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ORLANDO

NOVEMBER 6–8, 2014

#NSTA14

NSTA National Science Teachers Association

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NSTA National Science Teachers Association

NSTA 2014 Area Conference on Science Education

Science: Adventures into the Future

Orlando, Florida • November 6–8, 2014

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)

Welcome to Orlando—Science: Adventures into the Future

Barbara Rapoza

Michelle Ferro

Nancy Besley

Welcome to the NSTA Orlando Area Conference! On behalf of the science education community in Florida, we welcome you to Orlando, a city fueled by creativity and innovation.

The Florida Conference Committee challenges you to engage in exciting learning experiences involving "Science: Adventures into the Future" and has created a diverse and engaging program that will appeal to science educators across all grade levels and disciplines.

The conference is organized around these three strands:

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

From the numerous invited speakers, hands-on workshops, share-a-thons, presentations, field trips, short courses, and a symposium, you are sure to find innovative ideas and practices to assist in preparing students for their science adventures into the future. Also, be sure check out the latest instructional materials at the exhibit hall and redeem your meal voucher.

We look forward to meeting every one of you as you engage in an exciting learning experience that will provide adventures in science excellence.

2014 Orlando Area Conference Committee Leaders
Barbara Rapoza, Michelle Ferro, and Nancy Besley

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

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Orlando Conference Committee

Program Committee

Strand Leader: Elementary Science—Early and Often
Madge Nanney
Terry Parker High School
Jacksonville, FL

Strand Leader: Environmental Explorations: Indoors and Outdoors
Steve Rich
NSTA Director for Professional Development;
Director of GYSTC
University of West Georgia
Carrollton, GA

Strand Leader: STEM Connections: Preparing the Workforce of Tomorrow
Marsha S. Winegarner
MLSW Consulting, Inc.
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Local Arrangements Committee

Field Trips Manager
Sandra McCoy
Avalon Middle School
Orlando, FL

Guides Manager
Judith Frank
Avalon Middle School
Orlando, FL

Manager of Services for People with Disabilities
Lori Braga
Southwest Middle School
Palm Bay, FL

Volunteers Manager
Fadia Ahmed Hussien
Avalon Middle School
Orlando, FL

President's Welcome

Science: Adventures into the Future

Welcome to NSTA's 2014 Orlando Conference. Most of us remember our earliest fascination with science. It was almost never found in a stack of data or a series of factoids, but rather through a leap of the imagination that sparked a burning question, How does a bee fly? Why does the moon seem so large? What makes the ocean's shore constantly change? We may not have realized it then, but we walked in the footsteps of scientists througout the ages: Galileo's swinging chandeliers, Curie's glowing ore, or Einstein's fanciful ride on a beam of light.

To a lifelong learner, science is a way of knowing today's world that allows one to leap into the future. It is the spark that fuels investigation and innovation in everything we do. And there's no better place to recharge the imagination than Orlando, Florida.

For this NSTA conference, educators from around the country have worked to create a program that has something for everyone. The conference's strands reflect important trends in education nationwide. You'll find ways to emphasize "Elementary Science—Early and Often," ideas to encourage "Environmental Explorations: Indoors and Outdoors" and practical steps to implementing "STEM Connections" so that we can create the workforce of tomorrow.

You'll also find valuable ideas and connections everywhere you go, from hotel to the Exhibit Hall, in social events and on social media. Veteran participants often remind first-timers who might be daunted by the array of choices at an NSTA gathering, "Whatever you choose, you can't go wrong."

So use the many resources of this conference to chart a path to the future for yourself, your educational community, and its learners. As you participate, nurture the explorer inside you. Resolve to take home not only souvenirs and selfies, but the links you'll need to continue your quest at home. The adventure begins here.

Juliana Texley
2014–2015 NSTA President

Sponsors and Contributors to the Orlando Conference

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

Sponsors

Florida Association of Science Teachers

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Southwest Airlines

Texas Instruments, Inc.

Contributors

American Association of Physics Teachers

American Chemical Society

American Society for Engineering Education

Disney Youth Education Series

Orlando Science Center

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.

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.

Orange County Convention Center's Green Practices

Committed to environmental stewardship, the Orange County Convention Center (OCCC) is nationally and internationally recognized for its green initiatives.

- The first convention center in the United States to receive ISO certification for the implementation of an Environmental Management System (EMS). This accomplishment has resulted in a 19% total reduction in total waste generated and overall diversion rate of 53% of wastes from the landfill.
- The largest convention center in the world to be LEED Gold Certified for Existing Buildings. This achievement has resulted in a 12% reduction in potable water consumption since 2012.
- More than 455,956 guests of the Orange County Convention Center have attended events booked as Green Meetings since the OCCC was certified by APEX/ASTM as a Green Meeting Venue for environmentally sustainable meetings, events, conferences, and trade shows.
- The Orange County Convention Center generates its own renewable electric power using a 1 Megawatt Solar Array installed on the roof of its North/South Building.

"Go Green" at the Orlando Conference!

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

Meeting Location and Times

The conference hotels are the Hyatt Regency Orlando *(co-headquarters hotel)*, Rosen Plaza Hotel *(co-headquarters hotel)*, and DoubleTree by Hilton Hotel Orlando at SeaWorld. Conference registration, the exhibits, the NSTA Expo, the NSTA Science Store, exhibitor workshops, and many sessions will be located at the Orange County Convention Center—West Building. Other sessions and events will be held Hyatt Regency Orlando *(co-headquarters hotel)*, Rosen Plaza Hotel *(co-headquarters hotel)*, and DoubleTree by Hilton Hotel Orlando at SeaWorld. The conference will begin on Thursday, November 6, at 8:00 AM, and end on Saturday, November 8, 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.).

The NSTA Registration Area, located in West Hall WD2 of the Convention Center, will be open during the following hours:

Wed., Nov. 5	5:00–7:00 PM
Thu., Nov. 6	7:00 AM–5:00 PM
Fri., Nov. 7	7:00 AM–5:00 PM
Sat., Nov. 8	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 Orlando Planning Committee has scheduled a variety of ticketed events. Each of these events requires a separate fee and ticket. You may purchase tickets for these events, space permitting, in the NSTA Registration Area. See the Conference Program section (starting on page 34) for details. Note that some events may have required advance registration.

—Photo of the International Drive, Orlando, courtesy of Visit Orlando.

Ground Transportation to/from Airport

The Orlando International Airport (MCO) is located 13 miles from the Orange County Convention Center. Taxi fare from the airport to the Convention Center is approximately $38. For more information about ground transportation at the airport, go to *bit.ly/1vpXHo6*.

Getting Around Town

The **I-Ride Trolley** provides a hop-on/hop-off service route exclusive to the International Drive Resort area with a stop at the Orange County Convention Center West Concourse. Operating from 8:00 AM to 10:30 PM, a single cash fare is $2 per ride (exact change required). Visit *www.iridetrolley.com* for a map of stops and more information.

For approximate taxi fares from the Convention Center to various attractions, go to *bit.ly/1tbVv0N*.

•Orlando's public transportation system, **LYNX** *(www.golynx.com)*, is a great way to get around town.

Conference Hotels

See page 9 for a list of hotels and a map of the downtown area. If you have questions or concerns regarding your housing, please contact Orchid Event Solutions (during business hours), Monday through Friday, 9:00 AM–8:00 PM EST at 877-352-6710 (toll-free) /801-505-4611 or e-mail at *help@orchideventsolutions.com*.

Parking

The Orange County Convention Center operates on-site vehicle parking at both the West Building and the North/South Building. Additional parking is also offered at their Destination Parkway Garage and neighboring hotels and entertainment complexes. Parking rates vary upon location, vehicle size, and the entry time. Visit *bit.ly/1vrvhuF* to access a map of the Convention Center's parking facilities.

Each of the conference hotels offers self-parking and/or valet parking. Consult your hotel for parking rates.

Registration, Travel, and Hotels

Airlines

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

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."*

SeaWorld Special Offer for NSTA Orlando Conference Registrants

SeaWorld ORLANDO

Unexpected Encounters…Unbelievable Events. This is SeaWorld's promise, where one-of-a-kind experiences abound. This is where exhilarating coasters, awe-inspiring shows, up-close animal encounters, and incredible culinary creations combine to make your event a memory that will last a lifetime.

Whether you want to fly like a giant ray on SeaWorld's award-winning coaster, Manta®; see penguins up-close at their newest attraction, Antarctica: Empire of the Penguin® or network on the white, sandy beaches of Discovery Cove; it will be an immersive delight for the senses that will have you singing its praises all the way back to school and beyond.

To purchase discounted tickets to:

- **SeaWorld and Aquatica–SeaWorld's Waterpark**, go to *bit.ly/1nqSSeL*
- **Discovery Cove** tickets, go to *bit.ly/1sXULBA*

NSTA National Science Teachers Association
AREA CONFERENCE ON SCIENCE EDUCATION
ORLANDO, FL
NOVEMBER 6–8, 2014

1. **Hyatt Regency Orlando**
   formerly Peabody
   (Co-headquarters Hotel)
   9801 International Dr.
   Orlando, Fla.
2. **Rosen Plaza Hotel**
   (Co-headquarters Hotel)
   9700 International Dr.
   Orlando, Fla.
3. **DoubleTree by Hilton Hotel**
   Orlando at SeaWorld
   10100 International Dr.
   Orlando, Fla.

See shuttle information on page 10.

Shuttle

Hours of Operation

(Please see flyers and signs for updates)
Shuttles run every 15–20 minutes.

ROUTE

DoubleTree Orlando at SeaWorld *(DoubleTree pick up/drop off is at the main entrance, ground floor.)*

Rosen Plaza *(Rosen pick up/drop off is at the convention center entrance, back of the hotel.)*

***Special Note:** *The Hyatt Regency Orlando is within walking distance of the Orange County Convention Center–West Building.*

Date	Service Begins	Last Shuttle Departs OCCC
Wednesday, November 5		
Evening Service	4:30 PM	7:30 PM
Thursday, November 6		
All-day Service	6:30 AM	5:30 PM
Friday, November 7		
All-day Service	6:30 AM	5:30 PM
Saturday, November 8		
Half-day Service	7:00 AM	12:30 PM

Note: *The Convention Center pick up/drop off is at the West Building, Hall D, curbside on Bus Lane.*

Exclusive Offer for NSTA Conference Registrants

Welcome to Orlando.

Enjoy complimentary general admission to the

Orlando Science Center

www.osc.org

on the following days/times:

- **Thursday, November 6, 10:00 AM–5:00 PM**
- **Friday, November 7, 10:00 AM–5:00 PM**
- **Saturday, November 8, 10:00 AM–5:00 PM***

(*On Saturday, 5:00–9:00 PM, observatory and film experiences only.)

Show your NSTA badge at the Admissions Desk for complimentary general admission on the days of the conference (Nov. 6–8), offered exclusively to NSTA Orlando Area Conference registrants. The Orlando Science Center's mission statement is to "Inspire Science Learning for Life." Visit *www.osc.org* to find out the latest happenings at this dynamic and engaging museum that includes hundreds of exhibits, programs, films, an observatory, and much more. Parking is $5 per vehicle.

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Conference Resources

NSTA Exhibits

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

The lapel badge 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 114.

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 West Hall WD2, exhibits will be open for viewing during the following hours:

Thu., Nov. 6	11:00 AM–5:00 PM
Fri., Nov. 7	9:00 AM–5:00 PM
Sat., Nov. 8	9:00 AM–12 Noon

Did you know that NSTA offers Exclusive Exhibits Hall hours—Thursday 11:00 AM–2:00 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 128 for a complete listing of exhibitor workshops.

NSTA Expo

Stop by NSTA Expo (Booth #1141) to redeem your free six-month membership and learn about NSTA's benefits, services, programs, and partners. See pages 122–123 for a complete list of NSTA services and programs.

Meal Vouchers

Conference registrants will be issued three meal vouchers total ($15 each) …one for each day of the conference, redeemable at the Food Court area in the NSTA Exhibit Hall during the exhibit hall hours (Thursday 11:05 AM–5:00 PM; Friday 9:00 AM–5:00 PM; and Saturday 9:00 AM–12 Noon). Vouchers are not redeemable for cash; no change given back …and they will not be replaced if lost.

Meet the Presidents and Board/Council

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

Wi-Fi in Convention Center

Free wireless internet is available in all the public space concourse areas as well as the food court areas of the Convention Center. To access, select the SSID named "OCCC Free WiFi." Note: This is a limited user/lower bandwidth service that does not provide coverage in any of the exhibit halls or meeting rooms.

Session Updates and Cancellations

As cancellations come in, we will update the Session Browser/Personal Scheduler and schedule on the conference app. You can also go to *bit.ly/1xWGlDH* to access a list of session cancellations and room changes that will be updated during the conference.

Visit Orlando Information Desk

Visit Orlando has an Information Desk located in the central lobby (second level) of the Convention Center–West Building. The desk is open as follows:

Wed., Nov. 5	9:00 AM–5:00 PM
Thu., Nov. 6	9:00 AM–5:00 PM
Fri., Nov. 7	9:00 AM–5:00 PM

Information about Orlando's attractions and dining opportunities are available, as well as I-Ride Trolley passes and Disney, Universal, and SeaWorld tickets for sale. The staff can also assist with dining reservations.

NSTA Science Store

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

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

Graduate Credit Opportunity

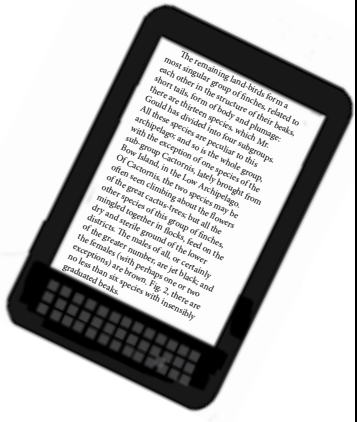
Orlando conference attendees can earn one graduate-level credit in professional development through Framingham State University. Visit *www.framingham.edu/nsta* for complete details. The fee is $129 and credit is by pass/fail option only.

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

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

When you log on to *www.nsta.org/orlandobrowser* and fill out an evaluation by clicking on the "evaluate session" button below the session you attended, you get entered into a drawing for a chance to win a Kindle Fire HD 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 A NEW KINDLE FIRE HD 7", 8 GB**

- **CONFERENCE APP**

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

FAST Booth

The Florida Association of Science Teachers (FAST) booth is located in the registration area of West Hall WD2 of the Convention Center, next to "Program Pickup." Stop by for information on the benefits of becoming a member of this organization. Membership forms as well as information on FAST 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 Florida!

Online Session Evaluations and Tracking Professional Development

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

Help NSTA's **GREEN** efforts by visiting the conference session browser to complete Orlando session evaluations online, November 5–21, 2014. During the conference, session evaluations can be completed on the computers at the Presenters/Presiders booth in the Registration Area. **And this year, we're giving away a NEW Kindle Fire HD 7" to one lucky attendee who completes a session evaluation! Remember, the more sessions you attend and evaluate, the more chances you have to win!**

To evaluate a session, attendees should follow these steps:

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

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

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

Beginning December 2, 2014, 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., Exhibit Hall visits, etc.). In addition, the NSTA Learning Center offers professional development experiences (online and face-to-face) for your long-term growth and professionalism.

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

The NSTA Conference App

Navigate the conference from the palm of your hand! The NSTA Conference app provides all the tools necessary for a successful conference experience. Features include the ability to view session and workshop listings by time and presenter; maps of the Convention Center, hotels, and Exhibit Hall; Social Media plugins; and a note-taking tool. Scan the QR code 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. *Note:* The NSTA Conference app does not sync with the online Personal Scheduler.

First Aid Services

First Aid is located in Medical Room 1 in teh West D lobby of the Convention Center, West Building, directly across from room W224A. Look for the First Aid sign on the door. Attendees in need of first aid may simply walk into the room or call at 407-685-5148.

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.

Presenters and Presiders Check-In

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

Lost and Found

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

Audiovisual Needs

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

- Reg. Office 15/16, Convention Center (West Building)
- Bayhill 30, Hyatt Regency Orlando
- Mediterranean C, DoubleTree by Hilton
- Salon 1, Rosen Plaza Hotel

Conference Evaluation

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

Business Services

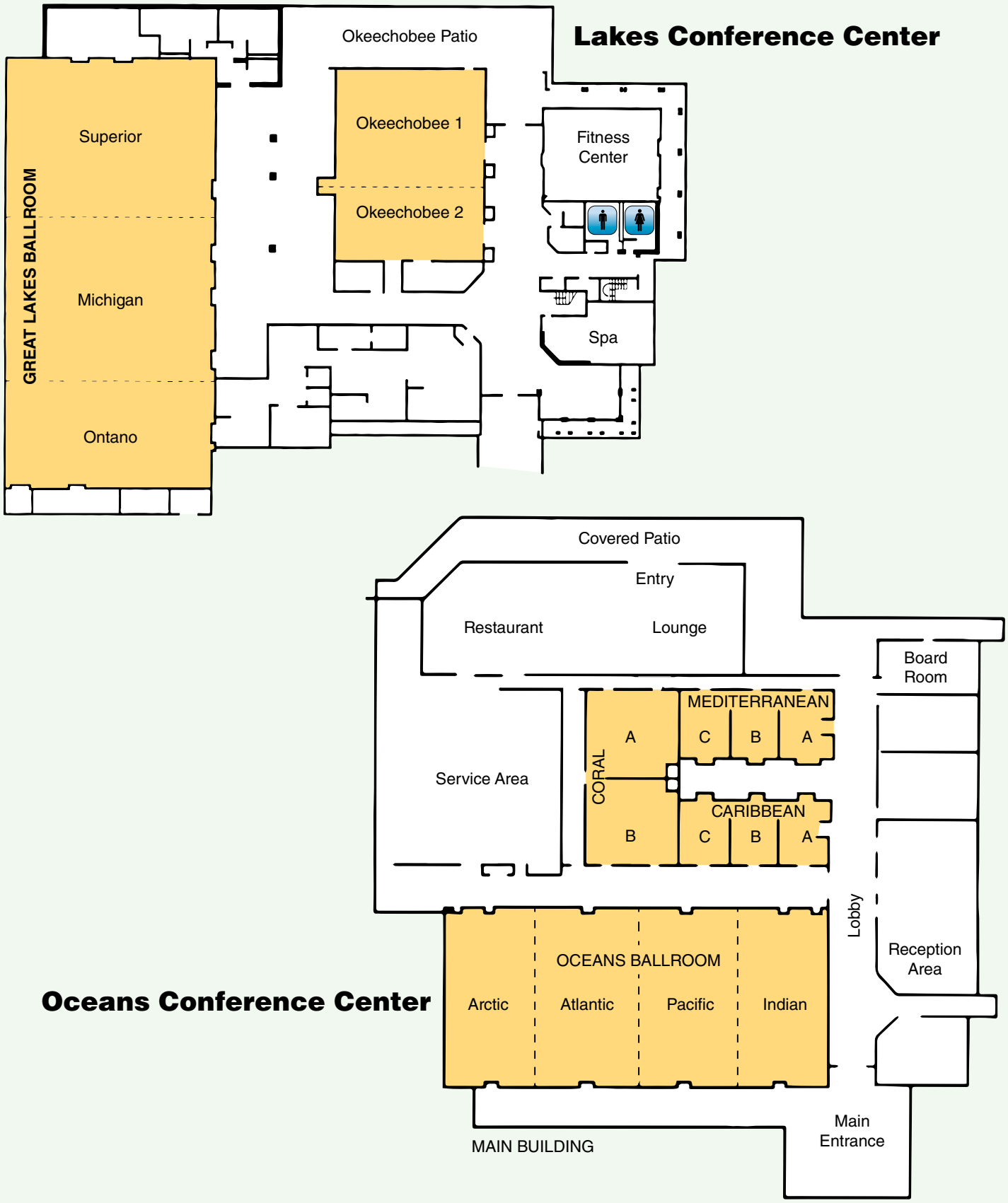
The FedEx Office Print & Ship Center℠ located outside the West Concourse Hall C of the Orange County Convention Center offers printing, packing, shipping, copying, and office supplies. Open daily from 8:00 AM–5:00 PM. For more information, call 407-363-2832 or e-mail *usa3996@fedex.com.*

Located at the Hyatt Regency Orlando, the 11th Hour Executive Business Center offers copying and digital printing, fax services, equipment rental, signage and package materials, and computer stations. Hours are Monday–Friday, 7:00 AM–8:00 PM; and Saturday, 7:00 AM–6:00 PM; and Sunday, 8:00 AM–6:00 PM. For more information, call 407-345-4466 or e-mail *executive@11thhourbiz.com.*

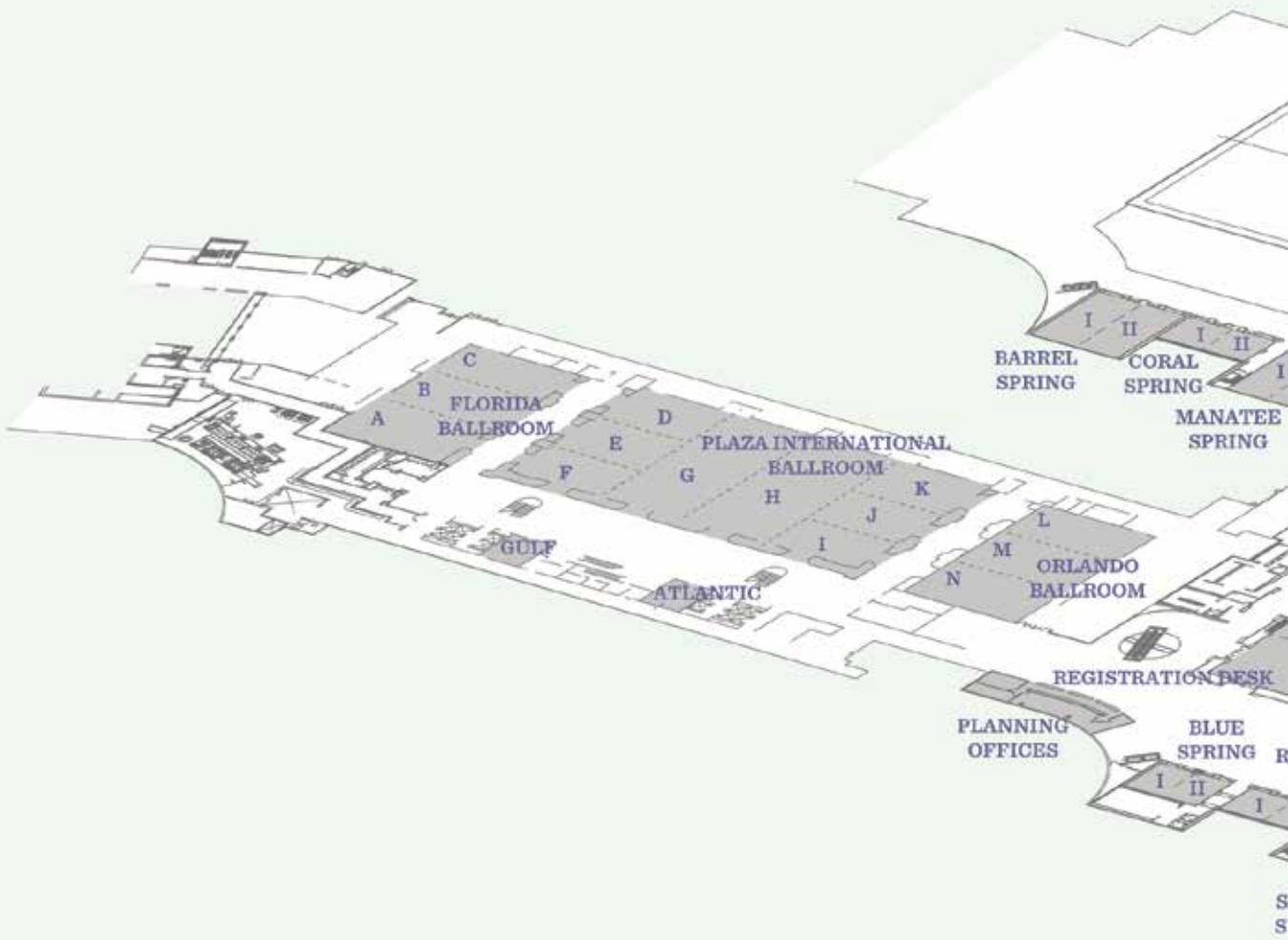
The RICOH Business Center is located at the Rosen Plaza Hotel. This full-service business center offers copying and printing, shipping, office rentals, computer services, and office supplies. Hours are Monday–Friday, 7:00 AM–6:30 PM; and Saturday, 7:00 AM–3:00 PM. For more information, call 407-354-5774 or e-mail *rp@ricohbusinesscenters.com.*

Orange County Convention Center

DoubleTree by Hilton Orlando at SeaWorld



Hyatt Regency Orlando



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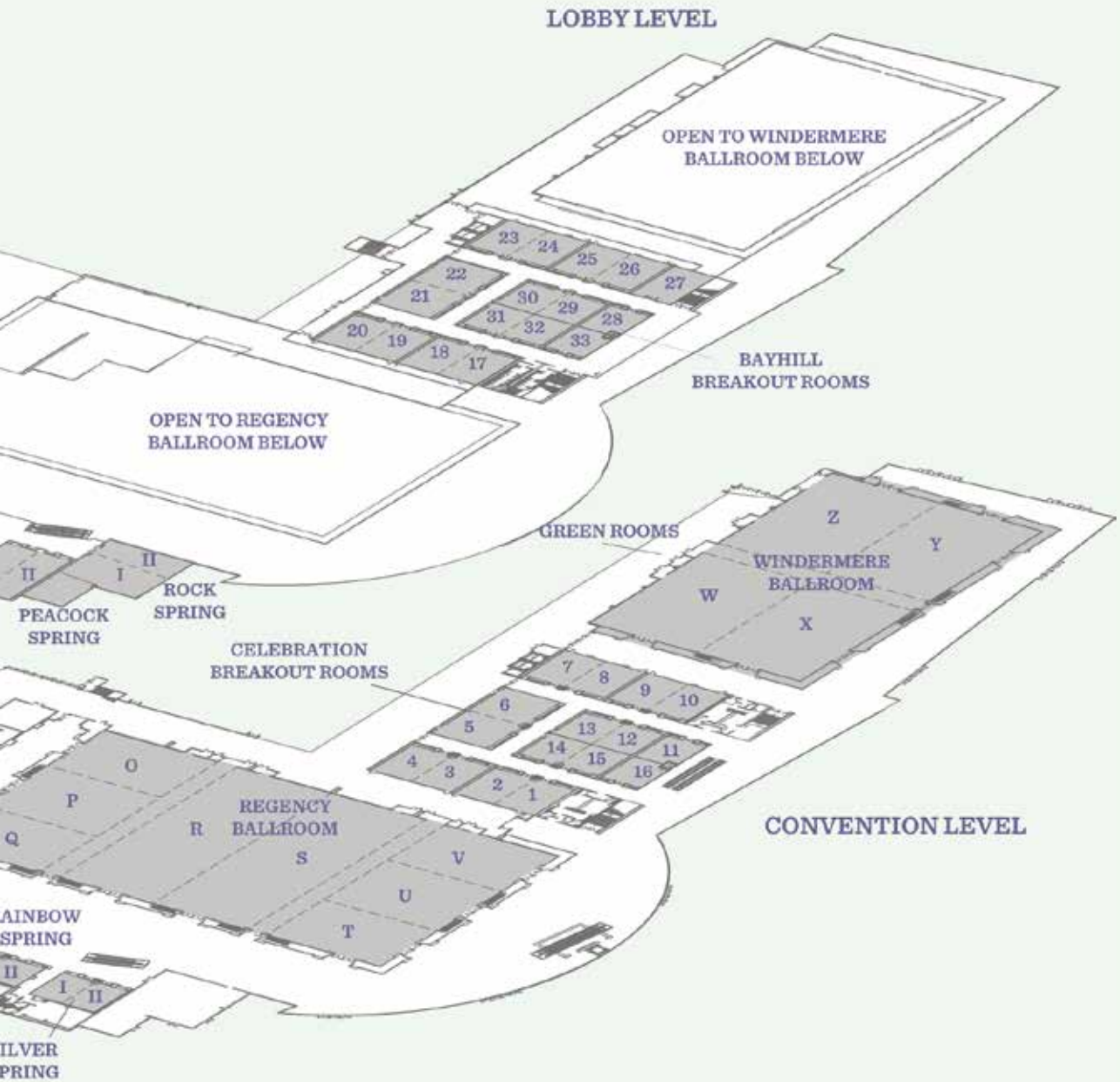
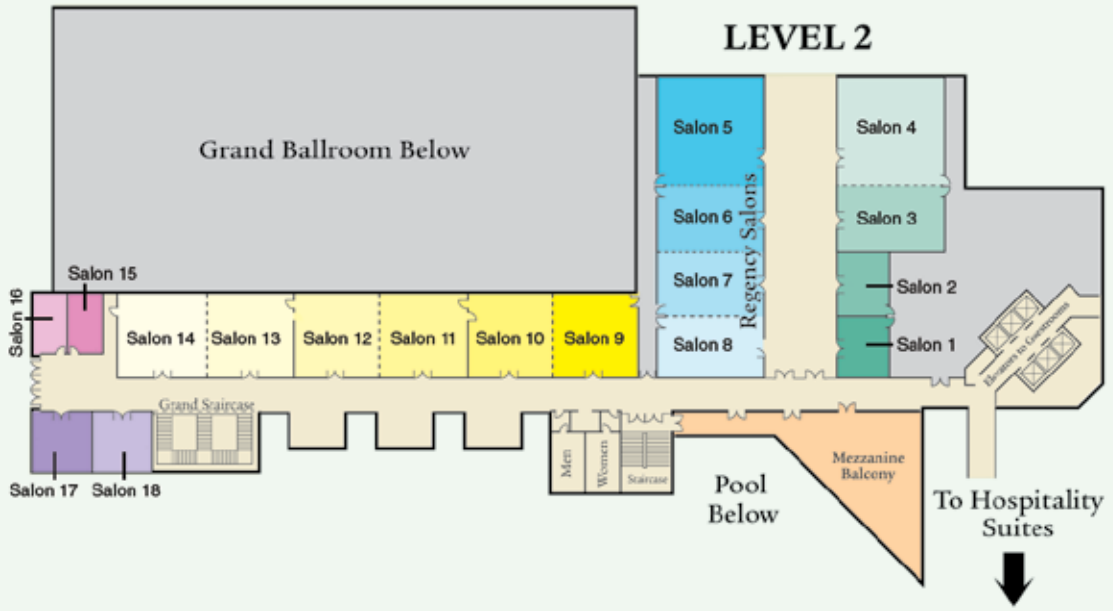


Rosen Plaza Hotel



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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

Chicago, Illinois
March 12–15, 2015

Nashville, Tennessee
March 31–April 3, 2016

Los Angeles, California
March 30–April 2, 2017

2015 STEM Forum & Expo

Minneapolis, Minnesota
May 20–23

Area Conferences on Science Education

2014 Area Conference

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

2015 Area Conferences

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

2016 Area Conferences

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

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

Company	Booth
American Chemical Society	1034
Bio-Rad Laboratories	1222
Camp Invention	1422
Carolina Biological Supply Co.	1019
The DuPont Challenge	1246
eCYBERMISSION	1242
Educational Innovations	1227
ExploreLearning	1419
Fisher Science Education	1129
Flinn Scientific	918
Howard Hughes Medical Institute	1123
LAB-AIDS, Inc.	1323
LEGO Education	922
MSU Teachers in Geosciences	942
NanoAndMore USA, Inc.	1234
Nasco	1321
PASCO scientific	1027
Pearson	1026
Project Learning Tree	1237
School Specialty Science	1219
Science First/STARLAB	924
SeaWorld Parks & Entertainment	1326
Shell Science Lab Challenge	1244
Swift Optical Instruments	919
Texas Instruments	1128
Vernier Software & Technology	1119
Wavefunction, Inc.	1427
Western Governors University	1228
WhiteBox Learning	927

—Photo courtesy of Visit Orlando

The Hurricane Simulator at the Orlando Science Center.
See page 10 for special offer for conference attendees.

Is This Your First NSTA Conference?

Yes, you say? Then you are invited to attend a special session on Thursday, 8:00–9:00 AM. Learn how you can gain the most from your conference experience and have fun doing it! See page 46 for details.

Thursday, November 6

Friday, November 7

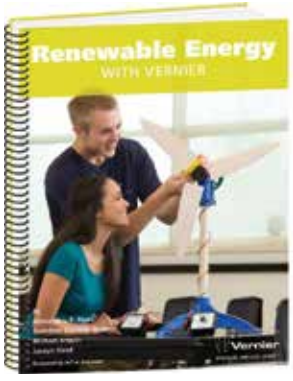
Saturday, November 8

Data Collection Meets Renewable Energy

Vernier provides the ideal solution for teaching students about renewable energy.

KidWind Advanced Wind Experiment Kit

Ideal for grades 7–12, this kit allows students to discover advanced wind turbine technology concepts. Students can test different blade designs, gear ratios, generators, and devices to measure electrical and weightlifting power. All they need is their own wind source, basic tools, and imagination!
www.vernier.com/kw-awx



Renewable Energy with Vernier Lab Book

Written for and aligned to NGSS, this lab book contains a wide range of high school level experiments that address objectives in integrated sciences, physical science, physics, and environmental science. The lab book features 26 experiments in wind and solar energy and contains a combination of explorations, traditional experiments, inquiry investigations, engineering projects, and more.
www.vernier.com/rev

Vernier Energy Sensor

Looking for an easy way for students to quantify voltage, current, power, and energy output? Look no further! When connected to a source and a load, the sensor measures both the potential and current from a renewable energy system. Students can then use data collection and analysis software to calculate the power and energy output. **www.vernier.com/ves-bta**

Vernier Variable Load

The Vernier Variable Load provides a perfect complement to the Vernier Energy Sensor, allowing students to test a range of resistive loads for wind turbine or solar panel projects. Students can adjust the potentiometer to provide resistances between 6 and 255 Ω to determine the optimal load on a system.
www.vernier.com/ves-vl

The Orlando 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.

Elementary Science—Early and Often

Early science experiences help students excel in mathematics and English language arts practices embedded in the *Common Core State Standards*. Engaging in the practices of asking questions; planning and carrying out investigations; analyzing data; using mathematics and computational thinking; engaging in argument from evidence; developing and using models; constructing explanations; and obtaining, evaluating, and communicating information are part of a deep and meaningful learning experience that builds a solid foundation for cross-curricular connections. This strand will increase participants' pedagogical content knowledge and find new ways to connect with the *Common Core State Standards*.

Environmental Explorations: Indoors and Outdoors

Exploring the environment enriches young people's knowledge base and gives them insight into becoming good stewards of natural resources. Environmental literacy is crucial to help students become informed consumers of materials and energy and contribute to a sustainable future. To effectively process available environmental data, students need quality science instruction, in a variety of settings, on topics such as the climate, alternative energy, ecosystems, and natural resource conservation.

STEM Connections: Preparing the Workforce of Tomorrow

Modern society depends on the preparation of students for STEM careers. Students must learn skills today that will transfer into new and emerging fields. This strand will highlight successful practices that emphasize career and technical education skills, including leadership, appropriate argumentation, problem solving, collaboration, and communication.

Elementary Science—Early and Often

Thursday, November 6

8:00–9:00 AM
Engineering in the Elementary

2:00–3:00 PM
What Do Scientists Do? Exploring the Nature of Science in Your Elementary Classroom

2:00–5:00 PM
SC-1: Integrating *NGSS* Lessons with Best Literacy Practices of the *CCSS*: K–5
(Tickets required: $16)

3:30–4:30 PM
Elementary Science Showcase…Students Take the Lead!

5:00–6:00 PM
Reading Through STEM: Problem-based Interdisciplinary Unit Design

Friday, November 7

8:00–9:00 AM
Science and the New Literacies

9:30–10:30 PM
Classroom Science Fair Projects Made Simple

11:00 AM–12 Noon
Elementary Teachers—Don't Let Science Anxiety Impact Your Science Teaching

2:00–3:00 PM
Featured Presentation: The Psychology of Teaching About Climate Change
(Speaker: Lynne Cherry)

3:30–4:30 PM
STEM in the Primary Classroom

5:00–6:00 PM
Ultimate K–3 Science Notebooking

Saturday, November 8

8:00–9:00 AM
Preschool to Kindergarten Hands-On Science: Get an Early Start on Building Scientific Habits of Mind!

9:30–10:30 AM
Big Kids Make Big Books

11:00 AM–12 Noon
Butterfly Gardening Using Native Plants

Environmental Explorations: Indoors and Outdoors

Thursday, November 6

8:00–8:30 AM
Inside–Out: Integrating Environmental Literacy into STEM at the Elementary Level

8:30–9:00 AM
Fostering Science Learning and Appreciation of Nature Through Play

2:00–3:00 PM
Featured Presentation: Transforming STEM Education with Sharks and Real-World Science
(Speaker: Chris Fischer)

3:30–4:00 PM
The Chesapeake Bay Experience: An Interdisciplinary Approach to Environmental Education and Service Learning

5:00–6:00 PM
Into the Outdoors

Friday, November 7

8:00–8:30 AM
Explore the Earth System Using Real-World Data

8:30–9:00 AM
Community Study Units: So Much More than a Field Trip

9:30–10:30 AM
Backyard Field Trips

2:00–3:00 PM
Cooling the Sidewalk for Ants

4:00–4:30 PM
The Classroom "Without" Walls

Saturday, November 8

8:00–9:00 AM
The Galápagos Islands Through Photos and Songs (Walking in Darwin's Footsteps)

9:30–10:30 AM
Engaging the Brain Through Place-based Learning in a National Park

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

11:00 AM–12 Noon
Creating a Successful Citizen Science Program in an Urban Setting

STEM Connections: Preparing the Workforce of Tomorrow

Thursday, November 6

8:00–9:00 AM
Engineering in the Middle

2:00–2:30 PM
STEM Career Explorations for Girls

3:30–4:30 PM
A Cross-Curricular Experience: Solving Real-World Problems Through Literacy- Rich STEM Discovery

5:00–6:00 PM
Simulate STEM Online Through Virtual Clinical Trials

Friday, November 7

8:00–9:00 AM
Reinforce STEM with Medical Mysteries Web Adventures

9:30–10:30 AM
Featured Presentation: Crittercam: An Adventure in STEM Education
(Speaker: Greg Marshall)

11:00 AM–12 Noon
Inquiry 2.0: Ramping Up Inquiry to Meet the *NGSS*

2:00–3:00 PM
NASA's High-Energy Vision: Chandra and the X-Ray Universe

3:30–4:30 PM
STEM in the Park: A Model Program that Provides Roots for STEM Learning

4:00–4:30 PM
Earth, Wind, and Sun: Growing STEM Majors

5:00–5:30 PM
Zoo Genetics: Key Aspects of Conservation Biology

5:30–6:00 PM
Project Based Learning Increases Student Interest and Access to the Curriculum

Saturday, November 8

8:00–9:00 AM
Climate Smart and Energy Wise: The Literacy Imperative of the 21st Century

9:30–10:30 AM
Introducing Nanotechnology into the Chemistry Classroom

11:00 AM–12 Noon
Engineer Your World: Integrating Engineering Design, Computational Thinking, and 21st-Century Skills

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 6

8:00–9:00 AM	Uncovering Student Ideas Through Digital Applications!
2:00–3:00 PM	Uncovering Elementary Students Ideas Through Science Talk
3:30–4:30 PM	Showcasing How Elementary Preservice Interns Teach Inside–Out
5:00–6:00 PM	*Inquiring Scientists, Inquiring Readers*: Using Literacy Strategies to Support Inquiry Investigations

Friday, November 7

8:00–9:00 AM	Pendulums and Porch Swings
9:30–10:30 AM	Teaching Science Through Integrating Children's Literature and Outdoor Investigations
11:00 AM–12 Noon	*Bringing Outdoor Science In*
	Uncovering Students' Ideas in the STEM Disciplines
2:00–3:00 PM	*Picture-Perfect Science Lessons: Using Children's Books to Guide Inquiry*
	Uncovering Teachers' and College Students' Ideas in Science

Friday, cont.

2:00–6:00 PM	Phenomenon-based Learning: Students Learning Science the Way Scientists Do (Short Course: SC-4, ticket $76, p. 36)
3:30–4:30 PM	Teaching Science Through Trade Books—Exemplars from the Book and Featured Columns
5:00–6:00 PM	*Next Time You See...*

Saturday, November 8

8:00–9:00 AM	*Scientific Argumentation in Biology: 30 Classroom Activities*
9:30–10:30 AM	*Argument-Driven Inquiry in Biology: Lab Investigations for Grades 9–12*
11:00 AM–12 Noon	*It's Debatable! Using Socioscientific Issues to Develop Scientific Literacy K–12*

Engineering Day at NSTA

Sponsored by the American Society for Engineering Education

Friday, November 7, 8:00 AM–6:00 PM
Manatee Spring II, Hyatt Regency Orlando

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	**Introducing Engineering to Elementary School**
9:30–10:30 AM	**ASEE's K–12 Outreach Program, eGFI: Engineering, Go For It! and *TeachEngineering.org***
11:00 AM–12 Noon	**Engaging Elementary-aged Children and Parents in Engineering**
2:00–3:00 PM	**Engineering Design Cycles and the *CCSS***
3:30–4:30 PM	**SENSE IT: Student-created Water Quality Sensors**
5:00–6:00 PM	**Effective STEM Curriculum for Girls**

ACS Chemistry for Life™

Chemistry Day at NSTA

Sponsored by the American Chemical Society

Energy as a Framework to Teach Chemistry at Multiple Levels
For Grades 9–12

Friday, November 7, 8:00 AM–4:00 PM
Bayhill 22, Hyatt Regency Orlando

Energy is a crosscutting concept in all of the science disciplines. It can be used within chemistry as a framework to help students understand the properties and behavior of substances at multiple levels. The three sessions of Chemistry Day are designed to analyze, discuss, and reflect on diverse instructional strategies that actively engage students in thinking about energy transfer issues in chemistry at the macroscopic, symbolic, particulate, and atomic levels.

We will also illustrate how to diagnose and formatively assess student understanding. While these sessions can each stand alone, participants who join us for the day will experience how teachers can use different science practices (design, modeling, and argumentation) to help students develop and apply an energy lens to describe, explain, and predict chemical properties and phenomena. This Day of Chemistry has been developed by the American Chemical Society (ACS) High School Chemistry Professional Development Leadership Group.

8:00–10:00 AM	**Energy as a Framework to Teach Chemistry at Multiple Levels: A Macroscopic View**
10:30 AM–12:30 PM	**Energy in Chemistry: A Particulate View**
2:00–4:00 PM	**Energy in Chemistry: An Atomic View**

Middle School Chemistry Day

Sponsored by the American Chemical Society

Middle School Chemistry—Big Ideas About the Very Small

Friday, November 7, 8:00 AM–6:00 PM
Salon 4, Rosen Plaza Hotel

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**
9:30–10:30 AM	**Changes of State: Evaporation and Condensation**
11:00 AM–12 Noon	**Density—A Molecular View**
2:00–3:00 PM	**The Periodic Table, Energy Levels, and Bonding**
3:30–4:30 PM	**Polarity of the Water Molecule and Its Consequences**
5:00–6:00 PM	**Chemical Change—Breaking and Making Bonds**

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

NSTA 2014 Orlando 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 Orlando conference. Sessions/events such as exhibit hall visits may not be available for online evaluation. However, these events still qualify for professional development.

Beginning December 2, 2014, Orlando transcripts can be accessed at the NSTA Learning Center *(learningcenter.nsta.org)* by logging on with your Orlando Badge ID# and then clicking on "My PD Record and Certificates." Keep this form and use it to add the following activities to your Orlando transcript. Completed transcripts can be printed from this website and presented to an administrator who requires documentation of participation in the conference. All information in these transcripts will be maintained (and can be accessed) indefinitely as part of an attendee's individual profile.

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

Evaluate sessions by accessing the conference session browser: *www.nsta.org/orlandobrowse*r. You will need your badge number to evaluate sessions. See page 14 of the conference program for instructions. *Note:* Our session evaluation system is designed to work from a computer and while it may work on smartphones/tablets, it is not really designed for them. ***And don't forget, the more sessions you attend and evaluate, the more chances you have to win a Kindle Fire HD 7"!***

Sample Questions:

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

Sample Responses:

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

Wednesday, November 5 8:30 AM–3:30 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 6 7:45 AM–6:00 PM

Start Time	End Time	Activity/Event Title

Friday, November 7 8:00 AM–6:30 PM

Start Time	End Time	Activity/Event Title

Saturday, November 8 8:00 AM–12 Noon

Start Time	End Time	Activity/Event Title

Physics Day at NSTA

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

Friday, November 7, 8:00 AM–6:00 PM • Manatee Spring I, Hyatt Regency Orlando

The American Association of Physics Teachers offers a full day of physics content. Physics Day 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 Orlando is being organized by the Florida Section of the American Association of Physics Teachers.

8:00–9:00 AM	**Modeling Physics in the Classroom**
9:30–10:30 AM	**"Sunsational" Solar Electricity: The Physics of Photovoltaics**
11:00 AM–12 Noon	**Setting the Stage: Knowing Physics Isn't Enough**
2:00–3:00 PM	**Science in the Classroom**
3:30–4:30 PM	**Choose Your Own Adventure: Studio Physics Courses at the University of Central Florida**
5:00–6:00 PM	**3-D Printing as a Tool for STEM Learning**

Picture-Perfect Science Preconference Workshop (C-1)

Tickets for this preconference workshop were available by preregistration only.

Karen Ansberry

Emily Morgan

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.*

Level: Grades K–5
Date: Wednesday, November 5
Time: 8:30 AM–3:30 PM
Location: Bayhill 18, Hyatt

STEM education begins in elementary school, but it can be difficult for elementary teachers to fit science into the school day. *Picture-Perfect Science* integrates science and reading in a meaningful way, so you can teach both subjects at once. In this 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 $39.95 value containing 15 classroom-ready lessons for grades K–5.

A continental breakfast is included in the ticket price.

—Courtesy of Karen Ansberry and Emily Morgan

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

Joyce B. Tugel

Page Keeley *(pagekeeley@gmail.com),* 2008–2009 NSTA President, and Author of 14 books, including the best-selling *Uncovering Student Ideas in Science* series and numerous journal articles.

Joyce Tugel *(jtugel@mmsa.org),* Maine Mathematics and Science Alliance, Augusta

Level: Grades K–12
Date: Wednesday, November 5
Time: 8:30 AM–3:30 PM
Location: Bayhill 19, Hyatt

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 nature of students' misconceptions students have, experience a framework used to address students' ideas within a cycle of instruction, and experience interactive formative classroom techniques (FACTs) that support language literacy capacities and the scientific practices of constructing explanations and argument from evidence. Applications to both K–12 teaching and teacher professional or preservice development will be addressed. All participants will receive a copy of *Uncovering Student Ideas in Science, Vol. 4,* a $31.95 value.

A continental breakfast is included in the ticket price.

Symposium: Flight of the Monarch Butterflies (SYM-1)

Katie-Lyn Bunney *(kbunney@umn.edu),* University of Minnesota Monarch Lab, St. Paul
Dolores (De) Cansler *(decansler@gmail.com),* Adjunct Teacher Trainer, Monarchs in the Classroom, St. Paul, Minn.
Ann Hobbie *(ann.s.hobbie@gmail.com),* Adjunct Teacher Trainer, Monarchs in the Classroom, St. Paul, Minn.
Jim O'Leary *(oleary@mdsci.org)* and **Maureen Sullivan,** Maryland Science Center, Baltimore
Level: Grades K–12
Date: Friday, November 7, 12:15–6:30 PM
Location: Off-site (Learning Labs, Orlando Science Center)
Registration Fee: $54

NSTA is partnering with the Maryland Science Center, University of Minnesota, and the National Science Foundation to present an exciting symposium for educators, grades K–12, on the topic of monarch butterfly migration. During this half-day symposium, participants will see the film *Flight of the Butterflies* and take part in classroom activities focused on the monarchs' amazing migration across North America, as well as their habitats and life cycle. Attendees will hear from monarch experts about how teachers and students can become involved in citizen science projects to help the monarchs. Educational materials will be provided for classroom use. A drawing for door prizes will take place at the end of the program. Lunch will be served! Participants will be reimbursed $100 after successful completion of the symposium, courtesy of the presenting groups. Visit *bit.ly/Yf572v* for more information.

Note: Meet your instructor in Lobby D, outside of the West Hall WD2, of the Orange County Convention Center, by 12 Noon.

—Photos courtesy of Jim O'Leary / Maryland Science Center

Meetings and Social Functions

Friday, November 7

CESI Breakfast: What Are Young Children Really Thinking? (Speaker: Page Keeley: M-1 ticket: $51)
Salon 3, Rosen Plaza Hotel ..... 8:00–10:00 AM

Florida Association of Science Teachers (FAST) Annual Meeting/ Award Ceremony
Orlando Ballroom N, Hyatt Regency Orlando .... 12:30–2:30 PM

Council for Elementary Science International (CESI) Board Meeting By Invitation Only
Salon 2, Rosen Plaza Hotel ..... 3:30–6:30 PM

Saturday, November 8

AMSE Board Meeting
Salon 2, Rosen Plaza Hotel ..... 9:00 AM–12 Noon

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.

Integrating *NGSS* Lessons with Best Literacy Practices of the *CCSS*: K–5 (SC-1)

Roseann Feldmann *(rfeldmann@stmaryschooldekalb.com),* St. Mary School, DeKalb, Ill.
Pamela Farris *(pamelafarris@comcast.net),* Professor Emeritus, Northern Illinois University, DeKalb
Level: K–5
Date: Thursday, November 6, 2:00–5:00 PM
Location: Coral A, DoubleTree
Ticket Price: $16

In this short course, engage in sample lesson plans focused on the three dimensions of the *NGSS* integrated with *CCSS* reading and writing activities based on recent informational books. Emphasis will be placed on creating opportunities for K–5 students to use informational text for authentic purposes. Also, learn about concept muraling, an instructional technique for introducing concepts that has been shown to enhance the retention levels of struggling readers and English language learners.

Growing Up WILD™: Exploring Nature with Young Children (SC-2)

Marlene Morales, Miami Dade College, Miami, Fla.
Suzanne Banas *(sbanas@mdc.edu)*, South Miami Middle Community School, Miami, Fla.
Level: PreK–3
Date: Friday, November 7, 8:00 AM–12 Noon CANCELED
Location: Coral A, DoubleTree
Ticket Price: $27

Strengthen your confidence to lead outdoor explorations and indoor environmental activities for young children. Get trained in Growing Up WILD™, an early childhood program for children ages 3–8 that provides ready-made activities and easily digestible background information for early childhood educators. Growing Up WILD provides an early foundation for developing active, healthy children who appreciate nature with lifelong social and academic skills. The program builds on children's curiosity and nature while inviting them to explore wildlife and their environment. This program is correlated to the National Association for the Education of Young Children standards and the Head Start domains.

—*Photo courtesy of Growing UpWild*

Super Science Stations: Differentiation for All Students (SC-3)

Ariane Huddleston, The Science Penguin, Austin, Tex.
Level: Grades 3–5
Date: Friday, November 7, 2:00–5:00 PM
Location: Okeechobee 1, DoubleTree
Ticket Price: $21

Short course participants will experience science stations with Ari, writer of *The Science Penguin* blog. Differentiating instruction using science stations is an excellent way to engage students and meet their diverse needs. With excellent classroom management and procedures in place, students can work on their own toward accomplishing a variety of activities that reinforce the concepts being taught. Leave with management tips, station ideas, and differentiation resources to meet the needs of all students! Visit *www.thesciencepenguin.com* for more information.

NSTA Press® Session: Phenomenon-based Learning: Students Learning Science the Way Scientists Do (SC-4)

Matt Bobrowsky *(mbobrowsky@desu.edu)*, Delaware State University, Dover
Level: Grades 3–College
Date: Friday, November 7, 2:00–6:00 PM
Location: Coral A, DoubleTree
Ticket Price: $76

Experience the kind of learning that propelled Finland to international leadership in science education—learning not by memorizing facts, but by exploration and discovery. Combining the most effective aspects of Finnish teaching along with progressive inquiry, Project-Based Learning, collaborative learning, responsive teaching, and hands-on experiments, we present "Phenomenon-based Learning." Take home a copy of the PBL *Gadgets & Gizmos* book for your grade level, full of hands-on explorations that support the PBL approach and also receive gadgets that evoke curiosity and inspire the desire to explore and learn. For more information, visit *www.msb-science.com/pbl.html*.

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 Lobby D, outside of the West Hall WD2, of the Orange County Convention Center at least 15 minutes before departure time.

Airboat Ride and Wildlife Park $78; *by preregistration only*

#T-1 Thurs., Nov. 6 7:45 AM–1:45 PM

Travel deep into the protected swamps, marshes, and rivers that make up the Central Florida Everglades. Get an in-depth look at the 'gators, birds, eagles, trees, and plants as you glide through more than 100,000 acres of beautiful wetlands. This is natural and authentic Florida at its very best! Don't expect to see any development, homes, or signs of human life. Experience for yourself how good it feels to be in the middle of nowhere and what Florida looked like 1,000 years ago! After the one-hour airboat ride, explore the amazing wildlife park at Wild Florida, full of zebras, watusi, deer, water buffalo, emu, wild boar, and monster alligators. Visit the tropical bird aviary, alligator demonstrations, gift shop, 500 ft. sightseeing dock, and nature trails. If all this excitement makes you hungry, a boxed lunch from our restaurant is included. In addition, we offer for sale our delicious barbecue with smoked ribs, chicken, pulled pork, fried alligator, and even frog legs! Be sure to bring your camera and binoculars. Travel time is close to an hour each way.

Note: Wear comfortable shoes that are securely attached to your feet as well as sunscreen and bug spray.

Florida Solar Energy Center $68

#T-2 CANCELED Thurs., Nov. 6 8:00 AM–4:15 PM

What's new under the Sun? Find out at the Florida Solar Energy Center. As the largest state-supported research institute of its kind in the nation, you will tour the energy-efficient building, experiment with renewable energy technologies, and explore ways to incorporate valuable energy lessons into your curriculum. This is a hands-on/minds-on experience that provides tools to help students now and in the future. Catered lunch (with vegetarian option) includes beverage and dessert. Freebies and door prizes, too. Travel time is an hour each way.

Note: Prior to lunch, make luncheon staff aware of any food allergies.

F-1: STEM Adventures at the Kennedy Space Center

—*Photo courtesy of Kennedy Space Center*

Educational Opportunities at SeaWorld $24

#T-3 Thurs., Nov. 6 8:20 AM–1:20 PM

Join us for a special behind-the-scenes look at SeaWorld Orlando's Rescue and Rehabilitation efforts. You will learn firsthand what it takes to care for ill or injured animals that are brought into SeaWorld for treatment. We'll also explore the variety of educational offerings available at SeaWorld Orlando for daytime field trips and overnight sleepover programs. Bring your camera, because you won't want to miss this awesome opportunity. Visit *seaworldorlando.com* to learn more about SeaWorld's education programs and other resources available to teachers.

Note: Wear comfortable walking shoes.

—*Photo courtesy of SeaWorld Orlando*

STEM Adventures at the Kennedy Space Center

$41; *by preregistration only*

#F-1 CANCELED Fri., Nov. 7 7:30 AM–2:30 PM

Spend a STEMulating morning at the Kennedy Space Center exploring NASA's past and the future! In addition to a self-guided tour of the Kennedy Space Center visitor center, participants will be trained to use several NASA activities in their classroom. Hands-on resources include solar system lessons, a water filtration activity, and a NASA Engineering Design Challenge. Boxed lunch included. Travel time is approximately 1.5 hours each way.

—*Photo courtesy of Adventures in Florida*

Wekiva River Kayak/Canoe Trip

$100; *by preregistration only*

#F-2 CANCELED Fri., Nov. 7 7:45 AM–3:00 PM

Only minutes from Orlando, this paddling trip is the most scenic in all of central Florida. Come enjoy a day of paddling clear water, sand pine scrub, hammocks, pine flat woods, and black water swamps. This field trip offers a great opportunity to observe alligators, the rare black bear, manatee, and numerous wading birds all from the vantage point of your kayak. A light lunch is provided picnic style, riverside. Bring your binoculars and water-proof camera for a great day out on the water. Travel time is an hour each way. This field trip takes place rain or shine unless the weather is inclement.

Special Notes: Must be able to swim. Wear comfortable-loose clothes (no denim) and shoes that could get wet and/or dirty, along with hat, sunscreen, sunglasses, and mosquito protection. Participants must sign waivers prior to arrival. If anyone requires a larger-sized kayak, let us know in advance.

Explore Science at Disney World

S-1: Exploring Careers in the Marine Sciences $22

#S-1 SOLD OUT Sat., Nov. 8 8:30–11:15 AM

The Seas with Nemo & Friends at Epcot® is home to the interactive field study Exploring Careers in the Marine Sciences. Join us and explore a variety of fascinating marine career tracks and be captivated by an amazing oceanic world that is home to thousands of sea creatures! This experience upholds the Walt Disney Company's appreciation of wildlife and wild places and encourages participants to connect and care about marine life and marine conservation. Extend your time at Disney World on Saturday with a complimentary one-day park hopping ticket (name, school, city, state, and e-mail address required). Those that opt to stay after field trip will need to find alternative transportation back to Convention Center.

S-2: Energy and Waves Physics Labs $22

#S-2 SOLD OUT Sat., Nov. 8 8:30–11:15 AM

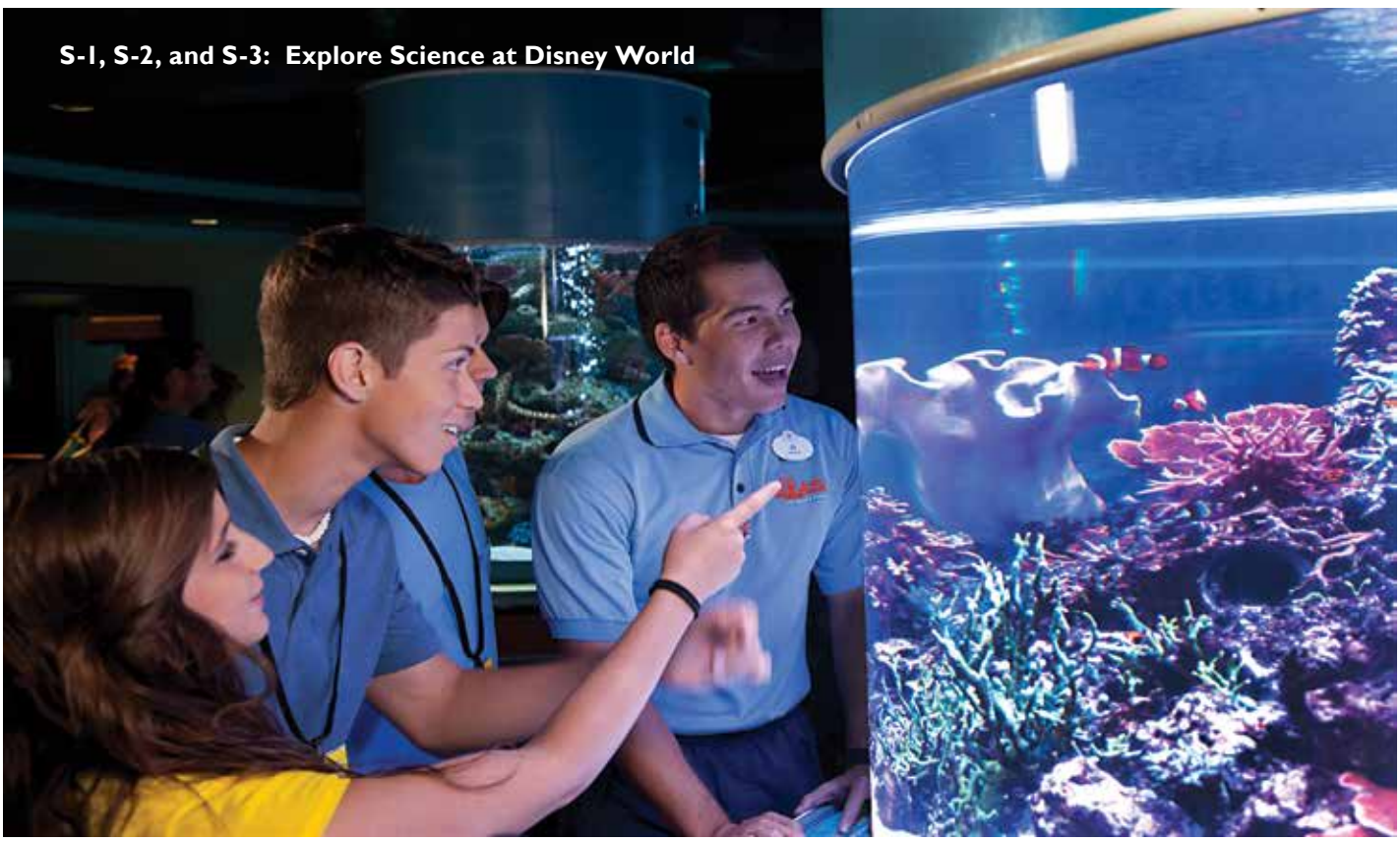
This snapshot of one of our most popular learning experiences will provide participants with the opportunity to experience light energy at work at a select Magic Kingdom® Park attraction. Join us and observe how optic principles govern the image-forming properties through lenses, mirrors, and other devices that use light energy. Extend your time at Disney World on Saturday with a complimentary one-day park hopping ticket (name, school, city, state, and e-mail address required). Those that opt to stay after field trip will need to find alternative transportation back to Convention Center.

S-3: Properties of Motion Physics Lab $22

#S-3 SOLD OUT Sat., Nov. 8 8:30–11:15 AM

Receive an overview of one of the most requested programs offered through the Disney Youth Education Series. Experience physics in a practical application as we demonstrate force, motion, and gravity at work on some of the most popular attractions at Magic Kingdom® Park. Extend your time at Disney World on Saturday with a complimentary one-day park hopping ticket (name, school, city, state, and e-mail address required). Those that opt to stay after field trip will need to find alternative transportation back to Convention Center.

Special Note: To receive a complimentary one-day park hopping ticket for use day of field trip, participants will need to provide name, school, city, state, and e-mail address. **This offer is for registered participants of S-1, S-2, or S-3 field trips/ adult teachers only.**



—Photo courtesy of Walt Disney World®

Association for Multicultural Science Education (AMSE)

President: Robert Ferguson

Friday, November 7

11:00 AM–12 Noon	K–8 Teachers Helping Students Make Sense of Climate Change	Salon 6, Rosen Plaza Hotel

Saturday, November 8

8:00–9:00 AM	Creating and Implementing Effective Watershed Lessons: for All Students: Use of the *Next Generation Science Standards* Appendix D and Case Studies	Salon 4, Rosen Plaza Hotel
9:00 AM–12 Noon	AMSE Board Meeting (By Invitation Only)	Salon 2, Rosen Plaza Hotel

Council for Elementary Science International (CESI)

President: Julie Thomas

Friday, November 7

8:00–10:00 AM	CESI Breakfast: What Are Young Children Really Thinking? (Speaker: Page Keeley; M-1 ticket: $51)	Salon 3, Rosen Plaza Hotel
11:00 AM–12 Noon	Elementary Science Share-a-Thon	Ballroom A, Rosen Plaza Hotel
2:00–3:00 PM	Integrating Science and Literacy: Proven Strategies Developed from Evidence-based Practice	Salon 3, Rosen Plaza Hotel
3:30–6:30 PM	CESI Board Meeting (By Invitation Only)	Salon 2, Rosen Plaza Hotel

Council of State Science Supervisors (CSSS)

President: Juan-Carlos Aguilar

Thursday, November 6

2:00–3:00 PM	Understanding the Vision for Science Education from the NRC *Framework* and the *NGSS*	Bayhill 22, Hyatt Regency Orlando

National Association for Research in Science Teaching (NARST)

President: Lynn Bryan

Thursday, November 6

5:00–5:30 PM	Leveraging Teacher Leadership to Support the *Next Generation Science Standards*	Bayhill 23, Hyatt Regency Orlando

National Middle Level Science Teachers Association (NMLSTA)

President: Patty McGinnis

Thursday, November 6

8:00–9:00 AM	Science and Special Education—Working Together	Bayhill 23, Hyatt Regency Orlando

Friday, November 7

2:00–3:00 PM	Writing a Successful Grant Proposal	Bayhill 23, Hyatt Regency Orlando

National Science Education Leadership Association (NSELA)

President: Darlene Ryan

Friday, November 7

8:00–9:00 AM	Tools for Science Leaders, Part I	Bayhill 23, Hyatt Regency Orlando
9:30–10:30 AM	Tools for Science Leaders, Part 2	Bayhill 23, Hyatt Regency Orlando

Society for College Science Teachers (SCST)

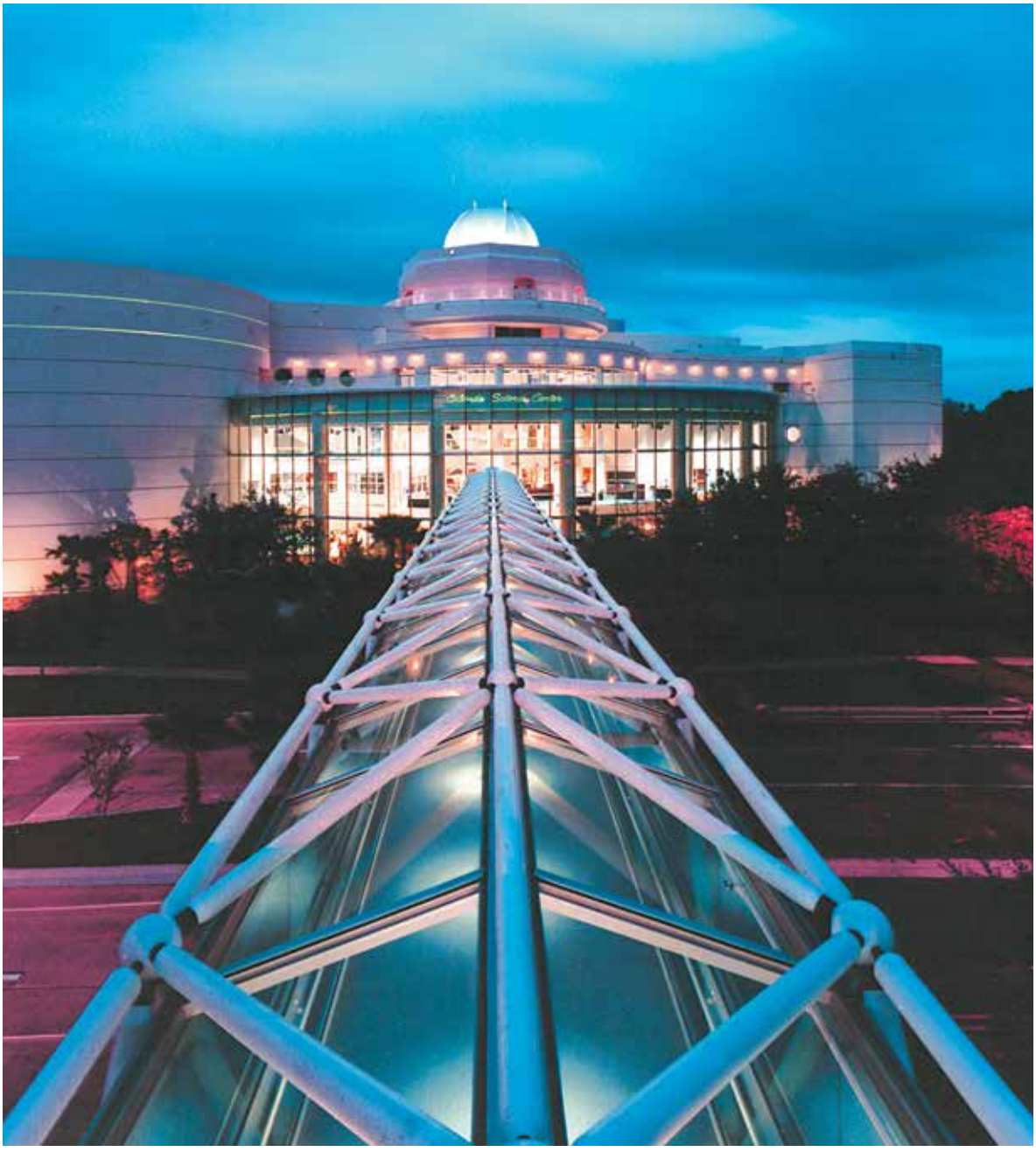
President: Nancy L. Elwess

Thursday, November 6

3:30–4:30 PM	Case Studies 101	Bayhill 23, Hyatt Regency Orlando

Friday, November 7

11:00 AM–12 Noon	Building a Topic's Course Using Case Studies	Bayhill 23, Hyatt Regency Orlando



—Orlando Science Center

The Orlando Science Center's mission is to foster creativity and curiosity for Science, Technology, Engineering, and Math (STEM); which stimulates the kind of innovation that transforms our economy and enhances lives.

8:30 AM–3:30 PM Preconference Workshops

Picture-Perfect Science Preconference Workshop (C-1)
(Grades K–5) *Bayhill 18, Hyatt*
By Preregistration Only
Karen Ansberry *(karen@pictureperfectscience.com),* Mason (Ohio) City Schools
Emily Morgan (@EmilyMorganNTYS; *emily@pictureperfectscience.com),* Picture-Perfect Science, West Chester, Ohio
For description, see page 34.

Science Formative Assessment Workshop: Uncovering What K–12 Students Really Know and Think (C-2)
(Grades K–12) *Bayhill 19, Hyatt*
By Preregistration Only
Page Keeley *(pagekeeley@gmail.com),* 2008–2009 NSTA President, Fort Myers, Fla.
Joyce Tugel *(jtugel@mmsa.org),* Maine Mathematics and Science Alliance, Augusta
For description, see page 34.

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

Science Area

A science area category is associated with each session. These categories are abbreviated on the Science Focus line for each session listing. On page 133, you will find the conference sessions grouped according to their assigned science area category.

The science areas and their abbreviations are:

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

Glossary

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

Strands

The Orlando 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.


Elementary Science—Early and Often


Environmental Explorations: Indoors and Outdoors


STEM Connections: Preparing the Workforce of Tomorrow

The following icons will be used throughout this program.


NSTA Press sessions

—*Photo courtesy of Orlando Science Center*

A young pair of honorary paleontologists uncover fossils at Jurassic Ridge, a 540-square-foot excavation site at the Orlando Science Center.

8:00–8:30 AM Presentation

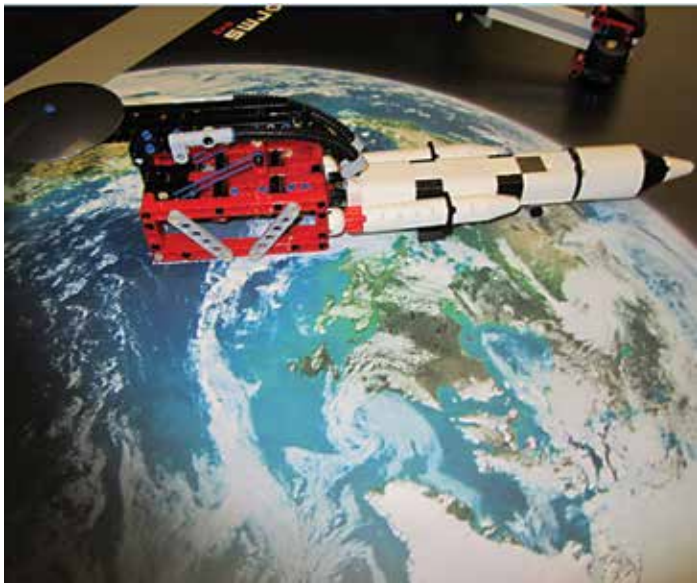
Inside-Out: Integrating Environmental Literacy into STEM at the Elementary Level

(Grades 1–5) *Salon 9, Rosen Plaza*

Science Focus: ESS

Sarah Haines *(shaines@towson.edu),* Towson University, Towson, Md.

Come learn about how an environmental literacy course for inservice elementary teachers jump-started innovative ideas for integrating environmental education into the traditional STEM subject areas.



8:00–9:00 AM Presentations

Dazzling Deceptions: Discrepant Events That Delight and Mystify!

(Grades 3–College) *Bayhill 19, Hyatt*

Science Focus: INF, NGSS

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

Scientific mysteries perplex the mind, fuel curiosity, and ignite imagination. Science experiences that seem contrary to "common sense" are great motivators and gateways to science inquiry and concept development.

NMLSTA Session: Science and Special Education—Working Together

(Grades 5–12) *Bayhill 23, Hyatt*

Science Focus: GEN

Kathleen Brooks, Educational Consultant, Guilford, Conn.

Emphasis will be placed on strategies for working with both special needs students and with special education teachers who do not know science.

Science on the Silver Screen

(Grades 6–12) *Bayhill 25, Hyatt*

Science Focus: GEN

Emily Meyer *(emeyer@regisjesuit.com),* Regis Jesuit High School, Girls Division, Aurora, Colo.

Use short clips of movies and TV shows featuring different science topics to jump-start conversation and critical thinking in your classroom. Handouts!

Multilevel Exploration of Motion with Constant Acceleration

(Grades 7–12) *Bayhill 26, Hyatt*

Science Focus: PS

Leslie Rogers *(lrogers@steds.org)*, Saint Edward's School, Vero Beach, Fla.

Hear how the study of a simple velocity graph can evolve into an in-depth study of motion and constant acceleration. Come find out how to propel new learning in your classroom.

Moving Past Memorization: Using Performance Tasks to Improve Critical Thinking in the Science Classroom

(Grades 9–College) *Bayhill 28, Hyatt*

Science Focus: LS, SEP3, SEP6, SEP7

Kimberly Boyd *(kboyd@cabrini.edu),* Cabrini College, Radnor, Pa.

Participants will review actual performance tasks—focusing on cancer—designed to teach/assess cell division content units and ones that are adaptable to all levels of high school and introductory college biology or health-related courses. Participants will then dissect a task to identify its key elements and then work in teams to design a "mini-task" for use in their own classrooms.

NASA Lunar and Meteorite Certification Class

(General) *Bayhill 31, Hyatt*

Science Focus: ESS1

Lester Morales *(lester.morales@nasa.gov),* NASA Kennedy Space Center, Kennedy Space Center, Fla.

From outer space and into your classroom, borrow lunar and meteorite samples and study their origins, composition, and how NASA's Apollo missions brought them to Earth. This is an official NASA certification class to borrow these national treasures and bring them into your classroom.

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

(General) *Orlando Ballroom N, Hyatt*

Science Focus: GEN

NSTA Board and Council

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

Inquiry-based Instructional Strategies to Increase Science Achievement

(Grades 6–8) *Ballroom B, Rosen Plaza*

Science Focus: GEN, SEP

Elizabeth Burt *(ejburt123@gmail.com),* Westwood Middle School, Winter Haven, Fla.

Leave with specific teaching strategies, how to implement the strategies in the science classroom, and ways to modify the instructional strategies to fit into a multitude of different science curricula and science classrooms. Discussion includes their impact of the strategies on underperforming middle school students.

NSTA Press® Session: Uncovering Student Ideas Through Digital Applications!

(Grades 3–12) *Salon 6, Rosen Plaza*

Science Focus: GEN, NGSS

Page Keeley *(pagekeeley@gmail.com),* 2008–2009 NSTA President, Fort Myers, Fla.

Robert Miller (@robrtmiller; *millermail@mac.com),* Port Orange Elementary School, Port Orange, FL

See how *Uncovering Student Ideas: 25 Formative Assessment Probes* can be converted to video probes and used with a variety of digital applications. Get links to already-made videos or learn how to create your own video assessment probe.

8:00–9:00 AM Hands-On Workshops

Exotic Animals and Marine Fish in the Science Classroom
(Grades 1–9) *Bayhill 27, Hyatt*
Science Focus: INF, LS1.A, LS1.B, LS2.A, LS2.D, LS4.C
Karl Leonhardt *(kleonhardt@steds.org)* and **Kerryane Monahan** *(kmonahan@steds.org),* Saint Edward's School, Vero Beach, Fla.
Get up close and personal with animals you may want to consider using in your classroom, and learn to create lessons centered around these critters. Handouts and one lucky attendee will leave with a door prize.

Engineering in the Middle
(Grades 6–8) *Bayhill 29, Hyatt*
Science Focus: ETS
Nathan Heiselt *(nericheiselt@bagley.msstate.edu),* Mississippi State University, Mississippi State, Miss.
Middle school is a great time to turn students on to the "E" in STEM. See activities that truly intertwine STEM topics for learning.

Bridge to Biology
(Grades 8–10) *Bayhill 32, Hyatt*
Science Focus: LS, SEP3, SEP4, SEP6, SEP7, SEP8
Lee Hughes *(leoph@leeschools.net),* The School District of Lee County, Fort Myers, Fla.
How do you prepare rising eighth-graders for the transition to high school biology? You build a bridge to biology. Initiate life science discourse via this pretreatment curriculum that builds conceptual knowledge and enhances the likelihood of success on high-stakes assessment.

Practicing Argumentation in the High School Science Classroom
(Grades 9–12) *Manatee Spring I, Hyatt*
Science Focus: LS, PS, SEP6, SEP7
Jeremy Peacock (@jeremy_peacock; *peacock.jeremy@gmail.com),* Northeast Georgia RESA, Winterville, Ga.
Amy Peacock (@peacock_science; *peacocka@clarke.k12.ga.us),* Clarke County School District, Athens, Ga.
Engage in scientific argumentation and learn how this approach can support your students' learning relative to the *NGSS*, *CCSS ELA*, and AP curriculum.

Need help navigating?

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

First-Timer Attendee Session • Thursday, November 6, 8:00–9:00 AM
Orlando Ballroom N, Hyatt Regency Orlando

Exploring the Science and Engineering Practices
(Grades K–12) *Manatee Spring II, Hyatt*
Science Focus: GEN, SEP
Ted Willard (@Ted_NSTA; *twillard@nsta.org),* Program Director, COMPASS, NSTA, Arlington, Va.
Come explore science and engineering practices such as constructing explanations and developing models that are central to the vision of education described in the NRC *Framework* and the *NGSS*.

CSSS Session: Understanding the Vision for Science Education from the NRC *Framework* and the *NGSS*
(General) *Orlando Ballroom M, Hyatt*
Science Focus: GEN, NGSS
Brett Moulding *(mouldingb@ogdensd.org),* Partnership for Effective Science Teaching and Learning, Ogden, Utah
The NRC *Framework* and *NGSS* provide a new vision for science instruction. This workshop provides insights into instructional shifts and a plan to engage students in science performances at the intersection of the three dimensions.

Engineering in the Elementary
(Grades K–6) *Ballroom A, Rosen Plaza*
Science Focus: ETS, PS2, PS3.A, PS3.B, PS3.C, CCC, SEP
John Gaines, South Whittier School District, Whittier, Calif.
Explore the engineering design process via Problem-Based Learning within the context of an elementary classroom.

Building Healthy Brains: Connecting Young Learners to the Outdoors Through Growing Up WILD™
(Grades P–3) *Salon 8, Rosen Plaza*
Science Focus: GEN, NGSS
Marlene Morales, Miami Dade College, Miami, Fla.
Presider: Donna Barton *(dmbarton@oneclay.net),* Argyle Elementary School, Orange Park, Fla.
Learn about building healthy brains through developmentally appropriate nature-based science activities for children ages 3–8 from Growing Up WILD.

Engaging Kids with *NGSS* Science and Engineering Practices in a Community-based Science Workshop
(Grades 1–8) *Salon 10, Rosen Plaza*
Science Focus: INF, SEP
Jerry Valadez *(jdvscience@yahoo.com),* SAM Academy, Inc., Fresno, Calif.
Explore how kids become engaged with *NGSS* science and engineering practices and *Common Core State Standards* while having fun in a Sanger community science workshop. Join me and build simple projects from recycled materials while learning how to effectively teach and model science and engineering practices.

8:00–9:15 AM Exhibitor Workshops

Using the Polymerase Chain Reaction to Identify Genetically Modified Foods
(Grades 8–College) *W221A, Convention Center*
Science Focus: LS3.A
Sponsor: Edvotek Inc.
Danielle Snowflack *(info@edvotek.com)* and **Brian Ell** *(info@edvotek.com)*, Edvotek Inc., Washington, D.C.
For centuries, selective breeding and conventional hybridization were used to produce desirable qualities in crops. Today, genetic engineering directly manipulates the DNA, quickly producing these traits. Due to controversy, some companies removed GM ingredients from their foods. We will extract snack food DNA and analyze it using PCR and electrophoresis. Free flash drive/T-shirt drawing.

Engineering Design in the FOSS Next Generation Program
(Grades 3–5) *W221B, Convention Center*
Science Focus: ETS, PS
Sponsor: Delta Education/School Specialty Science–FOSS
Brian Campbell and **Linda De Lucchi,** The Lawrence Hall of Science, University of California, Berkeley
FOSS Next Generation modules provide students with opportunities to engage in engineering experiences to develop solutions to problems; construct and evaluate models; and use systems thinking. We'll describe and display the engineering opportunities with the new grade 3 module, Motion and Matter.

Science, the Literacy Connection, and the *CCSS ELA*
(Grades K–6) *W221C, Convention Center*
Science Focus: GEN
Sponsor: Delta Education/School Specialty Science
Johanna Strange, Consultant, Richmond, Ky.
Learn how your students can experience the enjoyment of learning science using Delta Science Modules and make the literacy connection with Delta Science literacy resources that support the *CCSS ELA*. Receive a workshop packet containing *Common Core* strategy templates and other related Delta literacy materials.

A STEM Approach to Teaching Electricity and Magnetism
(Grades 5–12) *W221 D/E, Convention Center*
Science Focus: ETS, PS
Sponsor: CPO Science/School Specialty Science
Erik Benton, CPO Science/School Specialty Science, Nashua, N.H.
The new CPO Science Link™ Wind Turbine learning module lets students engineer a wind turbine while learning in a tablet-based and hands-on learning environment. Students build, test, and revise their designs. Link uses STEM activities and an *NGSS* approach, giving students an understanding of how to apply the engineering cycle.

Making Failure Fun: Amplify Science Games
(Grades 6–8) *W224A, Convention Center*
Science Focus: GEN, NGSS
Sponsor: Amplify Education, Inc.
Abigail Pillitteri, Amplify Education, Inc., Brooklyn, N.Y.
Experience Amplify's unique approach and process in developing science games. At Amplify, we view games as a voluntary activity for learning in a student's free time. Find out what we have learned through trial and error in the design process. Gain insight into the power of Amplify science games through a firsthand experience of SimCell.

An Invitation: Moving Forward with the NRC *Framework* and *NGSS*
(Grades K–8) *W224B, Convention Center*
Science Focus: GEN
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
From crosscutting concepts to science and engineering practices, take away strategies and approaches that can bring the NRC *Framework* and *NGSS* to life in your district.

Investigating Gas Exchange
(Grades 9–12) *W224E, Convention Center*
Science Focus: LS1
Sponsor: LAB-AIDS®, Inc.
Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.
Teachers know their students have many misconceptions about respiration. In this activity, participants use an acid-base indicator to determine the amount of carbon dioxide gas in a sample of their exhaled breath. They will consider differences in individual responses, explore qualitative *vs.* quantitative measures, and examine the structure of the lungs and their role in respiration.

Experience the STEM Wi-Fi Classroom: Creating a Success Story for Your Students
(Grades 7–12) *W224G, Convention Center*
Science Focus: GEN, NGSS
Sponsor: Swift Optical Instruments, Inc.
David Doty, Swift Optical Instruments, Inc., Schertz, Tex.
The digital future is here! Experience the STEM classroom firsthand. Learn how Wi-Fi cameras and microscopes can be used to transform your labs, lesson plans, and activities into digital formats. This workshop will focus on the student learner as well as the teacher presenting in a Wi-Fi STEM environment. BYOD and download the MotiConnect App before attending.

8:30–9:00 AM Presentations

Using iPad Technology to Bridge the Gap Between Struggling and On-Grade-Level Students by Increasing the Use of Academic Language Through Video Podcasting

(Grades 6–12) *Bayhill 18, Hyatt*

Science Focus: LS1, LS2, LS3

Michelina MacDonald *(mmacdonald@pky.ufl.edu),* P.K. Yonge Developmental Research School, Gainesville, Fla.

Harness student desire to use technology. Find out how to use iPads to differentiate support in biology and as a tool to reduce the learning gaps between struggling students and students on/above grade level.

Fostering Science Learning and Appreciation of Nature Through Play

(Grades P–6) *Salon 9, Rosen Plaza*

Science Focus: INF, GEN

Eric Worch *(eworch@bgsu.edu),* Bowling Green State University, Bowling Green, Ohio

Review results from research examining play and science learning at Toledo Zoo children's area, Nature's Neighborhood. Nature's Neighborhood received the 2011 Exhibit Award by the Association of Zoos and Aquariums for its unique design that fosters science learning and an appreciation of nature through play.

9:15 AM–10:30 AM General Session

Brain Sense: Learning About the Brain Through Puzzles, Illusions, and Hands-On Activities

(General) *Chapin Theater, Convention Center*

Science Focus: GEN

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

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

Platform Guests: Michael DiSpezio; Juliana Texley; Bill Badders, NSTA Retiring President, and Retired Director, Cleveland Math and Science Partnership, Cleveland, Ohio; Carolyn Hayes, NSTA President-Elect, and Indiana University, Indianapolis; Donna Governor, NSTA Director, District V, and North Forsyth High School, Cumming, Ga; Barbara Rapoza, Chairperson, NSTA Orlando Area Conference, and FAST Conference Liaison, Fort Lauderdale, Fla; Michelle Ferro, Program Coordinator, NSTA Orlando Area Conference, FAST President, and Learning Systems Institute, Florida State University, West Melbourne; Nancy Besley, Local Arrangements Coordinator, NSTA Orlando Area Conference, and Florida Foundation for Future Scientists, Goldenrod; David L. Evans, NSTA Executive Director, Arlington, Va.

Join textbook author, television host, puzzle writer, and global educator Michael A. DiSpezio as he facilitates an entertaining and motivating journey in which the latest brain research is explained using an assortment of mind-twisting puzzles, stimulating activities, and mind-bending illusions. In Michael's hallmark style, he'll challenge you to construct an understanding of thinking by assuming the role of an active audience participant.

After graduating from the City University of New York, Michael spent his graduate years in Woods Hole and worked as a research assistant to Nobel laureate Albert Szent-Györgyi. After leaving the marine science laboratory, Michael became a full-time teacher, spending eight years teaching a variety of elementary, middle school, and high school science subjects. Moving from the classroom, he focused his attention on the development of educational materials. To date, he has co-authorship of more than 40 K–12 textbooks. In addition, he has been a consultant on numerous television broadcasts and publications, including authorship on more than 25 trade books.

10:00–11:15 AM Exhibitor Workshop

Detecting the Silent Killer: Clinical Detection of Diabetes

(Grades 8–College) *W221A, Convention Center*

Science Focus: INF, LS

Sponsor: Edvotek Inc.

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

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

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

(Grades 1–6) *W221B, Convention Center*

Science Focus: GEN, SEP

Sponsor: Delta Education/School Specialty Science–FOSS

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

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

Solving the Mystery of STEM Using Forensic Science

(Grades 5–12) *W221C, Convention Center*

Science Focus: LS

Sponsor: Frey Scientific/School Specialty Science

Lou Loftin, Nevada's Northwest Regional Professional Development Program, Reno

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

Exploring Genetics and Heredity with Crazy Traits

(Grades 5–12) *W221 D/E, Convention Center*

Science Focus: LS

Sponsor: CPO Science/School Specialty Science

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

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

***Evolving Switches, Evolving Bodies:* A Story of Gene Regulation and Evolution**

(Grades 9–College) *W222A, Convention Center*

Science Focus: LS3, LS4

Sponsor: Howard Hughes Medical Institute

Jennifer Barnes, Woodstock High School, Woodstock, Ga.

The story of the adaptation of stickleback fish to freshwater environments can help teach evolution, genetics, and gene regulation. Learn how genes and genetic switches involved in evolution of body structures are identified and how evolutionary change is documented in the fossil record. Receive free resources to support the film.

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

(Grades 5–8) *W222B, Convention Center*

Science Focus: ESS, LS, PS

Sponsor: Flinn Scientific, Inc.

Mike Frazier *(mfrazier@flinnsci.com)* and **Irene Cesa** *(icesa@flinnsci.com),* Flinn Scientific, Inc., Batavia, Ill.

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

Molecular-Level Visualization and the *NGSS:* Engaging Your Students

(Grades 6–College) *W223 A/B, Convention Center*

Science Focus: PS

Sponsor: Wavefunction, Inc.

Jurgen Schnitker *(sales@wavefun.com),* Wavefunction, Inc., Irvine, Calif.

Do you notice persistent misconceptions in your students' understanding of molecular phenomena? Would your classroom benefit from molecular models and simulations that are scientifically sound? Bring your laptop (Windows or Mac OS X) and learn how to improve student comprehension with *ODYSSEY® Molecular Explorer*—an interactive and content-rich tool for introductory chemistry.

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

(Grades K–5) *W224A, Convention Center*

Science Focus: GEN, NGSS

Sponsor: Amplify Education, Inc.

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

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

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

(Grades 9–12) *W224B, Convention Center*

Science Focus: PS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Hate it when a lab activity fizzles? Explore easy, engaging, safe chemistry activities that work every time—so they're sure to produce a reaction from students. Whether you're new to chemistry or feeling out of your element, you'll learn new ways to create excitement. Free materials and giveaways!

Chemical Formula and Amino Acids

(Grades 9–12) *W224E, Convention Center*

Science Focus: PS1

Sponsor: LAB-AIDS®, Inc.

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

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

Hurricanes and Typhoons: Nature on the Rampage

(Grades 6–9, 11) *W224G, Convention Center*

Science Focus: ESS2.D

Sponsor: Simulation Curriculum Corp

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

Join us as we use Simulation Curriculum's *The Layered Earth Meteorology* to investigate two of the most destructive storms of recent times—Hurricane Sandy and Typhoon Haiyan. With the help of classroom-ready lessons, we will trace the causes, paths, and destructive effects of these superstorms, as well as learn how to track future storms.

The "E" in STEM: 3-D STEM Engineering

(Grades 5–College) *W224H, Convention Center*

Science Focus: ETS

Sponsor: WhiteBox Learning

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

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

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

Exhibits Entrance, Hall WD2, Convention Center

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

Welcoming Remarks: Barbara Rapoza, Chairperson, NSTA Orlando Area Conference, and FAST Conference Liaison, Fort Lauderdale, Fla.

Special Guests: Bill Badders, NSTA Retiring President, and Retired Director, Cleveland Mathematics and Science Partnership, Cleveland, Ohio; Carolyn Hayes, NSTA President-Elect, and Indiana University, Indianapolis; Donna Governor, NSTA Director, District V, and North Forsyth High School, Cumming, Ga.; Michelle Ferro, Program Coordinator, NSTA Orlando Area Conference, FAST President, and Learning Systems Institute, Florida State University, West Melbourne; Nancy Besley, Local Arrangements Coordinator, NSTA Orlando Area Conference, and Florida Foundation for Future Scientists, Goldenrod; David L. Evans, NSTA Executive Director, Arlington, Va.; Jason Sheldrake, Asst. Executive Director, Sales, NSTA, Arlington, Va.

Musical Entertainment: Avalon Middle School Chorus under the direction of Evan Powers

11:05 AM–5:00 PM Exhibits

Hall WD2, Convention Center

Did you know that NSTA offers Exclusive Exhibits Hall hours today from 11:00 AM to 2:00 PM? During these hours there are no teacher sessions scheduled and it's a perfect time to visit the exhibits and discover all the products and services companies and organizations have to offer. Some exhibitors will offer materials for sale throughout the conference.

Also, this is the perfect time to use your meal voucher at the Food Court area in the NSTA Exhibit Hall. Vouchers are not redeemable for cash; no change is given back. Visit page 12 for complete details.

11:10 AM–12:10 PM Special Session

Meet the Presidents and Board/Council

(General) *NSTA Exhibits Entrance, Hall WD2, Conv. Center*

Science Focus: GEN

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

12:30–1:45 PM Exhibitor Workshops

Biotechnology Basics

(Grades 6–College) *W221A, Convention Center*

Science Focus: INF, LS

Sponsor: Edvotek Inc.

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

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

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

(Grades 1–6) *W221B, Convention Center*

Science Focus: GEN, CCC

Sponsor: Delta Education/School Specialty Science–FOSS

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

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

Teaching Argumentation for Our Next Generation

(Grades K–6) *W221C, Convention Center*

Science Focus: GEN

Sponsor: Delta Education/School Specialty Science

Johanna Strange, Consultant, Richmond, Ky.

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

Fun with Atom Building Games and the Periodic Table

(Grades 5–12) *W221 D/E, Convention Center*

Science Focus: PS

Sponsor: CPO Science/School Specialty Science

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

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

Great Discoveries in Science: *The Double Helix*

(Grades 9–College) *W222A, Convention Center*

Science Focus: LS1, LS3

Sponsor: Howard Hughes Medical Institute

Mary Colvard, Retired Educator, Deposit, N.Y.

It is almost impossible to think about DNA without thinking of Watson, Crick, Franklin, and Chargaff. HHMI's short film *The Double Helix* recounts the discovery of the structure of the DNA molecule. Experience animations, videos, and inquiry-based activities to help teach the core concepts of DNA. Free resources will be distributed.

Advanced Inquiry Labs for AP Chemistry from Flinn Scientific

(Grades 9–12) *W222B, Convention Center*

Science Focus: PS

Sponsor: Flinn Scientific, Inc.

Mike Frazier *(mfrazier@flinnsci.com)* and **Irene Cesa** *(icesa@flinnsci.com),* Flinn Scientific, Inc., Batavia, Ill.

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

Are You Ready for the Challenge? Teaching Integrated STEM in the Elementary Grades

(Grades K–5) *W223 A/B, Convention Center*

Science Focus: ETS, SEP

Sponsor: ETA hand2mind

Sara Moore *(smoore@hand2mind.com),* ETA hand2mind, Vernon Hills, Ill.

Justin Yates *(jtyates@iemail.tamu.edu)*, Texas A&M University, College Station

How can a builder warm a house in the sun and keep it warm after dark? Design a model passive solar house! Experience an integrated STEM module grounded in engineering design and applying mathematics, science, and literacy. ETA hand2mind and Texas A&M have developed a series of classroom-tested modules balancing rigor and ease of use.

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

(Grades 6–8) *W224A, Convention Center*

Science Focus: GEN, NGSS

Sponsor: Amplify Education, Inc.

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

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

Hands-On Science with Classroom Critters

(Grades K–12) *W224B, Convention Center*

Science Focus: LS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Add action and excitement to your science class with live organisms! Discover fun, simple hands-on activities you can use in your labs with pill/sow bugs, termites, bess bugs, and butterflies. Learn about care and handling, as well as easy ways to introduce inquiry. Free product samples and literature.

Dive In with Magnetic Water Molecules

(Grades 5–College) *W224C, Convention Center*

Science Focus: PS

Sponsor: 3D Molecular Designs

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

Engaging water molecules enable you to use an inquiry approach to explore why water is essential for life. Discover the physical and chemical properties of water, states of matter, evaporation, condensation, transpiration, erosion, and more using interactive water molecules with embedded magnets that mimic the polar interactions in real water.

Using the Engineering Design Process to Understand Heat

(Grades 9–12) *W224E, Convention Center*

Science Focus: ETS1, PS

Sponsor: LAB-AIDS®, Inc.

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

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

Build Human Anatomy in Clay—One System at a Time

(Grades 8–College) *W224H, Convention Center*

Science Focus: LS

Sponsor: ANATOMY IN CLAY® Learning System

Presenter to be announced

Attend this interactive workshop to learn how to engage your students with immediate hands-on learning using the ANATOMY IN CLAY Learning System. Come build your body systems utilizing this kinesthetic approach!

1:00–2:30 PM Exhibitor Workshop

Identify Patient Zero of a Zombie Apocalypse
(Grades 9–College) *W224F, Convention Center*
Science Focus: LS, CCC, SEP
Sponsor: Bio-Rad Laboratories
Sherri Andrews *(sherri_andrews@bio-rad.com),* Bio-Rad Laboratories, Hercules, Calif.
Explore how a zombie virus could spread through the population with this hands-on classroom lab using the power of an ELISA assay. The highly specific nature of antibodies allows researchers to develop tests for almost any biological molecule that elicits an immune response. Learn how to use an ELISA to monitor transmission and track the spread of the disease!

Meal Vouchers!

Don't forget to use your meal vouchers! Conference registrants will be issued up to three meal vouchers total ($15 each), one for each day of the conference. They're redeemable at the Food Court area in the NSTA Exhibit Hall during the exhibit hall hours (see page 12 for hours). Vouchers are not redeemable for cash; no change given back…and they will not be replaced if lost.

2:00–2:30 PM Presentations

Performance-based Assessment in Chemistry
(Grades 10–12) *Bayhill 19, Hyatt*
Science Focus: PS
Sophia Liarakos, Lakes Community High School, Lake Villa, Ill.
Find out how to incorporate a chemistry assessment that requires a student to display understanding of the scientific inquiry process via a hands-on task. Learning objectives and performance tasks will be covered.

What Is "Scientific Literacy" and Why Is It Important to STEM Majors?
(Grades 11–College) *Bayhill 23, Hyatt*
Science Focus: GEN
Melissa Demetrikopoulos *(mdemetr@biohi.org),* Institute for Biomedical Philosophy, Dunedin, Fla.
Levels of scientific literacy obtained during high school may be critical to the success of incoming STEM majors and may predict success and retention in STEM careers.

Forensic Botany in the High School Classroom: Real-World Application of Molecular Techniques
(Grades 9–12) *Bayhill 24, Hyatt*
Science Focus: INF, LS3, LS4
Jacob Landis *(jblandis@ufl.edu),* Florida Museum of Natural History, Gainesville
Julie Bokor *(jbokor@ufl.edu),* University of Florida, Gainesville
In this interactive session, participants experience a hands-on molecular biology module developed for high school students based on an authentic forensic botany case.

STEM Career Explorations for Girls
(Grades 5–8) *Bayhill 26, Hyatt*
Science Focus: INF
Michele Marquette *(mlmarque@utmb.edu),* The University of Texas Medical Branch at Galveston
Encounter successful strategies for informing and inspiring grades 5–8 girls to pursue STEM careers by providing career exploration workshops presented by successful women professionals from universities, businesses, and government agencies.

Engineering Models in Early Childhood: Stepping Stones to *NGSS* Practices
(Grades P–3) *Salon 9, Rosen Plaza*
Science Focus: ETS1.B, ETS1.C, PS2.A, PS2.B, PS4.A, CCC2, SEP2, SEP6
Debra Bloomquist, Scott Molitor, Amy Allen, Charlene Czerniak, and **Susanna Hapgood,** The University of Toledo, Ohio
Discover how the construction of models and the engineering design process supports other *NGSS* practices and advance critical-thinking skills in preK–3 classrooms. Inquiry lessons and assessments provided.

2:00–3:00 PM Featured Presentation

Transforming STEM Education with Sharks and Real-World Science

(General) *Chapin Theater, Convention Center*

Science Focus: ESS

Chris Fischer
@ChrisOCEARCH
cberger@ocearch.org
Founder and CEO, OCEARCH, and Expedition Leader of *Shark Men* on National Geographic Channel, Park City, Utah

Presider: Barbara Rapoza, Chairperson, NSTA Orlando Area Conference, and FAST Conference Liaison, Fort Lauderdale, Fla.

A recognized leader in ocean exploration, research, conservation, and education, Chris will share the genesis of the Tracker-based STEM curriculum, which began when he walked into a Florida classroom and witnessed a teacher using the Shark Tracker as a teaching tool—inspiring him to approach Landry's Inc. to help develop a STEM curriculum based on the Global Shark Tracker, the *MV OCEARCH* research vessel, and sharks, in general.

Since 2007, Chris Fischer has led 20 global expeditions to advance science and education while unlocking the many mysteries surrounding the life history of white sharks and other giants of the ocean. He has facilitated millions of dollars in collaborative ocean research, supporting the work of more than 50 scientists from more than 35 international and regional institutions. Chris's ultimate goal is to explode the body of knowledge forward by enabling scientists and governments around the globe to generate groundbreaking data on the ocean's apex predators in an open source environment, while advancing STEM (science, technology, engineering, and math) education through a dynamic shark-based curriculum.

Chris believes that being inclusive is inspiring and that education creates generational change—ensuring a future where we manage the world's oceans in a centrist data-driven way. His resource-driven approach has led to including students and enthusiasts around the world by creating a K–12 STEM educational curriculum and the OCEARCH Global Shark Tracker. This near real-time dynamic tool allows students and the public to track and learn about sharks side by side with the brightest researchers in the world. In 2014, a single OCEARCH-tagged shark (Lydia–white shark) generated more than 10 million results on a Google search during the first-ever recorded trans-Atlantic crossing of a shark.

2:00–3:00 PM Presentations

Using Real-Time NOAA Data to Support the *NGSS*

(Grades 6–12) *Bayhill 18, Hyatt*

Science Focus: ESS, CCC

June Teisan, Einstein Fellow, NOAA, Washington, D.C.

Hear about a wide variety of free online NOAA data, ranging from fisheries to oceanic, atmospheric, and paleoclimatology data.

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

(Grades 9–12) *Bayhill 25, Hyatt*

Science Focus: PS

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

Emphasis will be placed on the key components and strategies for writing a fundable proposal and the available ACS grant opportunities for high school chemistry teachers and students.

Community Connections: Engaging Strategies for Preservice Elementary Teachers

(Grades P–4/College) *Bayhill 31, Hyatt*

Science Focus: GEN, NGSS

Krista Varano *(varano@kutztown.edu)* and **Michele White** *(mwhite@kutztown.edu),* Kutztown University of Pennsylvania, Kutztown

Emphasis will be placed on ways in which preservice teachers can engage in and grow through community-based opportunities that support their confidence in teaching children science.

NSTA Press® Session: Uncovering Elementary Students' Ideas Through Science Talk

(Grades K–5) *Salon 6, Rosen Plaza*

Science Focus: GEN, NGSS

Page Keeley *(pagekeeley@gmail.com),* 2008–2009 NSTA Past President, Fort Myers, Fla.

Learn about ways to engage students in productive science talk through formative assessment. We will examine ideas K–5 students bring to their learning and ways to use the information to develop learning targets that support conceptual change.

2:00–3:00 PM Hands-On Workshops

Working the *NGSS* into Your Curriculum Through Ocean Exploration
(Grades 5–12) *Bayhill 21, Hyatt*
Science Focus: ESS, SEP
Melissa Ryan *(melissa.oceantechnology@gmail.com),* NOAA Office of Ocean Exploration and Research, Silver Spring, Md.
Deepen student understanding of oceans with lessons that integrate science and engineering practices focusing on how the ocean is explored and the state-of-the-art technology involved.

SECME: Raising Results with Rockets and Race Cars
(Grades 3–12) *Bayhill 27, Hyatt*
Science Focus: INF, ETS, PS
Erich Landstrom, Seminole Ridge High School, Loxahatchee, Fla.
Shine the SECME (Science, Engineering, Communication, and Mathematics) spotlight with these make-and-take projects. Participants will build Design Squad soda star rockets and rubber band–powered model cars. SECME will provide the simple scaffolding for STEM.

A Tale of Two Great Oceans: Wind-driven Ocean Circulation
(Grades 5–8) *Bayhill 29, Hyatt*
Science Focus: ESS
Donna Barton *(dmbarton@oneclay.net),* Argyle Elementary School, Orange Park, Fla.
This Maury Project module on wind-driven ocean circulation links the two great oceans, atmosphere, and hydrosphere. Find out how atmospheric circulation produces gyres, and how these gyres affect the environment. Free module guide.

Modeling Stellar Evolution on the H-R Diagram
(Grades 10–College) *Bayhill 32, Hyatt*
Science Focus: ESS1.A, ETS2.A, PS4.C, CCC1, CCC2, CCC4, SEP3, SEP4, SEP8
Donna Young *(donna@aavso.org),* AAVSO, Cambridge, Mass.
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.

Water, Water Everywhere—But What Will It Support?
(Grades 9–12) *Manatee Spring I, Hyatt*
Science Focus: ESS
Jacklyn Bonneau *(bonneau@wpi.edu),* Massachusetts Academy of Math & Science at WPI, Worcester
Water is the backbone of our environment—its ability to support life is the key to survival. Come test local waters and see what life they support.

How Science Works—Wondering, Asking, and Finding Out
(Grades 6–12) *Manatee Spring II, Hyatt*
Science Focus: GEN, SEP1, SEP3, SEP7
Carlos Villa *(villa@magnet.fsu.edu),* National High Magnetic Field Laboratory, Tallahassee, Fla.
The nature of science is innately built into all of us. Here are some ideas that will bring out the questioning in your students.

Using School Facilities as a Laboratory for Studying Sustainability Science
(General) *Orlando Ballroom M, Hyatt*
Science Focus: ESS3.A, ESS3.C, ESS3.D, ETS2.B
Caroline Nielsen *(cbn24@cabrini.edu),* **Anne Coleman** *(amc729@cabrini.edu),* and **Kimberly Boyd** *(kboyd@cabrini.edu),* Cabrini College, Radnor, Pa.
Learn how to use the school itself to examine the renewable and nonrenewable resources we use every day, and how those resources impact the environment.

Presidential Awardees Share-a-Thon
(General) *Orlando Ballroom N, Hyatt*
Science Focus: GEN
Peggy Carlisle *(peggy.carlisle1@gmail.com),* Pecan Park Elementary School, Jackson, Miss.
Steve Rich (@bflyguy; *bflywriter@comcast.net),* West GYSTC, Douglasville, Ga.
Join past winners of the Presidential Award for Excellence in Mathematics and Science Teaching as they share their favorite classroom activities. Lots of free handouts! Demonstrations!

Newton, Calder, and the Circus
(Grades 4–8) *Ballroom A, Rosen Plaza*
Science Focus: INF, PS, CCC3, CCC4, CCC5, SEP1, SEP2, SEP3, SEP4, SEP5, SEP6, SEP8
Karen Bell *(karen@circusarts.org)* and **Robin Eurich** *(robin@circusarts.org),* The Circus Arts Conservatory, Sarasota, Fla.
Rebekka Stasny (@ascienceteacher; *stasny2r@manateeschools.net),* Electa A. Lee Magnet Middle School, Bradenton, Fla.
It's tremendous! It's stupendous! It's Project Based Learning combining art, physics, and the circus—helping students investigate Alexander Calder, Sir Isaac Newton, and the physics of motion. The circus is a world of physics…perfect for teaching students abstract concepts. Circus Arts Conservatory educators will discuss their collaboration at Lee Middle School.

Teaching STEM with Project Learning Tree
(Grades 1–8) *Salon 5, Rosen Plaza*
Science Focus: ESS, INF
Al Stenstrup, Project Learning Tree, Washington, D.C.
In addition to hitting STEM benchmarks, learn how Project Learning Tree activities can enhance students' knowledge of trees, forests, and the environment around them.

Put the "E" in STEM! Engineering Design Challenges, Easier than They Sound!
(Grades 3–5) *Salon 7, Rosen Plaza*
Science Focus: ETS1, PS2, PS3, SEP
Holly Mentillo *(mentillo@earthlink.net),* Ocean Breeze Elementary School, Melbourne, Fla.
Try out an engineering design challenge and get many more to take back to your grades 3–5 classroom. This workshop is intended for the engineering design novice—come find out how easy these challenges are!

What Do Scientists Do? Exploring the Nature of Science in Your Elementary Classroom
(Grades 3–5) *Salon 10, Rosen Plaza*
Science Focus: GEN, NGSS
Steven Bernhisel *(steveb@linfield.edu),* Linfield College, McMinnville, Ore.
Let's explore what is science—using engaging, inexpensive, and safe activities designed to teach elementary children about how science is conducted.

2:00–5:00 PM Short Course

Integrating *NGSS* Lessons with Best Literacy Practices of the *CCSS*: K–5 (SC-1)
(Grades K–5) *Coral A, DoubleTree*
Tickets Required; $16
Roseann Feldmann *(rfeldmann@stmaryschooldekalb.com),* St. Mary School, DeKalb, Ill.
Pamela Farris (@PamFarris20; *pamelafarris@comcast.net),* Professor Emeritus, Northern Illinois University, DeKalb
For description, see page 36.

Evaluate Your Sessions Online!

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

2:15–3:30 PM Exhibitor Workshops

Case of the Missing Records
(Grades 8–College) *W221A, Convention Center*
Science Focus: INF, LS
Sponsor: Edvotek Inc.
Danielle Snowflack *(info@edvotek.com)* and **Brian Ell** *(info@edvotek.com),* Edvotek Inc., Washington, D.C.
Explore genetic diversity using forensic science! Your students become crime scene investigators as they analyze biological evidence using DNA fingerprinting, a technique that identifies people via genetic differences. Gel electrophoresis is used to create DNA fingerprints from crime scene and suspect samples. A match between samples suggests which suspect committed the crime. Free flash drive/T-shirt drawing.

Floods, Heat Waves, and Hurricanes: Analyzing Evidence for a Changing Climate Using FOSS
(Grades 5–8) *W221B, Convention Center*
Science Focus: ESS, SEP
Sponsor: Delta Education/School Specialty Science–FOSS
Virginia Reid, The Lawrence Hall of Science, University of California, Berkeley
What is the current scientific evidence for climate change? Engage in hands-on activities and multimedia from the newly revised FOSS Weather and Water course for middle school to explore causes and implications of climate change, and to identify connections to the *NGSS* science and engineering practices. New program features will be shown.

How Do They Use FOSS in Their School District?
(Grades K–8) *W221C, Convention Center*
Science Focus: GEN
Sponsor: Delta Education/School Specialty Science
Edwin Emmer, Richland School District Two, Columbia, S.C.
Looking for ideas on how to use and implement FOSS in your school district? Staff from the Richland County School District will share what they have done to make learning and doing science in their schools successful. Walk away with great ideas.

Exploring Genetics and Heredity with Crazy Traits
(Grades 5–12) *W221 D/E, Convention Center*
Science Focus: LS
Sponsor: CPO Science/School Specialty Science
Erik Benton, CPO Science/School Specialty Science, Nashua, N.H.
The CPO Science Link™ Crazy Traits learning module uses STEM and *NGSS* strategies in a real-time tablet-based and hands-on learning environment to explore genetics. Concepts like traits, alleles, phenotypes, genotypes, and heredity will come alive as you create "crazy creatures" with a unique kit, and study probability, dominance, and recession.

Teaching Evolution with BioInteractive
(Grades 9–College) *W222A, Convention Center*
Science Focus: LS4
Sponsor: Howard Hughes Medical Institute
Mary Colvard, Retired Educator, Deposit, N.Y.
Discover free classroom-ready resources designed to help you teach concepts central to the study of evolution. Topics include natural selection, phylogenetic trees, biodiversity, and molecular genetics. View video segments and animations and work through inquiry-based activities, data collection, and analysis. Take home videos, virtual labs, posters, and more!

Making Science Notebooks FOLD-tastic via Notebook Foldables®

(General) *W222B, Convention Center*

Science Focus: GEN

Sponsor: Dinah-Might Adventures, LP

Robert Stremme, Retired Educator, Plymouth Meeting, Pa.

Cut, fold, and more in this hands-on workshop as you construct Notebook Foldables that are sure to make your students' science notebooks FOLD-tastic. Use basic classroom materials and depart with a mini-composition book made on-site that is filled with immediately usable ideas.

Implementing the Eight *NGSS* Science and Engineering Practices with a Research-based Curriculum

(Grades 6–8) *W223 A/B, Convention Center*

Science Focus: GEN, SEP

Sponsor: Activate Learning

Marilyn Schmidt, Retired Educator, Aurora, Colo.

IQWST stands for the Investigating and Questioning our World through Science and Technology. Find out how to integrate the *NGSS* into the middle school science classroom using IQWST, the latest researched-based curriculum developed for grades 6–8. Leave with strategies to implement pedagogy that can increase student achievement.

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

(Grades K–5) *W224B, Convention Center*

Science Focus: GEN

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

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

New Modeling Kits: Flow of Genetic Information and Phospholipid and Membrane Transport Kits

(Grades 8–College) *W224C, Convention Center*

Science Focus: LS, PS

Sponsor: 3D Molecular Designs

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

3D Molecular Designs is releasing two kits this school year and the Center for BioMolecular Modeling continues to develop new materials such as the Synapse Construction Kit, new gene maps, and molecular stories. Test new kits and learn about Modeling the Molecular World, and other professional development opportunities for next year.

Using Climate Proxies to Learn About Earth's Climate History

(Grades 9–12) *W224E, Convention Center*

Science Focus: ESS1.C, ESS2, ETS2

Sponsor: LAB-AIDS®, Inc.

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

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

From Student to Scientist—Inspiring Stewardship and Inquiry for Positive Change

(Grades K–12) *W224G, Convention Center*

Science Focus: INF, ESS2.C, ESS2.D, ESS3, ETS2.B, LS2, CCC1, CCC2, CCC6, CCC7, SEP

Sponsor: Nature's Academy

Dana Pounds *(dana@naturesacademy.org),* Nature's Academy, Bradenton, Fla.

One person can make a difference. Our founder, Dana Pounds, a marine biologist and amputee, battles cancer while inspiring and stimulating STEM interest for thousands of students annually. We provide day and overnight inquiry-driven field programs—highlights include citizen science data collection, which connects students with research and fosters stewardship.

Engineering Design *vs.* Science Practices: A Closer Look at *NGSS* Practices

(Grades 6–9) *W224H, Convention Center*

Science Focus: ETS, SEP

Sponsor: eCYBERMISSION

Matthew Hartman, (@ecybermission), eCYBERMISSION Content Coordinator, NSTA, Arlington, Va.

Implementing the *NGSS* with its emphasis on engineering design can be easy and fun. We'll discuss science and engineering design practices and engage in hands-on demos that you can take back to your middle school science class. Get details about the free STEM competition, eCYBERMISSION, and learn how it can help you integrate engineering design into your classroom.

2:30–3:00 PM Presentations

Dimensional Analysis and Stoichiometry: Simplifying Very Difficult Concepts
(Grades 9–College) *Bayhill 19, Hyatt*
Science Focus: PS, SEP5
Karen Belciglio *(kbelciglio@charlottecatholic.com),* Charlotte Catholic High School, Charlotte, N.C.
These are the two hardest subjects to teach—we offer a proven math-based approach with plenty of tips and handouts!

Flowers, Birds, and Bees: Constructing Phylogenies and Interpreting Plant/Pollinator Interactions in the High School Classroom
(Grades 9–12) *Bayhill 24, Hyatt*
Science Focus: LS2, LS3, LS4, CCC1, CCC2, CCC6
Jacob Landis *(jblandis@ufl.edu),* Florida Museum of Natural History, Gainesville
Julie Bokor *(jbokor@ufl.edu),* University of Florida, Gainesville
Incorporating phylogenetics facilitates student understanding of evolutionary relationships. Using flowering plants, construct morphological and molecular phylogenetic trees. Modifications for differing classroom contexts shared.

Elementary Science Notebooking—The Real Deal!
(Grades P–4) *Salon 9, Rosen Plaza*
Science Focus: GEN, INF, NGSS
Anne Durrance (@sugaranne49; *anne.durrance@gmail.com),* Rapoport Academy, Waco, Tex.
Teach organizational skills, writing skills, journaling, and science—all wrapped up in one notebook! Young students can benefit from these vital skills while enjoying science lessons. In addition, students develop a real sense of ownership in their work.

3:00–4:30 PM Exhibitor Workshop

Effortlessly Integrate Inquiry with Glowing Bacteria (AP Big Idea 3)
(Grades 9–College) *W224F, Convention Center*
Science Focus: LS
Sponsor: Bio-Rad Laboratories
Sherri Andrews *(sherri_andrews@bio-rad.com),* Bio-Rad Laboratories, Hercules, Calif.
How comfortable do your students feel about engaging in inquiry? Learn new ways to advance inquiry—from guided to open—by establishing a strategy that integrates essential and real-world science practices. From generating scientifically reasonable questions to developing the procedure to interpreting the data, the glowing bacteria from pGLO™ leads the way.

3:30–4:00 PM Presentations

Teaching the Controversy
(Grades 4–College) *Bayhill 19, Hyatt*
CANCELED
Science Focus: GEN, INF, SEP
Amanda Glaze, Jacksonville (Ala.) City Schools
This presentation touches on the importance of teaching controversial topics and outlines research-based techniques for addressing controversial topics with students in upper elementary and secondary sciences.

The Chesapeake Bay Experience: An Interdisciplinary Approach to Environmental Education and Service Learning
(Grades 5–9) *Bayhill 26, Hyatt*
Science Focus: GEN
Phyllis Shepherd, King George County Schools, King George, Va.
Emphasis will be placed on methods educators can use to design interdisciplinary environmental research projects that evoke the spirit of environmental awareness and service learning among students.

3:30–4:30 PM Presentations

SCST Session: Case Studies 101
(Grades 9–College) *Bayhill 23, Hyatt*
Science Focus: GEN
Michele Snyder, Clinton Community College, Plattsburgh, N.Y.
Leave this session with some ideas about how to select material for developing your own case studies, modify existing case studies to meet course objectives, and a plan for getting started.

PolyWhat? Understanding What a Polymer Is—Polymer 101
(Grades P–12) *Bayhill 24, Hyatt*
Science Focus: PS
Sherri Rukes *(scrukes@comcast.net),* Libertyville High School, Libertyville, Ill.
Andrew Nydam *(andrewnydam@hotmail.com),* ASM International Foundation, Materials Park, Ohio
Discover different strategies for introducing what a polymer is in ways you and your students can understand. Many examples and handouts will be shared.

NOAA in Your Backyard and Beyond: Professional Development Opportunities and Local Educator Resources
(Grades K–12) *Bayhill 28, Hyatt*
Science Focus: GEN
June Teisan, Einstein Fellow, NOAA, Washington, D.C.
NOAA has hundreds of facilities and professional communicators across the nation ready to support teachers with free and inexpensive resources. Get connected to guest speakers, field trips, and local/national professional development opportunities.

And the Winners Are…the Best in Trade Books for Science
(Grades P–12) *Bayhill 31, Hyatt*
Science Focus: GEN
Juliana Texley (@Juliana.Texley; *juliana.texley@nsta.org),* NSTA President, Boca Raton, Fla.
Suzanne Flynn *(suzannemflynn@earthlink.net),* Lesley University and Cambridge College, Cambridge, Mass.
NSTA has a searchable database of more than 10,000 books for classrooms and a 45-year history of selecting the best trade books in science with the Children's Book Council. Join us as we announce the new winners as well as share our selection methods.

NSTA Press® Session: Showcasing How Elementary Preservice Interns Teach Inside-Out
(Grades 3–5) *Salon 6, Rosen Plaza*
Science Focus: ESS
Robert Blake, Jr. *(rblake@towson.edu),* **Sarah Haines** *(shaines@towson.edu),* and **Lisa Trattner** *(ltrattner@towson.edu),* Towson University, Towson, Md.
Join us as we showcase how the materials from *Inside-Out: Environmental Science in the Classroom and the Field, Grades 3–8* are used in the classroom by preservice elementary education students.

Elementary Science Showcase…Students Take the Lead!
(Grades K–5) *Salon 9, Rosen Plaza*
Science Focus: GEN, NGSS
Polly Burkhart *(pollyburk@aol.com),* Polk County Schools, Bartow, Fla.
Student scientists ignite when they take the lead in an elementary "Science Showcase" that reflects the rigors of both the *Common Core State Standards* and the *Next Generation Science Standards*.

3:30–4:30 PM Hands-On Workshops

Learn the Magic of Affordable Classroom Hydroponics
(Grades 6–12) *Bayhill 21, Hyatt*
Science Focus: LS, CCC
Joe Mallon *(josephcm@leeschools.net),* Island Coast High School, Cape Coral, Fla.
Cherie Sukovich *(cherieas@leeschools.net),* The Alva School, Alva, Fla.
Discover how to make a classroom hydroponics system for under $150. Participants will create a make-and-take germination chamber, as well as get their questions answered about hydroponics and aquaponics for the classroom. Handouts!

Scale the Universe
(Grades 6–10) *Bayhill 22, Hyatt*
Science Focus: GEN, CCC3
Christine Royce (@caroyce; *caroyce@aol.com),* Shippensburg University/PSTA, Shippensburg, Pa.
How big is big? How small is small? Let us "Scale the Universe" as we investigate a variety of different scaling activities.

Engagement Modes: Action Based on Research
(Grades 4–10) *Bayhill 27, Hyatt*
Science Focus: GEN, CCC
Tamara Pellien *(pellien@aesop.rutgers.edu)* and **Rachel Lyons** *(lyons@aesop.rutgers.edu),* Rutgers Cooperative Extension, New Brunswick, N.J.
You're talking…but are your students listening or engaged? This research-based workshop can help you tell the difference and make changes while you teach.

STEM-ulating Simulations
(Grades 6–12) *Bayhill 29, Hyatt*
Science Focus: GEN, NGSS
Michele Detwiler (@MicheleDetwiler; *michele.detwiler@sdhc.k12.fl.us)* and **Mindy Pearson** (@ScienceMindy; *mindy.pearson@sdhc.k12.fl.us),* Hillsborough County Public Schools, Tampa, Fla.
Investigate how to use simulations to support the *NGSS* through a STEM-centered approach and a use of the claim, evidence, and reasoning model.

Supporting STEM Practices Using Scientific Reading Material and Discussion
(Grades 9–12) *Manatee Spring I, Hyatt*
Science Focus: ETS, CCC, SEP1, SEP3, SEP4, SEP6, SEP7, SEP8
Amanda Whitener (@TheAWhitener; *awhitener@envisionexperience.com)* and **Jan Sikorsky** *(jsikorsky@envisionexperience.com),* Envision EMI, Vienna, Va.
Scientific readings and case studies have many applications and can be used in the classroom to develop scientific thinking, problem solving, and collaboration.

Balanced Assessment in the Inquiry-driven STEM Classroom
(Grades 3–College) *Manatee Spring II, Hyatt*
Science Focus: GEN, SEP
Michelle Schaut *(mschaut@gstboces.org)* and **Katelin Woods** *(kwoods@gstboces.org),* The Great Southern Tier BOCES, Bush Campus, Elmira, N.Y.
The Greater Southern Tier of New York STEM Education Initiative is transforming teacher assessment practices in inquiry-driven classrooms. Come explore what has been developed!

Using Inquiry to Teach Rocks, Part I: The Rock Cycle and Igneous Rocks
(Grades 3–12) *Orlando Ballroom M, Hyatt*
Science Focus: ESS, CCC
Davida Buehler *(dbuehler@geosociety.org),* The Geological Society of America, Boulder, Colo.
Join the Geological Society of America as we go through several inquiry-based activities to teach the rock cycle and igneous rocks. Free materials!

Interactive Science Notebooks: An Amazing Beginning!
(Grades K–8) *Ballroom A, Rosen Plaza*
Science Focus: GEN, SEP
Elizabeth Ridgeway (@ridgewayclass; *ridgewae@highlands.k12.fl.us),* Lake Country Elementary School, Lake Placid, Fla.
Discover how to set up notebooks and integrate reading, writing, and art. Plus, start using your notebooks as an assessment tool in your classroom now. Handouts!

Using 3-D Graphic Organizers to Increase Science Literacy and Develop Writing
(Grades 4–8) *Salon 5, Rosen Plaza*
Science Focus: GEN
Jennifer Trochez, Gates Street Elementary School, Los Angeles, Calif.
Integrate literacy skills in science with paper, scissors, and glue. Easy-to-find materials become 3-D graphic organizers that facilitate student creativity, increase learning, and develop writing.

Problem-Based Learning: Adding Rigor and Relevance to STEM Instruction
(Grades 3–5) *Salon 7, Rosen Plaza*
Science Focus: GEN, NGSS
Stan Hill *(shill@wakehealth.edu),* Wake Forest University School of Medicine, Winston Salem, N.C.
Problem-Based Learning is a self-directed approach to answering a complex problem that requires critical thinking, collaboration, and various forms of communication skills. Actively engage in solving a PBL case and leave with Problem-Based Learning activities that support the *CCSS* and *NGSS*.

Genetics Is Elementary: Teaching the Principles of Genetics to Early Elementary Students
(Grades K–3) *Salon 8, Rosen Plaza*
Science Focus: LS3
Shari Weaver *(sweaver@wpi.edu),* Massachusetts Academy of Math & Science at WPI, Worcester
Investigate patterns of inheritance through the eyes of grades K–3 students as we engage in an interactive lesson that addresses the *NGSS* and *CCSS ELA*.

A Cross-Curricular Experience: Solving Real-World Problems Through Literacy-rich STEM Discovery
(Grades 1–8) *Salon 10, Rosen Plaza*
Science Focus: ETS, SEP1, SEP6, SEP8
Brian Soash (@BSoach; *bsoash@mvcds.org)* and **Jana Smith** (@smithjana87; *jsmith@mvcds.org),* Maumee Valley Country Day School, Toledo, Ohio
STEM Discovery challenges students to look at science through the lens of an engineer. Develop fluent, 21st-century communication skills in your students through differentiated lessons, rubrics, and scaffolding strategies.

4:00–4:30 PM Presentation

Evolution Education in Florida
(Grades 6–College) *Bayhill 19, Hyatt*
Science Focus: LS
Brandon Haught, Florida Citizens for Science
Hear how governors, lawmakers, school boards, teachers, parents, and citizens have all been entangled in battles over teaching evolution in Florida schools for nine decades.

4:00–5:15 PM Exhibitor Workshops

The Drunken Worms: Exploring Gene Function with *C. elegans*
(Grades 8–College) *W221A, Convention Center*
Science Focus: LS
Sponsor: Edvotek Inc.
Danielle Snowflack *(info@edvotek.com)* and **Brian Ell** *(info@edvotek.com),* Edvotek Inc., Washington, D.C.
Model organisms allow us to study fundamental questions in biology that are difficult to study in humans. Learn how to culture the nematode *C. elegans* in your classroom. Explore how mutations affect alcohol metabolism using a simple locomotion assay. Data is collected and analyzed using statistics. Free flash drive/T-shirt drawing entry.

Evidence for Plate Movement with FOSS Earth History for Middle School
(Grades 5–8) *W221B, Convention Center*
Science Focus: ESS, SEP
Sponsor: Delta Education/School Specialty Science–FOSS
Virginia Reid, The Lawrence Hall of Science, University of California, Berkeley
What evidence from rocks informs us about the history of our planet? Explore Earth History concepts with hands-on activities and multimedia, and identify connections to the *NGSS* science and engineering practices. Experience the recently released FOSS Earth History Course (2nd ed.) focusing on new features, strategies, content, and materials.

STEM, Science Fairs, and Other Student Projects
(Grades K–6) *W221C, Convention Center*
Science Focus: INF, ETS
Sponsor: Delta Education/School Specialty Science
Johanna Strange, Consultant, Richmond, Ky.
Having trouble helping students conceptualize science fair projects, STEM performances, and other competitions? Learn an effective method for teaching students to design experiments from simple investigations. The same process can help students crystallize engineering design ideas into products. Join us as we share Delta products and resources.

Building an Electric Motor the STEM Way
(Grades 5–12) *W221 D/E, Convention Center*
Science Focus: ETS, PS
Sponsor: CPO Science/School Specialty Science
Erik Benton, CPO Science/School Specialty Science, Nashua, N.H.
The new CPO Science Link™ Electric Motor learning module is a STEM- and *NGSS*-based approach to electromagnets, permanent magnets, commutators, and induction in a real-time tablet-based learning environment using hands-on equipment. The engineering cycle, observation, measurement, and experimentation are used to design and build electric motors with student-based activities.

Teaching Environmental Science with BioInteractive
(Grades 9–College) *W222A, Convention Center*
Science Focus: ESS3, LS2, CCC5
Sponsor: Howard Hughes Medical Institute
Laura Dinerman, Sherwood High School, Sandy Spring, Md.
Discover HHMI's resources for teaching environmental science topics in your biology, Earth science, or environmental science course. Watch video segments and animations and explore classroom-ready activities developed by scientists and classroom teachers. Take home free resources and be among the first to see clips from this year's Holiday Lectures!

Comparative Vertebrate Anatomy with Carolina's Perfect Solution® Specimens
(Grades 6–12) *W224B, Convention Center*
Science Focus: LS
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Animals look different, but are they really that different on the inside? Students find out firsthand with this hands-on dissection of a pig, rat, shark, and frog. It's a fascinating comparative dissection activity that features our very best Carolina's Perfect Solution vertebrate specimens. Free dissection supplies and great door prizes.

The Many Jobs of Proteins: Modeling Proteins and Enzymes
(Grades 8–College) *W224C, Convention Center*
Science Focus: PS
Sponsor: MSOE Center for BioMolecular Modeling
Tim Herman *(herman@msoe.edu),* 3D Molecular Designs, Milwaukee, Wis.
By folding their own proteins following the basic principles of chemistry with the engaging Amino Acid Starter Kit, your students can understand the core structure-function concept. Then they will be ready to explore enzymes with the new Enzymes In Action Kit, leading to a new appreciation of the biomolecular world.

Investigating Stem Cell Differentiation
(Grades 9–12) *W224E, Convention Center*
Science Focus: LS3
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, experience how your students could investigate the development of specialized stems cells and consider bioethical issues in stem cell research.

5:00–5:30 PM Presentations

Springs Coast Watershed Project—From the Springs to the Gulf
CANCELED
(Grades 4–12) *Bayhill 18, Hyatt*
Science Focus: INP, ESS3.A, LS2.A, SEP1, SEP3, SEP4
Earnie Olsen, Citrus County School District, Inverness, Fla.
Learn about this project that seeks to increase student achievement in science by engaging students in meaningful watershed educational experiences and marine science station field activities.

NARST Session: Leveraging Teacher Leadership to Support the *Next Generation Science Standards*
(Grades K–12) *Bayhill 23, Hyatt*
Science Focus: GEN, NGSS
Jeremy Peacock (@jeremy_peacock; *peacock.jeremy@gmail.com),* Northeast Georgia RESA, Winterville, Ga.
This session draws on a research-based model of science instructional leadership to provide practical guidance for teacher leaders to leverage support for reform.

5:00–6:00 PM Presentations

The NGSS@NSTA Hub
(Grades K–12) *Bayhill 19, Hyatt*
Science Focus: GEN, NGSS
Ted Willard (@Ted_NSTA; *twillard@nsta.org),* Program Director, COMPASS, NSTA, Arlington, Va.
At the NGSS@NSTA Hub, educators can browse and search the standards, interact with peers and experts, find and share resources, and plan instruction and professional learning focused on the *NGSS*. This session will feature a tour of the Hub and a description of the work of 55 NGSS@NSTA curators—a group of educators from all across the U.S. working to identify resources that support the standards.

Research Experiences for Undergraduates: Engaging in Science Practices
(College) *Bayhill 24, Hyatt*
Science Focus: GEN, SEP1, SEP2, SEP3, SEP5
Troy Sadler (@ReSTEMInst; *sadlert@missouri.edu),* University of Missouri, Columbia
Hear about an international research program for undergraduates and the ways in which participating students engaged in science practices. Attention will be paid to designing and implementing undergraduate research programs with a focus on student mentorship as well as program structures and supports.

Simulate STEM Online Through Virtual Clinical Trials
(Grades 8–College) *Bayhill 26, Hyatt*
Science Focus: ETS, LS
Lynn Lauterbach (@lynncantweet; *lynnlauterbach@gmail.com),* Retired Teacher, Loveland, Colo.
Expose high school students to scientific and biomedical engineering practices using free online simulations that engage students in technology while designing authentic neuroscience-based clinical trials.

NASA Remote-sensing Technology Applications
(General) *Bayhill 31, Hyatt*
Science Focus: INF, ESS, CCC1, CCC2, SEP1, SEP4, SEP7, SEP8
Lester Morales *(lester.morales@nasa.gov),* NASA Kennedy Space Center, Kennedy Space Center, Fla.
Explore your backyard, mountains, oceans, and even the Moon with the help of NASA satellites and missions. See and learn to appreciate our planet from a bird's eye view perspective.

NSTA Press® Session: *Inquiring Scientists, Inquiring Readers:* Using Literacy Strategies to Support Inquiry Investigations
(Grades 3–5) *Salon 6, Rosen Plaza*
Science Focus: GEN, SEP1, SEP3, SEP4, SEP6, SEP8
Terry Shiverdecker, Ohio Resource Center, Columbus
Learn how the authors of *Inquiring Scientists, Inquiring Readers* select nonfiction texts and integrate literacy strategies into learning cycle investigations. You'll also experience Classroom Curling!

5:00–6:00 PM Hands-On Workshops

Climate Change Classroom Activities: CO_2 Chemistry and Ocean Acidification
(Grades 9–12) *Bayhill 21, Hyatt*
Science Focus: PS
Jerry Bell *(j_bell@acs.org),* Wisconsin Initiative for Science Literacy, Madison
Aqueous solutions of carbon dioxide, including your blood and the oceans, are essential to life on Earth. Upsetting the acid/base balance of these important solutions can be a matter of life and death. Engage in activities, discussion, analyses, and assessment that enhance understanding of the relationships among basic chemical concepts and human activities that are changing Earth. Bring your USB flash drive and take away the presentation and the activities to use in your classes.

Integrating STEM and 21st-Century Skills into the Virtual Classroom
(Grades 6–12) *Bayhill 22, Hyatt*
Science Focus: GEN, SEP
Kim Paschall *(kpaschall@flvs.net),* Florida Virtual School, Orlando
Join Florida Virtual School as we research best practices, collect data, interview stakeholders, network, and collaborate to define STEM and create your own strategic vision.

Human Body Systems—Building a Foundation for Success
(Grades 6–College) *Bayhill 27, Hyatt*
Science Focus: INF, LS
Aundrea Rue (@Prov_31_Wmn; *burghgrrl@gmail.com),* Carolina Forest High School, Myrtle Beach, S.C.
Build human body systems in clay and discuss how this relates to current STEM education. This methodology is one of the best STEM-based practices, creating successful health science education for more than 25 years.

Into the Outdoors
(Grades K–12) *Bayhill 29, Hyatt*
Science Focus: INF, GEN, NGSS
Curtis Varnell *(curtis.varnell@wscstarfish.com),* Western Arkansas Educational Cooperative, Branch
Too often, students sit in classrooms hearing about science when authentic, real-life science is beckoning just outside. Into the Outdoors provides instruction and curriculum that will allow every teacher to integrate real-world experiences into their students' education. Content includes information on how to organize and set up your own outdoor classroom using space as small as a playground or as large as a national park. Turn off the classroom light, close the door, and join us in the outdoors for some real education!

Manipulatives to Models, I
(Grades 9–College) *Bayhill 32, Hyatt*
Science Focus: LS
Linda Kilch *(linda.kilch@sdhc.k12.fl.us)* and **Dodi Cline** *(dodi.cline@sdhc.k12.fl.us),* King High School, Tampa, Fla.
Experience hands-on inquiry science as we share our teacher-developed manipulatives and models we use in our biology classrooms. Workshop includes genetics, anatomy, and physiology lessons.

CRASH Science! Investigating the Dangers of Distracted Driving
(Grades 9–12) *Manatee Spring I, Hyatt*
Science Focus: LS, PS, SEP
Griff Jones *(gjones@coe.ufl.edu),* University of Florida, Gainesville
Learn how to use easy-to-implement biology and physics-related hands-on inquiry activities and dramatic crash videos to teach students about the dangers of distracted driving.

Modeling Black Holes with NASA
(Grades 7–College) *Manatee Spring II, Hyatt*
Science Focus: ESS
Robert Sparks (@halfastro; *rsparkles@aol.com),* National Optical Astronomy Observatory, Tucson, Ariz.
Explore how to bring the exciting science of black holes to your students with hands-on activities using inexpensive everyday materials. Free NASA materials to all participants.

Using Inquiry to Teach Rocks, Part 2: Sedimentary and Metamorphic Rocks
(Grades 3–12) *Orlando Ballroom M, Hyatt*
Science Focus: ESS, CCC
Davida 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! Free resources!

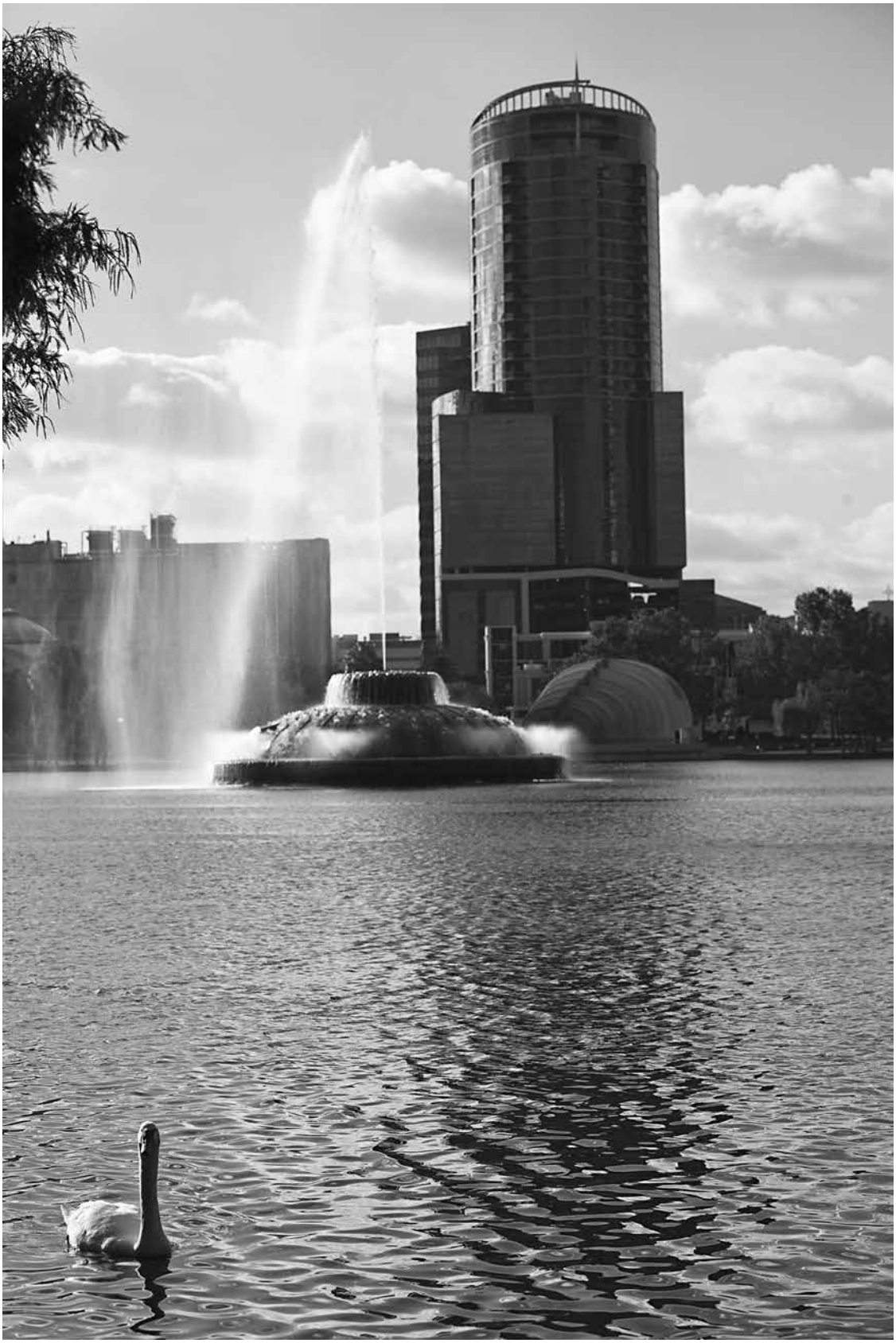
Reading Through STEM: Problem-based Interdisciplinary Unit Design
(Grades P–5) *Salon 5, Rosen Plaza*
Science Focus: GEN, CCC3, SEP
Lisa Milenkovic (@BrowardSTEM; @sleuthacademy; *lisa.milenkovic@browardschools.com),* Broward County Public Schools, Fort Lauderdale, Fla.
Experience design units that encompass a scaffolded series of inquiry-based performance tasks that integrate science with literacy to solve authentic STEM problems in the elementary classroom.

Stretch Your Legs for Science!
(Grades 3–8) *Salon 8, Rosen Plaza*
Science Focus: GEN, INF, NGSS
Lindsay Glasner (@BirdSleuth; *lig27@cornell.edu),* The Cornell Lab of Ornithology, Ithaca, N.Y.
Care for a little more exercise than running between sessions? Come explore citizen science via a mini bird walk! After a tutorial on bird identification, we'll head outside so you can experience just how engaging and easy it is!

Engineering: Build a Better Kaleidoscope!
(Grades 3–8) *Salon 10, Rosen Plaza*
Science Focus: ETS
Karen Ostlund *(klostlund@utexas.edu),* 2012–2013 NSTA President, and The University of Texas at Austin
Build a better kaleidoscope by using an engineering design process integrating the *NGSS* three Ds: science and engineering practices, disciplinary core ideas, and crosscutting concepts.

5:30–6:00 PM Presentation

Recruitment and Retention of High School Juniors to Become STEM Teachers
(Grades 11–College) *Bayhill 18, Hyatt*
Science Focus: GEN
Melissa Demetrikopoulos *(mdemetr@biohi.org),* Institute for Biomedical Philosophy, Dunedin, Fla.
Cynthia Trawick *(cynthia.trawick@morehouse.edu)* and **Natasha Crosby,** Morehouse College, Atlanta, Ga.
Designed to develop future STEM teacher leaders, hear about a recruitment program focusing on black male students that provides guidance on college admissions and begins their preparation for secondary science and math teaching prior to entering college.



—*Photo courtesy of Visit Orlando*

A solitary swan enjoys a sunny day on Lake Eola in downtown Orlando.

8:00 AM–8:30 AM Presentations

Explore the Earth System Using Real-World Data
(General) *Bayhill 25, Hyatt*
Science Focus: ESS
James Brey (@AMSeducation; *brey@ametsoc.org),* American Meteorological Society, Washington, D.C.
Spice up that science lesson with current, real-world environmental data. AMS DataStreme courses will show you how.

Science, Service, and Stewardship: Coastal Area Climate Change Education…a Middle School Teacher's Approach!
(Grades 6–8) *Salon 6, Rosen Plaza*
Science Focus: ESS
Pamela McFarlin *(pamela.mcfarlin@sdhc.k12.fl.us),* Hillsborough County Public Schools, Tampa, Fla.
Middle school students become outstanding "citizen scientists"! Help your students understand and investigate local and global climate change issues and their effects on marine ecosystems.

8:00 AM–9:00 AM Presentations

Growing with Water: A School-based Hydroponics Program
(Grades 6–12) *Bayhill 18, Hyatt*
Science Focus: LS, INF, CCC
Tamara Pellien *(pellien@aesop.rutgers.edu),* Rutgers Cooperative Extension, Toms River, N.J.
Get your hands out of the dirt and into water with "Growing with Water," an interactive school-based gardening program for teachers to implement. Take your students from germination to bounty in 3–4 months.

***NGSS* Practices Reduce Conflict and Help Religious Students Study Evolution!**
(Grades 6–College) *Bayhill 19, Hyatt*
Science Focus: GEN, NGSS
Lee Meadows (@scientificallee; *lmeadows@uab.edu),* The University of Alabama at Birmingham
You're teaching in a public school where religious students object to evolution. Hear an approach that engages them in understanding the evidence, but minimizes conflict.

NSELA Session: Tools for Science Leaders, Part 1
(General) *Bayhill 23, Hyatt*
Science Focus: GEN
Craig Gabler, Educational Service District 113, Tumwater, Wash.
Presider: Kenn Heydrick, The University of Texas at Tyler
Come learn about the various tools and strategies that science leaders can use to enhance teaching and learning in their outreach.

Reinforce STEM with Medical Mysteries Web Adventures
(Grades 6–College) *Bayhill 26, Hyatt*
Science Focus: GEN, INF, NGSS
Lynn Lauterbach (@lynncantweet; *lynnlauterbach@gmail.com),* Retired Teacher, Loveland, Colo.
Promote scientific inquiry, STEM careers, and science literacy in the context of infectious diseases with this free online adventure game. Handouts!

Supporting English Language Learners
(Grades 1–12) *Bayhill 28, Hyatt*
Science Focus: GEN
Adrienne Somera, Northwest Educational Service District, Bellingham, Wash.
Walk away with a variety of strategies for supporting English language learners in science classes. Examples of modified elementary and secondary lessons will be shared.

Engaging Your Students: Creating a STEM Virtual Poster Competition
(Grades 5–College) *Bayhill 31, Hyatt*
Science Focus: GEN
Michele Marquette *(mlmarque@utmb.edu),* The University of Texas Medical Branch at Galveston
Join us for a "how-to" guide on hosting an online STEM virtual poster competition. This online venue is especially beneficial for students from isolated/rural or economically disadvantaged areas, allowing them the opportunity to participate in a "science and engineering fair" competition.

AAPT Session: Modeling Physics in the Classroom
(Grades 9–12) *Manatee Spring I, Hyatt*
Science Focus: PS, SEP1, SEP4
Kevin Thomas *(kevinthomas@knights.ucf.edu),* University of Central Florida, Orlando
Art Woodruff *(art_woodruff@scps.k12.fl.us),* Oviedo High School, Oviedo, Fla.
This session will focus on a basic introduction to implementing modeling instruction in the high school physics classroom, and skills learned from the AMTA summer workshops.

Creating K–6 Classrooms that Embrace Science Inquiry: Helping Students Think and Work Like Scientists
(Grades K–6) *Ballroom B, Rosen Plaza*
Science Focus: GEN, SEP1, SEP5, SEP8
Donna Knoell *(dknoell@sbcglobal.net),* Educational Consultant, Overland Park, Kans.
Discuss what inquiry encompasses and how to create a classroom environment that embraces it. Learn the benefits of teaching science as inquiry, including the student learning and engagement that result.

8:00 AM–9:00 AM Hands-On Workshops

Life Cycle of the Monarch Butterfly
(Grades K–12) *Bayhill 17, Hyatt*
Science Focus: LS
Katie-Lyn Bunney *(kbunney@umn.edu),* University of Minnesota Monarch Lab, St. Paul
Dolores (De) Cansler *(decansler@gmail.com),* Adjunct Teacher Trainer, Monarchs in the Classroom, St. Paul, Minn.
Ann Hobbie *(ann.s.hobbie@gmail.com),* Adjunct Teacher Trainer, Monarchs in the Classroom, St. Paul, Minn.
Jim O'Leary *(oleary@mdsci.org)* and **Maureen Sullivan,** Maryland Science Center, Baltimore
Examine the four stages of the monarch butterfly with live specimens of each stage—egg, larva, pupa, and adult monarchs.

From Single Cells to Complex Systems—Biofuels from Algae in the Future?
(Grades 6–12) *Bayhill 21, Hyatt*
Science Focus: ETS, LS, INF, CCC, SEP
Tiffany Fleming, Boyce Thompson Institute, Ithaca, N.Y.
Algae, which quickly produce oil and nutrients on nonagricultural lands, are promising sources of renewable biofuels. Integrated STEM thinkers will create this sustainable future. Come learn about algae biology and how to design simple classroom photobioreactors with water bottles and aquarium supplies. Engage your students in investigating how to make this viable.

Brain Break Boosters and NASA's New Horizons
(Grades 3–12) *Bayhill 27, Hyatt*
Science Focus: GEN
Erich Landstrom, Seminole Ridge High School, Loxahatchee, Fla.
Research has consistently demonstrated that multiple short sessions distributed over time lead to a better long-term memory than a single mass study period. "Brain breaks" are a short switch-up from studies to activate a different skill set. Using the NASA New Horizons mission, we will model memorizing facts via multiple intelligence "brain booster" breaks.

Using Case Studies to Promote Technical Literacy in an Anatomy and Physiology Class
(Grades 11–12) *Bayhill 29, Hyatt*
Science Focus: LS1.A, LS1.B, SEP1, SEP4, SEP6
Shari Weaver *(sweaver@wpi.edu),* Massachusetts Academy of Math & Science at WPI, Worcester
Participate in an immunology case study to explore how this pedagogical method engages students in real-world medical scenarios while strengthening their technical literacy.

ASEE Session: Introducing Engineering to Elementary School
(Grades K–5) *Manatee Spring II, Hyatt*
Science Focus: ETS
Stacy Gardner (@stemefg; *stacy.gardner@harpethhall.org),* Harpeth Hall School, Nashville, Tenn.
Engineering is natural in elementary. Encounter tools such as the Engineering is Elementary program and other ways to introduce engineering in K–5 classrooms.

Harnessing the Power of Earth System Science for Developing Science Practices and Crosscutting Concepts
(Grades 6–12) *Orlando Ballroom M, Hyatt*
Science Focus: ESS
Roberta Johnson Killeen *(rmjohnsn@nestanet.org),* National Earth Science Teachers Association, Boulder, Colo.
Margaret Holzer *(mholzer@monmouth.com),* Chatham High School, Chatham, N.J.
Michael Passow *(michael@earth2class.org),* Dwight Morrow High School, Englewood, N.J.
This NESTA hands-on workshop highlights lessons and strategies using *NGSS* crosscutting concepts to unite core ideas and science practices for classroom Earth system science.

Hidden Depths: What Really Lives Under the Ocean?
(Grades 4–6) *Salon 10, Rosen Plaza*
Science Focus: ESS
Marianne Phillips, Texas A&M University–San Antonio
Deepen your students' understanding of aquatic life with an exciting adventure exploring the hidden depths of the ocean. Leave with lesson activities and materials to make ocean models.

ACS Middle Level Session: Matter: Solids, Liquids, and Gases
(Grades 6–8) *Salon 4, Rosen Plaza*
Science Focus: PS1.A, CCC2, CCC4, SEP2, SEP3
James Kessler *(jhkessler@acs.org),* 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 *www.middleschoolchemistry.com.*

Engage In and Create a STEM-ulating Experience
(Grades P–8) *Salon 5, Rosen Plaza*
Science Focus: ESS2, ETS2, LS2, PS2, SEP
Teri Barenborg (@teribborg; *teri.barenborg@stlucieschools.org),* St. Lucie School District, Vero Beach, Fla.
Experience and learn how to create a hands-on STEM design challenge that can engage students in critical thinking while meeting state standards.

NSTA Press® Session: Pendulums and Porch Swings
(Grades 3–8) *Salon 7, Rosen Plaza*
Science Focus: ETS, SEP
Richard Konicek-Moran *(rkonicek@gmail.com),* Professor Emeritus, University of Massachusetts, Amherst
Joyce Tugel *(jtugel@mmsa.org),* Maine Mathematics and Science Alliance, Augusta
Learn how to combine *Uncovering Student Ideas in Science* with *Every Day Science Mysteries* to engage students in the science and engineering practices. Experience an example that connects a scientific investigation to an engineering problem for classroom use or use in professional development.

STEM Is Not EXTRA
(Grades K–5) *Salon 8, Rosen Plaza*
Science Focus: GEN, NGSS
Michele Wiehagen *(michele.wiehagen@sdhc.k12.fl.us)* and **Shana Tirado** *(shana.tirado@sdhc.k12.fl.us),* Hillsborough County Public Schools, Tampa, Fla.
STEM is integrated into our K–5 weekly curriculum! Lessons have been written to replace traditional math/science lessons. Come engineer with us as we share these lessons.

8:00 AM–9:15 AM Exhibitor Workshops

Biotechnology Basics
(Grades 6–College) *W221A, Convention Center*
Science Focus: LS
Sponsor: Edvotek Inc.
Danielle Snowflack *(info@edvotek.com)* and **Brian Ell** *(info@edvotek.com)*, Edvotek Inc., Washington, D.C.
Feeling overwhelmed by the complicated experiments performed in biotechnology laboratories? If so, join us for this hands-on workshop that explores biotechnology techniques commonly used in research labs (DNA isolation, PCR, and electrophoresis). These experiments will help students understand how techniques like genetic engineering work in a real-world context. Free flash drive/T-shirt drawing.

Streamline Your Preparation and Presentation with Student Notebooks
(Grades 6–10) *W221C, Convention Center*
Science Focus: GEN
Sponsor: LearnEd Notebooks
Rachel Miller *(rachelm@learnednotebooks.com),* LearnEd Notebooks, Lincolnton, N.C.
As an educator, how much time do you spend preparing notes, researching activities, and writing tests (not to mention your many other responsibilities)? Through the use of a unique notebooking system, find out how you can spend more time focusing on your presentation and less time on your preparation. Join us for free lesson plans and class-set giveaways.

From Farm to Fork to Classroom—Easy Lessons to Teach the Science of Feeding the World
(Grades K–8) *W222A, Convention Center*
Science Focus: GEN, CCC
Sponsor: International Food Information Council Foundation
Sarah Romotsky *(romotsky@ific.org),* International Food Information Council Foundation, Washington, D.C.
Becky Andrews *(bandrews@theeducationcenter.com),* The Education Center, LLC, Greensboro, N.C.
Find out how students can experience the wonder of the farm-to-fork process! Using curricula based on the *CCSS* and *NGSS*, participants will model classroom lessons and demonstrations illustrating the science of feeding the world. You can help ensure a nutritious, safe, and affordable food supply.

Envelope Graphic Organizers—UnFOLDing the Possibilities
(General) *W222B, Convention Center*
Science Focus: GEN
Sponsor: Dinah-Might Adventures, LP
Robert Stremme, Retired Educator, Plymouth Meeting, Pa.
In this fast-paced, interactive session, discover how to transform basic classroom materials and manila envelopes into 3-D graphic organizers, also known as Foldables®. See the possibilities unFOLD before you and depart with ideas ready to use on Monday that are evidence based, kinesthetic, and integrative.

Blending the *CCSS* and *NGSS* in Your K–5 Science Classroom
(Grades P–5) *W223 A/B, Convention Center*
Science Focus: NGSS
Sponsor: Activate Learning
LeeAnn Sutherland, The University of Michigan, Ann Arbor
By using Activate Learning's Active Science K–5 curriculum, see how you can integrate both the *CCSS* and *NGSS* into your elementary classroom. Join us and engage in activities and get pedagogies and practices to take back to your classroom.

Achievable Inquiry in Biology—See How PASCO Technology Can Transform Data Collection in Your Lab!
(Grades 8–12) *W224A, Convention Center*
Science Focus: LS
Sponsor: PASCO scientific
Ronn Fieldhouse, PASCO scientific, Roseville, Calif.
Get hands on with biology experiments, including Enzyme Activity and Cellular Respiration for accurate and fast results. See the latest in PASCO technology, including the Optical Dissolved Oxygen Sensor, Wireless Spectrometer, and data sharing in SPARKvue®—compatible with iPad, Windows, Mac OS, Android, and Chromebooks. Free sensor set for five attendees!

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

(Grades 6–12) *W224B, Convention Center*

Science Focus: LS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

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

The *Next Generation Science Standards:* What They Mean for Earth and Space Science

(Grades K–12) *W224C, Convention Center*

Science Focus: ESS

Sponsor: Pearson

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

The *NGSS* represents a bold new direction for K–12 science in America, but it also poses many challenges and questions. Join Michael Wysession, *NGSS* writing team leader, as he discusses the implications for teaching, assessment, and professional development in Earth and space science education.

***Project-Based Inquiry Science*™: Blending Science and Engineering Practices, Core Ideas, and Crosscutting Concepts in Middle School Classrooms**

(Grades 6–8) *W224D, Convention Center*

Science Focus: GEN, NGSS

Sponsor: It's About Time

Presenter to be announced

Blending science and engineering practices, core ideas, and crosscutting concepts is made easy with *Project-Based Inquiry Science.* Experience how students collaborate to develop core ideas as they complete projects and science investigations that blend modeling, asking questions, and other science and engineering practices. Take home an activity idea and learn how *PBIS* makes learning science meaningful.

DuPont Presents: Photosynthesis, Respiration, and Starches—It's a Plant's Life!

(Grades 6–12) *W224E, Convention Center*

Science Focus: ETS2, LS2

Sponsor: LAB-AIDS®, Inc.

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

Help students sprout and grow with a different approach to teaching photosynthesis, cellular respiration, and plant food storage that connects to the carbon cycle. Challenge and excite your students with inquiry activities, such as dissecting a plant seed and treating it with reagents differentiating between plant food stored as a simple sugar or as a starch.

Integrating Online Learning into the Science Classroom

(Grades 1–10) *W224G, Convention Center*

Science Focus: GEN, INF, NGSS

Sponsor: NewPath Learning

George Nassis, NewPath Learning, Victor, N.Y.

Melissa Hughes, Solon High School, Solon, Ohio

Experience NewPath Learning's online program sponsored by the National Institutes of Health that allows teachers to assign and present ready-to-use, standards-based multimedia lessons, interactive activities, lab simulations, and assessments, as well as track student progress. Additionally, the program provides easy-to-use authoring tools and templates to develop customized, interactive lessons. Join us and receive a free trial subscription.

Modeling in Engineering Design—From Ideas to Reality

(Grades 6–9) *W224H, Convention Center*

Science Focus: ETS

Sponsor: eCYBERMISSION

Matthew Hartman, (@ecybermission), eCYBERMISSION Content Coordinator, NSTA, Arlington, Va.

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

8:00 AM–9:30 AM Exhibitor Workshop

Chemistry and Biology with Vernier
(Grades 7–College) *W221B, Convention Center*
Science Focus: LS, PS
Sponsor: Vernier Software & Technology
David Carter *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
In this hands-on workshop, you will use various digital tools—including our new wireless sensors—to conduct experiments from our popular chemistry and biology lab books. Use LabQuest Mini with a computer, or LabQuest 2 as a stand-alone device, with a computer, or wirelessly with iPad, Chromebook, and BYOD environments.

8:00–10:00 AM CESI Breakfast

What Are Young Children Really Thinking? (M-1)
(Grades K–6) *Salon 3, Rosen Plaza*
Tickets Required; $51

Page Keeley *(pagekeeley@gmail.com)*, 2008–2009 NSTA President, Fort Myers, Fla.

Young children form ideas about science well before they encounter them in school. Join Page Keeley as she introduces ways teachers can probe children's thinking and encourage science talk about everyday phenomena and familiar concepts. Over breakfast, she'll share her experiences and introduce teachers to the remarkable ideas young children bring to their learning as well as their surprisingly sophisticated ways of reasoning.

Page Keeley is an award-winning author and recognized expert in the areas of science, mathematics, and STEM diagnostic and formative assessment. A former middle school science teacher, Page has received the Presidential Award for Excellence in Secondary Science Teaching as well as the Milken National Distinguished Educator Award. She consults with school districts and organizations throughout the United States and internationally to build teachers' capacity to use formative assessment effectively as well as provides instructional coaching and guidance on linking formative assessment, inquiry, and engineering; and linking the NGSS *science practices with* CCSS, ELA.

Page is a former NSTA president and the 2013 recipient of the National Science Education Leadership Association's award for Outstanding Leadership in Science Education.

8:00–10:00 AM Hands-On Workshops

ACS Session: Energy as a Framework to Teach Chemistry at Multiple Levels: A Macroscopic View
(Grades 9–12) *Bayhill 22, Hyatt*
Science Focus: PS
Marta Gmurczyk *(m_gmurczyk@acs.org),* American Chemical Society, Washington, D.C.
Engage in "design activities" that can help students meaningfully understand energy transfer between systems with different temperatures by designing devices with specific properties and testing their properties. These activities have been developed to deepen students' conceptual understanding about energy, heat, and temperature in macroscopic systems.

Elementary Make and Take
(Grades P–5) *Ballroom A, Rosen Plaza*
Science Focus: GEN
Beth Conti *(conti.elizabeth@brevardschools.org),* Quest Elementary School, Melbourne, Fla.
Ed Short *(short.ed@brevardschools.org),* Brevard County School Board, Viera, Fla.
Join the Brevard Leadership and Training Cadre in "make and take" hands-on/minds-on activities based on the Next Generation Sunshine State Standards for Science. Lesson plans provided.

8:30–9:00 AM Presentations

Community Study Units—So Much More than a Field Trip
(Grades K–12) *Bayhill 25, Hyatt*
Science Focus: GEN, INF, NGSS
Randolph Tully (@LeeSchoolsEE; *randolphrt@leeschools.net),* School District of Lee County, Fort Myers, Fla.
The Community Study Unit is a full unit of study with an imbedded field experience. Students explore their environment with activities related to classroom curricula.

Leadership in the Classroom
(Grades 6–9) *Salon 6, Rosen Plaza*
Science Focus: GEN
Vivian O'Brien *(fizzics@roadrunner.com),* Plymouth Regional High School, Plymouth, N.H.
Golda Dugan *(clementinedugan@gmail.com),* Heritage Middle School, Wake Forest, N.C.
Leave with a fresh approach to classroom organization through developing student leadership skills such as project planning, officer roles, and more.

8:30–10:00 AM Exhibitor Workshop

What Fish Is That? Have Fun with PCR, Fish Flash Cards, and *Jeopardy!* to Perform DNA-based Identification

(Grades 9–College) *W224F, Convention Center*

Science Focus: LS

Sponsor: Bio-Rad Laboratories

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

Use games to explore the barcoding of fish. Learn how to extract DNA, amplify it with PCR, and classify species using sequencing/bioinformatics to determine if that fish you bought is really what's on the label. Hear how students can contribute to the International Barcode of Life, a global genetic repository for barcodes of all species.

9:00 AM–5:00 PM Exhibits

Hall WD2, 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 teacher sessions scheduled and it's a perfect time to visit the exhibits and discover all the products and services companies and organizations have to offer. Some exhibitors will offer materials for sale throughout the conference.

Also, this is the perfect time to use your meal voucher at the Food Court area in the NSTA Exhibit Hall (see page 12).

9:30–10:00 AM Presentations

Helping New Teachers Survive and Thrive: Florida's STEM Teacher Induction and Professional Support (STEM TIPS) Online Initiative

(Grades 6–12) *Bayhill 18, Hyatt*

Science Focus: GEN

Griff Jones *(gjones@coe.ufl.edu),* University of Florida, Gainesville

Discover how online instructional coaching and resources are delivered via a tiered online induction model to support Florida's districts in developing and retaining new STEM teachers.

Strategies on Moving Toward 21st-Century Teaching

(Grades 5–9) *Salon 9, Rosen Plaza*

Science Focus: GEN, NGSS

Leah Torres, Osceola School District, Kissimmee, Fla.

Attention will be paid to techniques for veteran teachers and new teachers on how to update labs, collect classroom data, and form collaborative groups to fit with the new models of teaching.

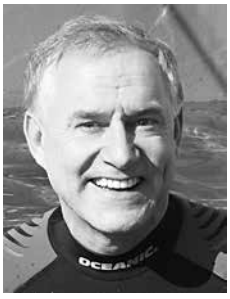
9:30–10:30 AM Featured Presentation

Crittercam: An Adventure in STEM Education

(General) *Chapin Theater, Convention Center*

Science Focus: LS

Speaker sponsored by National Geographic Learning



Greg Marshall, National Geographic Fellow and Biologist/Inventor, National Geographic Learning, Washington, D.C.

Presider: Marsha Winegarner, Program Representative, NSTA Orlando Area Conference, Coordinator of NSTA's Science Matters in Florida, and K–12 Education Consultant, DeFuniak Springs, Fla.

After originally heading for law school, Greg Marshall's insatiable desire to explore the physical world thrust him into the ever mysterious and seductive world of science instead. He learned that playing in the STEM arena means paying dues, and Greg has paid his fair share with blood, sweat, and tears. It's not easy to create a new field of biological research—animal-borne imaging; Greg will explain why. He will also share stories about the rewards of a life spent striving to know, following inspiration, immersing oneself in innovation and discovery, solving problems, and doing conservation. Greg will prove that the hard work of a STEM career is well worth the investment.

A National Geographic Fellow, inventor, biologist, conservationist, and Emmy Award–winning filmmaker, Greg Marshall has dedicated his life to studying, exploring, and documenting animal life in the oceans and across the globe. He has headed up more than a 100 field expeditions worldwide and collaborated in cutting-edge behavioral studies of more than 70 species, from lions to emperor penguins to humpback whales.

Greg's most celebrated contribution to the research community is the invention of the National Geographic Crittercam, a small, lightweight, streamlined camera that has the remarkable ability to travel unobtrusively with its animal hosts where no camera has been before, capturing never before seen footage of the private lives of wild animals. Through his Crittercam research, he has provided a dazzling library of imagery from the perspective of animals in the wild. This footage has been used in more than 70 National Geographic documentaries, including a 13-part National Geographic television series, numerous PBS/NBC/NGC specials, and 60 short films airing on PBS's Wild Chronicles *series.*

9:30–10:30 AM Presentations

Gray Matter: Learning and Teaching Science with the Brain in Mind
(Grades K–12) *Bayhill 19, Hyatt*
Science Focus: GEN, NGSS
Carolyn Hayes *(caahayes@comcast.net),* NSTA President-Elect, and Indiana University, Indianapolis
Experience through science activities how discoveries in cognitive neuroscience are applied to *NGSS* teaching strategies and the principles of how students learn science.

NSELA Session: Tools for Science Leaders, Part 2
(General) *Bayhill 23, Hyatt*
Science Focus: GEN
Craig Gabler, Educational Service District 113, Tumwater, Wash.
Presider: Kenn Heydrick, The University of Texas at Tyler
Come learn about the various tools and strategies that science leaders can use to enhance teaching and learning in their outreach.

Basic Polymer Science for the High School Classroom
(Grades 9–12) *Bayhill 24, Hyatt*
Science Focus: PS
Debbie Goodwin *(nywin@hotmail.com),* Retired High School Science Teacher, Chillicothe, Mo.
Simple demonstrations, labs, and activities bring polymers into your curriculum and make them relevant. Concepts include formation, classification, structure, and properties. Take home CD of activities/information.

Lotions, Potions, and Scrubs: Polymer Science in Cosmetics
(Grades 7–12) *Bayhill 26, Hyatt*
Science Focus: PS, INF
Sherri Rukes *(scrukes@comcast.net),* Libertyville High School, Libertyville, Ill.
Find out how to make various cosmetics as well as the polymer science behind them. Handouts and samples provided.

Write to Know Science
(Grades 3–10) *Bayhill 28, Hyatt*
Science Focus: ESS, LS, PS, SEP2, SEP4, SEP6, SEP7, SEP8
Lee Hughes *(leoph@leeschools.net),* The School District of Lee County, Fort Myers, Fla.
Giving students reasons to write across the curriculum is one of the most powerful and time-saving strategies in the educator's toolkit. Receive an introduction to research-based writing prompts and strategies for classroom implementation that support argumentation, discourse, and inquiry. Writing is a cognitive process wherein students "show what they know."

Classroom Science Fair Projects Made Simple
(Grades K–5) *Ballroom B, Rosen Plaza*
Science Focus: GEN, SEP2, SEP3
Mary Ward *(mary.ward@sarasotacountyschools.net)* and **Carrie Ross** *(carrie.ross@sarasotacountyschools.net),* Ashton Elementary School, Sarasota, Fla.
Take your students through each step of their scientific investigations with this simple classroom journal as they work through an investigation together in class.

Science Education Needs a Pinch of Pixie Dust!
(Grades K–6) *Salon 6, Rosen Plaza*
Science Focus: GEN
Donna Plocharczyk *(donna@plochdesigns.com),* St. Alexander School, Crestwood, Ill.
Add sparkle to your science lessons. Channeling Walt Disney, I will provide strategies to make science classrooms alive and imaginative. *"When you're curious, you find lots of interesting things to do."*

Meal Vouchers!

Don't forget to use your meal vouchers! Conference registrants will be issued up to three meal vouchers total ($15 each), one for each day of the conference. They're redeemable at the Food Court area in the NSTA Exhibit Hall during the exhibit hall hours (see page 12 for hours). Vouchers are not redeemable for cash; no change given back…and they will not be replaced if lost.

9:30–10:30 AM Hands-On Workshops

Life Cycle of the Monarch Butterfly
(Grades K–12) *Bayhill 17, Hyatt*
Science Focus: LS
Katie-Lyn Bunney *(kbunney@umn.edu),* University of Minnesota Monarch Lab, St. Paul
Dolores (De) Cansler *(decansler@gmail.com),* Adjunct Teacher Trainer, Monarchs in the Classroom, St. Paul, Minn.
Ann Hobbie *(ann.s.hobbie@gmail.com),* Adjunct Teacher Trainer, Monarchs in the Classroom, St. Paul, Minn.
Jim O'Leary *(oleary@mdsci.org)* and **Maureen Sullivan,** Maryland Science Center, Baltimore
Examine the four stages of the monarch butterfly with live specimens of each stage—egg, larva, pupa, and adult monarchs.

CHANGE the Way You Teach Climate Change: The Link Between Red Tide and Climate Change
(Grades 6–12) *Bayhill 21, Hyatt*
Science Focus: ESS2, ESS3, PS4, CCC5, CCC7, SEP
Allan Feldman *(afeldman@usf.edu)* and **Molly Nation** (@mollytnation; *mollynation@mail.usf.edu),* University of South Florida, Tampa
Tracy Flanagan, Durant High School, Plant City, Fla.
Andria Keene, Strawberry Crest High School, Dover, Fla.
Investigate the relationship between climate change and the increased frequency, severity, and distribution of harmful algal blooms. Learn more about of the NSF-funded CHANGE (Climate Change Narrative Game Education) project.

Addressing Complexity of Energy Flow in an Ecosystem Using an Active Hands-On Model
(Grades 5–College) *Bayhill 27, Hyatt*
Science Focus: ESS3.C, LS2.A, LS2.B, LS2.C, INF, CCC4, CCC5, CCC7
Anne Coleman *(amc729@cabrini.edu),* **Caroline Nielsen** *(cbn24@cabrini.edu),* and **Kimberly Boyd** *(kboyd@cabrini.edu)*, Cabrini College, Radnor, Pa.
Experience a field-tested energy flow model designed to engage students and challenge thinking about the complexities of energy flow through an ecosystem and the impacts of human intervention.

Backyard Field Trips
(General) *Bayhill 29, Hyatt*
Science Focus: INF, ESS
Mark Francek, Central Michigan University, Mount Pleasant
Explore the unique geology, botany, weather, and daytime astronomy found on every campus. Minerals and rocks can be gathered, examined, and categorized from the school yard grounds. We will take a field trip outside to explore these phenomena. Come dressed for the weather. Handouts!

Differential Equations and Mathematical Modeling
(Grades 11–College) *Bayhill 32, Hyatt*
Science Focus: PS, SEP
Curtis Pehl *(cpehl@steds.org),* Saint Edward's School, Vero Beach, Fla.
Join me as I present methods for solving first- and second-order differential equations in advanced physics. Explore the more advanced methods for solving differential equations such as integrating factors. Handouts!

AAPT Session: "Sunsational" Solar Electricity: The Physics of Photovoltaics
(Grades 6–12) *Manatee Spring I, Hyatt*
Science Focus: ETS, PS
Malcolm Butler *(malcolm.butler@ucf.edu),* University of Central Florida, Orlando
Susan Schleith *(susan@fsec.ucf.edu),* Florida Solar Energy Center, Cocoa
Spark new learning in your classroom. Join us and explore the basics of photovoltaic technology using hands-on/minds-on learning techniques for grades 6–12 students.

ASEE Session: ASEE's K–12 Outreach Program, eGFI: Engineering, Go For It! and *TeachEngineering.org*
(Grades 5–12) *Manatee Spring II, Hyatt*
Science Focus: ETS
Stacy Gardner (@stemefg*; stacy.gardner@harpethhall.org),* Harpeth Hall School, Nashville, Tenn.
The American Society for Engineering Education (ASEE) and its K–12 division will introduce you to innovative ways to introduce engineering into your classroom.

How Weird Can It Get? Developing Weather and Climate Literacy
(Grades 6–12) *Orlando Ballroom M, Hyatt*
Science Focus: ESS
Roberta Johnson Killeen *(rmjohnsn@nestanet.org),* National Earth Science Teachers Association, Boulder, Colo.
Margaret Holzer *(mholzer@monmouth.com),* Chatham High School, Chatham, N.J.
Michael Passow *(michael@earth2class.org),* Dwight Morrow High School, Englewood, N.J.
Explore the scientific foundations of what we know about weather, climate, and climate change through effective hands-on and data-rich classroom activities from NESTA.

Biology Bob: Oh Whale!
(Grades 3–6) *Salon 10, Rosen Plaza*
Science Focus: GEN, INF, NGSS
Robert Everett *(robert.everett@ucf.edu),* University of Central Florida, Orlando
Come play the hands-on "Oh Whale!" game while learning about whales and how scientists study them. This workshop includes music and shares classroom implementation.

ACS Middle Level Session: Changes of State—Evaporation and Condensation
(Grades 6–8) *Salon 4, Rosen Plaza*
Science Focus: PS1.A, CCC2, CCC4, SEP2, SEP3
James Kessler *(jhkessler@acs.org),* 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 *www.middleschoolchemistry.com.*

Got Engineering?
(Grades K–8) *Salon 5, Rosen Plaza*
Science Focus: ETS
Dana Ladefoged *(dxl1097@lausd.net),* Bryson Avenue Elementary School, South Gate, Calif.
Jennifer Trochez, Gates Street Elementary School, Los Angeles, Calif.
Engage in the engineering design process with inexpensive materials that can pique your students' interest in engineering. Explorations shared can be tailored to meet the needs of different learners.

NSTA Press® Session: Teaching Science Through Integrating Children's Literature and Outdoor Investigations
(Grades 3–6) *Salon 7, Rosen Plaza*
Science Focus: GEN, INF, NGSS
Christine Royce (@caroyce; *caroyce@aol.com),* Shippensburg University/PSTA, Shippensburg, Pa.
Steve Rich (@bflyguy; *bflywriter@comcast.net),* West GYSTC, Douglasville, Ga.
Engage in lessons that combine investigations in outdoor science topics with paired children's literature that enhance the topic and integrate other discipline areas.

STEM in Elementary? Who Has Time?
(Grades K–5) *Salon 8, Rosen Plaza*
Science Focus: ETS, SEP
Denise Webb *(dewebb@forsyth.k12.ga.us),* Coal Mountain Elementary School, Cumming, Ga.
Amber Hoke, Chattahoochee Elementary School, Cumming, Ga.
Through hands-on investigations, every K–5 student at our school participates in STEM labs and engineering investigations that support the *CCSS* and *NGSS*! Find out how we did it. Take home resources including career connections.

10:00–10:30 AM Presentations

Growing Master Teachers and Top Notch Curriculum Resources Through Content Leadership Teams
(Grades 6–12) *Bayhill 18, Hyatt*
Science Focus: GEN
Janice Creneti, Pinellas County Schools, Largo, Fla.
Find out how to harness the power of your master teachers and grow the leadership capacity of newer teachers to strengthen teaching quality across your district.

Raising Students' Communication Skills Through Literacy in Science Strategies
(Grades 7–College) *Bayhill 31, Hyatt*
Science Focus: LS1, LS2, LS4, INF, CCC1, CCC2, CCC6, SEP
Carmen Woodhall *(woodhallc@ecu.edu),* East Carolina University, Greenville, N.C.
Vicky Zygouris-Coe *(vzygouri@ucf.edu),* University of Central Florida, Orlando
Students' understanding of science concepts can be augmented through specific science literacy strategies that can result in higher communication skills in science.

Sustainable Development-based Hands-On Activities That Relate to the *NGSS*
(Grades 3–9) *Salon 9, Rosen Plaza*
Science Focus: ESS, CCC
Paul Kelter *(paul.kelter@ndsu.edu),* North Dakota State University, Fargo
Learn about hands-on activities focused on the natural resources and their uses, including mining for minerals, biodegradability of packing materials, petroleum use and misuse, and population and resource distribution. Lessons relate science, math, and social issues to the *NGSS*.

10:00–11:15 AM Exhibitor Workshops

Case of the Missing Records
(Grades 8–College) *W221A, Convention Center*
Science Focus: INF, LS
Sponsor: Edvotek Inc.
Danielle Snowflack *(info@edvotek.com)* and **Brian Ell** *(info@edvotek.com),* Edvotek Inc., Washington, D.C.
Explore genetic diversity using forensic science! Your students become crime scene investigators as they analyze biological evidence using DNA fingerprinting, a technique that identifies people via genetic differences. Gel electrophoresis is used to create DNA fingerprints from crime scene and suspect samples. A match between samples suggests which suspect committed the crime. Free flash drive/T-shirt drawing.

National Geographic Explorers and STEM—From the World to Your Classroom!
(Grades 2–5) *W221C, Convention Center*
Science Focus: GEN, SEP
Sponsor: National Geographic Learning
Tom Hinojosa *(tom.hinojosa@cengage.com),* National Geographic Learning, Littleton, Colo.
National Geographic provides students with exciting examples of an integration of disciplines that is "STEM." Focusing on innovation and the applied process of addressing questions and designing solutions, Emerging Explorers provide ideal role models to teach awareness of STEM fields and occupations so you can integrate STEM teaching into your classroom.

Fantastical Chemistry Demos for All Classrooms
(Grades 4–12) *W222A, Convention Center*
Science Focus: PS
Sponsor: Educational Innovations, Inc.
William Richey, Xenia High School, Xenia, Ohio
These super fun and exciting chemistry demonstrations can be used by all teachers at any level to get your students excited about the amazing world of chemistry. These easy and practical demonstrations will truly show your students what we already know—that science is fun!

Flinn Scientific Presents Exploring Chemistry™: Connecting Content Through Experiments
(Grades 9–12) *W222B, Convention Center*
Science Focus: PS
Sponsor: Flinn Scientific, Inc.
Mike Frazier *(mfrazier@flinnsci.com)* and **Irene Cesa** *(icesa@flinnsci.com),* Flinn Scientific, Inc., Batavia, Ill.
Join us as we showcase the features of our Exploring Chemistry line of kits! These best-of-the-best experiments, demonstrations, and POGIL activities ensure students really understand the concepts. Flinn's labs and activities take students on a virtual tour inside the test tube to see the world of chemistry where it begins—at the molecular level.

Molecular-Level Visualization and the *NGSS:* Promoting Conceptual Understanding
(Grades 7–College) *W223 A/B, Convention Center*
Science Focus: PS
Sponsor: Wavefunction, Inc.
Sean Ohlinger *(sales@wavefun.com),* Wavefunction, Inc., Irvine, Calif.
The new focus on conceptual understanding—prominent in the *Next Generation Science Standards,* the revised AP Chemistry Curriculum, and most state standards—makes molecular visualization a must-have tool for the classroom. Bring your laptop (Windows or Mac OS X) to this hands-on workshop and learn how to teach chemistry more effectively with *ODYSSEY® Molecular Explorer.*

Incorporate Science and Engineering Practices into Your Chemistry Lab Using PASCO Technology
(Grades 9–12) *W224A, Convention Center*
Science Focus: PS, SEP
Sponsor: PASCO scientific
Ronn Fieldhouse, PASCO scientific, Roseville, Calif.
Get hands on with PASCO technology that empowers students to construct meaning from easily collected, analyzed, and shared data! Use sensors to experiment with concepts like pH titrations. See the latest PASCO technology, including the Advanced Chemistry Sensor, Wireless Spectrometer, and data sharing in SPARKvue®—compatible with iPad, Windows, Mac OS, Android, and Chromebooks. Free sensor set for five attendees!

Bring Visual Science into Grades 6–8 Classrooms—It's a Game Changer!
(Grades 6–8) *W224B, Convention Center*
Science Focus: GEN
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Spark student interest by combining visual, auditory, and hands-on learning techniques. Harvey Bagshaw discusses and models how he teaches science with video and activities to support blended learning. Learn how to integrate compelling visuals and video and receive a one-year subscription to Carolina's Twig online video-based learning program!

Beyond Climate to Global Change: Welcome to the Anthropocene!
(Grades K–12) *W224C, Convention Center*
Science Focus: ESS
Sponsor: Pearson
Joseph Levine, Author, Boston, Mass.
We live in a new geological epoch—the Anthropocene—in which human activity drives global change. Learn approaches and resources that teach about human ecology in ways that follow *NGSS* strategies and practices while informing students in ways that empower them to make informed decisions and take positive actions.

Earth and Space Science—More Pertinent Today, More Important to Our Future
(Grades 9–12) *W224D, Convention Center*
Science Focus: ESS
Sponsor: It's About Time
Presenter to be announced
Recent developments and the increasing societal importance of Earth-related issues have created a need for understanding Earth's systems. Experience how the American Geosciences Institute's new edition of *EarthComm®* can help educators successfully deepen Earth science learning using a truly STEM project-based approach in their classroom.

Waves, Energy, and Color
(Grades 6–8) *W224E, Convention Center*
Science Focus: ETS2, PS4
Sponsor: LAB-AIDS®, Inc.
Lisa Kelp, LAB-AIDS, Inc., Ronkonkoma, N.Y.
Although we live an EM waves–enabled lifestyle, most of us have no idea how they work. Join LAB-AIDS for an *NGSS*-based waves activity from SEPUP's *Issues and Physical Science* program. Explore light properties by investigating colors of the visible spectrum and their energy levels using phosphorescent material. SEPUP embeds research-based practices and real issues for powerful content learning.

Plate Tectonics: Continents on the Move
(Grades 6–12) *W224G, Convention Center*
Science Focus: ESS2.B
Sponsor: Simulation Curriculum Corp.
Herb Koller, Simulation Curriculum Corp., Minnetonka, Minn.
Join us as we use Simulation Curriculum's *The Layered Earth* to investigate continental drift and the theory of plate tectonics. Classroom-ready STEM lessons engage students with interactive learning activities, thought-provoking exercises, and historical links while displaying a contextual and interactive model of Earth.

The "E" in STEM: 3-D STEM Engineering
(Grades 5–College) *W224H, Convention Center*
Science Focus: ETS
Sponsor: WhiteBox Learning
Graham Baughman *(graham@whiteboxlearning.com),* WhiteBox Learning, Louisville, Ky.
Engage your students in the complete engineering design process. WhiteBox Learning provides standards-, web-, and project-based applied STEM learning applications. Gliders2.0, Rover2.0, Structures2.0, Prosthetics2.0, MousetrapCar2.0, GreenCar2.0, Rockets2.0, and Dragster2.0 allow students to build, analyze, and simulate their designs, and compete "virtually," 24/7, all around the world…how cool is that?!?

10:00–11:30 AM Exhibitor Workshop

Integrate iPad, Chromebook, and BYOD with Vernier Technology
(Grades 3–College) *W221B, Convention Center*
Science Focus: GEN, SEP4
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—including our new wireless sensors—to conduct investigations using Graphical Analysis for iOS and Android, or Vernier Data Share for Chromebooks and BYOD environments. These tools can help you address the *NGSS*, as well as many states' standards.

10:30 AM–12 Noon Exhibitor Workshop

DNA Detectives: Who Killed Jose?
(Grades 9–College) *W224F, Convention Center*
Science Focus: LS
Sponsor: Bio-Rad Laboratories
Sherri Andrews *(sherri_andrews@bio-rad.com),* Bio-Rad Laboratories, Hercules, Calif.
In this hands-on lab, solve a theatrical crime scene using biotechnology skills such as DNA gel electrophoresis, restriction digestion, and pipetting. Learn about the Innocence Project and how the wrongly accused can be exonerated.

10:30 AM–12:30 PM Hands-On Workshop

ACS Session: Energy in Chemistry: A Particulate View
(Grades 9–11) *Bayhill 22, Hyatt*
Science Focus: PS
Marta Gmurczyk *(m_gmurczyk@acs.org),* American Chemical Society, Washington, D.C.
Participants will engage in "modeling activities" that can help students better understand energy transfer during physical and chemical processes by building and analyzing particulate models of matter. These activities are designed to deepen students' conceptual understanding of how kinetic and potential energy of particles change during phase changes and in chemical reactions, and how this information can be used to analyze changes in our surroundings.

11:00 AM–12 Noon Featured Presentation

Using the Tools of the *NGSS* to Support Quality Science Instruction

(General) *Chapin Theater, Convention Center*

Science Focus: GEN, NGSS

Stephen L. Pruitt (@DrSPruitt), Senior Vice President, Content, Research and Development, Achieve Inc., Washington, D.C.

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

Stephen will provide updates on the various *NGSS* tools under development and how to use them with teachers to provide a deeper understanding of the *NGSS*.

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

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

11:00 AM–12 Noon Presentations

NSTA Press® Session: Uncovering Students' Ideas in the STEM Disciplines

(Grades 3–College) *Bayhill 18, Hyatt*

Science Focus: ETS

Page Keeley *(pagekeeley@gmail.com),* 2008–2009 NSTA President, Fort Myers, Fla.

Joyce Tugel *(jtugel@mmsa.org)*, Maine Mathematics and Science Alliance, Augusta

Learn how to use formative assessment probes and strategies to uncover student thinking that links science to mathematics, technology, and/or engineering. Try out new probes in the forthcoming book, *Uncovering Student Ideas in Science, 25 STEM Formative Assessment Probes*.

Growing Options: Campus Experiences with Gardening

(Grades K–12) *Bayhill 19, Hyatt*

Science Focus: INF, NGSS

Randolph Tully (@LeeSchoolsEE; *randolphrt@leeschools.net),* School District of Lee County, Fort Myers, Fla.

School campuses offer many opportunities for students to grow. Hear about programs in which students grow plants, wildlife, and food while they themselves grow in understanding and commitment to sustainability.

SCST Session: Building a Topic Course Using Case Studies

(Grades 11–College) *Bayhill 23, Hyatt*

Science Focus: GEN

Sandra Latourelle, SUNY Plattsburgh, N.Y.

Become a more critically minded and independent learner through the use of case studies that apply key science concepts.

Differentiating for Success
(Grades 4–9) *Bayhill 24, Hyatt*
Science Focus: INF
Elyse Brunt *(ebeb2002@yahoo.com),* Florida Association of Science Teachers, Fort Lauderdale
Are you challenged by the varied learning needs of your students? Come learn methods to differentiate instruction to help students reach their potential.

CPALMS 3D: Modeling and Printing Classroom Resources for STEM Education
(Grades 6–12) *Bayhill 25, Hyatt*
Science Focus: ETS, INF
Adam Santone *(asantone@lsi.fsu.edu)* and **Melissa Dyehouse** (@cpalmsmea), Florida State University, Tallahassee
CPALMS stands for Curriculum Planning and Learning Management System and is Florida's official source for K–12 standards information. Hear how CPALMS 3D Initiative focuses on producing STEM curriculum resources related to 3-D modeling and 3-D printing. For more information, go to *3D.cpalms.org*.

Do You Need a New Science Lab?
(Grades 6–12) *Bayhill 26, Hyatt*
Science Focus: GEN
Ruth Ruud *(ruth.ruud@yahoo.com),* Cleveland State University, Cleveland, Ohio
Come learn how to win a Shell Science Lab Makeover ($20,000 value) for your school. You will have an opportunity to actually begin to complete the application and have your questions answered. The Shell Science Lab Challenge invites middle school and high school science teachers (grades 6–12) in the U.S. and Canada (with special attention to urban and underrepresented groups) to illustrate replicable approaches to science lab instruction using limited school and laboratory resources.

A Tool to Develop Preservice Teachers: NSTA Learning Center
(Grades K–12) *Bayhill 28, Hyatt*
Science Focus: GEN
Al Byers *(abyers@nsta.org),* Assistant Executive Director, Government Partnerships and e-Learning, NSTA, Arlington, Va.
Flavio Mendez *(flavio_m@nsta.org),* Senior Director, Learning Center/SciLinks, NSTA, Arlington, Va.
Come learn about a new online system to assist professors in creating customized e-textbooks using the Learning Center's interactive and e-print resources for their preservice teachers.

Inquiry 2.0: Ramping Up Inquiry to Meet the *NGSS*
(Grades 5–College) *Bayhill 31, Hyatt*
Science Focus: GEN, NGSS
Lee Meadows, The University of Alabama at Birmingham
You've taught by inquiry. Now you need to step up to the *Next Generation Science Standards*. Come listen, learn, and share how do-able this is.

AAPT Session: Setting the Stage—Knowing Physics Isn't Enough
(Grades 9–12) *Manatee Spring I, Hyatt*
Science Focus: PS
Terry Barchfeld, Timber Creek High School, Orlando, Fla.
Emphasis will be placed on modeling and discussing methods for "selling" physics to your students. Think of it as a chance to explore the side of teaching that involves helping people see why you're interested in the topic.

Using the iPad App StoryMaker to Teach and Test Variables in Elementary Classrooms
(Grades 2–7) *Ballroom B, Rosen Plaza*
Science Focus: GEN, SEP
Michael Deiter *(mdeiter@columbia.k12.pa.us),* Park Elementary School, Columbia, Pa.
Learn how to teach your students to identify and test variables and communicate results as a form of application and assessment.

AMSE Session: K–8 Teachers Helping Students Make Sense of Climate Change
(Grades K–8) *Salon 6, Rosen Plaza*
Science Focus: ESS
Bobby Jeanpierre *(bobby.jeanpierre@ucf.edu),* University of Central Florida, Orlando
Join me as I share teacher-developed lesson plans as models to help address some of the challenges in teaching climate change in K–8 classrooms.

Integrated Strategies for Addressing *CCSS ELA/Mathematics* Through Elementary STEM Activities
(Grades P–6) *Salon 9, Rosen Plaza*
Science Focus: ETS
Roxanne Molina *(rmolina1@nova.edu),* **Herminia Rivera** *(hr176@nova.edu),* and **Maryann Tobin** (@maryanntobinphd; *mt745@nova.edu),* Nova Southeastern University, Fort Lauderdale, Fla.
Strategies for addressing *Common Core State Standards,* in English language arts and mathematics through elementary STEM activities will be shared. Participants will engage in integrating *CCSS* in a STEM activity.

11:00 AM–12 Noon Hands-On Workshops

NASA's Space Forensics: Integrating Storytelling into STEM Education
(Grades 8–12) *Bayhill 21, Hyatt*
Science Focus: INF, ESS1.A, SEP1, SEP4, SEP7, SEP8
Sara Mitchell *(sara.mitchell@nasa.gov)* and **Sarah Eyermann** *(sarah.e.eyermann@nasa.gov),* Syneren Technologies and NASA Goddard Space Flight Center, Greenbelt, Md.
Explosions, collisions, and deaths—the universe contains numerous cosmic "crime scenes." Introduce students to scientific problem solving through narratives and hands-on activities.

Change from Within: Strategies to Initiate and Sustain Professional Learning Communities for Science Teachers
(Grades K–12) *Bayhill 27, Hyatt*
Science Focus: GEN, NGSS
Jennifer Mesa *(jmesa@uwf.edu),* University of West Florida, Pensacola
Rose Pringle *(rpringle@coe.ufl.edu),* University of Florida, Gainesville
Explore strategies to initiate and sustain PLCs that can foster real shifts in student science learning and deepen their understanding of the *NGSS*.

L.A.C.E.S. (Learning Activities for Cognitive Engagement in STEM)
(Grades 6–12) *Bayhill 29, Hyatt*
Science Focus: GEN
Merilyn Johnson *(merilyn.johnson@browardschools.com),* Broward County Public Schools, Fort Lauderdale, Fla.
Explore activities and resources that mirror the tasks of STEM professionals and how they can be used in the science classroom to cognitively engage the 21st-century learner.

The Human Microbiome
(Grades 9–12) *Bayhill 32, Hyatt*
Science Focus: LS2.A, LS2.C, CCC2, CCC3, CCC7
Molly Malone *(molly.malone@utah.edu),* Genetic Science Learning Center, Salt Lake City, Utah
Explore the ecosystem of the human body. Learn what we're discovering about the body's microbes and how they influence our health. Explore free materials at *learn.genetics.utah.edu.*

ASEE Session: Engaging Elementary-aged Children and Parents in Engineering
(Grades 1–6) *Manatee Spring II, Hyatt*
Science Focus: ETS, INF
David Heil *(dheil@davidheil.com),* David Heil & Associates, Inc., Portland, Ore.
Hear how to host effective family events and facilitate hands-on engineering activities designed to engage the whole family in real-world challenges.

Earth Science Rocks! Using Earth Science Activities to Engage Students as Scientists
(Grades 6–12) *Orlando Ballroom M, Hyatt*
Science Focus: ESS
Roberta Johnson Killeen *(rmjohnsn@nestanet.org),* National Earth Science Teachers Association, Boulder, Colo.
Margaret Holzer *(mholzer@monmouth.com),* Chatham High School, Chatham, N.J.
Michael Passow *(michael@earth2class.org),* Dwight Morrow High School, Englewood, N.J.
This NESTA workshop presents exemplary *NGSS*-focused activities for the geology classroom that bring fundamental concepts in Earth science to life for your students. Handouts!

CESI Session: Elementary Science Share-a-Thon
(Grades P–8) *Ballroom A, Rosen Plaza*
Science Focus: GEN
Jim McDonald (@jimscienceguy; *jim.mcdonald@cmich.edu),* Central Michigan University, Mount Pleasant
Come see a variety of elementary science ideas that can be integrated with other subjects presented by CESI members. Walk away with handouts to implement in your classroom.

Elementary Teachers—Don't Let Science Anxiety Impact Your Science Teaching
(Grades K–5) *Salon 10, Rosen Plaza*
Science Focus: GEN
Chris Culen, Brook Park Elementary School, La Grange Park, Ill.
Science anxiety is an understandable trend among many elementary teachers. Join us for inquiry-based activities that will increase your comfort and confidence in teaching science.

Creating STEM Connections—You Can Do This with Any Book!
(Grades 3–8) *Salon 3, Rosen Plaza*
Science Focus: INF
Jessica Fredricks (RhythmTrek@yahoo.com; *jessica.fredricks@polk-fl.net),* Bethune Academy, Haines City, Fla.
Presider: Amanda Smith, Bethune Academy, Haines City, Fla.
Find out how to use any book as a springboard into STEM activities that can have your students clamoring for more! This hands-on workshop uses music, visual arts, engineering, reading, and technology to enhance science education for students of all ability levels and learning styles.

ACS Middle Level Session: Density—A Molecular View
(Grades 6–8) *Salon 4, Rosen Plaza*
Science Focus: PS1.A, CCC4, CCC6, SEP2, SEP3
James Kessler *(jhkessler@acs.org),* American Chemical Society, Washington, D.C.
Explore the density of different materials on the molecular level through hands-on activities and animations from the free, completely developed 5E (Engage, Explore, Explain, Elaborate, and Evaluate) lesson plans in *www.middleschool-chemistry.com.*

The Science of Mini Golf: An Engineering Design Challenge
(Grades 3–5) *Salon 5, Rosen Plaza*
Science Focus: ETS1, PS2.A, CCC2, SEP3
Donna Barton *(dmbarton@oneclay.net),* Argyle Elementary School, Orange Park, Fla.
This is sure to be a hit in your classroom! Come play golf using student-designed obstacles and activities for a miniature golf course to investigate force and motion concepts. Take home a CD with course design ideas and an activities packet.

NSTA Press® Session: *Bringing Outdoor Science In*
(Grades K–8) *Salon 7, Rosen Plaza*
Science Focus: INF, GEN, CCC
Steve Rich (@bflyguy; *bflywriter@comcast.net),* West GYSTC, Douglasville, Ga.
Taking it outside or *Bringing Outdoor Science In*, explore school yard resources for crosscutting concepts, and learn how sticks and stems bring in STEM. Free seeds!

ASTE Session: Experiencing Communication Barriers: Building Teacher Empathy for English Language Learners
(Grades 3–8) *Salon 8, Rosen Plaza*
Science Focus: GEN
Katie Brkich *(kbrkich@georgiasouthern.edu),* Georgia Southern University, Statesboro
Join me as I share a lesson developed for use with preservice teachers teaching the importance of ELL accommodations through affective experience and empathy development.

12 Noon–1:15 PM Exhibitor Workshops

Detecting the Silent Killer: Clinical Detection of Diabetes
(Grades 8–College) *W221A, Convention Center*
Science Focus: INF, LS
Sponsor: Edvotek Inc.
Danielle Snowflack *(info@edvotek.com)* and **Brian Ell** *(info@edvotek.com),* Edvotek Inc., Washington, D.C.
More than 380 million people worldwide have diabetes, a disease that causes high blood sugar. Due to genetic predisposition and high-calorie, low-activity lifestyles, that number continues to grow. Without early treatment, diabetes causes severe medical complications. We will diagnose diabetes using simulated urinalysis and ELISA tests. Free flash drive/T-shirt drawing.

Protein Modeling: A Science Olympiad Event and the *NGSS*
(Grades 9–12) *W222A, Convention Center*
Science Focus: LS, PS
Sponsor: MSOE Center for BioMolecular Modeling
Tim Herman *(herman@msoe.edu),* 3D Molecular Designs, Milwaukee, Wis.
Through modeling, an authentic practice of science, students learn by both using models and constructing models. By using these popular kits—the Water Kit, Amino Acid Starter Kit, and Insulin: mRNA to Protein Kit, you can prepare your students to compete in the Protein Modeling Event and meet the *NGSS*.

Enhance Your Physics Classroom Demonstrations with PASCO Equipment, Sensors, and New Capstone Software!
(Grades 9–12) *W224A, Convention Center*
Science Focus: PS
Sponsor: PASCO scientific
Glenn Starkey, PASCO scientific, Roseville, Calif.
Learn how PASCO lab equipment can make your classroom demonstrations easy and reliable. During this workshop, we will present the top PASCO physics demos in rotation, induction, and waves. You'll also get hands-on experience with the newest in PASCO physics apparatus and Capstone video analysis. Free sensor set for five attendees!

Engineering, Technology, and the Application of Science K–8
(Grades K–8) *W224B, Convention Center*
Science Focus: ETS
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Ready to prepare your district's students for STEM careers? Come learn to integrate engineering processes into best practices using practical applications of science skills from practices-based inquiry lessons.

Using Problem-Based Learning to Up Your *NGSS* Game
(Grades K–11) *W224C, Convention Center*
Science Focus: GEN, NGSS
Sponsor: Pearson
Michael Padilla, 2005–2006 NSTA President, and Clemson University, Clemson, S.C.
The *NGSS* seeks to incorporate more scenario-based and Problem-Based Learning. To help prepare students in school and beyond, students need to be doing science and seeing how it fits into their daily lives. Join Pearson author Mike Padilla as he brings PBL into the science classroom to help prepare students for future science and technology careers.

Active Chemistry and Active Physics: *Project-Based Inquiry Science*™ That Engages Students
(Grades 9–12) *W224D, Convention Center*
Science Focus: PS
Sponsor: It's About Time
Arthur Eisenkraft, 2000–2001 NSTA President, and UMass Boston, Mass.
Active Chemistry and Active Physics are NSF research-based curricula that make chemistry and physics accessible to ALL high school students. Find out how Active Chemistry and Active Physics can enhance your instruction. Watch what will happen to the quality of students' work when they take ownership of real-world scientific challenges that matter to them.

DuPont Presents: The Science of Food Safety
(Grades 6–12) *W224E, Convention Center*
Science Focus: ETS2, LS1
Sponsor: LAB-AIDS®, Inc.
Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.
We need to feed the world in a safe manner. Explore food safety issues such as food-borne illness, chemical additives, packaging to prevent microbial growth, fresh fruit oxidation, and enhanced nutrient content. Investigate the ability of chemicals to inhibit growth of a simulated microbe and determine how additives can be used to increase food supply safety.

12 Noon–1:30 PM Exhibitor Workshop

Integrate iPad, Chromebook, and BYOD with Vernier Technology
(Grades 3–College) *W221B, Convention Center*
Science Focus: GEN, SEP4
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—including our new wireless sensors—to conduct investigations using Graphical Analysis for iOS and Android, or Vernier Data Share for Chromebooks and BYOD environments. These tools can help you address the *NGSS*, as well as many states' standards.

12:15–6:30 PM Symposium

Flight of the Monarch Butterflies (SYM-1)
(Grades K–12) *Learning Labs, Orlando Science Center*
Tickets Required; $54
Katie-Lyn Bunney *(kbunney@umn.edu),* University of Minnesota Monarch Lab, St. Paul
Dolores (De) Cansler *(decansler@gmail.com),* Adjunct Teacher Trainer, Monarchs in the Classroom, St. Paul, Minn.
Ann Hobbie *(ann.s.hobbie@gmail.com),* Adjunct Teacher Trainer, Monarchs in the Classroom, St. Paul, Minn.
Jim O'Leary *(oleary@mdsci.org)* and **Maureen Sullivan,** Maryland Science Center, Baltimore
For description, see page 35.

Note: Meet your instructor by 12 Noon in Lobby D, outside of the WD2 Exhibit Hall, of the Convention Center.

12:30–2:30 PM Meeting

Florida Association of Science Teachers (FAST) Annual Meeting/Award Ceremony
Orlando Ballroom N, Hyatt

1:30–2:30 PM Exhibitor Workshop

Are Worms Smarter than Your Students? (AP Big Ideas 1, 2, 3, 4)

(Grades 9–College) *W224F, Convention Center*

Science Focus: LS

Sponsor: Bio-Rad Laboratories

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

How do genes influence behavior? Using *C. elegans* (a nematode), compare normal and mutant worm behavior in a classical conditioned learning experiment (think Pavlov's worms). Explore worm taste preferences in a simple chemotaxis assay and examine how our worm mutant links to human diseases. A great alternative to AP fruit fly behavior lab!

2:00–2:30 PM Presentation

CPALMS Perspectives: STEM Videos Featuring Experts, Teachers, Professionals, and Enthusiasts

(Grades 6–12) *Bayhill 25, Hyatt*

Science Focus: GEN, INF, NGSS

Adam Santone *(asantone@lsi.fsu.edu)* and **Melissa Dyehouse** (@cpalmsmea), Florida State University, Tallahassee

CPALMS stands for Curriculum Planning and Learning Management System and is Florida's official source for K–12 standards information. These brief, documentary-style, standards-based videos feature participants explaining math and science in interesting ways. For more information, go to *perspectives.cpalms.org.*

2:00–3:00 PM Featured Presentation

The Psychology of Teaching About Climate Change

(Grades P–5) *Chapin Theater, Convention Center*

Science Focus: ESS

Lynne Cherry (@YoungClimate; *lncherry@aol.com),* Author and Illustrator; and Producer and Director, *Young Voices for Planet* films, Thurmont, Md.

Presider: Madge Nanney, Program Representative, NSTA Orlando Area Conference, and Duval County Public Schools, Jacksonville, Fla.

Long ago, in speaking to students, Lynne realized that gloom and doom frightened young people and turned them off to hearing about environmental issues. However, when she shared other students' success stories—whether of kids saving forests, cleaning up rivers, or fighting climate change—kids were motivated to act. Join Lynne as she discusses her experiences documenting these inspiring success stories and offers strategies for communicating about climate change to youth and adults alike. We must teach about climate change and energy in a fundamentally different and carefully thought-out manner; preceding science lessons with messaging that focuses on positive success stories allowing students and adults alike to hear and absorb the science.

Lynne Cherry is an environmental lecturer and author/illustrator of dozens of award-winning children's books, including her bestsellers The Great Kapok Tree *and* A River Ran Wild *that teach children to respect Earth.*

Lynne is also the producer and director of the Young Voices for the Planet *films that are used by educational institutions such as National Geographic Education online as well as being aired on PBS TV. The films have been screened widely at international conferences such as the COP15 Climate Talks and at the United Nations. They have been shown at many film festivals worldwide and at science centers and museums such as the American Museum of Natural History in New York City.*

Lynne earned an art degree at Tyler School of Art, a teaching degree at Temple University, and a master's degree in history at Yale University. She has had artist-in-residencies at many eminent institutions—including Princeton University, The Smithsonian Institution, and Cornell. She was a recipient of the Metcalf Fellowship and has received science-writing fellowships from the Marine Biological Lab and the Woods Hole Oceanographic Institution.

2:00–3:00 PM Presentations

NSTA Press® Session: Uncovering Teachers' and College Students' Ideas in Science
(General) *Bayhill 18, Hyatt*
Science Focus: GEN, NGSS
Page Keeley *(pagekeeley@gmail.com),* 2008–2009 NSTA President, Fort Myers, Fla.
Learn how the *Uncovering Student Ideas in Science: 25 Formative Assessment Probes* extend beyond the classroom for use in K–12 teacher professional development and teacher preparation, as well as how scientists developed similar probes for use in Math Science Partnership projects and other content institutes.

Magical Illusions and Scintillating Simulations for Science: It's Showtime!
(Grades 3–College) *Bayhill 19, Hyatt*
Science Focus: GEN, INF, NGSS
Alan McCormack *(amccorma@mail.sdsu.edu),* 2010–2011 NSTA President, and San Diego State University, San Diego, Calif.
Storylines, discrepant events, and magic develop concepts in both physical and biological sciences, pique students' interest and imagination, and build creative and logical thinking skills.

NMLSTA Session: Writing a Successful Grant Proposal
(Grades K–12) *Bayhill 23, Hyatt*
Science Focus: GEN
Kitchka Petrova *(kp13b@my.fsu.edu),* Florida State University, Tallahassee
Discussion centers on the importance of external funding and how to apply for it to enrich your students' science learning experience.

NASA's High-Energy Vision: Chandra and the X-Ray Universe
(Grades 5–College) *Bayhill 26, Hyatt*
Science Focus: ESS1.A, ETS1.A, ETS1.C, ETS2.A, PS3.B, PS4.C, CCC1, CCC2, CCC3, CCC4, CCC5, CCC6, SEP1, SEP2, SEP3, SEP4, SEP6, SEP8
Donna Young *(donna@aavso.org),* AAVSO, Cambridge, Mass.
Peer into the solar system and distant galaxies and learn about the latest scientific discoveries—including massive black holes, neutron stars, white dwarfs, supernovas, star formation, colliding galaxies, X-ray binaries, and dark matter.

The NSTA Learning Center: Free Professional Development Resources and Opportunities for Educators
(Grades K–12) *Bayhill 28, Hyatt*
Science Focus: GEN
Flavio Mendez *(flavio_m@nsta.org),* Senior Director, Learning Center/SciLinks, NSTA, Arlington, Va.
Lost when it comes to finding online professional development resources to enhance your content knowledge and skills? With more than 11,000 resources (25% of which are free) and quality PD opportunities to assist educators with core subject content, the Learning Center has the answers! Get free resources and ICE CREAM!

Engage Your Students with NOAA's Ocean Acidification and Coral Reef Resources
(General) *Bayhill 31, Hyatt*
Science Focus: ESS
June Teisan, Einstein Fellow, NOAA, Washington, D.C.
Learn about ocean acidification through the context of coral ecosystems. A variety of free NOAA resources will be highlighted, including demos, labs, activities, and multimedia.

AAPT Session: Science in the Classroom
(Grades K–12) *Manatee Spring I, Hyatt*
Science Focus: PS
Presenter to be announced
We will explore hands-on science activities that teachers and students can do in the classroom.

STEM and the *NGSS*
(Grades 6–9) *Salon 6, Rosen Plaza*
Science Focus: ETS
Matthew Hartman (@ecybermission; *mhartman@nsta.org),* eCYBERMISSION Content Coordinator, NSTA, Arlington, Va.
Hear how the *NGSS* fits with Science, Technology, Engineering, and Math (and the *CCSS*!) as well as information about the eCYBERMISSION competition.

Saturday Biomedical Sciences Academy: Elementary Science Enrichment
(Grades 4–6) *Salon 9, Rosen Plaza*
Science Focus: INF, LS
Alicia Simmons *(acsimmon@utmb.edu)* and **Michele Marquette** *(mlmarque@utmb.edu),* The University of Texas Medical Branch at Galveston
Find out how to design and implement an enrichment program for grades 4–6 students and engage in several sample forensics activities used in the program.

Visit Orlando has an Information Desk located in the central lobby (second level) of the Convention Center. See page 13 for details and hours.

2:00–3:00 PM Hands-On Workshops

Forensics Science: Using Math and Science to Solve Crimes
(Grades 8–12) *Bayhill 21, Hyatt*
Science Focus: GEN, NGSS
Jacklyn Bonneau *(bonneau@wpi.edu)*, Massachusetts Academy of Math & Science at WPI, Worcester
Observing patterns is the backbone of science and mathematics. When those patterns solve a crime, students enjoy doing mathematics and science without even knowing it.

Exploring Vocabulary in the Science Classroom
(Grades 1–12) *Bayhill 27, Hyatt*
Science Focus: GEN, SEP8
Jeremy Peacock (@jeremy_peacock; *peacock.jeremy@gmail.com),* Northeast Georgia RESA, Winterville
Amy Peacock (@peacock_science; *peacocka@clarke.k12.ga.us)*, Clarke County School District, Athens, GA
Which comes first? Vocabulary or understanding? We will use the 5-E (Engage, Explore, Explain, Elaborate, and Evaluate) model to demonstrate how explorations and context support student understanding and vocabulary development.

Using Microscale Investigations in Chemistry Classes
(Grades 9–12) *Bayhill 29, Hyatt*
Science Focus: PS1, PS2, CCC3, SEP3, SEP4, SEP6
Michael Mury *(m_mury@acs.org)*, American Chemical Society, Washington, D.C.
Microscale labs allow students to conduct meaningful scientific investigations while learning green chemistry principles such as generating less waste. Learn about several microscale investigations, including double displacement/precipitate reactions and titration.

The Biggest Bangs Since the Big Bang: NASA's Hunt for Gamma Ray Bursts
(Grades 7–College) *Bayhill 32, Hyatt*
Science Focus: ESS
Robert Sparks (@halfastro; *rsparkles@aol.com),* National Optical Astronomy Observatory, Tucson, Ariz.
Gamma ray bursts release more energy in seconds than our Sun will in 10 billion years. Discover how NASA is unraveling the mysteries of these strange events, which signal the birth of a black hole. Free NASA materials!

ASEE Session: Engineering Design Cycles and the *CCSS*
(Grades K–12) *Manatee Spring II, Hyatt*
Science Focus: ETS
Nancy Ruzycki, University of Florida, Gainesville
Leave with a simple template that teachers and coaches can use to assess and adjust current engineering activities and to design their own activities to support their core curriculum standards.

National Earth Science Teachers Association (NESTA) Rock and Mineral Raffle
(General) *Orlando Ballroom M, Hyatt*
Science Focus: ESS
Roberta Johnson Killeen *(rmjohnsn@nestanet.org),* National Earth Science Teachers Association, Boulder, Colo.
Margaret Holzer *(mholzer@monmouth.com),* Chatham High School, Chatham, N.J.
NESTA offers more than 50 specimens to choose from for a chance to win display-quality specimens of rocks, minerals, fossils, and other Earth science–related materials.

Cooling the Sidewalk for Ants
(Grades P–1) *Salon 10, Rosen Plaza*
Science Focus: ETS
Skyler Wiseman *(skylerb@wustl.edu),* Washington University in St. Louis, Mo.
Follow the progress of kindergartners designing sunshades for small creatures on their playground as they apply science and engineering practices. Handouts!

CESI Session: Integrating Science and Literacy: Proven Strategies Developed from Evidence-based Practices
(Grades 1–5) *Salon 3, Rosen Plaza*
Science Focus: GEN, SEP
Jim McDonald (@jimscienceguy; *jim.mcdonald@cmich.edu),* Central Michigan University, Mount Pleasant
Find out how to integrate science with literacy and walk away with 33 proven instructional strategies to use in your classroom right away.

ACS Middle Level Session: The Periodic Table, Energy Levels, and Bonding
(Grades 6–8) *Salon 4, Rosen Plaza*
Science Focus: PS1.A, CCC1, CCC4
James Kessler *(jhkessler@acs.org),* American Chemical Society, Washington, D.C.
Explore the periodic table and bonding through a card game, molecular animations, and video from the free, completely developed 5E (Engage, Explore, Explain, Elaborate, and Evaluate) lesson plans in *www.middleschoolchemistry.com.*

Inquiry in Action: Investigating Matter Through Inquiry
(Grades 3–8) *Salon 5, Rosen Plaza*
Science Focus: PS1.A, PS1.B, CCC6, SEP1, SEP2, SEP3, SEP5, SEP6
Patti 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.*

NSTA Press® Session: *Picture-Perfect Science Lessons: Using Children's Books to Guide Inquiry*
(Grades K–5) *Salon 7, Rosen Plaza*
Science Focus: GEN, INF, CCC, DCI
Emily Morgan (@EmilyMorganNTYS; *emily@pictureperfectscience.com),* Picture-Perfect Science, West Chester, Ohio
Karen Ansberry *(karen@pictureperfectscience.com),* Mason (Ohio) City Schools
Join NSTA Press authors Emily Morgan and Karen Ansberry as they share how to use science-related picture books to integrate the *NGSS* and the *CCSS*.

Let's Get Physical—Water, Wind, and Weather
(Grades P–4) *Salon 8, Rosen Plaza*
Science Focus: PS
Ruth Ruud *(ruth.ruud@yahoo.com),* Cleveland State University, Cleveland, Ohio
Juliana Texley @Juliana.Texley; *juliana.texley@nsta.org),* NSTA President, Boca Raton, Fla.
Don't look now—but the *CCSS* asks that you teach physical science as early as kindergarten, and the *NGSS* have very specific goals for early primary. No more procrastinating! The good news is that you have your equipment. Come get easy activities, lit basics, and basic teacher background so that you can start right away!

2:00–3:15 PM Exhibitor Workshops

Using the Polymerase Chain Reaction to Identify Genetically Modified Foods

(Grades 8–College) *W221A, Convention Center*

Science Focus: LS3.A

Sponsor: Edvotek Inc.

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

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

Help with Aligning New Teaching Strategies to Florida Science and Literacy Standards

(Grades K–12) *W221C, Convention Center*

Science Focus: GEN, CCC, SEP

Sponsor: LJ Create

Edgar Villarreal, LJ Create, Orlando, Fla.

Experience LJ Create's engaging active learning platform of K–12 cloud-based bilingual science resources. Strategies will include integrating Florida Next Generation Sunshine State Standards with the new literacy standards, effectively using hands-on scientific inquiry, incorporating engineering design and STEM challenges into science lessons, and showing how to access appropriate support and test-preparation elements.

Telling Molecular Stories with David Goodsell's Cellular Landscapes

(Grades 9–College) *W222A, Convention Center*

Science Focus: LS

Sponsor: 3D Molecular Designs

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

These amazing landscapes allow you to tell molecular stories. In "Your Flu Shot in Action" story, students trace the expression of an antibody gene from the nucleus to the endoplasmic reticulum where docked ribosomes synthesize it. Then the antibody continues to the cell surface via the Golgi and secretory vesicles.

Teaching Academic Vocabulary for Comprehension and Retention

(Grades K–12) *W222B, Convention Center*

Science Focus: LS2, CCC4, CCC5

Sponsor: Edusmart

Shana Tirado and **Michele Wiehagen,** Hillsborough County Public Schools, Tampa, Fla.

Research indicates that the more students interact with key terms in a variety of different ways, the greater their depth of conceptual understanding. Join us as we integrate Dr. Marzano's Six-Step Process with multimedia and hands-on activities that provide opportunities to interact with key terms in a variety of ways for increased comprehension and retention.

STEM for Young Children: Prepare for Success!

(Grades P–K) *W223 A/B, Convention Center*

Science Focus: ETS, SEP

Sponsor: ETA hand2mind

Sara Moore *(smoore@hand2mind.com),* ETA hand2mind, Vernon Hills, Ill.

Justin Yates *(jtyates@iemail.tamu.edu),* Texas A&M University, College Station

How can Pam the Raccoon build a strong camping tent? What happens when she loses tent poles? Early STEM education is critical to maintain natural interest. See an integrated STEM module with applications of mathematics, science, and literacy. ETA hand2mind and Texas A&M developed a series of classroom-tested modules that balance rigor and ease of use.

Introduction to Wisconsin Fast Plants®

(Grades K–12) *W224B, Convention Center*

Science Focus: LS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

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

STEM and *NGSS* Inquiry in Chemistry—Effective, Efficient, Economical
(Grades 6–12) *W224C, Convention Center*
Science Focus: PS
Sponsor: Pearson
Ed Waterman, Retired Educator, Fort Collins, Colo.
Learn how to transition to a STEM and *NGSS* student-centered chemistry classroom by implementing inquiry activities that are safe, simple, easy to use, material conserving, time efficient, and effective. Safety and differentiation are built in. Teach core content while fostering problem solving, creativity, and invention. Students design original experiments not possible with traditional methods.

***Engineering the Future*™: A Practical Approach to STEM for High School**
(Grades 9–12) *W224D, Convention Center*
Science Focus: ETS
Sponsor: It's About Time
Presenter to be announced
STEM—it's a real need. *Engineering the Future* is a real answer. See how the Museum of Science, Boston has packaged a solution that makes implementing STEM easy. Find out how *Engineering the Future*'s real-world projects give students an opportunity to see engineering as part of their everyday world.

Investigating a Cliff Model
(Grades 6–8) *W224E, Convention Center*
Science Focus: ESS2, ETS2
Sponsor: LAB-AIDS®, Inc.
Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.
Here's your chance to engineer a coastal breakwater. Using a unit from LAB-AIDS' *Issues and Earth Science*, analyze design trade-offs. Explore how the natural world is influenced by our engineered world, creating more societal issues that must be solved through engineering. SEPUP embeds the engineering practices and uses real issues to deliver powerful content learning.

Stellar Evolution Made Easy
(Grades 6–12) *W224G, Convention Center*
Science Focus: ESS1.A
Sponsor: Simulation Curriculum Corp
Herb Koller, Simulation Curriculum Corp., Minnetonka, Minn.
Where do stars come from? What happens during their lifetime? How do we know a star is dying? Where are the stellar graveyards? Join us as we answer these and other questions using Simulation Curriculum's award-winning *Starry Night* lessons and learn how to access a free classroom-ready lesson.

MINDSTORMS® EV3 Robotics in the Middle School Classroom—Getting Started
(Grades 6–9) *W224H, Convention Center*
Science Focus: GEN, SEP
Sponsor: LEGO Education
James Jones, Ocoee High School, Ocoee, Fla.
Learn firsthand how LEGO Education MINDSTORMS EV3 can get your students excited as they model real-life mechanisms and solve real-world challenges, all while building the critical-thinking and creative problem-solving skills that will serve them well for a lifetime.

2:00–3:30 PM Exhibitor Workshop

Physics and Physical Science with Vernier
(Grades 7–College) *W221B, Convention Center*
Science Focus: PS
Sponsor: Vernier Software & Technology
David Carter *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
In this hands-on workshop, you will use various digital tools—such as probeware—to conduct experiments from our popular physics and physical science lab books. Use LabQuest Mini with a computer, or LabQuest 2 as a standalone device, with a computer, or wirelessly to iPad, Chromebook, and BYOD environments.

2:00–4:00 PM Roundtable

NSTA's Exemplary Science Programs (ESP) Meeting Current Reform Efforts

(General) *Bayhill 17, Hyatt*

Science Focus: GEN, SEP1, SEP8

ESP Coordinator: Jeff Weld

Jeff Weld, Iowa Governor's STEM Advisory Council, Cedar Falls

Karl Spencer *(karl.spencer@visualrealization.com), Visualrealization.com,* Houston, Tex.

Ellen Yezierski *(yeziere@miamioh.edu),* Miami University, Oxford, Ohio

Deborah Herrington *(herringd@gvsu.edu),* Grand Valley State University, Allendale, Mich.

Alaina Rutledge *(arutledge@invent.org),* Invent Now, Inc., North Canton, Ohio

Catherine Matthews *(cmatthews@uncg.edu),* The University of North Carolina at Greensboro

Kim Sadler *(kim.sadler@mtsu.edu),* Middle Tennessee State University, Murfreesboro

Allan Feldman *(afeldman@usf.edu),* University of South Florida, Tampa

Troy Sadler (@ReSTEMInst; *sadlert@missouri.edu),* University of Missouri, Columbia

The Four Goals/Justifications for Science were used by the National Science Education Standards (NSES)—first offered by Project Synthesis in 1981 in K–16 settings. The NSES, in turn, was used as a guide in the development of the recent *Next Generation Science Standards.* The goals indicate what students should experience while: 1) Doing Science; 2) Solving Personal Problems; 3) Solving Societal Problems; and 4) Making Career Choices.

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!

2:00–4:00 PM Hands-On Workshops

Retiring? Tricks and Tips for the Next Phase of Your Life

(General) *Bayhill 20, Hyatt*

Science Focus: GEN

Joyce Gleason *(joycegle@earthlink.net),* Educational Consultant, Punta Gorda, Fla.

In this workshop sponsored by the Retired Members Advisory Board, experts will explore topics like finances, volunteering, travel, consulting, liability, writing, caregiving, elderly driving, NSTA benefits, and other topics that can add spark to the retirement years.

ACS Session: Energy in Chemistry: An Atomic View

(Grades 9–12) *Bayhill 22, Hyatt*

Science Focus: PS

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

Engage in "argumentation activities" that can help students understand energy transfer at the atomic level by building arguments based on evidence and scientific models and ideas. These activities are designed to deepen students' conceptual understanding about atomic models of matter, quantization of energy, and atomic emission spectroscopy.

2:00–5:00 PM Short Course

Super Science Stations: Differentiation for All Students (SC-3)

(Grades 3–5) *Okeechobee 1, DoubleTree*

Tickets Required; $21

Ariane Huddleston (@sciencepenguin), The Science Penguin, Inc., Austin, Tex.

For description, see page 36.

2:00–6:00 PM Short Course

NSTA Press® Session: Phenomenon-based Learning: Students Learning Science the Way Scientists Do (SC-4)

(Grades 3–College) *Coral A, DoubleTree*

Tickets Required; $76

Matt Bobrowsky *(mbobrowsky@desu.edu),* Delaware State University, Dover

For description, see page 36.

2:30–3:00 PM Presentation

Using Career Academies to Integrate STEM in Real-World Applications

(Grades 9–12) *Bayhill 24, Hyatt*

Science Focus: INF, ESS, ETS

Alicia Pressel, Creekside High School, St. Johns, Fla.

The Academy of Environmental and Urban Planning is a STEM Academy that teaches students environmental science, technology, and engineering. Students have opportunities to earn industry certifications, gain real-world experience, and have internships through community partnerships.

3:00–4:00 PM Exhibitor Workshop

Communicating Science Through Lab Notebooking

(Grades 9–College) *W224F, Convention Center*

Science Focus: GEN, NGSS

Sponsor: Bio-Rad Laboratories

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

Maintaining a proper lab notebook is key to communicating processes and findings to build on results as well as making a difference in awarding patents. Find out what the critical elements are to properly document results and how to assess student notebooks using a rubric.

3:30–4:00 PM Presentations

STEM Enrichment—Sustainability Through Hydroponics and Aquaculture at Your School—Make It Happen!

(Grades 6–College) *Bayhill 19, Hyatt*

Science Focus: ETS, CCC

Cherie Sukovich *(cherieas@leeschools.net),* The Alva School, Alva, Fla.

Joe Mallon *(josephcm@leeschools.net),* Island Coast High School, Cape Coral, Fla.

Find out how to stimulate students AND overcome the logistical and administrative aspects of incorporating aquaculture, hydroponics, and aquaponics into your STEM curriculum. Resources provided.

STEM in the Park: A Model Program That Provides Roots for STEM Learning

(General) *Bayhill 26, Hyatt*

Science Focus: GEN, INF, CCC, SEP

Eric Worch *(eworch@bgsu.edu),* Bowling Green State University, Bowling Green, Ohio

STEM in the Park is a free community event featuring interactive STEM activities aimed to increase awareness, interest, and knowledge in STEM and STEM careers.

Infusing Literature into Science Instruction in Order to Promote the *Next Generation Science Standards*

(Grades P–8) *Salon 6, Rosen Plaza*

Science Focus: GEN, NGSS

Marcia Walker, Trevecca Nazarene University, Nashville, Tenn.

For centuries, there has been a perceived connection between science and the arts, including literature. This connection is now being introduced to children as part of an effective curriculum that includes subject integration. Over the past two decades, educators have turned more attention toward integrated curricula, particularly the introduction of literature into science instruction.

3:30–4:30 PM Presentations

Exploring Climate Change Using the Eyes in the Sky
(Grades 8–College) *Bayhill 23, Hyatt*
Science Focus: ESS3.C, ESS3.D
Suzanne Banas *(sbanas@dadeschools.net),* South Miami Middle Community School, Miami, Fla.
By using NEO (NASA Earth Observations) satellite images and NIH ImageJ to animate the images, this project has students explore various aspects of climate change. Participants will get a glimpse of the project, see student work, and get a demonstration of the two free programs.

Authors Wanted! Learn How to Submit an Article for Publication in an NSTA Journal
(General) *Bayhill 28, Hyatt*
Science Focus: GEN
Ken Roberts, Assistant Executive Director, Journals, NSTA, Arlington, Va.
Meet with editors to learn how to successfully prepare and submit an article for publication in an NSTA journal.

The Greater Southern Tier of New York STEM Education Initiative
(Grades K–12) *Bayhill 31, Hyatt*
Science Focus: GEN
Jeremy Wheeler *(jwheeler@gstboces.org)* and **Brande Flaitz** *(bflaitz@gstboces.org),* The Great Southern Tier BOCES, Bush Campus, Elmira, N.Y.
Join us to learn how the GST STEM Education Initiative has made a positive impact on STEM education in New York State. Discussion centers on the project plan, critical partnerships, and current activities.

AAPT Session: Choose Your Own Adventure: Studio Physics Courses at the University of Central Florida
(Grades 11–College) *Manatee Spring I, Hyatt*
Science Focus: PS, SEP8
Jacquelyn Chini *(jchini@ucf.edu),* University of Central Florida, Orlando
Attention will be paid to the advantages and barriers to implementation of a range of studio methods of physics instruction.

I'll Talk About TV, But I Will Not Talk About Science
(Grades 6–8) *Ballroom B, Rosen Plaza*
Science Focus: GEN, NGSS
Autumn Nowlin *(autumn.nowlin@gmail.com),* Yulee Middle School, Yulee, Fla.
Jennifer Bray *(brayj@levy.k12.fl.us),* Bronson Middle High School, Bronson, Fla.
Increase student discussion and deconstruct student misconceptions using an inquiry-based science curriculum known as IQWST. IQWST (which stands for Investigating and Questioning our World through Science and Technology) pushes for understanding through evidence-based reasoning.

Magnetics
(Grades P–5) *Salon 9, Rosen Plaza*
Science Focus: PS
Carlos Villa *(villa@magnet.fsu.edu),* National High Magnetic Field Laboratory, Tallahassee, Fla.
Hear how National High Magnetic Field Laboratory educators are using inquiry activities to teach the topics of magnets and magnetism. You're guaranteed one new idea using magnets for your classroom!

3:30–4:30 PM Hands-On Workshops

Spectroscopy—Stairway to the Stars
(Grades 10–College) *Bayhill 21, Hyatt*
Science Focus: ESS1.A, ETS1.B, ETS2.A, PS1.C, PS3.A, PS4.B, PS4.C, CCC1, CCC2, CCC4, CCC5, SEP1, SEP2, SEP3, SEP4, SEP6
Donna Young *(donna@aavso.org),* AAVSO, Cambridge, Mass.
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.

Manipulatives to Models, II
(Grades 9–College) *Bayhill 32, Hyatt*
Science Focus: ESS, LS
Linda Kilch *(linda.kilch@sdhc.k12.fl.us)* and **Dodi Cline** *(dodi.cline@sdhc.k12.fl.us),* King High School, Tampa, Fla.
Experience hands-on, inquiry science as we share our teacher-developed manipulatives and models we use in our biology classrooms. Workshop includes biochemistry and ecology lessons.

ASEE Session: SENSE IT: Student-created Water Quality Sensors

(Grades 7–12) *Manatee Spring II, Hyatt*

Science Focus: ETS

Liesl Hotaling *(lieslhotaling@yahoo.com),* Eidos Education, Highlands, N.J.

The SENSE IT program challenges participating students to construct, deploy, and interpret data from their own water quality sensors. The hope is that by building their own sensors, students will gain a better understanding not only of how sensors work, but also to demystify the "black box" effect associated with using commercially available probes in classrooms.

Using Data in the Earth and Space Science Classroom to Engage Students as Real Scientists

(Grades 6–12) *Orlando Ballroom M, Hyatt*

Science Focus: ESS, CCC, SEP

Roberta Johnson Killeen *(rmjohnsn@nestanet.org),* National Earth Science Teachers Association, Boulder, Colo.

Margaret Holzer *(mholzer@monmouth.com),* Chatham High School, Chatham, N.J.

Michael Passow *(michael@earth2class.org),* Dwight Morrow High School, Englewood, N.J.

This NESTA-ESIP hands-on workshop highlights freely available lessons and strategies integrating data acquisition, analysis, and interpretation into the classroom, engaging students in the scientific process.

STEM in the Primary Classroom

(Grades K–2) *Salon 10, Rosen Plaza*

Science Focus: GEN, SEP

Deidre Burchett *(dburchett@gstboces.org),* The Great Southern Tier BOCES, Bush Campus, Elmira, N.Y.

Primary students are natural scientists—how do we as educators cultivate their scientific nature to ensure they're ready to compete in the 21st century?

Learning in Florida's Environment (LIFE): A Model for Informal/Formal Science Collaboration

(Grades 5–9) *Salon 3, Rosen Plaza*

Science Focus: INF, ESS2.C, ESS3.C, LS2.A, SEP2

Gregory Ira *(greg.ira@dep.state.fl.us),* Florida Dept. of Environmental Protection, Tallahassee

Barbara Rapoza, Chairperson, NSTA Orlando Area Conference, FAST Liaison, and New River Middle School, Fort Lauderdale, Fla.

The Learning in Florida's Environment (LIFE) Program engages middle school students and teachers in hands-on field experiences on Florida's public conservation lands. Join us for an outline of the research basis for the program, a demonstration of a typical field lab, and a review of recent results from a regional project involving eight sites along the Gulf of Mexico.

ACS Middle Level Session: Polarity of the Water Molecule and Its Consequences

(Grades 6–8) *Salon 4, Rosen Plaza*

Science Focus: PS1.A, CCC4, CCC6, SEP2, SEP3

James Kessler *(jhkessler@acs.org),* American Chemical Society, Washington, D.C.

Explore water's characteristic properties and what makes water a polar molecule through hands-on activities and molecular animations from the free completely developed 5E (Engage, Explore, Explain, Elaborate, and Evaluate) lesson plans in *www.middleschoolchemistry.com.*

Data Chats Can Be FUN!

(Grades 4–5) *Salon 5, Rosen Plaza*

Science Focus: GEN

Michele Wiehagen and **Barbara Brightman** *(barbara.brightman@sdhc.k12.fl.us),* Hillsborough County Public Schools, Tampa, Fla.

Data chats occur with all our fifth-graders—so how do we make them fun? Our standards all become games. Join us as we share carnival science games.

NSTA Press® Session: Teaching Science Through Trade Books—Exemplars from the Book and Featured Columns

(Grades 2–6) *Salon 7, Rosen Plaza*

Science Focus: GEN

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

Emily Morgan (@EmilyMorganNTYS; *emily@pictureperfectscience.com),* Picture-Perfect Science, West Chester, 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 highlight science and literature exemplars featured in their book.

***NGSS*—Make Your Lessons 3-D**

(Grades 1–5) *Salon 8, Rosen Plaza*

Science Focus: GEN, NGSS

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

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

3:30–6:30 PM Meeting

Council for Elementary Science International (CESI) Board Meeting
(By Invitation Only) *Salon 2, Rosen Plaza*

Don't forget to evaluate the sessions you attend—one person will win a Kindle Fire HD 7"! See page 14 for details.

4:00–4:30 PM Presentations

Awesome Aquaponics for the Classroom—Cheap, Easy, and STEMtabulous
(Grades 4–College) *Bayhill 19, Hyatt*
Science Focus: ETS, CCC
Cherie Sukovich *(cherieas@leeschools.net),* The Alva School, Alva, Fla.
Joe Mallon *(josephcm@leeschools.net),* Island Coast High School, Cape Coral, Fla.
Learn the basic principles of aquaponics (hydroponics and aquaculture in one sustainable system) and how to create, maintain, and incorporate a simple aquaponics system into your classroom. Discover how this innovative project applies to each science discipline. Handouts!

The Classroom "Without" Walls
(General) *Bayhill 25, Hyatt*
Science Focus: INF, ESS2.C, ESS2.D, ESS3.A, ESS3.C, ESS3.D, ETS1, LS1.B, LS1.C, LS2, LS4.B, PS1.A, PS3.B, CCC1, CCC4, CCC5, CCC7, SEP1, SEP8
Darrell Walker (@dwalker_l; *d.l.walker.1975@gmail.com),* Bertie Middle School, Windsor, N.C.
Learn about the importance of getting all student learners out of an indoor classroom and exposing them to the outdoors to raise environmental education awareness.

Earth, Wind, and Sun: Growing STEM Majors
(Grades 7–12) *Bayhill 26, Hyatt*
Science Focus: INF, ESS2.C, ESS2.D, ESS3.A, ESS3.C, ESS3.D, ETS1.B, ETS1.C, LS2.B, LS3, CCC3, CCC4, CCC5, SEP1, SEP3, SEP6, SEP8
Kathryn Orvis, Purdue University, West Lafayette, Ind.
Discussion centers on how agricultural concepts can be used to meet the *NGSS* and encourage students to choose STEM careers. Leave with examples of bioenergy activities focused on Earth, wind, and Sun.

Turning Lead to Gold—from Classroom Science to Expo-winning Science Projects
(Grades K–8) *Salon 6, Rosen Plaza*
Science Focus: INF, LS1.A, LS1.B, LS3.B, PS1.A, PS1.B, PS2.A, CCC1, CCC2, CCC6, SEP8, SEP1, SEP3, SEP5, SEP7
Jonathan Wilson *(jonathan.wilson@morgan.edu),* Morgan State University, Baltimore, Md.
Find out how to successfully engage urban K–8 students in integrated STEM projects using classroom lessons as science projects that integrate math and language arts.

4:00–5:15 PM Exhibitor Workshops

Biotechnology Basics
(Grades 6–College) *W221A, Convention Center*
Sponsor: Edvotek Inc.
Science Focus: INF, LS
Danielle Snowflack *(info@edvotek.com)* and **Brian Ell** *(info@edvotek.com),* Edvotek Inc., Washington, D.C.
Feeling overwhelmed by the complicated experiments performed in biotechnology laboratories? If so, join us for this hands-on workshop that explores biotechnology techniques commonly used in research labs (DNA isolation, PCR, and electrophoresis). These experiments can help students understand how techniques like genetic engineering work in a real-world context. Free flash drive/T-shirt drawing.

Genes, Genomes, and the New World of Personalized Medicine
(Grades 9–College) *W222A, Convention Center*
Sponsor: MSOE Center for BioMolecular Modeling
Science Focus: LS
Tim Herman *(herman@msoe.edu),* 3D Molecular Designs, Milwaukee, Wis.
Introduce students to the new science of genomics and personalized medicine with interactive tools, such as the DNA Discovery Kit, new Flow of Genetic Information Kit, and gene maps. We will tell a "genomic story" you can use to engage students by personalizing biologic genomic processes.

Engineer Excitement in Your Classroom with a Carolina STEM Challenge®
(Grades 6–12) *W224B, Convention Center*
Science Focus: GEN
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Catapult, float, and race your way into hands-on activities that engage your middle school and high school students while fostering both critical-thinking and creative problem-solving skills! Join us and experience how Carolina makes it easy to incorporate STEM into your classroom. Free handouts and door prizes!

Jump On the Project STEM Rollercoaster
(Grades K–12) *W224C, Convention Center*
Science Focus: ETS
Sponsor: Pearson
Thomas Gantt, Pearson Science Specialist, Miami, Fla.
STEM, STEM, STEM for all ages! Pearson educators will model how to engage students in real-world problem solving using Project STEM "Building a Rollercoaster" hands-on engineering workshop. Facilitate STEM in after-school programs and extended learning opportunities within schools by challenging students to create and design their own solutions to real-world problems.

DuPont Presents: Power Up and Design Your Own Battery
(Grades 6–12) *W224E, Convention Center*
Science Focus: ETS2, PS3
Sponsor: LAB-AIDS®, Inc.
Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.
Although we live in a battery-powered lifestyle, most of us have no idea how they work. Join us as we make a wet cell battery, explore the effect of using different metal electrodes on battery output, and consider ways to reduce the number of discarded batteries. The strategies modeled move toward active learning and open inquiry.

5:00–5:30 PM Presentations

Creating Your Own Textbooks
(Grades 6–College) *Bayhill 19, Hyatt*
Science Focus: GEN
Emily Glenn *(eglenn@regisjesuit.com),* Regis Jesuit High School, Aurora, Colo.
Learn how to create a dynamic, interactive course textbook. I'll feature the best sources, programs, and options available in a free, legal setting.

Differentiation of Talented and Gifted Learners' Instruction for Higher-Level Process Skills of Science Using the Polycyclic Inquiry Approach
(Grades 3–College) *Bayhill 25, Hyatt*
Science Focus: GEN
Melissa Demetrikopoulos *(mdemetr@BioPhi.org),* Institute for Biomedical Philosophy, Dunedin, Fla.
Science instruction often focuses on content knowledge with students memorizing facts and figures about the natural world. In many instances, talented and gifted (TAG) education consists of processing greater quantities of content (enrichment) or memorizing facts at a younger age (acceleration). Come learn about a better differentiated instruction approach.

Zoo Genetics: Key Aspects of Conservation Biology
(Grades 7–College) *Bayhill 26, Hyatt*
Science Focus: LS, INF, CCC1, SEP3
Jason Crean *(jcrean@lths.net),* Lyons Township High School, Western Springs, Ill.
Zoo Genetics is a free curriculum that uses segments of actual research projects from the Wildlife Genetics Laboratory in Chicago. Students collect and analyze actual data from real-world situations and hypothesize and conclude based on the data provided, all while simulating how important genetics is to biological conservation.

5:00–6:00 PM Presentations

Did You Know Google Earth Could Do That?
(Grades 3–College) *Bayhill 24, Hyatt*
Science Focus: ESS3.A
Suzanne Banas *(sbanas@dadeschools.net),* South Miami Middle Community School, Miami, Fla.
Go beyond the Google Earth "map" and learn how to create virtual field trips and make interactive tours. See how science, mathematics, geography, geology, and history subjects are enhanced by Google Earth.

Integrating STEM in the Science Classroom: Design, Engineering Practices, and Real-World Context via Model Eliciting Activities
(Grades K–12) *Bayhill 31, Hyatt*
Science Focus: GEN, SEP
Melissa Dyehouse (@cpalmsmea), **Adam Santone** *(asantone@lsi.fsu.edu),* and **Ronald Carr,** Florida State University, Tallahassee
Learn how to use Model Eliciting Activities in your classroom as your students think like engineers to solve real-world problems while learning standards-based science content.

AAPT Session: 3-D Printing as a Tool for STEM Learning
(Grades 6–College) *Manatee Spring I, Hyatt*
Science Focus: INF, PS, ETS, SEP4, SEP5
Kevin Thomas *(kevinthomas@knights.ucf.edu),* University of Central Florida, Orlando
In this session, we will discuss what physics classrooms can do with a 3-D printer, motivating your students to be engaged as well as building a justification for funding.

Citizen Science Research as the Context for Learning Elementary School Science
(Grades 3–5) *Ballroom B, Rosen Plaza*
Science Focus: GEN, NGSS
William Midden (@bobmidden; *midden.bgsu@gmail.com),* Bowling Green State University, Bowling Green, Ohio
Jim Gunner *(jgunner@perkinsschools.org),* Perkins Local School District, Sandusky, Ohio
What better way for students to master the practices of science than by participating in real science research led by professional scientists? Join us for a demonstration of the integration of citizen science research across the curricula as the context for learning in grades 3–5 throughout two school districts.

Science Content + Literacy = *Common Core* Success
(Grades 3–8) *Salon 6, Rosen Plaza*
Science Focus: GEN, NGSS
Linda Linnen *(lslinnen@aol.com),* Retired Teacher, Littleton, Colo.
Walk away with many upper elementary and middle school classroom lesson ideas appropriate for teaching literacy and science simultaneously geared toward the *CCSS*.

Ultimate K–3 Science Notebooking
(Grades 1–3) *Salon 9, Rosen Plaza*
Science Focus: GEN, SEP1, SEP2, SEP3, SEP4, SEP6, SEP8
Thomas Medcalf, School District of Palm Beach County, West Palm Beach, Fla.
Find out which notebooking strategies are most effective with early learners. Discussion centers on how to set learning goals, increase student understanding through collaborative writing, and use effective primary formative assessment strategies.

5:00–6:00 PM Hands-On Workshops

Captivate Students' Interests Beyond the Classroom with Chemistry
(Grades 8–12) *Bayhill 21, Hyatt*
Science Focus: INF, PS
Karen Kaleuati (@ACSChemClubs; *k_kaleuati@acs.org)* and **Marta Gmurczyk** *(m_gmurczyk@acs.org),* American Chemical Society, Washington, D.C.
The American Chemical Society ChemClub is a high school chemistry club that provides students with a unique opportunity to experience chemistry beyond the classroom. Join us to learn about the free, fun resources as well as experience a meeting. Handouts!

NASA Powers of 10: Scaling the Universe
(Grades 7–College) *Bayhill 27, Hyatt*
Science Focus: ESS1, LS1.B, PS1.A, CCC3
Tyson Harty *(tysonharty@gmail.com),* Jasper County High School, Monticello, Ga.
How big is big? How small is small? "Scale the Universe" as we investigate the powers of 10 with free NASA materials. Take home "TOPS: Scale the Universe" and other NASA mission materials for immediate classroom use.

The War on Cancer: The Cell Cycle and Clinical Trials

(Grades 9–12) *Bayhill 29, Hyatt*

Science Focus: LS1.D, CCC2

Jessica Mahoney *(jessica.mahoney@ocps.net),* Edgewater High School, Orlando, Fla.

Designed for regular and AP biology classes, this seven-lesson curriculum centers around the biology of cancer, incorporating biotechnology, the nature of science, and translational medicine. Join me for a preview of the curriculum and receive materials for use in your classroom.

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

(Grades 7–College) *Bayhill 32, Hyatt*

Science Focus: ESS1, ESS2.A, ETS2, PS1.B, PS3.B, PS4.B, CCC1, CCC2, CCC3, CCC4, CCC5, CCC7, SEP1, SEP2, SEP3, SEP4, SEP6, SEP7, SEP8

Donna Young *(donna@aavso.org),* AAVSO, Cambridge, Mass.

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

ASEE Session: An Effective STEM Curriculum for Girls

(Grades 7–12) *Manatee Spring II, Hyatt*

Science Focus: ETS

Stacy Gardner (@stemefg; *stacy.gardner@harpethhall.org),* Harpeth Hall School, Nashville, Tenn.

Experience an integrated STEM curriculum specifically targeted for girls that includes a focus on service learning and the engineering design process.

JetStream: An Online School for Weather

(Grades 3–9) *Salon 3, Rosen Plaza*

Science Focus: ESS, INF

Dennis Cain, National Weather Service, Fort Worth, Tex.

Explore JetStream, a free online resource from the National Weather Service. Precipitate new learning in your classroom with in-depth lesson plans and demonstrations on various aspects of weather.

ACS Middle Level Session: Chemical Change—Breaking and Making Bonds

(Grades 6–8) *Salon 4, Rosen Plaza*

Science Focus: PS1.B, CCC2, CCC4, SEP2

James Kessler *(jhkessler@acs.org),* 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 free, completely developed lesson plans in *www.middleschoolchemistry.com.*

An Engineering Fair for Everyone

(Grades 3–8) *Salon 5, Rosen Plaza*

Science Focus: ETS

Stephanie Selznick *(sselznick71@gmail.com),* Curley K–8 School, Jamaica Plain, Mass.

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

Walk away with a plan to do your own engineering fair at your school. Review pictures and student lab work of the inventions from a recent fair as well as connections to the *NGSS* and *CCSS*. Handouts!

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

(Grades P–5) *Salon 7, Rosen Plaza*

Science Focus: GEN, INF, NGSS

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

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

Science Is Thoughtful, Crafty, and Fun! Activities to Enhance Your Curriculum

(Grades P–6) *Salon 8, Rosen Plaza*

Science Focus: GEN, INF

Jackie Word *(jword@escambiak12.net),* Turtle Point Environmental Science Center, Flomaton, Ala.

Successful students are engaged and inspired. Come see how one educator achieves this goal with make-and-take activities. Animal, vegetable, and mineral activities included!

5:30–6:00 PM Presentations

A Model for Encouraging and Monitoring STEM Careers: Summer Research for High School Students
(Grades 9–College) *Bayhill 19, Hyatt*
Science Focus: GEN, INF, SEP
Barbara Speziale (@ciclemson; *bjspz@clemson.edu),* Clemson University, Clemson, S.C.
Hear how Clemson University and the South Carolina Governor's School for Science and Mathematics collaborate to engage high school students in STEM research and track their career progress.

Project Based Learning Increases Student Interest and Access to the Curriculum
(Grades 9–11) *Bayhill 26, Hyatt*
Science Focus: PS, SEP1, SEP2, SEP3, SEP4, SEP6
Phillip Moore *(moorep@fitchburg.k12.ma.us),* Fitchburg High School, Fitchburg, Mass.
Kurt Lichtenwald *(klichtenwald@gloucester.k12.ma.us),* Gloucester High School, Gloucester, Mass.
Join us as we discuss our school's implementation of the engineering design process in our sophomore physics classes. We will share the impacts on student behavior and engagement from using this Project Based Learning model.

8:00–8:30 AM Presentation

Five Critical Process Skills for the 21st Century
(General) *Bayhill 19, Hyatt*
Science Focus: GEN
Donna Walker Tileston *(dwtileston@gmail.com),* Strategic Teaching and Learning, Dallas, Tex.
With the coming of the *Common Core State Standards*, a new emphasis has been placed on what students can do with what they know. We have identified five critical process skills that are essential to 21st-century learners in science and across the board. Come learn these process skills and take home the blackline masters to directly teach them to your students.

8:00–9:00 AM Presentations

Solids: The Neglected "State" of Chemistry
(Grades 9–12) *Bayhill 24, Hyatt*
Science Focus: PS
Debbie Goodwin *(nywin@hotmail.com),* Retired High School Science Teacher, Chillicothe, Mo.
Use solids to make chemistry more STEM friendly and relevant for students. Hands-on activities using solid materials (metals/polymers/ceramics) make concepts easier to teach/learn. Take home a CD of information.

The Galápagos Islands Through Photos and Songs (Walking in Darwin's Footsteps)
(General) *Bayhill 25, Hyatt*
Science Focus: INF, NGSS
Robert Everett *(robert.everett@ucf.edu),* University of Central Florida, Orlando
Murray Pendarvis *(murray.pendarvis@selu.edu),* Southeastern Louisiana University, Hammond
Come join the presenters as they explore the Galápagos Islands through photographs and songs.

Climate Smart and Energy Wise: The Literacy Imperative of the 21st Century
(General) *Bayhill 26, Hyatt*
Science Focus: ESS
Mark McCaffrey (@McCaffreyMark; *mccaffrey@ncse.com),* National Center for Science Education, Oakland, Calif.
Join Mark McCaffrey, author of *Climate Smart & Energy Wise,* as he covers the challenges and opportunities to infuse climate, energy, and related literacy throughout the K–12 curricula, including all the sciences, mathematics, and language arts, as well as social studies, civics, and arts.

Before and After Retirement: Practicalities and Possibilities
(General) *Bayhill 28, Hyatt*
Science Focus: GEN
Teshia Birts *(tbirts@nsta.org),* Senior Director of Membership Development and Chapter Relations, NSTA, Arlington, Va.
Joyce Gleason *(joycegle@earthlink.net),* Educational Consultant, Punta Gorda, Fla.
The NSTA Retired Advisory Board invites you to a vibrant and useful information-sharing session. Join your fellow colleagues and share your ideas about staying active both in and out of the profession.

Using NSTA Resources for Professional Development
(General) *Bayhill 31, Hyatt*
Science Focus: GEN, NGSS
Steve Rich (@bflyguy; *bflywriter@comcast.net),* West GYSTC, Douglasville, Ga.
Responsible for professional learning for science teachers? Discover which NSTA books, authors, and web resources can help you with *NGSS*, *CCSS*, and science literacy.

MY NASA DATA and S'COOL: Easy-to-Use NASA Projects for the Classroom
(Grades K–12) *Ballroom B, Rosen Plaza*
Science Focus: ESS
Margaret Holzer *(mholzer@monmouth.com),* Chatham High School, Chatham, N.J.
Engage your students inside the classroom and out with two easy-to-incorporate NASA science projects. With MY NASA DATA, your students will learn how to access and use authentic NASA data with the click of the mouse. The S'COOL project will get you and your students outside and observing clouds like a pro in no time at all.

Science Assessment Strategies That Demonstrate Learning for All Students
(Grades K–8) *Salon 6, Rosen Plaza*
Science Focus: GEN
Shawn Brown *(sab@reinhardt.edu),* Reinhardt University, Waleska, Ga.
Assessing student performance is vital to determining their level of performance, getting to know their learning style, and motivating them to learn. Discussion centers on using assessment to stimulate critical discussion of science content among teachers and students.

NSTA's Preschool–Elementary Committee Presents STEM Projects for Elementary Students
(Grades P–5) *Salon 9, Rosen Plaza*
Science Focus: ETS
Peggy Carlisle *(peggy.carlisle1@gmail.com),* Pecan Park Elementary School, Jackson, Miss.
Anne Durrance *(anne.durrance@gmail.com),* Rapoport Academy, Waco, Tex.
Join NSTA's Committee on Preschool–Elementary Science Teaching as they share a wealth of ready-to-use, classroom-tested hands-on STEM activities created for K–5 teachers. Handouts and website links provided.

8:00–9:00 AM Hands-On Workshops

Planning and Designing Safe and Sustainable Science Facilities that Meet the *NGSS* (Science Facilities 101)
(General) *Bayhill 18, Hyatt*
Science Focus: GEN
LaMoine Motz *(llmotz@comcast.net),* 1988–1989 NSTA President, and Motz Consultant Group, White Lake, Mich.
Juliana Texley (@JulianaTexley; *jtexley@att.net),* NSTA President, Boca Raton, Fla.
So you want new science facilities? Does your curriculum define your science teaching facility? With more than 15 years of conducting visits and presentations of new/renovated school science facilities, the author team for *NSTA Guide to Planning School Science Facilities* (2nd ed.) will present the "basics" of science facility planning for safe, ergonomically designed, and sustainable facilities.

NSTA Press® Session: *Scientific Argumentation in Biology: 30 Classroom Activities*
(Grades 6–12) *Bayhill 21, Hyatt*
Science Focus: LS, SEP
Victor Sampson (@drvictorsampson; *victor.sampson@gmail.com),* The University of Texas at Austin
Receive a brief overview of scientific argumentation and an introduction to three different approaches for engaging students in scientific argumentation. Experience one of the approaches firsthand.

Integrating Food Science and Nutrition into Your Science Curriculum
(Grades 6–12) *Bayhill 22, Hyatt*
Science Focus: LS1
Miriam Cooper (@mimcooper; *mimicooper@verizon.net),* Consultant, Green Cove Springs, Fla.
Freshen up your science lessons with hands-on activities available through the Food and Drug Administration's curriculum *Science and Our Food Supply: Investigating Food Safety from Farm to Table*.

Using Inquiry to Teach Minerals
(Grades 1–12) *Bayhill 27, Hyatt*
Science Focus: ESS
Davida Buehler *(dbuehler@geosociety.org),* The Geological Society of America, Boulder, Colo.
Join the Geological Society of America as we go through several inquiry-based activities that can help your students become more engaged during your mineral unit. Free resources!

Life Jackets, Density, and STEM
(Grades 6–12) *Bayhill 29, Hyatt*
Science Focus: ETS, PS
Donna Barrett *(donna.barrett@mresa.org)* and **Terri George** *(terrigeorge1@gmail.com)*, Metro RESA, Smyrna, Ga.
In this STEM activity, you will design life jackets for a toy soldier, experience an application of density, and the inverse relationship between volume and density.

Integrate Popular Literature and Nontraditional Science Activities and Assessments into Your Standards-based Classroom

(Grades 7–College) *Bayhill 32, Hyatt*

Science Focus: GEN, INF, NGSS

Kimberly Haag, Regis Jesuit High School, Aurora, Colo.

Looking for ways to incorporate literacy and critical thinking into your science classroom? Discover how to engage students in interdisciplinary lessons using current standards. Take home resources and helpful websites to begin developing your own story-based units.

Biomedical Curriculum Series—Developed by Teachers for Teachers

(Grades 9–12) *Manatee Spring I, Hyatt*

Science Focus: LS, CCC6

Julie Bokor *(jbokor@ufl.edu)* and **Houda Darwiche** *(houdad@cpet.ufl.edu),* University of Florida, Gainesville

Join me for a series of biomedical curricular units developed by Florida high school teachers based on a university summer research experience.

Family STEM Explorations Created by Community Partnerships

(Grades 1–6, College) *Manatee Spring II, Hyatt*

Science Focus: INF, ETS, SEP

David Heil *(dheil@davidheil.com),* David Heil & Associates, Inc., Portland, Ore.

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

The Science 2V Strategy for Improving Reading Comprehension

(Grades 5–9) *Salon 3, Rosen Plaza*

Science Focus: GEN, SEP4

Monica Wright *(monica.wright@nassau.k12.fl.us),* Nassau County School District, Fernandina Beach, Fla.

Jennifer Ewbank *(jewbank@putnamschools.org),* Putnam County School District, Crescent City, Fla.

Load your science lessons with intense vocabulary strategies, vast visualizations, and high-interest inquiry. Make reading for understanding a must in your science classroom!

AMSE Session: Creating and Implementing Effective Watershed Lessons for All Students: Use of *Next Generation Science Standards* Appendix D and Case Studies

(Grades K–8) *Salon 4, Rosen Plaza*

Science Focus: ESS

Cherry Brewton *(cbrewton@georgiasouthern.edu),* Science Education Consultant, Statesboro, Ga.

Explore ways to proceed with implementing the *NGSS* according to equity and diversity principles that are research based to enhance learning of all students. How can we use case studies as resources in this process? Join me as I present activities and teaching strategies focused on watersheds.

A Writing Engagement!

(Grades 6–9) *Salon 5, Rosen Plaza*

Science Focus: ETS

ZoEllen Warren *(warrenzm@gm.sbac.edu),* Alachua County Public Schools, Gainesville, Fla.

Sharon Crain *(t2wpass@bellsouth.net),* Ridgeview Elementary School, Orange Park, Fla.

Come experience practical ways to engage students in real-world writing focusing on STEM-related content areas.

Be Active with Interactive Science Notebooks

(Grades 3–5) *Salon 7, Rosen Plaza*

Science Focus: GEN

Ariane Huddleston (@sciencepenguin), The Science Penguin, Inc., Austin, Tex.

BYON: Bring Your Own Notebook! Get active making your own Interactive Science Notebook with cooperative, engaging activities every student is sure to love.

Introducing Children's Engineering into the Elementary Science Classroom

(Grades K–6) *Salon 8, Rosen Plaza*

Science Focus: ETS

Nancy DeJarnette, Rowan University, Glassboro, N.J.

Discover how to navigate the new *NGSS* and encounter ways in which you can implement engineering in the elementary classroom. Children's engineering activities will be modeled and resources for additional lesson ideas provided.

8:00–9:15 AM Exhibitor Workshop

Using Climate Proxies to Learn About Earth's Climate History

(Grades 9–12) *W224E, Convention Center*

Science Focus: ESS2, ETS2

Sponsor: LAB-AIDS®, Inc.

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

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

9:00 AM–12 Noon Exhibits

Hall WD2, Convention Center

Come see the most up-to-date science textbooks, software, equipment, and other teaching materials. Some exhibitors will offer materials for sale. Also, this is the perfect time to use your meal voucher at the Food Court area in the NSTA Exhibit Hall (see page 12).

9:00 AM–12 Noon Meeting

AMSE Board Meeting

(By Invitation Only) *Salon 2, Rosen Plaza*

For more information, please visit *www.amsek16.org.*

9:30–10:30 AM Presentations

Interactive Notebooks: Shifting Practice and Intentionality to Make It Meaningful

(Grades K–12) *Bayhill 19, Hyatt*

Science Focus: GEN, SEP

Lauren Burdick (@laurburdick; *lburdick@pasco.k12.fl.us)* and **Susan McKenna** (@SusanMcKenna14; *smckenna@pasco.k12.fl.us),* Pasco County Schools, Land O Lakes, Fla.

Develop strategies to enhance inquiry-based practices to foster student ownership of learning using notebooks—shifting practices from being leaders of learning to partners in facilitating metacognitive learners. Leave with questioning strategies, resources, and techniques to assist in engaging students in active processing of learning and the role of science and engineering practices in creating science-literate learning environments.

Promoting Science Literacy Development Through Trade Books

(Grades 3–12) *Bayhill 23, Hyatt*

Science Focus: GEN, NGSS

Zhihui Fang *(zfang@coe.ufl.edu),* University of Florida, Gainesville

Developing science literacy requires not only firsthand explorations of the material world but also secondhand investigations with text. A potentially powerful kind of text in science is the trade book. Explore some of the ways trade books can be used in science classrooms to enhance students' secondhand experiences.

Polymers: New Twists on Old Favorites

(Grades 7–12) *Bayhill 24, Hyatt*

Science Focus: ETS2, ETS1.A, ETS1.C, PS1.B, PS1.A, PS3.B

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

Andrew Nydam *(andrewnydam@hotmail.com),* ASM International Foundation, Materials Park, Ohio

Enhance and deepen science and math concepts taught in traditionally "fun" polymer labs. Add more scientific processes to make them inquiry based. Take home CD of information.

Engaging the Brain Through Place-based Learning in a National Park

(General) *Bayhill 25, Hyatt*

Science Focus: LS1, LS2, LS4, CCC1, CCC2, CCC6, SEP

Marlene Morales, Miami Dade College, Miami, Fla.

Allyson Gantt *(allyson_gantt@nps.gov),* Everglades National Park, Homestead, Fla.

Yvette Greenspan *(ygreensp@mdc.edu),* Science Educator, Delray Beach, Fla.

Join us for an introduction to how the brain learns and how place-based activities can be used to engage the brain in learning. In addition, engage in an activity modeling brain-compatible teaching strategies while relaying the relevance of national parks as living, sustainable environmental classrooms.

Introducing Nanotechnology into the Chemistry Classroom
(Grades 7–12) *Bayhill 26, Hyatt*
Science Focus: INF, PS
Sherri Rukes *(scrukes@comcast.net),* Libertyville High School, Libertyville, Ill.
Nanotechnology is a topic that is taking off in many different areas of science. Learn about what nanotechnology is as well as applications from ancient time to present day. Take home handouts with activities to teach the concept.

Explore Our Water-filled World with SeaPerch: ROVs (Remote Operated Vehicles)
(Grades 5–12) *Bayhill 28, Hyatt*
Science Focus: INF, ESS
Nathan Heiselt, Mississippi State University, Mississippi State, Miss.
Give your students an in-depth STEM experience. SeaPerch is a dynamic ROV experience for classrooms to construct and use for understanding our watery world (marine and fresh water applications).

Get Them Connected: Experimental Design Tools and STEM Career Experiences!
(Grades 6–8) *Ballroom B, Rosen Plaza*
Science Focus: ETS
Lynn Lauterbach (@lynncantweet; *lynnlauterbach@gmail.com),* Retired Teacher, Loveland, Colo.
Simple supplies of Post-it® Notes and a graphic organizer template can help you guide your students to the experimental design level. Handouts and free online support!

Big Kids Make Big Books
(Grades K–2/6–12) *Salon 9, Rosen Plaza*
Science Focus: GEN, SEP8
Rachel Hallett-Njuguna *(rachel_hallett@scps.us)* and **Lindsey Hosack** *(lindsey_hosack@scps.us),* Seminole County Public Schools, Sanford, Fla.
Bridget Walters (@walteezee; *bridget_walters@scps.k12.fl.us),* Seminole High School, Sanford, Fla.
Hear about a literacy initiative in which secondary students created "big books" with K–2 science standards. Books were then given to K–2 teachers to add rigor and relevance to their science curriculum. Discussion centers on the the process as well as lessons learned.

9:30–10:30 AM Hands-On Workshops

Planning and Designing Safe and Sustainable Science Facilities That Meet the *NGSS* (Science Facilities 102)
(General) *Bayhill 18, Hyatt*
Science Focus: GEN
LaMoine Motz *(llmotz@comcast.net),* 1988–1989 NSTA President, and Motz Consultant Group, White Lake, Mich.
Juliana Texley (@JulianaTexley; *juliana.texley@nsta.org),* NSTA President, Boca Raton, Fla.
Is your district planning for new science facilities? Are you involved? If not, you need to before it is too late. In an advanced course (an extension of the Science Facilities 101 session), the author team for *NSTA Guide to Planning School Science Facilities* (2nd ed.) will present more detailed information and examples of safe, ergonomically correct, and functional science facilities for STEM-based science. Budgeting, working with architects, technology, and special adjacencies will be addressed. Handouts!

NSTA Press® Session: *Argument-Driven Inquiry in Biology: Lab Investigations for Grades 9–12*
(Grades 9–12) *Bayhill 21, Hyatt*
Science Focus: LS
Victor Sampson (@drvictorsampson; *victor.sampson@gmail.com),* The University of Texas at Austin
Argument-driven inquiry gives students an opportunity to learn how to participate in the practices of science and use the core ideas and crosscutting concepts of science to make sense of natural phenomena. Receive a brief overview of this innovative approach to laboratory instruction.

Explore Earthquakes!
(Grades 3–12) *Bayhill 27, Hyatt*
Science Focus: ESS, SEP3, SEP4
Davida Buehler *(dbuehler@geosociety.org),* The Geological Society of America, Boulder, Colo.
Using several inquiry-based activities, we will explore earthquakes in a way that allows students to become actively engaged in the learning process. Free resources!

An Infrared Exposé: Exposing the Mysteries of Our Universe

(Grades 7–12) *Bayhill 29, Hyatt*

Science Focus: ESS1.A, ESS1.B, ETS1.C, ETS2.A, PS4.B, CCC2, CCC5, SEP1, SEP4, SEP6, SEP7

Margaret Holzer *(mholzer@monmouth.com),* Chatham High School, Chatham, N.J.

Nathan Mahoney (@NASAmbassador; *nathan.mahoney@pinecrest.edu),* Pine Crest School, Fort Lauderdale, Fla.

From the birth of stars to evidence of planet formation, infrared astronomy provides answers to astronomy's difficult questions. Join us as we share effective demonstrations and activities designed to assist learners in understanding how we can use the electromagnetic spectrum in general, and infrared energy more specifically to answer questions.

Using Modeling Activities in the High School Chemistry Class

(Grades 9–12) *Manatee Spring I, Hyatt*

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

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

Visualization is difficult for many students. Let's discuss and demonstrate several modeling activities you can use in your chemistry class. For example, one way for students to understand kinetic molecular theory and the behavior of gases is to represent a gas using a box of super bounce balls.

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

(Grades 3–6) *Salon 10, Rosen Plaza*

Science Focus: NGSS, ESS3.A, ESS3.C

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

Dive into elementary- and intermediate-grade investigations that help explore watersheds and water quality. Activities are paired with literature-based connections for integrated learning opportunities.

Interactive Formative Assessments

(Grades 3–8) *Salon 3, Rosen Plaza*

Science Focus: INF

Rebecca Bowers *(rbowers@gstboces.org),* The Great Southern Tier BOCES, Bush Campus, Elmira, N.Y.

Come experience a multitude of interactive formative assessments to help students reflect on their learning, develop communication skills, and provide valuable feedback to guide your instruction.

The Patterns Are in the Rocks: A Low-Cost Model to Describe Changes Over Time

(Grades 4–8) *Salon 4, Rosen Plaza*

Science Focus: ESS

Kim Cheek *(k.cheek@unf.edu)* and **Stacy Boote** *(s.boote@unf.edu),* University of North Florida, Jacksonville

Participants will create outcrops, measure strata, and take samples to determine the geologic history of their "region" using different varieties of bread and common snack foods like raisins. No baking required.

Archaeology of Animal Bones

(Grades 3–5) *Salon 5, Rosen Plaza*

Science Focus: LS1, LS2.A, LS3.A, LS4.B, LS4.C, LS4.D, CCC6, SEP

Stephany Arcentales *(sarcentales@avenues.org)* and **Elizabeth Rosenberger,** Avenues: The World School, New York, N.Y.

What can animal bones tell us? Find out how students use skull replicas to identify how the animal lived its life and survived.

Design, Engage, and Create: Engineering Design Challenges with the Orlando Science Center

(Grades K–5) *Salon 8, Rosen Plaza*

Science Focus: ETS, INF

Emily Duguid *(eduguid@osc.org),* Orlando Science Center, Orlando, Fla.

Engage in a hands-on design challenge to place learners in an engineer's role and use problem-solving methods to complete the engineering design process.

10:00–11:15 AM Exhibitor Workshop

Waves, Energy, and Color

(Grades 6–8) *W224E, Convention Center*

Science Focus: ETS2, PS4

Sponsor: LAB-AIDS®, Inc.

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

Although we live an EM waves–enabled lifestyle, most of us have no idea how they work. Join LAB-AIDS for an *NGSS*-based waves activity from SEPUP's *Issues and Physical Science* program. Explore light properties by investigating colors of the visible spectrum and their energy levels using phosphorescent material. SEPUP embeds research-based practices and real issues for powerful content learning.

11:00–11:30 AM Presentations

A Multimodal Approach to Integrative Science Education

(General) *Bayhill 23, Hyatt*

Science Focus: ETS2.A

Michelle Costello *(costello@geneseo.edu)* and **Katie Rommel-Esham,** SUNY Geneseo, N.Y.

Attention will be paid to a co-taught lesson from a science methods course requiring preservice teachers to integrate science and multiliteracies into instruction for elementary classrooms.

Representations of Scientists in Children's Literature and Multimedia

(Grades 2–5) *Salon 6, Rosen Plaza*

Science Focus: INF

Donna Farland-Smith, The Ohio State University, Mansfield

Elementary teachers know the challenges of balancing instruction with high-stakes testing. One way to do this is by incorporating literature or multimedia. Join me for a meta-analysis of representations of how scientists are portrayed in literature and multimedia.

11:00 AM–12 Noon Presentations

You Think Your Students Know Science? Using Multimedia and Online Collaboration in Your Formative Science Assessment

(Grades 3–12) *Bayhill 19, Hyatt*

Science Focus: GEN

Robert Miller (@robrtmiller; *millermail@mac.com),* Port Orange Elementary School, Port Orange, Fla.

See how one teacher uses NSTA materials and his YouTube Channel to create formative assessments through video and online tools that guide his science lessons. Leave with inspiration to create your own material!

Corrosion: Chemistry Made Simple, Relevant, and Fun

(Grades 9–11) *Bayhill 24, Hyatt*

Science Focus: ETS1, ETS2.B, PS1.A, PS1.B, PS3

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

Andrew Nydam *(andrewnydam@hotmail.com),* ASM International Foundation, Materials Park, Ohio

Leave with labs, demonstrations, and examples that make reactivity, oxidation/reduction, and corrosion engineering exciting, practical, and easy to teach/learn. Take home a CD of information.

Creating a Successful Citizen Science Program in an Urban Setting

(Grades K–12) *Bayhill 25, Hyatt*

Science Focus: INF

Denise McNamara *(dmcnama@schools.nyc.gov),* New York City Dept. of Education, Staten Island, N.Y.

Interested in initiating a Citizen Science program in your urban school district? Join me for a complete "how to" guide based on a pilot program that was launched in New York City.

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

(Grades 9–12) *Bayhill 26, Hyatt*

Science Focus: ETS, ETS2.B, CCC, SEP

Rachel McGowan, The University of Texas at Austin

Engineer Your World engages students in authentic engineering practices, computational thinking, and 21st-century skills as they explore engineering fields and professions to discover what engineering is, what engineers do, and the impact that engineers have on our world.

Biographies Brought to Life

(Grades 4–10) *Bayhill 31, Hyatt*

Science Focus: GEN, SEP1, SEP3

Jennifer Wilson, Tequesta Trace Middle School, Fort Lauderdale, Fla.

Myra Crews *(crewsmr@yahoo.com),* Rutherford High School, Panama City, Fla.

Learn a variety of strategies to improve students' reading and science skills by bringing biographies of scientists to life.

Discover the Amazing World of Engaging Discrepant Event Science Demonstrations

(Grades 6–9) *Ballroom B, Rosen Plaza*

Science Focus: GEN, SEP

Vince Mancuso *(vince_mancuso@bcsd.org),* Brighton Central School District, Rochester, N.Y.

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

Biology Bob: Waterway Animals
(Grades K–6) *Salon 9, Rosen Plaza*
Science Focus: INF, LS
Robert Everett *(robert.everett@ucf.edu),* University of Central Florida, Orlando
Join Biology Bob as he sings songs about animals that live in or near water. Bring your singing voice. He encourages audience participation.

11:00 AM–12 Noon Hands-On Workshops

NSTA Press® Session: *It's Debatable! Using Socioscientific Issues to Develop Scientific Literacy K–12*
(Grades K–12) *Bayhill 21, Hyatt*
Science Focus: GEN, NGSS
Dana Zeidler *(zeidler@usf.edu),* University of South Florida, Tampa
Sami Kahn *(samikahn@mail.usf.edu)*, Collegiate School, New York, N.Y.
During this interactive workshop, participants will model the use of controversial societal issues related to science to develop their students' scientific literacy.

Integrating Math and Science with a "Slopes & Starburst" Lesson
(Grades 6–12) *Bayhill 22, Hyatt*
Science Focus: PS, CCC1, CCC3, CCC4, SEP3, SEP4, SEP7
Gayle Evans *(gnevans@coe.ufl.edu)* and **Rochelle McTureous** *(rmctureous@coe.ufl.edu),* University of Florida, Gainesville
Collect data using rolling carts and Starburst® candies dropped at timed intervals and create models of data using TI-Nspires™. Join us as we demonstrate how the mathematical process of using scatter plots and linear regression analysis to generate a linear equation relates with the velocity of a moving object to the slope of a graphed line.

Developing Models That Have Explanatory and Predictive Power
(Grades K–12) *Bayhill 27, Hyatt*
Science Focus: PS, SEP2
David Brothers, Wentzville (Mo.) R-IV School District
Developing and using models is an unfamiliar science practice for many teachers. Participants, in groups, will construct a model for water evaporating and condensing in an open and a closed container as well as discuss how to engage students in modeling at different grade levels and abilities.

Astrobiology
(Grades 6–12) *Bayhill 29, Hyatt*
Science Focus: ESS, LS, CCC4
Molly Malone *(molly.malone@utah.edu),* Genetic Science Learning Center, Salt Lake City, Utah
Can Earth's creatures living in extremes teach us about the possibility of extraterrestrial life? What do living things need to survive? Explore free materials at *learn.genetics.utah.edu.*

Growing Energy: Educational Games to Explore Strategies for Sustainable Bioenergy Crop Production
(Grades 7–College) *Bayhill 32, Hyatt*
Science Focus: ESS3.A, ESS3.C, ESS3.D, ETS2.B, LS1.C, LS2, LS4.D, PS3.D, CCC1, CCC2, CCC4, CCC7, SEP1, SEP2, SEP4, SEP6, SEP7
John Greenler (@johngreenler; *jgreenler@glbrc.wisc.edu),* Great Lakes and Bioenergy Research Center, Madison, Wis.
How can games engage students in testing solutions to real-world sustainability challenges? Play games developed with ecologists to teach students about connections among biofuels and sustainable land management.

Climate Change Classroom Activities: Light, CO_2, and Global Warming
(Grades 9–12) *Manatee Spring I, Hyatt*
Science Focus: PS
Jerry Bell *(j_bell@acs.org),* Wisconsin Initiative for Science Literacy, Madison
The energy of electromagnetic radiation (light) is evident to anyone standing in the sunlight on a bright summer day. Less obvious is the radiation emitted by the warmed planetary surface. The characteristics of these electromagnetic radiations and their consequences are important for maintaining life as we know it. Engage in activities, discussion, analyses, and assessment that enhance understanding of the relationships among basic chemical concepts and human activities that are changing Earth. Bring your USB flash drive and take away the presentation and the activities to use in your classes.

Don't forget to evaluate the sessions you attend…one lucky person will win a Kindle Fire! See page 14 for details.

An Inquiry Approach to Establishing Collaborative Learning Communities in a STEM Classroom
(Grades 3–12) *Manatee Spring II, Hyatt*
Science Focus: ETS
Jeremy Wheeler *(jwheeler@gstboces.org)* and **Brande Flaitz** *(bflaitz@gstboces.org),* The Great Southern Tier BOCES, Bush Campus, Elmira, N.Y.
In this interactive session, participants will experience an inquiry-based exploration that will demonstrate how students can use data to practice skills and understand the power of collaborative learning in a STEM classroom.

Butterfly Gardening Using Native Plants
(General) *Salon 10, Rosen Plaza*
Science Focus: LS
Nancy Sale *(butterflybonanza@yahoo.com),* Lillie C. Evans K–8 Center, Miami, Fla.
Butterfly Bonanza provides a roadmap to success for implementing a native butterfly habitat. Take home a starter kit that will enable you to immediately set up a habitat at your school.

Engage and Excite with Elementary Science Olympiad
(Grades 3–6) *Salon 4, Rosen Plaza*
Science Focus: GEN, SEP
Kelly Price, Forsyth County Schools, Cumming, Ga.
Join me for a fun-filled workshop about the Elementary Science Olympiad program. Learn how to execute engaging Science Olympiad lessons in your class and how to compete as well.

Model Eliciting Activities in the Elementary Classroom
(Grades 3–5) *Salon 7, Rosen Plaza*
Science Focus: ETS
Melissa Parks *(mparks@stetson.edu),* Stetson University, Deland, Fla.
Learn about and have some fun with Model Eliciting Activities as tools to introduce or increase STEM activities in your classroom.

Exciting Elementary Endeavors
(Grades K–5) *Salon 8, Rosen Plaza*
Science Focus: ETS
Terri George *(terrigeorge1@gmail.com)* and **Donna Barrett** *(donna.barrett@mresa.org),* Metro RESA, Smyrna, Ga.
Explore easy and exciting science experiences at the elementary level. These will include engineering, literacy, and the 5E (Engage, Explore, Explain, Elaborate, and Evaluate) learning model.

11:30 AM–12 Noon Presentation

Getting Ready to PARCC—Using Science Content to Teach Students Writing
(Grades 2–5) *Salon 6, Rosen Plaza*
Science Focus: GEN, SEP4, SEP8
Cheri Jones *(cheri_jones@gwinnett.k12.ga.us)* and **Jennifer Albrecht** *(jennifer_albrecht@gwinnett.k12.ga.us),* Chattahoochee Elementary School, Duluth, Ga.
The Partnership for Assessment of Readiness for College and Careers (PARCC) will contain a writing component. Learn how to guide your students through the writing process so they can clearly communicate information and ideas using science-based texts and data as seen on the PARCC.

Some exhibitors have classified their products by grade level and subject area. Subject areas are abbreviated here as follows:

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Professional Development	PD
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E-mail: *kms5@msstate.edu*
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Museum of Science and Industry **#1427**
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Tampa, FL 33617 K–12
Phone: 813-987-6341
E-mail: *arlene.segovia@mosi.org*
Website: *www.mosi.org*

The Museum of Science and Industry (MOSI) offers educators the option of personalized, content-driven field studies that incorporate STEAM concepts. Programs are fun with interactive learning opportunities for both students and educators.

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Phone: 941-538-6829
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Nature's Academy aims to enhance science literacy and foster environmental stewardship. We offer day and overnight field trips that focus on conservation science for school, families, and group organizations. Our inquiry-driven programs include citizen science data collection, snorkeling, kayaking, and explorations at parks and science facilities throughout the state.

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NGSS@NSTA **#1140**
1840 Wilson Blvd.
Arlington, VA 22201 K–12
E-mail: *ngss@nsta.org*
Website: *www.nsta.org/ngss*

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 Education **#1318**
1401 Constitution Ave. NW, #6863 EA, EN
Washington, DC 20230 5–12
Phone: 301-713-1208
E-mail: *education@noaa.gov*
Website: *www.education.noaa.gov*

NOAA is a federal science agency providing free information about weather, climate, oceans, coasts, satellite data, solar weather, and fisheries. Every day, NOAA's science touches the lives of all Americans. In partnership with NSTA, NOAA supports and develops a suite of products for the science classroom.

NSTA Membership **#1141**
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NSTA Expo

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Website: *www.ecybermission.com*

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Website: *www.nsta.org/conferences*

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Booth #1144
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NSTA National Science Teachers Association

NSTA Professional Learning Opportunities **#1142** G
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Website: *www.nsta.org/conferences*

The NSTA Professional Learning team supports science educators in school districts and institutions of higher education through a variety of face-to-face, online, and blended experiences tailored to their specific needs. The Learning Center, NSTA's online learning portal, is designed to enhance the content and pedagogical knowledge of teachers of science. Visit our booth to learn more about the professional learning opportunities available through NSTA.

NSTA Science Matters **#1144**
1840 Wilson Blvd. All
Arlington, VA 22201 PreK–12
E-mail: *sciencemattersonline@nsta.org*
Website: *www.nsta.org/sciencematters*

Science/STEM education plays a critical role in our nation's competitiveness and economic future. NSTA's Science Matters Network of parents and teachers dedicated to quality science education provides information and advocacy to inform key stakeholders—including policy makers, educators, business leaders, and scientists—about quality science/STEM education.

Nutrients for Life Foundation **#1333**
425 Third St. SW, Suite 950 B, EA, EN
Washington, DC 20024 1–12
Phone: 202-515-2714
E-mail: *jmcguire@nutrientsforlife.org*
Website: *www.nutrientsforlife.org*

The Nutrients for Life Foundation is an education nonprofit that provides information and resources to educators and the public about the vital role fertilizers play in feeding our world.

Orlando Science Center **#821**
777 E. Princeton St. All
Orlando, FL 32803 PreK–12
Phone: 407-514-2000
E-mail: *gservices@osc.org*
Website: *www.osc.org*

The Orlando Science Center (OSC) is a nonprofit informal science education institution that serves children, youth, families, preK–12 schools, educators, and adult lifelong learners. We provide hands-on experiences through exhibits, films, and programs that focus on science, technology, engineering, and mathematics (STEM).

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Phone: 202-765-3641
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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.

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Websites: *www.sciencefirst.com; www.starlab.com*

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Seacamp Association, Inc is a private, non-profit organization operating two programs in the Florida Keys. Newfound Harbor Marine Institute is our school-based program offering marine and environmental education programs to visiting school groups. Seacamp is our summer residential program for youth ages 12 to 17 years old with programs in marine science, SCUBA, sailing, and windsurfing.

SeaWorld Parks and Entertainment **#1326**
9205 South Park Center Loop B
Suite 400 PreK–12
Orlando, FL 32819 College
Phone: 803-918-5246
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Exhibitors

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E-mail: *shellsciencelab@nsta.org*
Website: *www.nsta.org/shellsciencelab*

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Phone: 952-653-0493
E-mail: *mgoodman@simcur.com*
Website: *www.simulationcurriculum.com*

Simulation Curriculum is a developer of award-winning interactive Earth and space science curriculum solutions for elementary school, middle school, high school, and college.

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Washington, DC 20036 K–12, College
Phone: 202-785-2255
E-mail: *ssnyder@societyforscience.org*
Website: *www.societyforscience.org*

Society for Science & the Public (SSP) is a nonprofit 501(c)(3) membership organization dedicated to public engagement in scientific research and education. Our vision is to promote the understanding and appreciation of science and the vital role it plays in human advancement: to inform, educate, and inspire.

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Website: *www.universalorlando.com*

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Edvotek Inc., cont.

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Friday, November 7	10:00–11:15 AM	W221A, Conv. Center	Case of the Missing Records (p. 81)
Friday, November 7	12 Noon–1:15 PM	W221A, Conv. Center	Detecting the Silent Killer: Clinical Detection of Diabetes (p. 88)
Friday, November 7	2:00–3:15 PM	W221A, Conv. Center	Using the Polymerase Chain Reaction to Identify Genetically Modified Foods (p. 94)
Friday, November 7	4:00–5:15 PM	W221A, Conv. Center	Biotechnology Basics (p. 100)

ETA hand2mind (Booth #1327)

Thursday, November 6	12:30–1:45 PM	W223 A/B, Conv. Center	Are You Ready for the Challenge? Teaching Integrated STEM in the Elementary Grades (p. 54)
Friday, November 7	2:00–3:15 PM	W223 A/B, Conv. Center	STEM for Young Children: Prepare for Success! (p. 94)

Flinn Scientific, Inc. (Booth #918)

Thursday, November 6	10:00–11:15 AM	W222B, Conv. Center	Flinn Scientific Presents Hands-On Integrated Science Activities for Middle School (p. 51)
Thursday, November 6	12:30–1:45 PM	W222B, Conv. Center	Advanced Inquiry Labs for AP Chemistry from Flinn Scientific (p. 55)
Friday, November 7	10:00–11:15 AM	W222B, Conv. Center	Flinn Scientific Presents Exploring Chemistry™: Connecting Content Through Experiments (p. 82)

Frey Scientific/School Specialty Science (Booth #1223)

Thursday, November 6	10:00–11:15 AM	W221C, Conv. Center	Solving the Mystery of STEM Using Forensic Science (p. 51)

Howard Hughes Medical Institute (Booth #1123)

Thursday, November 6	10:00–11:15 AM	W222A, Conv. Center	*Evolving Switches, Evolving Bodies*: A Story of Gene Regulation and Evolution (p. 51)
Thursday, November 6	12:30–1:45 PM	W222A, Conv. Center	Great Discoveries in Science: *The Double Helix* (p. 55)
Thursday, November 6	2:15–3:30 PM	W222A, Conv. Center	Teaching Evolution with BioInteractive (p. 60)
Thursday, November 6	4:00–5:15 PM	W222A, Conv. Center	Teaching Environmental Science with BioInteractive (p. 66)

International Food Information Council Foundation (Booth #820)

Friday, November 7	8:00–9:15 AM	W222A, Conv. Center	From Farm to Fork to Classroom—Easy Lessons to Teach the Science of Feeding the World (p. 74)

It's About Time (Booth #1218)

Friday, November 7	8:00–9:15 AM	W224D, Conv. Center	*Project-Based Inquiry Science*™: Blending Science and Engineering Practices, Core Ideas, and Crosscutting Concepts in Middle School Classrooms (p. 75)
Friday, November 7	10:00–11:15 AM	W224D, Conv. Center	Earth and Space Science—More Pertinent Today, More Important to Our Future (p. 82)
Friday, November 7	12 Noon–1:15 PM	W224D, Conv. Center	Active Chemistry and Active Physics: *Project-Based Inquiry Science*™ That Engages Students (p. 89)
Friday, November 7	2:00–3:15 PM	W224D, Conv. Center	*Engineering the Future*™: A Practical Approach to STEM for High School (p. 95)

LAB-AIDS®, Inc. (Booth #1323)

Thursday, November 6	8:00–9:15 AM	W224E, Conv. Center	Investigating Gas Exchange (p. 49)
Thursday, November 6	10:00–11:15 AM	W224E, Conv. Center	Chemical Formula and Amino Acids (p. 52)
Thursday, November 6	12:30–1:45 PM	W224E, Conv. Center	Using the Engineering Design Process to Understand Heat (p. 55)

LAB-AIDS®, Inc., cont.

Thursday, November 6	2:15–3:30 PM	W224E, Conv. Center	Using Climate Proxies to Learn About Earth's Climate History (p. 61)
Thursday, November 6	4:00–5:15 PM	W224E, Conv. Center	Investigating Stem Cell Differentiation (p. 67)
Friday, November 7	8:00–9:15 AM	W224E, Conv. Center	DuPont Presents: Photosynthesis, Respiration, and Starches—It's a Plant's Life! (p. 75)
Friday, November 7	10:00–11:15 AM	W224E, Conv. Center	Waves, Energy, and Color (p. 83)
Friday, November 7	12 Noon–1:15 PM	W224E, Conv. Center	DuPont Presents: The Science of Food Safety (p. 89)
Friday, November 7	2:00–3:15 PM	W224E, Conv. Center	Investigating a Cliff Model (p. 95)
Friday, November 7	4:00–5:15 PM	W224E, Conv. Center	DuPont Presents: Power Up and Design Your Own Battery (p. 101)
Saturday, November 8	8:00–9:15 AM	W224E, Conv. Center	Using Climate Proxies to Learn About Earth's Climate History (p. 108)
Saturday, November 8	10:00–11:15 AM	W224E, Conv. Center	Waves, Energy, and Color (p. 110)

LearnEd Notebooks (Booth #1418)

Friday, November 7	8:00–9:15 AM	W221C, Conv. Center	Streamline Your Preparation and Presentation with Student Notebooks (p. 74)

LEGO Education (Booth #922)

Friday, November 7	2:00–3:15 PM	W224H, Conv. Center	MINDSTORMS® EV3 Robotics in the Middle School Classroom—Getting Started (p. 95)

LJ Create (Booth #932)

Friday, November 7	2:00–3:15 PM	W221C, Conv. Center	Help with Aligning New Teaching Strategies to Florida Science and Literacy Standards (p. 94)

MSOE Center for BioMolecular Modeling (Booth #1421)

Thursday, November 6	4:00–5:15 PM	W224C, Conv. Center	The Many Jobs of Proteins: Modeling Proteins and Enzymes (p. 67)
Friday, November 7	12 Noon–1:15 PM	W222A, Conv. Center	Protein Modeling: A Science Olympiad Event and the *NGSS* (p. 88)
Friday, November 7	4:00–5:15 PM	W222A, Conv. Center	Genes, Genomes, and the New World of Personalized Medicine (p. 100)

National Geographic Learning (Booth #1332)

Friday, November 7	10:00–11:15 AM	W221C, Conv. Center	National Geographic Explorers and STEM—From the World to Your Classroom! (p. 81)

Nature's Academy (Booth #1236)

Thursday, November 6	2:15–3:30 PM	W224G, Conv. Center	From Student to Scientist—Inspiring Stewardship and Inquiry for Positive Change (p. 61)

NewPath Learning (Booth #1032)

Friday, November 7	8:00–9:15 AM	W224G, Conv. Center	Integrating Online Learning into the Science Classroom (p. 75)

PASCO scientific (Booth #1027)

Friday, November 7	8:00–9:15 AM	W224A, Conv. Center	Achievable Inquiry in Biology—See How PASCO Technology Can Transform Data Collection in Your Lab! (p. 74)
Friday, November 7	10:00–11:15 AM	W224A, Conv. Center	Incorporate Science and Engineering Practices into Your Chemistry Lab Using PASCO Technology (p. 82)

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PASCO scientific, cont.

Friday, November 7	12 Noon–1:15 PM	W224A, Conv. Center	Enhance Your Physics Classroom Demonstrations with PASCO Equipment, Sensors, and New Capstone Software! (p. 88)

Pearson (Booth #1026)

Friday, November 7	8:00–9:15 AM	W224C, Conv. Center	The *Next Generation Science Standards*: What They Mean for Earth and Space Science (p. 75)
Friday, November 7	10:00–11:15 AM	W224C, Conv. Center	Beyond Climate to Global Change: Welcome to the Anthropocene! (p. 82)
Friday, November 7	12 Noon–1:15 PM	W224C, Conv. Center	Using Problem-Based Learning to Up Your *NGSS* Game (p. 89)
Friday, November 7	2:00–3:15 PM	W224C, Conv. Center	STEM and *NGSS* Inquiry in Chemistry—Effective, Efficient, Economical (p. 95)
Friday, November 7	4:00–5:15 PM	W224C, Conv. Center	Jump On the Project STEM Rollercoaster (p. 101)

Simulation Curriculum Corp. (Booth #1322)

Thursday, November 6	10:00–11:15 AM	W224G, Conv. Center	Hurricanes and Typhoons: Nature on the Rampage (p. 52)
Friday, November 7	10:00–11:15 AM	W224G, Conv. Center	Plate Tectonics: Continents on the Move (p. 83)
Friday, November 7	2:00–3:15 PM	W224G, Conv. Center	Stellar Evolution Made Easy (p. 95)

Swift Optical Instruments, Inc. (Booth #919)

Thursday, November 6	8:00–9:15 AM	W224G, Conv. Center	Experience the STEM Wi-Fi Classroom: Creating a Success Story for Your Students (p. 49)

Vernier Software & Technology (Booth #1119)

Friday, November 7	8:00–9:30 AM	W221B, Conv. Center	Chemistry and Biology with Vernier (p. 76)
Friday, November 7	10:00–11:30 AM	W221B, Conv. Center	Integrate iPad, Chromebook, and BYOD with Vernier Technology (p. 83)
Friday, November 7	12 Noon–1:30 PM	W221B, Conv. Center	Integrate iPad, Chromebook, and BYOD with Vernier Technology (p. 89)
Friday, November 7	2:00–3:30 PM	W221B, Conv. Center	Physics and Physical Science with Vernier (p. 95)

Wavefunction, Inc. (Booth #941)

Thursday, November 6	10:00–11:15 AM	W223 A/B, Conv. Center	Molecular-Level Visualization and the *NGSS*: Engaging Your Students (p. 52)
Friday, November 7	10:00–11:15 AM	W223 A/B, Conv. Center	Molecular-Level Visualization and the *NGSS*: Promoting Conceptual Understanding (p. 82)

WhiteBox Learning (Booth #927)

Thursday, November 6	10:00–11:15 AM	W224H, Conv. Center	The "E" in STEM: 3-D STEM Engineering (p. 52)
Friday, November 7	10:00–11:15 AM	W224H, Conv. Center	The "E" in STEM: 3-D STEM Engineering (p. 83)

Earth and Space Science

Thursday

8:00–9:00 AM	G	Bayhill 31, Hyatt	NASA Lunar and Meteorite Certification Class (p. 46)
10:00–11:15 AM	5–8	W222B, Conv. Center	Flinn Scientific Presents Hands-On Integrated Science Activities for Middle School (p. 51)
10:00–11:15 AM	6–9	W224G, Conv. Center	Hurricanes and Typhoons: Nature on the Rampage (p. 52)
2:00–3:00 PM	G	Chapin Theater, Conv. Center	Transforming STEM Education with Sharks and Real-World Science (p. 57)
2:00–3:00 PM	6–12	Bayhill 18, Hyatt	Using Real-Time NOAA Data to Support the *NGSS* (p. 57)
2:00–3:00 PM	5–12	Bayhill 21, Hyatt	Working the *NGSS* into Your Curriculum Through Ocean Exploration (p. 58)
2:00–3:00 PM	5–8	Bayhill 29, Hyatt	A Tale of Two Great Oceans: Wind-driven Ocean Circulation (p. 58)
2:00–3:00 PM	10–C	Bayhill 32, Hyatt	Modeling Stellar Evolution on the H-R Diagram (p. 58)
2:00–3:00 PM	9–12	Manatee Spring I, Hyatt	Water, Water Everywhere—But What Will It Support? (p. 58)
2:00–3:00 PM	G	Orlando Blrm. M, Hyatt	Using School Facilities as a Laboratory for Studying Sustainability Science (p. 58)
2:00–3:00 PM	1–8	Salon 5, Rosen Plaza	Teaching STEM with Project Learning Tree (p. 59)
2:15–3:30 PM	5–8	W221B, Conv. Center	Floods, Heat Waves, and Hurricanes: Analyzing Evidence for a Changing Climate Using FOSS (p. 60)
2:15–3:30 PM	9–12	W224E, Conv. Center	Using Climate Proxies to Learn About Earth's Climate History (p. 61)
2:15–3:30 PM	K–12	W224G, Conv. Center	From Student to Scientist—Inspiring Stewardship and Inquiry for Positive Change (p. 61)
3:30–4:30 PM	3–5	Salon 6, Rosen Plaza	NSTA Press® Session: Showcasing How Elementary Preservice Interns Teach Inside–Out (p. 63)
3:30–4:30 PM	3–12	Orlando Blrm. M, Hyatt	Using Inquiry to Teach Rocks, Part I: The Rock Cycle and Igneous Rocks (p. 64)
3:30–4:30 PM	K–8	Blrm. A, Rosen Plaza	Interactive Science Notebooks: An Amazing Beginning! (p. 64)
4:00–5:15 PM	5–8	W221B, Conv. Center	Evidence for Plate Movement with FOSS Earth History for Middle School (p. 66)
4:00–5:15 PM	9–C	W222A, Conv. Center	Teaching Environmental Science with BioInteractive (p. 66)
5:00–6:00 PM	G	Bayhill 31, Hyatt	NASA Remote-sensing Technology Applications (p. 68)
5:00–6:00 PM	7–C	Manatee Spring II, Hyatt	Modeling Black Holes with NASA (p. 69)
5:00–6:00 PM	3–12	Orlando Blrm. M, Hyatt	Using Inquiry to Teach Rocks, Part 2: Sedimentary and Metamorphic Rocks (p. 69)

Friday

8:00–8:30 AM	G	Bayhill 25, Hyatt	Explore the Earth System Using Real-World Data (p. 71)
8:00–8:30 AM	6–8	Salon 6, Rosen Plaza	Science, Service, and Stewardship: Coastal Area Climate Change Education…a Middle School Teacher's Approach! (p. 71)
8:00–9:00 AM	6–12	Orlando Blrm. M, Hyatt	Harnessing the Power of Earth System Science for Developing Science Practices and Crosscutting Concepts (p. 73)
8:00–9:00 AM	4–6	Salon 10, Rosen Plaza	Hidden Depths: What Really Lives Under the Ocean? (p. 73)
8:00–9:00 AM	P–8	Salon 5, Rosen Plaza	Engage In and Create a STEM-ulating Experience (p. 73)
8:00–9:15 AM	K–12	W224C, Conv. Center	The *Next Generation Science Standards*: What They Mean for Earth and Space Science (p. 75)
9:30–10:30 AM	G	Bayhill 29, Hyatt	Backyard Field Trips (p. 79)
9:30–10:30 AM	6–12	Orlando Blrm. M, Hyatt	How Weird Can It Get? Developing Weather and Climate Literacy (p. 79)
10:00–10:30 AM	3–9	Salon 9, Rosen Plaza	Sustainable Development-based Hands-On Activities That Relate to the *NGSS* (p. 81)
10:00–11:15 AM	K–12	W224C, Conv. Center	Beyond Climate to Global Change: Welcome to the Anthropocene! (p. 82)
10:00–11:15 AM	9–12	W224D, Conv. Center	Earth and Space Science—More Pertinent Today, More Important to Our Future (p. 82)
10:00–11:15 AM	6–12	W224G, Conv. Center	Plate Tectonics: Continents on the Move (p. 83)
11:00 AM–12 Noon	K–8	Salon 6, Rosen Plaza	AMSE Session: K–8 Teachers Helping Students Make Sense of Climate Change (p. 86)
11:00 AM–12 Noon	8–12	Bayhill 21, Hyatt	NASA's Space Forensics: Integrating Storytelling into STEM Education (p. 86)
11:00 AM–12 Noon	6–12	Orlando Blrm. M, Hyatt	Earth Science Rocks! Using Earth Science Activities to Engage Students as Scientists (p. 86)

2:00–3:00 PM	P–5	Chapin Theater, Conv. Center	The Psychology of Teaching About Climate Change (p. 90)
2:00–3:00 PM	G	Bayhill 31, Hyatt	Engage Your Students with NOAA's Ocean Acidification and Coral Reef Resources (p. 91)
2:00–3:00 PM	5–C	Bayhill 26, Hyatt	NASA's High-Energy Vision: Chandra and the X-Ray Universe (p. 91)
2:00–3:00 PM	7–C	Bayhill 32, Hyatt	The Biggest Bangs Since the Big Bang: NASA's Hunt for Gamma Ray Bursts (p. 92)
2:00–3:00 PM	G	Orlando Blrm. M, Hyatt	National Earth Science Teachers Association (NESTA) Rock and Mineral Raffle (p. 92)
2:00–3:15 PM	6–8	W224E, Conv. Center	Investigating a Cliff Model (p. 95)
2:00–3:15 PM	6–12	W224G, Conv. Center	Stellar Evolution Made Easy (p. 95)
2:30–3:00 PM	9–12	Bayhill 24, Hyatt	Using Career Academies to Integrate STEM in Real-World Applications (p. 97)
3:30–4:30 PM	8–C	Bayhill 23, Hyatt	Exploring Climate Change Using the Eyes in the Sky (p. 98)
3:30–4:30 PM	10–C	Bayhill 21, Hyatt	Spectroscopy—Stairway to the Stars (p. 98)
3:30–4:30 PM	9–C	Bayhill 32, Hyatt	Manipulatives to Models, II (p. 98)
3:30–4:30 PM	6–12	Orlando Blrm. M, Hyatt	Using Data in the Earth and Space Science Classroom to Engage Students as Real Scientists (p. 99)
3:30–4:30 PM	5–9	Salon 3, Rosen Plaza	Learning in Florida's Environment (LIFE): A Model for Informal/Formal Science Collaboration (p. 99)
4:00–4:30 PM	G	Bayhill 25, Hyatt	The Classroom "Without" Walls (p. 100)
4:00–4:30 PM	7–12	Bayhill 26, Hyatt	Earth, Wind, and Sun: Growing STEM Majors (p. 100)
5:00–6:00 PM	3–C	Bayhill 24, Hyatt	Did You Know Google Earth Could Do That? (p. 102)
5:00–6:00 PM	7–C	Bayhill 27, Hyatt	NASA Powers of 10: Scaling the Universe (p. 102)
5:00–6:00 PM	7–C	Bayhill 32, Hyatt	Ice Core Records—From Volcanoes to Solar Proton Events to Supernova Events (p. 103)
5:00–6:00 PM	3–9	Salon 3, Rosen Plaza	JetStream: An Online School for Weather (p. 103)

Saturday

8:00–9:00 AM	G	Bayhill 26, Hyatt	Climate Smart and Energy Wise: The Literacy Imperative of the 21st Century (p. 105)
8:00–9:00 AM	K–12	Blrm. B, Rosen Plaza	MY NASA DATA and S'COOL: Easy-to-Use NASA Projects for the Classroom (p. 105)
8:00–9:00 AM	1–12	Bayhill 27, Hyatt	Using Inquiry to Teach Minerals (p. 106)
8:00–9:00 AM	K–8	Salon 4, Rosen Plaza	AMSE Session: Creating and Implementing Effective Watershed Lessons for All Students: Use of *Next Generation Science Standards* Appendix D and Case Studies (p. 107)
8:00–9:15 AM	9–12	W224E, Conv. Center	Using Climate Proxies to Learn About Earth's Climate History (p. 108)
9:30–10:30 AM	5–12	Bayhill 28, Hyatt	Explore Our Water-filled World with SeaPerch: ROVs (Remote Operated Vehicles) (p. 109)
9:30–10:30 AM	3–12	Bayhill 27, Hyatt	Explore Earthquakes! (p. 109)
9:30–10:30 AM	7–12	Bayhill 29, Hyatt	An Infrared Exposé: Exposing the Mysteries of Our Universe (p. 110)
9:30–10:30 AM	3–6	Salon 10, Rosen Plaza	A Drop in My Drink—Diving into Water Activities Through Trade Books (p. 110)
9:30–10:30 AM	4–8	Salon 4, Rosen Plaza	The Patterns Are in the Rocks: A Low-Cost Model to Describe Changes Over Time (p. 110)
11:00 AM–12 Noon	6–12	Bayhill 29, Hyatt	Astrobiology (p. 112)
11:00 AM–12 Noon	7–C	Bayhill 32, Hyatt	Growing Energy: Educational Games to Explore Strategies for Sustainable Bioenergy Crop Production (p. 112)

Engineering, Technology, and the Application of Science

Thursday

8:00–9:00 AM	6–8	Bayhill 29, Hyatt	Engineering in the Middle (p. 47)
8:00–9:00 AM	K–6	Blrm. A, Rosen Plaza	Engineering in the Elementary (p. 48)
8:00–9:15 AM	3–5	W221B, Conv. Center	Engineering Design in the FOSS Next Generation Program (p. 48)
8:00–9:15 AM	5–12	W221 D/E, Conv. Center	A STEM Approach to Teaching Electricity and Magnetism (p. 49)
10:00–11:15 AM	5–C	W224H, Conv. Center	The "E" in STEM: 3-D STEM Engineering (p. 52)

12:30–1:45 PM	K–5	W223 A/B, Conv. Center	Are You Ready for the Challenge? Teaching Integrated STEM in the Elementary Grades (p. 54)
12:30–1:45 PM	9–12	W224H, Conv. Center	Using the Engineering Design Process to Understand Heat (p. 55)
2:00–2:30 PM	P–3	Salon 9, Rosen Plaza	Engineering Models in Early Childhood: Stepping Stones to *NGSS* Practices (p. 56)
2:00–3:00 PM	3–12	Bayhill 27, Hyatt	SECME: Raising Results with Rockets and Race Cars (p. 58)
2:00–3:00 PM	10–C	Bayhill 32, Hyatt	Modeling Stellar Evolution on the H-R Diagram (p. 58)
2:00–3:00 PM	G	Orlando Blrm. M, Hyatt	Using School Facilities as a Laboratory for Studying Sustainability Science (p. 58)
2:00–3:00 PM	3–5	Salon 7, Rosen Plaza	Put the "E" in STEM! Engineering Design Challenges, Easier than They Sound! (p. 59)
2:15–3:30 PM	9–12	W224E, Conv. Center	Using Climate Proxies to Learn About Earth's Climate History (p. 61)
2:15–3:30 PM	K–12	W224G, Conv. Center	From Student to Scientist—Inspiring Stewardship and Inquiry for Positive Change (p. 61)
2:15–3:30 PM	6–9	W224H, Conv. Center	Engineering Design vs. Science Practices: A Closer Look at *NGSS* Practices (p. 61)
3:30–4:30 PM	9–12	Manatee Spring I, Hyatt	Supporting STEM Practices Using Scientific Reading Material and Discussion (p. 64)
3:30–4:30 PM	1–8	Salon 10, Rosen Plaza	A Cross-Curricular Experience: Solving Real-World Problems Through Literacy-Rich STEM Discovery (p. 65)
4:00–5:15 PM	K–6	W221C, Conv. Center	STEM, Science Fairs, and Other Student Projects (p. 66)
4:00–5:15 PM	5–12	W221 D/E, Conv. Center	Building an Electric Motor the STEM Way (p. 66)
5:00–6:00 PM	8–C	Bayhill 26, Hyatt	Simulate STEM Online Through Virtual Clinical Trials (p. 67)
5:00–6:00 PM	3–8	Salon 10, Rosen Plaza	Engineering: Build a Better Kaleidoscope! (p. 69)

Friday

8:00–9:00 AM	6–12	Bayhill 21, Hyatt	From Single Cells to Complex Systems—Biofuels from Algae in the Future? (p. 72)
8:00–9:00 AM	K–5	Manatee Spring II, Hyatt	ASEE Session: Introducing Engineering to Elementary School (p. 72)
8:00–9:00 AM	P–8	Salon 5, Rosen Plaza	Engage In and Create a STEM-ulating Experience (p. 73)
8:00–9:00 AM	3–8	Salon 7, Rosen Plaza	NSTA Press® Session: Pendulums and Porch Swings (p. 73)
8:00–9:15 AM	6–12	W224E, Conv. Center	DuPont Presents: Photosynthesis, Respiration, and Starches—It's a Plant's Life! (p. 75)
8:00–9:15 AM	6–9	W224H, Conv. Center	Modeling in Engineering Design—From Ideas to Reality (p. 75)
9:30–10:30 AM	3–10	Bayhill 28, Hyatt	Write to Know Science (p. 78)
9:30–10:30 AM	6–12	Bayhill 21, Hyatt	CHANGE the Way You Teach Climate Change: The Link Between Red Tide and Climate Change (p. 79)
9:30–10:30 AM	5–C	Bayhill 27, Hyatt	Addressing Complexity of Energy Flow in an Ecosystem Using an Active Hands-On Model (p. 79)
9:30–10:30 AM	6–12	Manatee Spring I, Hyatt	AAPT Session: "Sunsational" Solar Electricity: The Physics of Photovoltaics (p. 79)
9:30–10:30 AM	5–12	Manatee Spring II, Hyatt	ASEE Session: ASEE's K–12 Outreach Program, eGFI: Engineering, Go For It! and *TeachEngineering.org* (p. 79)
9:30–10:30 AM	K–8	Salon 5, Rosen Plaza	Got Engineering? (p. 80)
9:30–10:30 AM	K–5	Salon 8, Rosen Plaza	STEM in Elementary? Who Has Time? (p. 81)
10:00–11:15 AM	6–8	W224E, Conv. Center	Waves, Energy, and Color (p. 83)
10:00–11:15 AM	5–C	W224H, Conv. Center	The "E" in STEM: 3-D STEM Engineering (p. 83)
11:00 AM–12 Noon	3–C	Bayhill 18, Hyatt	NSTA Press® Session: Uncovering Students' Ideas in the STEM Disciplines (p. 84)
11:00 AM–12 Noon	6–12	Bayhill 25, Hyatt	CPALMS 3D: Modeling and Printing Classroom Resources for STEM Education (p. 85)
11:00 AM–12 Noon	P–6	Salon 9, Rosen Plaza	Integrated Strategies for Addressing *CCSS ELA/Mathematics* Through Elementary STEM Activities (p. 86)
11:00 AM–12 Noon	1–6	Manatee Spring II, Hyatt	ASEE Session: Engaging Elementary-Aged Children and Parents in Engineering (p. 86)
11:00 AM–12 Noon	3–5	Salon 5, Rosen Plaza	The Science of Mini Golf: An Engineering Design Challenge (p. 88)
12 Noon–1:15 PM	K–8	W224B, Conv. Center	Engineering, Technology, and the Application of Science K–8 (p. 89)
12 Noon–1:15 PM	6–12	W224E, Conv. Center	DuPont Presents: The Science of Food Safety (p. 88)
2:00–3:00 PM	6–9	Salon 6, Rosen Plaza	STEM and the *NGSS* (p. 91)

2:00–3:00 PM	5–C	Bayhill 26, Hyatt	NASA's High-Energy Vision: Chandra and the X-Ray Universe (p. 91)
2:00–3:00 PM	P–1	Salon 10, Rosen Plaza	Cooling the Sidewalk for Ants (p. 93)
2:00–3:15 PM	P–K	W223 A/B, Conv. Center	STEM for Young Children: Prepare for Success! (p. 94)
2:00–3:15 PM	9–12	W224D, Conv. Center	Engineering the Future™: A Practical Approach to STEM for High School (p. 95)
2:00–3:15 PM	6–8	W224E, Conv. Center	Investigating a Cliff Model (p. 95)
2:30–3:00 PM	9–12	Bayhill 24, Hyatt	Using Career Academies to Integrate STEM in Real-World Applications (p. 97)
3:30–4:00 PM	6–C	Bayhill 19, Hyatt	STEM Enrichment—Sustainability Through Hydroponics and Aquaculture at Your School—Make It Happen! (p. 97)
3:30–4:30 PM	10–C	Bayhill 21, Hyatt	Spectroscopy—Stairway to the Stars (p. 98)
3:30–4:30 PM	7–12	Manatee Spring II, Hyatt	ASEE Session: SENSE IT: Student-created Water Quality Sensors (p. 99)
4:00–4:30 PM	4–C	Bayhill 19, Hyatt	Awesome Aquaponics for the Classroom—Cheap, Easy, and STEMtabulous (p. 100)
4:00–4:30 PM	G	Bayhill 25, Hyatt	The Classroom "Without" Walls (p. 100)
4:00–4:30 PM	7–12	Bayhill 26, Hyatt	Earth, Wind, and Sun: Growing STEM Majors (p. 100)
4:00–5:15 PM	K–12	W224C, Conv. Center	Jump On the Project STEM Rollercoaster (p. 101)
4:00–5:15 PM	6–12	W224E, Conv. Center	DuPont Presents: Power Up and Design Your Own Battery (p. 101)
5:00–6:00 PM	3–5	Blrm. B, Rosen Plaza	Citizen Science Research as the Context for Learning Elementary School Science (p. 102)
5:00–6:00 PM	3–8	Salon 6, Rosen Plaza	Science Content + Literacy = *Common Core* Success (p. 102)
5:00–6:00 PM	6–C	Manatee Spring I, Hyatt	AAPT Session: 3-D Printing as a Tool for STEM Learning (p. 102)
5:00–6:00 PM	1–3	Salon 9, Rosen Plaza	Ultimate K–3 Science Notebooking (p. 102)
5:00–6:00 PM	7–C	Bayhill 32, Hyatt	Ice Core Records—From Volcanoes to Solar Proton Events to Supernova Events (p. 103)
5:00–6:00 PM	7–12	Manatee Spring II, Hyatt	ASEE Session: Effective STEM Curriculum for Girls (p. 103)
5:00–6:00 PM	3–8	Salon 5, Rosen Plaza	An Engineering Fair for Everyone (p. 103)

Saturday

8:00–9:00 AM	P–5	Salon 9, Rosen Plaza	NSTA's Preschool–Elementary Committee Presents STEM Projects for Elementary Students (p. 106)
8:00–9:00 AM	6–12	Bayhill 29, Hyatt	Life Jackets, Density, and STEM (p. 106)
8:00–9:00 AM	6–9	Salon 5, Rosen Plaza	A Writing Engagement! (p. 107)
8:00–9:00 AM	K–6	Salon 8, Rosen Plaza	Introducing Children's Engineering into the Elementary Science Classroom (p. 107)
8:00–9:15 AM	9–12	W224E, Conv. Center	Using Climate Proxies to Learn About Earth's Climate History (p. 108)
9:30–10:30 AM	7–12	Bayhill 24, Hyatt	Polymers: New Twists on Old Favorites (p. 108)
9:30–10:30 AM	6–8	Blrm. B, Rosen Plaza	Get Them Connected: Experimental Design Tools and STEM Career Experiences! (p. 109)
9:30–10:30 AM	7–12	Bayhill 29, Hyatt	An Infrared Exposé: Exposing the Mysteries of Our Universe (p. 110)
9:30–10:30 AM	K–5	Salon 8, Rosen Plaza	Design, Engage, and Create: Engineering Design Challenges with the Orlando Science Center (p. 110)
10:00–11:15 AM	6–8	W224E, Conv. Center	Waves, Energy, and Color (p. 110)
11:00–11:30 AM	G	Bayhill 23, Hyatt	A Multimodal Approach to Integrative Science Education (p. 111)
11:00 AM–12 Noon	9–11	Bayhill 24, Hyatt	Corrosion: Chemistry Made Simple, Relevant, and Fun (p. 111)
11:00 AM–12 Noon	9–12	Bayhill 26, Hyatt	Engineer Your World: Integrating Engineering Design, Computational Thinking, and 21st-Century Skills (p. 111)
11:00 AM–12 Noon	7–C	Bayhill 32, Hyatt	Growing Energy: Educational Games to Explore Strategies for Sustainable Bioenergy Crop Production (p. 112)
11:00 AM–12 Noon	3–12	Manatee Spring II, Hyatt	An Inquiry Approach to Establishing Collaborative Learning Communities in a STEM Classroom (p. 112)
11:00 AM–12 Noon	3–5	Salon 7, Rosen Plaza	Model Eliciting Activities in the Elementary Classroom (p. 112)
11:00 AM–12 Noon	K–5	Salon 8, Rosen Plaza	Exciting Elementary Endeavors (p. 112)
11:00 AM–12 Noon	3–12	Manatee Spring II, Hyatt	An Inquiry Approach to Establishing Collaborative Learning Communities in a STEM Classroom (p. 113)
11:00 AM–12 Noon	3–5	Salon 7, Rosen Plaza	Model Eliciting Activities in the Elementary Classroom (p. 113)
11:00 AM–12 Noon	K–5	Salon 8, Rosen Plaza	Exciting Elementary Endeavors (p. 113)

Informal Science Education

Thursday

8:00–9:00 AM	3–C	Bayhill 19, Hyatt	Dazzling Deceptions: Discrepant Events That Delight and Mystify! (p. 45)
8:00–9:00 AM	1–9	Bayhill 27, Hyatt	Exotic Animals and Marine Fish in the Science Classroom (p. 47)
8:00–9:00 AM	1–8	Salon 10, Rosen Plaza	Engaging Kids with *NGSS* Science and Engineering Practices in a Community-based Science Workshop (p. 48)
8:30–9:00 AM	P–6	Salon 9, Rosen Plaza	Fostering Science Learning and Appreciation of Nature Through Play (p. 50)
10:00–11:15 AM	8–C	W221A, Conv. Center	Detecting the Silent Killer: Clinical Detection of Diabetes (p. 51)
12:30–1:45 PM	6–C	W221A, Conv. Center	Biotechnology Basics (p. 53)
2:00–2:30 PM	9–12	Bayhill 24, Hyatt	Forensic Botany in the High School Classroom: Real-World Application of Molecular Techniques (p. 56)
2:00–2:30 PM	5–8	Bayhill 26, Hyatt	STEM Career Explorations for Girls (p. 56)
2:00–3:00 PM	3–12	Bayhill 27, Hyatt	SECME: Raising Results with Rockets and Race Cars (p. 58)
2:00–3:00 PM	4–8	Blrm. A, Rosen Plaza	Newton, Calder, and the Circus (p. 59)
2:00–3:00 PM	1–8	Salon 5, Rosen Plaza	Teaching STEM with Project Learning Tree (p. 59)
2:15–3:30 PM	8–C	W221A, Conv. Center	Case of the Missing Records (p. 60)
2:15–3:30 PM	K–12	W224G, Conv. Center	From Student to Scientist—Inspiring Stewardship and Inquiry for Positive Change (p. 61)
2:30–3:00 PM	P–4	Salon 9, Rosen Plaza	Elementary Science Notebooking—The Real Deal! (p. 62)
5:00–6:00 PM	G	Bayhill 31, Hyatt	NASA Remote-sensing Technology Applications (p. 68)
5:00–6:00 PM	K–12	Bayhill 29, Hyatt	Into the Outdoors (p. 68)
5:00–6:00 PM	6–C	Bayhill 27, Hyatt	Human Body Systems—Building a Foundation for Success (p. 68)

Friday

8:00–9:00 AM	6–12	Bayhill 18, Hyatt	Growing with Water: A School-based Hydroponics Program (p. 71)
8:00–9:00 AM	6–12	Bayhill 21, Hyatt	From Single Cells to Complex Systems—Biofuels from Algae in the Future? (p. 72)
8:00–9:15 AM	1–10	W224G, Conv. Center	Integrating Online Learning into the Science Classroom (p. 75)
9:30–10:30 AM	5–C	Bayhill 27, Hyatt	Addressing Complexity of Energy Flow in an Ecosystem Using an Active Hands-On Model (p. 79)
9:30–10:30 AM	G	Bayhill 29, Hyatt	Backyard Field Trips (p. 79)
9:30–10:30 AM	3–6	Salon 10, Rosen Plaza	Biology Bob: Oh Whale! (p. 80)
9:30–10:30 AM	3–6	Salon 7, Rosen Plaza	NSTA Press® Session: Teaching Science Through Integrating Children's Literature and Outdoor Investigations (p. 81)
10:00–10:30 AM	7–C	Bayhill 31, Hyatt	Raising Students' Communication Skills Through Literacy in Science Strategies (p. 81)
10:00–11:15 AM	8–C	W221A, Conv. Center	Case of the Missing Records (p. 81)
11:00 AM–12 Noon	K–12	Bayhill 19, Hyatt	Growing Options: Campus Experiences with Gardening (p. 84)
11:00 AM–12 Noon	4–9	Bayhill 24, Hyatt	Differentiating for Success (p. 85)
11:00 AM–12 Noon	6–12	Bayhill 25, Hyatt	CPALMS 3D: Modeling and Printing Classroom Resources for STEM Education (p. 85)
11:00 AM–12 Noon	8–12	Bayhill 21, Hyatt	NASA's Space Forensics: Integrating Storytelling into STEM Education (p. 86)
11:00 AM–12 Noon	1–6	Manatee Spring II, Hyatt	ASEE Session: Engaging Elementary-Aged Children and Parents in Engineering (p. 86)
11:00 AM–12 Noon	3–8	Salon 3, Rosen Plaza	Creating STEM Connections—You Can Do This with Any Book! (p. 87)
11:00 AM–12 Noon	K–8	Salon 7, Rosen Plaza	NSTA Press® Session: *Bringing Outdoor Science In* (p. 88)
12 Noon–1:15 PM	8–C	W221A, Conv. Center	Detecting the Silent Killer: Clinical Detection of Diabetes (p. 88)
2:00–2:30 PM	6–12	Bayhill 25, Hyatt	CPALMS Perspectives: STEM Videos Featuring Experts, Teachers, Professionals, and Enthusiasts (p. 90)
2:00–3:00 PM	3–C	Bayhill 19, Hyatt	Magical Illusions and Scintillating Simulations for Science: It's Showtime! (p. 91
2:00–3:00 PM	4–6	Salon 9, Rosen Plaza	Saturday Biomedical Sciences Academy: Elementary Science Enrichment (p. 92)
2:30–3:00 PM	9–12	Bayhill 24, Hyatt	Using Career Academies to Integrate STEM in Real-World Applications (p. 97)

3:30–4:00 PM	G	Bayhill 26, Hyatt	STEM in the Park: A Model Program that Provides Roots for STEM Learning (p. 97)
3:30–4:30 PM	5–9	Salon 3, Rosen Plaza	Learning in Florida's Environment (LIFE): A Model for Informal/Formal Science Collaboration (p. 99)
4:00–4:30 PM	G	Bayhill 25, Hyatt	The Classroom "Without" Walls (p. 100)
4:00–4:30 PM	7–12	Bayhill 26, Hyatt	Earth, Wind, and Sun: Growing STEM Majors (p. 100)
4:00–4:30 PM	K–8	Salon 6, Rosen Plaza	Turning Lead to Gold—from Classroom Science to Expo-winning Science Projects (p. 100)
4:00–5:15 PM	6–C	W221A, Conv. Center	Biotechnology Basics (p. 100)
5:00–5:30 PM	7–C	Bayhill 26, Hyatt	Zoo Genetics: Key Aspects of Conservation Biology (p. 101)
5:00–6:00 PM	6–C	Manatee Spring I, Hyatt	AAPT Session: 3-D Printing as a Tool for STEM Learning (p. 102)
5:00–6:00 PM	8–12	Bayhill 21, Hyatt	Captivate Students' Interests Beyond the Classroom with Chemistry (p. 102)
5:00–6:00 PM	3–9	Salon 3, Rosen Plaza	JetStream: An Online School for Weather (p. 103)
5:00–6:00 PM	P–5	Salon 7, Rosen Plaza	NSTA Press® Session: Next Time You See… (p. 103)
5:00–6:00 PM	P–6	Salon 8, Rosen Plaza	Science Is Thoughtful, Crafty, and Fun! Activities to Enhance Your Curriculum (p. 103)
5:30–6:00 PM	9–C	Bayhill 19, Hyatt	A Model for Encouraging and Monitoring STEM Careers: Summer Research for High School Students (p. 104)

Saturday

8:00–9:00 AM	G	Bayhill 25, Hyatt	The Galápagos Islands Through Photos and Songs (Walking in Darwin's Footsteps) (p. 105)
8:00–9:00 AM	G	Bayhill 28, Hyatt	Before and After Retirement: Practicalities and Possibilities (p. 105)
8:00–9:00 AM	G	Bayhill 31, Hyatt	Using NSTA Resources for Professional Development (p. 105)
8:00–9:00 AM	K–8	Salon 6, Rosen Plaza	Science Assessment Strategies That Demonstrate Learning for All Students (p. 106)
8:00–9:00 AM	G	Bayhill 18, Hyatt	Planning and Designing Safe and Sustainable Science Facilities that Meet the *NGSS* (Science Facilities 101) (p. 106)
8:00–9:00 AM	7–C	Bayhill 32, Hyatt	Integrate Popular Literature and Nontraditional Science Activities and Assessments into Your Standards-based Classroom (p. 107)
8:00–9:00 AM	1–6	Manatee Spring II, Hyatt	Family STEM Explorations Created by Community Partnerships (p. 107)
8:00–9:00 AM	3–5	Salon 7, Rosen Plaza	Be Active with Interactive Science Notebooks (p. 107)
9:30–10:30 AM	7–12	Bayhill 26, Hyatt	Introducing Nanotechnology into the Chemistry Classroom (p. 109)
9:30–10:30 AM	5–12	Bayhill 28, Hyatt	Explore Our Water-filled World with SeaPerch: ROVs (Remote Operated Vehicles) (p. 109)
9:30–10:30 AM	K–2/ 6–12	Salon 9, Rosen Plaza	Big Kids Make Big Books (p. 109)
9:30–10:30 AM	G	Bayhill 18, Hyatt	Planning and Designing Safe and Sustainable Science Facilities That Meet the *NGSS* (Science Facilities 102) (p. 109)
9:30–10:30 AM	3–8	Salon 3, Rosen Plaza	Interactive Formative Assessments (p. 110)
9:30–10:30 AM	K–5	Salon 8, Rosen Plaza	Design, Engage, and Create: Engineering Design Challenges with the Orlando Science Center (p. 110)
11:00–11:30 AM	2–5	Salon 6, Rosen Plaza	Representations of Scientists in Children's Literature and Multimedia (p. 111)
11:00 AM–12 Noon	K–12	Bayhill 25, Hyatt	Creating a Successful Citizen Science Program in an Urban Setting (p. 111)
11:00 AM–12 Noon	K–6	Salon 9, Rosen Plaza	Biology Bob: Waterway Animals (p. 112)

General Science Education

Thursday

8:00–8:30 AM	1–5	Salon 9, Rosen Plaza	Inside–Out: Integrating Environmental Literacy into STEM at the Elementary Level (p. 45)
8:00–9:00 AM	5–12	Bayhill 23, Hyatt	NMLSTA Session: Science and Special Education—Working Together (p. 45)
8:00–9:00 AM	6–12	Bayhill 25, Hyatt	Science on the Silver Screen (p. 45)

8:00–9:00 AM	G	Orlando Blrm. N, Hyatt	First-Timer Conference Attendees Orientation—Is This Your First NSTA Conference? (p. 46)
8:00–9:00 AM	6–8	Blrm. B, Rosen Plaza	Inquiry-based Instructional Strategies to Increase Science Achievement (p. 46)
8:00–9:00 AM	3–12	Salon 6, Rosen Plaza	NSTA Press® Session: Uncovering Student Ideas Through Digital Applications! (p. 46)
8:00–9:00 AM	G	Orlando Blrm. M, Hyatt	CSSS Session: Understanding the Vision for Science Education from the NRC *Framework* and the *NGSS* (p. 48)
8:00–9:15 AM	K–6	W221C, Conv. Center	Science, the Literacy Connection, and the *CCSS ELA* (p. 49)
8:00–9:15 AM	6–8	W224A, Conv. Center	Making Failure Fun: Amplify Science Games (p. 49)
8:00–9:15 AM	K–8	W224B, Conv. Center	An Invitation: Moving Forward with the NRC *Framework* and *NGSS* (p. 49)
8:00–9:15 AM	7–12	W224G, Conv. Center	Experience the STEM Wi-Fi Classroom: Creating a Success Story for Your Students (p. 49)
8:30–9:00 AM	P–6	Salon 9, Rosen Plaza	Fostering Science Learning and Appreciation of Nature Through Play (p. 50)
9:15–10:30 AM	G	Chapin Theater, Conv. Center	Brain Sense: Learning About the Brain Through Puzzles, Illusions, and Hands-On Activities (p. 50)
8:00–9:15 AM	1–6	W221B, Conv. Center	Science Practices: What Does Argumentation Look Like in an Elementary Classroom? (p. 51)
10:00–11:15 AM	K–5	W224A, Conv. Center	Learn How to Integrate the *NGSS* and *CCSS ELA* from The Lawrence Hall of Science (p. 52)
12:30–1:45 PM	1–6	W221B, Conv. Center	Crosscutting Concepts: What Do They Look Like in an Elementary Classroom? (p. 53)
12:30–1:45 PM	K–6	W221C, Conv. Center	Teaching Argumentation for Our Next Generation (p. 53)
12:30–1:45 PM	6–8	W224A, Conv. Center	Immerse Students into the World of Scientists and Engineers by Putting Sims at the Center of Learning (p. 54)
2:00–2:30 PM	11–C	Bayhill 23, Hyatt	What Is "Scientific Literacy" and Why Is It Important to STEM Majors? (p. 56)
2:00–3:00 PM	P–4/C	Bayhill 31, Hyatt	Community Connections: Engaging Strategies for Preservice Elementary Teachers (p. 57)
2:00–3:00 PM	P–5	Salon 6, Rosen Plaza	NSTA Press® Session: Uncovering Elementary Students Ideas Through Science Talk (p. 57)
2:00–3:00 PM	6–12	Manatee Spring II, Hyatt	How Science Works—Wondering, Asking, and Finding Out (p. 58)
2:00–3:00 PM	G	Orlando Blrm. N, Hyatt	Presidential Awardees Share-a-Thon (p. 58)
2:00–3:00 PM	3–5	Salon 10, Rosen Plaza	What Do Scientists Do? Exploring the Nature of Science in Your Elementary Classroom (p. 59)
2:15–3:30 PM	K–8	W221C, Conv. Center	How Do They Use FOSS in Their School District? (p. 60)
2:15–3:30 PM	G	W222B, Conv. Center	Making Science Notebooks FOLD-tastic via Notebook Foldables® (p. 61)
2:15–3:30 PM	6–8	W223 A/B, Conv. Center	Implementing the Eight *NGSS* Science and Engineering Practices with Research-based Curriculum (p. 61)
2:15–3:30 PM	K–5	W224B, Conv. Center	Bring Visual Science into Grades K–5 Classrooms—It's a Game Changer! (p. 61)
2:30–3:00 PM	P–4	Salon 9, Rosen Plaza	Elementary Science Notebooking—The Real Deal! (p. 62)
3:30–4:00 PM	G	Bayhill 26, Hyatt	The Chesapeake Bay Experience: An Interdisciplinary Approach to Environmental Education and Service Learning (p. 62)
3:30–4:30 PM	9–C	Bayhill 23, Hyatt	SCST Session: Case Studies 101 (p. 63)
3:30–4:30 PM	K–12	Bayhill 28, Hyatt	NOAA in Your Backyard and Beyond: Professional Development Opportunities and Local Educator Resources (p. 63)
3:30–4:30 PM	P–12	Bayhill 31, Hyatt	And the Winners Are…the Best in Trade Books for Science (p. 63)
3:30–4:30 PM	K–5	Salon 9, Rosen Plaza	Elementary Science Showcase…Students Take the Lead! (p. 63)
3:30–4:30 PM	3–C	Manatee Spring II, Hyatt	Balanced Assessment in the Inquiry-driven STEM Classroom (p. 64)
3:30–4:30 PM	4–8	Salon 5, Rosen Plaza	Using 3-D Graphic Organizers to Increase Science Literacy and Develop Writing (p. 65)
3:30–4:30 PM	3–5	Salon 7, Rosen Plaza	Problem-Based Learning: Adding Rigor and Relevance to STEM Instruction (p. 65)
5:00–5:30 PM	K–12	Bayhill 23, Hyatt	NARST Session: Leveraging Teacher Leadership to Support the Next Generation Science Standards (p. 67)
5:00–6:00 PM	K–12	Bayhill 19, Hyatt	The NGSS@NSTA Hub (p. 67)
5:00–6:00 PM	C	Bayhill 24, Hyatt	Research Experiences for Undergraduates: Engaging in Science Practices (p. 67)
5:00–6:00 PM	8–C	Bayhill 26, Hyatt	Simulate STEM Online Through Virtual Clinical Trials (p. 67)

5:00–6:00 PM	3–5	Salon 6, Rosen Plaza	NSTA Press® Session: Inquiring Scientists, Inquiring Readers: Using Literacy Strategies to Support Inquiry Investigations (p. 68)
5:00–6:00 PM	K–12	Bayhill 29, Hyatt	Into the Outdoors (p. 68)
5:00–6:00 PM	P–5	Salon 5, Rosen Plaza	Reading Through STEM: Problem-based Interdisciplinary Unit Design (p. 69)
5:00–6:00 PM	3–8	Salon 8, Rosen Plaza	Stretch Your Legs for Science! (p. 69)
5:30–6:00 PM	11–C	Bayhill 18, Hyatt	Recruitment and Retention of High School Juniors to Become STEM Teachers (p. 69)

Friday

8:00–9:00 AM	G	Bayhill 26, Hyatt	Reinforce STEM with Medical Mysteries Web Adventures (p. 71)
8:00–9:00 AM	K–6	Blrm. B, Rosen Plaza	Creating K–6 Classrooms that Embrace Science Inquiry: Helping Students Think and Work Like Scientists (p. 72)
8:00–9:00 AM	3–12	Bayhill 27, Hyatt	Brain Break Boosters and NASA's New Horizons (p. 72)
8:00–9:00 AM	K–5	Salon 8, Rosen Plaza	STEM Is Not EXTRA (p. 73)
8:00–9:15 AM	6–10	W221C, Conv. Center	Streamline Your Preparation and Presentation with Student Notebooks (p. 74)
8:00–9:15 AM	K–8	W222A, Conv. Center	From Farm to Fork to Classroom—Easy Lessons to Teach the Science of Feeding the World (p. 74)
8:00–9:15 AM	G	W222B, Conv. Center	Envelope Graphic Organizers—UnFOLDing the Possibilities (p. 74)
8:00–9:15 AM	K–5	W223 A/B, Conv. Center	Blending the *CCSS* and *NGSS* in Your K–5 Science Classroom (p. 74)
8:00–9:15 AM	6–8	W224D, Conv. Center	Project-Based Inquiry Science™: Blending Science and Engineering Practices, Core Ideas, and Crosscutting Concepts in Middle School Classrooms (p. 75)
8:00–9:15 AM	1–10	W224G, Conv. Center	Integrating Online Learning into the Science Classroom (p. 75)
8:00–10:00 AM	P–5	Blrm. A, Rosen Plaza	Elementary Make and Take (p. 76)
8:30–9:00 AM	K–12	Bayhill 25, Hyatt	Community Study Units: So Much More than a Field Trip (p. 76)
8:30–9:00 AM	6–9	Salon 6, Rosen Plaza	Leadership in the Classroom (p. 76)
9:30–10:00 AM	6–12	Bayhill 18, Hyatt	Helping New Teachers Survive and Thrive: Florida's STEM Teacher Induction and Professional Support (STEM TIPS) Online Initiative (p. 77)
9:30–10:00 AM	5–9	Salon 9, Rosen Plaza	Strategies on Moving Toward 21st-Century Teaching (p. 77)
9:30–10:30 AM	K–12	Bayhill 19, Hyatt	Gray Matter: Learning and Teaching Science with the Brain in Mind (p. 78)
9:30–10:30 AM	G	Bayhill 23, Hyatt	NSELA Session: Tools for Science Leaders Part 2 (p. 78)
9:30–10:30 AM	K–5	Blrm. B, Rosen Plaza	Classroom Science Fair Projects Made Simple (p. 78)
9:30–10:30 AM	K–6	Salon 6, Rosen Plaza	Science Education Needs a Pinch of Pixie Dust! (p. 78)
9:30–10:30 AM	3–6	Salon 10, Rosen Plaza	Biology Bob: Oh Whale! (p. 80)
9:30–10:30 AM	3–6	Salon 7, Rosen Plaza	NSTA Press® Session: Teaching Science Through Integrating Children's Literature and Outdoor Investigations (p. 81)
10:00–10:30 AM	6–12	Bayhill 18, Hyatt	Growing Master Teachers and Top Notch Curriculum Resources Through Content Leadership Teams (p. 81)
10:00–11:15 AM	2–5	W221C, Conv. Center	National Geographic Explorers and STEM—From the World to Your Classroom! (p. 81)
10:00–11:15 AM	6–8	W224B, Conv. Center	Bring Visual Science into Grades 6–8 Classrooms—It's a Game Changer! (p. 82)
10:00–11:30 AM	3–C	W221B, Conv. Center	Integrate iPad, Chromebook, and BYOD with Vernier Technology (p. 83)
11:00 AM–12 Noon	G	Chapin Theater, Conv. Center	Using the Tools of the *NGSS* to Support Quality Science Instruction (p. 84)
11:00 AM–12 Noon	11–C	Bayhill 23, Hyatt	SCST Session: Building a Topic's Course Using Case Studies (p. 84)
11:00 AM–12 Noon	6–12	Bayhill 26, Hyatt	Do You Need a New Science Lab? (p. 85)
11:00 AM–12 Noon	K–12	Bayhill 28, Hyatt	A Tool to Develop Preservice Teachers: NSTA Learning Center (p. 85)
11:00 AM–12 Noon	5–C	Bayhill 31, Hyatt	Inquiry 2.0: Ramping Up Inquiry to Meet the *NGSS* (p. 85)
11:00 AM–12 Noon	2–7	Blrm. B, Rosen Plaza	Using the iPad App StoryMaker to Teach and Test Variables in Elementary Classrooms (p. 85)
11:00 AM–12 Noon	K–12	Bayhill 27, Hyatt	Change from Within: Strategies to Initiate and Sustain Professional Learning Communities for Science Teachers (p. 86)
11:00 AM–12 Noon	6–12	Bayhill 29, Hyatt	L.A.C.E.S. (Learning Activities for Cognitive Engagement in STEM) (p. 86)
11:00 AM–12 Noon	P–8	Blrm. A, Rosen Plaza	CESI Session: Elementary Science Share-a-Thon (p. 87)

11:00 AM–12 Noon	K–5	Salon 10, Rosen Plaza	Elementary Teachers—Don't Let Science Anxiety Impact Your Science Teaching (p. 87)
11:00 AM–12 Noon	K–8	Salon 7, Rosen Plaza	NSTA Press® Session: *Bringing Outdoor Science In* (p. 88)
11:00 AM–12 Noon	3–8	Salon 8, Rosen Plaza	ASTE Session: Experiencing Communication Barriers: Building Teacher Empathy for English Language Learners (p. 88)
12 Noon–1:15 PM	K–11	W224C, Conv. Center	Using Problem-Based Learning to Up Your *NGSS* Game (p. 89)
12 Noon–1:15 PM	3–C	W221B, Conv. Center	Integrate iPad, Chromebook, and BYOD with Vernier Technology (p. 89)
2:00–2:30 PM	6–12	Bayhill 25, Hyatt	CPALMS Perspectives: STEM Videos Featuring Experts, Teachers, Professionals, and Enthusiasts (p. 90)
2:00–3:00 PM	G	Bayhill 18, Hyatt	NSTA Press® Session: Uncovering Teachers' and College Students' Ideas in Science (p. 91)
2:00–3:00 PM	3–C	Bayhill 19, Hyatt	Magical Illusions and Scintillating Simulations for Science: It's Showtime! (p. 91)
2:00–3:00 PM	K–12	Bayhill 23, Hyatt	NMLSTA Session: Writing a Successful Grant Proposal (p. 91)
2:00–3:00 PM	K–12	Bayhill 28, Hyatt	The NSTA Learning Center: Free Professional Development Resources and Opportunities for Educators (p. 91)
2:00–3:00 PM	8–12	Bayhill 21, Hyatt	Forensics Science: Using Math and Science to Solve Crimes (p. 92)
2:00–3:00 PM	1–12	Bayhill 27, Hyatt	Exploring Vocabulary in the Science Classroom (p. 92)
2:00–3:00 PM	1–5	Salon 3, Rosen Plaza	CESI Session: Integrating Science and Literacy: Proven Strategies Developed from Evidence-based Practices (p. 93)
2:00–3:00 PM	K–5	Salon 7, Rosen Plaza	NSTA Press® Session: Picture-Perfect Science Lessons: Using Children's Books to Guide Inquiry (p. 93)
2:00–3:15 PM	K–12	W221C, Conv. Center	Help with Aligning New Teaching Strategies to Florida Science and Literacy Standards (p. 94)
2:00–3:15 PM	6–9	W224H, Conv. Center	MINDSTORMS® EV3 Robotics in the Middle School Classroom—Getting Started (p. 95)
2:00–4:00 PM	G	Bayhill 17, Hyatt	NSTA's Exemplary Science Programs (ESP) Meeting Current Reform Efforts (p. 96)
2:00–4:00 PM	G	Bayhill 20, Hyatt	Retiring? Tricks and Tips for the Next Phase of Your Life (p. 96)
3:00–4:00 PM	9–C	W224F, Conv. Center	Communicating Science Through Lab Notebooking (p. 97)
3:30–4:00 PM	G	Bayhill 26, Hyatt	STEM in the Park: A Model Program that Provides Roots for STEM Learning (p. 97)
3:30–4:00 PM	P–8	Salon 6, Rosen Plaza	Infusing Literature into Science Instruction in Order to Promote the Next Generation Science Standards (p. 97)
3:30–4:30 PM	G	Bayhill 28, Hyatt	Authors Wanted! Learn How to Submit an Article for Publication in an NSTA Journal (p. 98)
3:30–4:30 PM	K–12	Bayhill 31, Hyatt	The Greater Southern Tier of New York STEM Education Initiative (p. 98)
3:30–4:30 PM	6–8	Blrm. B, Rosen Plaza	I'll Talk About TV, But I Will Not Talk About Science (p. 98)
3:30–4:30 PM	K–2	Salon 10, Rosen Plaza	STEM in the Primary Classroom (p. 99)
3:30–4:30 PM	4–5	Salon 5, Rosen Plaza	Data Chats Can Be FUN! (p. 99)
3:30–4:30 PM	2–6	Salon 7, Rosen Plaza	NSTA Press® Session: Teaching Science Through Trade Books—Exemplars from the Book and Featured Columns (p. 99)
3:30–4:30 PM	1–5	Salon 8, Rosen Plaza	*NGSS*—Make Your Lessons 3-D (p. 99)
4:00–5:15 PM	6–12	W224B, Conv. Center	Engineer Excitement in Your Classroom with a Carolina STEM Challenge® (p. 101)
5:00–5:30 PM	6–C	Bayhill 19, Hyatt	Creating Your Own Textbooks (p. 101)
5:00–5:30 PM	3–C	Bayhill 25, Hyatt	Differentiation of Talented and Gifted Learners' Instruction for Higher-Level Process Skills of Science Using the Polycyclic Inquiry Approach (p. 101)
5:00–5:30 PM	7–C	Bayhill 26, Hyatt	Zoo Genetics: Key Aspects of Conservation Biology (p. 101)
5:00–6:00 PM	K–12	Bayhill 31, Hyatt	Integrating STEM in the Science Classroom: Design, Engineering Practices, and Real-World Context via Model Eliciting Activities (p. 102)
5:00–6:00 PM	P–5	Salon 7, Rosen Plaza	NSTA Press® Session: Next Time You See… (p. 103)
5:00–6:00 PM	P–6	Salon 8, Rosen Plaza	Science Is Thoughtful, Crafty, and Fun! Activities to Enhance Your Curriculum (p. 103)
5:30–6:00 PM	9–C	Bayhill 19, Hyatt	A Model for Encouraging and Monitoring STEM Careers: Summer Research for High School Students (p. 104)

Saturday

8:00–8:30 AM	G	Bayhill 19, Hyatt	Five Critical Process Skills for the 21st Century (p. 105)
8:00–9:00 AM	7–C	Bayhill 32, Hyatt	Integrate Popular Literature and Nontraditional Science Activities and Assessments into Your Standards-based Classroom (p. 107)
8:00–9:00 AM	1–6	Manatee Spring II, Hyatt	Family STEM Explorations Created by Community Partnerships (p. 107)
8:00–9:00 AM	5–9	Salon 3, Rosen Plaza	The Science 2V Strategy for Improving Reading Comprehension (p. 107)
9:30–10:30 AM	K–12	Bayhill 19, Hyatt	Interactive Notebooks: Shifting Practice and Intentionality to Make It Meaningful (p. 108)
9:30–10:30 AM	3–12	Bayhill 23, Hyatt	Promoting Science Literacy Development Through Trade Books (p. 108)
11:00 AM–12 Noon	3–12	Bayhill 19, Hyatt	You Think Your Students Know Science? Using Multimedia and Online Collaboration in Your Formative Science Assessment (p. 111)
11:00 AM–12 Noon	4–10	Bayhill 31, Hyatt	Biographies Brought to Life (p. 111)
11:00 AM–12 Noon	6–9	Blrm. B, Rosen Plaza	Discover the Amazing World of Engaging Discrepant Event Science Demonstrations (p. 111)
11:00 AM–12 Noon	K–12	Bayhill 21, Hyatt	NSTA Press® Session: It's Debatable! Using Socioscientific Issues to Develop Scientific Literacy K–12 (p. 112)
11:00 AM–12 Noon	3–6	Salon 4, Rosen Plaza	Engage and Excite with Elementary Science Olympiad (p. 113)
11:30 AM–12 Noon	2–5	Salon 6, Rosen Plaza	Getting Ready to PARCC—Using Science Content to Teach Students Writing (p. 113)

Life Science

Thursday

8:00–9:00 AM	9–C	Bayhill 28, Hyatt	Moving Past Memorization: Using Performance Tasks to Improve Critical Thinking in the Science Classroom (p. 46)
8:00–9:00 AM	1–9	Bayhill 27, Hyatt	Exotic Animals and Marine Fish in the Science Classroom (p. 47)
8:00–9:00 AM	8–10	Bayhill 32, Hyatt	Bridge to Biology (p. 47)
8:00–9:00 AM	K–12	Manatee Spring II, Hyatt	Exploring the Science and Engineering Practices (p. 48)
8:00–9:00 AM	9–12	Manatee Spring I, Hyatt	Practicing Argumentation in the High School Science Classroom (p. 47)
8:00–9:00 AM	P–3	Salon 8, Rosen Plaza	Building Healthy Brains: Connecting Young Learners to the Outdoors Through Growing Up WILD™ (p. 48)
8:00–9:15 AM	8–C	W221A, Conv. Center	Using the Polymerase Chain Reaction to Identify Genetically Modified Foods (p. 48)
8:00–9:15 AM	9–12	W224E, Conv. Center	Investigating Gas Exchange (p. 49)
8:30–9:00 AM	6–12	Bayhill 18, Hyatt	Using iPad Technology to Bridge the Gap Between Struggling and On-Grade-Level Students by Increasing the Use of Academic Language Through Video Podcasting (p. 50)
10:00–11:15 AM	8–C	W221A, Conv. Center	Detecting the Silent Killer: Clinical Detection of Diabetes (p. 51)
10:00–11:15 AM	5–12	W221C, Conv. Center	Solving the Mystery of STEM Using Forensic Science (p. 51)
10:00–11:15 AM	5–12	W221 D/E, Conv. Center	Exploring Genetics and Heredity with Crazy Traits (p. 51)
10:00–11:15 AM	9–C	W222A, Conv. Center	Evolving Switches, Evolving Bodies: A Story of Gene Regulation and Evolution (p. 51)
10:00–11:15 AM	5–8	W222B, Conv. Center	Flinn Scientific Presents Hands-On Integrated Science Activities for Middle School (p. 51)
12:30–1:45 PM	6–C	W221A, Conv. Center	Biotechnology Basics (p. 53)
12:30–1:45 PM	9–C	W222A, Conv. Center	Great Discoveries in Science: The Double Helix (p. 54)
12:30–1:45 PM	K–12	W224B, Conv. Center	Hands-On Science with Classroom Critters (p. 54)
12:30–1:45 PM	8–C	W224H, Conv. Center	Build Human Anatomy in Clay—One System at a Time (p. 55)
1:00–2:30 PM	9–C	W224F, Conv. Center	Identify Patient Zero of a Zombie Apocalypse (p. 56)
2:00–2:30 PM	9–12	Bayhill 24, Hyatt	Forensic Botany in the High School Classroom: Real-World Application of Molecular Techniques (p. 56)
2:15–3:30 PM	8–C	W221A, Conv. Center	Case of the Missing Records (p. 60)
2:15–3:30 PM	5–12	W221 D/E	Exploring Genetics and Heredity with Crazy Traits (p. 60)

2:15–3:30 PM	9–C	W222A, Conv. Center	Teaching Evolution with BioInteractive (p. 60)
2:15–3:30 PM	8–C	W224C, Conv. Center	New Modeling Kits: Flow of Genetic Information and Phospholipid and Membrane Transport Kits (p. 61)
2:15–3:30 PM	K–12	W224G, Conv. Center	From Student to Scientist—Inspiring Stewardship and Inquiry for Positive Change (p. 61)
2:30–3:00 PM	9–12	Bayhill 24, Hyatt	Flowers, Birds, and Bees: Constructing Phylogenies and Interpreting Plant/Pollinator Interactions in the High School Classroom (p. 62)
3:00–4:30 PM	9–C	W224F, Conv. Center	Effortlessly Integrate Inquiry with Glowing Bacteria (AP Big Idea 3) (p. 62)
3:30–4:30 PM	6–12	Bayhill 21, Hyatt	Learn the Magic of Affordable Classroom Hydroponics (p. 64)
3:30–4:30 PM	6–10	Bayhill 22, Hyatt	Scale the Universe (p. 64)
3:30–4:30 PM	4–10	Bayhill 27, Hyatt	Engagement Modes: Action Based on Research (p. 64)
3:30–4:30 PM	G	Bayhill 29, Hyatt	STEM-ulating Simulations (p. 64)
3:30–4:30 PM	K–3	Salon 8, Rosen Plaza	Genetics Is Elementary: Teaching the Principles of Genetics to Early Elementary Students (p. 65)
4:00–4:30 PM	6–C	Bayhill 19, Hyatt	Evolution Education in Florida (p. 65)
4:00–5:15 PM	8–C	W221A, Conv. Center	The Drunken Worms: Exploring Gene Function with *C. elegans* (p. 66)
4:00–5:15 PM	9–C	W222A, Conv. Center	Teaching Environmental Science with BioInteractive (p. 66)
4:00–5:15 PM	6–12	W224B, Conv. Center	Comparative Vertebrate Anatomy with Carolina's Perfect Solution® Specimens (p. 66)
4:00–5:15 PM	9–12	W224E, Conv. Center	Investigating Stem Cell Differentiation (p. 67)
5:00–6:00 PM	8–C	Bayhill 26, Hyatt	Simulate STEM Online Through Virtual Clinical Trials (p. 67)
5:00–6:00 PM	6–12	Bayhill 22, Hyatt	Integrating STEM and 21st-Century Skills into the Virtual Classroom (p. 68)
5:00–6:00 PM	9–12	Manatee Spring I, Hyatt	CRASH Science! Investigating the Dangers of Distracted Driving (p. 69)

Friday

8:00–9:00 AM	6–12	Bayhill 18, Hyatt	Growing with Water: A School-based Hydroponics Program (p. 71)
8:00–9:00 AM	6–C	Bayhill 19, Hyatt	*NGSS* Practices Reduce Conflict and Help Religious Students Study Evolution! (p. 71)
8:00–9:00 AM	G	Bayhill 23, Hyatt	NSELA Session: Tools for Science Leaders Part 1 (p. 71)
8:00–9:00 AM	G	Bayhill 26, Hyatt	Reinforce STEM with Medical Mysteries Web Adventures (p. 71)
8:00–9:00 AM	1–12	Bayhill 28, Hyatt	Supporting English Language Learners (p. 71)
8:00–9:00 AM	G	Bayhill 31, Hyatt	Engaging Your Students: Creating a STEM Virtual Poster Competition (p. 71)
8:00–9:00 AM	K–12	Bayhill 17, Hyatt	Life Cycle of the Monarch Butterfly (p. 72)
8:00–9:00 AM	6–12	Bayhill 21, Hyatt	From Single Cells to Complex Systems—Biofuels from Algae in the Future? (p. 72)
8:00–9:00 AM	11–12	Bayhill 29, Hyatt	Using Case Studies to Promote Technical Literacy in an Anatomy and Physiology Class (p. 72)
8:00–9:00 AM	P–8	Salon 5, Rosen Plaza	Engage In and Create a STEM-ulating Experience (p. 73)
8:00–9:15 AM	6–C	W221A, Conv. Center	Biotechnology Basics (p. 74)
8:00–9:15 AM	8–12	W224A, Conv. Center	Achievable Inquiry in Biology—See How PASCO Technology Can Transform Data Collection in Your Lab! (p. 74)
8:00–9:15 AM	6–12	W224B, Conv. Center	AUTOPSY: Forensic Dissection Featuring Carolina's Perfect Solution® Pigs (p. 75)
8:00–9:15 AM	6–12	W224E, Conv. Center	DuPont Presents: Photosynthesis, Respiration, and Starches—It's a Plant's Life! (p. 75)
8:00–9:30 AM	7–C	W221B, Conv. Center	Chemistry and Biology with Vernier (p. 76)
8:00–10:00 AM	9–C	W224F, Conv. Center	What Fish Is That? Have Fun with PCR, Fish Flash Cards, and Jeopardy! to Perform DNA-based Identification (p. 77)
9:30–10:30 AM	G	Chapin Theater, Conv. Center	Crittercam: An Adventure in STEM Education (p. 77)
9:30–10:30 AM	3–10	Bayhill 28, Hyatt	Write to Know Science (p. 78)
9:30–10:30 AM	K–12	Bayhill 17, Hyatt	Life Cycle of the Monarch Butterfly (p. 79)
9:30–10:30 AM	5–C	Bayhill 27, Hyatt	Addressing Complexity of Energy Flow in an Ecosystem Using an Active Hands-On Model (p. 79)
9:30–10:30 AM	3–6	Salon 10, Rosen Plaza	Biology Bob: Oh Whale! (p. 80)

10:00–10:30 AM	7–C	Bayhill 31, Hyatt	Raising Students' Communication Skills Through Literacy in Science Strategies (p. 81)
10:00–11:15 AM	8–C	W221A, Conv. Center	Case of the Missing Records (p. 81)
10:30 AM–12 Noon	9–C	W224F, Conv. Center	DNA Detectives: Who Killed Jose? (p. 83)
11:00 AM–12 Noon	9–12	Bayhill 32, Hyatt	The Human Microbiome (p. 86)
12 Noon–1:15 PM	8–C	W221A, Conv. Center	Detecting the Silent Killer: Clinical Detection of Diabetes (p. 88)
12 Noon–1:15 PM	9–12	W222A, Conv. Center	Protein Modeling: A Science Olympiad Event and the *NGSS* (p. 88)
12 Noon–1:15 PM	6–12	W224E, Conv. Center	DuPont Presents: The Science of Food Safety (p. 88)
1:30–2:30 PM	9–C	W224F, Conv. Center	Are Worms Smarter than Your Students? (AP Big Ideas 1, 2, 3, 4) (p. 90)
2:00–3:00 PM	4–6	Salon 9, Rosen Plaza	Saturday Biomedical Sciences Academy: Elementary Science Enrichment (p. 92)
2:00–3:15 PM	8–C	W221A, Conv. Center	Using the Polymerase Chain Reaction to Identify Genetically Modified Foods (p. 94)
2:00–3:15 PM	9–C	W222A, Conv. Center	Telling Molecular Stories with David Goodsell's Cellular Landscapes (p. 94)
2:00–3:15 PM	K–12	W222B, Conv. Center	Teaching Academic Vocabulary for Comprehension and Retention (p. 94)
2:00–3:15 PM	K–12	W224B, Conv. Center	Introduction to Wisconsin Fast Plants® (p. 94)
3:30–4:30 PM	9–C	Bayhill 32, Hyatt	Manipulatives to Models, II (p. 98)
3:30–4:30 PM	5–9	Salon 3, Rosen Plaza	Learning in Florida's Environment (LIFE): A Model for Informal/Formal Science Collaboration (p. 99)
4:00–4:30 PM	G	Bayhill 25, Hyatt	The Classroom "Without" Walls (p. 100)
4:00–4:30 PM	7–12	Bayhill 26, Hyatt	Earth, Wind, and Sun: Growing STEM Majors (p. 100)
4:00–4:30 PM	K–8	Salon 6, Rosen Plaza	Turning Lead to Gold—from Classroom Science to Expo-winning Science Projects (p. 100)
4:00–5:15 PM	6–C	W221A, Conv. Center	Biotechnology Basics (p. 100)
4:00–5:15 PM	9–C	W222A, Conv. Center	Genes, Genomes, and the New World of Personalized Medicine (p. 100)
5:00–5:30 PM	7–C	Bayhill 26, Hyatt	Zoo Genetics: Key Aspects of Conservation Biology (p. 101)
5:00–6:00 PM	7–C	Bayhill 27, Hyatt	NASA Powers of 10: Scaling the Universe (p. 102)
5:00–6:00 PM	9–12	Bayhill 29, Hyatt	The War on Cancer: The Cell Cycle and Clinical Trials (p. 103)

Saturday

8:00–9:00 AM	6–12	Bayhill 21, Hyatt	NSTA Press® Session: Scientific Argumentation in Biology: 30 Classroom Activities (p. 106)
8:00–9:00 AM	6–12	Bayhill 22, Hyatt	Integrating Food Science and Nutrition into Your Science Curriculum (p. 106)
8:00–9:00 AM	9–12	Manatee Spring I, Hyatt	Biomedical Curriculum Series—Developed by Teachers for Teachers (p. 107)
9:30–10:30 AM	G	Bayhill 25, Hyatt	Engaging the Brain through Place-based Learning in a National Park (p. 108)
9:30–10:30 AM	9–12	Bayhill 21, Hyatt	NSTA Press® Session: Argument-Driven Inquiry in Biology: Lab Investigations for Grades 9–12 (p. 109)
9:30–10:30 AM	3–5	Salon 5, Rosen Plaza	Archaeology of Animal Bones (p. 110)
11:00 AM–12 Noon	K–6	Salon 9, Rosen Plaza	Biology Bob: Waterway Animals (p. 112)
11:00 AM–12 Noon	6–12	Bayhill 29, Hyatt	Astrobiology (p. 112)
11:00 AM–12 Noon	7–C	Bayhill 32, Hyatt	Growing Energy: Educational Games to Explore Strategies for Sustainable Bioenergy Crop Production (p. 112)
11:00 AM–12 Noon	G	Salon 10, Rosen Plaza	Butterfly Gardening Using Native Plants (p. 113)

Physical Science

Thursday

8:00–9:00 AM	7–12	Bayhill 26, Hyatt	Multilevel Exploration of Motion with Constant Acceleration (p. 45)
8:00–9:00 AM	9–12	Manatee Spring I, Hyatt	Practicing Argumentation in the High School Science Classroom (p. 47)
8:00–9:00 AM	K–6	Blrm. A, Rosen Plaza	Engineering in the Elementary (p. 48)
8:00–9:15 AM	3–5	W221B, Conv. Center	Engineering Design in the FOSS Next Generation Program (p. 48)
8:00–9:15 AM	5–12	W221 D/E, Conv. Center	A STEM Approach to Teaching Electricity and Magnetism (p. 49)

10:00–11:15 AM	5–8	W222B, Conv. Center	Flinn Scientific Presents Hands-On Integrated Science Activities for Middle School (p. 51)
10:00–11:15 AM	6–C	W223 A/B, Conv. Center	Molecular-Level Visualization and the NGSS: Engaging Your Students (p. 52)
10:00–11:15 AM	9–12	W224B, Conv. Center	Keep Calm and Chemistry On: Successful Lab Activities for the New Chemistry Teacher (p. 52)
10:00–11:15 AM	9–12	W224E, Conv. Center	Chemical Formula and Amino Acids (p. 52)
12:30–1:45 PM	5–12	W221 D/E, Conv. Center	Fun with Atom Building Games and the Periodic Table (p. 54)
12:30–1:45 PM	9–12	W222B, Conv. Center	Advanced Inquiry Labs for AP Chemistry from Flinn Scientific (p. 54)
12:30–1:45 PM	5–C	W224C, Conv. Center	Dive In with Magnetic Water Molecules (p. 55)
12:30–1:45 PM	9–12	W224H, Conv. Center	Using the Engineering Design Process to Understand Heat (p. 55)
2:00–2:30 PM	10–12	Bayhill 19, Hyatt	Performance-based Assessment in Chemistry (p. 56)
2:00–2:30 PM	P–3	Salon 9, Rosen Plaza	Engineering Models in Early Childhood: Stepping Stones to *NGSS* Practices (p. 56)
2:00–3:00 PM	9–12	Bayhill 25, Hyatt	Write Your Way to Success: Grant Writing Strategies for You and Your Chemistry Students (p. 57)
2:00–3:00 PM	3–12	Bayhill 27, Hyatt	SECME: Raising Results with Rockets and Race Cars (p. 58)
2:00–3:00 PM	10–C	Bayhill 32, Hyatt	Modeling Stellar Evolution on the H-R Diagram (p. 58)
2:00–3:00 PM	4–8	Blrm. A, Rosen Plaza	Newton, Calder, and the Circus (p. 59)
2:00–3:00 PM	3–5	Salon 7, Rosen Plaza	Put the "E" in STEM! Engineering Design Challenges, Easier than They Sound! (p. 59)
2:15–3:30 PM	8–C	W224C, Conv. Center	New Modeling Kits: Flow of Genetic Information and Phospholipid and Membrane Transport Kits (p. 61)
2:30–3:00 PM	9–C	Bayhill 19, Hyatt	Dimensional Analysis and Stoichiometry: Simplifying Very Difficult Concepts (p. 62)
3:30–4:30 PM	P–12	Bayhill 24, Hyatt	PolyWhat? Understanding What a Polymer Is—Polymer 101 (p. 63)
4:00–5:15 PM	5–12	W221 D/E, Conv. Center	Building an Electric Motor the STEM Way (p. 66)
4:00–5:15 PM	8–C	W224C, Conv. Center	The Many Jobs of Proteins: Modeling Proteins and Enzymes (p. 67)
5:00–6:00 PM	9–12	Bayhill 21, Hyatt	Climate Change Classroom Activities: CO2 Chemistry and Ocean Acidification (p. 68)
5:00–6:00 PM	6–C	Bayhill 27, Hyatt	Human Body Systems—Building a Foundation for Success (p. 68)
5:00–6:00 PM	9–C	Bayhill 32, Hyatt	Manipulatives to Models, I (p. 68)
5:00–6:00 PM	9–12	Manatee Spring I, Hyatt	CRASH Science! Investigating the Dangers of Distracted Driving (p. 69)

Friday

8:00–9:00 AM	9–12	Manatee Spring I, Hyatt	AAPT Session: Modeling Physics in the Classroom (p. 72)
8:00–9:00 AM	6–8	Salon 4, Rosen Plaza	ACS Middle Level Session: Matter: Solids, Liquids, and Gases (p. 73)
8:00–9:00 AM	P–8	Salon 5, Rosen Plaza	Engage In and Create a STEM-ulating Experience (p. 73)
8:00–9:30 AM	7–C	W221B, Conv. Center	Chemistry and Biology with Vernier (p. 76)
8:00–10:00 AM	9–12	Bayhill 22, Hyatt	ACS Session: Energy as a Framework to Teach Chemistry at Multiple Levels: A Macroscopic View (p. 76)
9:30–10:30 AM	9–12	Bayhill 24, Hyatt	Basic Polymer Science for the High School Classroom (p. 78)
9:30–10:30 AM	7–12	Bayhill 26, Hyatt	Lotions, Potions, and Scrubs: Polymer Science in Cosmetics (p. 78)
9:30–10:30 AM	3–10	Bayhill 28, Hyatt	Write to Know Science (p. 78)
9:30–10:30 AM	6–12	Bayhill 21, Hyatt	CHANGE the Way You Teach Climate Change: The Link Between Red Tide and Climate Change (p. 79)
9:30–10:30 AM	11–C	Bayhill 32, Hyatt	Differential Equations and Mathematical Modeling (p. 79)
9:30–10:30 AM	6–12	Manatee Spring I, Hyatt	AAPT Session: "Sunsational" Solar Electricity: The Physics of Photovoltaics (p. 79)
9:30–10:30 AM	6–8	Salon 4, Rosen Plaza	ACS Middle Level Session: Changes of State—Evaporation and Condensation (p. 80)
10:00–11:15 AM	4–12	W222A, Conv. Center	Fantastical Chemistry Demos for All Classrooms (p. 82)
10:00–11:15 AM	9–12	W222B, Conv. Center	Flinn Scientific Presents Exploring Chemistry™: Connecting Content Through Experiments (p. 82)
10:00–11:15 AM	7–C	W223 A/B, Conv. Center	Molecular-Level Visualization and the *NGSS*: Promoting Conceptual Understanding (p. 82)
10:00–11:15 AM	9–12	W224A, Conv. Center	Incorporate Science and Engineering Practices into Your Chemistry Lab Using PASCO Technology (p. 82)

10:00–11:15 AM	6–8	W224E, Conv. Center	Waves, Energy, and Color (p. 83)
10:30 AM–12:30 PM	9–11	Bayhill 22, Hyatt	ACS Session: Energy in Chemistry: A Particulate View (p. 83)
11:00 AM–12 Noon	9–12	Manatee Spring I, Hyatt	AAPT Session: Setting the Stage: Knowing Physics Isn't Enough (p. 85)
11:00 AM–12 Noon	6–8	Salon 4, Rosen Plaza	ACS Middle Level Session: Density—A Molecular View (p. 88)
11:00 AM–12 Noon	3–5	Salon 5, Rosen Plaza	The Science of Mini Golf: An Engineering Design Challenge (p. 88)
12 Noon–1:15 PM	9–12	W222A, Conv. Center	Protein Modeling: A Science Olympiad Event and the *NGSS* (p. 88)
12 Noon–1:15 PM	9–12	W224A, Conv. Center	Enhance Your Physics Classroom Demonstrations with PASCO Equipment, Sensors, and New Capstone Software! (p. 88)
12 Noon–1:15 PM	9–12	W224D, Conv. Center	Active Chemistry and Active Physics: Project-Based Inquiry Science™ That Engages Students (p. 89)
2:00–3:00 PM	5–C	Bayhill 26, Hyatt	NASA's High-Energy Vision: Chandra and the X-Ray Universe (p. 91)
2:00–3:00 PM	K–12	Manatee Spring I, Hyatt	AAPT Session: Science in the Classroom (p. 91)
2:00–3:00 PM	9–12	Bayhill 29, Hyatt	Using Microscale Investigations in Chemistry Classes (p. 92)
2:00–3:00 PM	P–4	Salon 8, Rosen Plaza	Let's Get Physical—Water, Wind, and Weather (p. 93)
2:00–3:00 PM	6–8	Salon 4, Rosen Plaza	ACS Middle Level Session: The Periodic Table, Energy Levels, and Bonding (p. 93)
2:00–3:00 PM	3–8	Salon 5, Rosen Plaza	Inquiry in Action: Investigating Matter Through Inquiry (p. 93)
2:00–3:15 PM	6–12	W224C, Conv. Center	STEM and *NGSS* Inquiry in Chemistry—Effective, Efficient, Economical (p. 95)
2:00–3:30 PM	7–C	W221B, Conv. Center	Physics and Physical Science with Vernier (p. 95)
2:00–4:00 PM	9–12	Bayhill 22, Hyatt	ACS Session: Energy in Chemistry: An Atomic View (p. 96)
3:30–4:30 PM	11–C	Manatee Spring I, Hyatt	AAPT Session: Choose Your Own Adventure: Studio Physics Courses at the University of Central Florida (p. 98)
3:30–4:30 PM	P–5	Salon 9, Rosen Plaza	Magnetics (p. 98)
3:30–4:30 PM	10–C	Bayhill 21, Hyatt	Spectroscopy—Stairway to the Stars (p. 98)
3:30–4:30 PM	6–8	Salon 4, Rosen Plaza	ACS Middle Level Session: Polarity of the Water Molecule and Its Consequences (p. 99)
4:00–4:30 PM	G	Bayhill 25, Hyatt	The Classroom "Without" Walls (p. 100)
4:00–4:30 PM	K–8	Salon 6, Rosen Plaza	Turning Lead to Gold—from Classroom Science to Expo-winning Science Projects (p. 100)
4:00–5:15 PM	6–12	W224E, Conv. Center	DuPont Presents: Power Up and Design Your Own Battery (p. 101)
5:00–6:00 PM	8–12	Bayhill 21, Hyatt	Captivate Students' Interests Beyond the Classroom with Chemistry (p. 102)
5:00–6:00 PM	7–C	Bayhill 27, Hyatt	NASA Powers of 10: Scaling the Universe (p. 102)
5:00–6:00 PM	6–C	Manatee Spring I, Hyatt	AAPT Session: 3-D Printing as a Tool for STEM Learning (p. 102)
5:00–6:00 PM	7–C	Bayhill 32, Hyatt	Ice Core Records—From Volcanoes to Solar Proton Events to Supernova Events (p. 103)
5:00–6:00 PM	6–8	Salon 4, Rosen Plaza	ACS Middle Level Session: Chemical Change—Breaking and Making Bonds (p. 103)
5:30–6:00 PM	9–11	Bayhill 26, Hyatt	Project Based Learning Increases Student Interest and Access to the Curriculum (p. 104)

Saturday

8:00–9:00 AM	9–12	Bayhill 24, Hyatt	Solids: The Neglected "State" of Chemistry (p. 105)
9:30–10:30 AM	7–12	Bayhill 24, Hyatt	Polymers: New Twists on Old Favorites (p. 108)
9:30–10:30 AM	7–12	Bayhill 26, Hyatt	Introducing Nanotechnology into the Chemistry Classroom (p. 109)
9:30–10:30 AM	7–12	Bayhill 29, Hyatt	An Infrared Exposé: Exposing the Mysteries of Our Universe (p. 110)
9:30–10:30 AM	9–12	Manatee Spring I, Hyatt	Using Modeling Activities in the High School Chemistry Class (p. 110)
10:00–11:15 AM	6–8	W224E, Conv. Center	Waves, Energy, and Color (p. 110)
11:00 AM–12 Noon	9–11	Bayhill 24, Hyatt	Corrosion: Chemistry Made Simple, Relevant, and Fun (p. 111)
11:00 AM–12 Noon	6–12	Bayhill 22, Hyatt	Integrating Math and Science with a "Slopes & Starburst" Lesson (p. 112)
11:00 AM–12 Noon	K–12	Bayhill 27, Hyatt	Developing Models That Have Explanatory and Predictive Power (p. 112)
11:00 AM–12 Noon	7–C	Bayhill 32, Hyatt	Growing Energy: Educational Games to Explore Strategies for Sustainable Bioenergy Crop Production (p. 112)
11:00 AM–12 Noon	9–12	Manatee Spring I, Hyatt	Climate Change Classroom Activities: Light, CO_2, and Global Warming (p. 112)

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