SAVE THE DATES
2017 NSTA AREA CONFERENCES ON SCIENCE EDUCATION

BALTIMORE
MARYLAND
10/5–10/7
MAKING SCIENCE ACCESSIBLE: FULL SPEED AHEAD

MILWAUKEE
WISCONSIN
11/9–11/11
MAKING WAVES: MOVING SCIENCE FORWARD!

NEW ORLEANS
LOUISIANA
11/30–12/2
CELEBRATE SCIENCE: INSPIRE, INTEGRATE, INNOVATE

PROFESSIONAL DEVELOPMENT STRANDS

ANCHORING OUR NATURAL TREASURES THROUGH ENVIRONMENTAL LITERACY
CHARTING THE COURSE FOR INNOVATION
TYING THE KNOT: COHERENCE IN 3D SCIENCE LEARNING

PREPARING ALL STUDENTS FOR THE VOYAGE
NAVIGATING STEM THROUGH THE NGSS
BUOYING UP LITERACY WITH SCIENCE

INSPIRE OUR YOUNG LEARNERS
INTEGRATE SCIENCE EDUCATION FOR ALL
INNOVATE SCIENCE EDUCATION FOR TOMORROW

FOR MORE INFORMATION AND UPDATES, VISIT WWW.NSTA.ORG/CONFERENCES
#NSTA17
6th Annual STEM Forum & Expo, hosted by NSTA
Kissimmee/Orlando, Florida • July 12–14, 2017

Wednesday Kickoff starts at 12 Noon and continues until 6:30 PM

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National Science Teachers Association
1840 Wilson Blvd.
Arlington, VA 22201-3000
703-243-7100
E-mail: conferences@nsta.org
www.nsta.org

NSTA Affiliates
Association for Multicultural Science Education (AMSE)
Association for Science Teacher Education (ASTE)
Association of Science-Technology Centers (ASTC)
Council for Elementary Science International (CESI)
Council of State Science Supervisors (CSSS)
National Association for Research in Science Teaching (NARST)
National Middle Level Science Teachers Association (NMLSTA)
National Science Education Leadership Association (NSELA)
Society for College Science Teachers (SCST)
The 6th Annual STEM Forum & Expo, hosted by NSTA

NSTA and the STEM Forum Steering Committee are extremely grateful to the following companies and organizations for their generous support and contributions to the 6th Annual STEM Forum & Expo, hosted by NSTA.

**Sponsors**
- Pitsco Education
- Squishy Circuits
- Vernier Software & Technologies

**Program Partners**
- American Association of Chemistry Teachers (AACT)
- American Association of Physics Teachers (AAPT)
- American Society for Engineering Education (ASEE)
- International Technology and Engineering Educators Association (ITEEA)
- National Association of Biology Teachers (NABT)
- National Council of Teachers of Mathematics (NCTM)
- STEMx, managed by Battelle

The environment is important to science educators. These programs are recyclable and were printed on recycled paper.
Welcome to the 6th Annual STEM Forum & Expo, hosted by NSTA

The National Science Teachers Association is proud to host the 6th Annual STEM Forum & Expo in Kissimmee, Florida. STEM in action is fully represented in the entertainment, educational, and ecotourism venues throughout central Florida. Science, Technology, Engineering, and Mathematics (STEM), working collectively and in concert with all academic disciplines in formal and informal education settings, strives to move forward and improve our world’s culture, environment, and quality of life for all individuals. Therefore, we are thrilled to bring you this highly specialized professional development event that enables us, as educators, to help our students stay globally competitive in terms of innovation, while demonstrating real-life applications to concepts we are teaching.

NSTA, the STEM Forum’s Steering Committee, and all our program partners have worked diligently to bring you an exciting program of sessions, featured panels, and a keynote address filled with strategies to stimulate your students’ interests in STEM, ideas to begin or enhance STEM initiatives in your school or district, as well as ways to enhance the skills and knowledge of current and future STEM leaders at all levels. Please take some time this week to network with fellow STEM-minded colleagues from around the world. We are confident that you will not only learn from experts in the STEM education fields, but you will also share and learn from each other.

In conclusion, we encourage you to embrace the potential that STEM can add to your educational settings by using the tools, knowledge, and resources you will accumulate. On behalf of the Steering Committee and NSTA, thank you for making STEM a priority by attending this forum. We promise this experience will be invigorating, rewarding, energizing, and magical for you as we dive deeply into STEM here in central Florida.

Welcome!

Jennifer C. Williams, Steering Committee Chairperson, 6th Annual STEM Forum & Expo
David T. Crowther, 2017–2018 NSTA President

2017 STEM Forum Steering Committee

Chairperson
Jennifer C. Williams
Department Chair, Lower School Science
Isidore Newman School
New Orleans, LA

Committee Members
Lower Elementary/Early Childhood Strand Leader
Adriana Guerra
Kindergarten Teacher
E.P. Foster STEM Academy
Ventura, CA

Upper Elementary Strand Leader
Sandra Kellermann
Grade 4 Teacher
Lyman Elementary School
Gulfport, MS

Middle Level Strand Leader
Kenneth Williams
STEM Teacher
Oxon Hill Middle School
Fort Washington, MD

High School Strand Leader
Garrett Mason
Director of Innovation and Design
St. Martin’s Episcopal School
Metairie, LA

Partnerships Strand Leader
Brenda Nixon
Co-Director, Gordon A. Cain Center
Louisiana State University
Baton Rouge, LA

Administrators Strand Leader
Tiffany Huitt
Principal School of Science and Engineering Magnet
Dallas, TX
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 6th Annual STEM Forum & Expo, 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:

**Online Forum Information and Personal Scheduler**
Most of your STEM Forum & Expo arrangements can now be accomplished online (www.nsta.org/stemforum). 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 Forum Programs by E-Mail**
Forum registrants are now given the option of receiving an electronic version (PDF) of the final program by e-mail approximately one week prior to the forum, further reducing printing and shipping requirements. Also, attendees are encouraged to use the NSTA Conference app, which provides all the tools necessary for a successful STEM Forum experience.

**Recycled Paper and Sustainable Print Services**
Forum programs are printed on recycled paper whenever possible. In addition, Freeport Press, the printer for our forum materials, takes its responsibility to the environment seriously and is determined to make its carbon footprint as small as possible. Freeport Press owns and operates a regenerative thermal pollution control unit that removes 98.5% of all VOCs. Through this process, Freeport Press uses the solvents in the printing process to fuel its burner, thus reducing the amount of natural gas consumed. Since Freeport Press uses soy-based inks, its publishers are approved by The American Soybean Association to include the SoySeal in their magazines. Freeport Press has also obtained certification with the Forest Stewardship Council® (FSC) to ensure paper products are being harvested from environmentally responsible sources.

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

**Gaylord Palms Resort & Convention Center’s Green Efforts**
The Gaylord Palms staff are committed to taking mindful steps toward minimizing their impact on the environment.
- **Energy Efficiency:** Have upgraded lighting to dimmable fluorescents. Also, exploring heating hot water via solar technology.
- **Water Conservation:** Have installed low-flow faucets and toilets as well as water-efficient landscaping on its grounds.
- **Waste Reduction:** Have implemented waste reducing practices, such as recycling cardboard, plastic, and paper products.
- **Clean Air Initiatives:** Have installed High Efficiency Particulate Air (HEPA) filters, as well as systematically clean air handler units and coils to ensure clean air and energy efficiency.
- **Food-Related Practices:** Gaylord Palms chefs work with Second Harvest Food Bank to provide excess prepared food to needy families and local soup kitchens, reducing waste.

**“Go Green” at the 6th Annual STEM Forum & Expo!**
- Recycle your forum 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.
- 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 STEM Forum & Expo.
- Bring your own refillable water bottle to the forum. Water refill stations are located at every water fountain.
- In advance of the forum, presenters are encouraged to post their presentations and handouts online on the Session Browser/Personal Scheduler.
- Evaluate sessions attended online.
Registration, Travel, and Resort

Meeting Location and Times

STEM Forum & Expo will take place at the Gaylord Palms Resort & Convention Center. The STEM Forum registration, the exhibits, the NSTA Science Store, and sessions will be located at the Convention Center. The STEM Forum & Expo will begin on Wednesday, July 12, at 1:00 PM, starting with two hours of STEMx featured sessions, along with a First-Timers session from 2:00 to 2:45 PM, followed by the Student Panel, and an Evening Exhibits Preview and Welcome Reception. The Thursday keynote address will be given by Derek Muller, science communicator, filmmaker, and television presenter, 4:30 to 5:30 PM.

The STEM Forum & Expo will end on Friday with a Closing Session from strand leaders, 4:30 to 5:30 PM.

Registration

Registration is required for participation in all forum activities and the exhibits. The lapel badge e-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 non-ticketed forum activities.

NSTA Registration and the NSTA Science Store are both located in Exhibit Hall C of the Convention Center. NSTA Registration will be open the following hours:

- Wed., July 12 12 Noon–7:00 PM
- Thu., July 13 7:00 AM–5:30 PM
- Fri., July 14 7:00 AM–5:30 PM

The NSTA Science Store will be open the following hours:

- Wed., July 12 1:00–7:00 PM
- Thu., July 13 7:30 AM–4:30 PM
- Fri., July 14 7:30 AM–5:00 PM

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.

Ground Transportation to/from Airport/Amtrak

Orlando International Airport (MCO) is located 21 miles from the Gaylord Palms. NSTA has partnered with Mears Transportation to extend a $4 discount off round-trip shuttle service to/from the Gaylord Palms and the Orlando International Airport. To access the coupon, visit bit.ly/2pDnQqz or book online at bit.ly/2pmj9f8.

Upon your arrival at the airport, proceed to one of the Mears Motor Shuttle ticket counters on Level 1 and present your coupon or your reservation number to the Mears counter attendant.

Taxi fare from the airport to the Gaylord Palms is $45–$75, depending on traffic.

The Amtrak station (KIS) at 111 East Dakin Avenue, Kissimmee, is approximately 11 miles from the resort and travel time is 22–24 minutes, depending on traffic. Visit bit.ly/2p7VWlf for maps, directions, and transportation options to the resort.

Shuttle & Transportation Services

The Gaylord Palms offers shuttle service to Walt Disney World® theme parks and the Disney Springs area. A daily schedule is available at the Concierge desk. For schedule and fees, call 407-586-2236 or phone ext. 62236 from hotel. To access a detailed map of the Gaylord Palms, visit bit.ly/2oMYbqs.

Hertz is located on-site for car rentals at the resort.

Hertz 407-586-2244 154080
Go to www.hertz.com and use "154080" in the Discount/CDP/Club field.

Parking

Resort self-parking is $22 a day; valet parking is available for $29 a day. (Tax is additional.) Rates are subject to change. Please note that special rates may apply for groups or special events. For directions to the Gaylord Palms as well as parking rates and maps, visit bit.ly/2p7VWlf.

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."

Photo courtesy of Gaylord Palms Resort & Convention Center.

6th Annual STEM Forum & Expo, hosted by NSTA
Gaylord Palms Resort & Convention Center
6000 W. Osceola Pkwy.
Kissimmee, Florida

Housing Questions or Concerns?
If you have any questions or concerns about your housing, please call the Gaylord Reservations Department at 877-491-0442, or visit the hotel lobby desk.
NSTA Exhibits
The NSTA Exhibit Hall is a must-see! NSTA brings you the leading STEM education companies and organizations to showcase products, services, curricula, and much more. You’ll discover something new and exciting in the world of STEM education.

The lapel badge e-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 non-ticketed forum activities. A map display of the Exhibit Hall is accessible via our Conference app. A complete list of exhibitors and contact information starts on page 74.

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

Evening Exhibit Preview and Welcome Reception
   Wed., July 12  4:30–6:30 PM

Exhibits
   Thu., July 13  9:15 AM–3:00 PM
   Fri., July 14  9:15 AM–3:00 PM

Lead Retrieval. NSTA exhibitors use lead retrieval, a paperless tracking system to allow them to receive fast, accurate information about forum 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 STEM Forum & Expo is still fresh in your mind.

Exhibitor Workshops. Exhibitor-sponsored workshops for STEM teachers are offered throughout the forum. 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 88 for a complete listing of exhibitor workshops.

Presenters and Presiders Check-In
If you are presenting or presiding at a session, please check in at the Presenters/Presiders booth in the Registration Area.

Wi-Fi at the Gaylord Palms
Complimentary Wi-Fi is available on the hotel side of the Gaylord (front desk lobby, guest rooms, restaurants, pools, and atriums). Complimentary wireless access in the front desk lobby area is open (no password required), the SSID/network name is “GaylordLobby.” The SSID/network name for access in the guest rooms, atriums, and restaurants is “Gaylord Hotels” and the login is last name and guest room number.

NSTA Science Store
Visit us at the NSTA Science Store to explore a wide selection of resources and gear you’ll love! You’ll find hundreds of books that uniquely blend accurate STEM content with sound teaching strategies for STEM 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 classroom supplies.

We offer convenient free shipping for book purchases to addresses within the United States when you place your order on-site at the STEM Forum. Please note that free shipping is not offered to international addresses or for NSTA gear purchases. We’ve lined up a number of unique opportunities for STEM Forum-goers:

- Exclusive author signings and meet-and-greet opportunities
- Our latest books—including Argument-Driven Inquiry in Physics, Volume 1: Mechanics Lab Investigations for Grades 9–12; Creating a STEM Culture for Teaching and Learning; Eureka! Grade 3–5 Science Activities and Stories; Problem-Based Learning in the Earth and Space Science Classroom, K–12; Big Data, Small Devices: Investigating the Natural World Using Real-Time Data; Helping Students Make Sense of the World Using Next Generation Science and Engineering Practices; and Picture-Perfect STEM Lessons, K–2: Using Children’s Books to Inspire STEM Learning—and our newest children’s books from NSTA Kids, such as When the Sun Goes Dark, Next Time You See a Cloud, and Notable Notebooks: Scientists and Their Writings
- “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
- Daily book and gear specials, product giveaways, and more.

Don’t forget to visit the NSTA Science Store for a selection of titles as well as hundreds of STEM teaching resources.

—Photo courtesy of Mike Weiss
Graduate Credit Opportunity

STEM Forum & Expo attendees can earn one or two graduate-level credit/s in professional development through Dominican University of California (dominicancaonline.com).

Participants must attend the STEM Forum, complete the required assignments, and pay a fee of $95 for one credit or $190 for two credits. To learn more about the assignment requirements and registration, visit bit.ly/2rMqk42.

Deadline is July 31.

Interested in Joining NSTA?
Stop by NSTA: STEM Starts Here, located in the NSTA Science Store at the Convention Center. Find out more about the benefits of becoming an NSTA member, including all the best professional development and resources a STEM educator needs. If you received a six-month-free membership coupon at registration, please redeem it here.

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 (an LCD projector and screen). 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 Osceola Registration #1 at the Ballroom Level (Level 2) of the Convention Center.

Business Services
Located across from the “Jump for Joy” dolphin fountain, the FedEx Office Print & Ship Center offers a variety of services, including photocopying, scanning, faxing, use of computer work stations, office supplies, and same-day shipping. For more information, please call 407-586-2599.

During the week of the forum, hours will be:

Monday–Sunday  7:00 AM–7:00 PM

First Aid/Emergency Services and Mother’s Room
STEM Forum attendees in need of first aid should dial extension “33” on any house phone to reach security who will dispatch assistance. In addition, a room for nursing mothers is located in room Registration 3 at the exhibit hall level of the Convention Center. See the NSTA Registration Desk for entry/key for mother’s room.

Online Session Evaluations and Tracking Professional Development

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

Help NSTA’s GREEN efforts by completing session evaluations online July 12–25, 2017, while the session is fresh in your mind!

And this year, we’re giving away an Apple iPad mini 2 Wi-Fi tablet 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 STEM Forum 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 this page 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 August 7, 2017, an attendee can view his or her transcript at the NSTA Learning Center (learningcenter.nsta.org) by logging in and then clicking My Profile, where you’ll find a Certificates tab. Attendees can also document credit for activities that are not being evaluated (e.g., Exhibit Hall visits). 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 forum. All information in these transcripts will be maintained (and can be accessed) indefinitely as part of an attendee’s individual profile.

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To evaluate a session, attendees should follow these steps:

• Visit the STEM Forum 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 this page 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 August 7, 2017, an attendee can view his or her transcript at the NSTA Learning Center (learningcenter.nsta.org) by logging in and then clicking My Profile, where you’ll find a Certificates tab. Attendees can also document credit for activities that are not being evaluated (e.g., Exhibit Hall visits). 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 forum. All information in these transcripts will be maintained (and can be accessed) indefinitely as part of an attendee’s individual profile.
This form is for planning purposes only. Do NOT submit to NSTA.

6th Annual STEM Forum & Expo, hosted by NSTA
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 6th Annual STEM Forum & Expo, hosted by NSTA. Sessions/events such as exhibit hall visits are not available for online evaluation. However, these events still qualify for professional development.

Beginning August 7, 2017, STEM Forum transcripts can be accessed at the NSTA Learning Center (learningcenter.nsta.org) by logging on with your STEM Forum Badge ID# and first clicking on “My Profile” under the “Welcome.” Here you’ll find a “Certificates” tab to access your transcript. Keep this form and use it to add the following activities to your STEM Forum transcript. Completed transcripts can be printed from this website and presented to an administrator who requires documentation of participation in the forum. 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 STEM Forum & Expo session browser: www.nsta.org/stemforumbrowser. You will need your badge number to evaluate sessions. See page 8 of the program for instructions. And this year, we’re giving away an Apple iPad mini 2 Wi-Fi tablet to one lucky attendee who completes a session evaluation! Remember, the more sessions you attend and evaluate, the more chances you have to win! 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.

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 STEM 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, July 12 1:00 PM–6:30 PM
Start Time  End Time  Activity/Event Title
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Thursday, July 13 8:00 AM–5:30 PM
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**Friday, July 14  8:00 AM–5:30 PM**

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**Saturday, July 15  8:15 AM–12:15 PM**

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NSTA Conference App

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Lost and Found

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

ELEMENTARY STEM SHOWCASE

AT THE

6TH ANNUAL STEM Forum & Expo

HOSTED BY NSTA
Kissimmee/Orlando
July 12–14, 2017

THURSDAY, JULY 13, 2017
10:30 AM to 12 Noon

Join 30+ presenters as they:
- Share STEM investigations conducted in their classrooms
- Provide a variety of teaching strategies and resources for grades preK–5
- Highlight NGSS connections to student experiences
- Engage participants in hands-on activities in a flea-market style

Plus a chance to win an iPad!
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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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6th Annual STEM Forum & Expo, hosted by NSTA
All cities are subject to change pending final negotiation.

National Conferences on Science Education

Atlanta, Georgia
March 15–18, 2018

St. Louis, Missouri
April 11–14, 2019

Boston, Massachusetts
March 26–29, 2020

Chicago, Illinois
April 8–11, 2021

Area Conferences on Science Education

2017 Area Conferences
Baltimore, Maryland—October 5–7
Milwaukee, Wisconsin—November 9–11
New Orleans, Louisiana—November 30–December 2

2018 Area Conferences
Reno, Nevada—October 11–13
Gaylord National Harbor, Maryland—November 15–17
Charlotte, North Carolina—November 29–December 1

7th Annual STEM Forum & Expo, hosted by NSTA
Philadelphia, Pennsylvania—July 11–13, 2018
Keynote Address

Thursday, July 13, 4:30–5:30 PM

Derek Muller
Science Communicator, Filmmaker, Television Presenter, and Creator of YouTube Channel Veritasium

The Uncomfortable Effort of Thinking

Thinking is hard. This is something clearly shown on Derek’s YouTube videos where he interviews people on the street. Misconceptions about science abound. And they are not easy to change in traditional educational settings because the people who hold them are not even aware of these misconceptions. Prior knowledge is essential to think about when teaching, but incorrect prior knowledge is even more important. This is because it has a devastating impact on perception—people don’t even perceive that what is being presented differs from their prior knowledge. Join Derek has he discusses evidence he’s collected about these phenomena and methods that have shown promise in helping to affect conceptual change both in traditional educational settings and on YouTube.

(See page 51 for details.)

First-Timers Orientation

Come learn about the STEM Forum & Expo program and networking opportunities for registrants who are first-time attendees. See page 23 for details.

STEM Education Week in Kissimmee

NSTA is pleased to announce that Mayor Jose Alvarez has proclaimed July 10–16, 2017, STEM Education Week in Kissimmee, Florida. STEM Education Week highlights the importance of improving the participation and performance of America’s students in STEM so that our next generation will exceed the level of innovation, problem solving, and technological advancement required in a globally competitive environment.

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**Lower Elementary/Early Childhood**

Students in the lower elementary grades are beginning to understand the world around them and the role they play in it. They are curious and want to make sense of their surroundings. By providing students with inquiry-based experiences in Science, Technology, Engineering, and Mathematics, we can unlock each student’s natural curiosity and help them understand the world in an engaging way. The foundational skills learned and mastered through the integration of STEM during the early years, if done right, will help these students be critical thinkers and makers who can innovate the future they will be a part of. Sessions in this strand will emphasize open-ended and active exploration, play, and investigation of the real world through the lens of NGSS.

**Upper Elementary**

How do we respond to research that indicates that by the time our students reach the fourth grade, a third of them will lose interest in science? How do we ensure that our students develop a solid foundation in the STEM areas so that they are prepared to both work and live in the 21st century? To reverse this trend and ignite their interest in future STEM careers, elementary students need quality learning activities and experiences that spark curiosity, promote confidence, support the rigor of current standards, and develop competence in STEM subjects. The sessions in this strand showcase programs and instructional strategies that support STEM and have been successfully integrated into the elementary core curriculum.

**Middle Level**

Engaging students through opportunities to explore STEM fields of study that support the NRC Framework and the Next Generation Science Standards is a top priority at the middle school level. A successful middle school STEM program allows students to create, innovate, communicate, collaborate, and iterate projects that are driven by their own interests. The sessions in this strand showcase learning environments where Science, Technology, Engineering, and Mathematics interconnect to serve as a vehicle for discovery, innovation, and independent problem solving while also meeting rigorous content standards.

**High School**

As we prepare high school students to enter the workforce and college, students must not only understand but apply their understanding in the context of real-world problem solving. Nowhere is this more important than in STEM for grades 9–12. The sessions in this strand will highlight innovative, hands-on, student-centered approaches to STEM topics that cross subject boundaries.

**Partnerships**

Partnerships among community, business/industry, and education-focused entities often connect preK–16 schools and universities to valuable resources. Leveraging those partnerships can also be key to preparing students to meet the needs of a dynamic workforce that is constantly changing. As the nation recognizes the importance of STEM education to our economic future, collaborations in STEM education between preK–16 and business and cultural communities are becoming increasingly prevalent. The sessions in this strand highlight select preK–16 partnership initiatives that have been successfully implemented and have demonstrated positive outcomes.

**Administrators**

Successful STEM programs at the primary and secondary levels align the interrelated nature of science and mathematics education with an emphasis on technology and engineering through hands-on and real-life applications where students develop the skills and mind-sets needed to answer complex questions, investigate global issues, and develop solutions for real challenges. This is an incredibly exciting time in education as we shift to support the development of these skills in STEM and across the curriculum. The sessions in this strand will highlight how administrators can best support innovative, hands-on, student-centered approaches to STEM education.
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Visit www.nsta.org/store to make a purchase today, or call 800-277-5300.

STORE HOURS

Wednesday, July 12
1:00 PM – 7:00 PM

Thursday, July 13
7:30 AM – 4:30 PM

Friday, July 14
7:30 AM – 5:00 PM

Travel light with FREE Shipping for in-store orders!
Student Panel Discussion: The Power of STEM Education

Wednesday, July 12, 3:00–4:15 PM
Palm Beach, Gaylord Palms

For more than 50 years, the U.S. Army has supported a wide range of educational opportunities in STEM for our youth and undergraduate students, as well as our valued teachers. A diverse panel of students from the U.S. Army Educational Outreach Program (AEOP) will describe their experiences with the AEOP programs they have participated in, the importance of STEM in their lives and school experiences, how STEM will help them in their futures, and why they think STEM is important.

AEOP aims to provide both students and teachers with diverse opportunities that effectively engage, inspire, and attract the next generation of STEM talent and expose participants to Department of Defense (DoD) STEM careers.

NSTA Press Sessions

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

Thursday, July 13
1:30–2:30 PM
Uncovering K–2 Students’ Ideas in Science, Mathematics, and Engineering: STEM-Focused Formative Assessment
The Power of Investigating: Guiding Authentic Assessments

Friday, July 14
9:30–10:30 AM
Water and People: An Example Hydrology Unit for Grades 8–12
Uncovering Grades 2–8 Students’ Ideas About Magnets and Magnetic Interactions

11:00 AM–12 Noon
Argument-Driven Inquiry in Physical and Life Science: Lab Investigations for Grades 6–8

11:00 AM–12 Noon, cont.

Picture-Perfect STEM Lessons: Using Children’s Books to Inspire STEM Learning
The Power of Questioning

1:30–2:30 PM
Pendulums and Crooked Porch Swings: A Model for Connecting Science and Engineering
That’s A Wrap…A STEM-tastic Celebration

Wrap Up/Strand Leaders’ Reports

Friday, July 14, 4:30–5:30 PM
Palm Beach, Gaylord Palms

Join us for a STEM-tastic wrap-up session from the 6th Annual STEM Forum & Expo’s Steering Committee. Share in fond memories and reflect upon the deep learning experienced at this year’s STEM Forum. Celebrate the magical sessions, panels, workshops, and networks created during your time in central Florida. You will have the opportunity to question our Steering Committee members and you will discover ways to be a part of the magic by becoming involved in future STEM Forums. **One lucky attendee will have the chance to win a free registration to the 7th Annual STEM Forum & Expo in Philadelphia in 2018.** So come to our STEM-tastic celebration!

Steering Committee:

- Jennifer C. Williams, Steering Committee Chairperson, and Department Chair, Lower School Science, Isidore Newman School, New Orleans, La.
- Adriana Guerra, Lower Elementary/Early Childhood Strand Leader, and Kindergarten Teacher, E.P. Foster STEM Academy, Ventura, Calif.
- Sandra Kellermann, Upper Elementary Strand Leader, and Grade 4 Teacher, Lyman Elementary School, Gulfport, Miss.
- Kenneth Williams, Middle Level Strand Leader, and STEM Teacher, Oxon Hill Middle School, Fort Washington, Md.
- Garrett Mason, High School Strand Leader, and Director of Innovation and Design, St. Martin’s Episcopal School, Metairie, La.
- Brenda Nixon, Partnerships Strand Leader, and Co-Director, Gordon A. Cain Center, Louisiana State University, Baton Rouge
- Tiffany Huitt, Administrators Strand Leader, and Principal, Science/Engineering Magnet High School, Dallas, Tex.
Venture deep into the Florida Everglades with an airboat tour. Get an in-depth look at the alligators, birds, and plants that inhabit the wetlands.
1:00–1:45 PM  Presentation

**STEMx Session: Building a Foundation for Effective Rural STEM Engagement**
(Grades 5–9) Osceola B, Gaylord Palms

J. Wesley Hall (@WesleyHall; @theTSIN; halj@battelle.org) and Brandi Stroecker (@STEMignites; @theTSIN; stroecker@battelle.org), Tennessee STEM Innovation Network—Battelle, Nashville

Discover how Tennessee successfully engaged rural students in STEM learning through a statewide strategy and deployment of an online interdisciplinary STEM tool called Learning Blade.

1:00–1:45 PM  Hands-On Workshops

**STEMx Session: School Leaders 2.0**
(Grades 6–12) Osceola A, Gaylord Palms

Stephanie Johnson (@docsyj; @osln; johnsonsa@battelle.org), Battelle Memorial Institute, Columbus, Ohio
Stephanie Lamlein (slamlein@biomedscienceacademy.org), Bio-Med Science Academy, Rootstown, Ohio
Larry Johnson (@ljchsinghim2; ljjohnso6@apslearns.org), Firestone Community Learning Center, Akron, Ohio

Innovative schools need leaders who think differently. Learn about and experience how the Innovative Leaders Institute has changed the way school leaders are trained.

2:00–2:45 PM  Presentations

**First-Timers Orientation**
(Grades P–12) Orange Blossom Ballroom, Gaylord Palms

NSTA Board and Council

Come learn about the STEM Forum program and networking opportunities for registrants who are first-time attendees. Join us for tips on navigating the forum and learn how to make the most of the amazing opportunities available over the next few days.

**STEMx Session: Creating a Pathway to STEM Success—Recognizing STEM Schools**
(Grades K–12) Osceola B, Gaylord Palms

Lauren Allen (@AllnSTEM; lauren.allen@dc.gov), D.C. Office of the State Superintendent of Education, Washington, D.C.

Curtis Pyke (cpyke@gwu.edu), The George Washington University, Washington, D.C.

Michael Ford (mford9le@gmail.com), Gunston Middle School, Arlington, Va.

This presentation engages administrators and school leaders in discussing the challenges and rewards in piloting a STEM school recognition process.

2:00–2:45 PM  Hands-On Workshop

**STEMx Session; STEM in the Real World—Making It Matter**
(Grades 3–9) Osceola A, Gaylord Palms

Jodi Zeis (mrszteachesme@yahoo.com), South Carolina’s Coalition for Mathematics & Science, Clemson

Experience specific strategies to engage groups of students who are underrepresented in STEM fields. Learn how to make STEM matter now to encourage purposeful learning.

3:00–3:45 PM  Presentations

**STEMx Session: Harnessing Competition to Fuel Interest in STEM**
(Grades 5–12) Osceola A, Gaylord Palms

Evan Curran (@MakerMinded; currane@battelle.org), Tennessee STEM Innovation Network—Battelle, Nashville

Heather Sherman (@hibelle88; sherman@battelle.org), Ohio STEM Learning Network/Battelle, Columbus

Explore how Tennessee and Ohio successfully used competition to promote school engagement with local and national STEM activities.
STEMx Session: Computer Science Is More Than Coding! Implementing the Computer Science Framework into Your Region
(Grades 5–12) Osceola B, Gaylord Palms

Angela Hemmingway (angela.hemmingway@stem.idaho.gov), Idaho STEM Action Center, Boise
Kelly Gaier Evans (@kellymgaier; gaierk@battelle.org), Ohio STEM Learning Network/Battelle, Columbus
Jarred Corwin (@JarredCorwin; jcorwin@doe.in.gov), Indiana Dept. of Education, Indianapolis

Are you interested in adding computer science to your school’s curriculum? Come learn about four states that are integrating the new CS Framework into their programs!

Wednesday, 3:00–3:45 PM

Mark Your Calendars for Next Year’s STEM Forum & Expo

We’re excited to announce the following site/dates for the 7th Annual STEM Forum & Expo, hosted by NSTA:

Philadelphia, Pennsylvania
July 11–13, 2018

More details to come at www.nsta.org/conferences

FIRST TIMER?

Need some help navigating your first STEM Forum & Expo?
Join us and we’ll show you the ropes.

First-Timers Orientation
Wednesday, July 12, 2:00–2:45 PM
Orange Blossom Ballroom
Gaylord Palms
3:00–4:15 PM Opening Session

Student Panel Discussion: The Power of STEM Education

(General) Palm Beach, Gaylord Palms


Student Panelists:
Matt Gallagher, Kassidy Marshall, India Miller, and Alex Rubio, Students, Orangewood Christian High School, Maitland, Fla.

The need for STEM literacy—the ability to understand and apply concepts from science, technology, engineering, and mathematics in order to solve our nation's most complex problems—is growing exponentially. The requirement for STEM literacy goes beyond the traditional STEM occupations of scientist, engineer, and mathematician. In addition, the United States and the Army have a growing need for highly qualified, STEM-literate technicians and skilled workers in advanced manufacturing, logistics, management, and other technology-driven fields.

For more than 50 years, the U.S. Army has supported a wide range of educational opportunities in STEM for our youth and undergraduate students, as well as our valued teachers. From elementary school through undergraduate school, students of all proficiency levels, interests, and social and economic backgrounds are encouraged to participate in real-world STEM experiences while also engaging with Army-sponsored mentors. These STEM experiences include competitions; STEM enrichment programs; and opportunities for apprenticeships, internships, and scholarships.

A diverse panel of students from the U.S. Army Educational Outreach Program (AEOP) will describe their experiences with the AEOP programs they have participated in, the importance of STEM in their lives and school experiences, how STEM will help them in their futures, and why they think STEM is important. AEOP aims to provide both students and teachers with diverse opportunities that effectively engage, inspire, and attract the next generation of STEM talent and expose participants to Department of Defense (DoD) STEM careers.

4:30–6:30 PM Evening Exhibit Preview and Welcome Reception

Hall C, Gaylord Palms

Please join us for this exclusive sneak preview of the Exhibit Hall. Be among the first to take in the sights and sounds of the Expo as you enjoy complimentary refreshments throughout the exhibit hall. Exhibitors will have hands-on activities, free resources, giveaways, best practices, and more—all tailored specifically to teachers’ needs. Brand-new and soon-to-be-released STEM resources will be featured by industry leaders. Don’t forget to come back for our regular exhibit hours on Thursday and Friday.

For a complete list of exhibitors, see page 74.
Fun activities abound at the second-annual Elementary STEM Showcase. Be sure to stop in at this flea market–style event on Thursday, 10:30 AM—12 Noon in Hall C.
8:00–9:00 AM  Featured Panels

**How Business/Industry/Nonprofit Partnerships Help Prepare PreK–16 Students to Meet the Needs of the Future**

*(General) Orange Blossom Ballroom, Gaylord Palms*

Moderator: **Brenda Nixon** *(bnixon@lsu.edu)*, Partnerships Strand Leader, and Co-Director, Gordon A. Cain Center, Louisiana State University, Baton Rouge

**Frazier Wilson**, Vice President, Shell Oil Company Foundation, and Director, Workforce and Strategic Community Initiative, Shell, Houston, Tex.

**Reo Pruiett**, Director, Programs, Educate Texas, Dallas

**Angel Price**, Engineering Services Manager, Disney’s Animal Kingdom Park, Orlando, Fla.

Innovation in STEM has been pivotal in meeting the workforce demands of today. Our students need to be collaborative problem solvers as well as members of a highly skilled workforce. How can preK–16 educators engage business, industry, and nonprofits to assist in creating students who are well prepared for the dynamic workforce needs of the future and to drive the leading edge of STEM innovation?

This session provides an opportunity for attendees to better understand how business, industry, and nonprofit organizations are interfacing with preK–16 schools to meet those demands. Panel members will discuss how they have partnered with schools and provided STEM resources or employee assistance to help implement quality STEM education in K–16 schools. Members of the audience will have the opportunity to ask questions following the panelists’ presentations.

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**Inclusive STEM Schools: Making STEM for All a Reality**

*(General) Osceola A, Gaylord Palms*

Sponsored by STEMx, managed by Battelle

Moderator: **Michael Feder** *(federm@battelle.org)*, Battelle, Arlington, Va.

**Panelists:**

**David Burns**, Director, Ohio STEM Learning Network/Battelle, Columbus

**Sandy Watkins** *(sandy@TSIN.org)*, Principal-in-Residence, Tennessee STEM Innovation Network–Battelle, Nashville

**Larry Johnson**, Principal, Firestone Community Learning Center, Akron, Ohio

STEMx members have developed networks of inclusive STEM schools to improve educational opportunities and outcomes across the country. Come talk to the experts about what makes these schools special, how they stack up, and what lessons you can apply to your school and classroom.

**Engaging Diverse Learners and Special Needs Students in STEM**

*(General) Osceola B, Gaylord Palms*

Moderator: **Janella Watson**, Director of Communications, Providence Children’s Museum, Providence, R.I.

**Panelists:**

**Gina Tesoriero** *(ginatesoriero@gmail.com)*, STEM Special Education Teacher, M.S. 319 Maria Teresa Mirabal School, New York, N.Y.

**Delia Meza** *(dmeza@nysci.org)*, Early Childhood Science Coordinator, New York Hall of Science, Corona

Explore programs, practices, and approaches that nurture curiosity, agency, and a love of STEM learning in students with special needs. In this panel, we’ll hear powerful stories from educators engaging learners of all ages in engineering design, making, and sensory-rich STEM exploration, as well as unique community partnerships that encourage and support students with special needs to pursue STEM pathways.
8:00–9:00 AM Presentations

Getting Graphic with Your Details? Now That’s a Novel Approach!
(Grades 3–8) Emerald 3, Gaylord Palms
Sandi Sumerfield (@ssumerfield; sandi@warmbluewaters.com), Hamilton County ESC, Cincinnati, Ohio
Let’s explore blending scientific inquiry with literacy practices as students learn to communicate the details and findings of their investigations using a graphic novel format.

Math Matters: A Closer Look at the “M” in STEAM
(Grades 3–5) Emerald 5, Gaylord Palms
Sarah Bush (@sarahbbush; sarah.bush@ucf.edu), University of Central Florida, Orlando
Kristin Cook (kcook@bellarmine.edu), Bellarmine University, Louisville, Ky.
Richard Cox, Jr. (@OMESCoach; richard.cox@bulitt.kyschools.us), Old Mill Elementary School, Mount Washington, Ky.
We will share practical strategies for maximizing the use of STEAM investigations by placing a greater focus on the “M” in STEAM.

Structure and Play: Teaching Engineering Through Music Composition
(Kindergarten) Emerald 7, Gaylord Palms
Elissa Johnson-Green (elissa_johnsongreen@uml.edu), UMass Lowell, Mass.
Hear about an immersive, integrated engineering-music curriculum that was implemented using music composition and architectural design precepts to engage students in engineering skills practice.

8:00–9:00 AM Hands-On Workshops

Student Interest Leads the Way Through STEM in Earth Science
(Grades 3–6) Emerald 2, Gaylord Palms
Tamra Lamb (talamb@bullochschools.org), Mattie Lively Elementary School, Statesboro, Ga.
Katie Brkich (kbrkich@georgiasouthern.edu), Georgia Southern University, Statesboro
We share how student interest helped guide a unit on Earth science that used STEM integration and three-dimensional learning, plus phenomenon- and place-based inquiry.

Using the Science of Flight to Teach NGSS and CCSS to Upper Elementary Students
(Grades 3–6) Emerald 4, Gaylord Palms
Lee Siudzinski (lee@blueskyfoundation.org), Blue Sky Educational Foundation, Three Lakes, Wis.
Erron Sagen (erron.sagen@gmail.com), Oakwood Elementary School, Oshkosh, Wis.
Teaching an aviation curriculum that integrates NGSS and CCSS is the perfect way to motivate students to learn and apply the four forces of flight.

Model-Eliciting Activities: Real-World Interdisciplinary STEM Lessons
(Grades K–8) Emerald 6, Gaylord Palms
Deborah Kozdras (@USFStavros; dkozdras@usf.edu), University of South Florida, Tampa
Christine Angel Danger (@AngelDanger10; christine.danger@sdhc.k12.fl.us), Hillsborough County Public Schools, Tampa, Fla.
Students need to see the relevance to the real world. Model-Eliciting Activities provide realistic scenarios that offer opportunities for engaging interdisciplinary STEM lessons.

Cultivating the Whole Plant, Not Just the STEM
(Grades 4–College) Emerald 8, Gaylord Palms
Anthony Williams (@beaconhouseinc; williamsbiology2015@gmail.com), Dr. Martin Luther King, Jr. Middle School, Germantown, Md.
Attention will be paid to demonstrating how administrators can effectively support and build STEM programs at their schools by evaluating resources, developing and stewarding a vision, and by expanding their focus to all contents supporting critical thinking, problem solving, and collaborative work.
Electrified Paper: Electrical Engineering Meets the Arts
(Grades 7–12) St. George 106, Gaylord Palms
Gila Stein and Orly Nadler (@orlynadler; nadler@maayanot.org), Ma’ayanot Yeshiva High School for Girls, Teaneck, N.J.
What if your students could use science, technology, electrical engineering, and art to illuminate their thinking? Using simple materials like copper tape, Surface Mount LEDs, and batteries, your students can make their notebooks light up by creating intricate paper circuitry designs while exploring basic scientific concepts like conductivity, current flow, simple circuit design, and mechanical switches.

Smartphone Physics: Newton’s Second Law
(Grades 9–College) St. George 108, Gaylord Palms
Aaron Osowiecki (aosowiecki@bostonpublicschools.org), Boston Latin School, Boston, Mass.
Use the sensors in a smartphone to collect force and acceleration data to investigate Newton’s second law of motion.

Learning and Teaching STEM Through Game Design
(Grades 9–12) St. George 114, Gaylord Palms
Meredith Thompson (@Meredith_M_J; meredith.m.thompson@gmail.com), Harvard University, Cambridge, Mass.
Games are serious fun and a great way to motivate STEM learning. Let’s explore how to engage students in designing games.

Launching an Elementary STEM Program
(Grades P–5) Tampa 2, Gaylord Palms
Kim Stilwell (@kimstilwellnsta; kstilwell@nsta.org), Manager, New Business Development, NSTA, Arlington, Va.
Need ideas for where to start with building an elementary STEM program or enhancing your current program? The initial steps in building an elementary STEM program can be an overwhelming thought. Presenters will share their success stories and how using Picture-Perfect Science resources became part of the foundation to a successful implementation. Leave with links to helpful resources and ideas on how to start an elementary STEM program.

Investigate Evolution and Practice STEM Skills with Middle School and Early High School Students
(Grades 7–10) Osceola 4, Gaylord Palms
Mary Williams (mawilliams@altamontschool.org), The Altamont School, Birmingham, Ala.
Learn how to use HHMI BioInteractive’s free evolution resources to provide students with opportunities to work with scientific data. BioInteractive’s engaging multimedia resources facilitate understanding natural selection, adaptation, and diversity through analyzing and interpreting data, as well as using evidence to construct explanations.
Reclaiming the Metal
(Grades 6–8) Osceola 5, Gaylord Palms
Sponsor: Lab-Aids, Inc.
Amy Reijmer, Oconee Middle School, Bogart, Ga.
From the SEPUP middle level physical science program, participants role-play a scenario involving pretreatment of copper containing liquid wastes from computer circuit board manufacture. They examine trade-offs of metal replacement and chemical precipitation, techniques actually used in industrial applications, and in so doing, come to understand the science behind complex environmental issues.

Left at the Scene of the Crime: Introduction to Forensic Science
(Grades 6–College) Osceola 6, Gaylord Palms
Sponsor: Edvotek Inc.
Danielle Snowflack (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. Receive a free gift for attending.

Out-of-School STEM Enrichment: AEOP Program Design Collaboration
(Grades K–12) Sarasota 1/2, Gaylord Palms
Sponsor: AEOP
Come learn about what AEOP can do for your students’ STEM enrichment outside of school time! The Army Educational Outreach Program (AEOP) sponsors Out-of-School programs across the nation for K–12 students. You will get a chance to work with colleagues in developing your ideal (fictional) program and seeing how it stacks up to the programs offered by AEOP!

9:15 AM–3:00 PM Exhibits
Hall C, Gaylord Palms
Come stroll through the exposition picking up tips, product samples, and ideas to spark your imagination. Please note that no sessions are scheduled from 12 Noon to 1:30 PM during our exclusive exhibit hall hours.

9:30–10:30 AM Featured Panel
Shift Makers: How Informal Educators Are Making a Shift to Better Support STEM and Learner-Centered Science
(General) Osceola A, Gaylord Palms
Organizer: Karen Hays (khays@denverzoo.org), Youth Programs Manager, Denver Zoo, Denver, Colo.
Panelists:
Cynthia Jones (cynthiaj@thehenryford.org), General Manager, Henry Ford Museum and Ford Rouge Factory Tour, The Henry Ford, Dearborn, Mich.
Seun Phillips (seun.phillips@mi-sci.org), Vice President of Education and Engagement, Michigan Science Center, Detroit
Heather Norton, Vice President of Education, Orlando Science Center, Orlando, Fla.

Exciting forces are influencing science education today—STEM education and the NRC Framework. Both provide teachers with opportunities and also challenges that cannot be addressed alone. Informal environments are ideal for STEM learning, as well as learner-centered interests and curiosities in science. What kinds of experiences are needed to support STEM learning and the science and engineering practices? How might your local informal science organizations be able to connect you and your students to careers in science and meaningful, authentic science experiences? Join this panel of informal science organizations to discuss how we should shift our STEM thinking to better support your STEM learning.
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In partnership with the United States Patent and Trademark Office
9:30–10:30 AM Presentations

Targeted Interventions Through Skilled Peer Mentoring in University STEM Research Labs for Promoting STEM College and Career Readiness in High School Students
(Grades 9–College) Destin 1, Gaylord Palms

Vicky Zygouris-Coe (@vzygouri; vzygouri@ucf.edu), University of Central Florida, Orlando

Hear about lessons learned from a partnership between a metropolitan university and a school district in an effort to improve high school students’ STEM college and career readiness.

Recruiting Underrepresented and Low-Income Students into STEM Research Programs
(Grades 6–12) Destin 2, Gaylord Palms


Scientific research, participation in STEM competitions, and ongoing community support can be used for maximizing student achievement and for overcoming socioeconomic or ethnic barriers.

ASEE Session: Polar ICE: Bringing the Poles to Your Classroom
(Grades 6–12) Emerald 1, Gaylord Palms

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

Networks of sensors and sensor platforms are being deployed across polar systems to provide near real-time data from the poles. Polar Interdisciplinary Coordinated Education (ICE) provides classroom access to the Antarctic and Arctic regions through polar data, observations, and interactions with the scientists. Polar ICE offers lessons and student research ideas available for immediate classroom implementation, as well as professional development workshops for teachers across the country.

Developing Resilience in the Science Classroom
(Grades K–8) Emerald 3, Gaylord Palms

Bonnie Laabs, Hamline Elementary School, St. Paul, Minn.

Gain a better understanding of how stress and trauma impact school success. Learn how to build a trauma-sensitive science classroom that promotes resiliency in learning.

The “T” and “S” in STEM and Early Childhood: Helping Young Children Explore Their World
(Grades P–3) Emerald 5, Gaylord Palms

Tamara Kaldor (@chiplaypro; @TEC_Center; tkaldor@erikson.edu), TEC Center at Erikson Institute, Chicago, Ill.

Screens and technology tools can become magnifying Roch-riges, mirrors, and windows for young children’s exploration of the world around them…and they can be powerful research tools.

Revolutionizing Education Through an Integrated STEAM Model
(Grades 5–12) Emerald 7, Gaylord Palms

Heather Soja (heather_soja@uwharriecharter.org) and Casey Harris (casey_harris@uwharriecharter.org), Uwharrie Charter Academy, Asheboro, N.C.

Explore ways to boldly lead your school or district to transform education by integrating STEAM across the curriculum with the support of community partners.

Igniting Student Interest and Learning in Engineering: Classroom Applications/Tools/Resources from the 2016 Northrop Grumman Foundation Teachers Academy Fellows
(Grades 5–8) Gainesville 1, Gaylord Palms

Jennifer Basalari (jennifer.basalari@ocps.net), Lakemont Elementary School, Winter Park, Fla.

Kara Mathews (mathews.kara@brevardschools.org), Central Middle School, Melbourne, Fla.

Steve Kirsche (stephen.kirsche@stjohns.k12.fl.us), Liberty Pines Academy, Saint Johns, Fla.

Come learn and experience how a cohort of middle school teachers gained a better understanding of the knowledge and skills needed in the corporate and industrial community for a scientifically and technologically literate workforce and how these experiences may be translated into classroom applications.

WIDA Session: Doing and Talking Science with ELLs
(Grades 3–8) Osceola B, Gaylord Palms

Rita MacDonald (rkmacdonald@wisc.edu), Wisconsin Center for Education Research, Madison

WIDA stands for World-Class Instructional Design and Assessment. Discover through video examples and discussion how to implement discourse facilitation moves to strengthen students’ reasoning and complex language in ways fully inclusive of English language learners.
Teaching Students to Ask Their Own STEM Questions  
(General)  
Palm Beach, Gaylord Palms  
Sarah Westbrook (@rightquestion; sarah.westbrook@rightquestion.org) and John Sessler (sslerjohn@gmail.com), The Right Question Institute, Cambridge, Mass.  
How can STEM educators strengthen all students’ question-asking skills? Explore the Question Formulation Technique (QFT), a simple yet powerful step-by-step process that teaches students how to produce, improve, and strategize on how to use their own questions. Work actively with classroom examples from elementary through higher education showing how the QFT is used to spark scientific inquiry and leave ready to immediately implement and share.

9:30–10:30 AM  Hands-On Workshops

Teaching Life Science Through STEM Integration: Bee-Friendly Projects  
(Grades 4–6)  
Emerald 2, Gaylord Palms  
Drew Ayres (dayres@purdue.edu), Purdue University, West Lafayette, Ind.  
Leave with a 12-lesson unit plan that is focused on teaching plant science, soil types, and engineering design/technology design.

Beam vs. Suspension Bridges  
(Grades 3–5)  
Emerald 4, Gaylord Palms  
Lukas Hefty (@LukasHefty; hefyl@pcsb.org), Pinellas County Schools, Largo, Fla.  
Geraldina Ruso (rodriguez.geri@gmail.com), Douglas L. Jamerson, Jr. Elementary School, Saint Petersburg, Fla.  
Use models to investigate the difference between beam and suspension bridges. Connect the investigation to a broader engineering unit focused on bridge design.

Climate Change and Nano-Bio-Sensor Science  
(Grades 5–8)  
Emerald 6, Gaylord Palms  
Jonathan Bonner (jonathan.bonner@rocketmail.com), CFM Group, Tuscaloosa, Ala.  
Karen Boykin (kboykin@ua.edu), The University of Alabama, Tuscaloosa  
This Earth science module introduces emerging technology for reducing greenhouse gases with nano-bioplastics and 3D printers to tackle environmental issues students face in their lifetime.

DNA Barcoding  
(Grades 10–College)  
St. George 112, Gaylord Palms  
Jeff Dykes (jdykes@wvc.edu), Wenatchee Valley College at Omak Campus, Omak, Wash.  
Are you interested in your students participating in a real-world research project? Find out about having them use DNA Barcoding to identify plants. The DNA target sequence is amplified by PCR (Polymerase Chain Reaction) and the DNA sequence is compared to a database of known organisms. Organisms not known are added to the database.

AAPT Session: Star Spectra Science  
(Grades 6–College)  
Emerald 8, Gaylord Palms  
Dolores Gende (@AAPTHQ; @dgende; dgende@gmail.com), North Broward Preparatory School, Coconut Beach, Fla.  
Use colored buttons and balloons to simulate how astronomers analyze spectra to learn about star composition, color, black body radiation curves, and luminosity.

Energy Carnival  
(Grades 6–8)  
Orange Blossom Ballroom, Gaylord Palms  
Kimberly Stalker (@KimStalker; kimestalker@gmail.com) and Melissa Szentmiklosi (melissa_szentmiklosi@scps.k12.fl.us), South Seminole Middle School, Casselberry, Fla.  
Discover how creativity can get learners excited by infusing Energy NGSS with carnival attraction stations, where the final goal is creating an “Energetic” attraction!

Planning and Designing Safe and Sustainable Science Facilities for STEM-Based Science (Science Facilities 101)  
(Grades K–12)  
Sarasota 3, Gaylord Palms  
So you want new science facilities? Does your curriculum define your science teaching facility? With more than 20 years of conducting visits and presentations of new/renovated school science facilities, the author team of NSTA Guide to Planning School Science Facilities (2nd ed.) will present the “basics” of science facility planning for safe, ergonomically designed, and sustainable facilities.
A STEM Teacher Experience—Army Educational Outreach Program (AEOP): RESET
(Grades 6–12) St. George 104, Gaylord Palms
Lindsey Dahl (ldahl@eriesd.org), Woodrow Wilson Middle School, Erie, Pa.
Join me for an interactive session that will provide you with access to STEM lessons that follow the legacy cycle. You’ll also find out how you can be part of a community of STEM educators through the Research Experiences for STEM Educators and Teachers (RESET) program sponsored by AEOP.

Connect-an-Engineer
(Grades 5–9) St. George 108, Gaylord Palms
Jeffery Townsend (scott.townsend@eku.edu) and Mary Lamar (mf137660@gmail.com), Eastern Kentucky University, Corbin
Introduce middle schoolers to the general field of engineering, specific sub-disciplines of engineering, and connections to their everyday lives. Free lessons and unit plan materials!

STEAM Projects, Digital Science Fairs, and Student Performances
(Grades 5–12) St. George 114, Gaylord Palms
David Lockett (@DavidJLockett; david.lockett@lwchars terschools.com), Edward W. Bok Academy, Lake Wales, Fla.
Having trouble helping students conceptualize science fair projects, STEAM performances, and other competitions? Discover an effective method for teaching students to design experiments from simple investigations. Learn integration strategies that provide a better way to integrate science, literacy, and technology.

“STEAM” Up Your Classroom with Cool Design Challenges!
(Grades K–4) Tampa 1, Gaylord Palms
Caryn Walker (caryn.walker@jefferson.kyschools.us), Jefferson County Public Schools, Louisville, Ky.
Laura Keeling (laura.keeling@jefferson.kyschools.us), Tully Elementary School, Louisville, Ky.
Come join our exploration of how the engineering design process can support STEAM education and classroom instruction. We will create, design, test, and improve!

Literacy + STEM = A Launchpad for Success
(Grades P–3) Tampa 2, Gaylord Palms
Kalynda Pearce (@LovSunshine1115; kjpearce8@msn.com), Lake Ridge Elementary School, Nampa, Idaho
Quincey Williamson (qwilliamson@nsd131.org), Nampa (Idaho) School District 131
We invite teachers to engage in strategies that use picture books and science challenges to increase the learning and language opportunities, particularly for English language learners.

Unlock the Gardening Experience
(Grades P–3) Tampa 3, Gaylord Palms
Mary Hess (marylynn_hess@scps.us), Goldsboro Elementary Magnet School, Sanford, Fla.
Unearth meaningful, innovative approaches to effectively engage learners through gardening, using real-world experiences that support NGSS. Discover the latest research that supports STEM education.
9:30–10:30 AM  Exhibitor Workshops

Make Science Night Meaningful with STEMrangers
(Grades 3–12)  Naples 1/2, Gaylord Palms
Sponsor: STEMscopes
Reid Whitaker (reid@acceleratelearning.com) and Lisa Webber (lwebber@acceleratelearning.com), Accelerate Learning, Inc., Houston, Tex.
Designed with Phillippe Cousteau and EarthEcho International, STEMrangers is a school science night kit that empowers students, teachers, and parents to take on real-world problems and understand their role in solving them.

Integrating Chromebook and BYOD with Vernier Technology
(Grades 3–12)  Naples 3, Gaylord Palms
Sponsor: Vernier Software & Technology
David Carter (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.
Participate in fun and engaging experiments that compare grip strengths, investigate pressure/volume relationships, and match position graphs, all using Vernier digital tools with Chromebooks or BYOD. See how sensor-based experiments teach students about data collection and analysis—practices that promote STEM inquiry, improve STEM literacy, and authentically boost test scores.

Keep Your Head Above Water with Magnetic Water Molecule Models
(Grades 6–College)  Osceola 1, Gaylord Palms
Sponsor: 3D Molecular Designs
Kristine Herman (kris.herman@3dmoleculardesigns.com), 3D Molecular Designs, Milwaukee, Wis.
Engage students by modeling chemical and physical properties of water using hands-on/minds-on magnetic water molecules. Explore common water phenomena such as density, erosion, and weathering. Explain the phases of water, density, and solubility. Elaborate on the water cycle and its impact on the ecosystem. Evaluate student learning with models.

Make Sure Your Makerspace Has Options for All Students!
(Grades K–8)  Osceola 2, Gaylord Palms
Sponsor: Delta Education/Frey Scientific
Darrick Wood, Distance Learning Coordinator, Louisville, Ky.
Kathy Armstrong, Northside Elementary School, Midway, Ky.
For students to develop the proper range of skills required of “makers,” a makerspace should provide tools and resources to help them grow as scientists. Many makerspaces now include supplemental curriculum options that give students, curious about science, resources designed for exploring classroom concepts in a maker setting.

Space-Docking Failure: Phenomena, 3-D Instruction, and Amplify Science for Grades 6–8
(Grades 6–8)  Osceola 3, Gaylord Palms
Sponsor: Amplify
Carissa Romano (amplifyscience@berkeley.edu) and Sophia Lambertsen (amplifyscience@berkeley.edu), The Lawrence Hall of Science, University of California, Berkeley
Experience how students investigate a failed spacecraft docking while figuring out principles of force and motion and engaging in three-dimensional learning. Participants will get a hands-on dive into Amplify Science for grades 6–8, engaging with this new NGSS-designed curriculum from The Lawrence Hall of Science.

Plunging into Data About Climate Change and Coral Bleaching
(Grades 9–College)  Osceola 4, Gaylord Palms
Sponsor: HHMI BioInteractive
Scott Sowell (sowells@duvalschools.org), Darnell-Cookman School of the Medical Arts, Jacksonville, Fla.
Immerse students in authentic data about the phenomenon of coral bleaching and its connection to climate change. Using a free inquiry-based activity developed by HHMI BioInteractive, participants will construct, analyze, and interpret graphical representations of data to generate conclusions about the effects of climate change on coral reefs worldwide.

NGSS Waves: Make an Abstract Concept Become Visible!
(Grades 6–8)  Osceola 5, Gaylord Palms
Sponsor: Lab-Aids, Inc.
Amy Reijmer, Oconee Middle School, Bogart, Ga.
Experience two exemplary NGSS-focused activities from SEPUP. Anchored in the context of health issues around various types and levels of wave exposure, activities model seamless integration of the three dimensions, ELA, and math standards. We will explore the relationship between visible light frequency and energy through the use of a phosphorescent material and use light boxes to explore reflection and refraction.
Beyond the Punnett Square
(Grades 7–College) Osceola 6, Gaylord Palms
Sponsor: B.A.C.K. for Learning
Mary Holland (mholland@backforlearning.com), B.A.C.K. for Learning, Casa Grande, Ariz.
We have all taught genetics and probability using the traditional Punnett square. What if you could use hands-on kits that interconnect the concepts of cell division, inheritance, and protein synthesis? More than just kits, this workshop incorporates a method of teaching that will have you teaching more and grading less.

Flinn Scientific’s STEM Design Challenge™ Activities
(Grades 6–12) Sarasota 1/2, Gaylord Palms
Sponsor: Flinn Scientific, Inc.
Janet Hoekenga (jhoekenga@flinnsci.com), Flinn Scientific, Inc., Batavia, Ill.
This hands-on interactive workshop will help you integrate STEM scientific inquiry and engineering design principles into your curriculum. Join Flinn Scientific in a “build-it-yourself” lab project that will actively engage students and increase their understanding of concepts that cut across scientific disciplines. Interactive demonstrations highlight science and engineering practices such as reasoning based on the evidence. Handouts for all activities!

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• Scan QR code below to access our NSTA Conference App.
10:30 AM–12 Noon  Special Session
Elementary STEM Showcase!
(Grades P–5)  Exhibit Hall C, Gaylord Palms

Sponsored by Pitsco Education and Squishy Circuits

Organized by Linda Froschauer (fro2@me.com), 2006–2007 NSTA President, Pasadena, Calif.

Karen Ansberry (karen@pictureperfectscience.com) and Emily Morgan (emily@pictureperfectscience.com), Picture-Perfect Science, West Chester, Ohio
Chris Barton, Author, Austin, Tex.
Sarah B. Bush (sarah.bush@ucf.edu), University of Central Florida, Orlando
Kristin Cook (kcook@bellarmine.edu), Bellarmine University, Louisville, Ky.
Shelly L. Counsell (sclnsell@memphis.edu), The University of Memphis, Tenn.
Richard Cox, Jr. (richard.cox@bullitt.kschools.us), Old Mill Elementary School, Mount Washington, Ky.
Barbara Ehlers (ehlersb@uiu.edu), Upper Iowa University, Fayette
Joan Gillman (joan.gillman@calhoun.org), The Calhoun School, New York, N.Y.
Rachelle Haroldson (rachelle.haroldson@uwrf.edu), University of Wisconsin–River Falls
Lukas Hefty (hefyl@pcsb.org), Pinellas County Schools, Largo, Fla.
Kate Hutchinson, Museum of Science, Boston, Mass.
Shana Keller (shanakeller@yahoo.com), Author, Pittsburgh, Pa.
J. Carrie Launius (janetcarrie@gmail.com), NSTA Director, District XI, Saint Louis, Mo.
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Lisa Nyberg (lnyberg@csufresno.edu), California State University, Fresno
Melissa Parks (mparks@stetson.edu), Stetson University, Deland, Fla.
Felicia Peat (fpeat@wkno.org), WKNO–Public Broadcasting of the Mid-South, Cordova, Tenn.
Christine Anne Royce (carynce@aol.com), NSTA President-Elect, and Shippensburg University, Shippensburg, Pa.
Ann Rubino (maudthemarmot@gmail.com), Retired Educator, Shorewood, Ill.
Stephanie Selznick (selznick71@gmail.com), Endeavor Elementary School, Orlando, Fla.

Melissa Sleeper (melissa.sleeper@indianriverschools.org), Gifford Middle School, Vero Beach, Fla.
Jennifer Swanson (jennifer@jenniferswansonbooks.com), Author, Jacksonville, Fla.
Juliana Texley (texlelj@cmich.edu), 2014–2015 NSTA President, and Central Michigan University, Mount Pleasant
Megan Veldhuizen (mrveldhuizen@gmail.com), Lawton (Okla.) Public Schools
Laurie Wallmark (laurie@lauriewallmark.com), Raritan Valley Community College, North Branch, N.J.

The Elementary STEM Showcase brings together approximately 30 leaders in STEM education who will provide a variety of preK–5 STEM teaching strategies and resources. Featured materials include NSTA Press® books, award-winning books from the Best STEM Books list, and strategies from the NSTA preK–5 journal, Science & Children. NGSS connections to student experiences will be highlighted during this flea market–style sharing experience where participants will engage in hands-on activities and interact with presenters about STEM investigations.

Participants will learn from this energy-filled experience and leave with ideas to use with students and colleagues. The Elementary STEM Showcase will be one of the featured events held during the STEM Forum & Expo, as well as the only elementary session provided during the Thursday 10:30 AM–12 Noon time slot.

Free copy of Bringing STEM to the Elementary Classroom to the first 10 participants PLUS all attendees have a chance to win an iPad!
Thursday, 11:00 AM–12 Noon  

**Presentations**

**Enhancement of Education Through a STEM Pipeline Partnership Model: Engaging K–12, Community College, and University Students with a Focus on Genetics and GMOs**  
(Grades 9–College)  
Destin 1, Gaylord Palms  
Tara Turley-Stoulig (tturley@selu.edu), Southeastern Louisiana University, Hammond  
I’ll share an approach and results of student exposure to technologies with rapidly advancing fields involving GMO investigation and scientific literacy creating a broad impact at progressive STEM levels.

**How We, as Educators, Can Increase the Number of Women of Color in the Field of STEM**  
(Grades 9–College)  
Destin 2, Gaylord Palms  
Shonnileigh Westcarth, Nova Southeastern University, Fort Lauderdale, Fla.  
Let’s discuss how we, as educators, can increase the number of minority women in the field of STEM.

**ASEE Session: AMP-Up Middle School Science and Math Through STEM Connections Classrooms**  
(Grades 6–8)  
Emerald 1, Gaylord Palms  
Jeffrey Rosen (jeff.rosen@ceismc.gatech.edu), CEISMC, Georgia Institute of Technology, Atlanta, Ga.  
Receive an overview of the integrated middle school curriculum materials designed as part of the AMP-IT-UP NSF Math/Science Partnership project. The materials, created for STEM Connections classes and core math and science courses, are available for free download.

**What’s Happening with STEM in Libraries?**  
(General)  
Emerald 5, Gaylord Palms  
Chandra Jones (cjones@denverlibrary.org), Denver Public Library, Denver, Colo.  
Find out what’s happening with STEM in school and public libraries, and leave with projects you can use right away.

**You Can’t Have STEM Without Science: Combating the Barriers to Elementary Science Education**  
(Grades K–5)  
Emerald 7, Gaylord Palms  
Heidi Brennan (@heidibrennan3; heidi.brennan@fldoe.org), Florida Dept. of Education, Tallahassee  
This panel discussion will be facilitated by Heidi Brennan, the elementary science specialist with the Florida Department of Education. Administrators from across the state will discuss how they support science instruction and overcome issues such as funding and time management.

**Colonizing Mars with Minecraft**  
(Grades 5–8)  
Gainesville 1, Gaylord Palms  
Selene Willis (@mswillisscience; mswillisscience@gmail.com), Mandy Howell (@mrshowellmath; mhowell@shorecrest.org), and Sandra Janack (sjanack@shorecrest.org), Shorecrest Preparatory School, St. Petersburg, Fla.  
Take your middle school students to Mars using Minecraft. Learn about this collaborative science and math unit that teaches more than the solar system and geometry through the science of space exploration.

**Creating Android Apps in the Science Classroom**  
(Grades 6–9)  
Gainesville 2, Gaylord Palms  
Hector Telford (hector@hu-ms2.org), Howard University Middle School of Mathematics and Science, Washington, D.C.  
Explore the use of MIT App Inventor to create android apps to enhance teaching and learning in science. Participants will learn how students can use this program to explore and reinforce scientific concepts. (Participants need an Android phone or tablet.)

**Corrosion: The Application of Redox Chemistry**  
(Grades 6–12)  
Orange Blossom Ballroom, Gaylord Palms  
Sherri Rukes (sherri.rukes@d128.org), Libertyville High School, Libertyville, Ill.  
Join me for labs, demonstrations, and examples that make oxidation reductions and corrosion engineering more exciting, practical, and easy to teach and learn. Pick up connections to all areas of science and engineering (STEM) and a CD of information.

**NCTM Session: Teaching Matters! Turn High-Quality Standards into Successful STEM Learning**  
(General)  
Osceola B, Gaylord Palms  
Diane Briars (dfbmath@comcast.net), National Council of Teachers of Mathematics, Pittsburgh, Pa.  
Explore eight research-based teaching practices that produce high levels of STEM learning. I’ll show you how to implement these practices in your classroom and share common pitfalls to avoid.
K–12 STEM Outreach Opportunities with the Department of Defense
(General) Palm Beach, Gaylord Palms
Richard Baker (richard.baker.1@us.af.mil), U.S. Air Force STEM Outreach Programs, Dayton, Ohio
This session is presented by the directors of the DoD K–12 STEM Outreach Opportunities with the Department of Defense. The Army, Navy, and Air Force, along with dozens of other Department of Defense agencies, provide numerous outreach opportunities to children, teachers, and schools across the country. We will highlight these activities and provide you with information on how to get involved with DoD STEM outreach!

High-Paying STEM Careers in the Medical Field That Use the NGSS Life Science Performance Expectations (Grades 9–12) St. George 102, Gaylord Palms
Alejandro Melendez (amelendez@lsc.org), Liberty Science Center, Jersey City, N.J.
Experience the opportunity to speak with a surgical team, discuss careers pathways, and watch a surgical procedure!

Practicing the Art of Teaching Through Simulations and Games (Grades 9–12) St. George 106, Gaylord Palms
Meredith Thompson (@Meredith_M_T; meredith.m.thompson@gmail.com), Harvard University, Cambridge, Mass.
We will share and play a set of open-source games for teacher skills designed in collaboration with teachers, districts, and schools of education.

Hope on the Horizon: STEM, PBL, and Service Learning for Middle School Students (Grades 6–8) Tampa 1, Gaylord Palms
Matt Ehresman (@ehresman79; ehresmann@centergrove.k12.in.us), Center Grove Community School Corp., Greenwood, Ind.
Use STEM, PBL, and online/blended learning to create opportunities for middle school students to solve problems on a global scale.

Going Green! Development of an Online Teacher Institute for Implementing a Hands-On Climate Change Curriculum (Grades 5–8) Tampa 2, Gaylord Palms
Rhonda Christensen (rhonda.christensen@gmail.com) and Gerald Knezek (knezek@unt.edu), University of North Texas, Denton
Introducing an online professional development institute to sustain and expand hands-on STEM curricular activities related to standby power and climate change.
11:00 AM–12 Noon  Hands-On Workshops

CHANGE the Way You Teach Climate Change: A Multidisciplinary STEM Approach
(Grades 9–12)  Emerald 4, Gaylord Palms
Allan Feldman (afeldman@usf.edu) and Linda Schmitt (linda.schmitt@sdhc.k12.fl.us), University of South Florida, Tampa
Tracy Flanagan (tracy.flanagan@sdhc.k12.fl.us), Strawberry Crest High School, Dover, Fla.
Participate in a role-playing STEM game about the mitigation of storm surge as scientists, engineers, policy-makers, etc. and learn about the NSF-funded CHANGE curriculum project.

What Happens in Vegas Ends Up Going to the Landfill: A Unique Partnership Highlighting the Vegas Waste Stream
(Grades 4–12)  Emerald 6, Gaylord Palms
Craig Rosen (@RosenCraig; @greenpowerdri; craig.rosen@dri.edu), Desert Research Institute, Las Vegas, Nev.
Mackenzie Peterson (mackenzie.peterson@dri.edu), Desert Research Institute, Reno, Nev.
Presider: Leah Madison (leah.madison@dri.edu), Desert Research Institute, Reno, Nev.
We will highlight a unique partnership in Las Vegas that provided free professional development and hands-on lessons on the waste stream, from the Vegas strip to the landfill.

The Architects Have Started Without Me: What Do I Do Now? (Science Facilities 102)
(Grades K–12)  Sarasota 3, Gaylord Palms
LaMoine Motz (lmotz@comcast.net), 1988–1989 NSTA President, and The Motz Consulting Group, White Lake, Mich.
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 Science Facilities 101 session) the NSTA 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 the architect, technology, and special adjacencies will also be presented.

STEM and Your Food Choices: The Connections
(Grades 5–8)  St. George 104, Gaylord Palms
Miriam Cooper (@mimcooper; mimcooper63@gmail.com), Science and Our Food Supply Facilitator, Green Cove Springs, Fla.
Using free FDA hands-on resources, learn how to help students take control of their health by exploring the association between food choices and disease.

Ahoy! STEM Mates: Let’s Explore the Engineering Design Process
(Grades 5–9)  St. George 108, Gaylord Palms
Matt Kempton and Michael Carraway (michael.carraway@ccboe.net), Lakeside Middle School, Evans, Ga.
In STEM, science and math connections to other disciplines become relevant. Explore the engineering design process by designing a boat powered by kinetic and potential energy using the provided materials. Leave with a lesson plan you can use immediately.

AACT Session: Building a Gas Law Unit Plan Using American Association of Chemistry Teachers (AACT) Resources
(Grades 9–12)  St. George 112, Gaylord Palms
Kimberly Duncan (@chemduncan; @AACTconnect; k_duncan@acs.org), American Association of Chemistry Teachers, Washington, D.C.
Join us as we show you how to put together a successful unit plan using the wide variety of classroom resources available on AACT’s website.

Spanning the “STEM” Acronym: Bridging Science and Math
(Grades 8–12)  St. George 114, Gaylord Palms
Jeffrey Lukens (jeffreylukens0613@gmail.com), Sioux Falls (S.Dak.) School District
Science and math are the “bookends” of STEM education. Integrating science and math can be seamless, natural, and painless. Come join the fun as we collect and analyze data!

Using Puzzling Phenomena and Modeling in Diverse Classrooms
(Grades 9–12)  Tampa 3, Gaylord Palms
Kar Lucido, Wendell Phillips Academy High School, Chicago, Ill.
Join me for this interactive talk that will lead you through the planning, implementation, and assessment of a unit planned around puzzling phenomena and the NGSS.
eCYBERMISSION is a national web-based STEM competition for students in grades 6-9.

Teachers can apply for Mini-Grants to support the implementation of student projects.

www.ecybermission.com/AdvisorResources
**Thursday, 11:00 AM–12 Noon**

**Exhibitor Workshops**

**DIVE-IN to Engineering by STEMscopes**  
(Grades 5–8) Naples 1/2, Gaylord Palms  
Sponsor: STEMscopes  
Reid Whitaker (reid@acceleratelearning.com) and Lisa Webber (lwebber@acceleratelearning.com), Accelerate Learning, Inc., Houston, Tex.  
In this interactive, engaging, and hands-on session, the DIVE (Deconstruct, Imitate, Vary, and Explore) process is investigated. Facilitation techniques are modeled as collaboration and consensus are also challenged. Come check out our new grades 5–8 engineering products called DIVE-in Engineering!

**Integrating BYOD and Chromebook with Vernier Technology**  
(Grades 3–12) Naples 3, Gaylord Palms  
Sponsor: Vernier Software & Technology  
David Carter (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.  
Participate in fun and engaging experiments that compare grip strengths, investigate pressure/volume relationships, and match position graphs, all using Vernier digital tools with BYOD or Chromebooks. See how sensor-based experiments teach students about data collection and analysis—practices that promote STEM inquiry, improve STEM literacy, and authentically boost test scores.

**Enzymes! Breaking It Down and Building It Up**  
(Grades 9–College) Osceola 1, Gaylord Palms  
Sponsor: 3D Molecular Designs  
Gina Vogt (gina.vogt@3dmoleculardesigns.com), MSOE Center for BioMolecular Modeling, Milwaukee, Wis.  
Engage your students in investigating enzyme structure/function using multiple modeling strategies. Explore and explain catabolism, anabolism, and competitive/noncompetitive inhibition with hands-on/minds-on instructional materials. Elaborate on insecticide inhibition at an enzyme active site resulting in unintended consequences. Evaluate student learning with an enzyme molecular story. Handouts!

**CPO Science Engineering Design: Learning About Collisions and Restraints**  
(Grades 5–12) Osceola 2, Gaylord Palms  
Sponsor: CPO Science/Frey Scientific  
Kat Mills, School Specialty Science, Rosharon, Tex.  
See STEM standards that integrate middle school and high school physical science ideas in action. Step through the CPO Science engineering cycle in a collaborative 1:1 student platform. Use your creativity as you build a basis for understanding the dynamics of collisions in vehicle-related incidents. Learn how Newton’s third law, conservation of energy, and momentum play a role.

**The Mystery of Poisonous Newts: Phenomena, 3-D Instruction, and Amplify Science for Grades 6–8**  
(Grades 6–8) Osceola 3, Gaylord Palms  
Sponsor: Amplify  
Carissa Romano (amplifyscience@berkeley.edu) and Sophia Lambertsen (amplifyscience@berkeley.edu), The Lawrence Hall of Science, University of California, Berkeley  
Experience how students investigate a population of deadly newts while figuring out principles of natural selection and engaging in three-dimensional learning. Participants will get a hands-on dive into Amplify Science for grades 6–8, engaging with this new K–8 NGSS-designed curriculum from The Lawrence Hall of Science.

**Using HHMI BioInteractive Resources to Bring Math into the Biology Lesson**  
(Grades 9–College) Osceola 4, Gaylord Palms  
Sponsor: HHMI BioInteractive  
Robin Bulleri (rbulleri@chccs.k12.nc.us), Carrboro High School, Carrboro, N.C.  
Looking for engaging and authentic ways to use quantitative analysis in your high school biology lessons? We will share free classroom-ready HHMI BioInteractive resources that use ecology (Great Elephant Census) and natural selection (Galápagos Finches) to expose students to computational thinking.

**STEM in Action: What eCYBERMISSION Can Do for You**  
(Grades 6–9) Sarasota 1/2, Gaylord Palms  
Sponsor: AEOP  
Learn about this online STEM competition with NO registration fee from those who have participated. Also, find out how to implement this project-based learning experience in your grades 6–9 classrooms, with mini-grants available to participants!
1:30–2:30 PM  Featured Panel

Administrators’ Panel: The Global Context for STEM Education
(General) Osceola A, Gaylord Palms

Moderator: Tiffany Huitt (thuitt@dallasisd.org), Administrators Strand Leader, and Principal, School of Science and Engineering Magnet, Dallas, Tex.

Panelists:
Karim Virani (karim.virani@bigthought.org), Information Technology Director, Big Thought, Dallas, Tex.
Jenny Christian (jechristian@dallasisd.org), Science Director, STEM Department, Dallas (Tex.) ISD
Meghan Groome (mgroome@nyas.org), Senior Vice President of Education, The New York Academy of Sciences, New York
Daniel Bartels (daniel_bartels@collegiate-va.org), STEAM Coordinator, Middle and Upper Schools at Collegiate School, and Director of Integrative STEM Education, CodeVA, Richmond, Va.

How do you prepare students for jobs that do not exist? How do you prepare students with skills that educators may not possess? Millions of the good jobs now and in the future will require high-tech skills, but in the U.S. there is a shortage of young people prepared to step into those roles. STEM knowledge is crucial to 21st-century skills, including computer programming, robotics, medical technology, and the operation of advanced machinery. Yet the U.S. Department of Education says only 16% of American high school seniors are proficient in math and interested in a STEM career.

Our panel will identify transformational practices and strategies in STEM education needed to prepare the next generation with skills necessary to drive innovation and economic growth within a global context.

1:30–2:30 PM  Presentations

Designing Professional Development for STEM Integration
(Grades 6–8) Destin 2, Gaylord Palms

Drew Ayres (dayres@purdue.edu) and Selcen Guzey (sguzey@purdue.edu), Purdue University, West Lafayette, Ind.
The ability to integrate the STEM disciplines begins with effective professional development. We will explain successfully implemented professional development.

ITEEA Session: Makerspace and STEM Lab Safety
(General) Emerald 1, Gaylord Palms

Tyler Love (@UMES_Tech_Dept; tslove@umes.edu), University of Maryland Eastern Shore, Princess Anne
Design guidelines and instructional strategies for safer makerspaces and STEM labs will be discussed from Ken Roy (NSTA) and Tyler Love’s (ITEEA) book.

PLUM LANDING: Rx to Explore—Creating a New Curriculum Pathway to Foster Urban Children’s Interest in Outdoor STEM Learning
(Grades 2–4) Emerald 3, Gaylord Palms

Join me as I present findings and new curricular materials from PLUM LANDING: Rx to Explore for outdoor STEM learning in urban areas for children ages 6–9.

Creating and Implementing STEM Curriculum Webs Across the Content Areas
(Grades K–6) Emerald 5, Gaylord Palms

Lisa Roberts (@GrandviewTigers; lroberts@mccsc.edu) and Eddie Pierce (@GrandviewTigers; epierce@mccsc.edu), Grandview Elementary School, Bloomington, Ind.
Hear how to connect STEM throughout all content areas, including art, music, and PE. We will take you through the process of creating a cross-curricular web.

A Picture Is Worth a Thousand Words: Strategies to Support Superb Sketches in the Classroom
(Grades 2–12) Gainesville 2, Gaylord Palms

Gina Tesoriero (@Miss_STEM; gntesoriero@gmail.com), M.S. 319 Maria Teresa Mirabal School, New York, N.Y.
Amanda Solarsh (amandasolarsh@gmail.com), Simon Baruch MS104, New York, N.Y.
Explore the importance of sketching within the engineering design process. To make their vision a reality, designers need to create sketches that speak for themselves. Learn how to support students’ sketching abilities to prepare them for future careers.
Using Models to Teach How Crime Scene Blood Spatter Evidence Tells a Story
(Grades 9—College) Orange Blossom Ballroom, Gaylord Palms
Anthony Bertino (abertino@nycap.rr.com), Retired Educator, Schenectady, N.Y.
Patricia Nolan Bertino (nolanp@nycap.rr.com), Retired Educator, Schenectady, N.Y.
Using easy-to-understand, inexpensive models, participants apply math and physics to determine blood’s direction, impact angle, area of convergence and origin, and if the evidence is consistent with eyewitness accounts. Handouts!

Partnership Bootcamp
(General) Osceola B, Gaylord Palms
Sally Creel (@STEMSally; sally.creel@cobbk12.org), Cobb County School District, Marietta, Ga.
Effective STEM projects and programs embrace partnerships between the school and community. Where do you start? Partnership Bootcamp, that’s where! Learn who to reach out to, how to ask, what to ask, and how to keep it going.

NSTA Press® Session: Uncovering K–2 Students’ Ideas in Science, Mathematics, and Engineering:
STEM-Focused Formative Assessment
(Grades P–2) Palm Beach, Gaylord Palms
Page Keeley, 2008–2009 NSTA President, and The Keeley Group, Fort Myers, Fla.
Before developing or implementing STEM lessons, it is important to uncover the ideas young students bring to the classroom that affect their learning and inform teaching.

Do You Need a New Science Lab?
(Grades 6—11) St. George 102, Gaylord Palms
Ruth Ruud (ruudruth61@gmail.com), Cleveland State University, Cleveland, Ohio
Win a Shell Science Lab Makeover ($20,000 value) for your school! Are you a middle school or high school science teacher in need of a science lab makeover? Attend this session and learn how you can apply to win the Shell Science Lab Makeover! You will have an opportunity to actually begin to complete the application and have your questions answered.

1:30–2:30 PM Hands-On Workshops
Bringing STEM Discourse to Life with Stop-Motion Animation
(General) Emerald 2, Gaylord Palms
Gayle Evans (@ufteach1; gnevans@coe.ufl.edu) and Kristen Apraiz (@kpraz @coe.ufl.edu), University of Florida, Gainesville
Stop-motion video is a powerful tool for stimulating discourse. Participants will film stories, analyze films for STEM concepts, and use films to guide discourse.

The Marvelous, Miraculous Circus Machine!
(Grades 2–8) Emerald 4, Gaylord Palms
Karen Bell (karen@circusarts.org) and Robin Eurich (robin@circusarts.org), The Circus Arts Conservatory, Sarasota, Fla.
Rebekka Stasny (@ascienceteacher; ascienceteacher@gmail.com), Rowlett Middle Academy, Bradenton, Fla.
Ladies and Gentlemen, boys and girls, children of all ages! The Circus Arts Conservatory in partnership with USF Center for PAInT proudly presents...The Marvelous, Miraculous Circus Machine! Inspired by cause and effect, chain reaction machines, and combined with the engineering feats of the circus, students will learn through trial and error scientific principles, including balanced and unbalanced forces, mass, and potential and kinetic energy.

Designing Solutions: Using Roof Models to Explore Surface Water Runoff
(Grades 4–6) Emerald 6, Gaylord Palms
Candace Lutzow-Felling (cj66b@eservices.virginia.edu), Blandy Experimental Farm, Boyce, Va.
Debbie Biggs (biggd@clarke.k12.va.us), Clarke County High School, Berryville, Va.
Participate in this hands-on session about a watershed systems unit. Design and engineer a roof model to explore the impacts of water runoff. Lessons provided.

NSTA Press® Session: The Power of Investigating: Guiding Authentic Assessments
(Grades P–6) Sarasota 3, Gaylord Palms
Lisa Nyberg (@docnyberg; lnyberg@csufresno.edu), California State University, Fresno
Julie McGough (@jvmcgough1; mrmagojulie2@att.net), Valley Oak Elementary School, Fresno, Calif.
Learn hands-on strategies to launch investigations through questioning. Engage in collaboration, reading, and writing to bring science to life! Investigations will fuel student thinking and learning!
**Using Inquiry-Based Learning to Activate Student Growth**  
*Grades K–12*  
St. George 104, Gaylord Palms  
**Joe Ferrara,** The University of Texas at Dallas, Richardson  
Discover an inquiry-based approach to learning that engages and motivates students. Experience an introduction to instructional standards and PBL cases that can transform any classroom.

**Teaching Environmental Sustainability Using a Free Place-Based Watershed Model**  
*Grades 8–12*  
St. George 108, Gaylord Palms  
**Carolyn Staudt** (cjstaudt; cstaudt@concord.org), The Concord Consortium, Concord, Mass.  
Model My Watershed is a free web-based application that invites students to explore the condition of their local watershed with a scientifically valid watershed model.

**AACT Session: Building a Periodic Table Unit Plan Using American Association of Chemistry Teachers (AACT) Resources**  
*Grades 9–12*  
St. George 112, Gaylord Palms  
**Kimberly Duncan** (chemduncan; AACTconnect; k_duncan@acs.org), American Association of Chemistry Teachers, Washington, D.C.  
Come learn how to put together a successful unit plan using the wide variety of classroom resources available on AACT’s website.

**Building Mousetrap Vehicles to Integrate Science, Technology, Engineering, and Mathematics**  
*Grades 6–College*  
St. George 114, Gaylord Palms  
**Karen Ostlund** (kostlund@utexas.edu), 2012–2013 NSTA President, and The University of Texas at Austin  
**Alden Balmer** (alden_balmer@roundrockisd.org), Mc High School, Austin, Tex.  
Build a mousetrap vehicle to integrate science, technology, engineering, and mathematics by modifying variables to increase speed or distance traveled.

**Starting STEM Early**  
*Grades P–2*  
Tampa 1, Gaylord Palms  
**Ruben Rosario** (rosario@lsc.org) and **Kengo Yamada** (MisterKengo; kyamada@lsc.org), Liberty Science Center, Jersey City, N.J.  
Engage in activities that embed matter, energy, and engineering into the early childhood curriculum.

**Materials in a Green, Clean World: Engaging Our Youngest Scientists with a Hands-On/Minds-On Physical Science Curriculum for Grades K–2**  
*Grades K–3*  
Tampa 2, Gaylord Palms  
**Anne Stevenson** (steve020@umn.edu), University of Minnesota Extension Center for Youth Development, Andover  
Explore a new curriculum designed to engage children in the practices of scientists and engineers. Learning activities utilize a guided inquiry approach to explore materials and polymer (plastic) science.

**The Blended Revolution: Blended Learning in the Early Childhood Classroom**  
*Grades P–2*  
Tampa 3, Gaylord Palms  
**Sarah Allen** (msallenteaches; sallen@indiancreekschool.org) and **Kelly Bryant** (@K3llyBryant; kbrewen@indiancreek-school.org), Indian Creek School, Crownsville, Md.  
Come learn how to make your Early Childhood curriculum more inclusive of STEAM elements, including purposeful and transformative technology use, sensory and multi-modality experiences, and interdisciplinary and inquiry-based learning. Please bring your smart device.
1:30–2:30 PM  Exhibitor Workshops

Argumentation: A STEM Strategy to Increase Student Talk
(Grades 3–College)  Naples 1/2, Gaylord Palms
Sponsor: STEMscopes
Terry Talley (ttalley@acceleratelearning.com) and Jacque Garcia (jgarcia@acceleratelearning.com), Accelerate Learning, Inc., Houston, Tex.
Model successful implementation of consensus building through argumentation and learn how to reduce teacher talk and increase purposeful student talk around intriguing science concepts that matter. Bring ELA skills into the STEM classroom—the 21st-century skills of communication and collaboration are essential! New topic this year.

Make Science, Coding, and Robotics Come to Life with LEGO® Education WeDo 2.0
(Grades K–5)  Naples 3, Gaylord Palms
Sponsor: LEGO Education
Laura Jackson, Retired Educator, Lee’s Summit, Mo.
Did you know that LEGO Education makes science, coding, and robotics come to life? With WeDo 2.0, elementary students can explore, create, and share discoveries as they build solutions to real-world, standards-based projects. Come experience a hands-on STEM resource that develops students’ confidence to ask questions, find answers, and solve problems!

Cells as Protein Engineers!
(Grades 9–College)  Osceola 1, Gaylord Palms
Sponsor: 3D Molecular Designs
Gina Vogt (gina.vogt@3dmoleculardesigns.com), MSOE Center for BioMolecular Modeling, Milwaukee, Wis.
Developing and using models is identified as an important NGSS science and engineering practice. We will use hands-on/minds-on materials to model the cellular processes of DNA replication, transcription, and translation. Handouts and information on borrowing kits from a university model lending library program will be provided.

Got Lactase? Exploring Genetics with HHMI Bio-Interactive Resources
(Grades 9–College)  Osceola 4, Gaylord Palms
Sponsor: HHMI BioInteractive
Robin Bulleri (rbulleri@chccs.k12.nc.us), Carrboro High School, Carrboro, N.C.
Why can some people digest milk and others can’t? Trace the genetics and evolution of lactose tolerance using free HHMI BioInteractive resources. This exploration, which links classical and molecular genetics, is appropriate for all levels of biology learners.

Introduction to Llongwill Digital USA
(Grades K–8)  Osceola 5, Gaylord Palms
Sponsor: Llongwill Digital USA
Angela Romero (aromero@llongwilldigitalusa.com), Llongwill Digital USA, Houston, Tex.
Kelechi Ubaha (kubaha@llongwilldigitalusa.com), Fort Bend ISD, Sugar Land, Tex.
We are revolutionizing accessibility to data collection equipment. As a company, we want to connect educators through scientific engagement. We offer development of curricula and provide teacher training. Join us as our innovative company changes how educators and districts do business with a sensor-based company.
Use Science to Teach Reading, Reading to Teach Science
(Grades K–6) Osceola 6, Gaylord Palms
Sponsor: Learning A–Z
Lori Smith (lori.smith@learninga-z.com), Learning A–Z, Tucson, Ariz.
Come explore Science A–Z, which contains digital, leveled content that strengthens students’ reading and scientific literacy simultaneously and provides resources to help introduce students to concepts and skills in STEM fields. Free trials will be given to all participants, allowing access to free products post-conference!

Drought in Africa Inspires Students to Invent a Smart Irrigation System
(Grades 6–12) Sarasota 1/2, Gaylord Palms
Sponsor: Texas Instruments
Fred Fotsch, Texas Instruments, Dallas
Come learn how to create a project-based camp or classroom lesson that enables students to apply concepts, such as photosynthesis and the cycle, to design a smart irrigation system. Inspired by real-world events, students are motivated to apply problem-solving skills and learn some basic programming to come up with innovative solutions to the drought situation in southern Africa.

3:00–4:00 PM Presentations

Models of STEM Integration Teaching
(Grades 6–8) Destin 1, Gaylord Palms
Drew Ayres (dayres@purdue.edu) and Selcen Guzey (sguzey@purdue.edu), Purdue University, West Lafayette, Ind.
Emphasis will be placed on models of STEM integration that have been successfully implemented in classrooms, including co-teaching, collaborative teaching, individual teaching, or entire courses.

NCTM Session: Engaging Students in the Mathematical Modeling Process via Data Collection and Analysis
(Grades 8–College) Emerald 1, Gaylord Palms
Maria Hernandez (@mathmodeling; hernandez@nccsm.edu), North Carolina School of Science and Mathematics, Durham
Focused on how we can engage students in the math modeling process, we will explore some data collection and analysis activities using LoggerPro and connect our work to the GAIMME Report. GAIMME stands for Guidelines for Assessment and Instruction in Mathematical Modeling Education.

Young Engineers in the Woods: Bringing Engineering Design Challenge to the Outdoor Classroom
(Grades P–2) Emerald 5, Gaylord Palms
Erica Green (egreen@fwsu.org), Bellows Free Academy, Fairfax, Vt.
Come explore the concept of the Engineering Design Challenge as it is used outdoors and how it connects to the learning of young children.

Elementary Principals…Are You Ready for the NGSS?
(Grades K–5) Emerald 7, Gaylord Palms
Sarah Pauch (spauch@readington.k12.nj.us), Readington Township Public Schools, Whitehouse Station, N.J.
Kristen Higgins (@TBSTiger; khiggins@readington.k12.nj.us), Three Bridges School, Three Bridges, N.J.
This session is designed to prepare elementary principals and science supervisors to lead their teachers in a successful rollout of the Next Generation Science Standards (NGSS).

Camino a la Ciencia: A Program Designed to Recruit, Retain, and Train Hispanic Women in STEM Disciplines
(Grades 9–College) Gainesville 1, Gaylord Palms
April Marchetti (@AprilMarchetti; amarchetti@rmc.edu), and Robert Patterson (robertpatterson@rmc.edu), -Macon College, Ashland, Va.
We will share a partnership between high schools, higher education, corporations, nonprofits, and governmental agencies to engage Hispanic girls in STEM education.
Female STEM Major Selection and Persistence (Grades 9–College)  
St. George 102, Gaylord Palms  
Jessica Mitchell (@docjsmitchell; jmitchell12@una.edu),  
Erica Blackstock (ebblackstock@una.edu), and Candice Gonzalez (cgonzalez@una.edu), University of North Alabama, Florence  
Review findings from a research study conducted on a college campus that was designed to explore the experiences of female STEM majors. Recommendations for promoting STEM majors to this underrepresented population will be presented.

NABT Presents: Simple, Inexpensive Ways to Develop Understanding of the Most Difficult Biological Concepts (Grades 8–College)  
Emerald 8, Gaylord Palms  
Chi Klein (@chi_molecule; chi.t.klein@gmail.com), Saint Stephen’s Episcopal School, Bradenton, Fla.  
Addressing crowdsourced feedback on the most difficult biological concepts to teach, participants will explore active non-lecture content delivery with cheap materials. Student learning will focus on models, representations, and data analysis.

Support Data Analysis in Your Classroom with a Simple Strategy for Understanding and Using Statistical Significance (Grades 6–9)  
Sarasota 3, Gaylord Palms  
Matthew Mirabello (mmirabello@amnh.org), American Museum of Natural History, New York, N.Y.  
Gina Tesoriero (@Miss_STEM; ginetesoriero@gmail.com), M.S. 319 Maria Teresa Mirabal School, New York, N.Y.  
Explore the effects that sample size and variation can have on statistical significance when evaluating and analyzing a data set. Engage in and learn some strategies to make rigorous data-based explanations and conclusion writing accessible to middle school students.

Evaluate Your Sessions Online!  
This year, we’re giving away an Apple iPad mini 2 Wi-Fi tablet 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 8 for details.)

3:00–4:00 PM    Hands-On Workshops

Erosion Trays in Elementary STEM: How to Make and Implement Erosion Trays in K–5 (Grades K–5)  
Emerald 2, Gaylord Palms  
Justine Kim (justine.nicolle.kim@gmail.com), University of Minnesota, Minneapolis  
Learn how to make affordable erosion trays and see how they can be used in interactive K–5 STEM units. See the demonstrations, leave with lesson plans!

STEM Is FUNdamental (Grades 3–5)  
Emerald 4, Gaylord Palms  
Nicole Rivera (@orlandoscience; nrivera@osc.org), Orlando Science Center, Orlando, Fla.  
Engineering design challenges are the best way to engage youth in STEM. Experience a challenge and gain strategies that can be implemented with your students! Participants will work in small groups of three to six people to design and create a sail for a vehicle to transport goods across a canyon, using a natural renewable resource: wind.

STEM-Integrated Upper Elementary Lessons That Increase Student Achievement (Grades 3–5)  
Emerald 6, Gaylord Palms  
Susan Butler (@ufteacherprep; sbutler@coe.ufl.edu), University of Florida, Gainesville  
Experience an integrated STEM lesson that addresses all four STEM disciplines. Get access to 70 upper elementary STEM lessons that raised student achievement.
Integrating Technology into Middle School NGSS Engineering Design Performance Expectations
(Grades 5–12) St. George 104, Gaylord Palms
Ruben Rosario (rosario@lsc.org) and Deepa Shah (@Celestine; dshah@lsc.org), Liberty Science Center, Jersey City, N.J.
Learn how to integrate technology into the NGSS engineering design performance expectations. Explore hands-on examples using 3D-printed materials and electronic components.

60 Minutes to Success: STEM Ed Quality Framework (General) St. George 106, Gaylord Palms
Kevin Cornell (@DRSTEMCENTER; cornellcorner@gmail.com) and Michael O’Shaughnessy (michael.oshaughnessy@mcesc.org), Montgomery County Educational Service Center, Dayton, Ohio
The Dayton Regional STEM Center uses its nationally recognized STEM Ed Quality Framework to enhance STEM learning for teachers, as well as industry and higher education.

Meteoroids, Asteroids, and Moons, Oh My! (Grades 3–8) St. George 108, Gaylord Palms
Joan Gillman (joan.gillman@calhoun.org), The Calhoun School, New York, N.Y.
Presider: Sherri Cianca (scianca@niagara.edu), Niagara University, Niagara University, N.Y.
For this workshop, STEM skills will be emphasized. We will design, build, and test moon landing devices that allow two “marshmallow” people to land softly on the moon.

We Do 2.0: Bringing Science to Life with We Do 2.0 Robots (Grades 2–5) St. George 114, Gaylord Palms
David Garringer (dag8819@lausd.net) and Oscar Rios (ocrios13@gmail.com), Stanley Mosk Elementary School, Winnetka, Calif.
Make science come to life: participants will engage in a hands-on experience on how to use LEGO WeDo 2.0 for teaching the CCSS and NGSS by staff from Stanley Mosk Elementary School, a LEGO Education Model School.

Rediscovering and Exploring Science Through the Arts (Grades P–K) Tampa 1, Gaylord Palms
Drama, creative movement, puppetry, and music are engaging tools for the exploration of physical science, Earth science, and life science, three main areas of early childhood science education. We will use arts-integrated strategies to expand a child’s knowledge of the world while developing skills that promote approaches to learning, observation skills, descriptive skills, and problem solving through exploring magnets, unique environments, what living things need to survive, and principles of engineering.

Arts in Application: Dance in Kindergarten Math (Grades P–K) Tampa 2, Gaylord Palms
Be inspired by the natural connection between math and dance to ignite your imagination as you create multisensory experiences for the kindergarten classroom.

Crowdfunding Your STEM Project (Grades P–12) Tampa 3, Gaylord Palms
Nancy Sale (butterflybonanza@yahoo.com), Lillie C. Evans K–8 Center, Miami, Fla.
Using an online crowdfunding site, teachers can secure STEM project funding. Leave with a high probability of being funded. BYOD (bring your own device).
3:00–4:00 PM  Exhibitor Workshops

**DNA Structure and Function with a Twist of CRISPR**
(Grades 9–College)  Osceola 1, Gaylord Palms
Sponsor: MSOE Center for BioMolecular Modeling
Tim Herman (herman@msoe.edu), MSOE Center for BioMolecular Modeling, Milwaukee, Wis.
Explore a variety of hands-on/minds-on instructional materials that introduce students to DNA as a double-stranded helical molecule, as information (a sequence of As and Ts and Gs and Cs) that encodes proteins, and as a 3.2 billion base pair genome that can now be edited with CRISPR/Cas9 technology.

**Is the Taste for STEM in Your Genes?**
(Grades 7–College)  Osceola 2, Gaylord Palms
Sponsor: miniPCR
A single nucleotide change in your DNA can make you a supertaster. Join in to explore the molecular genetics of taste using PCR and gel electrophoresis. Discover how to amplify and analyze your genes, linking your PTC taste receptor DNA sequence to your own taster phenotype.

**HHMI BioInteractive Resources Exploring Human Skin Color**
(Grades 9–College)  Osceola 4, Gaylord Palms
Sponsor: HHMI BioInteractive
Kenyatta McKie (kenyatta.mckie@browardschools.com), Broward County Public Schools, Fort Lauderdale, Fla.
Dive into an example of polygenic inheritance by studying the variation in human skin color. We will explore activities related to *The Biology of Skin Color* short film, including one that uses evidence and mathematical modeling to explain how SNPs are used to study genes and phenotypes in polygenic traits.

**Analyzing and Interpreting Real-Time Weather Data**
(Grades 6–12)  Osceola 6, Gaylord Palms
Sponsor: Earth Networks
Mark Hyer (mhtyer@earthnetworks.com), Earth Networks, Germantown, Md.
Ed Mansouri (emansouri@weatherstem.com), WeatherSTEM, Tallahassee, Fla.
Explore how your students can use real-time weather data to discover new patterns and generate reports. Join Earth Networks and WeatherSTEM as they share analytical, statistical, visual, API, and coding tools designed to advance science and engineering practices. Get an introduction to big data driven from global weather observations, including global lightning data. We will also share a numerical forecasting tool designed to build predictive models.

**Zombie Apocalypse!**
(Grades 6–12)  Sarasota 1/2, Gaylord Palms
Sponsor: Texas Instruments
Jeffrey Lukens, Sioux Falls (S.Dak.) School District
Be part of a zombie apocalypse! Learn about disease-spread modeling using simulations and fun story lines about a zombie outbreak. Applicable for middle school and high school, this workshop is sure to scare you and your little zombies with its exciting Hollywood themes used to engage students in learning science!
Derek Muller (@Veritasium), Science Communicator, Filmmaker, Television Presenter, and Creator of YouTube Channel Veritasium, Los Angeles, Calif.

Welcome: David T. Crowther, NSTA President, and University of Nevada, Reno

Presider: Jennifer C. Williams, Steering Committee Chairperson, 2017 STEM Forum & Expo, and Department Chair Lower School Science, Isidore Newman School, New Orleans, La.

Thinking is hard. This is something clearly shown on Derek’s YouTube videos where he interviews people on the street. Misconceptions about science abound. And they are not easy to change in traditional educational settings because the people who hold them are not even aware of these misconceptions. Prior knowledge is essential to think about when teaching, but incorrect prior knowledge is even more important. This is because it has a devastating impact on perception—people don’t even perceive that what is being presented differs from their prior knowledge. Join Derek as he discusses evidence he’s collected about these phenomena and methods that have shown promise in helping to affect conceptual change both in traditional educational settings and on YouTube.

Derek Muller (@Veritasium) is a science communicator, filmmaker, and television presenter. He is best known for creating and hosting Veritasium, a YouTube channel about science. Started in 2011, Veritasium is a science video blog featuring experiments, expert interviews, cool demos, and discussions with the public about “everything science.” The channel has over 4 million subscribers. The 230+ videos on the channel have been seen more than 330 million times. Topics of videos range from how transistors work to the history of the kilogram, quantum entanglement and Bell’s inequalities, to extreme demonstrations of the Magnus effect and gyroscopic precession.

Based on his YouTube success, Derek was recruited to work in traditional media, starting as a host on the Australian ABC’s Catalyst science magazine program. In 2015, he hosted the award-winning international documentary, Uranium: Twisting the Dragon’s Tail for PBS, tracing the impact of radioactivity from its discovery through to the present. In 2016, he hosted Digits, a documentary on the past, present, and future of the internet for Curiosity Stream, and he is a correspondent on the new Netflix show, Bill Nye Saves the World. Recently, he also launched a new YouTube channel, Sciencium.
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8:00–9:00 AM  Featured Panels

How Business/Industry/Nonprofit Partnerships Help Prepare PreK–16 Students to Meet the Needs of the Future

(General) Orange Blossom Ballroom, Gaylord Palms

Moderator: Brenda Nixon (bnixon@lsu.edu), Partnerships Strand Leader, and Co-Director, Gordon A. Cain Center, Louisiana State University, Baton Rouge

Frazier Wilson, Vice President, Shell Oil Company Foundation, and Director, Workforce and Strategic Community Initiative, Shell, Houston, Tex.

Reo Pruiett, Director, Programs, Educate Texas, Dallas

D’Yanna Craighead, Manager of Technology, Disney Support Systems, Walt Disney Attractions, Orlando, Fla.

Innovation in STEM has been pivotal in meeting the workforce demands of today. Our students need to be collaborative problem solvers as well as members of a highly skilled workforce. How can preK–16 educators engage business, industry, and nonprofits to assist in creating students who are well prepared for the dynamic workforce needs of the future and to drive the leading edge of STEM innovation?

This session provides an opportunity for attendees to better understand how business, industry, and nonprofit organizations are interfacing with preK–16 schools to meet those demands. Panel members will discuss how they have partnered with schools and provided STEM resources or employee assistance to help implement quality STEM education in K–16 schools. Members of the audience will have the opportunity to ask questions following the panelists’ presentations.

Inclusive STEM Schools: Making STEM for All a Reality

(General) Osceola A, Gaylord Palms

Sponsored by STEMx, managed by Battelle

Moderator: Michael Feder (federm@battelle.org), Battelle, Arlington, Va.

Panelists:

David Burns, Director, Ohio STEM Learning Network/Battelle, Columbus

Sandy Watkins (sandy@TSIN.org), Principal-in-Residence, Tennessee STEM Innovation Network–Battelle, Nashville

Larry Johnson, Principal, Firestone Community Learning Center, Akron, Ohio

STEMx members have developed networks of inclusive STEM schools to improve educational opportunities and outcomes across the country. Come talk to the experts about what makes these schools special, how they stack up, and what lessons you can apply to your school and classroom.

Engaging Diverse Learners and Special Needs Students in STEM

(General) Osceola B, Gaylord Palms

Moderator: Janella Watson, Director of Communications, Providence Children’s Museum, Providence, R.I.

Panelists:

Gina Tesoriero (ginatesoriero@gmail.com), STEM Special Education Teacher, M.S. 319 Maria Teresa Mirabal School, New York, N.Y.

Delia Meza (dmeza@nysci.org), Early Childhood Science Coordinator, New York Hall of Science, Corona

Explore programs, practices, and approaches that nurture curiosity, agency, and a love of STEM learning in students with special needs. In this panel, we’ll hear powerful stories from educators engaging learners of all ages in engineering design, making, and sensory-rich STEM exploration, as well as unique community partnerships that encourage and support students with special needs to pursue STEM pathways.
8:00–9:00 AM  Presentations

**A** A K–8 Model for STEM Teaching, Learning, and Professional Development Using EiE  
(Grades K–8/College)  
Emerald 7, Gaylord Palms  
Trudy Giassi (giasitrudy@gmail.com), Columbus (Ohio) City Schools  
Tanya Taylor (tanyataylor@metroparks.net), Columbus and Franklin County Metro Parks, Westerville, Ohio  
Come hear about a STEM/STEAM professional development and implementation model developed in partnership between a large urban school district and a university. This model uses Engineering is Elementary (EiE) resources.

**M** Meeting the Needs of Fragile Schools  
(Grades 5–12)  
Gainesville 1, Gaylord Palms  
Samuel Crupi (@OCPPSCrupi; samuel.crupi@ocps.net), Orange County Public Schools, Orlando, Fla.  
Learn how to meet the needs of science education in schools that have demonstrated low levels of performance across disciplines at the middle school/secondary level. Data-driven intervention relies on student involvement and are essential to growth. This session provides an outline to accomplish the sharing of information to drive student performance as a component of the short form course. Leave with a research-based tool for use in your school and district to drive science achievement.

**H** Helping Children Recognize the Presence and Impact of STEM: Explorations with Physical Structures, Everyday Household Tools, and Plants  
(Grades 3–6)  
Palm Beach, Gaylord Palms  
Donna Knoell (dknoell@sbcglobal.net), Educational Consultant, Overland Park, Kans.  
Join me as I model strategies and activities to engage students in STEM applications, constructing physical structures (bridges, buildings, etc.), exploring everyday objects, and growing plants. Handouts!

**E** Hacking Data with High Schoolers  
(Grades 8–12)  
St. George 102, Gaylord Palms  
Morgan Stewart (@morganrstewart; morganrstewart@gmail.com), Sealed Air Corp., Duncan, S.C.  
Shannon Kao (@ShannonKao; skao127@gmail.com), Stanford University, Stanford, Calif.  
Let’s use public data sets to explore data-driven investigations with basic statistics and programming. We’ll highlight finding open data sets and portfolio-worthy example projects.

**L** Science and Literacy in the K–5 Classroom  
(Grades K–5)  
Tampa 3, Gaylord Palms  
Leisa Clark, Assistant Executive Director, e-Products, NSTA, Arlington, Va.  
Engage in science and literacy in your classroom. This presentation will cover the practices and crosscutting concepts of three-dimensional learning and how to engage your elementary students in science and literacy through e-books. Find out how to use digital multimedia to enhance student learning of science, English language arts, and mathematics.
8:00–9:00 AM  Hands-On Workshops

Looking into STEM Activities as Inspiration for Capturing and Keeping Student Interest in Science
(Grades 3–5)  Emerald 2, Gaylord Palms
Melissa Parks (mparks@stetson.edu), Stetson University, Deland, Fla.
Let’s talk STEM as well as happy and engaged students. As we complete STEM activities, we will discuss how to find, implement, and modify STEM activities to meet the needs of diverse learners.

NABT and BSCS Present: Identify and Interpret—A Strategy to Help Students Make Sense of Difficult Information
(Grades 10–12)  Emerald 8, Gaylord Palms
Chi Klein (@chi_molecule; cklein@saintsteps.org), Saint Stephen’s Episcopal School, Bradenton, Fla.
Lesley Kirkley (lalaroebylesleykirkley@gmail.com), Pasco County Schools, Land O’ Lakes, Fla.
Engage with a powerful Identify and Interpret (I2) strategy in your classroom to help your students make sense of the information presented in graphs, complex figures, and data tables.

Applying Shujaa’s D.R.C. Model as an Approach for Implementing the Next Generation Science Standards
(General)  St. George 104, Gaylord Palms
Emily Jackson (emilyjackson525@gmail.com), Glen Oaks High School, Baton Rouge, La.
Explore lesson design methods that employ Deconstruction, Reconstruction, and Construction Modeling. Gain useful resources for K–12 STEM activities in both the formal and informal classrooms.

8:00–9:00 AM  Exhibitor Workshops

Take a Walk Through the Molecular World with Watercolor Landscapes
(Grades 9–College)  Osceola 1, Gaylord Palms
Sponsor: MSOE Center for BioMolecular Modeling
Tim Herman (herman@msoe.edu), MSOE Center for Bio-Molecular Modeling, Milwaukee, Wis.
Use vibrant watercolor landscapes to explore the molecular world in the cellular context within which proteins function. David Goodsell’s Tour of the Human Cell Panorama traces the production and secretion of antibodies. His new Flu Fight: Immunity & Infection Panorama illustrates how antibodies work to block the influenza infection cycle.

Improving STEM Education with JoVE Video Resources
(Grades 9–College)  Osceola 2, Gaylord Palms
Sponsor: JoVE
Dave Cox (dave.cox@jove.com), JoVE, Cambridge, Mass.
JoVE Science Education provides STEM students with an engaging, easy-to-follow video guide through hundreds of essential scientific and medical techniques. With this resource, faculty around the country are seeing improvements to learning outcomes and STEM retention. Join us and see the value of JoVE Science Education for yourself.

Is Cancer in My DNA?
(Grades 6–12)  Osceola 4, Gaylord Palms
Sponsor: Fisher Science Education
April Fischione (april.fischione@thermofisher.com), Fisher Science Education, Pittsburgh, Pa.
Through a complete hands-on session, help Jane determine if she has a genetic predisposition to colon cancer. Learn how genetic mutations can cause cancer and the role genes play in cancer risk by examining family history and comparing DNA sequencing and lab analysis in this real-life case study.

Investigating a Cliff Model
(Grades 6–8)  Osceola 5, Gaylord Palms
Sponsor: Lab-Aids, Inc.
Amy Reijmer, Oconeé Middle School, Bogart, Ga.
Engineer a coastal breakwater and analyze the trade-offs of the design. Explore how the natural world is influenced by our engineered world, which in turn creates more societal issues that must be solved through science and engineering practices. Activities exemplify NGSS and show how SEPUP embeds the engineering practices and uses real issues to powerfully deliver content learning.
Friday, 8:00–9:00 AM

Using Maggots, Flies, and Flesh to Solve a Mystery!  
(Grades 6–12)  Sarasota 1/2, Gaylord Palms  
Sponsor: Texas Instruments  
Jeffrey Lukens, Sioux Falls (S.Dak.) School District  
A decomposing corpse is found in a field. Four possible missing persons fit the description. But who is it? Using clues near the scene will help determine identity. Forensic anthropologist and director of the Human ID Lab of Colorado, Dr. Diane France helped to develop this free middle school and high school forensic science lesson.

9:15 AM–3:00 PM  Exhibits  
Hall C, Gaylord Palms  
Come stroll through the exposition picking up tips, product samples, and ideas to spark your imagination. Please note that no sessions are scheduled from 12 Noon to 1:30 PM during our exclusive exhibit hall hours.

9:30–10:30 AM  Presentations

Cultural Competence and Effective Communication in Students’ Transformation  
(General)  Destin 1, Gaylord Palms  
Kelly Haynes (khaynes@bakerschools.org), Baker High School, Baker, La.  
Tara Beth Hollins (@TaraBethHollins; tanabethhollins@yahoo.com), Port Allen High School, Port Allen, La.  
Presider: Chastity Wilson (chastityw@yahoo.com), Opelousas Junior High School, Opelousas, La.  
Build awareness and sensitivity to the culture-based genius that students bring to the classroom using science inquiry strategies. Emphasis will be placed on a model for the inclusion of culturally relevant content that accommodates student backgrounds and methods of learning.

Bridging Gaps: Making Partnership Connections Work for STEM Student Learning and Teacher Effectiveness  
(Grades 4–College)  Destin 2, Gaylord Palms  
Dewayne Morgan (@USMAsker; dmorgan@usmd.edu), University System of Maryland, Adelphi  
Hear about the Minority Student Pipeline Math Science Partnership, an NSF-funded strong multifaceted STEM learning partnership between universities, community colleges, and a K–12 school system.

The Implementation and Impact of Advanced Placement® Science Courses on Students in an Experiment  
(Grades 9–12)  Emerald 3, Gaylord Palms  
Raymond McGhee (rmcghee@equalmeasure.org), Equal Measure, Philadelphia, Pa.  
In this presentation, I’ll describe the classroom implementation highlights as well as report on the impact evaluation results on students’ scientific inquiry skills and their perceived ability to engage in scientific inquiry.

Authors Wanted! How to Get Your Article Published in an NSTA Journal  
(General)  Emerald 5, Gaylord Palms  
Linda Froschauer (fro2@me.com), 2006–2007 NSTA President, Pasadena, Calif.  
Learn how to successfully prepare and submit an article for publication in an NSTA journal.

STEMing into the Future: How to Build a STEM Program Within an Elementary School  
(Grades P–5)  Emerald 7, Gaylord Palms  
Michael Pisseri (mpisseri@stamfordct.gov) and Kyle Runfola (krunfola@ci.stamford.ct.us), Davenport Ridge Elementary School, Stamford, Conn.  
Looking to STEM into the future? Find out how to incorporate STEM education into your elementary classroom.

NCTM Session: The Teacher Role in Planning for and Enacting Mathematical Modeling Tasks  
(Grades 6–College)  Emerald 1, Gaylord Palms  
Maria Hernandez (@mathmodeling; hernandez@ncsm.edu), North Carolina School of Science and Mathematics, Durham  
Focused on the teacher role, I will share resources that can help us develop the practices that support students in their mathematical modeling experiences.

STEM Projects for the Science Classroom  
(Grades 3–12)  Osceola A, Gaylord Palms  
DJ West (@djwest78; djwest78@gmail.com), Schoolcraft College, Livonia, Mich.  
Emphasis will be placed on best practices in STEM projects, review and evaluation of STEM projects, and resources that support the development of a STEM environment in the classroom. Leave with resources you can use in class.
iMakeMedia
(Grades 3–8) Osceola B, Gaylord Palms
Kevin Cornell (@originalmisterc; learningscienceisfun@gmail.com), Learning Science is Fun, Dayton, Ohio
Grab a seat and enjoy a good beat. Join Mister C to experience hands-on science during this high-intensity multimedia session. Learn how to record and publish your lessons on the fly!

Urban STEM-ification
(Grades K–12) Palm Beach, Gaylord Palms
Sally Creel (@STEMSally; sally.creel@cobbk12.org), Cobb County School District, Marietta, Ga.
Join me as I share a journey toward infusing STEM into a large urban school district in Metro-Atlanta. I’ll share and discuss what worked and what didn’t…along the way.

NSTA Press® Session: Water and People: An Example Hydrology Unit for Grades 8–12
(Grades 8–College) St. George 102, Gaylord Palms
Russell Colson (colson@mnstate.edu), Minnesota State University Moorhead
Mary Colson (@MnMColson; mc@moorheadschools.org), Horizon Middle School, Moorhead, Minn.
Explore how to expand a unit on surface water runoff to include engineering problems and mathematical models using science reasoning challenges and experiments from the NSTA Press book Learning to Read the Earth and Sky.

Using Student Research as a Vehicle for Student Engagement and Development in Science
(Grades 6–9) Vero, Gaylord Palms
Brian Ogle (bogle@beaconcollege.edu), Beacon College, Leesburg, Fla.
Active participation in research creates a dynamic learning environment that cultivates science literacy, meets standards, and fosters engagement in the field.

Where It Stops, Nobody Knows: ELA Through STEM
(Grades K–5) Emerald 4, Gaylord Palms
Clay Nolan (@STEMuClaytion; cnolan@caboces.org), Cattaraugus-Allegany-BOCES, Olean, N.Y.
Presider: Ada Lynne Lopez (ada.lopez@sas.com), SAS Institute Inc., Cary, N.C.
Discussion centers on how to design lessons that incorporate literacy through a STEM lens. We will explore how using a nonfiction book can kick off a lesson series and infuse literacy, science, and math from the content of the book while meeting grade level–specific CCSS.

Where Would a Space Explorer Find Water and Oxygen?
(Grades 3–8) Emerald 6, Gaylord Palms
Karen Roark (kcroark@gmail.com), NASA Ames Research Center, Mountain View, Calif.
This workshop will help your students answer the question: What can I do to make clean water? (by designing and building their own water filtering system).

Terra Troopers: A STEM Partnership with the Girl Scouts of Western Oklahoma and Devon Energy
(Grades K–12) Gainesville 2, Gaylord Palms
Sharica Robinson (srobinson@gswestok.org), Girl Scouts Western Oklahoma, Oklahoma City
Allison Bailey (allison.bailey@dvn.com), Devon Energy, Oklahoma City, Okla.
Engage in activities and learn about a Devon Energy partnership with the Girl Scouts Western Oklahoma to expand STEM education focused on the oil and natural gas industry to girls in Oklahoma.

What’s the Big Idea? A Glimpse into Current Themes for STEM Educators
(Grades 6–8) Sarasota 3, Gaylord Palms
Marianne Phillips (marianne.phillips@tamusa.edu), Texas A&M University–San Antonio
Julie Vowell (jevowell@txwes.edu), Texas Wesleyan University, Fort Worth
Discussion centers on current pedagogical themes important for STEM instruction. Then, participants will create a collage of what each theme would look like in the classroom.
Coding Across the Curriculum
(Grades 3–10)  St. George 104, Gaylord Palms
Erin Dunroe, Lake Center Middle School, Santa Fe Springs, Calif.
Learn to use the coding program Scratch to incorporate STEM across multiple content areas, including example projects and rubrics. Participants will create a Scratch project.

Strengthening Science Learning Through Disciplinary Literacy
(Grades 9–12)  St. George 106, Gaylord Palms
Vicky Zygouris-Coe (vzygouri@ucf.edu), University of Central Florida, Orlando
In this session, I'll demonstrate how to use science-specific instructional strategies that develop science and literacy learning in tandem.

NSTA Press® Session: Uncovering Grades 2–8 Students’ Ideas About Magnets and Magnetic Interactions
(Grades 2–8)  St. George 108, Gaylord Palms
Susan Cooper (sjcooper@fgcu.edu), Florida Gulf Coast University, Fort Myers
Learn how formative assessment can give you the information you need about students’ ideas related to magnets and magnetic interactions in order to design and implement successful scientific investigations and engineering challenges that involve magnets. We will also share how these probes were used with preservice teachers.

AACT Session: Elementary and Middle School Chemistry: Demonstrations and Lab Activities on a Shoestring Budget
(Grades 3–8)  St. George 112, Gaylord Palms
Kimberly Duncan (@chemduncan; @AACTconnect; k_duncan@acs.org), American Association of Chemistry Teachers, Washington, D.C.
Come learn how you can implement budget-friendly classroom demonstrations, labs, and activities to teach fundamental chemistry topics in your elementary or middle school classroom.

Data Analysis Made Easy: Connecting Math and Science Through Technology
(Grades 7–College)  St. George 114, Gaylord Palms
Karlheinz Haas (khaas@thepineschool.org), The Pine School, Hobe Sound, Fla.
Increase student engagement in analysis and evaluation of real data. Engage students of different ability levels in mathematical modeling with measurements not previously accessible in the classroom.

Start with STEM: Water, Wind, and Weather
(Grades P–2)  Tampa 1, Gaylord Palms
Juliana Texley (@JulianaTexley; texleyj@cmich.edu), 2014–2015 NSTA President, and Central Michigan University, Mount Pleasant
Ruth Ruud (ruudruth61@gmail.com), Cleveland State University, Cleveland, Ohio
The earliest engineers can explore water, wind, and weather using their senses and building sound understandings. Come play with us, read, recite poetry, sing, and even dance a bit to explore ideas for early childhood STEM.

STEM and Literacy: An Integration
(Grades K–5)  Tampa 2, Gaylord Palms
Chenita Jarrett (@chenitajarrett; chenitaus@gmail.com), Fulton County Schools, Atlanta, Ga.
Have you ever heard, “We can find time to teach science”…? Come engage in STEM activities and learn how to connect STEM lessons to elementary literacy concepts. Leave with resources to suggested book lists and STEM lesson ideas.

Warming Up to Engineering with Solar Ovens
(Grades 3–6)  Tampa 3, Gaylord Palms
Susan Ramsey (@Ramseyscience; @CCS_iSTEM; susanbradyramsey@gmail.com) and Christy Scott (@CCS_iSTEM; scottc1@charlottesvilleschools.org), Charlottesville (Va.) City Schools
Increase the impact of your solar oven engineering challenge by gathering quantifiable data on different insulators, and providing evidence-based justifications on the creation of your solar oven.
9:30–10:30 AM  EXHIBITOR WORKSHOPS

Understanding Air Pollution and Energy Choices Through Hands-On STEM Activities
(Grades 6–College)  Naples 1/2, Gaylord Palms
Sponsor: U.S. EPA
Gayle Hagler and Rebecca Dodder, U.S. EPA Research Triangle Park, Durham, N.C.
Join us for two hands-on educational tools developed by EPA researchers that foster STEM skills while learning about air quality, energy, and the environment. We will highlight EPA STEM outreach resources, demonstrate building a Particle Matter air sensor kit, and play a board game called Generate! focused on energy choices.

Hands-On Robotics and Coding: Think Like an Engineer with LEGO® MINDSTORMS® Education EV3
(Grades 5–12)  Naples 3, Gaylord Palms
Sponsor: LEGO Education
Laura Jackson, Retired Educator, Lee’s Summit, Mo.
How can you prepare students for STEM-related fields? Join us for this workshop to learn ways to integrate science, technology, engineering, and math through hands-on learning with LEGO MINDSTORMS Education EV3. Participants will gain the foundational knowledge of robotics, coding, and programming in order to solve real-world problems.

Students Modeling the Molecular World
(Grades 9–College)  Osceola 1, Gaylord Palms
Sponsor: MSOE Center for BioMolecular Modeling
Tim Herman (herman@msoe.edu), MSOE Center for Bio-Molecular Modeling, Milwaukee, Wis.
Explore interactive instructional materials and different kinds of student-centered, three-dimensional modeling programs that introduce basic concepts of protein structure and function and their relevance to current research. These programs, which include training in computer visualization software and 3-D protein model design, can be used inside or outside your classroom.

How to Use Dry Ice
(Grades 4–12)  Osceola 2, Gaylord Palms
Sponsor: Penguin Brand™ Dry Ice
Crystal Dixon (crystal@sciencekiddo.com), The Science Kiddo, Portland, Ore.
In this workshop, we will demonstrate fun and engaging ways to use dry ice in the classroom.

Blackout! Phenomena, 3-D Instruction, and Amplify Science for Grades K–5
(Grades K–5)  Osceola 3, Gaylord Palms
Sponsor: Amplify
Carissa Romano (amplifyscience@berkeley.edu) and Sophia Lambertsen (amplifyscience@berkeley.edu), The Lawrence Hall of Science, University of California, Berkeley
Experience how students investigate a town that is experiencing frequent blackouts while figuring out principles of energy and engaging in three-dimensional learning. Participants will get a hands-on dive into Amplify Science for grades K–5, engaging with this new K–8 NGSS-designed curriculum from The Lawrence Hall of Science.

STEM Design Challenge
(Grades 1–8)  Osceola 4, Gaylord Palms
Sponsor: Fisher Science Education
April Fischione (april.fischione@thermofisher.com), Fisher Science Education, Pittsburgh, Pa.
Discover how to create and develop questions about force, energy, and motion for an engaging classroom lab. Then, solve an engineering problem using creative and realistic world processes while supporting your understanding with fun and exciting team competition. Finally, learn how to bring this Project-Based Learning program to your community!

Motions, Graphs, Speed, and Collisions
(Grades 6–8)  Osceola 5, Gaylord Palms
Sponsor: Lab-Aids, Inc.
Amy Reijmer, Oconee Middle School, Bogart, Ga.
Using specially designed carts, tracks, and weights, students investigate the role of mass and speed in collisions. We will explore the development of concepts in an issues-based approach that studies applications of Newton’s laws in a context of automobile safety.
Hands-On STEM for Grades K–8
(Grades K–8) Osceola 6, Gaylord Palms
Sponsor: SAE International
Meghan Stoyanoff (meghan.stoyanoff@sae.org) and Amy Smith (amy.smith@sae.org), SAE International, Warrendale, Pa.

Looking for a hands-on way to keep students engaged with STEM concepts? A World In Motion (AWIM) is a teacher-administered, industry volunteer-assisted program that incorporates science, technology, engineering, and math learning experiences through hands-on activities. Along with an overview of AWIM’s methodology, this workshop will show you how to breathe new life into your classroom by challenging students to design and construct balloon-powered cars.

11:00 AM–12 Noon Presentations

Transforming Students’ Ideas About STEM and School Learning in an Informal Setting
(Grades 6–College) Destin 1, Gaylord Palms
Angelia Reid-Griffin (@wcejrseahawk; griffina@uncw.edu), University of North Carolina Wilmington
The practice of mentoring has been known to positively influence the behaviors and career choices of many. During a summer STEM program for middle school children, the role of mentoring was explored. Join me as we analyze how the experience transforms students’ STEM interests and confidence.

Abbott Operation Discovery: A Partnership Approach to Creating a Global Program
(Grades 4–9) Destin 2, Gaylord Palms
Christine Caldwell, Catalysis LLC, Portland, Ore.
Kristen Manivilovski and Monica Bomani (monica.bomani@abbott.com), Abbott Laboratories, Abbott Park, Ill.
Learn how a middle school, an engineer, and a science consultant created an effective partnership to develop a relevant, sustainable, and global program model.

ASEE Session: Using an Engineering Frame to Map Engineering Design into Your STEM Curriculum
(Grades 4–7) Emerald 1, Gaylord Palms
Nancy Ruzyczki, University of Florida, Gainesville
Teachers want to embed more engineering design into their curriculum, but many are bound by guides that limit engineering activities. Discover how to use a frame structure to embed an engineering design activity that meets current content standards in your lessons. This frame routine has been tested with teachers in several Florida school districts and was rated highly useful as a tool.

STEM and NGSS: How NGSS Fits with Science, Engineering, Technology, and Math (and CCSS!)
(Grades 6–9) Sarasota 1/2, Gaylord Palms
Sponsor: AEOP

Everyone knows that NGSS includes science and engineering, but in this workshop we will discuss how NGSS matches up with the CCSS. Come learn how these all fit together and find out about the eCYBERMISSION Competition, a chance for your middle school students to use what they are learning in a practical setting.

STEM and Trade Books: Strange Bedfellows
(Grades P–8, College) Emerald 2, Gaylord Palms
J. Carrie Launius (@janetcarrie; janetcarrie@gmail.com), NSTA Director, District XI, Saint Louis, Mo.
Juliana Texley (@JulianaTexley; texle1j@cmich.edu), 2014–2015 NSTA President, and Central Michigan University, Mount Pleasant
Emily Brady, Executive Administrator and Manager, NSTA Recommends, NSTA, Arlington, Va.
Wondering how to add literacy to STEM? Learn about NSTA's Best STEM Book initiative and how to identify a STEM book.

Greenway Case Study: Using Technology and Maps to Inform Development Decisions
(Grades 9–College) Emerald 3, Gaylord Palms
Jenna Hartley (@JHartleySTEM; hartley-jenna@epa.gov), U.S. EPA Research Triangle Park, Durham, N.C.
Greenway Case Study puts students in the decision-making role. Students generate a justification for whether they support a proposed greenway route using maps and web-based interactive tools from the EPA’s EnviroAtlas tool.

5EzSteps to Building an Elementary Science Curriculum
(Grades K–5) Emerald 5, Gaylord Palms
Clay Nolan (@STEMuClaytion; cnolan@caboces.org), Cattaraugus-Allegany-BOCES, Olean, N.Y.
Our established lessons are built on the 5E (Engage, Explore, Explain, Elaborate, and Evaluate) lesson model. We will share how to design a process for constructing an elementary STEM curriculum that meets the NGSS and gets results.

Friday, 9:30–10:30 AM
Defining and Transitioning into a STEM School
(General)
Emerald 7, Gaylord Palms
Susan Butler (@ufteacherprep; sbutler@coe.ufl.edu), University of Florida, Gainesville
Shari Bremekamp (@CTESLions; @sharbrem; shari.bremekamp@palmbeachschools.org), Cypress Trails Elementary School, West Palm Beach, Fla.
Fred Barch (@ufteacherprep; barchs@aol.com), Boynton Beach Community High School, Boynton Beach, Fla.
Jennifer Galindo (@grassy_waters; jennifer.galindo@palmbeachschools.org), The School District of Palm Beach County, West Palm Beach, Fla.
Sandra Jinks (cayealo@palmbeach.k12.fl.us), Palm Springs Community Middle School, Palm Springs, Fla.
Annmare Dilbert (@Crosspointe_El; annmarie.dilbert@palmbeachschools.org), Crosspointe Elementary School, Boynton Beach, Fla.

A committee of 15 principals in the School District of Palm Beach County created a professional learning community that studied the attributes of effective STEM schools. The result was a STEM School Rubric that they used as a road map to transform their schools into STEM-focused institutions. The principals will share the benefits and barriers they encountered on this journey to STEM school status.

Creating Real-World Connections: Integrating Comics and Pop Culture into a STEM Classroom
(Grades 6—College)
Orange Blossom Ballroom, Gaylord Palms
Shari Brady (@ScienceOf_org; shari@thescienceof.org) and Matt Brady (@ScienceOf_org; matt@thescienceof.org), Parkland Magnet High School, Winston-Salem, N.C.

Use comics and pop culture to bring real-world relevance to your STEM classroom with www.thescienceof.org.

NSTA Press® Session: Argument-Driven Inquiry in Physical and Life Science: Lab Investigations for Grades 6–8
(Grades 6–8)
Osceola B, Gaylord Palms
Victor Sampson (@drvictorsampson; victor.sampson@gmail.com), The University of Texas at Austin
Hear about Argument-Driven Inquiry and how it can help students learn to use disciplinary core ideas, crosscutting concepts, and science and engineering practices to explain natural phenomena.

Differentiating Instruction to Make STEM Accessible to ALL Children
(Grades 3–6)
Palm Beach, Gaylord Palms
Donna Knoell (dknoell@sbcglobal.net), Educational Consultant, Overland Park, Kans.
Join me as I model differentiation strategies and activities, using classroom makerspaces to maximize exploration, inquiry, and discourse, and make STEM learning accessible to ALL children. Handouts!

Incorporating GLOBE and Inquiry into Middle School Science
(Grades 6—8)
Vero, Gaylord Palms
Daniel Stokes, Alfonza W. Davis Middle School, Omaha, Neb.
Presider: Carol Engelmann, University of Nebraska Omaha
Discussion centers on strategies used to measure a student’s attitude toward science as measured by a pre- and post-intervention survey.
11:00 AM–12 Noon  Hands-On Workshops

Critter Scene Investigation (CSI): Scat on the iPods (Grades 3–8)  Emerald 4, Gaylord Palms
Tanya Taylor (tanyataylor@metroparks.net), Columbus and Franklin County Metro Parks, Westerville, Ohio
Investigate created “evidence” using field guides loaded on iPods. Explore maps, bags of tracks, sheds, and scat in this fun inquiry activity.

Cultural Connections to Science: The Northern Lights (Grades 4–6)  Emerald 6, Gaylord Palms
Lori Schoening (llschoening@alaska.edu), Lynda McGilvary (lmmcgilvary@alaska.edu), and Doreen Hayward (dehayward@alaska.edu), Geophysical Institute, Fairbanks, Alaska
Discover free NGSS-focused resources for teaching about the aurora that incorporates Iñupiat culture and language and embeds proven strategies for engaging indigenous learners in science.

AAPT Session: DNA Science (Grades 9–College)  Emerald 8, Gaylord Palms
Dolores Gende (@AAPTHQ; @dgende; dgende@gmail.com), North Broward Preparatory School, Coconut Beach, Fla.
Using a pen spring, a laser, and a protractor, model how Rosalind Franklin determined the pitch angle of DNA using physics and biology.

Enhancing Water Education Through a University and School District Partnership (Grades 4–6, College)  Gainesville 2, Gaylord Palms
Yilin Zhuang (@marionwet; yilin@ufl.edu), UF/IFAS Extension Marion County, Ocala, Fla.
Learn about extension-based programs that enhance water education with an interactive and hands-on approach through a partnership between university and school district.

Hands-On Performance Assessment of the CCSS and NGSS: An Effective Formative Assessment Strategy (Grades 5–9)  St. George 104, Gaylord Palms
Deborah Tucker (deborahlt@aol.com), Independent Science Education Consultant, Napa, Calif.
Grant Gardner (@Assessmentserv; grantmgardner@msn.com), Assessment Services, Inc., Pepperell, Mass.
Engage in a hands-on performance task. Explore how this form of assessment is used to demonstrate student mastery of the CCSS and NGSS.

Using Grand Challenges to Engage Students in STEM (Grades 6–8)  St. George 106, Gaylord Palms
Tania Pachuta (@STEMania; tania.pachuta@cobbk12.org), Cobb County School District, Marietta, Ga.
What are Grand Challenges and how can we use them to engage students in authentic STEM learning? View exemplar projects and create your own!

NSTA Press® Session: Picture-Perfect STEM Lessons: Using Children's Books to Inspire STEM Learning (Grades K–5)  St. George 108, Gaylord Palms
Emily Morgan (@PSLessons; emily@pictureperfectscience.com) and Karen Ansberry (karen@pictureperfectscience.com), Picture-Perfect Science, West Chester, Ohio
The authors of Picture-Perfect STEM Lessons will share lessons that integrate STEM and literacy through the use of STEM-related picture books.

Project-Based Assessments in a Biology Modeling Classroom (Grades 9–12)  St. George 114, Gaylord Palms
Becky Rollo (rollor@wcsd.org), Westerville Central High School, Westerville, Ohio
Ashley Evans (evansa@wcsd.org), Westerville North High School, Westerville, Ohio
Valecia Kelly (fresta8990@gmail.com), Shroder High School, Cincinnati, Ohio
Kaeri King (@kaeriking; kaeriking75@gmail.com), Groveport Madison High School, Groveport, Ohio
Tired of final exams that kids don’t study for and won’t remember? Come integrate NGSS-focused project-based assessments in a biology modeling classroom.

STEM on a Shoestring (Grades K–4)  Tampa 1, Gaylord Palms
Julianne Ross-Kleinmann (@JBR_Kleinmann; jbrox.stem.pnh@gmail.com), The Foote School, New Haven, Conn.
Interested in incorporating STEM into your curriculum but have limited resources? Experience how third-graders learn and apply the Museum of Science’s engineering design process using spaghetti, index cards, Life Savers®, pipe cleaners, shoe boxes, and other household items to tackle collaborative and independent design challenges.
NSTA Press® Session: The Power of Questioning
(Grades P–6) Tampa 2, Gaylord Palms
Lisa Nyberg (@docnyberg; lnyberg@csufresno.edu), California State University, Fresno
Julie McGough (@jvmcgough1; mrmagojulie2@att.net), Valley Oak Elementary School, Fresno, Calif.
Learn questioning strategies integrated in a dynamic model to engage powerful practices, depth of knowledge, and communication skills with CCSS and science standards!

Stories and STEM: Integrating Literacy and STEM in Early Childhood
(Grades K–3) Tampa 3, Gaylord Palms
Meredith Fraysure (@AfterSchoolRead; mfraysure@literacypbc.org), Literacy Coalition of Palm Beach County, Boynton Beach, Fla.
Learn how to connect literature with STEM along with completing several experiments that are fun and inexpensive. Lesson plans and suggested book lists will be provided!

Friday, 11:00 AM–12 Noon
Exhibitor Workshops

11:00 AM–12 Noon Exhibitor Workshops
Project/Presentation Time…Now What? FOLDABLES!
(Grades 3–12) Naples 1/2, Gaylord Palms
Sponsor: Dinah.com
Bob Stremme (kardrobz@gmail.com), Dinah.com, San Antonio, Tex.
Research completed, data gathered—you’re ready to tell everyone about your STEM project. Learn how to use envelopes, paper, scissors, and glue to construct a Foldable display and assemble your information for all to see. Leave with a working sample, ready for your next day in the classroom.

The Power of Modeling in K–8 Classrooms
(Grades K–8) Osceola 3, Gaylord Palms
Sponsor: Amplify
Carissa Romano (amplifyscience@berkeley.edu) and Sophia Lambertsen (amplifyscience@berkeley.edu), The Lawrence Hall of Science, University of California, Berkeley
How can students create and use models to enhance, explain, and expand their thinking? Experience a variety of ways students deepen and demonstrate their understanding of scientific phenomena through the use of models. Engage with K–8 exemplars from Amplify Science, the new NGSS-designed curriculum from The Lawrence Hall of Science.

Blending Modeling and Storytelling to Engage Students in Science and Engineering Practices
(Grades 5–College) Osceola 1, Gaylord Palms
Sponsor: 3D Molecular Designs
Kristine Herman (kris.herman@3dmoleculardesigns.com), 3D Molecular Designs, Milwaukee, Wis.
Explore science and engineering practices with stories and hands-on modeling. Combine physical tangram sets and a tale about the Nintendo Empire to encourage collaboration and discuss how scientific models evolve. A black box activity demonstrates how scientists gather data to explain phenomena and design and build models to test hypotheses.

Introduction to Llongwill Digital USA
(Grades K–8) Osceola 5, Gaylord Palms
Sponsor: Llongwill Digital USA
Angela Romero (aromero@llongwilldigitalusa.com), Llongwill Digital USA, Houston, Tex.
Kelechi Ubaha (kubaha@llongwilldigitalusa.com), Fort Bend ISD, Sugar Land, Tex.
We are revolutionizing accessibility to data collection equipment. As a company, we want to connect educators through scientific engagement. We offer development of curricula and provide teacher training. Join us as our innovative company changes how educators and districts do business with a sensor-based company.

Beyond the Punnett Square
(Grades 7–College) Osceola 6, Gaylord Palms
Sponsor: B.A.C.K. for Learning
Mary Holland (mhollandaz@backforlearning.com), B.A.C.K. for Learning, Casa Grande, Ariz.
We have all taught genetics and probability using the traditional Punnett square. What if you could use hands-on kits that interconnect the concepts of cell division, inheritance, and protein synthesis? More than just kits, this workshop incorporates a method of teaching that will have you teaching more and grading less.
Drought in Africa Inspires Students to Invent a Smart Irrigation System
(Grades 6–12) Sarasota 1/2, Gaylord Palms
Sponsor: Texas Instruments
Fred Fotsch, Texas Instruments, Dallas
Come learn how to create a project-based camp or classroom lesson that enables students to apply concepts, such as photosynthesis and the water cycle, to design a smart irrigation system. Inspired by real-world events, students are motivated to apply problem-solving skills and learn some basic programming to come up with innovative solutions to the drought situation in southern Africa.

1:30–2:30 PM Administrators Featured Workshop
Design Thinking: A Hands-On Workshop for Navigating Challenges in Your Class, School, and Life
(General) Osceola A, Gaylord Palms
Facilitators:
Ela Ben-Ur (ela@innovatorscompass.org), Founder, Innovators’ Compass, Cambridge, Mass.
Garrett Mason (garrett.mason@stmsaints.com), High School Strand Leader, and Director of Innovation and Design, St. Martin’s Episcopal School, Metairie, La.

As educators, we not only help students learn subject content, but more importantly, also nurture in them the mind-sets and skills they will need to be successful in life. These mind-sets and skills unfold from the questions we ask. Surprisingly, there are five root questions that drive “innovators” of all kinds—whether a curious two-year-old or a professional engineer.

What happens when educators and students use these questions as a compass to find new possibilities in our schools and lives? On big challenges and small ones? Throughout curriculum and school culture? It is because Design Thinking articulates each of these questions and invites people to explore them in diverse ways that it has had a growing impact in the primary, secondary, and postsecondary schools across the country.

Join us as we delve headfirst into Design Thinking through this experiential workshop where we’ll practice applying our own skills and mind-sets in expanding how problem solving happens in our classrooms and schools. This workshop is geared toward both administrators and teachers to understand how Design Thinking can not only enhance your STEM program, but also strengthen the very culture of thinking at your school.
Addressing NGSS with Technology in the Field (Grades K–6)  
Emerald 5, Gaylord Palms  
Suzanne Zietlow, Discovery Charter School, Columbus, Wis.  
Discover ways to address NGSS in the field/outdoor classroom with the purposeful use of technology.

Revamping Science Class (Grades 3–5)  
Emerald 7, Gaylord Palms  
Patrice Semicek (@PSemicek; psemicek@mciu.org), Montgomery County Intermediate Unit 23, Norristown, Pa.  
Providing cross-content instruction in the elementary classroom through Project-Based Learning takes planning and preparation. Come see how one grade 5 team revamped their materials.

Partnering with Business/Industry to Provide STEM Career Opportunities for High School Students (Grades 6–12)  
Gainesville 1, Gaylord Palms  
Amy Davis (amy.davis@aiu3.net), Allegheny Intermediate Unit 3, Homestead, Pa.  
Let’s get high school students out of the four walls of our school buildings and into the real world. Experience STEM as a career!

Engaging the Virtual Student in STEM (Grades 9–12)  
Orange Blossom Ballroom, Gaylord Palms  
Amsler Burns, Kimberly Cloran (@physicosphysics; kcloran@flvs.net), and Linda Childs (l.childs@flvs.net), Florida Virtual School, Orlando  
We will showcase strategies that engage virtual students in STEM, including ways to connect virtual students with the real-life science community!

Apple Valley High School Fab Lab and Multimedia Makerspace E3STEM Grant (Grades 6–12)  
Osceola B, Gaylord Palms  
Christopher Lee (@AVHS_STEM; christopher.lee@district196.org), Apple Valley High School, Apple Valley, Minn.  
The Apple Valley High School Fabrication Lab and Multimedia Makerspace, with support from the E3STEM grant, have integrated STEM activities throughout the school and community.

The Strategic Undergraduate STEM Talent Acceleration Initiative (SUSTAIN) (College)  
Palm Beach, Gaylord Palms  
John Tillotson (@johnwtillotson; jwtillot@syr.edu), Jason Wiles, Julia Snyder, and Jeremy Sloane, Syracuse University, Syracuse, N.Y.  
Find out about the Syracuse University SUSTAIN Project, an NSF-funded effort designed to recruit, support, and retain high-achieving undergraduate STEM students from low-income and underrepresented backgrounds.

Effective Food Safety Curriculum for STEM Teachers: A Case Study (Grades 7–College)  
St. George 102, Gaylord Palms  
Yaohua Feng (yhfeng@ucdavis.edu) and Christine Bruhn (cmbruhn@ucdavis.edu), University of California, Davis  
We will describe an effective food safety curriculum that was piloted in high schools in California. Students reported a significant increase in food safety knowledge and behavior.

The Transition—From STEM Student to STEM Teacher (Grades 6–12)  
Vero, Gaylord Palms  
Nichelle Wollberg, Lake Holcombe School, Holcombe, Wis.  
Chelsey Turner (@ChelseyJTurner2), Viking Middle School, Woodville, Wis.  
Rachelle Haroldson, University of Wisconsin—River Falls  
First-year teachers who went through a STEM teacher preparation program will share their experiences transitioning from being a STEM student to a STEM teacher.
1:30–2:30 PM  Hands-On Workshops

DeSTEMber: 31 Days of Standards-Focused Curriculum
(Grades 3–6)  Emerald 4, Gaylord Palms
Itzel Gutierrez (@girlstart; itzel@girlstart.org), Girlstart, Austin, Tex.
Spark STEM excitement in your classroom with 31 days of fun, innovative activities in this hands-on workshop.

Tying with Engineering During Literacy: Designing a Literature-Based Cardboard Automaton
(Grades 3–6, College)  Emerald 6, Gaylord Palms
Jennifer Shettel (@readndr; jennifer.shettel@millersville.edu), Charlton Wolfgang (@docwolfgang), and Janet White (@jwmatheduc; jwhite@millersville.edu), Millersville University, Millersville, Pa.
Explore the world of cardboard automata and mechanisms! Participants will discover how to integrate engineering concepts with literacy standards through this engaging hands-on workshop.

AAPT Session: Nerve Science
(Grades 6–College)  Emerald 8, Gaylord Palms
Dolores Gende (@AAPTHQ; dgende; dgende@gmail.com), North Broward Preparatory School, Coconut Beach, Fla.
Build model axons from vinyl tubing, salted gelatin, and metal tacks. Investigate the role of resistivity in both physical and biological contexts.

SENSE IT: Student-Built Water Quality Sensors
(Grades 7–College)  Gainesville 2, Gaylord Palms
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. To build and understand their sensors, students must use a wide range of core knowledge of mathematics and physical science, as well as learn practical hands-on technology skills such as soldering and debugging circuits.

Infusing Computational Thinking into Science Classrooms
(Grades 6–8)  Sarasota 3, Gaylord Palms
Melody Hagaman (@ProjectGUTS), Centennial High School, Las Cruces, N.Mex.
Sheryl Arriola (sheryl.arriola@browardschools.com), Westglades Middle School, Parkland, Fla.
Get introduced to computational thinking through modeling and simulation of real-world phenomena. Participants will deconstruct and modify a computer model, conduct experiments using the model as a test bed, and reflect on what students learn when engaged in computational thinking in a science context. Laptops recommended.

Get Ready: A Total Solar Eclipse Is Coming to the United States!
(Grades P–12)  St. George 104, Gaylord Palms
Karen Roark (kcroark@gmail.com), NASA Ames Research Center, Mountain View, Calif.
This is a perfect chance to teach everything you can about the dynamics of the motion of the Earth and moon. Students learn about solar eclipses, sunspots, and solar storms through a series of hands-on activities, games, and lessons. Sun safety, solar careers (including women in space, research jobs, and salaries), and science blogs matching the NGSS included.

NSA Press® Session: Pendulums and Crooked Porch Swings: A Model for Connecting Science and Engineering
(Grades 3–8)  St. George 108, Gaylord Palms
Susan Cooper (sjcooper@fgcu.edu), Florida Gulf Coast University, Fort Myers
Experience a hands-on model lesson that connects a scientific investigation to an engineering problem. It can also be used for teacher and administrator professional development.

Building Leadership and Mentoring Through STEM-Based Literacy Projects
(Grades P–K, 9–12)  St. George 114, Gaylord Palms
Donna Jagielski (djagiels@asu.edu), Roosevelt Elementary School District No. 66, Phoenix, Ariz.
This program focuses on how teachers and administrators can foster opportunities for high school students to develop leadership and mentoring skills by bringing STEM-based literacy and hands-on projects to primary and early childhood students.

STEM Integration and Children’s Play
(Grades P–3)  Tampa 1, Gaylord Palms
Cynthia Gardner (cgardner@lander.edu) and Chris Sacerdote, Lander University, Greenwood, S.C.
How does children’s play provide the groundwork for STEM? Experience activities designed to integrate play with children’s learning within and across the STEM disciplines.
Weather, Here and There  
(Grades K–2)  
Tampa 2, Gaylord Palms  
Margaret Giunta (giuntam@pcsb.org), Douglas L. Jamerson, Jr. Elementary School, Saint Petersburg, Fla.  
Vickei Hrdina (@STEMesd112; vickei.hrdina@esd112.org), Educational Service District 112, Vancouver, Wash.  
Learn how teachers in different states joined forces to bring students an authentic STEM learning experience through an integrated weather and climate module featuring an Aesop’s fable.

“Don’t Call Us Kinders, We’re Engineers!” Engineering Education for Young Students  
(Grades K–2)  
Tampa 3, Gaylord Palms  
Emily Poster (eposter@smm.org), Science Museum of Minnesota, Saint Paul  
Learn about the Science Museum of Minnesota’s development of K–2 engineering lessons and engage in a hands-on kindergarten engineering challenge.

1:30–2:30 PM  Exhibitor Workshops  
Getting Students Through the Cellular Membrane  
(Grades 9–College)  
Osceola 1, Gaylord Palms  
Sponsor: 3D Molecular Designs  
Gina Vogt (gina.vogt@3dmoleculardesigns.com), MSOE Center for BioMolecular Modeling, Milwaukee, Wis.  
Support three-dimensional learning with materials that engage students in an exploration of the unique chemical and physical properties of water and the membranes that separate cells from their surrounding environment. Construct a model to explain diffusion, osmosis, and active and passive transport of molecules across the cell membrane.

Reconceptualizing Chemistry Through Play: Ionic Bonding  
(Grades 7–12)  
Osceola 2, Gaylord Palms  
Sponsor: PlayMada Games  
Edward Wang (edwardwang@playmada.com), PlayMada Games, New York, N.Y.  
Discover a new way to teach fundamental chemistry ideas in a fun and engaging way! Explore Collisions™, a digital chemistry game, and experience game play that provides students with a deepened understanding of key concepts including cation-anion attraction, neutrality, and ionic ratios. Bring your laptop/tablet for this lively hands-on session!

STEM Institute: Thinking Like an Engineer  
(Grades K–8)  
Osceola 3, Gaylord Palms  
Sponsor: Pearson  
Katie MacDonald (katie.macdonald@pearson.com) and Thomas Gantt (tom.gant@pearson.com), Pearson Education, Boston, Mass.  
Learn about the science and engineering practices and how they connect to science concepts. We will engage in the engineering design process and discuss ways to incorporate engineering into science lessons. Connections will be made to language arts and mathematics as well.

The Chemistry of Glow Sticks  
(Grades 6–12)  
Osceola 4, Gaylord Palms  
Sponsor: Fisher Science Education  
April Fischione (april.fischione@thermofisher.com), Fisher Science Education, Pittsburgh, Pa.  
Relive your childhood by making your own glow stick. You may have wondered what happens when you snap a glow stick that causes it to glow. Join us for a fun chemistry experiment where you will create a glowing chemical reaction.

Science Storylines and the Driving Question Board: Keeping NGSS-Focused Curricula Student Driven  
(Grades K–12)  
Osceola 5, Gaylord Palms  
Sponsor: Activate Learning  
Heather Milo, Activate Learning, Greenwich, Conn.  
What if K–12 lessons could both meet the standards and leverage student curiosity about the natural world? Join us for an engaging workshop on storyline coherence as a means to not only have pedagogy meet the NGSS, but also build on students’ questions using the Driving Question Board. One such storyline from the IQWST Middle School Curriculum will be raffled at the end!

Using Video Games to Encourage STEM Learning in Middle School  
(Grades 5–8)  
Osceola 6, Gaylord Palms  
Sponsor: Meadowlark Science and Education, LLC  
Charles Raffety (charles.raffety@umontana.edu) and Andrij Holian (andrij.holian@umontana.edu), University of Montana, Missoula  
Paulette Jones (paulette@meadowlarksxscience.com), Meadowlark Science and Education, LLC, Missoula, Mont.  
This workshop will provide a short background on the process used to develop STEM video games and additional curriculum support materials. Sample learning exercises from games will be demonstrated to illustrate the basis for STEM learning and use in classroom settings.
3:00–4:00 PM  Presentations

Building Community Partnerships Through Family STEM Night
(Grades 6–8) Destin 1, Gaylord Palms
Cathie Mullins (mullinsc@pcsb.org), Morgan Fitzgerald Middle School, Largo, Fla.
Research shows that strengthening community partnerships leads to increased motivation and learning engagement for students. Hear how businesses supported Family STEM Night at our school.

Partnerships: Creating Statewide Career Resources for Teachers, Parents, and Students
(Grades 7–College) Destin 2, Gaylord Palms
Joan Matz (@IL-IT_LEx; jmatz@comptia.org), Creating IT Futures Foundation, Downers Grove, Ill.
Receive strategies for building successful partnerships with employers, and hear best practices on creating new tools for teachers, students, and parents.

Not Your Parents’ Lecture: Strategies for Learner-Centered Instruction
(Grades 6–12) Emerald 1, Gaylord Palms
Mark Waxmonsky (@markwaxmonsky; mark.waxmonsky@knoxschools.org) and Alicia Signore (alicia.signore@knoxschools.org), L&N STEM Academy, Knoxville, Tenn.
In comparing CCSS for math and science, significant crossover was discovered. This presentation models authentic, cross-curricular, learner-centered opportunities for all classrooms.

STEAMing Ahead: Integrating the Arts into STEM Instruction
(Grades K–2) Emerald 3, Gaylord Palms
Heather Ribblett (heather.ribblett@kcd.org), Rebecca Gallion (rebecca.gallion@kcd.org), and LuAnn Hayes (luann.hayes@kcd.org), Kentucky Country Day School, Louisville
Gain practical strategies for integrating the arts into STEM instruction in the primary classroom. We will discuss planning, assessment, and examples of STEAM in action.

Exploration and Discovery Through Maps: Teaching Science with Technology
(Grades 4–5) Emerald 5, Gaylord Palms
Jenna Hartley (@JHartleySTEM; hartley.jenna@epa.gov), U.S. EPA Research Triangle Park, Durham, N.C.
Engage young learners in exploration with a three-part lesson package that includes hands-on activities, the outdoors, and a high-tech web-based mapping tool developed by the EPA (EnviroAtlas).

Transforming K–12 STEM Education Through Leader and Teacher Development
(Grades K–12) Emerald 7, Gaylord Palms
Jonathon Wetherington (@ScienceinGCPS; jonathon_wetherington@gwinnett.k12.ga.us) and Bonnie Brush (@blbbrush; bonnie_brush@gwinnett.k12.ga.us), Gwinnett County Public Schools, Suwanee, Ga.
Experience our STEM instructional transformation facilitated through the implementation of professional development laboratory schools, leadership development, and professional learning focusing on Problem/Project-Based Learning.

Growing STEM in the Park: Formal/Informal Education Partnerships
(General) Gainesville 1, Gaylord Palms
Tanya Taylor, Columbus and Franklin County Metro Parks, Westerville, Ohio
STEM—it’s in the park. Student understanding and test scores grow when classroom teachers and park naturalists partner in this standard-based life science curriculum. Come find out about the Students Exploring Ecosystem Dynamics (SEED) program.

Using National Science Olympiad STEM Events to Address NGSS Crosscutting Concepts and Content
(Grades 6–12) Oceola B, Gaylord Palms
Donna Young (dlyoung.nso@gmail.com), NASA NSO STEM Coordinator, Bullhead City, Ariz.
Hear how National Science Olympiad regional, state, and national competitions include STEM events and supporting resources that can be easily incorporated into existing curricula to actively engage students.

NASA and Science Literature Books
(Grades K–5) Palm Beach, Gaylord Palms
Lester Morales (@NASAKSCEDC; lester.morales@nasa.gov), NASA Kennedy Space Center, Fla.
Find out about NASA’s literature books for the K–5 classroom and how to use these books to engage students, increase vocabulary, and increase interest in science literacy.
Climate Change, Teenagers, and Butterflies  
(Grades 9–12)  
St. George 102, Gaylord Palms  
Betsy Payne (payne@ansp.org), The Academy of Natural Sciences of Drexel University, Philadelphia, Pa.  
Cash’e Chapman, Student, Science Leadership Academy @ Beeber, Philadelphia, Pa.  
N’aignae Starnes (naestar7@gmail.com), Student, Franklin Learning Center, Philadelphia, Pa.  
Explore a model to empower youth to better understand how scientists study climate change in different habitats and countries focusing on a species, in this case butterflies in Costa Rica.

3:00–4:00 PM  Hands-On Workshops

Supporting STEM Education in the Inclusion Classroom  
(Grades 3–5)  
Emerald 2, Gaylord Palms  
Mindy Gumpert (mgump001@odu.edu), Old Dominion University, Norfolk, Va.  
Engage in a STEM activity by collaboratively designing a vehicle. This lesson provides scaffolds to ensure active participation of students with disabilities.

Building Understandings Through Shared Concepts in Science and Music  
(Grades 3–6)  
Emerald 4, Gaylord Palms  
Terry Wolkowicz (twolkowicz@nbsymphony.org), New Bedford Symphony Orchestra, New Bedford, Mass.  
Ronald Sherwin (rsherwin@umassd.edu), UMass Dartmouth, North Dartmouth, Mass.  
Scientific concepts explored using a concept-based arts integration model can provide multiple pathways for students to build understanding while creating learning environments that support transfer of learning.

Teaching Engineering, Motion, and Energy Through Rube Goldberg  
(Grades 1–2, 4–7)  
Emerald 6, Gaylord Palms  
Elaine Sevin (elainesevin@newmanschool.org), Isidore Newman School, New Orleans, La.  
This introduction to STEM for elementary classrooms will allow participants to explore motion and energy while creating their own Rube Goldberg machine using found objects.

ITEEA Session: Engineering for All—Designing Solutions to Global Issues  
(Grades 6–8)  
Emerald 8, Gaylord Palms  
Anita Deck (adeck@iteea.org), International Technology and Engineering Educators Association, Crab Orchard, W.Va.  
Employ authentic social contexts for a hands-on approach to teaching STEM ideas and practices using the NSF-funded Engineering for All curriculum.

Consensus Discussions: An Approach to Scoring Scientific Explanations  
(Grades 3–8)  
Gainesville 2, Gaylord Palms  
Julie Jacobi (jjacobi@luc.edu), Center for Science and Mathematics Education, Loyola University Chicago, Ill.  
We will look at student work on constructing scientific explanations and engage in a consensus discussion around scoring that work. Get out of your usual scoring routine! Discover how engaging in consensus discussions in your school or professional learning community can help you gain a deeper understanding of student thinking.

Story Starts with STEM  
(Grades P–4)  
Osceola A, Gaylord Palms  
Jennifer C. Williams (@ScienceJennifer; jenniferwilliams@newmanschool.org), Steering Committee Chairperson, 6th Annual STEM Forum & Expo, and Isidore Newman School, New Orleans, La.  
Tiffany Abshire (tabshire@mceschool.com), Mount Carmel School, Abbeville, La.  
Promote your students’ enthusiasm and understanding of scientific concepts by integrating children’s literature into project-based experiments and activities. Join us as we explore the seamless blend of “story time” and STEM. Leave with a bibliography of suggested titles and complementary STEM activities.
Applying Systems Thinking Strategies to Address Real-World Problems  
(Grades 5–12) Sarasota 3, Gaylord Palms  
Brenda Breil (bbreil@pky.ufl.edu), P.K. Yonge Developmental Research School, Gainesville, Fla.  
Systems thinking strategies help students think critically about authentic problems, and design solutions to address issues that span a range of disciplines.

Measuring Sea Level from Space  
(Grades 6–8) St. George 104, Gaylord Palms  
Candice Autry (cauty@sheridanschool.org), Sheridan School, Washington, D.C.  
Analyze and interpret ocean depths to plot sea surface height. Attendees will practice making two-dimensional data become three-dimensional; in turn, bolstering visual-spatial conception skills.

How to Build a Better Muscle  
(Grades 7–College) St. George 106, Gaylord Palms  
Stacy Thibodeaux (@stacythib; srthibodeaux@gmail.com), Southside High School, Youngsville, La.  
Investigate muscle structure, collect data on muscle fatigue, and build a better muscle based on structure following function in anatomy and physiology.

STEM Lesson Guideposts™: Mapping STEM Lessons into Your Curriculum  
(Grades 2–8) St. George 108, Gaylord Palms  
Jo Anne Vasquez (jvasquez@stemlessonessentials.com), 1996–1997 NSTA President, and Rocks to Rainbows, LLC, Gilbert, Ariz.  
Michael Comer (@mathscience107; comermwedad@aol.com), Pearson Education, Boston, Mass.  
This interactive session will introduce a newly developed research-based process for developing practical integrated STEM lessons and units using your school or district standards and curriculum.

Design a Cell Phone Case to Protect Your Phone  
(Grades 6–College) St. George 114, Gaylord Palms  
Susan Ramsey (@Ramseyscience; susanbradyramsey@gmail.com) and Christy Scott (@CCS_iSTEM; scottie1@charlotterivleschools.org), Charlotteville (Va.) City Schools  
Using force plates to gather data, participants will design a cell phone case to reduce the force on their phone. Multiple iterations will be done over the course of 60 minutes to move through the design process.

Ignite Discovery: STEM Foundations  
(Preschool) Tampa 1, Gaylord Palms  
Nylah Rampersad (@orlandoscience; nrampersad@osc.org), Orlando Science Center, Orlando, Fla.  
Centers don’t need a science museum to incorporate STEM and Engineering Design Challenges into the classroom. Learn how to bring hands-on STEM challenges into any preschool center.

Designing with Electrical Circuits  
(Grades 3–5) Tampa 2, Gaylord Palms  
Barbara Adcock (@adcokhome; barbara.adcock@powhatan.k12.va.us) and Elizabeth Kirk (elizabeth.kirk@powhatan.k12.va.us), Powhatan County Public Schools, Powhatan, Va.  
Explore basic circuit design, differences between incandescent and LED lights, and design and create an electronic study guide. Leave with several design briefs that require very few supplies and can be done on a shoestring budget!

Blow the Roof Off!  
(Grades 3–6) Tampa 3, Gaylord Palms  
Karen Ostlund (@karen_ostlund; klostlund@utexas.edu), 2012–2013 NSTA President, and The University of Texas at Austin  
Strong winds generated by hurricanes and tornadoes can lift the roof off a house. Use a model for the engineering design process that integrates the NGSS three dimensions to design a better roof.

3:00–4:00 PM Exhibitor Workshop  
Water Chemistry Lab  
(Grades 9–12) Osceola 4, Gaylord Palms  
Sponsor: Fisher Science Education  
April Fischione (april.fischione@thermofisher.com), Fisher Science Education, Pittsburgh, Pa.  
Determine several chemical parameters of water samples from three bodies of water to determine water quality. Using field tools, laboratory equipment, and chemistry, you will investigate a real-world water quality case study.
4:30–5:30 PM  Closing Session: That’s A Wrap…A STEM-tastic Celebration

(General) Palm Beach, Gaylord Palms

Join us for a STEM-tastic wrap-up session from the 6th Annual STEM Forum & Expo’s Steering Committee. Share in fond memories and reflect upon the deep learning experienced at this year’s STEM Forum. Celebrate the magical sessions, panels, workshops, and networks created during your time in central Florida. You will have the opportunity to question our Steering Committee members and you will discover ways to be a part of the magic by becoming involved in future STEM Forums.

One lucky attendee will have the chance to win a free registration to the 2018 STEM Forum & Expo in Philadelphia…so come to our STEM-tastic celebration!

Steering Committee:

Jennifer C. Williams, Steering Committee Chairperson, and Isidore Newman School, New Orleans, La.

Adriana Guerra, Lower Elementary/Early Childhood Strand Leader, and E.P. Foster STEM Academy, Ventura, Calif.

Sandra Kellermann, Upper Elementary Strand Leader, and Harrison County School District, Gulfport, Miss.

Kenneth Williams, Middle Level Strand Leader, and Oxon Hill Middle School, Fort Washington, Md.


Brenda Nixon, Partnerships Strand Leader, and Gordon A. Cain Center, Louisiana State University, Baton Rouge

Tiffany Huitt, Administrators Strand Leader, and School of Science and Engineering Magnet, Dallas, Tex.


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CONFERENCE STRANDS

Atlanta, Georgia | March 15-18, 2018

WWW.NSTA.ORG/ATLANTA

#NSTA18
8:15 AM–12:15 PM  Post-Conference Workshop
Energy and Waves Physics Lab at Magic Kingdom®
(S-1)

Sponsored by Disney Youth Group Programs

The uniquely themed lands of the Magic Kingdom Park form the basis of this examination of light and sound energy and its relationship to creating one-of-a-kind Disney experiences. The learning adventure begins with participants interacting with common everyday items, showcasing real-world examples of the many forms of energy, and how the movement of energy is often in the form of a wave.

Participants engage in discussion and hands-on activities that form the foundation of their exploration of sound and light at work at the Magic Kingdom Park. Sound is a familiar part of our lives and provides information about the world around us. Guided by a Disney Y.E.S. facilitator, participants investigate sound and how it is produced and how it travels. A select attraction showcases the impact sound has on us in different ways!

The participants’ journey continues into the amazing world of light and a look at the Electromagnetic Spectrum. Refraction, reflection, absorption, and wave components are revealed through study and group discussion. A trip to Liberty Square® provides an illuminating understanding of the power of light in creating some delightfully “haunting” special effects!

Note: Participants will be required to bring a photo ID. Cameras are permitted; however, no photos are allowed when the participants are backstage. Registrants must meet in the hotel lobby no later than 8:15 AM for a prompt 8:30 AM departure. This registered educators–only workshop is 2 1/2 hours although Disney is providing a complimentary admission ticket the day of the event. Therefore, buses will leave the park, returning to the hotel at the following times: 12 Noon and 5:00 PM. (Anyone wanting to stay longer than 5:00 PM will need to make his/her own arrangements.)
Exhibitors

Some exhibitors have classified their products by grade level.

Elementary  E
Middle School  M
High School  HS
College  C

Scan the QR code for a map display of the Exhibit Hall on our conference app.

Hands-on and minds-on! Our kits and models focus on core ideas and crosscutting concepts in biology, chemistry, physical, and life sciences. We involve teachers in developing products and field testing. Kits support STEM, NGSS, AP, and IB. Ask about our Dynamic DNA Kit, Synapse Construction Kit, and influenza cellular landscape.

AC Supply Co. #708
1746 Winding Glen Dr.
St. Charles, MO 63303
Phone: 800-536-0238
E-mail: acsupply@swbell.net
Website: www.acsupplyco.com

AC Supply provides a wide array of hands-on activities with curriculum support for STEM education. Featuring Estes Rocketry; K’NEX; alternative energy; snap circuits; robotics; aerospace; CO2 dragsters; bridge building; house framing; balsa, basswood, and raw materials, and more—all at budget-saving prices!

Activate Learning #700
44 Amogerone Crossway, Suite 7862
Greenwich, CT 06836
Phone: 646-502-5231
E-mail: info@activatelearning.com
Website: www.activatelearning.com

Activate Learning is a leading publisher of investigation-centered, K–8 science curricula. Active Science (K–5) uses activities to develop problem-solving and communication skills across content areas. IQWST is a rigorous, grades 6–8 NGSS science curriculum that challenges and supports students as they investigate questions, engage in scientific practices, and explain scientific phenomena.

AEOP eCYBERMISSION and #312
GEMS E, M, HS, C
1840 Wilson Blvd.
Arlington, VA 22201
Phone: 703-312-9360
E-mails: missioncontrol@ecybermission.com; aeopgems@nsta.org
Website: www.usaeop.com

The National Science Teachers Association administers and provides support to U.S. Army Educational Outreach Programs that engage students in real-world STEM experiences. Come learn about eCYBERMISSION, an online competition free to grades 6–9 students, as well as GEMS and Camp Invention, summer STEM enrichment programs for grades K–12 teachers and students.

American Association of Chemistry Teachers #323
E, M, HS
1155 16th St., NW
Washington, DC 20036
Website: teachchemistry.org

The American Association of Chemistry Teachers (AACT) is a professional community by and for K–12 teachers of chemistry. AACT offers chemistry teaching resources, a periodical about teaching chemistry in the K–12 classroom, professional development opportunities, and more.

—Courtesy of Mike Weiss

3D Molecular Designs #407
1050 N. Market, CC130A
Milwaukee, WI 53202
Phone: 414-774-6562
E-mail: contactus@3dmoleculardesigns.com
Website: www.3dmoleculardesigns.com

Hands-on and minds-on! Our kits and models focus on core ideas and crosscutting concepts in biology, chemistry, physical, and life sciences. We involve teachers in developing products and field testing. Kits support STEM, NGSS, AP, and IB. Ask about our Dynamic DNA Kit, Synapse Construction Kit, and influenza cellular landscape.

A+ Educators #713
7227 N. 16th St.
Phoenix, AZ 85020
Phone: 602-906-6017
E-mail: rebecca.cartier@4aplus.com
Website: www.4aplus.com

At A+ Educators, our mission is to help build stronger K–12 schools by offering the highest quality and most effective education support services available today. We are dedicated to providing educators and schools nationwide with the most innovative and engaging professional development workshops and forward-facing classroom technology solutions.
American Association of Physics Teachers #320  
E, M, HS, C  
1 Physics Ellipse  
College Park, MD 20740  
Phone: 301-209-3326  
E-mail: swills@aapt.org  
Website: www.aapt.org  
The American Association of Physics Teachers (AAPT) is the premier global professional society dedicated to improving the understanding and appreciation of physics through teaching. We offer numerous physics-based resources to develop, improve, and promote best practices for high school science teachers. Stop by our booth at the STEM Forum for interactive demos based on lessons from The Physics Teacher, and win a free prize.

American Lab Design #514  
PO Box 2351  
Daytona Beach, FL 32115  
Phone: 800-194-3237  
E-mail: MikeLee@americanlabdesign.com  
Website: www.americanlabdesign.com  
Based in Florida, American Lab Design is an American-owned designer and manufacturer of science labs for over 24 years. They are the sole manufacturer of the four-student endeavor workstation and the A-frame lab stool.

American Society for Engineering Education #322  
E, M, HS, C  
1818 N St. NW  
Washington DC 20017  
Phone: 202-288-6222  
E-mail: lJennings@asee.org  
Website: www.asee.org  
The American Society for Engineering Education is a nonprofit organization of individuals and institutions committed to furthering education in engineering and engineering technology. ASEE develops policies and programs that enhance professional opportunities for engineering faculty members, and promotes activities that support increased student enrollments in engineering and engineering technology colleges and universities.

American Society for Nondestructive Testing #602  
M, HS, C  
1711 Arlingate Lane  
Columbus, OH 43228  
Phone: 614-274-6003  
E-mail: james@asnt.org  
Website: www.asnt.org  
Critical to public safety, nondestructive testing (NDT) is the examination of an object or material in a manner that does not damage them. Most are not aware of NDT, but its impact is everywhere from the buildings we occupy to the products we use to the transportation we take.

Amplify #621  
55 Washington St., 8th Floor  
Brooklyn, NY 11201  
Phone: 800-823-1969  
E-mail: science@amplify.com  
Website: www.amplify.com  
Amplify Science, written and developed by the Lawrence Hall of Science, is a brand new K–8 science curriculum designed to address the NGSS. Students learn to investigate, talk, read, write, think, and argue like real scientists and engineers through investigations of real-world problems and scientific phenomena.

Anatomage, Inc. #527  
303 Almaden Blvd.  
San Jose, CA 95110  
Phone: 408-885-1474, x2  
E-mail: info@anatomage.com  
Website: www.anatomage.com  
Anatomage products are used in tens of thousands of institutions worldwide. These include imaging equipment, radiology software, and display equipment. Anatomage products have been featured on TED, BBC, and PBS due to their originality and positive impact. Anatomage is dedicated to making innovative products and creating the highest quality experiences.

Ardusat #516  
341 S. Main St., Suite 111  
Salt Lake City, UT 84111  
Phone: 801-871-5516  
E-mail: info@ardusat.com  
Website: www.ardusat.com  
Ardusat is a complete STEM program for schools looking for an interactive and effective STEM solution. Ardusat provides open curriculum resources mapped to local standards, as well as eHub where students build experiments and share their findings. Activities range from using an Arduino and sensors, to running experiments on satellites in space.

B.A.C.K. for Learning #622  
561 W. Lucky Penny Place  
Casa Grande, AZ 85122  
Phone: 480-313-7168  
E-mail: mholland@backforlearning.com  
Website: www.backforlearning.com  
We sell biology active learning kits designed to help teach DNA, protein synthesis, patterns of inheritance, mitosis and meiosis, and cells.

BirdBrain Technologies #603  
544 Miltenberger St.  
Pittsburgh, PA 15219  
Phone: 888-371-6161  
E-mail: sales@birdbraintechnologies.com  
Website: www.birdbraintechnologies.com  
BirdBrain Technologies creates and commercializes educational robots and robot kits designed to support engineering and computer science, as well as foster a Project-Based Learning approach in everyday classrooms. We are devoted to integrating engineering and computer science with traditional core subjects by creating robots and electronics that can foster natural interdisciplinary projects.
Citizen Scientific Workshop produces educational creative scientific products for makers of all ages and skill levels. From robots to 3D printing and environmental sciences, we offer unique opportunities to ignite your home, workshop, or classroom with the spirit of invention and maker culture.

CoderZ™ by Intelitek

18 Tsienneto Rd.
Derry NH 03038
Phone: 603-413-2607
E-mail: dconnors@intelitek.com
Website: www.intelitek.com

CoderZ from Intelitek is a cloud-based learning environment for coding with real and virtual 3D robots. CoderZ integrates all STEM disciplines in a fun and accessible way by using a 3D game engine with simulated robots, while combining elements of math and engineering.

Cosmosphere International ScEd

1100 N. Plum St.
Hutchinson, KS 67501
Phone: 620-665-9323
E-mail: laurieg@cosmo.org
Website: www.cosmo.org

Learn how immersive, grade-specific NGSS curriculum coupled with the most unique collection of space artifacts in the world can bring STEM lessons to life in your classroom. Visit the Cosmosphere exhibit to discuss both on-site and distance learning opportunities that make STEM subjects engaging for every student.

Cubit

344 Thomas L. Berkley Dr.
Oakland, CA 94612
Phone: 415-515-5399
E-mail: jason@cubit.cc
Website: www.cubit.cc

It's the sense of optimism, fun, and a technology that "just works" that builds successful STEAM programs. Cubit is a modular robotics platform designed by engineers and educators for K–12 STEAM education. This key difference means that we understand the demands faced by educators to retrospectively design a STEAM technology platform.

Delta Education/School Specialty Science

80 Northwest Blvd.
Nashua, NH 03063
Phone: 800-258-1302
E-mail: customerservice.delta@schoolspecialty.com
Website: www.deltatoday.com

Delta Education has been the leader in classroom-tested, hands-on science solutions for over 30 years. From engaging core and supplemental curriculum like Full Option Science System (FOS$) and Delta Science Modules, to informational texts and reliable science and math classroom supplies, we have the selection and expertise that teachers trust.

Dinah.com

PO Box 690328
San Antonio, TX 78269
Phone: 210-698-0123
E-mail: orders@dinah.com
Website: www.dinah.com

Dinah.com is an educational publishing and consulting company owned by Dinah Zike, with downloadable resources for educators, featuring Notebooking Central, Visual Kinesiologic Vocabulary (VKVs), PHOTOnifer, Paperosphy, and LOCOMotion product lines, as well as Foldables® and Notebook Foldables® products. Knowledge unfolds.

DroneCurriculum.net

3983 S. McCarran Blvd.
Reno, NV 89502
Phone: 775-825-2263
E-mail: sales@dronecurriculum.net
Website: dronecurriculum.net

We offer a 16-unit curriculum that focuses on the elements of STEM education. Besides addressing essential concepts of drone design, each unit includes problem-solving activities that are aimed at enhancing student understanding, as well as teacher lesson plans, unit handouts, PowerPoint presentations, vocabulary lists, and comprehensive quizzes. We also offer a Learn-to-Fly curriculum.

DuinoKit

288 Harley Cole Rd.
Whittier, NC 28789
Phone: 828-226-5381
E-mail: dan@duinokit.com
Website: www.duinokit.com

DuinoKit is an interactive, hands-on system for learning about electronics and programming. Developed by a teacher, DuinoKits were developed to provide discovery-based learning along with engaging lessons and projects for work with Arduino and Raspberry Pi.

Earth Networks

12410 Milestone Center Dr.
Germantown, MD 20876
Phone: 301-250-4123
E-mail: mhyer@earthnetworks.com
Website: www.earthnetworks.com

Earth Networks offers a web-based instructional program that enables K–12 schools to use live weather and environmental data to improve student achievement across science, technology, math, and geography. Make your STEM curriculum shine. Spark creativity, collaboration, and analytical thinking with a weather-infused STEM curriculum while adding protection against severe weather threats.
### Exhibitors

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Booth #</th>
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| **Educational Innovations, Inc.**     | #523    | 5 Francis J. Clarke Circle E, M, HS, CBethel, CT 06801  
Phone: 203-748-3224  
E-mail: info@teachersource.com  
Website: www.teachersource.com  
At Educational Innovations, we only select STEM materials that ignite curiosity, collaboration, and confidence. Come see interactive science education at its best—and most fun! After the forum, visit www.TeacherSource.com, where you'll find helpful blogs, lessons, and newsletters full of ideas for bringing science to life. |
| **Edvotek Inc.**                      | #308    | 1121 5th St. NW  
Washington, DC 20001  
Phone: 202-370-1500  
E-mail: info@edvotek.com  
Website: www.edvotek.com  
Edvotek was the world's first company dedicated to demystifying biotechnology for young people. In 1987, we envisioned how the emerging area of biotechnology could inspire students to choose a career in science. Since then, Edvotek has expanded to become the world's leading supplier of safe, affordable, and easy-to-use biotechnology kits and equipment designed specifically for education. |
| **EF Explore America**                | #417    | 2 Education Circle  
Cambridge, MA 02141  
Phone: 800-503-2323  
Website: efexploreamerica.com  
EF Explore America, the domestic division of EF Education First, provides all-inclusive tours to help students and teachers go beyond the classroom and into the world around them. EF Explore America has recently launched STEM tours where your students have the chance to discover real-world applications of these subjects by learning from industry experts in cutting-edge locations such as Boston, San Francisco, and New York City. |
| **Emersive Learning**                 | #702    | from Science First, LLC  
86475 Gene Lasserre Blvd.  
Yulee, FL 32097  
Phone: 800-875-3214  
E-mail: info@sciencefirst.com  
Website: sciencefirst.com  
We bring to you Emersive Learning! Our products focus on experiential learning in all areas of science and we are committed to science using hands-on activities. We now provide even more laboratory equipment and curriculum for your science lab. We support STEM teaching and make learning into FUN experiences! |
| **Engineering Your World**            | #608    | from the University of Texas  
10100 Burnet Rd.  
Austin, TX 78758  
Phone: 512-471-3099  
E-mail: marie.girardot@austin.utexas.edu  
Website: engineeryourworld.org  
The University of Texas at Austin has developed a project-based engineering curriculum with comprehensive teacher support that has been implemented in 160+ high schools. Students engage in interesting hands-on activities requiring the application of analytical reasoning, critical thinking, communication, and collaboration skills. Students can also apply to earn dual-enrollment credit. |
| **Engineering is Elementary® (EiE)**  | #716    | 1 Science Park  
Boston, MA 02114  
Phone: 617-589-3121  
E-mail: eie@mos.org  
Website: www.eie.org  
Engineering is Elementary offers 20 integrated STEM units to be used flexibly (grades 1–5). It is research based, teacher tested, and meets the NGSS. Through hands-on design challenges, students apply science and math to design, create, and improve possible solutions. Through this constructivist, project-based experience, students realize—everyone can engineer! |
| **ETA hand2mind**                     | #512    | 500 Greensview Court  
Vernon Hills, IL 60061  
Phone: 800-445-5985  
E-mail: info@hand2mind.com  
Website: www.hand2mind.com  
ETA hand2mind’s STEM in Action™ modules seamlessly integrate science, technology, engineering, math, and literacy into real-world problems and target three major science genres—life, Earth, and physical. Developed in partnership with Purdue University, the modular lessons are teacher friendly, while the activities are fun and engaging for students. |
Explore Learning develops online solutions to improve student learning in math and science. Explore Learning Gizmos are the world’s largest library of interactive, online simulations for math and science in grades 3–12. Explore Learning Reflex (www.reflexmath.com) is the most powerful solution available for math fact fluency.

Fisher Science Education provides today’s teachers with the cutting-edge products they need to prepare their students for STEM careers. From anatomy to zoology and everything in between, Fisher Science Education can supply you with all the necessities for your educational laboratory setting.

FLEXHIBIT designs and builds multi-user, multi-outcome, hands-on STEM School Carts, which are designed with education in mind. The physical sciences are at the forefront of our first gallery of STEM School Carts and come with detailed NGSS curriculum for ease of teaching.

Flinn Scientific is the leader in science and laboratory chemical safety. Publisher of the world-renowned Flinn Science Catalog Reference Manual, Flinn develops and offers a full line of chemistry, biology, physics, life science, Earth science, physical science, and safety products for middle schools, high schools, and higher education.

Florida Science Olympiad is a science competition for elementary, middle school, and high school students. Teams of 15 students compete at regional, state, and national competitions. Events are designed around the NGSS.

Over the years, we’ve brought you breakthrough educational products created specifically with the needs of students and teachers in mind. Look to Frey Scientific for the best in STEM resources, hands-on kits, and other investigation-based programs that we have developed to engage your students and enhance your instruction.

Geophysical Institute is world-renowned, Flinn develops and offers a full line of chemistry, biology, physics, life science, Earth science, physical science, and safety products for middle schools, high schools, and higher education.

Leading the nation in auroral science for nearly 70 years, this exhibit showcases products developed for Learning through Cultural Connections: The Northern Lights. Designed to blend Alaska Native culture and language with the science of the aurora, products include student and teacher guides for grades 3–8 and video products infused with Inupiat culture and language.
Exhibitors

Georgia Aquarium #521
225 Baker St. NW
Atlanta GA 30313
Phone: 404-581-4000
Website: www.georgiaaquarium.org

Georgia Aquarium is an entertaining, intriguing, and educational experience for guests of all ages. While promoting a fun and enjoyable learning experience, the Aquarium instills in its guests a new appreciation for the world’s aquatic biodiversity.

Grand Classroom #422
PO Box 7166
Charlottesville, VA 22911
Phone: 434-975-2629
E-mail: maryannchapman@grandclassroom.com
Website: www.grandclassroom.com

Grand Classroom is a student travel organization, emphasizing outdoor educational experiences in national parks, major U.S. cities, and international destinations.

HHMI BioInteractive #412
4000 Jones Bridge Rd.
Chevy Chase, MD 20815
E-mail: octavainij@hhmi.org
Website: www.hhmi.org/biointeractive

HHMI BioInteractive develops free resources, including short films, virtual labs, apps, and print materials that are based on real data and highlight the science practices. These high-quality multimedia resources are developed, vetted, and field-tested by educators and scientists—and are all tied to major curriculum standards.

International Technology and Engineering Educators Association (ITEEA) #327
1914 Association Dr., Suite 201
Reston, VA 20191
Phone: 703-860-2100
E-mail: iteea@iteea.org
Website: www.iteea.org

The International Technology and Engineering Educators Association is the professional organization for technology, innovation, design, and engineering educators. Our mission is to promote technological literacy for all by supporting the teaching of technology and engineering. ITEEA strengthens the profession through leadership, professional development, membership services, publications, and classroom activities.

JoVE #618
1 Alewife Center
Suite 200
Cambridge, MA 02140
Phone: 617-401-7717
E-mail: subscriptions@jove.com
Website: www.jove.com

JoVE is the leading producer and publisher of video resources created to increase the productivity of research and education in science, medicine, and engineering. JoVE has produced over 7,000 video articles demonstrating experiments filmed at top research institutions and delivered online to millions of scientists, educators, and students worldwide.
KaBOOM! is the national nonprofit dedicated to ensuring that all children get the balance of active play they need to become healthy and successful adults. Join KaBOOM! in playing, building, and tinkering with Rigamajig, an innovative large-scale building kit for kids of all ages. Curriculum suggestions, a video of Rigamajig in use, and information about purchasing and grants are also available.

K’NEX Education develops curriculum supported science, technology, engineering, and math (STEM) sets for use in elementary, middle school, and high school classrooms. Making it easy to incorporate K’NEX into the classroom, our inquiry-based teachers guides include objectives, activities, key concepts, journals, and worksheets. Everything the teacher needs to not only teach the students, but also assess what they have learned.

Koantum is an interactive e-learning platform and accompanied content specifically designed to teach science to K–5 students based on the NGSS, using the 5E Instructional Model.

For over 53 years, our company has been developing, manufacturing, and publishing core curriculum and supplementary programs that help students better understand science concepts through direct experience. Backed by decades of research, our programs give you the tools to teach, inspire, and help students become science literate citizens.

Science A–Z® is an award-winning K–6 science resource that allows seamless integration of science and literacy into daily instruction. Science A–Z allows students to easily access developmentally appropriate content. Resources are available in printable, projectable, online, and mobile formats.

Learning Blade™ is an interactive, web-based supplemental system for increasing student interest in and attitudes toward STEM careers. Learning Blade introduces students to these and other skills in middle school, a critical age
for beginning career path decisions. Students pursue engaging missions about real-world STEM problems in an entertaining format.

**LEG0® Education**

501 Boylston St.  
Boston, MA 02116  
Phone: 800-362-4308  
E-mail: orders@legoeducation.us  
Website: www.LEGOeducation.com

LEG0 Education combines the unique excitement of LEG0 bricks with hands-on classroom solutions and curriculum in areas including science, technology, engineering and math. Visit the LEG0 Education booth to learn more about our STEM solutions, including LEG0 MINDSTORMS® Education EV3, Machines & Mechanisms, and WE-D0 2.0.

**Llongwill Digital USA**

1434 W. Sam Houston Pkwy. N  
Suite 110  
Houston, TX 77043  
Phone: 281-888-5079  
E-mail: aromero@llongwilldigitalusa.com  
Website: www.Llongwilldigitalusa.com

Llongwill Digital creates easy data-collecting sensors for science curriculum, instructional materials, and STEM education. We offer you 150+ sensor-based science laboratory equipment that helps students work collaboratively, solve real-world problems, and develop communication and self-management skills. Stop by to discover new strategies and practices on how to make your science lessons focused on the standards and keep students actively engaged and successful in learning. We also offer supportive professional development, training, and student workshops.

**Marine Resources Development Foundation**

51 Shoreland Dr.  
Key Largo, FL 33037  
Phone: 305-451-1139  
E-mail: jessica@marinelab.org  
Website: www.marinelab.org

Located in Key Largo, MarineLab has been providing STEM education through snorkeling, scuba diving, and hands-on labs and lectures about the ocean long before it was called STEM education! MarineLab is a program of the Marine Resources Development Foundation, a 501(c)3 nonprofit organization.

**The Markerboard People**

1611 N. Grand River Ave.  
Lansing, MI 48906  
Phone: 800-379-3727  
E-mail: feedback@dryerase.com  
Website: www.dryerase.com

We offer student dry-erase markerboards and response boards in class sets at unbeatable prices! They're great for instant response and instant assessment Single- and double-sided available—perfect for science, math, language arts, graphing, handwriting, and more. Long lasting, nontoxic, ultra-low-odor markers, and durable student erasers, too!

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We are McGraw-Hill Education—The digital learning science company intent on changing the world of education through highly personalized learning experiences, improving learning outcomes around the world.

**Meadowlark Science and Education, LLC®**

PO Box 16684  
Missoula, MT 59808  
Phone: 406-426-1001  
E-mail: paulatel@meadowlarkscience.com  
Website: www.meadowlarkscience.com

Meadowlark Science and Education works to bring an innovative solution for teachers to address the STEM and environmental health sciences. Interactive educational video games (iEVGs) can enhance learning by using the game world and the real world of the student. More detailed evaluation results are available on our website (www.meadowlarkscience.com).

**Microduino**

2659 Townsgate Rd.  
Westlake Village, CA 91361  
Phone: 818-900-0804  
E-mail: laura@microduino.cc  
Website: www.microduinoinc.com

Since 2012, Microduino is a leading manufacturer of electronic building blocks and modules. We take great pride in our product and have worked hard to build a community of makers and electronic enthusiasts of all ages and skill sets. We invite you to join us and test the bounds of your creativity and ingenuity. As the world becomes more and more tech driven, such knowledge will only become more valuable.

**MiniPCR**

1770 Massachusetts Ave.  
Cambridge, MA 02140  
Phone: 781-990-8727  
E-mail: team@minipcr.com  
Website: www.minipcr.com

The complete biotech lab for your classroom. The DNA Discovery System™ includes a miniPCR™ thermal cycler, blueGel™ electrophoresis with transilluminator, and a micropipette at prices schools can afford. Teach DNA science hands on. By the same team that brings you the national Genes in Space™ STEM competition.

**MSOE Center for BioMolecular Modeling**

1025 N. Broadway St.  
Milwaukee, WI 53202-3109  
Phone: 414-277-2824  
E-mail: herman@msoe.edu  
Website: cbm.msoe.edu

As an instructional materials development laboratory, we create student-centered, hands-on kits and models for the molecular biosciences. Through our professional development experiences, teachers learn active teaching skills and are involved in developing and field testing new kits. Ask about our outreach programs—SMART Teams and Science Olympiad Protein Modeling Event.
Nasco

826th Annual STEM Forum & Expo, hosted by NSTA

Nasco has an array of products to aid in your teaching of a STEM curriculum. In our 21st-century economy, a quality education for all students in necessary to prepare them to prosper in work and life.

National Association of Biology Teachers (NABT)

Established in 1938, the National Association of Biology Teachers continues to be recognized as a leader in life science education. Hundreds of educators have joined NABT to share experiences and expertise with colleagues from around the world, keep up with trends and developments in the field, and grow professionally.

National Council of Teachers of Mathematics (NCTM)

The National Council of Teachers of Mathematics is the public voice of mathematics education, supporting teachers to ensure equitable mathematics learning of the highest quality for each and every student through vision, leadership, professional development, and research.

National Flight Academy

The National Flight Academy delivers an immersive naval aviator experience designed to inspire and engage students in STEM. Modeled as an aircraft carrier, the National Flight Academy has grades 7–12 students undergo missions alongside their squadron teammates that involve hands-on applications as they solve problems.

National Geographic Learning

Established in 1938, the National Association of Biology Teachers continues to be recognized as a leader in life science education. Hundreds of educators have joined NABT to share experiences and expertise with colleagues from around the world, keep up with trends and developments in the field, and grow professionally.

National Institute for STEM Education

The National Institute for STEM Education (NISE) certifies teachers, campuses, and districts in STEM teaching using a competency-based, academic coach-led online learning platform in which educators produce a portfolio of work that demonstrates proficiency across 15 STEM teacher actions.

National Institute of Biomedical Imaging and Bioengineering

The National Institute of Biomedical Imaging and Bioengineering (NIBIB) supports research to create biomedical technologies to improve health. Stop by our booth to play our bioengineering game, check out our new health apps, watch cool videos, and learn about other free science education resources.

National Inventors Hall of Fame

WHERE BIG IDEAS BECOME THE NEXT BIG THING. Camp Invention is the only nationally recognized nonprofit summer enrichment program for K–6 students that is inspired by the greatest innovators around—the Inductees of the National Inventors Hall of Fame®. At Camp Invention, children are empowered to question, brainstorm, collaborate, and invent!

Nomad Press

Ever met a kid who isn’t curious? Kids are natural scientists. They want to know about the physical and natural worlds around them. Nomad Press titles engage young scientists in the scientific process as they find themselves thinking critically, making predictions, conducting experiments, documenting observations, and making discoveries about the real world.

NSTA Hub

Stop by the NSTA Hub and pick up your #STEMForum tweetshirt (while supplies last) and find out how you can maximize your STEM Forum experience and learn more about the opportunities NSTA has for you.
Students can now study scientific principles on the same world-class equipment used by leading researchers at university and government labs. Thousands of science educators have used spectroscopy education kits and fiber optic accessories from miniature spectroscopy pioneer Ocean Optics to create fun and engaging experiments for hands-on classroom learning.

Orlando Science Center  #701
777 E. Princeton St.  E, M, HS
Orlando, FL 32803
Phone: 407-514-2000
E-mail: classes@osc.org
Website: www.osc.org

Orlando Science Center offers programs that supplement classroom learning with valuable informal education and increase competency in STEM (science, technology, engineering, and math) skills. Our educational programs include teacher professional development, teacher training, and in-classroom support for Engineering is Elementary®, guided field trips, experimental labs, and off-site programming.

PASCO scientific  #501
10101 Foothills Blvd.  E, M, HS, C
Roseville, CA 95747
Phone: 800-772-8700
Website: www.pasco.com

A leader in STEM education, PASCO scientific transforms science education and student learning with award-winning probeware, software, and curricula that promote science inquiry and 21st-century readiness skills. Today teachers and students worldwide use PASCO solutions for physics, biology, chemistry, Earth, and environmental sciences, as well as programming and robotics.

PCG Education  #632
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10th Floor
Boston, MA 02109
Phone: 617-426-2026
E-mail: rvineyard@pcgus.com
Website: www.publicconsultinggroup.com/education

Our consulting services help schools, school districts, and state education agencies/ministries identify and implement ways to improve programs and processes, optimize financial resources, and promote student success. Our technology solutions give educators the means to gather, manage, and analyze data, including student performance information, to make effective instructional decisions.

Pearson Education  #712
1900 E. Lake Ave.  E, M, HS
Glenview, IL 60025

Pearson is working to create real results that break through the challenges in education today. We partner with educators to deliver new personalized ways of learning through effective, scalable assessment, instructional tools, services, and technologies. We help individuals improve learning outcomes and achieve their own definitions of success.

Penguin Brand™ Dry Ice  #624
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Lawrenceville, GA 30043
Phone: 678-985-7300
E-mail: brad.sanders@airgas.com
Website: dryiceideas.com

Airgas, through its Penguin Brand Dry Ice brand, is the leading producer of dry ice in the United States. Airgas serves customers in the food processing, food service, pharmaceutical, and biotech industries. Airgas Dry Ice is also the largest wholesale dry ice distributor to grocery and other retail outlets nationwide with over 5,000 grocery stores coast to coast on a direct-delivery basis.

Pitsco Education  #301
915 E. Jefferson St.  E, M, HS
Pittsburg, KS 66762
Phone: 800-358-4983
E-mail: orders@pitsco.com
Website: www.pitsco.com

Pitsco is your STEM resource. Every product we engineer, every activity we write, every curriculum we develop, and every solution we design is provided for the purpose of helping students around the world use their hands to engage their minds to learn and succeed—in the classroom and in life!
PlayMada Games

261 Madison Ave., 9th Floor
New York, NY 10016
Phone: 844-222-2320
E-mail: info@playmadagames.com
Website: www.playmadagames.com

PlayMada Games is a devoted team of educators, designers, and developers on a mission to bring game-based learning experiences into high school science classrooms. We create digital games that give students a deepened understanding of fundamental scientific concepts while exploring systems of science through play.

Quest Institute for Quality Education

100 Skyway Dr.
San Jose, CA 95111
Phone: 408-219-3382
E-mail: sbakken@thequestinstitute.com
Website: www.questforspace.com

Quest Institute presents an educational International Space Station (ISS) Space STEM program robust enough to reach the hardest to serve youth while supporting mentors with lesson materials, online community, and technical support. Combining Windows 10, LEGO® MINDSTORMS®, and patented hardware, the student-designed and developed programming uploads to the ISS with real-time data access.

Rokenbok Education

233 A St.
San Diego, CA 92101
Phone: 858-259-4433
E-mail: caitlinb@rokenbokeducation.org
Website: www.rokenbokeducation.org

Our mission is to help all school-age children prepare for a lifetime of learning about science and technology. Rokenbok’s STEM education program levels the playing field for underserved children by providing deep Project-Based Learning for all students. We make STEM easier for educators to teach while being highly cost-effective for schools and youth programs.

SAE International

400 Commonwealth Dr.
Warrendale, PA 15096
Phone: 724-772-8569
Website: www.sae.org

Our K–8 STEM education solution—A World In Motion (AWIM) program is a teacher-administered, industry volunteer-assisted program that brings science, technology, engineering and math (STEM) education to life in the classroom. Bench marked to the national standards, the AWIM program incorporates integrated STEM learning experiences through hands-on activities that reinforce classroom STEM learning.

School Specialty Science

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Nashua NH 03063
School Specialty Science brings together the very best curriculum with FOSS® and CPO Science, classroom resources, equipment, and furniture with Delta Education and Frey Scientific. Together, these effective teaching and learning solutions serve all the needs of preK–12 science teachers, curriculum specialists, and administrators.

SME—Florida Section

PO Box 1060
Mulberry, FL 33860
Phone: 863-781-5475
E-mail: george.opderbeck@mosaicco.com
Website: www.flsm.org

SME (Society for Mining, Metallurgy & Exploration) strives to create an enlightened public who understand the importance of mining and minerals in everyday life.

Southern Science Supply

2914 Oakleaf Dr.
San Antonio, TX 78209
Phone: 210-887-0479
E-mail: carol@southern sciencesupply.com
Website: www.southern sciencesupply.com

Magnify what you do with the MicroSight, MicroZoom, and ProScope Microscopes. These magnificent microscopes are available in USB, Wi-Fi, and portable models and will allow you to see the world in brilliant detail. Many accessories are available for each model, as well as unique specimen observation kits and lesson plan booklets. Come scope us out!

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Anoka, MN 55303
E-mail: matt@squishycircuits.com
Website: www.squishycircuits.com

Squishy Circuits uses conductive and insulating play dough to teach the basics of electrical circuits in a fun, hands-on way. Let your creations come to life as you light them up with LEDs, make noises with buzzers, and spin with the motor.

Start Engineering

4405 Westover Place
Washington, DC 20016
Phone: 202-244-5575
E-mail: bblack@start-engineering.com
Website: www.start-engineering.com

The mission of Start Engineering is to make the wonderful world of engineering exciting and accessible to as many kids as possible. We publish educational books, develop information resources, and collaborate with individuals and groups to bring a good word about engineering to K–12 audiences of all kinds.

STEAM Dreamers, LLC

PO Box 12015
Fort Pierce, FL 34979-2015
Phone: 772-453-9670
E-mail: mpowerssteam@gmail.com
Website: www.steamdreamers.com

Our books, STEAM Design Challenges published by Creative Teaching Press, are designed to support teachers in implementing the Engineering Design Process while integrating national standards from other disciplines. Each unique lesson includes a list of standards, science background information, and literacy connections. Students are inspired to act as scientists and engineers through our engaging and rewarding lessons.
STEM Jobs connects “Classrooms-to-Careers” in an engaging and dynamic format. Our industry-leading platform includes a print magazine, website, and educational tools designed to aid teachers and inspire students to pursue STEM education and careers. We encourage students to #dowhatyoulove.

STEM Revolution provides a full methodology with offerings, such as STEM Teacher Training, the STEMbus mobile-lab, innovative camps, STEM strategy planning, and a STEM school curriculum. Working with cutting-edge technology like Virtual Reality, Drones, Arduinos, and Minecraft—students learn robotics, electrical design, and coding.

STEM Sims provides grades 4–12 educators and students with high-quality, contextual, interactive simulations and virtual learning products that reinforce core STEM principles using effective research-based pedagogy. In addition to over 100 simulations, STEM Sims offers nearly 2,000 standards-based lessons, backgrounds, assessments, teachers guides, and videos authored by content experts.
At STEMPilot, we have developed an affordable K–12 curriculum, based around aviation and simulation. Using flight simulators, you will be able to engage students while applying STEM disciplines in a meaningful Project-Based Learning program.

STEMscopes, created by Accelerate Learning Inc., is an award-winning, research-based national leader in preK–12 STEM curricula. Used by over 3.5 million students across 45 states, STEMscopes provides comprehensive digital resources, supplemental print materials, and hands-on exploration kits that drive engagement and academic growth.

Ten80 Education Inc. develops and publishes K–12 science, technology, engineering, and mathematics (STEM) curriculum, trains educators in the art of STEM, and organizes events that motivate students to engage and learn over time. Ten80 is a team of education and STEM professionals who saw the need for a more integrated, interactive way of teaching science and mathematics.

Texas Instruments provides free classroom activities that enhance math, science, and STEM curricula; technology that encourages students to develop a deeper understanding of concepts; and professional development that maximizes your investment in TI technology.

Science at EPA provides the foundation for credible decision-making to safeguard human health and ecosystems from environmental pollutants. Visit our booth and pick up some STEM resources based upon the work of our scientists and engineers, including experts in the Office of Research and Development, the scientific arm of EPA.
You’re looking for a job or career that maximizes your talents, challenges you to take on a leadership role, and gives you an adrenaline rush in the process. YOU’VE JUST FOUND IT! The U.S. Navy puts you in command of cutting-edge technology, advanced systems, billions of dollars in aviation, submarine, and surface ship equipment. Envision yourself as a Navy officer, and ACCELERATE YOUR LIFTM. More information at www.NAVY.com or 1-800-USA-NAVY.

Looking for creative solutions, not prescribed results? Learn how to use XplorLabs to engage students in solving extreme engineering challenges. Learn about a new, free middle school resource built by practicing UL scientists and engineers that meet the NGSS.

The Unmanned Safety Institute is a world leader in unmanned aviation education and has been providing its STEM curriculum in high schools since 2015.

Vernier Software & Technology is a leading innovator of scientific data-collection technology. Focused on STEM, Vernier is dedicated to developing creative ways to teach and learn using hands-on science. Vernier creates easy-to-use science interfaces, sensors, and graphing/analysis software. Vernier’s technology-based solutions enhance STEM education, increase learning, and build students’ critical-thinking skills.

Changing the way America learns through 3D technology. Vizitech USA is an education and training company specializing in 3D technology, augmented reality (AR), and virtual reality (VR) learning programs. We take complex concepts and processes, such as frog dissection in the classroom or safety training in the workplace, and recreate them virtually for an interactive, safe learning experience.

Waterford Press publishes the largest line of folding-format reference guides in the industry. Our mission is to connect people to the natural world by making knowledge about wildlife and plant identification, outdoor recreation, ecotourism, and safety and survival skills accessible to a wide audience. All products are made in the United States.
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<td>1:30–2:30 PM</td>
<td>3–5</td>
<td>Emerald 7, Gaylord Palms</td>
<td>Revamping Science Class (p. 65)</td>
</tr>
<tr>
<td>3:00–4:00 PM</td>
<td>3–5</td>
<td>Emerald 2, Gaylord Palms</td>
<td>Supporting STEM Education in the Inclusion Classroom (p. 69)</td>
</tr>
<tr>
<td>3:00–4:00 PM</td>
<td>3–6</td>
<td>Tampa 3, Gaylord Palms</td>
<td>Blow the Roof Off! (p. 70)</td>
</tr>
<tr>
<td>3:00–4:00 PM</td>
<td>2–8</td>
<td>St. George 108, Gaylord Palms</td>
<td>STEM Lesson Guideposts™ Mapping STEM Lessons into Your Curriculum (p. 70)</td>
</tr>
<tr>
<td>3:00–4:00 PM</td>
<td>4–5</td>
<td>Emerald 5, Gaylord Palms</td>
<td>Exploration and Discovery Through Maps: Teaching Science with Technology (p. 68)</td>
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<tr>
<td>3:00–4:00 PM</td>
<td>3–6</td>
<td>Emerald 4, Gaylord Palms</td>
<td>Building Understandings Through Shared Concepts in Science and Music (p. 69)</td>
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<tr>
<td>3:00–4:00 PM</td>
<td>1–2, 4–7</td>
<td>Emerald 6, Gaylord Palms</td>
<td>Teaching Engineering, Motion, and Energy Through Rube Goldberg (p. 69)</td>
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<tr>
<td>3:00–4:00 PM</td>
<td>P–6</td>
<td>Palm Beach, Gaylord Palms</td>
<td>NASA and Science Literature Books (p. 68)</td>
</tr>
<tr>
<td>3:00–4:00 PM</td>
<td>3–5</td>
<td>Tampa 2, Gaylord Palms</td>
<td>Designing with Electrical Circuits (p. 70)</td>
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### Middle Level Strand

#### Wednesday

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<tr>
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<td>5–9</td>
<td>Osceola B, Gaylord Palms</td>
<td>STEMx Session: Building a Foundation for Effective Rural STEM Engagement (p. 23)</td>
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#### Thursday

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<tbody>
<tr>
<td>9:30–10:30 AM</td>
<td>5–8</td>
<td>Emerald 6, Gaylord Palms</td>
<td>Climate Change and Nano-Bio-Sensor Science (p. 33)</td>
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<tr>
<td>9:30–10:30 AM</td>
<td>6–12</td>
<td>Emerald 1, Gaylord Palms</td>
<td>ASEE Session: Polar ICE: Bringing the Poles to Your Classroom (p. 32)</td>
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<tr>
<td>9:30–10:30 AM</td>
<td>5–9</td>
<td>St. George 108, Gaylord Palms</td>
<td>Connect-an-Engineer (p. 34)</td>
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<tr>
<td>9:30–10:30 AM</td>
<td>5–8</td>
<td>Gainesville 1, Gaylord Palms</td>
<td>Igniting Student Interest and Learning in Engineering: Classroom Applications/Tools/Resources from the 2016 Northrop Grumman Foundation Teachers Academy Fellows (p. 32)</td>
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<tr>
<td>9:30–10:30 AM</td>
<td>6–8</td>
<td>Orange Blossom Blrm., Gaylord</td>
<td>Energy Carnival (p. 33)</td>
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<td>11:00 AM–12 Noon</td>
<td>6–9</td>
<td>Gainesville 2, Gaylord Palms</td>
<td>STEAM Projects, Digital Science Fairs, and Student Performances (p. 34)</td>
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<tr>
<td>11:00 AM–12 Noon</td>
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<td>Tampa 1, Gaylord Palms</td>
<td>Hope on the Horizon: STEM, PBL, and Service Learning for Middle School Students (p. 39)</td>
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<tr>
<td>11:00 AM–12 Noon</td>
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<td>St. George 108, Gaylord Palms</td>
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<td>11:00 AM–12 Noon</td>
<td>5–8</td>
<td>St. George 104, Gaylord Palms</td>
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<td>5–8</td>
<td>Tampa 2, Gaylord Palms</td>
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<td>Gainesville 1, Gaylord Palms</td>
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<td>Emerald 1, Gaylord Palms</td>
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<tr>
<td>1:30–2:30 PM</td>
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<tr>
<td>1:30–2:30 PM</td>
<td>K–12</td>
<td>St. George 104, Gaylord Palms</td>
<td>Using Inquiry-Based Learning to Activate Student Growth (p. 45)</td>
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<td>Osceola A, Gaylord Palms</td>
<td>Coasting Through Physics: Bring the Thrill of Roller Coasters to Your Classroom! (p. 48)</td>
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<tr>
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<td>St. George 108, Gaylord Palms</td>
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<td>3:00–4:00 PM</td>
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<td>Destin 1, Gaylord Palms</td>
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<tr>
<td>3:00–4:00 PM</td>
<td>5–12</td>
<td>St. George 104, Gaylord Palms</td>
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<tr>
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<td>6–9</td>
<td>Sarasota 3, Gaylord Palms</td>
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**Friday**

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<tr>
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<td>Applying Shujaa’s D.R.C. Model as an Approach for Implementing the Next Generation Science Standards (p. 55)</td>
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<tr>
<td>8:00–9:00 AM</td>
<td>5–12</td>
<td>Gainesville 1, Gaylord Palms</td>
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<tr>
<td>9:30–10:30 AM</td>
<td>3–10</td>
<td>St. George 104, Gaylord Palms</td>
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<tr>
<td>9:30–10:30 AM</td>
<td>K–C</td>
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<tr>
<td>9:30–10:30 AM</td>
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<td>Sarasota 3, Gaylord Palms</td>
<td>What’s the Big Idea? A Glimpse into Current Themes for STEM Educators (p. 57)</td>
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<tr>
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<td>3–12</td>
<td>Osceola A, Gaylord Palms</td>
<td>STEM Projects for the Science Classroom (p. 56)</td>
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<td>St. George 112, Gaylord Palms</td>
<td>AACT Session: Elementary and Middle School Chemistry: Demonstrations and Lab Activities on a Shoestring Budget (p. 58)</td>
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<tr>
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<tr>
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<td>4–7</td>
<td>Emerald 1, Gaylord Palms</td>
<td>ASEE Session: Using an Engineering Frame to Map Engineering Design into Your STEM Curriculum (p. 60)</td>
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<tr>
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<td>St. George 106, Gaylord Palms</td>
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<tr>
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<td>6–C</td>
<td>Destin 1, Gaylord Palms</td>
<td>Transforming Students’ Ideas About STEM and School Learning in an Informal Setting (p. 60)</td>
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<tr>
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<td>St. George 104, Gaylord Palms</td>
<td>Hands-On Performance Assessment of the CCSS and NGSS: An Effective Formative Assessment Strategy (p. 62)</td>
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<tr>
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<td>St. George 104, Gaylord Palms</td>
<td>Incorporating GLOBE and Inquiry into Middle School Science (p. 61)</td>
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<tr>
<td>11:00 AM–12 Noon</td>
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<td>St. George 106, Gaylord Palms</td>
<td>NCTM Session: Teaching Matters! Turn High-Quality Standards into Successful STEM Learning (p. 38)</td>
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<tr>
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<td>9–12</td>
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<td>AACT Session: Building a Gas Law Unit Plan Using American Association of Chemistry Teachers (AACT) Resources (p. 40)</td>
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<tr>
<td>11:00 AM–12 Noon</td>
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<td>Osceola B, Gaylord Palms</td>
<td>NCTM Session: Teaching Matters! Turn High-Quality Standards into Successful STEM Learning (p. 38)</td>
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<tr>
<td>11:00 AM–12 Noon</td>
<td>5–12</td>
<td>Tampa 3, Gaylord Palms</td>
<td>Using Puzzling Phenomena and Modeling in Diverse Classrooms (p. 40)</td>
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<tr>
<td>11:00 AM–12 Noon</td>
<td>9–12</td>
<td>Destin 2, Gaylord Palms</td>
<td>How We, as Educators, Can Increase the Number of Women of Color in the Field of STEM (p. 38)</td>
</tr>
<tr>
<td>11:00 AM–12 Noon</td>
<td>8–12</td>
<td>St. George 114, Gaylord Palms</td>
<td>Spanning the “STEM” Acronym: Bridging Science and Math (p. 40)</td>
</tr>
<tr>
<td>11:00 AM–12 Noon</td>
<td>9–12</td>
<td>Emerald 4, Gaylord Palms</td>
<td>CHANGE the Way You Teach Climate Change: A Multidisciplinary STEM Approach (p. 40)</td>
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**High School Strand**

**Thursday**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Location</th>
<th>Description</th>
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<tbody>
<tr>
<td>8:00–9:00 AM</td>
<td>9–12</td>
<td>St. George 114, Gaylord Palms</td>
<td>Learning and Teaching STEM Through Game Design (p. 29)</td>
</tr>
<tr>
<td>8:00–9:00 AM</td>
<td>9–C</td>
<td>St. George 108, Gaylord Palms</td>
<td>Smartphone Physics: Newton’s 2nd Law (p. 29)</td>
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<tr>
<td>8:00–9:00 AM</td>
<td>7–12</td>
<td>St. George 106, Gaylord Palms</td>
<td>Electrified Paper: Electrical Engineering Meets the Arts (p. 29)</td>
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<tr>
<td>9:30–10:30 AM</td>
<td>1–C</td>
<td>Palm Beach, Gaylord Palms</td>
<td>Teaching Students to Ask Their Own STEM Questions (p. 33)</td>
</tr>
<tr>
<td>9:30–10:30 AM</td>
<td>6–C</td>
<td>Emerald 8, Gaylord Palms</td>
<td>AAPT Session: Star Spectra Science (p. 33)</td>
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<tr>
<td>11:00 AM–12 Noon</td>
<td>9–12</td>
<td>St. George 112, Gaylord Palms</td>
<td>AACT Session: Building a Gas Law Unit Plan Using American Association of Chemistry Teachers (AACT) Resources (p. 40)</td>
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<tr>
<td>11:00 AM–12 Noon</td>
<td>K–C</td>
<td>Osceola B, Gaylord Palms</td>
<td>NCTM Session: Teaching Matters! Turn High-Quality Standards into Successful STEM Learning (p. 38)</td>
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<tr>
<td>11:00 AM–12 Noon</td>
<td>6–12</td>
<td>Orange Blossom Brlm., Gaylord</td>
<td>Corrosion: The Application of Redox Chemistry (p. 38)</td>
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<tr>
<td>11:00 AM–12 Noon</td>
<td>9–12</td>
<td>Tampa 3, Gaylord Palms</td>
<td>Using Puzzling Phenomena and Modeling in Diverse Classrooms (p. 40)</td>
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<tr>
<td>11:00 AM–12 Noon</td>
<td>9–C</td>
<td>Destin 2, Gaylord Palms</td>
<td>How We, as Educators, Can Increase the Number of Women of Color in the Field of STEM (p. 38)</td>
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<tr>
<td>11:00 AM–12 Noon</td>
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<td>St. George 114, Gaylord Palms</td>
<td>Spanning the “STEM” Acronym: Bridging Science and Math (p. 40)</td>
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<td>Emerald 4, Gaylord Palms</td>
<td>CHANGE the Way You Teach Climate Change: A Multidisciplinary STEM Approach (p. 40)</td>
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<tr>
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<td>9–12 St. George 102, Gaylord Palms</td>
<td>High-Paying STEM Careers in the Medical Field That Use the NGSS Life Science Performance Expectations (p. 39)</td>
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<tr>
<td>1:30–2:30 PM</td>
<td>8–12 St. George 108, Gaylord Palms</td>
<td>Teaching Environmental Sustainability Using a Free Place-Based Watershed Model (p. 45)</td>
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<tr>
<td>1:30–2:30 PM</td>
<td>6–11 St. George 102, Gaylord Palms</td>
<td>Do You Need a New Science Lab? (p. 44)</td>
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<tr>
<td>1:30–2:30 PM</td>
<td>9–C Orange Blossom Blrm., Gaylord</td>
<td>Using Models to Teach How Crime Scene Blood Spatter Evidence Tells a Story (p. 44)</td>
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<tr>
<td>1:30–2:30 PM</td>
<td>6–C St. George 114, Gaylord Palms</td>
<td>Building Mousetrap Vehicles to Integrate Science, Technology, Engineering, and Mathematics (p. 45)</td>
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<tr>
<td>1:30–2:30 PM</td>
<td>P–C Emerald 1, Gaylord Palms</td>
<td>ITEEA Session: Makerspace and STEM Lab Safety (p. 43)</td>
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<tr>
<td>1:30–2:30 PM</td>
<td>9–12 St. George 112, Gaylord Palms</td>
<td>AACT Session: Building a Periodic Table Unit Plan Using American Association of Chemistry Teachers (AACT) Resources (p. 45)</td>
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<td>3:00–4:00 PM</td>
<td>8–C Emerald 8, Gaylord Palms</td>
<td>NABT Presents: Simple, Inexpensive Ways to Develop Understanding of the Most Difficult Biological Concepts (p. 48)</td>
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<tr>
<td>3:00–4:00 PM</td>
<td>8–C Emerald 1, Gaylord Palms</td>
<td>NCTM Session: Engaging Students in the Mathematical Modeling Process via Data Collection and Analysis (p. 47)</td>
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<tr>
<td>3:00–4:00 PM</td>
<td>9–C St. George 102, Gaylord Palms</td>
<td>Female STEM Major Selection and Persistence (p. 48)</td>
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<tr>
<td>8:00–9:00 AM</td>
<td>8–12 St. George 102, Gaylord Palms</td>
<td>Hacking Data with High Schoolers (p. 54)</td>
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<tr>
<td>8:00–9:00 AM</td>
<td>10–12 Emerald 8, Gaylord Palms</td>
<td>NABT and BSCS Present: Identify and Interpret—A Strategy to Help Students Make Sense of Difficult Information (p. 55)</td>
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<tr>
<td>9:30–10:30 AM</td>
<td>6–C Emerald 1, Gaylord Palms</td>
<td>NCTM Session: The Teacher Role in Planning for and Enacting Mathematical Modeling Tasks (p. 56)</td>
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<tr>
<td>9:30–10:30 AM</td>
<td>9–12 Emerald 3, Gaylord Palms</td>
<td>The Implementation and Impact of Advanced Placement® Science Courses on Students in an Experiment (p. 56)</td>
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<tr>
<td>9:30–10:30 AM</td>
<td>7–C St. George 114, Gaylord Palms</td>
<td>Data Analysis Made Easy: Connecting Math and Science Through Technology (p. 58)</td>
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<tr>
<td>9:30–10:30 AM</td>
<td>8–C St. George 102, Gaylord Palms</td>
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<td>6–C Orange Blossom Blrm., Gaylord</td>
<td>Creating Real-World Connections: Integrating Comics and Pop Culture into a STEM Classroom (p. 61)</td>
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<td>9–12 St. George 114, Gaylord Palms</td>
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<td>9–C Emerald 3, Gaylord Palms</td>
<td>Greenway Case Study: Using Technology and Maps to Inform Development Decisions (p. 60)</td>
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<td>STEMx Session: Computer Science Is More Than Coding! Implementing the Computer Science Framework into Your Region (p. 24)</td>
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<td>5–12</td>
<td>Osceola A, Gaylord Palms</td>
<td>STEMx Session: Harnessing Competition to Fuel Interest in STEM (p. 23)</td>
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### Thursday

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<tr>
<td>8:00–9:00 AM</td>
<td>P–C</td>
<td>Orange Blossom Blrm., Gaylord Palms</td>
<td>How Business/Industry/Nonprofit Partnerships Help Prepare PreK–16 Students to Meet the Needs of the Future (p. 27)</td>
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<td>6–12</td>
<td>St. George 104, Gaylord Palms</td>
<td>A STEM Teacher Experience—Army Educational Outreach Program (AEOP): RESET (p. 34)</td>
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<td>9:30–10:30 AM</td>
<td>10–C</td>
<td>St. George 112, Gaylord Palms</td>
<td>DNA Barcoding (p. 33)</td>
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<td>9:30–10:30 AM</td>
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<td>Sarasota 3, Gaylord Palms</td>
<td>Planning and Designing Safe and Sustainable Science Facilities for STEM-Based Science (Science Facilities 101) (p. 33)</td>
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<tr>
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<td>Destin 1, Gaylord Palms</td>
<td>Targeted Interventions Through Skilled Peer Mentoring in University STEM Research Labs for Promoting STEM College and Career Readiness in High School Students (p. 32)</td>
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<td>St. George 106, Gaylord Palms</td>
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<td>Emerald 6, Gaylord Palms</td>
<td>What Happens in Vegas Ends Up Going to the Landfill: A Unique Partnership Highlighting the Vegas Waste Stream (p. 40)</td>
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<tr>
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<td>Destin 1, Gaylord Palms</td>
<td>Enhancement of Education Through a STEM Pipeline Partnership Model: Engaging K–12, Community College, and University Students with a Focus on Genetics and (p. 38)</td>
</tr>
<tr>
<td>1:30–2:30 PM</td>
<td>K–C</td>
<td>Osceola B, Gaylord Palms</td>
<td>Partnership Bootcamp (p. 44)</td>
</tr>
<tr>
<td>1:30–2:30 PM</td>
<td>6–8</td>
<td>Destin 2, Gaylord Palms</td>
<td>Designing Professional Development for STEM Integration (p. 43)</td>
</tr>
<tr>
<td>3:00–4:00 PM</td>
<td>2–5</td>
<td>St. George 114, Gaylord Palms</td>
<td>We Do 2.0: Bringing Science to Life with We Do 2.0 Robots (p. 49)</td>
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<tr>
<td>3:00–4:00 PM</td>
<td>9–C</td>
<td>Gainesville 1, Gaylord Palms</td>
<td>Camino a la Ciencia: A Program Designed to Recruit, Retain, and Train Hispanic Women in STEM Disciplines (p. 47)</td>
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### Friday

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<tr>
<th>Time</th>
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<tr>
<td>8:00–9:00 AM</td>
<td>P–C</td>
<td>Orange Blossom Blrm., Gaylord Palms</td>
<td>How Business/Industry/Nonprofit Partnerships Help Prepare PreK–16 Students to Meet the Needs of the Future (p. 53)</td>
</tr>
<tr>
<td>9:30–10:30 AM</td>
<td>K–12</td>
<td>Gainesville 2, Gaylord Palms</td>
<td>Terra Troopers: A STEM Partnership with the Girl Scouts of Western Oklahoma and Devon Energy (p. 57)</td>
</tr>
<tr>
<td>9:30–10:30 AM</td>
<td>4–C</td>
<td>Destin 2, Gaylord Palms</td>
<td>Bridging Gaps: Making Partnership Connections Work for STEM Student Learning and Teacher Effectiveness (p. 56)</td>
</tr>
<tr>
<td>11:00 AM–12 Noon</td>
<td>4–9</td>
<td>Destin 2, Gaylord Palms</td>
<td>Abbott Operation Discovery: A Partnership Approach to Creating a Global Program (p. 60)</td>
</tr>
<tr>
<td>11:00 AM–12 Noon</td>
<td>4–6,C</td>
<td>Gainesville 2, Gaylord Palms</td>
<td>Enhancing Through a University and School District Partnership (p. 62)</td>
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<td>1:30–2:30 PM</td>
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<td>Palm Beach, Gaylord Palms</td>
<td>The Strategic Undergraduate STEM Talent Acceleration Initiative (SUSTAIN) (p. 65)</td>
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<tr>
<td>1:30–2:30 PM</td>
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<td>Emerald 3, Gaylord Palms</td>
<td>Developing a STEM Outreach Agenda (p. 64)</td>
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<td>1:30–2:30 PM</td>
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<td>Gainesville 1, Gaylord Palms</td>
<td>Partnering with Business/Industry to Provide STEM Career Opportunities for High School Students (p. 65)</td>
</tr>
<tr>
<td>1:30–2:30 PM</td>
<td>K–5</td>
<td>Destin 2, Gaylord Palms</td>
<td>University of Florida Partners with Palm Beach County Schools (p. 64)</td>
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#### Partnerships Strand

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<td>ITEEA Session: iSTEM Elementary Education—Preparing STEM Teacher Leaders (p. 64)</td>
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<td>3:00–4:00 PM</td>
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<td>Destin 2, Gaylord Palms</td>
<td>Partnerships: Creating Statewide Career Resources for Teachers, Parents, and Students (p. 68)</td>
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<td>3:00–4:00 PM</td>
<td>6–12</td>
<td>Osceola B, Gaylord Palms</td>
<td>Using National Science Olympiad STEM Events to Address NGSS Crosscutting Concepts and Content (p. 68)</td>
</tr>
<tr>
<td>3:00–4:00 PM</td>
<td>3–8</td>
<td>Gainesville 2, Gaylord Palms</td>
<td>Constructing Explanations: Consensus Discussions in Professional Learning Communities (p. 69)</td>
</tr>
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<td>3:00–4:00 PM</td>
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<td>Gainesville 1, Gaylord Palms</td>
<td>Growing STEM in the Park: Formal/Informal Education Partnerships (p. 68)</td>
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#### Administrators Strand

##### Wednesday

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<td>1:00–1:45 PM</td>
<td>6–12</td>
<td>STEMx Session: School Leaders 2.0 (p. 23)</td>
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<tr>
<td>2:00–2:45 PM</td>
<td>K–12</td>
<td>STEMx Session: Creating a Pathway to STEM Success—Recognizing STEM Schools (p. 23)</td>
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<td>4–C</td>
<td>Cultivating the Whole Plant, Not Just the STEM (p. 28)</td>
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<tr>
<td>9:30–10:30 AM</td>
<td>5–12</td>
<td>Revolutionizing Education Through an Integrated STEAM Model (p. 32)</td>
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<tr>
<td>11:00 AM–12 Noon</td>
<td>K–5</td>
<td>You Can’t Have STEM Without Science: Combating the Barriers to Elementary Science Education (p. 38)</td>
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<tr>
<td>1:30–2:30 PM</td>
<td>P–C</td>
<td>Administrators’ Panel: The Global Context for STEM Education (p. 43)</td>
</tr>
<tr>
<td>3:00–4:00 PM</td>
<td>K–5</td>
<td>Elementary Principals…Are You Ready for the NGSS? (p. 47)</td>
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<td>A K–8 Model for STEM Teaching, Learning, and Professional Development Using EiE (p. 54)</td>
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<td>9:30–10:30 AM</td>
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<td>Urban STEM-ification (p. 57)</td>
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<td>Defining and Transitioning into a STEM School (p. 61)</td>
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<td>1:30–2:30 PM</td>
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<td>Administrators’ Workshop: Design Thinking: A Hands-On Workshop for Navigating Challenges in Your Class, School, and Life (p. 64)</td>
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<td>3:00–4:00 PM</td>
<td>K–12</td>
<td>Transforming K–12 STEM Education Through Leader and Teacher Development (p. 68)</td>
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