



Connecting Science Past with Science Future

General Information
Wed., March 17
Thu., March 18

1

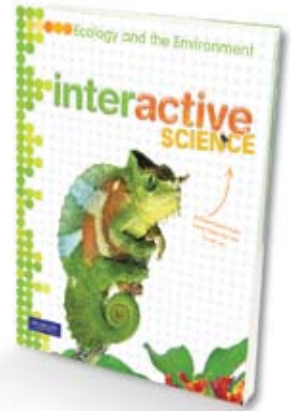
NSTA 2010 National Conference on Science Education

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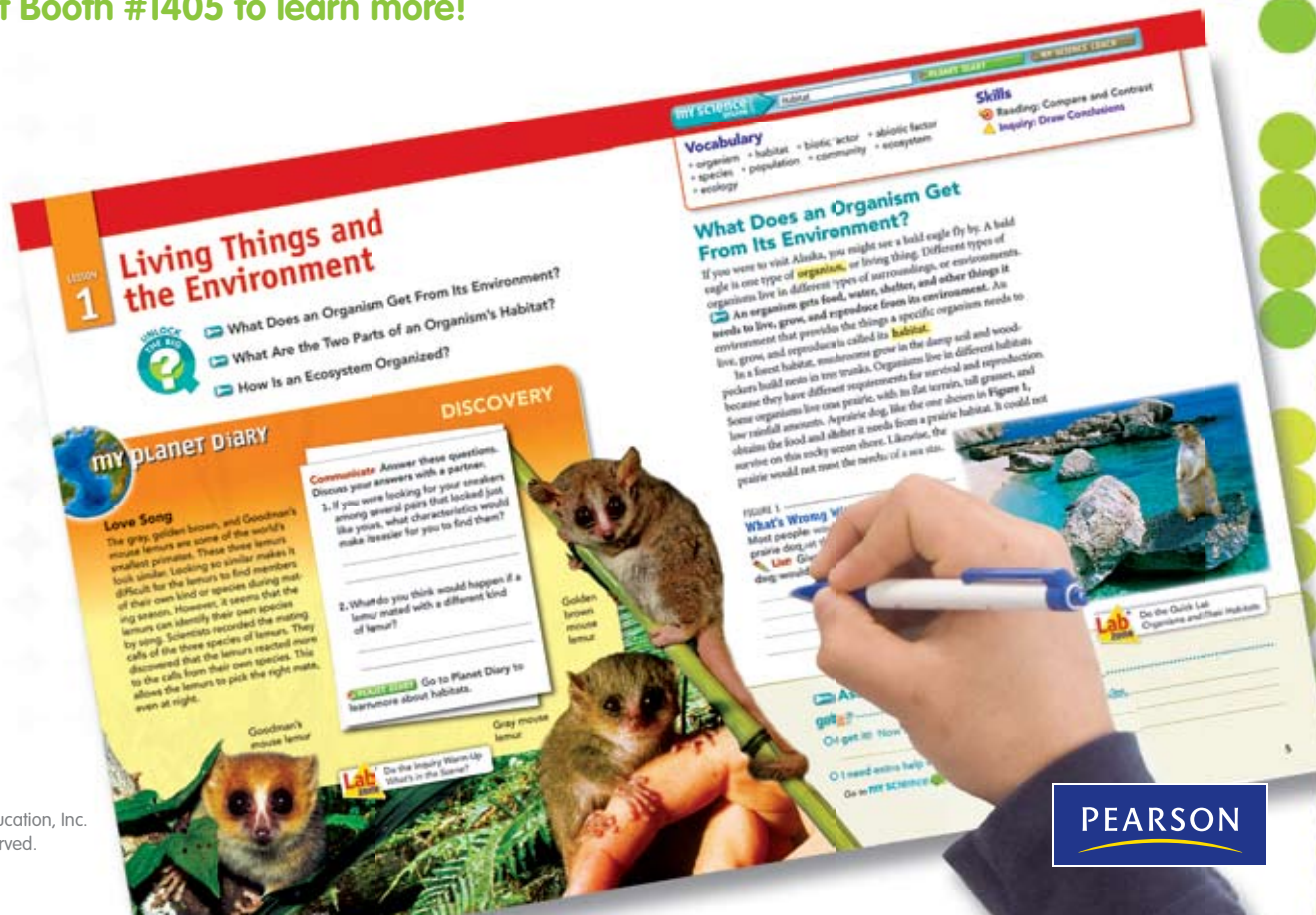
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NSTA 58th National Conference on Science Education

Philadelphia, Pennsylvania • March 18–21, 2010

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Cover Photo

Workshop participants investigate water at The Franklin Institute.

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Mission Statement

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

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



—Edward Savaria, Jr./PCVB

National Science Teachers Association

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www.nsta.org

NSTA Affiliates

Association for Multicultural Science Education (AMSE)
Association for Science Teacher Education (ASTE)
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Council of State Science Supervisors (CSSS)
National Association for Research in Science Teaching (NARST)
National Middle Level Science Teachers Association (NMLSTA)
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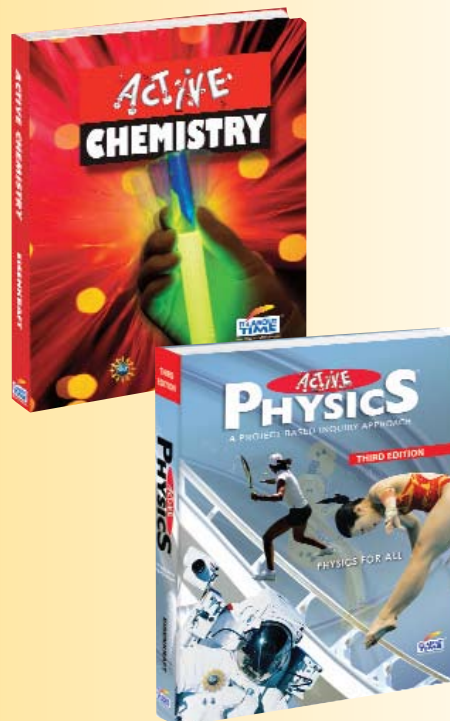
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President's Welcome



Welcome to Philadelphia, City of Brotherly Love. How appropriate to hold this important science event in the hometown of one of our country's premier inventors, Ben Franklin. While Philadelphia is filled with American history, it's time to shape your own history here at NSTA's 58th national conference. Our conference theme, *Connecting Science Past with Science Future*, suggests that while we don't want to lose what is good about what we currently do in science, we must also look to the future and accommodate changing times.

This conference is a wonderful opportunity for you to expand your pedagogical and content knowledge and to examine your beliefs and practices as well. This professional renewal is vital to your continued progress in science education, revitalizing you

and serving as a reminder of why you chose to go into science education in the first place.

The members of the conference planning committee deserve our sincere gratitude. They have spent countless hours selecting the speakers, planning special events, and tending to the myriad details entailed in planning a conference of this size. More than 1,500 presentations and workshops have been scheduled across all grade bands and disciplines. In addition, choose from a myriad of ticketed events, including NSTA symposia, short courses, professional development institutes, and two daylong conferences—a research dissemination conference and the Global Conversations in Science Education Conference.

Again, welcome to Philadelphia! Enjoy your time here and share what you've learned with others when you return.

Pat Shane, 2009–2010 NSTA President

Contributors to the Philadelphia Conference

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

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

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- Online Learning Center, interactive and topical, to build content knowledge and teaching skills.
- E-newsletters and listservs—stay informed and current, daily, weekly and monthly.
- Web seminars and short courses to build your science knowledge.
- NSTA books just for science educators—topical, strategic, and pedagogical.
- Get connected with NSTA Communities—a unique networking platform developed just for science educators. Create your profile today and meet colleagues, friends and professional contacts that share your passion.



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

Welcome to Philadelphia



Christine Anne Royce



Don Kline



Ambra B. Hook

Greetings from Philadelphia, the City of Brotherly Love (and Sisterly Affection!). The Philadelphia Planning Committee is thrilled that you have chosen to visit our city and participate in what will be an extraordinary NSTA conference. Robert Tamarkin stated that “To see where we might be going, we must understand where we have been.” It is with that focus that we selected our theme *Connecting Science Past with Science Future*. Philadelphia is rich in the history of science—from Ben Franklin’s famous experiments to cutting-edge jobs in the science field.

The importance of quality science teachers as well as quality science instruction is in the forefront of future endeavors. Consider President Obama’s recent statement, “...since we know that the progress and prosperity of future generations will depend on what we do now to educate the next generation,...[it is important that we have] a renewed commitment to education in mathematics and science.” As NSTA members, we have been and continue to be on the leading front of this commitment.

Whether a first-timer or veteran conference attendee, you are sure to find everything you need to help you grow both professionally and personally while attending Philadelphia 2010. Be sure to take some time to explore our wonderful city as you connect your science education past to your science education future.

2010 Philadelphia Conference Committee Leaders

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Strand Leader: Connecting Content: Between, Within, and Among Subjects

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Strand Leader: Meeting the Unique Needs of Urban and Rural Science Learners

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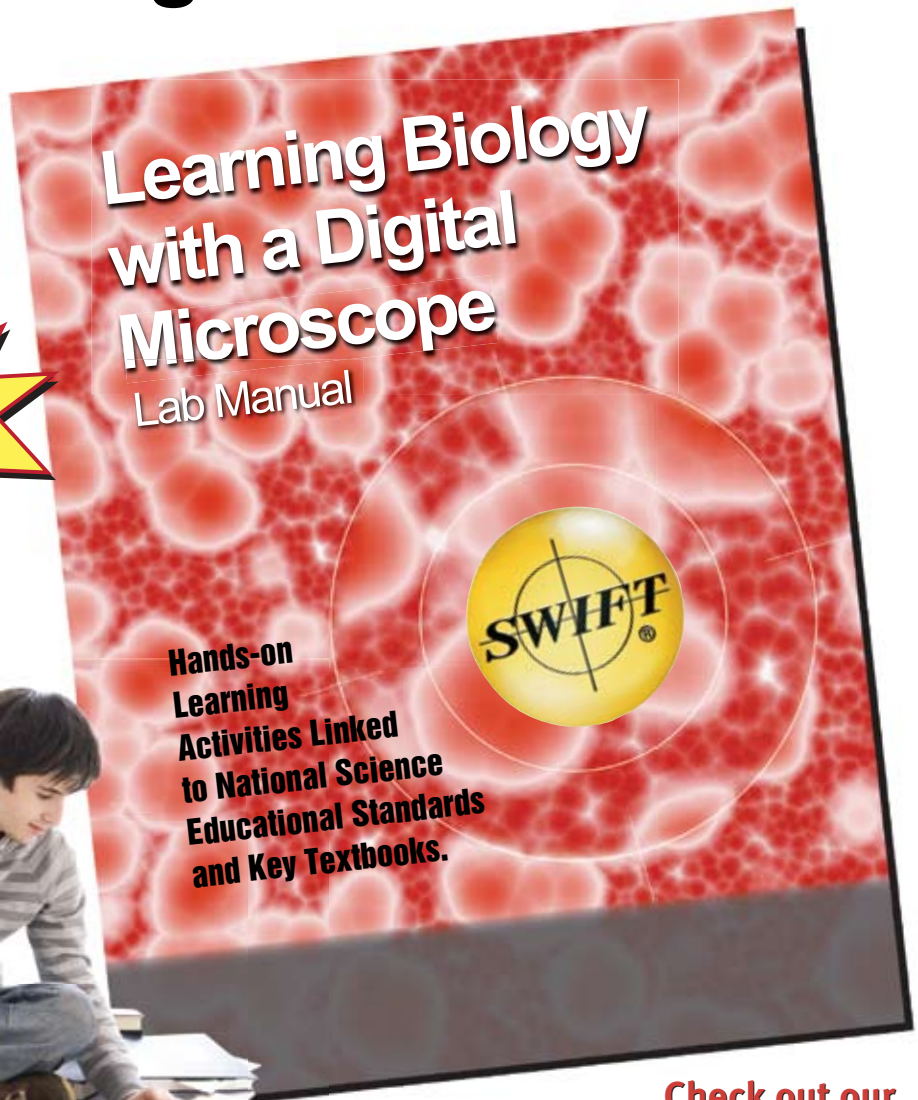
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NSTA Conferences Go Green!

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

Conference Previews

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

Online Conference Information and Personal Scheduler

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

Final Conference Programs by E-Mail

Conference registrants are now given the option of receiving an electronic version (PDF) of the final conference program by e-mail approximately two weeks prior to the conference, further reducing print and shipping requirements.

Recycled Paper and Sustainable Print Services

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

Environmentally Friendly Exhibition Practices

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

kets. 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.

Green Initiatives at the Pennsylvania Convention Center

The Pennsylvania Convention Center (PCC) is committed to reducing the environmental impact of operations and services by providing the following:

- **Low Environmental Impact Cleaning Policy.** The PCC creates a healthier indoor environment by using cleaning chemicals that are green seal certified and equipment that helps contribute to the USGBC leadership in energy and environmental design program for existing buildings.
- **Waste Reduction/Recycling.** The PCC recycles paper, aluminum, glass bottles and jars, plastic containers, and metal. Cardboard is compacted and recycled from the exhibit show floor. Recycle containers are placed throughout the building.
- **Foods and Beverages.** Aramark/SFS provides sustainable cutlery, hot/cold beverage cups, and napkins and plates made of 100% decomposable and biodegradable materials.
- **Low Environmental Impact Pest Management Policy.** The PCC has an integrated pest management program that provides the least possible hazard to people, property, and the environment.
- **Restroom Upgrades.** Restroom paper products are made from recycled products. Hand soap and cleaning products are green seal certified. Automatic dispensers and lighting help reduce waste and energy costs.

"Go Green" at the Philadelphia Conference!

- Recycle your conference programs in the clearly marked recycle bins located throughout the Convention Center.
- Recycle or re-use your plastic badge holders—you can either turn them in at the NSTA Registration Counter or use them at future conferences.
- Use double-side printing and/or recycled paper for session handouts and other conference materials.
- Walk or use public transportation when possible at the conference.
- Bring your own refillable water bottle to the conference.
- In advance of the conference, presenters are encouraged to post their presentations and handouts on NSTA Communities, the NSTA online professional learning community.

Learn from the Past, Get Ready for the Future

Carolina Professional Development at the 2010 NSTA National Conference

Understand historic science discoveries. Learn today's best teaching practices. Explore the future of classroom instruction. Carolina's professional development sessions are taught by experienced presenters—classroom teachers, science coordinators serving as teaching partners, and our own staff scientists. Their training in the latest teaching techniques, national standards, and cutting-edge science topics means you'll receive concise, valuable information. See below for sessions, times, and locations. **Visit us in booth 1105!**

Session Schedule

Thursday, March 18, 2010

Time	Location	Grade*	Title
9:30 AM–11:00 AM	Room 201B	E	Inquiring Minds Want to Know: An Introduction to Inquiry
9:30 AM–11:00 AM	Room 204A	H	Need "Energy" in Your Environmental Classes? Learn About Carolina's New <i>Inquiries in Science</i> ® Environmental Science Series
9:30 AM–11:00 AM	Room 204B	M, H	Comparative Vertebrate Anatomy with <i>Carolina's Perfect Solution</i> ® Specimens
11:30 AM–1:00 PM	Room 201B	E	Setting the Standard for PreK Science
11:30 AM–1:00 PM	Room 204A	M, H	Strawberry DNA and Molecular Models
11:30 AM–1:00 PM	Room 204B	M, H	Comparative Mammalian Organ Dissection with <i>Carolina's Perfect Solution</i> ® Specimens
1:30 PM–3:00 PM	Room 201B	M	Moving Cars, Driving Learning with the STC Program™
1:30 PM–3:00 PM	Room 204A	H	Energyze Your Chemistry Students' Inquiry Skills with Carolina's <i>Inquiries in Science</i> ® Chemistry Series
1:30 PM–3:00 PM	Room 204B	H	AUTOPSY: Forensic Dissection Featuring <i>Carolina's Perfect Solution</i> ® Pigs
3:30 PM–5:00 PM	Room 201B	E	Science Libraries: Reading for Content
3:30 PM–5:00 PM	Room 204A	E, M, H	Creating Habitats in the Classroom
3:30 PM–5:00 PM	Room 204B	H	Forensics for the Biology Laboratory

Friday, March 19, 2010

Time	Location	Grade*	Title
8:00 AM–9:30 AM	Room 201B	E	Going the Distance in Math
8:00 AM–9:30 AM	Room 204A	E, M, H	Hands-On Science with Classroom Critters
8:00 AM–9:30 AM	Room 204B	H, C	Exploring Feline Anatomy with <i>Carolina's Perfect Solution</i> ® Cats
10:00 AM–11:30 AM	Room 201B	E, M	Discover the Solar System and Beyond
10:00 AM–11:30 AM	Room 204A	H	Introduction to Protozoa
10:00 AM–11:30 AM	Room 204B	E, M	Carolina's Young Scientist Dissection Series
12:00 PM–1:30 PM	Room 201B	E	Science Notebooking: Integrating Writing and Science
12:00 PM–1:30 PM	Room 204A	E, M, H	Introduction to Wisconsin <i>Fast Plants</i> ®
12:00 PM–1:30 PM	Room 204B	H	Amplify Your Genetics Teaching Skills with Carolina's New <i>Inquiries in Science</i> ® Biology Units
2:00 PM–3:30 PM	Room 201B	E	Energy Works!
2:00 PM–3:30 PM	Room 204A	M, H	It's Alive! Carolina's Classroom Genetics
2:00 PM–3:30 PM	Room 204B	M, H	Take the Leap: <i>Carolina's Perfect Solution</i> ® Frog Dissection
4:00 PM–5:30 PM	Room 201B	M	Creepy Crawlers in the Middle School Classroom
4:00 PM–5:30 PM	Room 204A	H, C	From Fast Gels to Fruit Flies
4:00 PM–5:30 PM	Room 204B	H	SQUID INK-UIRY: Inquiry-Based Invertebrate Anatomy Through Squid Dissection

*E=Elementary, M=Middle School, H=High School, C=College



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Saturday, March 20, 2010

Time	Location	Grade*	Title
8:00 AM–9:30 AM	Room 201B	E	Exploring the World Through the 5 Senses
8:00 AM–9:30 AM	Room 204A	H	Introduction to Electrophoresis
8:00 AM–9:30 AM	Room 204B	H, C	Think Mink! Exploring Mammalian Anatomy with <i>Carolina's Perfect Solution</i> ® Mink
10:00 AM–11:30 AM	Room 201B	E	Do They Get It? Assessment Strategies for an Inquiry Classroom
10:00 AM–11:30 AM	Room 204A	H	Go APES! Explore Carolina's Quality AP® Environmental Science Series
10:00 AM–11:30 AM	Room 204B	H, C	Rats! Inquiry-Based Dissection with <i>Carolina's Perfect Solution</i> ® Specimens
12:00 PM–1:30 PM	Room 201B	M	Hands-On, Minds-On Middle School Science
12:00 PM–1:30 PM	Room 204A	H, C	Teaching Genetics and Biotechnology with Carolina's Manipulative Kits
12:00 PM–1:30 PM	Room 204B	H	Molecular Models in the Classroom
2:00 PM–3:30 PM	Room 201B	E	1, 2, 3, 4 . . . Boost Your Students' Math Scores
2:00 PM–3:30 PM	Room 204A	H, C	Exploring Gene Function in <i>C. elegans</i> : Mutations and RNA Interference
2:00 PM–3:30 PM	Room 204B	E, M, H	Butterflies in Your Classroom

For more information, visit www.carolina.com/nsta or call 866.815.2450.



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—Edward Savaria, Jr./PCVB



Ground Transportation to/from Airport

The ground transportation system at the airport consists of taxi, shuttle bus, limousine, and van operations. A taxi costs about \$28.50 to the downtown area. For more information, visit the Philadelphia International Airport website at www.phl.org.

Getting Around Town

Center City provides plenty of opportunities for visitors to stroll and take in the sights. And, if you want to stay on the move, hop aboard SEPTA, which provides an extensive network of buses, subways, trolleys, and regional rail lines throughout Center City and the surrounding region. For more information, visit the Philadelphia Convention and Visitors Bureau at www.philadelphiausa.travel.

Discounted Rental Cars

Special car rental rates for conference attendees have been negotiated with Enterprise Rent-A-Car. To make a reservation, book on the internet, call 1-800-Rent-A-Car, or contact your local branch directly. To make your reservation online, log on to www.enterprise.com. Enter your destination and dates of car rental and enter the NSTA corporate number 16AH230. Click on “search.” At the prompt, enter the three-character PIN NST.

NSTA Shuttle Bus Service

Free shuttle service is provided between the Convention Center and most NSTA hotels during registration and session hours. Hotels within walking distance of the Convention Center are not part of the service. See page 16 for routes and scheduling information.

Conference Hotels

See pages 14–15 for a complete list of hotels and a map of the downtown area. A Housing Bureau representative will be available at the NSTA Program Pickup Kiosk during registration hours to assist with housing questions.

Meeting Location and Times

The conference co-headquarters hotels are the Philadelphia Marriott Downtown, Loews Philadelphia Hotel, Sheraton Philadelphia City Center Hotel, and Doubletree Hotel Philadelphia. Conference registration, the exhibits, and the NSTA Science Bookstore will be located at the Pennsylvania Convention Center. Most sessions will be held at the Convention Center, Loews, Marriott, and Sheraton. Most short courses will be at the Doubletree.

The conference will begin on Thursday, March 18, at 8:00 AM and end on Sunday, March 21, at 12 Noon.

Registration

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

The NSTA Registration Area, located in Grand Hall, adjacent to the Exhibit Hall on Level 2, will be open during the following hours:

Wed., March 17	5:00–8:00 PM
Thu., March 18	7:00 AM–6:00 PM

Fri., March 19	7:00 AM–5:00 PM
Sat., March 20	7:00 AM–5:00 PM
Sun., March 21	7:30 AM–12 Noon

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

Purchasing Ticketed Events

The Philadelphia Planning Committee has scheduled a variety of ticketed events (e.g., professional development institutes, symposia, short courses, and field trips). Each of these events requires a separate fee and ticket. You may purchase tickets, space permitting, in the NSTA Registration Area. See the Conference Program section (starting on page 34) for details.

Airlines/Amtrak

The toll-free numbers to contact NSTA-designated airlines and Amtrak are:

AirTran	866-683-8368	Event Code NSTA10
American	800-433-1790	NSTA Index No. A5210TT
Continental	800-468-7022	NSTA Agreement Code C7XLNFS
United	800-521-4041	Meeting ID Code 510CK
Amtrak	800-872-7245	Conv. Fare Code X24Z-969

Registration, Travel, and Hotels

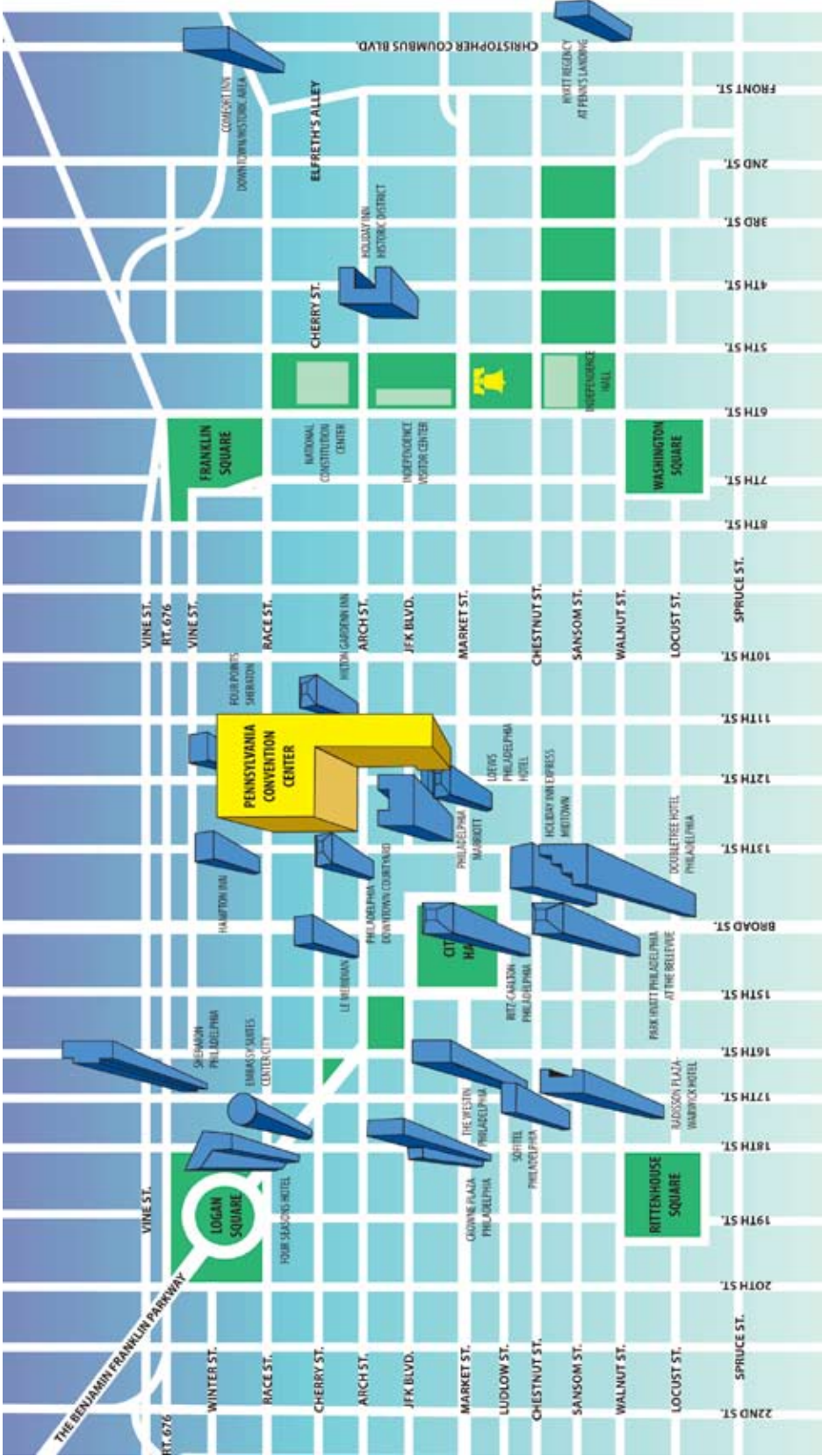
—Anthony Sinagoga/PCVB



NSTA Conference Hotels

Numbers correspond to map on facing page.

1. Comfort Inn Downtown/Historic Area
100 N. Christopher Columbus Blvd.
215-627-7900
2. Courtyard Philadelphia Downtown
21 N. Juniper St.
215-496-3200
3. Crowne Plaza Hotel Philadelphia Downtown
1800 Market St.
215-561-7500
4. Doubletree Hotel Philadelphia
Co-Headquarters Hotel
237 S. Broad St.
215-893-1600
5. Embassy Suites Philadelphia—Center City
1776 Benjamin Franklin Pkwy.
215-561-1776
6. Four Points by Sheraton Philadelphia Center City
1201 Race St.
215-496-2700
7. Four Seasons Hotel Philadelphia
One Logan Square
215-963-1500
8. Hampton Inn—Center City Philadelphia
1301 Race St.
215-665-9100
9. Hilton Garden Inn Philadelphia Center City
1100 Arch St.
215-923-0100
10. Holiday Inn Express Philadelphia Midtown
1305-11 Walnut St.
215-735-9300
11. Holiday Inn Hotel Historic District Philadelphia
400 Arch St.
215-923-8660
12. Hyatt Regency Philadelphia at Penn's Landing
201 S. Christopher Columbus Blvd.
215-928-1234
13. Le Méridien Philadelphia
1421 Arch St.
N/A (no longer available)
14. Loews Philadelphia Hotel
Co-Headquarters Hotel
1200 Market St.
215-627-1200
15. Park Hyatt Philadelphia at the Bellevue
200 S. Broad St.
215-893-1234
16. Philadelphia Marriott Downtown
Co-Headquarters Hotel
1201 Market St.
215-625-2900
17. Radisson Plaza—Warwick Hotel Philadelphia
1701 Locust St.
215-790-7763
18. The Ritz-Carlton, Philadelphia
Ten Avenue of the Arts
215-523-8000
19. Sheraton Philadelphia City Center Hotel
Co-Headquarters Hotel
17th and Race St.
215-448-2000
20. Sofitel Philadelphia
120 S. 17th St.
215-569-8300
21. The Westin Philadelphia
99 S. 17th St.
215-563-1600



NSTA Conference Shuttle Service to/from Pennsylvania Convention Center

Hours of Operation

Peak Service—Shuttles depart every 10–15 minutes

Off-Peak Service—Shuttles depart every 30 minutes

ROUTE 1 – RED

Sheraton City Center—Side door on 17th St.

ROUTE 2 – ORANGE

Doubletree—Broad Street entrance

ROUTE 3 – GREEN

Crowne Plaza—Market Street entrance

Four Seasons—at Embassy Suites stop

Embassy Suites—in front on Ben Franklin Pkwy.

Ritz Carlton—South Penn entrance facing City Hall

ROUTE 4 – BLUE

Westin—Across the street from entrance (17th St.)

Sofitel—17th Street main entrance

Radisson Warwick—17th Street main entrance

Holiday Inn Express—Corner of Broad and Walnut streets in front of Robinson's Luggage

ROUTE 5 – YELLOW

Comfort Inn—main entrance (Columbus Blvd.)

Hyatt Penn's Landing—main entrance (Columbus Blvd.)

Holiday Inn Historic—Across the street on corner of 4th and Arch (firehouse)

WALK HOTELS

Marriott

Loews

Courtyard

Four Points

Hampton Inn

Hilton Garden Inn

Wednesday, March 17

All routes	7:00–9:30 AM	Off-peak service between route hotels and Convention Center for professional development institutes PDI-1 through PDI-10 (tickets required)
All routes	4:30–8:30 PM	Off-peak service for NSTA Registration at Convention Center (5:00–8:00 PM)

Thursday, March 18

Route 1 (Red) and Route 2 (Orange)	6:30 AM–6:30 PM	Peak service
Route 3 (Green), 4 (Blue), and 5 (Yellow)	6:30–10:30 AM	Peak service
	10:30 AM–2:30 PM	No service
	2:30–6:30 PM	Peak service

Friday, March 19

Route 1 (Red) and Route 2 (Orange)	6:30 AM–6:30 PM	Peak service
Route 3 (Green), 4 (Blue), and 5 (Yellow)	6:30–10:30 AM	Peak service
	10:30 AM–2:30 PM	No service
	2:30–6:30 PM	Peak service
All Routes	6:30–10:00 PM	Off-peak service between route hotels and Marriott for exhibitor workshop <i>A Night of Forensics: The Red Carpet Mystery</i>

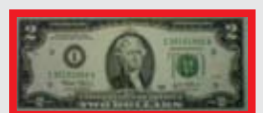
Saturday, March 20

Route 1 (Red) and Route 2 (Orange)	6:30 AM–6:30 PM	Peak service
Route 3 (Green), 4 (Blue), and 5 (Yellow)	6:30–10:30 AM	Peak service
	10:30 AM–2:30 PM	No service
	2:30–6:30 PM	Peak service
All routes	6:30–10:00 PM	Off-peak service between route hotels and Loews for the President's Banquet (Ticket M-11 required)

Sunday, March 21

All routes	6:30 AM–1:30 PM	Off-peak service
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Presented by IDSA (Industrial Designers Society of America) & sponsored by BusinessWeek. The IDEA (International Design Excellence Award) competition is a celebration of the most innovative & exciting product and product concept designs of the year & one of the world's most prestigious design competitions. Specimen images taken with the kena by Leslie Carisle of St. Gabriel School, Kansas City, MO.



NSTA Exhibits

NSTA exhibits are an essential feature of every NSTA conference. Here you will find the latest textbooks, computer hardware and software, laboratory equipment, industry-supported educational materials, summer opportunities, and many other exhibits that are designed to enhance your knowledge and teaching skills.

The lapel badge mailed to you with your confirmation, or issued to you at registration on-site, is your “ticket of admission” to the Exhibit Hall and all conference activities. A complete list of exhibitors and contact information is available in Volume 4

of the program. A foldout map of the Exhibit Hall floor plan is available at Program Pickup.

Exhibit Hall Hours. Located at the Pennsylvania Convention Center (Exhibit Hall B), exhibits will be open for viewing during the following hours:

Thu., March 18	10:00 AM–6:00 PM
Fri., March 19	9:00 AM–5:00 PM
Sat., March 20	9:00 AM–5:00 PM

Ribbon Cutting. An opening ceremony is scheduled on Thursday at 10:00 AM in the lobby of Exhibit Hall B.

Leads Retrieval. NSTA exhibitors use leads retrieval, a paperless tracking system that allows them to receive fast, accurate information about conference attendees who have visited their booth. With the system, an exhibitor scans your badge as you visit the booth. This allows exhibitors to send information to you while the conference is still fresh in your mind.

Exhibitor Workshops. Exhibitor-sponsored workshops for science teachers are offered throughout the conference. These workshops give you an opportunity to use a variety of commercial instructional materials. Attendance is on a first-come, first-served basis. See Volume 4 for a complete list of exhibitor workshops.

NSTA Avenue

Stop by the NSTA Avenue and learn about NSTA’s benefits, services, programs, and partners...all created for you! Share with others, expand your knowledge, and earn rewards for you and your students. See Volume 4 for a complete list of NSTA services and programs.

NSTA Science Bookstore

Don’t miss the opportunity to shop and browse the NSTA Science Bookstore for hundreds of the best books and resources in science education. The Science Bookstore is located in the NSTA Registration Area. NSTA members save 20% on all NSTA Press® products and 10% on products by other publishers. Enjoy our free shipping option as an added attendee benefit!

Welcome and Information Center

A Welcome and Information Center is located at the Program Pickup Kiosk. Here you’ll find information on conference activities, tourist attractions, transportation, and program changes. The center will be staffed during registration hours.

NSTA First-Timers Guide Service

NSTA will kick off a new program, the NSTA First-Timers Guide Service, at the Philadelphia conference. The Philadelphia pilot pairs retired veteran teachers with first-time conference attendees with the aim of helping newcomers navigate the conference program and acquaint them with the Exhibit Hall and the many opportunities the conference offers science teachers—in short, to make the national meeting experience less overwhelming.

If you are interested in learning more about this program at future conferences, please visit our website at www.nsta.org/conferences. Contact information will be posted when confirmed.

PSTA Booth

The Pennsylvania Science Teachers Association (PSTA) booth is located in the NSTA Registration Area. Stop by for information about Pennsylvania and the benefits of becoming a PSTA member. Membership forms and information on association activities will be available.

Evaluation Booth/Presenters and Presiders Check-In

If you are presenting or presiding at a teacher session, please check in and pick up your ribbon at the Evaluation Booth in the Registration Area after you have registered for the conference and received your name badge. Session presenters should also pick up an evaluation packet for each session presented (see Session Evaluations and Tracking Professional Development on page 20). Presenters of exhibitor workshops should pick up evaluation packets at the Exhibitor Registration counter.

Conference Evaluation

All conference attendees are invited to complete a conference evaluation form online at http://ecommerce.nsta.org/2010phi/conference_evaluation.asp.

First Aid Services/Security

The First Aid Room is located in the rear of Exhibit Hall B. Look for the red cross. In case of emergency, call extension 4911 on any house phone.

Lost and Found

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

International Lounge

Registration Room II at the Philadelphia Marriott Downtown has been reserved as an international lounge. All international guests are welcome to use this lounge as a place to meet or just simply relax while here at the NSTA conference. The lounge

will be open Thursday, Friday, and Saturday, 9:00 AM–5:00 PM.

Graduate Credit Opportunity

Shippensburg University, part of the Pennsylvania State System of Higher Education, will offer one graduate-level credit in professional development to teachers attending the 2010 Philadelphia conference. Stop by the PSTA Booth for information and a registration form. Details are available on the Shippensburg University website at www.ship.edu/extended/nsta.

Audiovisual Needs

NSTA will provide an LCD projector if it was requested on the original proposal form. Microphones are also provided in large rooms. For any other AV needs, presenters must arrange and pay for their own equipment. Technology Express, Inc., the designated AV company on-site, will be located in the following rooms:

Convention Center	Room 102 A/B
Doubletree	Minuet
Loews	P2 Parlor
Marriott	Meeting Room 501
Sheraton	Salon 2

Business Services

The Business Center at the Pennsylvania Convention Center is located on Level 2 outside Exhibit Hall B (next to the Gift Shop). The hours are Monday–Friday, 9:00 AM–5:00 PM. Services include printing, faxing, scanning, photocopying, and shipping (UPS and FedEx). Print 24/7 from your laptop, USB drive, or Smartphone at the PrintPod® kiosk located outside the Business Center. For more information, contact the Business Center at 215-418-2326 or bizcenter@paconvention.com.

Attendee Storage and Shipping Center

For a convenient way to store the items you are collecting and ship them home at the end of the conference, visit Rent-a-Box, which is located on the Level 2 bridge between the meeting rooms and the Exhibit Halls. Rent-a-Box allows you to “rent” a box that becomes your personal locker during the conference. Come and go as often as you want during the posted hours of operation, adding contents to your box until you are ready to ship or carry the contents home. All shipments will be sent via UPS ground. Rent-a-Box is open during the following hours:

Thu., March 18	8:00 AM–6:00 PM
Fri., March 19	8:00 AM–5:00 PM
Sat., March 20	7:00 AM–5:00 PM
Sun., March 21	7:00 AM–1:00 PM

All packages must be retrieved by closing time (1:00 PM) on Sunday. Packages will be shipped on Monday, March 22, via UPS ground. Expect one to five business days for delivery, depending on the destination.

The fee is \$10 per box for storage, plus shipping charges. Shipping charges are based on the weight and destination of each package and average approximately \$1.50 per pound. Poster tubes are also available. Packages being sent outside the 48 contiguous states will be sent via UPS air.

Rent-a-Box is operated by Rhino Business Services. For assistance, contact Lisa McKenzie at 504-232-1158.

Wireless Service

The Pennsylvania Convention Center offers complimentary open wireless for NSTA attendees throughout the building except in the Exhibit Hall. (If you must rely on the internet for your presentation, a hard line is recommended.) Follow these three easy steps to get connected: (1) configure your laptop or notebook computer's network settings to use DHCP (default for



MS Windows-based computers); (2) connect to the SSID: NSTA Attendees; (3) launch your internet browser.

NSTA Coordinating Center for People with Disabilities

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

Message Center

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

Session Evaluations and Tracking Professional Development

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

Session Presenters/Providers. Session presenters (teacher presentations and workshops) are required to check in at the Presenters/Presiders/Evaluation booth in the NSTA Registration Area and pick up a session evaluation packet.

Each exhibitor workshop provider is required to check in at the Exhibitor Registration counter in the NSTA Registration Area and pick up his or her company's workshop evaluation packets.

All presenters then distribute evaluation forms to attendees at the latter part of the session.

Attendees. Attendees will complete this short evaluation and deposit the form in the evaluation drop-off boxes located in each meeting facility. Since these forms will be used to "track" professional development hours, all evaluations must be placed in these drop-off boxes no later than 12:30 PM on Sunday.

Note: Attendees **MUST** enter their badge numbers accurately (up to seven digits) on evaluation forms to have their attendance at sessions documented.

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

Five weeks after the last day of the conference, attendees can visit the NSTA website <http://ecommerce2.nsta.org/transcript> to access a transcript of their attendance at specific sessions and to document credit for other activities for which they did not receive an evaluation form or that are not being evaluated (e.g., field trips, short courses, Exhibit Hall visits, featured speakers, and meetings). Each attendee is responsible for tracking his/her own attendance at such events.

A Professional Development Documentation Form is included following page 32 to help attendees keep track of sessions/events attended that were NOT evaluated.

Transcripts. Transcripts can be printed from the NSTA website <http://ecommerce2.nsta.org/transcript> and presented to an administrator who requires documentation of participation in the conference. All information in these transcripts will be maintained (and can be accessed) indefinitely as part of an attendee's individual profile.

ADVANCING SCIENCE LEARNING



Master of Science Education

Attention Pennsylvania Teachers:

The recent Pennsylvania System of School Assessment (PSSA) test in science uncovered a gap between what is currently being taught to K–12 students and what the PSSA tests. Make sure you are prepared to meet your students' curriculum, instructional, and assessment needs.

- **The Master of Science Education Program** provides every elementary, middle and high school teacher, including learning support teachers, the knowledge and skills to improve their students' performance in science.
- **Lebanon Valley College's MSE degree** focuses on the hands on, minds on, inquiry or experiential learning of science that is aligned with current PDE science standards and anchors.
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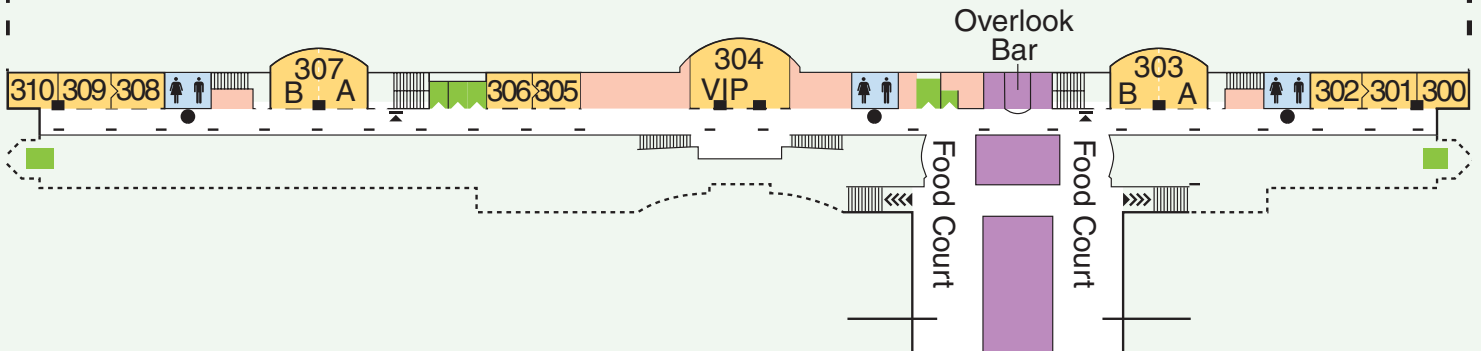
Pennsylvania Convention Center

100 Level



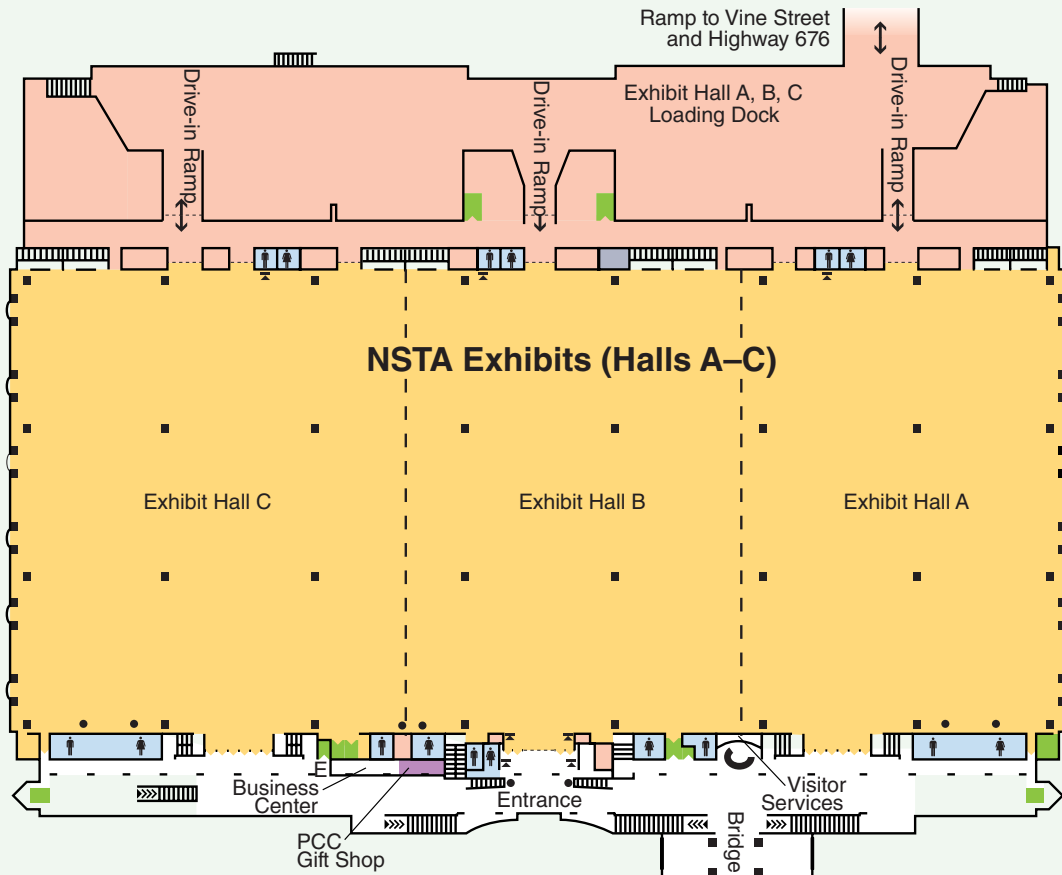
300 Level

OVERLOOK TO EXHIBIT HALLS

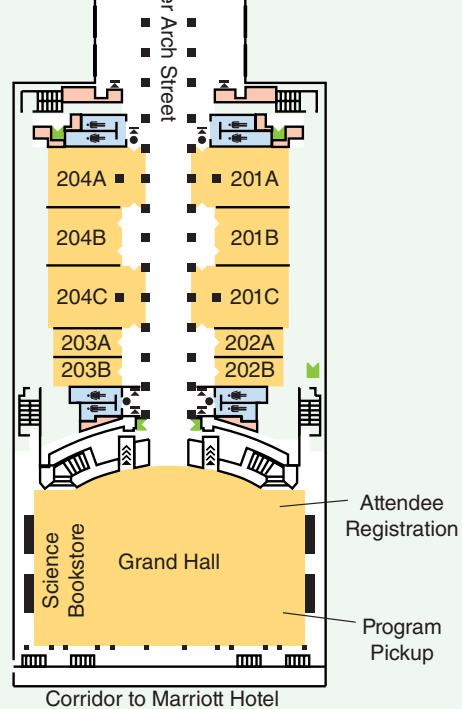
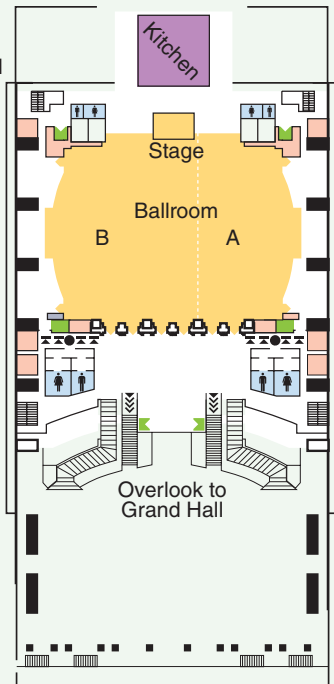


Pennsylvania Convention Center

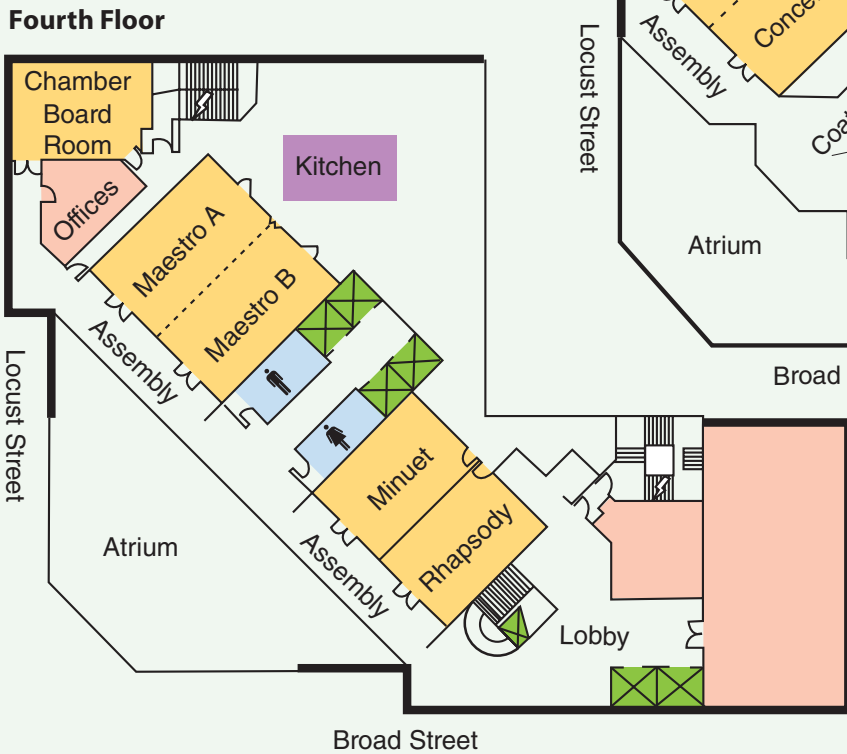
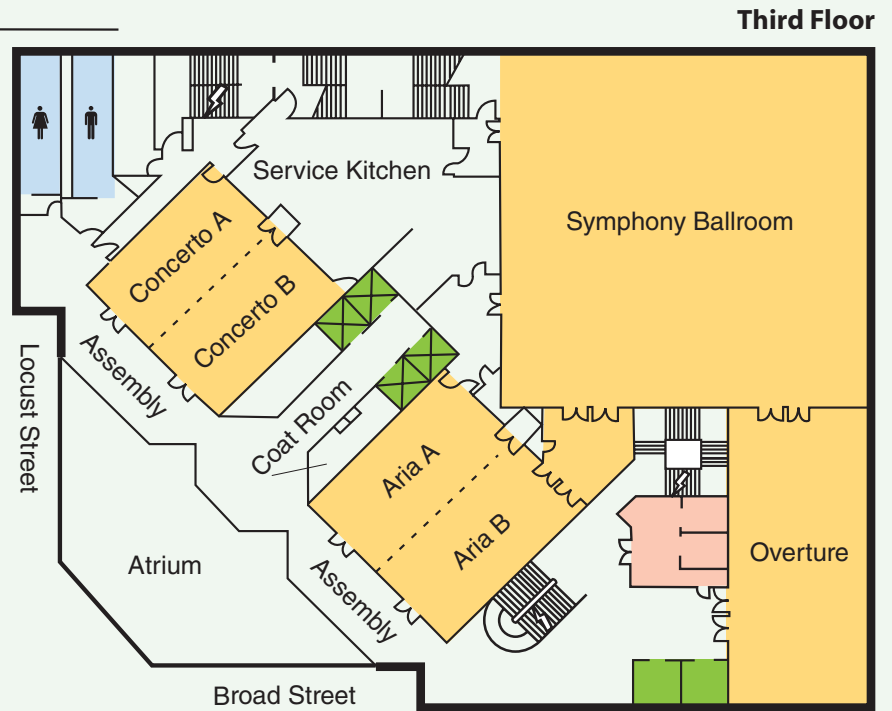
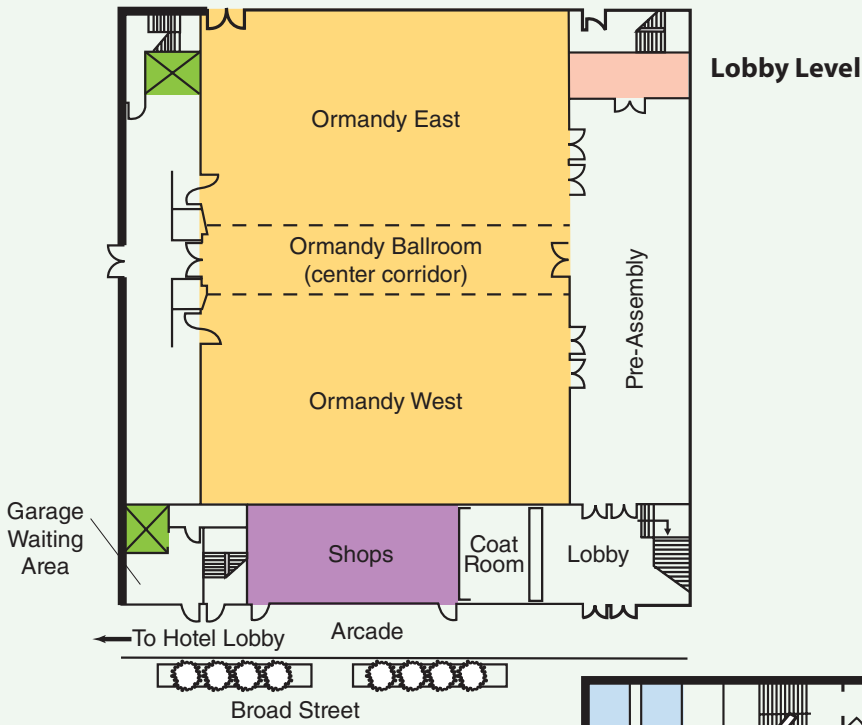
200 Level



No Access to Level 300 Rooms from Ballroom Level

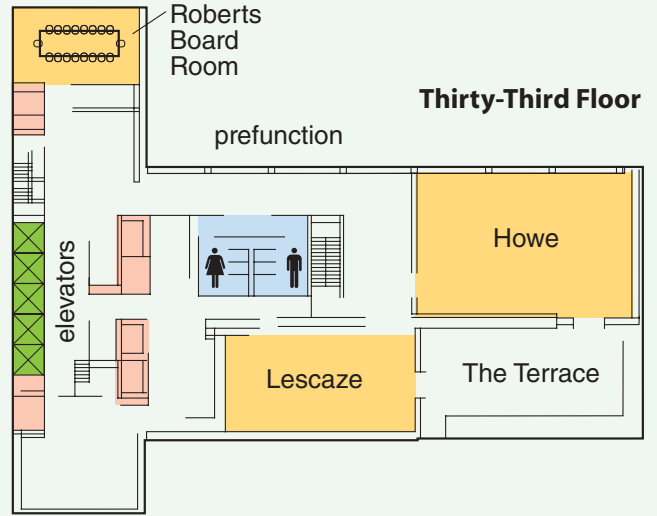
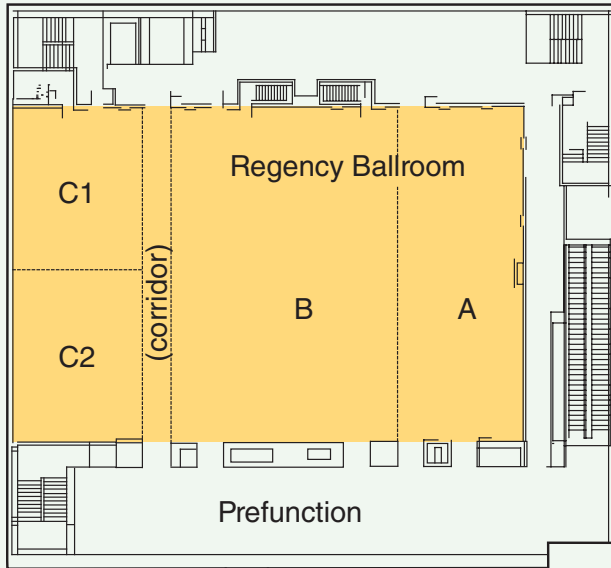


Doubletree Hotel Philadelphia

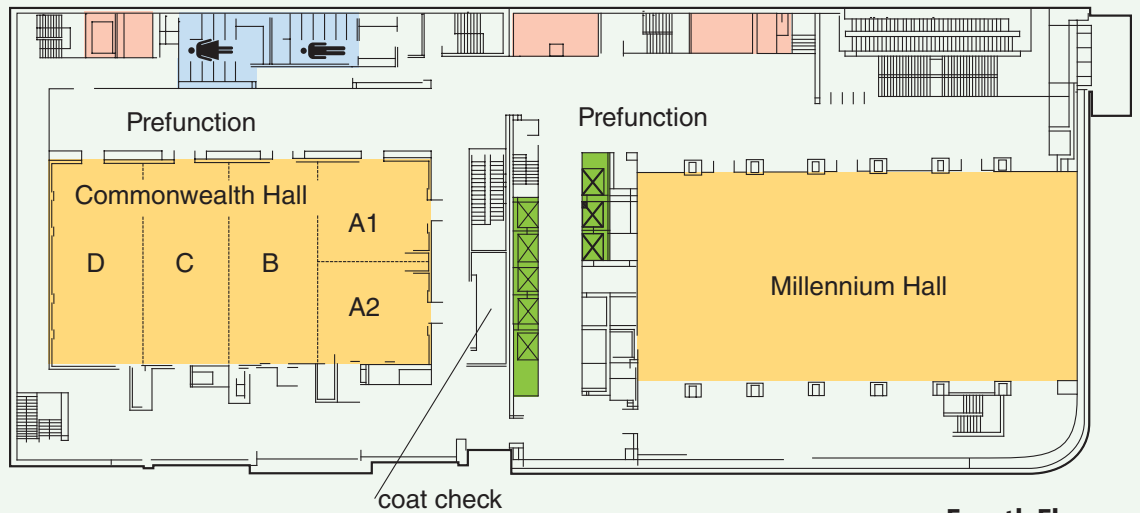


Loews Philadelphia Hotel

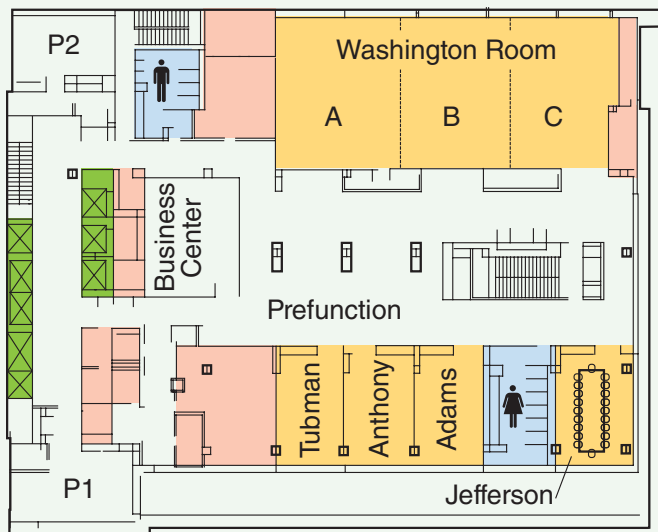
Second Floor Mezzanine



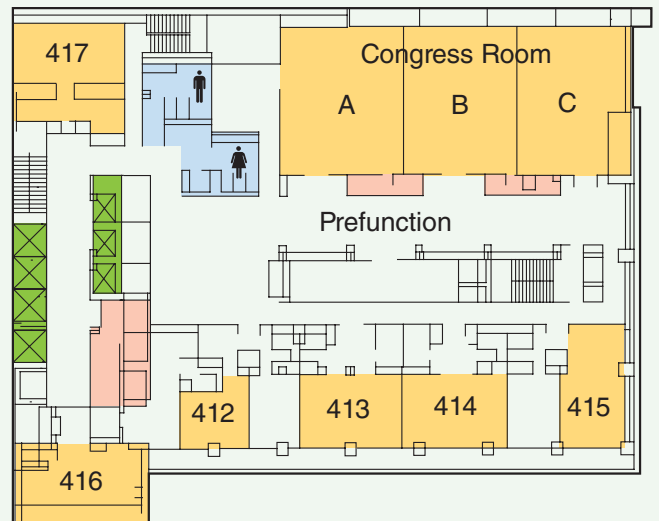
Second Floor



Third Floor

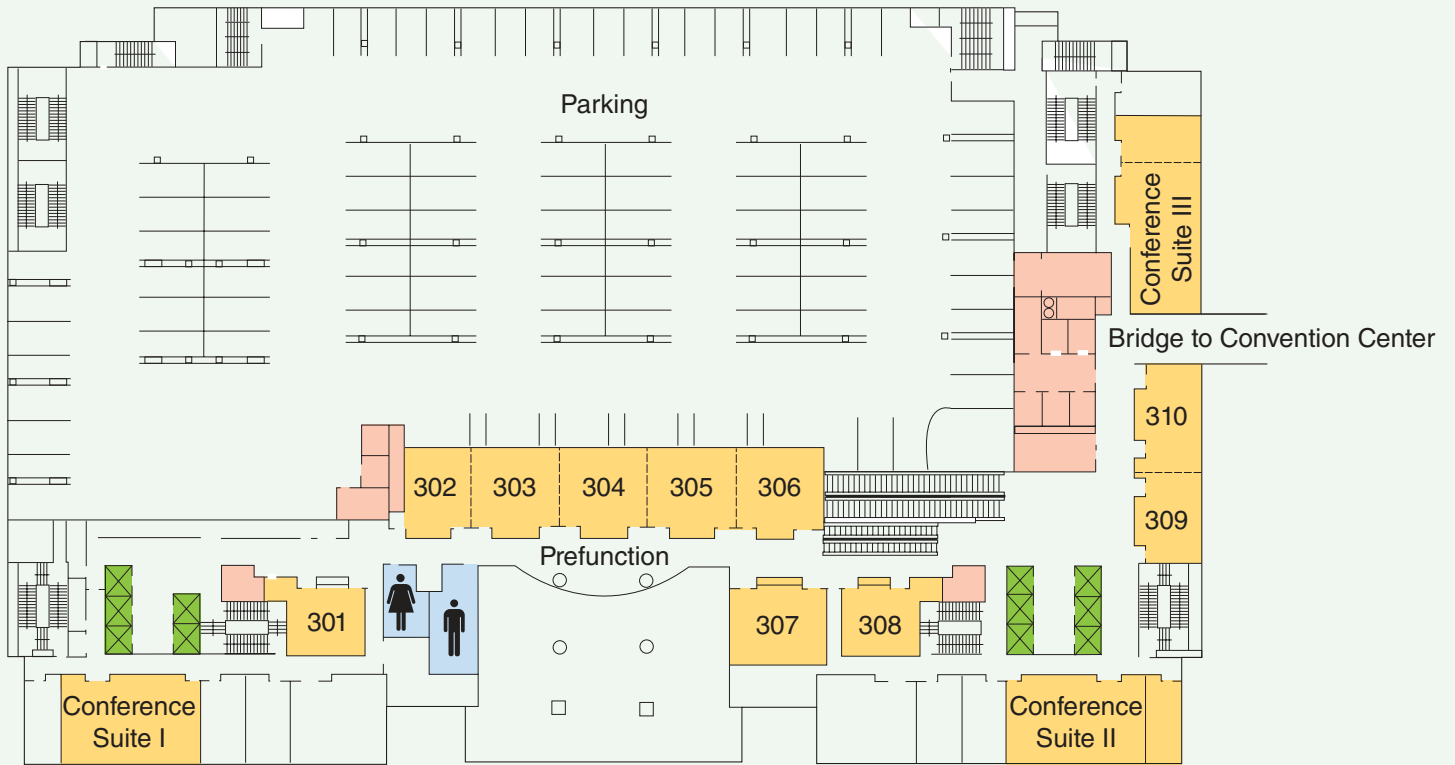


Fourth Floor

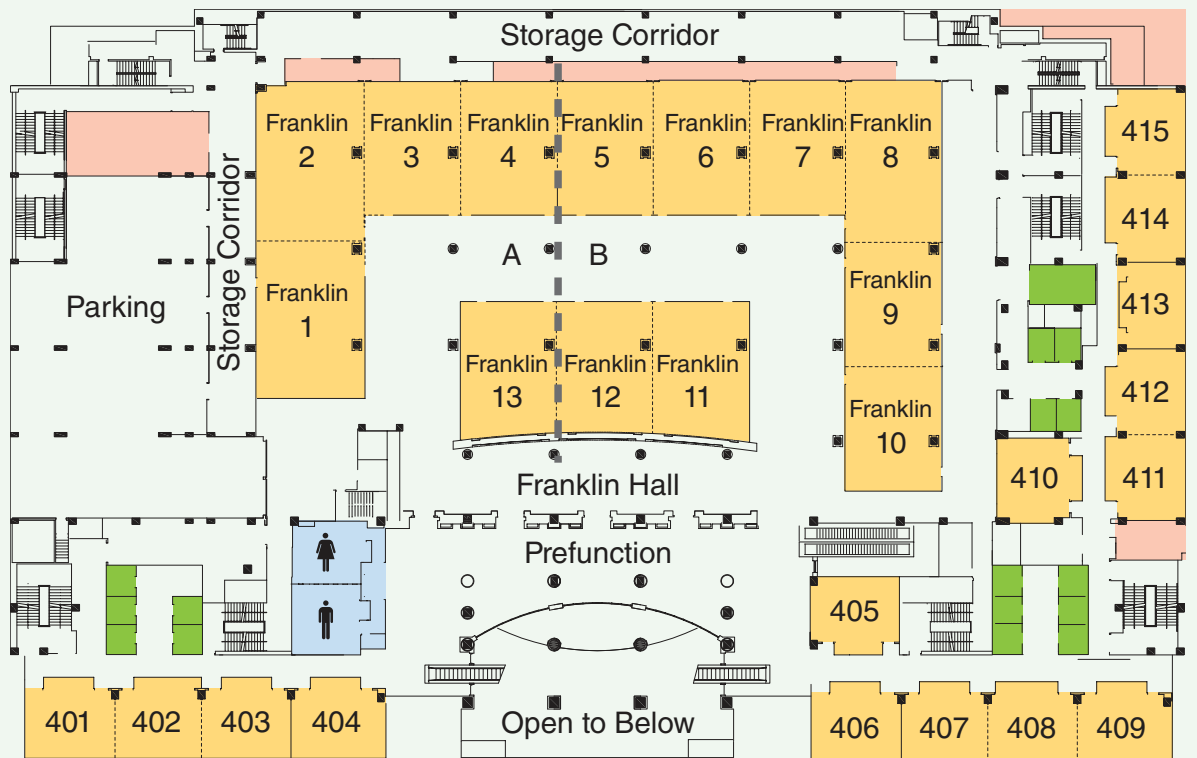


Philadelphia Marriott Downtown

Level Three

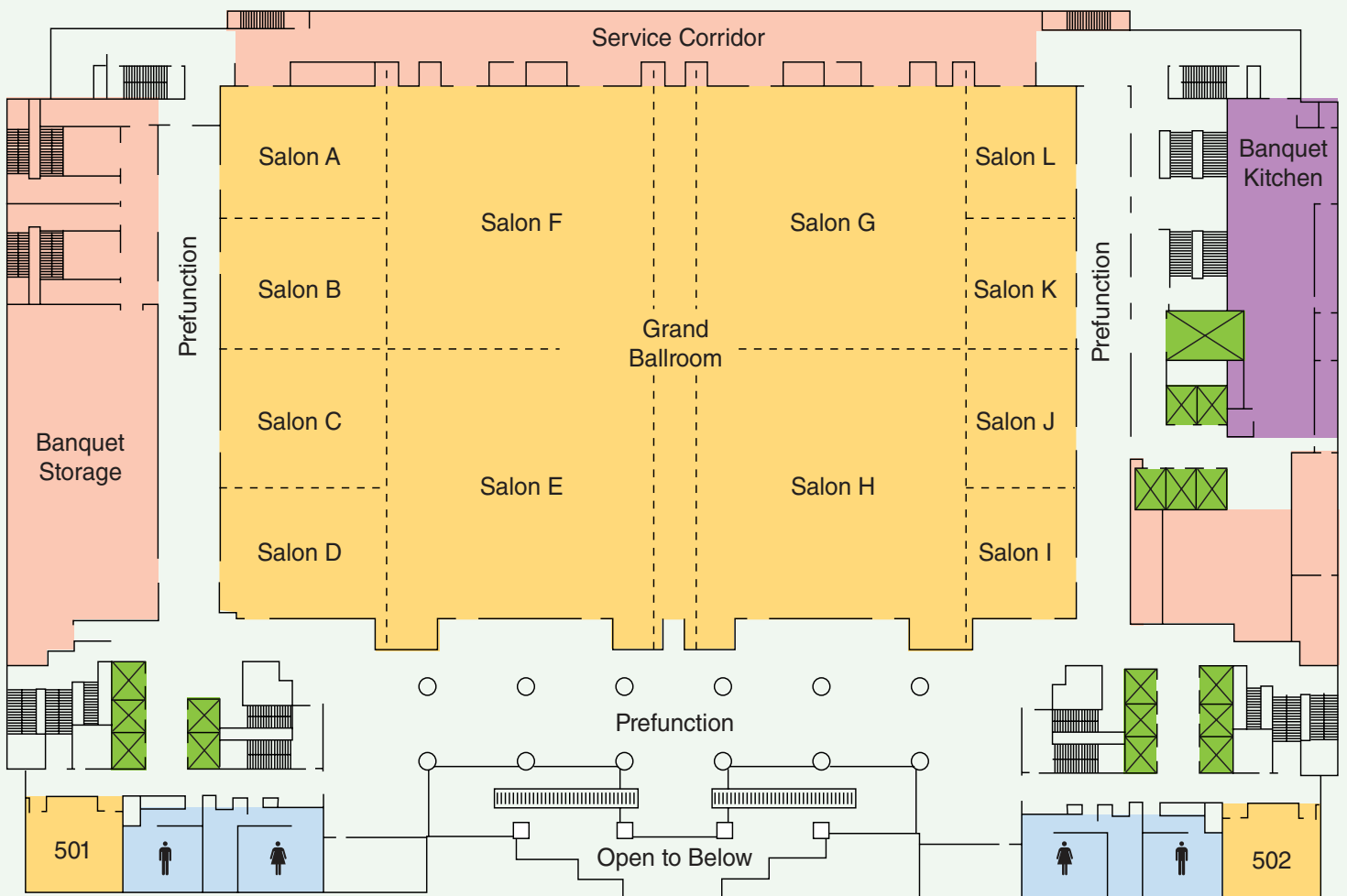


Level Four



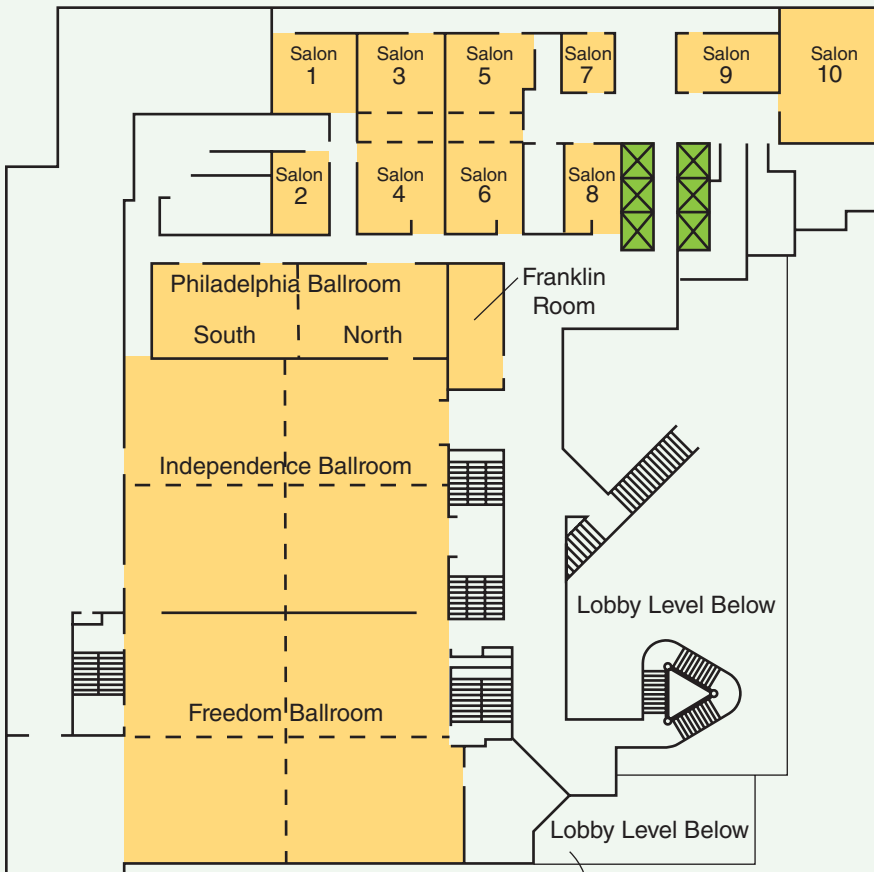
Philadelphia Marriott Downtown

Level Five

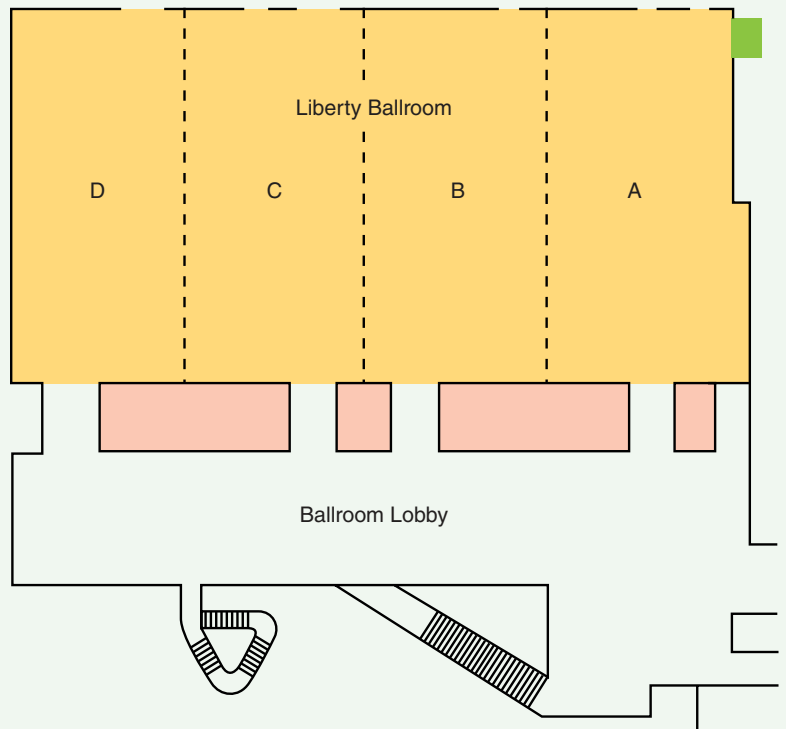
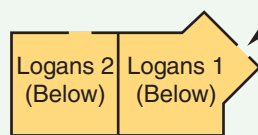


Sheraton Philadelphia City Center Hotel

Lobby and Mezzanine Levels

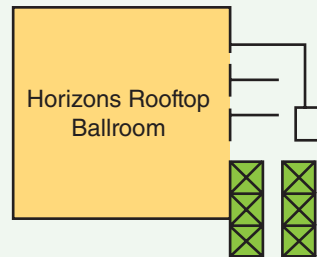


Ballroom Level

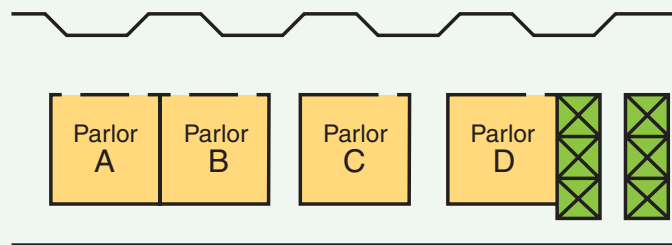


Sheraton Philadelphia City Center Hotel

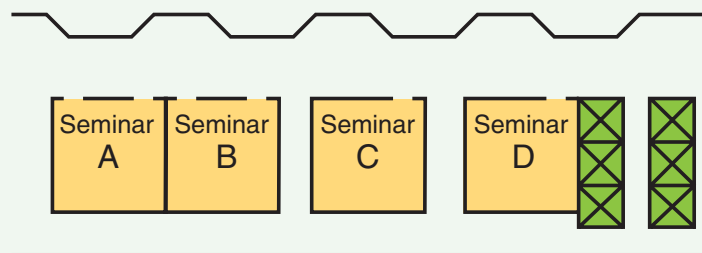
Horizons Rooftop Ballroom



Second Floor



First Floor



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The Science Teacher

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Paul Keidel, District IX
Kate Baird, District X
James Puckett, District XI
Heidi Baxter Lauffer, District XII
Pamela Christol, District XIII
Beverly DeVore-Wedding, District XIV
Sharla Dowding, District XV
Denise Antrim, District XVI
Craig Gabler, District XVII
Chuck Cohen, District XVIII
Cherry C. Brewton, AMSE

Meta Van Sickle, ASTE
Kay Atchison Warfield, CESI
Stephen Pruitt, CSSS
Troy Sadler, NARST
Rebecca Knipp, NMLSTA
Brenda Wojnowski, NSELA
Connie Russell, SCST

NSTA Mission Statement

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

All cities are subject to change pending final negotiation.

National Conferences on Science Education

San Francisco, California
March 10–13, 2011

Area Conferences on Science Education

2010 Area Conferences

Kansas City, Missouri
October 28–30

Baltimore, Maryland
November 11–13

Nashville, Tennessee
December 2–4

2011 Area Conferences

Hartford, Connecticut
October 27–29

New Orleans, Louisiana
November 10–12

Seattle, Washington
December 8–10



www.nsta.org/conferences

**Submit a session proposal for
the NSTA 2011 San Francisco
National Conference...**

Get Involved!

**2011 National Conference on Science
Education**

Deadline: April 15, 2010

San Francisco, CA
March 10–13, 2011



Friday, March 19 7:00 AM–12 Midnight

Start Time	End Time	Activity/Event Title
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Saturday, March 20 8:00 AM–12 Midnight

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Sunday, March 21 8:00 AM–12 Noon

Start Time	End Time	Activity/Event Title
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Save the Dates!

NSTA Conferences on Science Education are coming to a city near you.

- Attend presentations, special programs, and workshops on relevant issues—literacy, assessment, inquiry, and more.
- Develop content knowledge.
- Build teaching skills with new strategies.
- Learn from experts and become inspired.
- Sessions for educators in every grade band and every discipline.

Kansas City, MO

October 28-30

Strands:

- Data-driven Learning
- Developing and Communicating Conceptual Understanding for All Students
- Scientific Innovation: Applying Science in the Real World

Baltimore, MD

November 11-13

Strands:

- Teaching Science in the 21st-Century Classroom
- Embracing the World from Our Own Backyard: Environmental Education
- Building Tomorrow's Work Force: Science, Technology, Engineering, and Mathematics (STEM)

Nashville, TN

December 2-4

Strands:

- Building Capacity to Lead Professional Learning
- The Brain-considerate Classroom
- Understanding a Designed World

Visit www.nsta.org for more information.

NSTA National
Science
Teachers
Association

National Science Teachers Association

Robert H. Carleton Award

for National Leadership in the Field of Science Education

Sponsored by Dow Chemical Co.



Arthur Eisenkraft
2000–2001 NSTA President
and Distinguished Professor
University of Massachusetts
Boston, Mass.

National Science Teachers Association

**Distinguished Informal
Science Education Award**



Kim Sneden
Curator of Education
Detroit Zoological Society
Royal Oak, Mich.

National Science Teachers Association

Distinguished Teaching Award



Donna Rini
Science Teacher
Brookside High School
Sheffield, Ohio

Bio-Rad Biotechnology Explorer Award



Jennifer Hand
Science Teacher
Cairo High School
Cairo, Ga.

National Science Teachers Association
Distinguished Service to Science Education Award



Herb Brunkhorst
Professor of Science Education
and Biology
California State University
San Bernardino, Calif.



Dwight Sieggreen
Science Teacher
Northville Public Schools
Northville, Mich.

Shell Science Teaching Award

Sponsored by Shell Oil Co.

Awardee



Tamica Stubbs
Biology and Research Teacher
E.E. Waddell High School
Charlotte, N.C.

Finalist



Wendy DeMers
Science Teacher
Hynes Charter School
New Orleans, La.

Finalist



Chanda Davis
Seventh-Grade Science
Teacher
Hampton Cove Middle
School
Hampton Cove, Ala.

Fellow Award



Sandra Abell
Curators' Professor
University of Missouri
Columbia, Mo.

Sylvia Shugrue Award



Cathy Kindem
Science Specialist
Cedar Park STEM
Elementary School
Apple Valley, Minn.

Delta Education Award for Excellence in Elementary Level Inquiry-based Science Teaching

Sponsored by Delta Education, LLC, a division of School Specialty Science



Deborah Wickerham
Science Teacher
Chamberlin Hill Intermediate School
Findlay, Ohio

Frey Scientific and Neo/Sci Education Award for Excellence in Middle Level Inquiry-based Science Teaching

Sponsored by Frey Scientific and Neo/Sci Science, a division of School Specialty Science



Allison Bogart
Science Teacher
Woodrow Wallace Middle School
Lake Isabella, Calif.

CPO Science Education Award for Excellence in High School Inquiry-based Science Teaching

Sponsored by CPO Science, a division of School Specialty Science



Heather McArdle
Science Teacher
Mahopac High School
Mahopac, N.Y.

Legacy Award



Alice J. Moses
1984–1985 NSTA President
Past President of CESI
Past President of NASTS
Former NSF Director of Instructional
Materials Development Program
Washington, D.C.

Vernier Technology Awards

Sponsored by Vernier Software & Technology

Elementary Level



Judy Heitkamp
Classroom Teacher
Prairie Elementary School
Worthington, Minn.

Middle Level



Nicole Ackerson
Science Instructor
Berkeley Preparatory
School
Tampa, Fla.



Cynthia Ollendyke
Science Teacher
Peters Township Middle
School
McMurray, Pa.

High School Level



Steve Ahn
Science Teacher
Abingdon High School
Abingdon, Va.



Stephen Biscotte
Science Teacher
Cave Spring High School
Roanoke, Va.



Deborah Carder
Science Teacher
Fruitvale High School
Fruitvale, Tex.

College Level



Brian Geislinger
Physics Professor
Gadsden State Community
College
Gadsden, Ala.

Wendell G. Mohling Outstanding Aerospace Educator Award



Bill Richards
Executive Director
Community Resource Volunteers
St. Johns, Michigan

Zula International Early Science Educator Awards



NSTA/CESI Affiliation
Christina Ryan
Kindergarten Teacher
Cambridgeport School
Cambridge, Mass.



NAEYC/NHSA Affiliation
Jonathan Gillentine
Pre-kindergarten Teacher
Reverend Benjamin Parker School
Kaneohe, Hawaii

DuPont Challenge Science Essay Teacher Awardees

Junior Division



Joan Roberts
Seventh-Grade Science
Teacher, Team Leader
Rice Middle School
Plano, Tex.

Senior Division



Omar V. Acio
Chemistry Teacher
Thomas Jefferson High School
for Science and Technology
Alexandria, Va.

DCAT "Making a Difference" Awards

Sponsored by the Drug, Chemical, and Associated Technologies Assn.



Middle Level

Dennis Foreman
Science Teacher
Zane Trace Middle School
Chillicothe, Ohio



High School

Susan Hrenko
Science Teacher/Intervention
Specialist
WKHS Greenhouse
Worthington Kilbourne High
School
Columbus, Ohio

Faraday Science Communicator Award



Joseph Hwang
Anaheim Ducks
S.C.O.R.E. Program
Rosemead, Calif.

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

Robert Chase
Natalie Dagley
Isabelle DeBarros
Briana Faxon
Caysie Heil
Kathey Hoover
Kathryn Humora
Karen Kraus
Kimberly Kult
Lindsay Lowther
Theresa Madrid
Laura Marks
Abbie Martin

David Martinez
Emily Mathews
Megan McCulloch
Elizabeth McMillan
Scott Moore
Julie Parker
Torri Rinker
Jennifer Russell
Joleen Teates
Kyle Thompson
Shannon Thompson
Andrea Van Waardhuizen

FREE WORKSHOPS

VERNIER DATA-COLLECTION TECHNOLOGY



THURSDAY | March 18th | Workshop Room 202A

8:00 - 9:30 a.m.	Chemistry with Vernier	
10:00 - 11:30 a.m.	Biology with Vernier	
12:00 - 1:30 p.m.	K-8 Science with Vernier	
2:00 - 3:30 p.m.	Using Inquiry in Environmental Science & Biology with Vernier	

THURSDAY | March 18th | Workshop Room 202B

8:00 - 9:30 a.m.	Forensics with Vernier	DEMO
10:00 - 11:30 a.m.	What's New at Vernier?	DEMO
12:00 - 1:30 p.m.	Advanced Instrumentation: Spectroscopy and Gas Chromatography	DEMO
2:00 - 3:30 p.m.	Advanced Logger <i>Pro</i> and LabQuest	DEMO

FRIDAY | March 19th | Workshop Room 202A

8:00 - 9:30 a.m.	Physics with Vernier	
10:00 - 11:30 a.m.	Chemistry with Vernier	
12:00 - 1:30 p.m.	Water Quality and Environmental Science with Vernier	
2:00 - 3:30 p.m.	Earth Science with Vernier	

FRIDAY | March 19th | Workshop Room 202B

8:00 - 9:30 a.m.	Advanced Biology and Biotechnology with Vernier	DEMO
10:00 - 11:30 a.m.	Engineering with Vernier	DEMO
12:00 - 1:30 p.m.	Video Analysis with Vernier	DEMO
2:00 - 3:30 p.m.	AP and IB Science with Vernier	DEMO

SATURDAY | March 20th | Workshop Room 202A

8:00 - 9:30 a.m.	Biology with Vernier	
10:00 - 11:30 a.m.	Physics with Vernier	
12:00 - 1:30 p.m.	Inquiry Chemistry with Vernier	
2:00 - 3:30 p.m.	Human Physiology with Vernier	

NO PRE-REGISTRATION! NO FEE!

Hands-On Workshop

DEMO Demonstration Workshop

Is This Your First NSTA Conference?

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

The morning session is generously sponsored by Carolina Biological Supply Company. See pages 95 and 167 for details.

New at the Philadelphia conference! NSTA has introduced a new mentoring program, NSTA First-Timers Guide Service, which pairs retired veteran teachers with first-time conference attendees. If you are interested in learning more about this program at future conferences, please visit our website at www.nsta.org/conferences. Contact information will be posted when confirmed.

Ribbon-cutting Ceremony

An opening ceremony is scheduled on Thursday at 10:00 AM in the lobby of Exhibit Hall B.

Wednesday, March 17 (Volume 1)

9:00 AM–5:00 PM NSTA Professional Development Institutes 83

Thursday, March 18 (Volume 1)

7:30 AM–2:00 PM Global Conversations in Science Education Conference (M-2) 89

8:00–9:00 AM First-Timers' Meeting (Is This Your First NSTA Conference?) 95

9:00–10:30 AM Preservice and New Teachers Breakfast (M-1) 104

9:30–10:30 AM Featured Presentation: John Mooy 105

10:00–10:10 AM Ribbon-cutting Ceremony 117

10:10 AM–6:00 PM Exhibits 118

11:00 AM–12:30 PM General Session: Greg Marshall 124

12:30–1:30 PM Mary C. McCurdy Lecture: Julie Czerneda 132

2:00–4:00 PM The Planetary Society Lecture: Bill Nye 160

3:30–4:30 PM NSTA ESP Symposium I 164

3:30–4:30 PM Featured Presentation: Howard G. Adams 164

3:30–4:30 PM First-Timers' Meeting (Conference Tips for First-Timers) . . . 167

6:00 PM–12 Mid Special Evening Session: A Video Showcase of Inspiring Award-winning Teachers, Part 1 179

Friday, March 19 (Volume 2)

See Conference Highlights, Volume 2, for page numbers.

7:00–8:00 AM A Broad Spectrum for Science Learning Breakfast (Informal Science Day) (M-4): Karen Peterson

7:00–8:30 AM NSTA Dorothy K. Culbert CAG Breakfast (M-3)

7:00–8:30 AM High School Breakfast (M-5): Missy Holzer

7:30 AM–6:00 PM Informal Science Day

8:30–9:30 AM Featured Presentation: Sharnnia Artis

9:00 AM–5:00 PM Exhibits

10:30 AM–12 Noon Shell Science Seminar: Adriane E.L. Dorrington

10:30 AM–12 Noon Shell Science Seminar: Jane Lubchenco

1:30–3:00 PM Sigma Science Seminar: H. Kenneth Hudnell

1:30–3:00 PM Featured Panel: *Gathering Storm or Gathering Cobwebs? What Is the Federal Response to the Science Education Crisis?*

12 Noon–2:00 PM ASTE/NSELA Luncheon (M-6): Janice Koch

12 Noon–2:00 PM CESI/NSTA Elementary Science Luncheon (M-7): Emily Morgan and Karen Ansberry

12 Noon–2:00 PM NSTA/NMLSTA Middle Level Luncheon (M-8): Debbie Goodwin and Andrew Nydam

12:30–1:30 PM SCST Marjorie Gardner Lecture: Dee U. Silverthorn

12:30–1:30 PM Informal Science Day Keynote: Dennis Schatz and Andrew Shouse

2:00–3:00 PM AGU Lecture: Stephen Malone

General Session

Thu., Mar. 18, 11:00 AM–12:30 PM



Greg Marshall
Vice President,
Remote Imaging,
National Geographic
Society, Washington,
D.C.

Crittercam: Science Exploration from the Wild

Greg Marshall will speak about the exciting world of exploration, discovery, research, interpretation, and communication—science—as seen through the prism of his cutting-edge Crittercam research program. (See page 124 for details.)



Field Trip F-3—Museums as Inspiration for Inquiry Learning: A Visit to The Franklin Institute

—Susan Holmes

Friday, March 19, continued

- 3:30–4:30 PM NSTA ESP Symposium I
- 6:00–8:30 PM NSTA Teacher Awards Gala (M-9)
- 6:00 PM–12 Mid Special Evening Session: A Video Showcase of Inspiring Award-winning Teachers, Part 2

Saturday, March 20 (Volume 3)

See Conference Highlights, Volume 3, for page numbers.

- 7:00 AM–3:30 PM Keeping Elementary Primary: Current Research and Best Practices for Quality Instruction (Research Dissemination Conference) (C-1)
- 7:00 AM–6:30 PM NESTA Earth and Space Science Resource Day
- 8:00 AM–12 Noon NSTA/SCST College Symposium
- 8:00 AM–4:30 PM The Centers for Ocean Sciences Education Excellence (COSEE) Program
- 8:30 AM–5:00 PM Teacher Researcher Day
- 9:00 AM–5:00 PM Exhibits
- 10:30 AM–12 Noon Shell Science Seminar: Haian Fu
- 10:30 AM–12 Noon Shell Science Seminar: Neil Comins
- 11:00 AM–12 Noon Paul F-Brandwein Lecture: Lynne Cherry
- 12 Noon–1:30 PM NSTA/SCST College Luncheon (M-10): Robert J. Beichner
- 1:30–3:00 PM Shell Science Seminar: Terry Matilsky
- 1:30–3:00 PM Shell Science Seminar: Garland L. Thompson
- 2:00–3:00 PM NSTA/ASE Honors Exchange Lecture: Manoj Chitnavis and Annette Smith
- 3:30–4:30 PM Robert Karplus Lecture: Reagan Flowers
- 3:30–4:30 PM Featured Presentation: Glenn Schwartz
- 3:30–5:30 PM NSTA ESP Symposium III
- 7:00–9:30 PM President’s Annual Banquet (M-11)
- 6:00 PM–12 Mid Special Evening Session: A Video Showcase of Inspiring Award-winning Teachers, Part 3

Sunday, March 21 (Volume 3)

See Conference Highlights, Volume 3, for page numbers.

- 7:00–9:00 AM Life Members Buffet Breakfast (M-12)

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

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



Meeting the Unique Needs of Urban and Rural Science Learners

Urban and rural environments are unique in many ways. It is important that teachers, administrators, and parents are collaboratively involved in helping students achieve their fullest potential in science. This strand will provide the participant with programs and teaching strategies that have demonstrated increased academic achievement, foster interest and participation in science, and employ exemplary science programs in urban and rural areas.



Connecting Content: Between, Within, and Among Subjects

In this day and age, the need for relevant connections within and between all subjects and all content is important in assisting students to become globally productive citizens. Providing opportunities for students to engage in developing and establishing integrative concepts is key. This strand will focus on sessions that demonstrate the interconnectedness of science topics with other subjects at varying grade levels.



Closing the Digital Generation Gap Between Teachers and Students

Students today are often advanced in the use of digital technology. How can teachers, many of whom are digital immigrants, become responsible digital educators? The understanding and use of technology are critical components of STEM education. The appropriate use of current technology supports the development of “21st Century Skills” such as real-world applications, creative problem solving, collaboration, and effective communication.



Rekindling the Fires of Science Teaching and Learning

This strand will provide exemplary programs, best practices, and strategies to increase teacher retention and renewal by focusing on such areas as professional learning communities, administrative and science leader support, professional development that focuses on both science content and pedagogy, mentoring programs, and collegial support strategies.

Meeting the Unique Needs of Urban and Rural Science Learners

Connecting Content: Between, Within, and Among Subjects

Thursday, March 18

8:00–9:00 AM

NOAA-CREST Weather Camp: Field and Classroom Experiences to Support Urban Students' Recognition of the Connection Between the Local Environment and Weather Conditions

How a Professional Learning Community (PLC) Increases Chemistry Participation at an Urban High School

8:30 AM–12:30 PM

Short Course: Project-Based Learning and the 4Rs of Inquiry: Engaging Students in Urban Explorations (By Ticket: SC-3)

9:30–10:30 AM

Equity and Excellence: Implementation and Assessment of Rigorous, Heterogeneous Science Courses

12:30–1:30 PM

SPARK! Bringing STEM Mentors into the Classroom

2:00–3:00 PM

Engaging Parents in Science Learning: Bridging the Worlds of Home and School

3:30–4:30 PM

Student as Scientist: Increase Interest and Achievement

Friday, March 19

9:30–10:30 AM

Increasing Appreciation for Science in Six Reservation Schools

11:00 AM–12 Noon

The “Don’t Bug Me” Integrated Pest Management Challenge: Learning Science Through Agriculturally Based Problem Solving

12:30–1:30 PM

Sound Science: Learning About Sound and the Nature of Science Through Inquiry

2:00–3:00 PM

The Promise of Preschool Science

3:30–4:30 PM

Engaging Urban Students in Urban Ecological Studies Through GIS

5:00–6:00 PM

Lessons Learned from Implementing Engineering Learning Activities in an Urban Elementary Science Classroom

Saturday, March 20

8:00–9:00 AM

iYouth & the Ocean! (iYO!): An Academic Achievement and Research Program for Underrepresented Middle School Students

9:30–10:30 AM

Meaningful Environmental Science for Urban Learners

11:00 AM–12 Noon

Interactive Science Notebooks for Inspiring Young Scientists

12:30–1:30 PM

ELD Strategies in Science

1:30–3:00 PM

Shell Science Seminar: Talent Knows No Color Line (Speaker: Garland L. Thompson)

2:00–3:00 PM

Applied Geoscience in the City for Middle School Students

3:30–4:30 PM

City Science: Using Your City as a Classroom

Sunday, March 21

8:00–9:00 AM

The Urban Advantage of Field Science Investigations

Thursday, March 18

8:00–9:00 AM

Connecting Quality Science Lessons with Children’s Literature to Enhance Science and Reading Skills

Mesozoic Mania: Multidisciplinary Integration Through Dinosaurs!

8:00 AM–12 Noon

Short Course: Computer Software for Chemistry/Physical Science Teachers (By Ticket: SC-1)

9:30–10:30 AM

Connecting the Dots: Fun, Fascinating, and Functional Integration of Science, Technology, and Literacy

12:30–1:30 PM

Mary C. McCurdy Lecture: Engage the Wonder: Developing Scientific Literacy Using Science Fiction (Speaker: Julie Czerneda)

Aligning Science Curriculum and Assessment to Raise Science Achievement Scores Through a “Train-the-Trainers” Model

2:00–5:00 PM

Short Course: Nanotechnology: Bringing Frontier Research into STEM Classrooms (By Ticket: SC-4)

2:30–3:00 PM

The Science of Survival

3:30–4:30 PM

Cut It, Stab It, Slice It, Dice It: Using the Potato in the Science Classroom

Friday, March 19

8:00–9:00 AM

Integrate Biology and Geology: 1883 News Report—Kraaktoa Erupts!

Teaching Science and History Through Evolution Court Cases

8:00 AM–12 Noon

Short Course: Light, Color, and Spectroscopy for Kids (By Ticket: SC-6)

9:30–10:30 AM

How Big Are YOUR Feet? Measuring Your Ecological Footprint

Connecting Content: Between, Within, and Among Subjects, cont.

11:00 AM–12 Noon

Connecting Math and Science Through Inquiry: Engaging Lessons for Middle School Kids

12:30–1:30 PM

Bringing the Icy Ends of the Earth Right into Your Classroom!

2:00–3:00 PM

Build an Interdisciplinary Polar Science Unit with Beyond Penguins and Polar Bears

2:00–5:00 PM

Short Course: Nurturing Science in Students Using Outstanding Science Trade Books (By Ticket: SC-10)

3:30–4:30 PM

Bridging the Outdoors with Science Education, ELA, Art, and Historical Perspectives

5:00–6:00 PM

Reading and Writing Science with Fun Polymer Activities and Children's Literature

Saturday, March 20

8:00–9:00 AM

Engaging Students, Developing Science Knowledge, and Teaching Science Literacy Skills with Quality Nonfiction Science Books

Engaging Students with Math and Science Through Global Issues

9:30–10:30 AM

Physics and Art

11:00 AM–12 Noon

The Making of Lava Lamps: An Interdisciplinary Project Supporting STEM Education

12:30–3:30 PM

Connecting Math, Science, and Literacy for the Good of All!

2:00–3:00 PM

Mitosis, DNA, and Me!

2:00–5:00 PM

Short Course: The Young Scientist: Engaging Three- to Five-Year-Old Children in Science (By Ticket: SC-16)

3:30–4:30 PM

Connecting Children to Nature with Growing Up WILD

5:00–6:00 PM

Infusing Energy Education into Science, Mathematics, and Social Studies

Closing the Digital Generation Gap Between Teachers and Students

Thursday, March 18

8:00–9:00 AM

ISTE: Integrating Technology into the Classroom

8:00 AM–5:00 PM

Short Course: The NOAA Ocean Data Education Portal: Using Digital Technology to Teach Environmental Science (By Ticket: SC-2)

9:30–10:30 AM

ISTE: Eliciting Student Creativity Using Technology

12:30–2:30 PM

ISTE: Wikis for Students and Teachers in Science

2:00–3:00 PM

An Energy-Balance Model for Use in the Science Classroom

3:30–4:30 PM

ISTE: Using Google Apps in the Science Classroom

Friday, March 19

8:00–11:00 AM

ISTE: The Tech-based Science Classroom

9:00 AM–12 Noon

Short Course: How to Build a Classroom Planetarium (By Ticket: SC-8)

12:30–1:30 PM

ISTE: Podcasting for Students and Teachers in Science

2:00–3:00 PM

ISTE: Emerging Technologies in the Science Classroom

2:00–5:00 PM

Short Course: Using Technology to Teach Inquiry and Science Concepts Through Outdoor Studies (By Ticket: SC-9)

Closing the Digital Generation Gap Between Teachers and Students, cont.

3:30–4:30 PM

What Is Even More Amazing Than Google Earth?

Technology Goes Outdoors: Integrating Technology and Student Notebooks to Capture Seasonal Changes in the Schoolyard

5:00–6:00 PM

Earth Science and Engineering Connections

Saturday, March 20

8:00–9:00 AM

Creating Science Media Collaboratively: Teacher/Student Science Documentaries

8:00–11:00 AM

Short Course: MESSENGER: Integrate Technology with Classroom Instruction That Works (By Ticket: SC-11)

9:30–10:30 AM

Taking a CHANCE: A New and Different Multimedia-based Pedagogical Tool for High-Impact Learning

12:30–1:30 PM

Using Students' Already-developed Technology Skills

Creating Biologically Realistic 3-D Animations to Encourage Inquiry in the Classroom

1:30–3:30 PM

Shell Science Seminar: Authentic Astronomical Data Analysis in Educational Settings (Speaker: Terry Matilsky)

2:00–3:00 PM

Teach Locally, Collaborate Globally

3:30–4:30 PM

Using Virtual Labs to Fuel Inquiry and Promote Student Achievement

Teaching Chemistry to High School Students at a Cyber Charter School

5:00–6:00 PM

Tablet PCs Promote Classroom Interaction in Math and Science

Using a Social Media Tool to Motivate Learning

Rekindling the Fires of Science Teaching and Learning

Thursday, March 18

8:00–9:00 AM

Differentiated Science Inquiry

9:30–10:30 AM

Simple Methods for Improving Student Performance and Motivation

12:30–1:00 PM

Mentoring Science “Un-experts”

2:00–3:00 PM

Bring the Science of Cars into the Classroom

3:30–4:30 PM

CSI Meets Woodsy the Owl: Environmental Forensics

Friday, March 19

8:00–9:00 AM

Hollywood Science

11:00 AM–12 Noon

Teaching Science to Reluctant Learners

12:30–1:30 PM

Get Moving! Kinesthetic Tools for Excellence in Middle School Science

3:30–4:30 PM

Add It Up! Metacognitive Strategies + Good Science Curricula = Increased Student Learning!

Saturday, March 20

8:00–9:00 AM

Living and Working in Space: A Simulation Adapted for Classroom Use

9:00 AM–12 Noon

Short Course: Expedition Earth and Beyond (By Ticket: SC-14)

9:30–10:30 AM

Edible Science: Science Good Enough to Eat!

11:00 AM–12 Noon

Mentoring for Success: Supporting the First-Year Science Teacher

Surviving Your First Year as a Science Chairperson

12:30–1:30 PM

Accessing Chemistry: Reaching All Students

Sticky Notes and Student Identification of Variables in Science Investigations

2:00–3:00 PM

Moving Beyond Retention: Setting the Stage for the Next Generation of Teacher Leaders

3:30–4:30 PM

Captivate Your Students with Magic!

5:00–6:00 PM

“Simple”y the Best Demos



**Global Conversations in
Science Education Conference**

**Assessing Student Understanding of
Science: Perspectives and Solutions**

Thursday, March 18, 7:30 AM–2:00 PM

Grand Salon H, Marriott

This event is open to all registered conference attendees at no additional charge, but tickets (M-2) are required.

On Thursday, March 18, NSTA will host a special day dedicated to science education from an international perspective. During this event, there will be numerous opportunities for international visitors to network with science educators from various cultures. An agenda follows. *Global Conversations Conference events are described throughout the Thursday daily program (Vol. 1). See page 89.*

Wednesday, March 17

6:30–7:30 PM NSTA President’s International Reception
Open to all international visitors and invited guests.

Thursday, March 18

7:30–8:30 AM NSTA Conference Orientation
8:30–9:00 AM Welcome and Introductions
9:00–9:30 AM Plenary Session
Assessing Scientific Literacy: International Perspectives and Classroom Possibilities
Rodger W. Bybee, Chair, PISA 2006 Science Expert Group, Golden, Colo.
9:30–9:45 AM Break
9:45–10:45 AM Concurrent Sessions (K–12 Assessment and College-Level Assessment)
10:45–11:15 AM Poster Session
11:15 AM–12:15 PM Concurrent Sessions (K–12 Assessment and College-Level Assessment)
12:15–1:15 PM Luncheon Plenary Session
Assessment: A Key Lever of Change in Science Education
Robin Millar, Chair, Departmental Research Committee, University of York, U.K.
1:15–1:45 PM Panel Discussion
1:45–1:55 PM Updates from Around the World
1:55–2:00 PM Closing Remarks

NSTA Exemplary Science Program (ESP)

**Realizing the Visions of the National Science
Education Standards**

Thursday, March 18–Saturday, March 20

Grand Salon K, Marriott

ESP symposia were organized by Robert E. Yager, 1982–1983 NSTA President and editor of the NSTA ESP Program. These sessions will include brief descriptions of programs that exemplify how the four NSES goals have been met. The discussants will be drawn from authors of chapters from several monographs in the series. Discussion will center on how NSES *More Emphasis* suggestions have guided instruction.

ESP symposia are described throughout the daily program (Volumes 1, 2, and 3).

Thursday, March 18, 3:30–4:30 PM

Symposium I

Coordinator: Robert E. Yager, 1982–1983 NSTA President, and University of Iowa, Iowa City

Exemplary Science Programs: Best Practices in Professional Development

Exemplary Science Programs: Informal Education Settings

Friday, March 19, 3:30–4:30 PM

Symposium II

Coordinator: Robert E. Yager, 1982–1983 NSTA President, and University of Iowa, Iowa City

Inquiry: The Key to Exemplary Science

Saturday, March 20, 3:30–5:30 PM

Symposium III

Coordinator: Robert E. Yager, 1982–1983 NSTA President, and University of Iowa, Iowa City

Exemplary Science Programs: Grades PreK–4

Exemplary Science Programs: Grades 5–8

Exemplary Science Programs: Grades 9–12

Informal Science Day

Friday, March 19, 7:30 AM–6:00 PM

Grand Salon E/F, Marriott

Packed with exciting informal science presentations and activities, Informal Science Day is designed to offer a “town square” at which both informal and formal science educators can meet and interact to share best practices in informal science, learn about exciting collaborations happening among informal and formal science organizations, network with colleagues, and dialogue around ideas and innovations. Informal organizations represented include zoos, museums, media, after-school programs, university outreach, and others that provide and/or support out-of-school science education.

An agenda follows. *Informal Science Day events are described throughout the Friday daily program (Vol. 2).*

Friday, March 19

- 7:00–8:00 AM A Broad Spectrum for Science Learning Breakfast (Tickets Required: M-4)
Using Collaboration to Reach All Science Learners
Karen Peterson, National Girls Collaborative Project, and CEO, EdLab Group, Lynnwood, Wash.
- 9:30–10:30 AM Breakout Sessions
- 11:00 AM–12 Noon Breakout Sessions
- 12:30–1:30 PM Keynote Speaker
Surrounded by Science—Improve Your Practice by Exploring What Research Says About Learning Science in Informal Environments
Dennis Schatz, Pacific Science Center, Seattle, Wash.
Andrew W. Shouse, University of Washington, Seattle
- 2:00–3:00 PM Breakout Sessions
- 4:00–6:00 PM Informal Science Education Share-a-Thon

NSTA Student Chapter Sessions

Friday, March 19/Saturday, March 20

Grand Salon G, Marriott

NSTA is proud to provide an entire “thread” of unique events for NSTA preservice and new teacher members who participate in NSTA’s Student Chapter Program, which was created especially to provide you with valuable professional development and networking opportunities as you begin what is hopefully a long and fruitful career in education. If your school has an NSTA student chapter, bring examples of the work of your chapter, best practices, and stories to share. If your school does not yet have a student chapter, come to hear about your future colleagues’ best practices and learn about starting and running a successful NSTA student chapter at your own institution.

A list of Student Chapter events follows. *See the daily program (Vol. 2 and Vol. 3) for details.*

Friday, March 19

- 8:00–9:00 AM NSTA Student Chapter Faculty Advisor Roundtable
- 9:30–10:30 AM NSTA Student Chapter Action Session
- 11:00 AM–12 Noon Becoming an NSTA Student Chapter Leader
- 12:30–1:30 PM Getting Connected: NSTA Student Chapter Interactive Television (ITV) Meetings
- 2:00–3:00 PM Increase Science Enthusiasm on Your Higher Education Campus: Start an NSTA Student Chapter
- 3:30–4:30 PM Assisting Preservice Teachers in Presenting at NSTA and Other Science Conferences: An NSTA Student Chapter Roundtable
- 5:30–7:00 PM Student Chapter and Student Member Reception

Saturday, March 20

- 8:00–9:00 AM Starting an NSTA Student Chapter: Faculty and Student Perspectives

NSTA/SCST College Symposium

The Future of Quality Waters: An Educational Symposium Jointly Sponsored by NSTA and SCST

Saturday, March 20, 8:00 AM–12 Noon

Commonwealth B, Loews

Water is the most plentiful molecule on Earth's surface, but only three milliliters out of every 100 liters are pure enough for humans to consume. The rest is contaminated by naturally occurring factors that are geological, climatological, biological, or human influences caused by the disposal of industrial, agricultural, and residential residues. Studies indicate that over eight million people around the world die from consuming contaminated water every year. Four highly regarded experts in the future of the world's waters will come together at this symposium to discuss the pressures of maintaining the quality of water today and share their predictions for the future. An agenda follows. *See the Saturday daily program (Vol. 3) for details.*

Saturday, March 20

- 8:00–8:15 AM Introduction
Walter S. Smith, Texas Tech University, Lubbock
Tom Lord, Indiana University of Pennsylvania, Indiana, Pa.
- 8:15–9:00 AM Featured Speaker
Dan Wible, Water Resource and Environmental Engineer, CH2M Hill and Associates, Englewood, Colo.
- 9:15–10:00 AM Featured Speaker
Charles Duhigg, Reporter and Author, *The New York Times*, New York, N.Y.
- 10:15–11:00 AM Featured Speaker
Kent Crawford, Water Quality Specialist, Pennsylvania Water Science Center, U.S. Geological Survey, New Cumberland
- 11:15 AM–12 Noon Featured Speaker
Christopher Gorthy, LEED Accredited Professional, DPR Construction, Inc., Falls Church, Va.

Following the symposium, don't miss the NSTA/SCST College Luncheon (Ticket M-10) from 12 Noon to 1:30 PM (see Vol. 3). Also scheduled on Saturday afternoon is a field trip (Ticket S-6) to the Fairmont Water Works Interpretive Center (see Vol. 1, page 69).

NESTA Earth and Space Science Resource Day: Earth System Science and the Environment

Saturday, March 20, 7:00 AM–6:30 PM

Liberty A/B, Sheraton

This jam-packed day of professional development starts with a ticketed breakfast and speaker and finishes with the NESTA Annual Membership meeting. We look forward to seeing you on Saturday, as well as at other scheduled NESTA events on Friday, including our three share-a-thons and Friends of Earth Science Reception. *See the Saturday daily program (Vol. 3) for details on NESTA Earth and Space Science Resource Day events.*

Saturday, March 20

- 7:00–8:30 AM NESTA Earth and Space Science Resource Day Breakfast
Logans 1, Sheraton
Featured Speakers
Tanya Furman, Professor of Geosciences, The Pennsylvania State University, University Park
Laura Gertin, Associate Professor of Earth Sciences, Penn State Brandywine, Media, Pa.
(This event was available from NESTA by preregistration only.)
- 9:30–10:30 AM NESTA Earth System Science and the Environment Share-a-Thon
- 11:00 AM–12 Noon Advances in Earth and Space Science Lecture
Richard D. Clark, Millersville University, Millersville, Pa.
- 12:30–1:30 PM Advances in Earth and Space Science Lecture
Robert M. Ross, Museum of the Earth, Ithaca, N.Y.
- 2:00–3:00 PM Advances in Earth and Space Science Lecture
Alexander Gates, Rutgers University, Newark, N.J.
- 3:30–5:00 PM National Earth Science Teachers Association Rock and Mineral Raffle
- 5:00–6:30 PM NESTA Annual Membership Meeting

The Centers for Ocean Sciences Education Excellence (COSEE) Program

Saturday, March 20, 8:00 AM–4:30 PM

Independence C, Sheraton

Since 2002, the Centers for Ocean Sciences Education Excellence (COSEE) have worked to increase understanding of the ocean and its relevance to society. Primarily funded through the National Science Foundation, the COSEE network promotes partnerships between research scientists and educators, disseminates high-quality ocean sciences education resources, and promotes ocean science as a charismatic vehicle for learning at any age. COSEE sessions will highlight activities and products designed for classroom science teachers. Participants will leave with links to real-time data, relevant scientific resources, lesson plans, information on regional programs, and connections to a nationwide network of scientists and educators who are dedicated to improving ocean literacy. A list of COSEE events follows. See the Saturday daily program (Vol. 3) for details.

Saturday, March 20

8:00–9:00 AM	Bridge/COSEE NOW Activity: Can't Take the Heat?
9:00–10:00 AM	COSEE Alaska: Ways of Knowing Ocean Climate Change (USE THIS ORDER) Culturally Relevant Ocean Sciences Education in Hawaii
10:00–11:00 AM	Scientist-Educator Partnerships to Enhance Rural Ocean Literacy
11:00 AM–12 Noon	Linking the Ocean to the Classroom The Smithsonian Ocean Portal, COSEE, and Encyclopedia of Life: Digital Media for Science Education
12 Noon–1:30 PM	COSEE Luncheon (By Invitation Only) Featured Speakers: Scott Glenn and Oscar Schofield, Institute of Marine and Coastal Studies, Rutgers University, New Brunswick, N.J.
1:30–2:30 PM	COSEE-West Online Workshops: Providing Access to Scientists and Enhancing Teachers' Skills in the Digital World COSEE SE: Broadening Participation of Rural Students with Estuarine Scientists
2:30–3:30 PM	The Ocean Literacy Scope & Sequence
3:30–4:30 PM	Practical Applications of the Ocean Literacy Principles Scope & Sequence

Teacher Researcher Day

Saturday, March 20, 8:30 AM–5:00 PM

Grand Salon EIF, Marriott

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

An agenda follows. *Teacher Researcher Day events are described throughout the Saturday daily program (Vol. 3).*

Saturday, March 20

8:30–9:30 AM	Poster Session
9:30–10:30 AM	Presentation: <i>Co-generating Positive K–12 Science Learning Environments Through Dialogue</i>
10:30–11:00 AM	Concurrent Sessions
11:00 AM–12 Noon	Concurrent Sessions
12 Noon–12:30 PM	Science Inquiry Group Network
12:30–1:30 PM	Concurrent Sessions
1:30–2:00 PM	Concurrent Sessions
2:00–3:00 PM	Keynote Speaker <i>The Pretzel Theory of Inquiry</i> Douglas J. Llewellyn, St. John Fisher College, Rochester, N.Y.
3:30–4:30 PM	Concurrent Sessions
4:30–5:00 PM	Presentation: <i>Fostering Teacher Researcher Collaboration</i>

NSTA Press Sessions

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

Thursday, March 18

12:30–1:00 PM

Interpreting Assessment Data: Statistical Techniques; page 131

12:30–1:30 PM

Using the National Science Facilities Standards to Plan and Design Your School Science Labs; page 144

2:00–3:00 PM

What Every Science Teacher Needs to Know About Laboratory Safety!; page 155

3:30–4:30 PM

SAFETY & LIABILITY: Is The Jury Out On Your Class?; page 168

More Picture-Perfect Science Lessons, Grades K–4; page 171

5:00–6:00 PM

Magnetic Moments, Electrifying Connections, and Analogies for Interactive Teaching; page 177

Friday, March 19 (Volume 2)

8:00–9:00 AM

Stop Faking It! Finally Understand LIGHT AND SOUND So You Can Teach It

8:00 AM–12 Noon

Short Course (SC-7): Lecture-Free Teaching: A Learning Partnership Between Science Educators and Their Students (*Ticket Required*)

9:30–10:30 AM

Stop Faking It! Finally Understand CHEMISTRY BASICS So You Can Teach It

11:00 AM–12 Noon

Stop Faking It! Finally Understand FORCE AND MOTION So You Can Teach It

2:00–3:00 PM

Uncovering Student Ideas with Everyday Science Mysteries

3:30–4:30 PM

A Head Start on Science

5:00–6:00 PM

Classroom Community-building 21st-Century Style—Blogs, Wikis, and Video

Saturday, March 20 (Volume 3)

8:00–9:00 AM

Five Types of Teacher-Student Interactions That Promote Whole-Class Inquiry

9:00 AM–4:00 PM

Short Course (SC-15): cience Notebooks: Developing A Deeper Understanding (*Ticket Required*)

9:30–10:30 AM

Spotlighting Books Co-published by NSTA and NSELA and How to Use Them to Inform Science Programs, K–16

11:00 AM–12 Noon

Teaching for Conceptual Change

12:30–1:30 PM

Making Science Reading Come Alive

2:00–3:00 PM

Using Science Notebooks in the Elementary Classroom

Planning and Designing Safe, Sustainable, and Flexible Facilities for Inquiry-based Science

3:30–4:30 PM

Outdoor Science Classroom

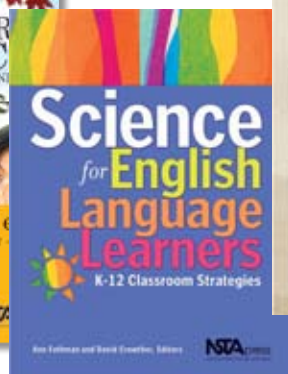
5:00–5:30 PM

The Biology Teacher's Handbook Is Here to Help You!

Sunday, March 21 (Volume 3)

9:30–10:30 AM

Extreme Science: Scales from Nano to Galactic



NSTA Avenue Sessions

Visit the NSTA Avenue, our marketplace in the Exhibit Hall, to learn about NSTA's products and services. Meet staff, register for the Learning Center, learn about NSTA Communities, or become a member. We're looking for connections to educators with a passion for science education, and we welcome you to our network.

Thursday, March 18

9:30–10:30 AM

Siemens We Can Change the World Challenge: Going Green (and Digital) in the 21st Century; page 105

How to Write Grants for Your Classroom: Tips from the Toshiba America Foundation Team; page 109

12:30–1:30 PM

The State of Science Teacher Education: Updates and Opportunities for Political Advocacy with NSTA and ASTE; page 133

Friday, March 19 (Volume 2)

9:30–10:30 AM

Toyota TAPESTRY Grants for Science Teachers = \$\$\$ for Your School!

11:00 AM–12 Noon

Siemens We Can Change the World Challenge—Going Green (and Digital) in the 21st Century

12:30–1:30 PM

The NSTA Learning Center: Free Classroom Resources and Professional Development for Educators

2:00–3:00 PM

No Child Left Behind Update

3:30–4:30 PM

SciLinks: Using the Online Assignment Tool

Saturday, March 20 (Volume 3)

11:00 AM–12 Noon

Disney's Planet Challenge (DPC)

2:00–3:00 PM

The Shell Science Teaching Award—Learn More, Be Successful

3:30–4:30 PM

Pete Conrad Spirit of Innovation Awards

Visit our booth #1341

Engage Students With Hands-On Science Programs

CPO Science's complete, coordinated Teaching and Learning Systems, hands-on equipment and supplemental curriculum provide all the essential components for an inquiry-based science program. Be sure to visit our booth (#1341) at the NSTA National Conference to learn more about CPO Science's innovative curriculum and equipment.

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Physics A First Course

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Ticket C-1 • \$295

Tickets, if still available, can be purchased at the Ticket Sales Counter in the NSTA Registration Area. Tickets must be purchased by close of registration on Friday, March 19.

Upon purchase of a ticket, participants may select three breakout sessions that best match their needs and interests.

Keeping Elementary Primary: Current Research and Best Practices for Quality Instruction

A Research Dissemination Conference for Elementary Teachers, Administrators, and Professional Development Providers (Ticket C-1)

Saturday, March 20, 7:00 AM–3:30 PM

Franklin 11–13, Marriott

Engaging children in science education at an early age is critical. Our 2010 research dissemination conference is focused on current research and best practices in elementary science teaching for learning. Our program facilitators are Jo Anne Vasquez, Vice President and Program Director for Arizona Teacher and Curriculum Initiatives, Helios Education Foundation, and Stacey Greene, master teacher from Hopi Elementary School in Phoenix, Arizona. They will provide two views—national and classroom—on the challenges elementary science instruction faces and what is needed to help develop and support a highly effective teacher. The overall objectives of this daylong event are to:

- Disseminate current research on effective professional development for elementary science teachers to practitioners and policy makers;
- Emphasize results that address key issues and concerns—student achievement, teacher retention, scalability, and sustainability;
- Provide a forum for discussing issues and fostering ongoing collaboration in support of improving professional development for elementary teachers of science; and
- Allow teachers, administrators at school and district levels, and professional development providers to learn about the implications of researchers' work for classroom practice and professional development.

Agenda

7:00–7:55 AM	Continental Breakfast
8:00–8:15 AM	Welcome and Introductions Zipporah Miller, NSTA Associate Executive Director for Professional Programs and Conferences Francis Q. Eberle, NSTA Executive Director
8:15–9:00 AM	Plenary Session I: <i>Highly Qualified vs. Highly Effective Teachers: Is There a Difference?</i> Jo Anne Vasquez, 1996–1997 NSTA President, and Vice President and Program Director, Arizona Teacher and Curriculum Initiatives, Helios Education Foundation, Phoenix Stacey Greene, Master Teacher, Hopi Elementary School, Phoenix, Ariz.
9:05–10:35 AM	Breakout Block A
10:35–10:45 AM	Break
10:45 AM–12:15 PM	Breakout Block B
12:15–1:00 PM	Lunch
1:00–2:30 PM	Breakout Block C
2:30–2:40 PM	Break
2:40–3:25 PM	Plenary Session II: <i>Reflection and Discussion</i> Jo Anne Vasquez, Stacey Greene
3:25 PM	Closing/Evaluation

Keeping Elementary Primary: Current Research and Best Practices for Quality Instruction

Breakout Session C-2

Research in Elementary Science Education: The Top 10 Articles to Read
Julie A. Luft, Arizona State University, Tempe

Breakout Session C-3

Seamless Assessment in Science
Sandra Abell and **Mark Volkmann**, Science Education Center, University of Missouri, Columbia

Breakout Session C-4

Gaps Between the Standards and the Curriculum: Which Gaps Need Bridging and How?
Joseph S. Krajcik and **LeeAnn M. Sutherland**, University of Michigan, Ann Arbor

Breakout Session C-5

Demystifying Data Through Claims, Evidence, and Reasoning: Bridging the Gap Between Elementary Science and Literacy
Katherine L. McNeill, Boston College, Chestnut Hill, Mass.
Dean Martin, Gardner Pilot Academy, Boston (Mass.) Public Schools

Breakout Session C-6

Writing in Science: Integration That Increases Achievement in Both Domains
Betsy Rupp Fulwiler, Seattle (Wash.) Public Schools

Breakout Session C-7

Moving Beyond Sharing Results to Constructing Evidence-based Explanations: Strategies for Effective Science Talks
Carla Zembal-Saul, The Pennsylvania State University, University Park
Kimberly Hershberger, Radio Park Elementary School, State College Area (Pa.) School District

Breakout Session C-8

Ready, Set, Science! A Model for K–8 Teacher Professional Development
Richard Duschl, The Pennsylvania State University, University Park
Margo Bartiromo, Merck Institute for Science Education, Rahway, N.J.
Brett Moulding, Utah Partnership for Effective Teaching and Learning
Leona Schauble, Vanderbilt University, Nashville, Tenn.
Heidi Schweingruber, National Research Council, Washington, D.C.

Breakout Session C-9

Evaluating and Adapting Elementary Science Curriculum Materials Using Reform-based Inquiry Frameworks

Breakout Session C-10

Redesigning Science Curricula to Leverage Students' Out-of-School Practices: An Interactive Session on Inquiry and Personally Relevant Science Instruction
Carrie Tzou, **Philip Bell**, **Andrew Shouse**, **Suzanne Reeve**, and **Giovanna Scalone**, University of Washington, Bothell
Elyse Litvack, **Patricia Koeller**, and **Marcia Ventura**, Maple Elementary School, Seattle (Wash.) Public Schools

Breakout Session C-11

Ideas, Evidence, and Argument in Science Education (The IDEAS Project)
Jonathan Osborne, Stanford University, Stanford, Calif.
Shirley Simon, Institute of Education, London, U.K.

Breakout Session C-12

Teaching and Assessing Scientific Inquiry and Nature of Science in Elementary Classrooms
Judith S. Lederman and **Norman G. Lederman**, Illinois Institute of Technology, Chicago

Breakout Session C-13

What Were They Thinking? Using Children's Ideas to Inform Teaching and Learning in the Physical Sciences
Page Keeley, 2008–2009 NSTA President, and Maine Mathematics and Science Alliance, Augusta
Joyce Tugel, Maine Mathematics and Science Alliance, Augusta
Rand Harrington, Blake School, Minneapolis, Minn.

Breakout Session C-14

Integrating Science and Literacy to Read the Scientific World
Mark Enfield, Elon University, Elon, N.C.
Melony Allen and **Catherine Matthews**, The University of North Carolina at Greensboro
Allison Billman, University of California, Berkeley
Marco Bravo, Santa Clara University, Santa Clara, California
Gina Cervetti, University of Colorado at Boulder

Breakout Session C-15

Making Sense of Science Content Standards: Using a Heuristic to Develop Teachers' Conceptual Understanding of Science Literacy
Stephen Marlette, **Jessica Krim**, and **Kathy Costello**, Southern Illinois University, Edwardsville



NSTA Professional Development Institutes

Wednesday, March 17

9:00 AM–5:00 PM

Registration Fee: \$295*

Location: Marriott

Come explore key topics in science teaching for learning with national experts. Ten professional development institutes are offered at the Philadelphia conference. In addition to the full-day session on Wednesday, each institute is followed by selected “pathway” sessions throughout the conference.

***PDIs were available by preregistration only.**

Inquiring into Inquiry: Creating an Inquiry-based Classroom (PDI-1)

Offered by the BSCS Center for Professional Development (www.bscs.org)

Sam Spiegel (sspiegel@bscs.org), BSCS Center for Professional Development, Colorado Springs, Colo.

Level: Elementary–High School

Location: Room 414/415, Marriott

Immerse yourself in a day of inquiry! Experience many facets of the role inquiry plays in student learning and teacher professional development.

Pathway Sessions

All sessions are located in Room 414/415. See daily program for details.

Thursday, March 18

8:00–9:00 AM

Review the Research: Teaching Science for Effective Understanding

9:30 AM–12:30 PM

The BSCS 5E Instructional Model—Constructing Your Own Understanding

2:00–4:00 PM

Inquiry in the Classroom—It’s Elementary

Friday, March 19

8:00–9:00 AM

Got Inquiry? How Do We Know?

9:30–11:00 AM

Do Your Students “Get It”? Sense-making Strategies for Your Science Class

12:30–1:30 PM

Student Talk: Who’s Accountable?

2:00–3:00 PM

Common Resources, Shared Consequences—Helping Students Understand

3:30–5:00 PM

Using Science Notebooks to Develop Conceptual Understanding in Science

Inside-Out: Enhancing Field-based Learning in Environmental Science for the Upper Elementary Classroom (PDI-2)

Offered by the Center for Science and Mathematics Education, Towson University, and the Maryland Sea Grant College, University System of Maryland

Robert Blake, Jr., and **Sarah Haines**, Towson University, Towson, Md.

Adam Frederick, Maryland Sea Grant Extension, Baltimore

Stephanie Lee, Westland Middle School, Bethesda, Md.

Level: Elementary–Middle Level

Location: Room 403, Marriott

Experience strategies to enhance science content knowledge inherent in the study of the environment as well as the design and implementation of field-based learning experiences for children.

Pathway Sessions

All sessions are located in Room 403. See daily program for details.

Thursday, March 18

8:00–9:00 AM

Watershed Exploration Using Project WET and Project Learning Tree Curricula

9:30–11:30 AM

Integrating Biotechnology in Environmental Education

2:00–3:00 PM

Constructing Essential Ideas of Topography with Elementary Children

3:30–4:30 PM

Talking Dirty

Friday, March 19

8:00–9:30 AM

Ecology of the Graham Cracker Marine Reserve

9:30–11:30 AM

Water: The “Connective Fluid” of Our Ecosystem

12:30–2:30 PM

Exploring Environmental Issues: Places We Live

Deepening Science Thinking and Reasoning Through Discussion and Writing in K–8 Inquiry-based Science (PDI-3)

Offered by the Center for Science Education, Education Development Center, Inc. (<http://cse.edc.org>)

Jeff Winokur and **Karen Worth**, Education Development Center, Inc., Newton, Mass.

Martha Heller-Winokur, Tufts University, Medford, Mass.

Sally Crissman, TERC, Cambridge, Mass.

Level: Elementary–Middle Level

Location: Room 411/412, Marriott

Learn how K–8 students' science thinking is enhanced through writing and discussion as students move from direct experience to conceptual understanding.

Pathway Sessions

All sessions are located in Room 411/412. See daily program for details.

Thursday, March 18

9:30–11:30 AM

Connecting Science and Literacy: The Role of Explicit Teaching

12:30–2:30 PM

Active Literacy Learning in Science

3:30–5:30 PM

Establishing Science Notebook Habits and Skills: Successes and Challenges from the Field

Friday, March 19

8:00–10:00 AM

Increasing Achievement in Expository Writing and Inquiry-based Science in the Elementary Grades

11:00 AM–1:00 PM

Linking Science and Literacy Through Nature Journals

2:00–4:00 PM

The Art of Talk and the Power of the Circle

5:00–7:00 PM

Writing in Science Using Firsthand Data

Outdoor Learning: A Path to Science and Literacy (PDI-4)

Offered by First Hand Learning, Inc. (www.firsthandlearning.org)

Patricia McGlashan, First Hand Learning, Inc., Buffalo, N.Y.

E. Wendy Saul, University of Missouri, St. Louis

Mark Baldwin, Roger Tory Peterson Institute of Natural History, Jamestown, N.Y.

Therese Arsenault, Lansing Middle School, Lansing, N.Y.

Level: Elementary–Middle Level/Informal Education

Location: Room 407/408, Marriott

Experience firsthand the process of recording observations in a field journal and creating a field guide to a local habitat.

Pathway Sessions

Most sessions are located in Room 407/408. See daily program for details.

Thursday, March 18

9:30–11:30 AM

Consider the Evidence—Using Student Journals to Drive Instruction

12:30–2:30 PM

Active Literacy Learning in Science

3:30–5:30 PM

Nature Journals and Field Guides: Tools for Linking Science and Literacy

Friday, March 19

8:00–9:00 AM

Louisville Is Engaging Children Outdoors (Louisville ECHO)

9:30–11:30 AM

Mapping the School Yard

12:30–2:30 PM

Outdoors After School

3:30–4:30 PM

Local Knowledge—Addressing the Gap Between What Students Already Know and What Gets Taught

Issue-oriented Science: Engage, Motivate, and Educate (PDI-5)

Offered by SEPUP, Lawrence Hall of Science (www.sepuplhs.org)

Sara Dombkowski Wilmes, John

Howarth, and **Laura Lenz**, Lawrence Hall of Science, University of California, Berkeley

Level: Middle Level–High School

Location: Room 404, Marriott

Learn specific strategies for integrating scientific issues into standards-based science units and develop plans for integrating issues with science content. Recent personal and societal issues related to biology, chemistry, and earth science will be highlighted.

Pathway Sessions

All sessions are located in Room 404. See daily program for details.

Thursday, March 18

8:00–9:00 AM

Developing Literacy and Addressing Content Standards Through Issue-oriented Science

9:30–10:30 AM

Alternative Energy for Transportation: Hydrogen and Fuel Cells

12:30–2:00 PM

Using Hands-On, Issue-oriented Science to Investigate Important Concepts in Physical Science

2:00–3:00 PM

Integrating Biodiversity Issues into Ecology and Evolution Units

3:30–4:30 PM

Getting Kids Invested with Stories: The Car of the Future

Friday, March 19

9:30–10:30 AM

Integrating Sustainability in the Science Classroom

11:00 AM–12:30 PM

Differentiating Instruction Related to Science and Societal Issues

12:30–1:30 PM

Integrating World Health Issues into a Life Science Classroom

2:00–3:30 PM

Teaching About Trade-offs: How Science Can Inform the Decision-making Process

3:30–4:30 PM

Using Issues as a Context for Teaching Science Content and Inquiry

Designing Effective Science Instruction: Developing Student Understanding Through Classroom Inquiry, Discourse, and Sensemaking (PDI-6)

Offered by Mid-continent Research for Education and Learning (McREL) (www.mcrel.org)

Anne Tweed, 2004–2005 NSTA President, and Mid-continent Research for Education and Learning, Denver, Colo.

Bj Stone, Mid-continent Research for Education and Learning, Denver, Colo.

Level: General

Location: Room 401/402, Marriott

Improve your ability to plan and deliver effective lessons to diverse student populations. Using a three-part framework of content, understanding, and environment, you will learn to discern where improvements are needed and which actions to take next.

Pathway Sessions

All sessions are located in Room 401/402. See daily program for details.

Thursday, March 18

8:00–9:30 AM

How Do We Know That Students Understand?

9:30–11:00 AM

Using a Formative Assessment Process to Determine Evidence of Student Understanding

12:30–2:00 PM

Instructional Technology and Virtual Manipulatives That Support Student Understanding

2:00–3:30 PM

Constructing Understanding Using Visual Tools

Friday, March 19

8:00–9:00 AM

Student-designed Experiments

9:30–11:00 AM

Addressing Student Misconceptions (Preconceptions)

11:00 AM–12:30 PM

Scientific Discourse in the Classroom

3:30–5:00 PM

Designing Effective Science Lessons—Helping Students Think Scientifically

21st-Century Skills (PDI-7)

Offered by the Center for Science Education, Education Development Center, Inc. (<http://cse.edc.org>)

Jackie Miller, Irene Baker, and Marian Pasquale, Education Development Center, Inc., Newton, Mass.

Level: High School

Location: Room 405, Marriott

Examine 21st-century skills, their integration into the content of instructional materials, and how they support student de-

velopment of science concepts. Hands-on activities and reflective discussions.

Pathway Sessions

All sessions are located in Room 405. See daily program for details.

Thursday, March 18

9:30 AM–12:30 PM

Infusing 21st-Century Skills into Your Science Classes

2:00–3:00 PM

Introducing Cutting-Edge Science into the Classroom

Friday, March 19

8:00–9:00 AM

The Intersection of Science and 21st-Century Skills

9:30–10:30 AM

Implementing a Framework for 21st-Century Science Learning

11:00 AM–12 Noon

Copper Extraction and the Power of Story

12:30–1:30 PM

Building 21st-Century Skills Through Innovative Technology Experiences for Students and Teachers

2:00–3:00 PM

Active Physics

We've Got Data! Using Mathematical Representations to Talk About, Model, and Explain Scientific Phenomena (PDI-8)

Offered by TERC (www.terc.edu)

Sally Crissman and Sue Doubler,

TERC, Cambridge, Mass.

Level: Elementary–Middle Level

Location: Room 406, Marriott

Learn strategies for making the most of opportunities to work with data in the service of deeper understanding of science concepts.

Pathway Sessions

All sessions are located in Room 406. See daily program for details.

Thursday, March 18

9:30–11:30 AM

Didn't We Do Graphs Like That in Math?

12:30–2:30 PM

From Data to Explanation: The Challenges of Investigations in Inclusive Science Classrooms

3:30–5:30 PM

The Shape of the Data: Seven Common Patterns

Friday, March 19

8:00–10:00 AM

The Times They Are a-Changin': Using Data to Understand Change Over Time

11:00 AM–1:00 PM

Thinking Outside the Coordinate Graph: From Data to Art to Understanding

2:00–4:00 PM

The Art of Talk and the Power of the Circle

When a Two-Page Spread Isn't Enough: Navigating Your Instructional Materials (PDI-9)

Offered by K–12 Alliance/WestEd (www.wested.org/cs/we/view/pj/79)

Kathy DiRanna, Jo Topps, Karen Cerwin, Jody Sherriff, and Melissa Smith, WestEd, Santa Ana, Calif.

Level: Elementary–High School

Location: Room 409, Marriott

Puzzled by your instructional materials? Use your instructional materials (bring your teacher's edition) to experience tools and processes to analyze your texts. Learn to enhance these materials to maximize student achievement.

Pathway Sessions

All sessions are located in Room 409. See daily program for details.

Thursday, March 18

8:00–11:00 AM

Selecting Quality Instructional Materials: Analyzing Instructional Materials (AIM)

3:30–6:30 PM

Providing Feedback: Rubric Development/Feedback Loops

Friday, March 19

8:00–11:00 AM

Assessment-centered Teaching: A Reflective Practice

12:30–3:30 PM

Understanding the Conceptual Flow in Instructional Materials

Effective Formative Assessment in Science: Teachers' Skills, Understanding, and Actions (PDI-10)

Offered by FACET Innovations (www.face-tinnovations.com), Seattle Pacific University, and the University of Washington

Ruth Anderson and Jim Minstrell,

FACET Innovations, Seattle, Wash.

Eric Magi, Spokane (Wash.) School District

Stamatis Vokos, Seattle Pacific University, Seattle, Wash.

Level: Middle Level–High School

Location: Room 410, Marriott

The more diagnostic the formative assessment, the better it can inform the teacher's next steps to efficiently promote deeper learning. Learn how to make the cycle of assessment and instruction more diagnostic.

Pathway Sessions

All sessions are located in Room 410. See daily program for details.

Thursday, March 18

8:00–11:00 AM

Collecting with Intention: Effectively Using Questions and Probes

12:30–3:30 PM

What Next? Matching Instructional Actions to Identified Student Needs

Friday, March 19

8:00–11:00 AM

Using Online Tools to Support Assessment for Learning

12:30–2:30 PM

Fostering Classroom Culture in Support of Formative Assessment



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

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

Climate Change Here and Now: Coastal, Ocean, and Atmospheric Impacts (SYM-1)

Katharine Hayhoe, Texas Tech University, Lubbock
Paulo S. Maurin and **Frank Niepold**, NOAA, Silver Spring, Md.

Britt-Anne A. Parker, NOAA Coral Reef Watch, Silver Spring, Md.

Peggy Steffen and **William Sweet**, NOAA National Ocean Service, Silver Spring, Md.

Level: Grades 5–12

Date/Time: Thursday, March 18, 1:30–6:00 PM

Location: Franklin 11, Marriott

Registration Fee: \$54

Scientists and education specialists from the National Oceanic and Atmospheric Administration (NOAA) will discuss the latest findings on the impacts of climate change and provide ideas and resources for the classroom. The U.S. Global Change Research Program's report, *Global Climate Change Impacts in the United States*, provides the foundation for the symposium. Topics include changing ocean chemistry and the impact of ocean acidification on coral reefs and deep corals and the factors involved in monitoring and predicting past, present, and future sea levels.

Walk away with resources and classroom activities that highlight the choices we face in response to climate change. Learn about educational materials and information available at the NOAA website. A drawing for door prizes will take place at the end of the program, and refreshments will be available. Graduate credit is available to participants at an additional cost. To receive graduate credit, participants must pay a nominal fee and complete an action plan and a lesson plan.

NOAA is pleased to provide a stipend of \$60 to all symposium participants upon completion.

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

Fri., March 19, 8:00–9:00 AM

Corals and Climate Change

Fri., March 19, 9:30–10:30 AM

The Coastal Impacts of Climate Change: Sea Level Rise

Fri., March 19, 11:00 AM–12 Noon

Whither Arctic Sea Ice? An Earth Exploration Toolbook Chapter on the Climate's Canary in a Coal Mine

Fri., March 19, 12:30–1:30 PM

Explore Earth's Systems Using the 2007 GLOBE Earth System Poster

Fri., March 19, 2:00–3:00 PM

Climate Information in Your Neighborhood

Fri., March 19, 3:30–4:40 PM

Climate Change Toolkit

Fri., March 19, 5:00–6:00 PM

Using Data to Teach About Climate Change in Estuaries Nationwide

FDA/NSTA Symposium: Teaching Nutrition Science and the Food Label (SYM-2)

Crystal Rasnake and **Blakeley Denking**, U.S. Food and Drug Administration, College Park, Md.

Elena Stowell, Kentwood High School, Covington, Wash.

Ken Bingman, Blue Valley West High School, Overland Park, Kans.

Mimi Cooper, Consultant, Green Cove Springs, Fla.

Level: Grades 5–12

Date/Time: Friday, March 19, 8:00 AM–12:30 PM

Location: Franklin 12, Marriott

Registration Fee: \$54

Learn the basics of nutrition science, nutrition-related health trends in the U.S., the scientific basis for the percent daily values (% DVs) on the Nutrition Facts Label, what teaching resources FDA has developed, and much more. FDA scientists and master teachers will lead participants in hands-on, inquiry-oriented activities that enable students to experience several National Science Education Standards, including those for Science in Personal Health and Social Perspectives.

All participants will receive educational materials and information about resources available on the FDA website. A drawing for door prizes will take place at the end of the program, and refreshments will be available. Graduate credit is available to participants at an additional cost. To receive graduate credit, participants must pay a nominal fee and complete an action plan and a lesson plan.

FDA is pleased to provide a stipend of \$60 to all symposium participants upon completion.

Related FDA sessions (SYM-2 and SYM-3) open to all conference attendees. See the daily program for details.

Thu., March 18, 8:00–9:00 AM

Food Allergies

Thu., March 18, 9:30–10:30 AM

Food-borne Outbreak Investigations

Thu., March 18, 2:00–3:00 PM

Dreaming at the Frontiers of BioScience: Five Technologies That Will Change Your Life!

Thu., March 18, 2:00–3:00 PM

Nutrition Education

Thu., March 18, 3:30–4:30 PM

Elementary-Level Curricula in Food Safety

FDA/NSTA Symposium: Teaching Science with Food Safety (SYM-3)

Alan M. Tart, U.S. Food and Drug Administration, Atlanta, Ga.

Sufian Alkhaldi and **Sherri McGarry**, U.S. Food and Drug Administration, College Park, Md.

Ken Bingham, Blue Valley West High School, Overland Park, Kans.

Elena Stowell, Kentwood High School, Covington, Wash.

Mimi Cooper, Consultant, Green Cove Springs, Fla.

Level: Grades 5–12

Date/Time: Friday, March 19, 1:30–6:00 PM

Location: Franklin 12, Marriott

Registration Fee: \$54

Learn how FDA detects food-borne pathogens, how to culture bacteria found in food, how FDA investigates an outbreak of food-borne illnesses, and much more. FDA scientists and master teachers will lead participants in hands-on, inquiry-oriented activities, some of which are laboratory based, that enable students to experience several National Science Education Standards, including those for Life Science (Structure and Function in Living Systems), Science and Technology, and Science in Personal Health and Social Perspectives.

All participants will receive educational materials and information about resources that are available on the FDA website. A drawing for door prizes will take place at the end of the program, and refreshments will be available. Graduate credit is available to participants at an additional cost. To receive graduate credit, participants must pay a nominal fee and complete an action plan and a lesson plan.

FDA is pleased to provide a stipend of \$60 to all symposium participants upon completion.

Climate Change Here and Now: Forest Ecosystem Impacts (SYM-4)

Victoria Arthur, USDA Forest Service, Washington, D.C.

Deborah Finch, Albuquerque Forestry Sciences Laboratory, USDA Forest Service, Albuquerque, N.Mex.

Karen Flammer, University of California, San Diego

Leesa Hubbard, Wilson Central High School, Lebanon, Tenn.

Steve McNulty, USDA Forest Service Southern Research Station, Raleigh, N.C.

Level: Grades 5–12

Date/Time: Saturday, March 20, 8:30 AM–1:00 PM

Location: Franklin 12, Marriott

Registration Fee: \$54

Scientists and education specialists from Sally Ride Science and the U.S. Forest Service will discuss the basic science behind our understanding of climate change, with a focus on global impacts on forest ecosystems. Topics include the important role of forests in the carbon cycle and U.S. regional climate change impacts. A regional focus helps engage students as they learn about the impacts of climate change on a local level. Presenters will lead participants in hands-on classroom-ready activities that are inquiry oriented and share ideas for facing our climate challenge and creating a healthier planet.

All participants will receive educational materials and information about resources. A drawing for door prizes will take place at the end of the program, and refreshments will be available. Graduate credit is available to participants at an additional cost. To receive graduate credit, participants must pay a nominal fee and complete an action plan and a lesson plan.

Related Sally Ride and U.S. Forest Service sessions open to all conference attendees. See Volume 3 for details.

Sat., March 20, 2:00–3:00 PM

An Opportunity to Take Pictures of the Moon

Sat., March 20, 3:30–4:30 PM

Looking at Our Changing Earth from Space

Sat., March 20, 5:00–6:00 PM

Introducing the Climate Change, Wildlife, and Wildlands Toolkit

Sun., March 21, 8:00–9:00 AM

How to Excite Students About Careers in Environmental Science

Sun., March 21, 9:30–10:30 AM

Carbon, Oxygen, Water, and Shade: Putting a Price on the Benefits of Your Schoolyard Trees!

Sun., March 21, 11:00 AM–12 Noon

Natural Inquirer Science Journals: Climate Change Collection

Larry Malone



SC-5: Taking K-8 Science Outdoors

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

SC-2 participants should meet their bus at the Convention Center entrance at the northwest corner of 12th and Arch streets.

 **Computer Software for Chemistry/Physical Science Teachers (SC-1)**

Hubert C. MacDonald (hmacdonald@pittcon.org) and John A. Varine (jvarine@pittcon.org), Society for Analytical Chemists of Pittsburgh, Pa.

Level: High School

Date/Time: Thursday, March 18, 8:00 AM–12 Noon

Location: Aria A, Doubletree

Registration Fee: \$24

This short course will demonstrate a variety of computer software that can be used to teach chemistry and physical science, including laboratory simulation software, classroom instructional software, data manipulation software, and software available through the internet. Participants will receive complimentary copies of all software demonstrated and complimentary subscriptions to the *Journal of Chemical Education* and the *Journal of Chemical Education Web-Based Software* site. This short course is conducted and funded by the Society for Analytical Chemists of Pittsburgh, a nonprofit technical society whose function is to promote science education at all levels, elementary through professional. Please visit www.sacp.org for more information.



The NOAA Ocean Data Education Portal: Using Digital Technology to Teach Environmental Science (SC-2)

Michiko Martin (sanctuaries@noaa.gov) and Kate Thompson (kate.thompson@noaa.gov), NOAA Office of National Marine Sanctuaries, Silver Spring, Md.

Kenneth Casey (ken.casey@noaa.gov), National Oceanographic Data Center, Silver Spring, Md.

Caroline Joyce (caroline@uwm.edu), University of Wisconsin, Milwaukee

Level: Middle Level–College

Date/Time: Thursday, March 18, 8:00 AM–5:00 PM

Location: Off-site (School District of Philadelphia)

Registration Fee: \$104

NOAA possesses an array of observing systems that monitor oceanic, atmospheric, and terrestrial parameters. The historical and streaming data from these systems offer broad opportunities to teach about dynamic Earth processes and engage students in understanding the impact of environmental events that occur on regional or global geographic scales. Come explore three robust education modules—global climate change, sea level rise, and water quality—and learn how to access NOAA data in your classroom using these inquiry-based digital labs. Your students will love them! Join us for this professional development session and take home the free activity book. A box lunch is included in the ticket price.



Project-Based Learning and the 4Rs of Inquiry: Engaging Students in Urban Explorations (SC-3)

Karen L. Anderson (karenanderson@stonehill.edu), Susan Mooney (smooney@stonehill.edu), Dana Gilfeather (dgilfeather@students.stonehill.edu), Nicole Klemonskey (nklemonskey@students.stonehill.edu) and Brittany Montano (bmontano@students.stonehill.edu), Stonehill College, Easton, Mass.

Dean M. Martin (anderson.martin@netzero.com), Gardner Pilot Academy, Boston, Mass.

Level: Grades K–5

Date/Time: Thursday, March 18, 8:30 AM–12:30 PM

Location: Concerto A/B, Doubletree

Registration Fee: \$24

To be competitive in a global economy and prepare for careers in STEM fields, students need to meaningfully engage in science and experience connections to their natural world. This short course shares successful strategies from K–5 and college partnerships that bring current educational research on Project-Based Learning (PBL) into

inner-city classrooms by using the urban schoolyard as an outdoor learning environment. PBL is a comprehensive approach to teaching and learning that engages students in the construction of knowledge and skills through an extended inquiry process. Structured around active engagement with real-world problems or environmental issues, projects emphasize the role of the environment as a tool for motivating students, in particular English language learners. By engaging in hands-on activities, short course participants will learn about the PBL model and how to support all students' learning through the use of the 4Rs of Inquiry, as well as how to engage urban students in explorations of the urban schoolyard.

—Morton M. Sternheim



SC-4: Nanotechnology

Making a nanofilm with oleic acid.

 **Nanotechnology: Bringing Frontier Research into STEM Classrooms (SC-4)**

Morton M. Sternheim (mort@umassk12.net) and **Rob Snyder** (snyder@umassk12.net), University of Massachusetts, Amherst

Level: Middle Level—High School

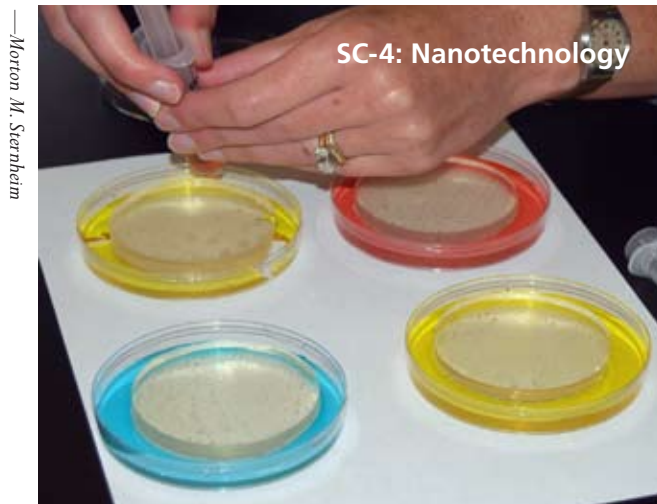
Date/Time: ~~Thursday~~ **SOLD OUT**, March 18, 2:00–5:00 PM

Location: Aria A, Doubletree

Registration Fee: \$34

A nanometer is a billionth of a meter, 100,000 times smaller than the diameter of a human hair, or about 10 atomic diameters. Come try a hands-on activity where you will use simple and inexpensive materials, collect data, and analyze the data to learn that you have produced a structure with a nanoscale dimension. The activity is also one example of nanoscale self-assembly. Another simple activity will model the absorption of nanomedicines in human tissues. The course also includes demonstrations of additional activities and ancillary materials that facilitate a seamless integration of nanoscale science and engineering into a wide range of middle school and high school STEM programs.

Nanotechnology activities can also be used to introduce students to the unique processes and properties of matter involved in the design and manufacturing of electronic devices, sunscreens, water filters, solar cells, thin coatings, medical therapies, and more. These nanotechnology activities and ancillary resources have been developed specifically for the middle school and high school curriculum by the STEM Education Institute and the Center for Hierarchical Manufacturing at the University of Massachusetts Amherst. Participants should bring laptops if possible.



—Morton M. Sternheim

Studying the diffusion of food dyes in gelatin to model nanomedicine diffusion in body tissues.

Taking K–8 Science Outdoors: It Works! It’s Easy! and Anyone (Anywhere) Can Do It! (SC-5)

Erica Beck Spencer (erica@indigoinventions.com) and **Joanna Snyder** (joanna_snyder@berkeley.edu), Lawrence Hall of Science, University of California, Berkeley

Kristin Metz (kristinmetz@schoolyards.org), Boston Schoolyard Initiative, Boston, Mass.

Level: Elementary–Middle Level

Date/Time: Thursday, March 18, 2:00–5:00 PM

Location: Maestro A/B, Doubletree

Registration Fee: \$24

Today’s children do not go outside the way most adults did when they were children. As a result, they are suffering from something termed nature-deficit disorder. In his groundbreaking work *Last Child in the Woods*, Richard Louv documents these devastating trends. One way teachers can help fight this trend is by using the space outside their schools to enhance the curriculum. Experience remarkably simple activities that enhance classroom learning and learn tips and tricks for successful outdoor lessons as you engage in a wide variety of outdoor activities that connect to any elementary science curriculum. Participants will receive resources and learn effective strategies for managing students outside. Dress appropriately—we’re going outside! For more information, please visit www.fossweb.com, www.schoolyards.org, and www.outdoorbiology.com.



Light, Color, and Spectroscopy for Kids (SC-6)

John A. Varine (varine@pittcon.org) and **Hubert C. Macdonald** (macdonald@pittcon.org), Spectroscopy Society of Pittsburgh, Pa.

Level: Elementary–Middle Level

Date/Time: Friday, March 19, 8:00 AM–12 Noon

Location: Maestro A/B, Doubletree

Registration Fee: \$24

We will introduce you to the fundamentals of light, color, and spectroscopy using the student-assisted lecture-demonstration approach. Topics will include projection of a visible spectrum (rainbow), student-derivation of ROY G. BIV, why colors appear the way they do, addition and subtraction of colors, spectroscopy as an art form, observation and interpretation of atomic spectra, and qualitative chemical analysis. Participants will receive (or construct) the materials to perform many of the activities in their classrooms. Each activity will be geared to a specific grade level, with suggestions for adapting it to other grade levels. Funding

for this course is provided by the Spectroscopy Society of Pittsburgh (www.ssp-pgh.org), a nonprofit technical society whose sole purpose is to promote science education.



NSTA Press: Lecture-Free Teaching: A Learning Partnership Between Science Educators and Their Students (SC-7)

Bonnie S. Wood (bonnie.s.wood@umpi.edu), University of Maine at Presque Isle

Level: Middle Level–College; K–16 Supervisors/Administrators

Date/Time: Friday, March 19, 8:00 AM–12 Noon

Location: Ormandy East, Doubletree

Registration Fee: \$60

For this hands-on course, each participant will receive a copy of the new NSTA Press book *Lecture-Free Teaching: A Learning Partnership Between Science Educators and Their Students* (Wood 2009). The first half of the course will be a simulation of a typical lecture-free class during which the instructor demonstrates the interplay of student preparation before class, cooperative learning, and classroom assessment techniques to achieve course content identical to that of a lecture-based course. During the second half, participants will discuss and follow the steps to lecture-free teaching to plan their own course revisions or design a new course.

Lecture-free teaching—using socks to model chromosomes.



—University of Maine at Presque Isle/Dick Harrison



How to Build a Classroom Planetarium (SC-8)

Jeff Adkins (*astronomyteacher@mac.com*), Deer Valley High School, Antioch, Calif.

Level: General

Date/Time: Friday, March 19, 9:00 AM–12 Noon

Location: Concerto A, Doubletree

Registration Fee: \$34

SOLD OUT

Learn how to build a homemade geodesic dome planetarium capable of holding 20–25 students; instructions and references provided. I'll also share resources for using small commercial planetaria, creating your own projector (both traditional pinhole-based projectors and adaptations of classroom digital projectors), and how to use free open-source planetarium software in the classroom. We will build a small geodesic dome, and participants will receive a CD-ROM with session instructions and the open-source planetarium program Stellarium. A copy of the *Constellations in Each Season* show written and recorded by Deer Valley High School students will be provided with rights for using it at your school.



Using Technology to Teach Inquiry and Science Concepts Through Outdoor Studies (SC-9)

William J. Klein (*wjmsklein@aol.com*), Western Iowa Tech Community College, Sioux City, Iowa

Level: General

Date/Time: Friday, March 19, 2:00–5:00 PM

Location: Maestro, Doubletree

Registration Fee: \$79

SOLD OUT

Facilitate the learning of science concepts through inquiry and the use of technology. As students study common organisms such as bees, aphids, sunflowers, and dandelions, and the agricultural products corn, wheat, peanuts, cotton, and rice, further questions are raised. Answers are pursued through guided inquiry using methods of observation and investigation to reach conclusions. Digital microscopes, cameras, and computers are effectively incorporated as tools for recording information and to communicate information and investigations through PowerPoint presentations in classroom versions of science academies. Participants will receive many handouts, including labs, teaching strategies, alternative methods of assessment, and a CD.



Nurturing Science in Students Using Outstanding Science Trade Books (SC-10)

Kristin T. Rearden (*krearden@utk.edu*), University of Tennessee, Knoxville

Carla Billups (*cbillups@haywood.k12.nc.us*), Jonathan Valley Elementary School, Waynesville, N.C.

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

Suzanne Flynn (*suzannemflynn@earthlink.net*), Cambridge College, Cambridge, Mass.

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

J. Carrie Launius (*janetcarrie@gmail.com*), Hazelwood School District, St. Louis, Mo.

E. Wendy Saul, University of Missouri–St. Louis

Cindi Smith-Walters (*csmithwa@mtsu.edu*), Middle Tennessee State University, Murfreesboro

Diana Wiig (*dwiig@uwyo.edu*), University of Wyoming, Laramie

Sally M. Walker (*sally@sallymwalker.com*), DeKalb, Ill.

Level: Elementary–High School

Date/Time: Friday, March 19, 2:00–5:00 PM

Location: Ormandy East, Doubletree

Registration Fee: \$34

The plethora of science trade books readily available for teachers brings both opportunities and challenges. Specifically, teachers must be able to distinguish among books that enhance the accurate presentation of science content, books that have extremely limited contributions to scientific knowledge, and books that contain inaccurate information or foster misconceptions. The NSTA/CBC Outstanding Science Trade Book Committee will share resources for identifying high-quality science trade books and outline effective strategies for using these resources. Science trade book authors will share their inspiration for integrating science with literacy and interact with participants in small-group settings.



MESSENGER: Integrate Technology with Classroom Instruction That Works (SC-11)

Brenda Conway (bconway@ms.spotsylvania.k12.va.us) and **Dianne Clowes** (dclowes@ms.spotsylvania.k12.va.us), Ni River Middle School, Spotsylvania, Va.

Corey Peloquin (corey.peloquin@technosavvyteacher.com) and **Julie Ball** (julie.ball@technosavvyteacher.com), Techno Savvy Teacher Education Consultants, Tampa, Fla.

Level: Middle Level–High School

Date/Time: Saturday, March 20, 8:00–11:00 AM

Location: Maestro A/B, Doubletree

Registration Fee: \$40

Classroom instructional strategies need to be paired with technology tools that engage the learner, enhance instruction, and improve student achievement. Following strategies outlined in *Using Technology with Classroom Instruction That Works*, participants will learn to pair appropriate technology tools to engage students and assess student learning. A NASA Educator Fellow will join with techno-savvy science teachers to engage participants in hands-on lessons from the NASA MESSENGER education modules. Aligned with NSES and Benchmarks for Science Literacy, these modules include inquiry-based, hands-on lessons for grades 6–12 that focus on solar system science, solar system exploration through history, and the challenges faced by scientists and engineers in sending a spacecraft to another world. Participants will leave with MESSENGER education modules, technology templates, and an understanding of how to connect hands-on lessons to technology tools.

NASA’s Space Weather Action Center (S.W.A.C.) (SC-12)

Elaine M. Lewis (elaine.m.lewis@nasa.gov) and **Troy Cline** (troy.d.cline@nasa.gov), NASA Goddard Space Flight Center, Greenbelt, Md.

Level: Grades 4–12

Date/Time: Saturday, March 20, 8:00 AM–12 Noon

Location: Rhapsody, Doubletree

Registration Fee: \$52

Learn how to establish your own classroom technology studios and space weather action centers. Space Weather Action Center (S.W.A.C.) (<http://sunearthday.nasa.gov/swac>) is a web-based portal that replicates the functions of the NOAA Space Weather Prediction Center and provides access to NASA mission science results, observation techniques, and analysis methods used by real astronomers. Participants will learn how to create a “nightly” news report on space

weather that predicts impending effects on Earth. Free NASA support materials. Ten Green Screen multimedia software packages will be given out as door prizes.

Making the Most of NSDL’s Science Literacy Maps (SC-13)

Ted Willard (twillard@aaas.org), AAAS Project 2061, Washington, D.C.

Level: General

Date/Time: Saturday, March 20, 9:00 AM–12 Noon

Location: Aria A/B, Doubletree

Registration Fee: \$42

NSDL Science Literacy Maps are a tool teachers and students can use to find resources that relate to specific science and math concepts. The maps are based on the strand maps in *The Atlas of Science Literacy* and address topics such as biological evolution, weather and climate, chemical reactions, energy transformations, describing change, and materials science. The maps illustrate connections between concepts as well as how concepts build upon one another across grade levels. Clicking on a concept within the maps shows NSDL resources relevant to the concept as well as information about related AAAS Project 2061 Benchmarks and the National Science Education Standards. In addition, information about research on student misconceptions can be accessed from the maps. This short course will describe how science literacy maps are derived from national standards, let participants explore the connections between ideas on science literacy maps, and teach best practices in using the maps to improve the resource discovery process as well as the entire teaching and learning process.

★ **Expedition Earth and Beyond (SC-14)**

Paige Graff (paige.v.graff@nasa.gov), NASA Johnson Space Center/Jacobs Technology, Houston, Tex.

Tim McCollum, Charleston Middle School, Charleston, Ill.

Charles F. Lindgren, Retired Educator, Cohasset, Mass.

Level: General

Date/Time: Saturday, March 20, 9:00 AM–12 Noon

Location: Concerto A/B, Doubletree

Registration Fee: \$26

Experience hands-on activities using stunning images of Earth from one of NASA’s new educational programs, Expedition Earth and Beyond. Learn how your classroom can conduct investigations, connect with scientists, request pic-

tures from astronauts onboard the International Space Station, and more! Students also have the opportunity to present their research to scientists and students across the nation. This program integrates science, mathematics, technology, reading, writing, and geography.

NSTA Press: Science Notebooks: Developing a Deeper Understanding (SC-15)

Trisha Herminghaus (herminghaus_trisha@asdk12.org) and **Texas Gail Raymond** (raymond_gail@asdk12.org),

Anchorage (Alaska) School District

Level: Grades K–12

Date/Time: Saturday, March 20, 9:00 AM–4:00 PM

Location: Ormandy West, Doubletree

Registration Fee: \$41

This short course for teachers, administrators, and professional developers is based on the work of El Centro School District in California and the Anchorage School District over the last 10 years. The course blends inquiry and science notebooks while modeling formats for student investigations, recording observations, and inviting thinking and discourse around evidence. Participants will experience an in-depth investigation into science notebooks, as well as a variety of science notebook strategies. The strategies modeled here include ideas for getting started, structuring science lessons, encouraging scientific discourse, examining student work, summarizing conceptual understanding, and self-assessment. Participants leave this session with enough background to implement science notebooks in their classrooms or to adapt this model for professional development around the use of science notebooks.



The Young Scientist: Engaging Three- to Five-Year-Old Children in Science (SC-16)

Karen Worth (kworth@edc.org) and **Jeffrey Winokur** (jwinokur@edc.org), Education Development Center, Inc., Newton, Mass.

Level: Preschool/College

Date/Time: Saturday, March 20, 2:00–5:00 PM

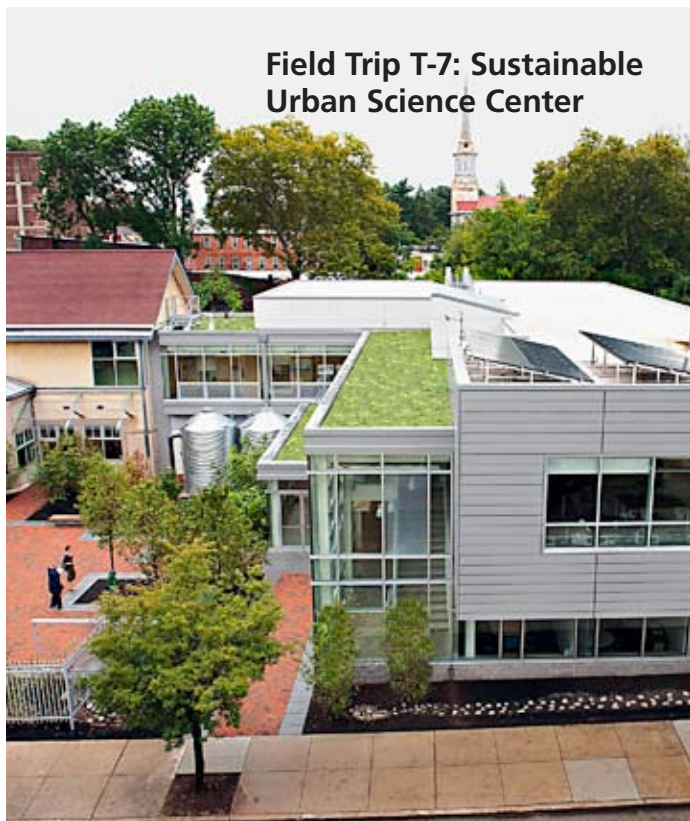
Location: Rhapsody, Doubletree

Registration Fee: \$34

Taking Science to School K–8 includes a synthesis of research on children's abilities by the time they enter kindergarten. The book makes a strong argument that young children's capabilities are vastly underestimated. Yet little attention is paid to engaging this potential by providing rich preschool science experiences. This short course, based on a four-year project funded by NSF, will address how to provide rich and challenging early childhood experiences that engage children in in-depth exploration of science concepts. Course participants will explore the nature of science inquiry and instructional strategies that support it. These strategies will be discussed within the context of a teaching framework that encourages children to extend their explorations and deepen their understanding. Participants will also view classroom video vignettes and analyze student work samples and other classroom artifacts that emphasize the potential of science experiences to support children's science learning.

Field Trip T-7: Sustainable Urban Science Center

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Tickets for field trips can be purchased (space permitting) at the Ticket Sales Counter in the NSTA Registration Area. Meet your field trip leader at the Convention Center entrance at the northwest corner of 12th and Arch streets.

Longwood Gardens \$55

- T-1 Thursday, March 18 8:45 AM–4:00 PM
- F-4 Friday, March 19 8:45 AM–4:00 PM

Longwood Gardens is a place of unparalleled beauty. Offering a new experience every day of the year, Longwood presents one-of-a-kind events, wonderful concerts, and delicious fine and casual cuisine in breathtaking settings. Often referred to as the world’s premier horticultural showplace, Longwood Gardens’ 1,050 acres of natural woodlands, majestic gardens, opulent conservatories, and dancing fountains are open every day of the year.

Enjoy a guided walk through the gardens, experience the Garden’s K–12 education programs, and visit the Research and Production Facility, a 30,000-square-foot greenhouse where expert horticulturalists research, study, propagate, and grow many of the plants that are seen on display in the Gardens. Lunch is on your own at the Terrace Restaurant.

The Academy of Natural Sciences \$48

- T-2 Thursday, March 18 9:00 AM–12:45 PM

Explore the Academy they never told you about in school! The Academy of Natural Sciences (www.ansp.org) is the oldest natural history museum in the Americas. Founded in 1812, it houses over 17,000,000 specimens. Join Academy staff behind the scenes in exploring some of the most notable collections, including Lewis and Clark’s plant specimens, birds collected by Audubon, and Thomas Jefferson’s fossil collection. Learn how scientists are using these collections to help educate students and teachers

Adventure Aquarium \$40

- T-3 Thursday, March 18 9:00 AM–1:00 PM
- F-5 Friday, March 19 9:00 AM–1:00 PM
- S-3 Saturday, March 20 9:00 AM–1:00 PM

Discover a world filled with strange and magical creatures at Adventure Aquarium (www.adventureaquarium.com). Visit the 550,000-gallon Shark Realm to feel the menacing eyes of over 25 sharks upon you in the suspended 40-foot shark tunnel. Encounter 13 new shark species, including the rare great hammerhead and three new tiger sharks. Watch hippos effortlessly glide underwater and hand-feed birds in a free-flight aviary at the West African River Experience. Discover the playful habits of penguins and seals in the outside exhibits. Or, roll up your sleeves to touch jellies, sting rays, sharks, and more in the many interactive attractions.

During a 60-minute behind-the-scenes tour, we’ll visit the top of the 760,000-gallon Ocean Realm (home to over 1,500 animals, including the bow-mouth guitar fish and new tiger sharks) for a rare glimpse of the largest exhibit. From there we will travel through the food preparation, water quality testing, and animal holding areas for a glimpse at the daily care of all of the animals at Adventure Aquarium. *The behind-the-scenes portion of this tour is not wheelchair accessible.*

The Beginnings of Science in America **\$13**

T-4	Thursday, March 18	9:45 AM–12:05 PM
T-11	Thursday, March 18	12:45–3:05 PM

The American Philosophical Society (www.amphilsoc.org) Library has earned international esteem for the strength and depth of its special collections. It is particularly known for holdings in the fields of early American history and culture, the history of science, and Native American linguistics and anthropology. The Library is a dynamic entity with a deep commitment to the stewardship of the materials in its care, to the growth of collections in appropriate ways, to superior reader services on behalf of scholars worldwide, and to the accessibility of collections in a digital age. More than 10 million manuscripts (along with rare books, maps, and prints) are housed at the Library. Among these treasures are the journals of Lewis and Clark, major collections in natural history of the 18th and 19th centuries, and the second largest collection of Darwin's papers in the world.

Presenting the Past: The Wagner Free Institute of Science **\$37**

T-5	Thursday, March 18	9:45 AM–12:15 PM
F-9	Friday, March 19	9:45 AM–12:15 PM

Take a journey back in time at the Wagner Free Institute of Science (www.wagnerfreeinstitute.org). This 154-year-old educational institution is housed in a National Historic Landmark building featuring pristine Victorian interiors and a soaring three-story exhibition space with original natural history museum displays. Discover the rich history of the Institute through a guided tour and experience how historic exhibits can create compelling contexts for educational programs. Photography is not permitted inside the building. The building is not handicapped accessible.

Arthropod Museum **\$39**

T-6	Thursday, March 18	12:15–3:45 PM
F-6	Friday, March 19	9:15 AM–12:45 PM

Advertised as the country's largest exhibit of live arthropods, the Insectarium is housed in the headquarters of Steve's Wildlife Management Company (an exterminating company). This unique privately owned museum has live collections of insects from around the world, including unusual insects such as tarantulas, scorpions, 12-inch walking sticks, metallic gold beetles, and crustaceans. Museum highlights include Cock Roach Kitchen, Bee Hive, the Petting Corner, Arachnid Alley, the Insect Scale, and aquatic insects.

Sustainable Urban Science Center **\$35**

T-7	Thursday, March 18	12:30–3:00 PM
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Tour an innovative, environmentally friendly urban school science facility while classes are in session. The Germantown Friends School Science Center (www.germantownfriends.org/sciencebuilding) is constructed of sustainable and recycled materials and features rain gardens and rainwater cisterns, a photovoltaic array, a geo-exchange heating and cooling system, and green roofs. In addition, an interactive building dashboard allows students to monitor the building's energy and water use in real time. This building, designed by SMP Architects, is expected to achieve at least a silver rating from the United States Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) Green Building Rating System. The architects, students, and faculty will be on hand during the tour. Come see a science teaching facility that incorporates the best principles of environmental design in an urban setting.

Anatomy and Human Medical Anomalies Museum **\$45**

T-8	Thursday, March 18	12:40–3:05 PM
F-7	Friday, March 19	9:40 AM–12:05 PM

Widely considered America's finest museum of medical history, the Mütter Museum of The College of Physicians of Philadelphia displays its beautifully preserved collections of anatomical specimens, models, and medical instruments in a 19th-century "cabinet museum" setting. Designed to educate doctors on medical anomalies, the museum consists of two floors of dark wood-trimmed display cases with a library-like stateliness. Where else can you see a plaster cast of Chang and Eng—and their actual attached livers? Or the Chevalier Jackson Collection of objects swallowed and removed? See the preserved body of the "Soap Lady," a collection of 2,000 objects extracted from people's throats, and more! No photography of any kind is allowed in the museum. No large bags of any kind (e.g., tote bags, book bags, backpacks, or shopping bags) are allowed in the museum. No food or drinks are allowed in the museum, and no smoking is allowed on or around the property. Cell phones must be set on silent or vibrate mode.

Independence Seaport \$36

T-9 Thursday, March 18 12:40–4:40 PM

Follow the route Ben Franklin walked when he arrived in Philadelphia in 1723. Beginning at the Seaport Museum, we'll walk up to Carpenter's Hall, comparing Franklin's Philadelphia with the Philadelphia of today. See what impact 300 years of human habitation has had on the Delaware River. Back at the museum we'll board the museum's two historic ships, the *Olympia* and the *Becuna*. Be sure to wear comfortable shoes. In the event of inclement weather, the lesson will be "Whales and Whalers" and include a guided tour of the museum's gallery.

Philadelphia—From Greene Countrie Towne to Green City \$30

T-10 Thursday, March 18 12:45–2:10 PM

In May of 2009, PECO (Philadelphia Electric Company) completed a green roof on top of the company's headquarters building at 23rd and Market streets. Join the Pennsylvania Horticultural Society (www.pennsylvaniahorticulturalsociety.org) for a tour of this innovative project. Totalling more than 45,000 square feet, it is the largest green roof ever installed on an existing building in a Pennsylvania urban area. The vegetative roof consists of a variety of plants, including 15 varieties of sedum, and features 3,000 square feet of pavers and 470 linear feet of railing. The roof will help reduce storm water runoff by absorbing 60%–70% of the approximate 1.5 million gallons of annual rainwater that falls on the main office building. The new roof also will save on heating and cooling costs by reducing the summer-time peak roof temperature by 60 to 80 degrees and will absorb air pollution, which helps alleviate common respiratory problems. No one under 18 years of age is allowed on the roof.

New Jersey Pine Barrens/Batsto River Paddle Trip \$78

F-1 Friday, March 19 7:30 AM–3:45 PM
S-1 Saturday, March 20 7:30 AM–3:45 PM

Come paddle the narrow, meandering streams of New Jersey's Pine Barrens, or Pinelands, in the heart of the nation's most congested area. The 100,000 pristine acres of woodlands and streams heavily forested with cedars, pines, and maple trees. The name "pine barrens" refers to the area's sandy nutrient-poor soil, conditions that enable the Pine Barrens to support a unique and diverse spectrum of plant life, including orchids and carnivorous plants. The Pine Barrens also helps recharge a huge aquifer that contains some of the purest water in the United States.

Bring your binoculars and camera! Your camera should be protected by a waterproof bag. Dress and pack for cold-weather paddling conditions. Layer on proper apparel (ideally, synthetics that insulate yet dry quickly if wet). DO NOT wear cotton or shorts. Also, pack an extra set of clothing, preferably in a dry (watertight) bag that can be carried along on the trip. A box lunch is included in the ticket price. www.belhavenpaddlesports.com

A Day at the Bay \$110

F-2 Friday, March 19 7:30 AM–6:45 PM

NorthBay is a unique educational program that serves middle school students and teachers from around the region. Designed for sixth graders from various demographics around the region, the program uses a high-energy authentic science curriculum where the goals are increased academic performance, increased environmental responsibility, and character development. Join us for a one-day experience at the NorthBay facility, which is located on the north end of the Chesapeake Bay. This will be a highly physical day, where participants can experience an exploration of Chesapeake Bay on board a research vessel, rock wall climbing, bouldering, kayaking/canoeing, rope climbing, swinging in a giant swing, hiking, and much more. Lunch is included in the ticket price. Participants must be physically able to participate in activities.

CANCELED
S-1

CANCELED

Museums as Inspiration for Inquiry Learning: A Visit to The Franklin Institute **\$13**

F-3 Friday, March 19 8:30 AM–12:30 PM

Founded in honor of America's first scientist, Benjamin Franklin, The Franklin Institute (FI) (www.fi.edu) is more than a museum. One of the country's oldest and premier centers of science education, the Institute is dedicated to creating exciting access to science and technology in ways that would delight its namesake. On this visit, we'll explore how to use museums, zoos, and public parks as learning resources. Discover the secrets to making a productive visit to a museum in your own community. We'll explore the nature of questions that will keep students thinking long after the visit and engage in activities that strengthen scientific thought processes, bolster science curriculum, and inspire cross-curricular connections. You'll also have the opportunity to practice launching inquiry investigations in exhibit settings.

If construction allows, we may also enjoy a behind-the-scenes tour of two new not-yet-open exhibits—Changing Earth and Electricity. Following the planned program, feel free to stop for lunch and stay to explore the Institute's other offerings on your own. Wear comfortable shoes and bring your camera.

An In-Depth Look at the Chemical Heritage Foundation **\$37**

F-8 Friday, March 19 9:40 AM–12:05 PM
F-11 Friday, March 19 12:40–3:05 PM

Discover the untold story of chemistry at the Chemical Heritage Foundation (CHF) (www.chemheritage.org). Featuring a world-class collection of instruments and apparatus, rare books, fine art and images, and artifacts, the CHF museum delves into the history of chemistry and the role science plays in the modern world. Join CHF's curators for a customized tour of the museum's exhibits as well as a glimpse behind the scenes to explore the extensive collections of this institution. Cameras are welcome, but flash photography is not permitted. No food or drink is allowed in the museum or library.

The Schuylkill Center for Environmental Education **\$29**

F-10 Friday, March 19 12 Noon–4:30 PM

Visit one of the nation's first urban environmental centers and experience a natural oasis in the city. At The Schuylkill Center (www.schuylkillcenter.org), environmental science is successfully incorporated into both formal and nonformal learning environments. We'll first visit the on-site, award-winning K–8 Green Woods Charter School, where the environment is used as an integrating context for learning. Then, the outdoors becomes the classroom. We'll participate in fun and engaging activities as we explore The Schuylkill Center's 350 acres of fields, forests, ponds, and streams. Dress for the weather and wear shoes appropriate for walking on unpaved trails with some hills and steps. *The outdoor portion of this tour is not wheelchair accessible.*

CSI Forensic Anthropology: Reclaiming Egypt's Scientific Past **\$49**

S-2 Saturday, March 20 8:30 AM–12:30 PM

On this visit to the world-famous Museum of Archaeology and Anthropology at the University of Pennsylvania (www.penn.museum), we'll learn the scientific methods and techniques used to evaluate human skeletal remains, techniques that apply in modern forensic investigations. We'll also examine how we are reclaiming Egypt's scientific past. While many scientific premises are credited to the Greeks, much was "borrowed" from the Egyptians, such as astronomy, medicine, and mathematics. After these presentations, you are free to tour the museum for an hour prior to departure. Cameras are allowed but no video, please.

©Susan Holmes/The Franklin Institute



Field Trip F-3: The Franklin Institute

Bartram’s Garden \$39

S-4 Saturday, March 20 9:30 AM–1:00 PM

Tour America’s first botanic garden, which showcases the Bartram collection of North American plants and the Bartram house, a one-of-a-kind structure and National Historic Landmark. Located on the banks of the Schuylkill River, just 20 minutes from Center City Philadelphia, this 45-acre urban oasis is a must-see experience for anyone interested in gardening, history, science, and nature. Bartram’s Garden (www.bartramsgarden.org) is frequently cited as the first true botanic collection in North America. Considered the “father of American botany,” John Bartram was one of the first practicing Linnaean botanists in North America. Over 9,000 children attend Bartram’s Garden’s educational field trips annually. Melanie Snyder, Director of Education and Public Programs, will welcome us and provide an overview of Bartram’s unique mix of cross-curriculum offerings. Bartram’s education staff will serve as our guides.

Behind the Scenes at America’s First Zoo \$39

S-5 Saturday, March 20 9:45 AM–2:15 PM

The Philadelphia Zoo (www.philadelphiazoo.org), America’s first zoo, has just finished celebrating its 150th year! Go behind the scenes with the zookeepers and curators of big cats, reptiles, and the new bird facility. We’ll experience the animals up close and learn how the zoo cares for many of these rare and endangered species, including training and environmental enrichment. We’ll also have the opportunity to visit the zoo’s newest addition, a baby orangutan, on our tour. Lunch is on your own at one of the zoo’s dining facilities.

—Photo Courtesy of the Philadelphia Zoo



Field Trip S-5: Philadelphia Zoo

Fairmount Water Works Interpretive Center \$33

S-6 Saturday, March 20 2:45–5:15 PM

Learn about watersheds and have a ton of fun doing it at the Fairmount Water Works Interpretive Center. There are five themed areas on the tour and simulations such as a helicopter ride from the Delaware Bay to the headwaters of the Schuylkill River and Pollutionopolis, America’s most contaminated and disgusting town (where you can see how a city can really mess up its water supply!). Philadelphia was the first large American city to regard the delivery of safe water as a municipal responsibility. This historic site is located in a beautiful setting overlooking the Schuylkill River and the Philadelphia Museum of Art.

Conference Program • Meetings and Social Functions

Monday, March 15

CSSS Annual Meeting
By Invitation Only
Ormandy East, Doubletree..... 7:30 AM–5:00 PM

NSELA Officers Meeting and Planning
By Invitation Only
Rhapsody, Doubletree..... 10:00 AM–6:30 PM

Tuesday, March 16

NSELA Board Meeting
By Invitation Only
Aria A, Doubletree..... 6:30 AM–5:30 PM

CSSS Annual Meeting
By Invitation Only
Ormandy East, Doubletree..... 7:30 AM–5:00 PM

Wednesday, March 17

National Marine Educators Association Board Meeting
By Invitation Only
Salon 3/4, Sheraton 7:00 AM–5:00 PM

NSELA Professional Development Institute
By Registration Through NSELA
Symphony Ballroom, Doubletree..... 7:30 AM–4:45 PM

CSSS Annual Meeting
By Invitation Only
Ormandy East, Doubletree..... 7:30 AM–5:00 PM

Science Education for Students with Disabilities Pre-Conference Meeting
By Registration Through SESD
Meeting Room 502, Marriott 8:00 AM–3:00 PM

Science Olympiad Executive Meeting
By Invitation Only
Conference Suite I, Marriott 9:00 AM–12:00 PM

Space Science Sequence Seminar for Grades 3–5
Philadelphia North, Sheraton 1:00–5:00 PM

Space Science Sequence Seminar for Grades 6–8
Philadelphia South, Sheraton 1:00–5:00 PM

SCST Board Meeting
By Invitation Only
Commonwealth A1, Loews..... 1:00–10:00 PM

NSRC National Science Education Leadership Development Forum: Professional Development Programs for K–12 Science Educators
Open to Education Leaders
Grand Salon E, Marriott 2:00–7:30 PM

NSTA New Science Teacher Academy Reception
By Invitation Only
Commonwealth B&C, Loews 5:00–7:00 PM

NSTA President's International Reception
Open to International Visitors and Invited Guests
Sponsored by Pearson
JW's, Marriott 6:30–7:30 PM

Joint Reception for NSELA and CSSS
By Invitation Only
Symphony Ballroom, Doubletree..... 6:30–8:30 PM

PSTA Science Education Leadership Dinner
By Registration Through PSTA
Grand Salon A/B, Marriott 6:30–10:00 PM

Science Olympiad Advisory Board Meeting
By Invitation Only
Grand Salon I, Marriott 7:30–10:30 PM

Thursday, March 18

NSELA/Pearson Annual Breakfast and Business Meeting
By Invitation Only
Howe, Loews..... 7:30–10:00 AM

NSTA New Science Teacher Academy Breakfast
By Invitation Only
Regency B, Loews..... 7:30–10:00 AM

Global Conversations in Science Education Conference (M-2)
(Tickets Required: No Charge)
By Registration Only
Grand Salon H, Marriott..... 7:30 AM–2:00 PM

Science and Children Advisory Board Meeting
301, Marriott..... 8:30–10:30 AM

Science Scope Advisory Board Meeting
302, Marriott 8:30–10:30 AM

The Science Teacher Advisory Board Meeting
310, Marriott..... 8:30–10:30 AM

Conference Program • Meetings and Social Functions

<i>Journal of College Science Teaching</i> Advisory Board Meeting Conference Suite I, Marriott 8:30–10:30 AM	Research in Science Teaching Committee Meeting Conference Suite III, Marriott 1:30–4:00 PM
Awards and Recognitions Committee Meeting Conference Suite II, Marriott 8:30–10:30 AM	High School Science Teaching Committee Meeting 310, Marriott 1:30–4:00 PM
Special Education Advisory Board Meeting Registration I, Marriott 8:30–10:30 AM	Coordination and Supervision of Science Teaching Committee Meeting 308, Marriott 1:30–4:00 PM
Science Safety Advisory Board Meeting Conference Suite III, Marriott 8:30–10:30 AM	Preservice Teacher Preparation Committee Meeting 309, Marriott 1:30–4:00 PM
Informal Science Committee Meeting 309, Marriott 8:30–11:30 AM	Nominations Committee Meeting Conference Suite II, Marriott 1:30–4:00 PM
Urban Science Education Advisory Board Meeting 308, Marriott 8:30–11:30 AM	<i>NSTA Reports</i> Advisory Board Meeting 304, Marriott 1:30–4:00 PM
RET Networking Meeting and Poster Session Grand Salon G, Marriott 8:30 AM–1:30 PM	Retired Members Advisory Board Meeting Meeting Room 502, Marriott 1:30–4:00 PM
Preservice and New Teachers Breakfast (M-1) <i>Sponsored by Kendall Hunt Publishing Co.</i> (Tickets required: \$12) Grand Salon A, Marriott 9:00–10:30 AM	Preschool/Elementary Science Teaching Committee Meeting 301, Marriott 1:30–4:00 PM
NSTA International Lounge Registration II, Marriott 9:00 AM–5:00 PM	Middle Level Science Teaching Committee Meeting 302, Marriott 1:30–4:00 PM
AMSE Board Meeting By Invitation Only Roberts Board Room, Loews 10:00 AM–1:00 PM	CESI Presidents' Roundtable By Invitation Only Congress B, Loews 2:00–4:00 PM
GLBT Educator Group Annual Meeting Adams, Loews 11:00 AM–12:00 PM	Investment Advisory Board Meeting Registration I, Marriott 3:00–4:00 PM
NESTA Board of Directors Meeting Logans 1, Sheraton 1:00–5:00 PM	NSTA/CBC Outstanding Science Tradebooks Committee Meeting By Invitation Only 302, Marriott 4:30–6:00 PM
Multicultural/Equity in Science Education Committee Meeting 413, Marriott 1:30–4:00 PM	Informal Science Reception By Invitation Only Planetarium, Franklin Institute 7:00–9:00 PM
College Science Teaching Committee Meeting Conference Suite I, Marriott 1:30–4:00 PM	Glenn Campaign Leadership Reception By Invitation Only JW's, Marriott 8:00–9:30 PM
Professional Development in Science Education Committee Meeting 305, Marriott 1:30–4:00 PM	

Conference Program • Meetings and Social Functions

Friday, March 19

A Broad Spectrum for Science Learning Breakfast (M-4)
(Tickets Required: \$15)
Grand Salon E/F, Marriott 7:00–8:00 AM

Development Advisory Board Meeting
By Invitation Only
310, Marriott 7:00–8:15 AM

NSTA Dorothy K. Culbert CAG Breakfast (M-3)
(Tickets Required: \$40)
Room 304, Marriott 7:00–8:30 AM

High School Breakfast (M-5)
(Tickets Required: \$40)
Logans I, Sheraton 7:00–8:30 AM

Society of Elementary Presidential Awardees (SEPA) Board Meeting
By Invitation Only
Conference Suite I, Marriott 7:00–9:00 AM

AMSE Alice J. Moses Breakfast
By Invitation Only
Regency A, Loews 7:00–9:00 AM

APAST Breakfast Meeting
By Invitation Only
Grand Salon I, Marriott 7:00–9:00 AM

NMLSTA Board Meeting (Part 1)
NMLSTA Members Only
Roberts Board Room, Loews 7:00–9:00 AM

ASMC Networking Forum Breakfast
By Invitation Only
Howe, Loews 7:30–10:00 AM

PBS/WGBH/NOVA Science Matters Breakfast
By Invitation Only
Millennium Hall, Loews 8:00–9:15 AM

Aerospace Programs Advisory Board Meeting
Conference Suite III, Marriott 8:30–10:30 AM

NSTA International Lounge
Registration II, Marriott 9:00 AM–5:00 PM

AMSE Annual Membership Meeting
Tubman, Loews 10:00 AM–12:00 PM

Association of Science Materials Centers (ASMC) Program Advisory Board Meeting
By Invitation Only
Jefferson, Loews 10:00 AM–3:00 PM

Society of Elementary Presidential Awardees (SEPA) Luncheon
By Registration Through SEPA
Grand Salon I, Marriott 12 Noon–2:00 PM

ASTE/NSELA Luncheon (M-6)
(Tickets Required: \$55)
Lescaze Room (33rd Floor), Loews 12 Noon–2:00 PM

CESI/NSTA Elementary Science Luncheon (M-7)
(Tickets Required: \$55)
Regency A, Loews 12 Noon–2:00 PM

NSTA/NMLSTA Middle Level Luncheon (M-8)
(Tickets Required: \$55)
Howe Room (33rd Floor), Loews 12 Noon–2:00 PM

ATLSS Plenary Session
By Invitation Only
Liberty C, Sheraton 1:00–3:00 PM

GEICO/NSTA New Member Orientation
By Invitation Only
Sponsored by GEICO
Grand Salon A/B, Marriott 2:00–3:00 PM

NSTA District Meet and Greet in Honor of Wendell G. Mohling
Exhibit Hall, Convention Center 2:00–3:30 PM

SESD Business Meeting
Registration I, Marriott 2:00–4:00 PM

NMLSTA Ice Cream Social
Howe, Loews 3:00–4:30 PM

SCST Business Meeting
Commonwealth A, Loews 3:00–5:00 PM

International Advisory Board Meeting
Conference Suite III, Marriott 3:00–5:00 PM

ExploraVision Ice Cream Social and Information Session
Regency B, Loews 3:30–4:30 PM

GEMS Network Reception
Liberty C, Sheraton 3:30–5:00 PM

ACTS Teachers Meeting
Franklin 13, Marriott 4:00–6:00 PM

Conference Program • Meetings and Social Functions

<p>NMLSTA Board Meeting (Part 2) NMLSTA Members Only Roberts Board Room, Loews 5:00–7:00 PM</p> <p>PSTA Members Reception By Invitation Only JW’s, Marriott 5:00–7:00 PM</p> <p>Student Chapter and Student Member Reception For NSTA Student members Grand Salon G, Marriott 5:30–7:00 PM</p> <p>NSTA Teacher Awards Gala (M-9) (Tickets Required: \$55) Millennium Hall, Loews 6:00–8:30 PM</p> <p>NESTA Friends of Earth Science Reception Horizons Rooftop, Sheraton 6:30–8:00 PM</p> <p>SCST Social and Poster Session Regency B, Loews 7:00–9:30 PM</p> <p>NSTA Competition Reception By Invitation Only Hosted by Walt Disney Company and the Conrad Foundation. Howe/Lescaze, Loews 8:30–10:00 PM</p>	<p>RAISE Meeting: Research About Science Teaching: Updates and Classroom Applications Congress C, Loews 9:00 AM–12:00 PM</p> <p>NSTA International Lounge Registration II, Marriott 9:00 AM–5:00 PM</p> <p>Science Matters Leadership Meeting By Invitation Only Grand Salon I, Marriott 9:30–11:00 AM</p> <p>Holt McDougal Luncheon By Invitation Only JW’s, Marriott 11:00 AM–1:00 PM</p> <p>NSTA/SCST College Luncheon (M-10) (Tickets Required: \$55) Commonwealth C, Loews `12 Noon–1:30 PM</p> <p>COSEE Luncheon By Invitation Only Logans 2, Sheraton 12:00–1:30 PM</p> <p>I Teach Inquiry Reception By Invitation Only Grand Salon I, Marriott 1:00–6:00 PM</p> <p>John Glenn Center Task Force Meeting By Invitation Only Registration I, Marriott 3:30–5:30 PM</p> <p>NESTA Annual Membership Meeting Liberty A/B, Sheraton 5:00–6:30 PM</p> <p>Association of Astronomy Educators Members Meeting Seminar A, Sheraton 6:00–7:00 PM</p> <p>Association of Astronomy Educators Members Meeting By Invitation Only Seminar B, Sheraton 7:15–8:45 PM</p> <p>President’s Annual Banquet (M-11) (Tickets Required: \$80) Millennium Hall, Loews 7:00–9:30 PM</p>
Saturday, March 20	
<p>NESTA Earth and Space Science Resource Day Breakfast By Ticket Through NESTA Logans 1, Sheraton 7:00–8:30 AM</p> <p>NSTA Past Presidents’ Breakfast For NSTA Past Presidents Only Lescaze, Loews 7:30–8:15 AM</p> <p>George Washington Carver Breakfast By Invitation Only Regency B, Loews 7:30–9:30 AM</p> <p>NSTA Recommends Reviewer/Publisher Coffee By Invitation Only 302, Marriott 8:00–9:00 AM</p> <p>SESD Science-abled Breakfast Meeting By Ticket Through SESD Meeting Room 502, Marriott 8:00–10:00 AM</p> <p>Past Presidents Advisory Board Meeting Lescaze, Loews 8:15–9:15 AM</p>	<p>Sunday, March 21</p> <p>Life Members Buffet Breakfast (M-12) (Tickets Required: \$45) Rooms 304/305, Marriott 7:00–9:00 AM</p>

Conference Program • Affiliate Sessions

Alliance of Affiliates (AoA)

Saturday, March 20

2:30–4:30 PM 21st-Century Skills: Research and Practice Regency B, Loews

Association for Multicultural Science Education (AMSE)

President: Cherry C. Brewton

AMSE Pays Special Tribute to Alice J. Moses

Thursday, March 18

10:00 AM–1:00 PM AMSE Board Meeting Roberts Board Room, Loews
(By Invitation Only)

Friday, March 19

7:00–9:00 AM AMSE Alice J. Moses Breakfast Regency A, Loews
(By Invitation Only)

8:00–9:00 AM Understanding Science: How Science Commonwealth D, Loews
Really Works

9:30–10:30 AM Integrating Multicultural Education into Commonwealth D, Loews
Science Through Folklore and Herbal Medicine

10:00 AM–2:00 PM AMSE Annual Membership Meeting Tubman, Loews

11:00 AM–12 Noon Boston Science Partnership Follow-Up to Commonwealth D, Loews
“Secret to Urban AP Success”

12:30–2:30 PM Multicultural Biology Activities: Is This Just Commonwealth D, Loews
About Good Science Teaching?

3:30–4:30 PM Integrating Physics in the Middle School Commonwealth D, Loews
Curriculum

Saturday, March 20

9:30–10:30 AM What’s the Case? Using Case Studies to Commonwealth D, Loews
Maximize Instruction with Diverse Populations

11:00 AM–12 Noon How Urban Children Construct Their Concepts Commonwealth D, Loews
of Ecosystems: A Two-Year Field-based Study of
a Salt Marsh

2:00–2:30 PM Science for All Children—And Their Parents! Commonwealth D, Loews

Association for Science Teacher Education (ASTE)

President: Meta Van Sickle

Thursday, March 18

8:00–9:00 AM	What Is ASTE?	Tubman, Loews
9:30–10:30 AM	Information, Networking, and Support for Preservice and New Teachers	Tubman, Loews
12:30–1:30 PM	Using Digital Media to Develop Ecology Units for Middle School Students	Tubman, Loews
	Factors Affecting Teacher Implementation of Student-centered Lab Investigations	Tubman, Loews
2:00–3:00 PM	Using Video Analysis to Improve Beginning Elementary Teachers' Ability to Orchestrate Evidence-based Science Talks	Tubman, Loews
	An Integrated Curriculum for Elementary Children	
3:30–4:00 PM	Cogenerative Dialogues, Coteaching, and Cosmopolitanism: Tools for Improving Science Teaching and Learning	Tubman, Loews

Friday, March 19

8:00–9:00 AM	Learning Physics in the Real World	Washington A, Loews
9:30–10:30 AM	Making High School Science Curricula Relevant and Contemporary by Infusing Cutting-Edge Discovery Research	Washington A, Loews
11:00 AM–12 Noon	Science Teaching as a Profession: Why It Isn't, How It Could Be	Washington A, Loews
2:00–3:00 PM	Inquiring Minds, Inquiring Methods: The Science Fair as a Professional Renewal Experience for Teachers and Problem-solving Experience for Students	Tubman, Loews
3:30–4:30 PM	EQUIPPing Teachers to Achieve Meaningful Inquiry-based Teaching and Learning	Tubman, Loews

Council for Elementary Science International (CESI)

President: Kay Atchison Warfield

Thursday, March 18

2:00–4:00 PM	CESI Presidents' Roundtable (By Invitation Only)	Congress B, Loews
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Conference Program • Affiliate Sessions

Friday, March 19

12 Noon–2:00 PM	CESI/NSTA Elementary Science Luncheon (Tickets Required: M-7)	Regency A, Loews
2:00–3:00 PM	Let Animals Teach Your Students Science	Washington A, Loews
3:30–4:30 PM	Oh, the Science You Can Teach: Strategies That Strengthen Science Through Literacy	Washington A, Loews

Saturday, March 20

8:00–10:00 AM	CESI Make ‘n’ Take	Millennium Hall, Loews
11:00 AM–12 Noon	Science Sen\$e: Easy, Inexpensive Activities for Elementary Classrooms Using Everyday Items	Washington A, Loews
3:30–4:30 PM	Creativity in the Science Classroom	Washington A, Loews

Council of State Science Supervisors (CSSS)

President: Stephen Pruitt

Monday, March 15

7:30 AM–5:00 PM	CSSS Annual Meeting (By Invitation Only)	Ormandy East, Doubletree
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Tuesday, March 16

7:30 AM–5:00 PM	CSSS Annual Meeting (By Invitation Only)	Ormandy East, Doubletree
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Wednesday, March 17

7:30 AM–5:00 PM	CSSS Annual Meeting (By Invitation Only)	Ormandy East, Doubletree
6:30–8:30 PM	Joint Reception for NSELA and CSSS (By Invitation Only)	Symphony Ballroom, Doubletree

Thursday, March 18

8:00–10:00 AM	Advancing Science as Inquiry: Professional Development Tools You Can Use	Congress C, Loews
3:30–4:00 PM	Linking Assessment, STEM Instruction, and Student Learning	Regency C1, Loews
5:00–6:00 PM	A Primer on Resources from the National Academy of Sciences	Congress C, Loews

Friday, March 19

9:30–10:30 AM	Potpourri of Instructional Strategies for Integrating Content Areas	Anthony, Loews
11:00 AM–12 Noon	The Evolution of Inquiry in the 21st Century	Anthony, Loews

12:30–1:30 PM	Authentic Multidisciplinary Student Research: Assessing Attitudes, Knowledge, and Behaviors Related to Water Quality	Anthony, Loews
2:00–3:00 PM	Supporting Inquiry Using GIS Technology and Invasive Species	Anthony, Loews
3:30–4:30 PM	Inquiry and Good Science Instruction: Are They the Same?	Anthony, Loews
5:00–6:00 PM	Go Green with GIS	Anthony, Loews

National Association for Research In Science Teaching (NARST)

President: Rick Duschl

Thursday, March 18

8:00–9:00 AM	Developing Pedagogical Content Knowledge (PCK) for Teaching the Nature of Science: Lessons from a Mentor-Mentee Relationship	Anthony, Loews
9:30–10:30 AM	Content-Area Literacy in New Teachers' Secondary Science Classrooms: Challenges and Possibilities	Anthony, Loews
12:30–1:30 PM	Fostering Development of Pedagogical Content Knowledge in Physics	Anthony, Loews
2:00–3:00 PM	Constraints or Structural Necessities? Teachers' Conceptualizations of the "Messy" Elements of Problem-Based Learning	Anthony, Loews
3:30–4:30 PM	Creating Scientific Discourse Communities in Your Classroom, Part 1 and Part 2	Anthony, Loews

Friday, March 19

8:00–9:00 AM	Teaching Deaf Students Earth Science Using Sandbox Fault Models Guided Peer Discussions as a Scaffold for Developing Learning Progressions About Inquiry	Tubman, Loews
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National Middle Level Science Teachers Association (NMLSTA)

President: Rebecca Knipp

Thursday, March 18

8:00–9:00 AM	Secrets of Fun in Science	Commonwealth B, Loews
9:30–10:30 AM	Hop to It! Integrating Math and Science Is Easy and Fun with Frog Jumping	Commonwealth B, Loews
12:30–1:30 PM	The Ubiquitous Middle Level Science Classroom	Commonwealth B, Loews

Conference Program • Affiliate Sessions

Friday, March 19

7:00–9:00 AM	NMLSTA Board Meeting (Part 1) (NMLSTA Members Only)	Roberts Board Room, Loews
12 Noon–2:00 PM	NSTA/NMLSTA Middle Level Luncheon (Tickets Required: M-8)	Howe, Loews
3:00–4:30 PM	NMLSTA Ice Cream Social	Howe, Loews
5:00–7:00 PM	NMLSTA Board Meeting (Part 2) (NMLSTA Members Only)	Roberts Board Room, Loews

Saturday, March 20

8:00–9:00 AM	Classroom Demonstrations on a Budget	Commonwealth D, Loews
9:30–10:30 AM	HOP 2: A Scientific Investigation	Commonwealth C, Loews

National Science Education Leadership Association (NSELA)

President: Brenda Wojnowski

Monday, March 15

10:00 AM–6:30 PM	NSELA Officers Meeting and Planning (By Invitation Only)	Rhapsody, Doubletree
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Tuesday, March 16

6:30 AM–5:30 PM	NSELA Board Meeting (By Invitation Only)	Aria A, Doubletree
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Wednesday, March 17

7:30 AM–4:45 PM	NSELA Professional Development Institute (By Registration Through NSELA)	Symphony Ballroom, Doubletree
6:30–8:30 PM	Joint Reception for NSELA and CSSS (By Invitation Only)	Symphony Ballroom, Doubletree

Thursday, March 18

7:30–10:00 AM	NSELA/Pearson Annual Breakfast and Business Meeting (By Invitation Only)	Howe, Loews
12:30–1:30 PM	TNT (Teach North Texas)—Getting a Bang Out of STEM Integration	Congress C, Loews
2:00–3:00 PM	Dragon Genetics	Congress C, Loews
3:30–4:30 PM	Biology, Government, Geometry, English... Oh My! An Interdisciplinary Lesson Addressing Wind Energy	Congress C, Loews

Friday, March 19

8:00–9:00 AM	Miles, Smiles, and Lots of Chocolate	Congress C, Loews
9:30–10:30 AM	From the United States to Thailand: The Globalization of an Effective Professional Development Model	Congress C, Loews

Conference Program • Affiliate Sessions

11:00 AM–12 Noon	Using Formative Assessments to Bridge the Modification Gaps for Special Education Students	Congress C, Loews
12 Noon–2:00 PM	ASTE/NSELA Luncheon (Tickets Required: M-6)	Lescaze, Loews
2:00–3:00 PM	The Right Organization for All Science Education Leaders	Congress C, Loews
3:30–4:30 PM	NSELA Working Groups: Network with Science Education Leaders	Congress C, Loews
5:00–6:00 PM	Middle School Science Teachers: Providing What They Need	Congress C, Loews

Saturday, March 20

9:30–10:30 AM	Spotlighting Books Co-published by NSTA and NSELA and How to Use Them to Inform Science Programs, K–16	Grand Salon D, Marriott
	Leading for Science Learning	Congress A, Loews

Society for College Science Teachers (SCST)

President: Connie Russell

Wednesday, March 17

1:00–10:00 PM	SCST Board Meeting (By Invitation Only)	Commonwealth A1, Loews
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Thursday, March 18

8:00–9:00 AM	Rekindling Science Education Through a Collaboration Between an Urban School and College	Commonwealth A, Loews
	Comparing Faculty Perceptions with Classroom Observations in Undergraduate Science Courses	
9:30–10:30 AM	Mini Journals: A Model for Authentic Inquiry-based Investigations in the College Science Classroom	Commonwealth A, Loews
	21st-Century Learning Skills: Striving to Enhance Student Learning in Science	
12:30–1:30 PM	Teaching to the Nature of Science Content Standards	Commonwealth A, Loews
	Physics of Medicine: Investigations into Inquiry	
	Service Learning in an Undergraduate Introductory Environmental Science Course: Getting Students Involved with the Community	
2:00–3:00 PM	Getting Students to Work Without Offering Them Points: A Test of Formative Assessment in Inquiry Labs	Commonwealth A, Loews
	Project Advance Biology: A Bridge Between High School and College	
	Encouraging Underrepresented Girls to Enter STEM Fields Through Informal Education Opportunities	

Conference Program • Affiliate Sessions

3:30–4:30 PM	Last Chance: Using Nontraditional Pedagogies to Improve Nonmajors' Appreciation and Understanding of Science The Stages of Inquiry Grief: Answers to Commonly Voiced Concerns and Excuses Serendipity: Student-led Teaching Models	Commonwealth A, Loews
5:00–6:00 PM	The Nuts and Bolts of a Science Study Skills Curriculum What Biological Concepts Must Be Covered in an Introductory Course for Biology Majors?	Commonwealth A, Loews

Friday, March 19

8:00–9:00 AM	Increasing 21st-Century Science and Literacy Skills Analyzing Political Cartoons to Stimulate Higher-Order Thinking in Science Courses Science Education and Creation Museums	Commonwealth A, Loews
9:30–10:30 AM	Science and Math Education for the Adult Urban Student: These Aren't Your Parents' College Courses! Why Can't You Just Tell Me What I Need to Know? A Student Teaching Experience in Inquiry	Commonwealth A, Loews
12:30–1:30 PM	SCST Marjorie Gardner Lecture: Too Much Content to Cover? Teach Using Competencies Instead	Commonwealth A, Loews
2:00–3:00 PM	Teaching with Technology: Encouraging Students to Engage in Study Outside the Classroom Stop Lecturing in Anatomy and Physiology and Allow Students to Truly Learn	Commonwealth A, Loews
3:00–5:00 PM	SCST Business Meeting	Commonwealth A, Loews
7:00–9:30 PM	SCST Social and Poster Session	Regency B, Loews

Saturday, March 20

12 Noon–1:30 PM	NSTA/SCST College Luncheon (Tickets Required: M-10)	Commonwealth C, Loews
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Fisher Science Education

Stop by the Fisher Science Education booth, #2033, and spin our prize wheel to win some great prizes

or

Visit us in Room 303 A/B, Thursday and Friday (see schedule below)

Attend our hands-on workshops and learn about some extraordinary new products!

Door prizes will be awarded!

Day/Date	Time	Title
Thur., March 18	8:00 a.m. – 9:00 a.m.	The Educational EarthBox®: A Versatile, Easy-to-Use Instructional Tool
Thur., March 18	9:30 a.m. – 11:00 a.m.	The Layered Earth: Geology Curriculum from the Makers of Starry Night
Thur., March 18	1:30 p.m. – 3:00 p.m.	The Green Roof Model: Building a Greener World
Thur., March 18	3:30 p.m. – 5:00 p.m.	NEW Datalogging System for Your Science Lab! A Simple and Affordable Technology Solution for a 21st Century Classroom
Fri., March 19	8:00 a.m. – 9:30 a.m.	NEW, Affordable Technology Solution for a 21st Century Classroom
Fri., March 19	10:00 a.m. – 11:30 a.m.	Advanced Datalogging for Your High School Science Classroom! NEW, Affordable Technology Solution for a 21st Century Classroom
Fri., March 19	1:30 p.m. – 3:00 p.m.	Improving Standardized Test Scores with New Path Learning's Curriculum Mastery Games for High School Students!
Fri., March 19	3:30 p.m. – 5:00 p.m.	Innovating Science: Chemistry Demonstrations that Really Get a Reaction!

The Educational EarthBox: A Versatile, Easy-to-Use Instructional Tool

EarthBox, a scientifically engineered container garden system, supports K–12th grade standards-based curriculum with hands-on, cross-curricula lesson plans that teach students principles and properties of water, light, soil, plants and nutrition.

The Layered Earth: Geology Curriculum from the Makers of Starry Night

What powers the internal processes that produce volcanoes, earthquakes and mountains? What is the rock cycle and, how does it work? What is an earthquake? How are volcanoes formed? Experience the Layered Earth – The Geology Curriculum from the makers of Starry Night.

The Green Roof Model: Building a Greener World

In this interactive, hands-on workshop, you will discover how the NEW Green Roof Model can make real-world technology accessible for your students. Discover the benefits of energy-efficient alternatives to standard commercial and residential roofing using this realistic model.

NEW Datalogging System for Your Science Lab! A Simple and Affordable Technology Solution for a 21st Century Classroom

Fisher Science Education is introducing a brand-new, flexible datalogging system that will help you breathe life into your biology classroom, get a reaction in your chemistry classroom and accelerate your physics labs. This workshop is perfect for middle and high school science teachers.

Advanced Datalogging for Your High School Science Classroom! NEW, Affordable Technology Solution for a 21st Century Classroom

Advanced datalogging activities will be explored as Fisher Science Education introduces you to a brand-new, flexible datalogging system. This workshop is perfect for AP and high school science teachers.

Improving Standardized Test Scores with New Path Learning's Curriculum Mastery Games for High School Students!

This workshop will provide an in-depth overview of New Path Learning's award-winning classroom games, available exclusively through Fisher Science Education. These engaging board game-based learning systems are designed to help increase student scores on standardized testing.

Innovating Science Chemistry Demonstrations that Really Get a Reaction!

This workshop will show you how to incorporate exciting, engaging chemical demonstrations into your chemistry curriculum. These demonstrations are guaranteed to grab your students' attention and enhance their learning experience, all while teaching fundamental science concepts.

For customer service, call 1-800-955-1177 or visit www.fisheredu.com



— Anne C. Kristensen

7:00 AM–5:00 PM Meeting

National Marine Educators Association Board Meeting

(By Invitation Only) *Salon 3/4, Sheraton*

7:30 AM–4:45 PM Meeting

NSELA Professional Development Institute

(By Registration Through NSELA) *Symphony Blrm., Doubletree*

7:30 AM–5:00 PM Meeting

CSSS Annual Meeting

(By Invitation Only) *Ormandy East, Doubletree*

8:00 AM–3:00 PM Meeting

Science Education for Students with Disabilities Pre-Conference Meeting

(By Registration Through SEDS) *Meeting Room 502, Marriott*
For further information, contact Patricia Davidson at pda-vidson@usi.edu.

9:00 AM–12 Noon Meeting

Science Olympiad Executive Meeting

(By Invitation Only) *Conference Suite I, Marriott*

9:00 AM–5:00 PM NSTA PDIs

PDI Designing Effective Science Instruction: Developing Student Understanding Through Classroom Inquiry, Discourse, and Sensemaking (PDI-6)

(General) *401/402, Marriott*

Tickets Required: \$295; by preregistration only

Offered by Mid-continent Research for Education and Learning (McREL) (www.mcrel.org)

Anne Tweed, 2004–2005 NSTA President, and Mid-continent Research for Education and Learning, Denver, Colo.

Bj Stone, Mid-continent Research for Education and Learning, Denver, Colo.

For description, see page 54.

PDI Inside-Out: Enhancing Field-based Learning in Environmental Science for the Upper Elementary Classroom (PDI-2)

(Elementary–Middle Level) *403, Marriott*

Tickets Required: \$295; by preregistration only

Offered by the Center for Science and Mathematics Education, Towson University, and the Maryland Sea Grant College, University System of Maryland

Robert Blake, Jr., and **Sarah Haines**, Towson University, Towson, Md.

Adam Frederick, Maryland Sea Grant, Baltimore

Stephanie Lee, Westland Middle School, Bethesda, Md.

For description, see page 52.

PDI Issue-oriented Science: Engage, Motivate, and Educate (PDI-5)

(Middle Level–High School) *404, Marriott*

Tickets Required: \$295; by preregistration only

Offered by the Science Education for Public Understanding Program (SEPUP) (www.sepuplhs.org), Lawrence Hall of Science

Sara Dombkowski Wilmes, **John Howarth**, and **Laura Lenz**, Lawrence Hall of Science, University of California, Berkeley

For description, see page 53.

PDI 21st-Century Skills (PDI-7)

(High School) *405, Marriott*

Tickets Required: \$295; by preregistration only

Offered by the Center for Science Education, Education Development Center, Inc. (<http://cse.edc.org>)

Jackie Miller, **Irene Baker**, and **Marian Pasquale**, Education Development Center, Inc., Newton, Mass.

For description, see page 54.

PDI We've Got Data! Using Mathematical Representations to Talk About, Model, and Explain Scientific Phenomena (PDI-8)

(Elementary–Middle Level) *406, Marriott*

Tickets Required: \$295; by preregistration only

Offered by TERC (www.terc.edu)

Sally Crissman and **Sue Doubler**, TERC, Cambridge, Mass.

For description, see page 55.

PDI Outdoor Learning: A Path to Science and Literacy (PDI-4)

(Elementary–Middle Level/Informal) 407/408, Marriott

Tickets Required: \$295; by preregistration only

Offered by First Hand Learning, Inc. (www.firsthandlearning.org)

Patricia McGlashan, First Hand Learning, Inc., Buffalo, N.Y.

E. Wendy Saul, University of Missouri, St. Louis

Mark Baldwin, Roger Tory Peterson Institute, Jamestown, N.Y.

Therese Arsenault, Lansing Middle School, Lansing, N.Y.

For description, see page 53.

PDI When a Two-Page Spread Isn't Enough: Navigating Your Instructional Materials (PDI-9)

(Elementary–High School) 409, Marriott

Tickets Required: \$295; by preregistration only

Offered by K–12 Alliance/WestEd (www.west.org/cs/we/view/pj/79)

Kathy DiRanna, Jo Topps, Karen Cerwin, Jody Sheriff, and Melissa Smith, WestEd, Santa Ana, Calif.

For description, see page 55.

PDI Assessing and Promoting Teachers' Understanding and Skills in Assessment and Instruction for Student Learning (PDI-10)

(Middle Level–High School) 410, Marriott

Tickets Required: \$295; by preregistration only

Offered by FACET Innovations (www.facetinnovations.com), Seattle Pacific University, and the University of Washington

Ruth Anderson, Pamela Kraus, and Jim Minstrell, FACET Innovations, Seattle, Wash.

Stamatis Vokos, Seattle Pacific University, Seattle, Wash.

For description, see page 55.

PDI Deepening Science Thinking and Reasoning Through Discussion and Writing in K–8 Inquiry-based Science (PDI-3)

(Elementary–Middle Level) 411/412, Marriott

Tickets Required: \$295; by preregistration only

Offered by the Center for Science Education, Education Development Center, Inc. (<http://cse.edc.org>)

Jeff Winokur and Karen Worth, Education Development Center, Inc., Newton, Mass.

Martha Heller-Winokur, Tufts University, Medford, Mass.

Sally Crissman, TERC, Cambridge, Mass.

For description, see page 53.

PDI Inquiring into Inquiry: Creating an Inquiry-based Classroom (PDI-1)

(Elementary–High School) 414/415, Marriott

Tickets Required: \$295; by preregistration only

Offered by BSCS Center for Professional Development (www.bsccs.org)

Sam Spiegel, BSCS, Colorado Springs, Colo.

For description, see page 52.

1:00–5:00 PM Meetings

Space Science Sequence Seminar for Grades 3–5

Philadelphia North, Sheraton

For more information, visit www.lhsgems.org.

Space Science Sequence Seminar for Grades 6–8

Philadelphia South, Sheraton

For more information, visit www.lhsgems.org.

1:00–10:00 PM Meeting

SCST Board Meeting

(By Invitation Only)

Commonwealth AI, Loews

Visit the NSTA Avenue, #517 in the Exhibit Hall.

Pick up your “NSTA Roadmap”
to guide you through member benefits, products, services,
programs and partners. We’re offering a great gift!

Share with Others

- **NSTA Membership.** Access high-quality educational materials and professional development opportunities. Pick up a sample journal, your district ribbon, and a free lapel pin. If you’re a student, ask about Student Chapters. If you’d like to volunteer, submit your name for nomination to become a candidate on a committee, review board, or the NSTA Board of Directors and Council.

Enhance Your Skills

- **NSTA Learning Center.** Select high-quality online learning opportunities to build content knowledge. Use our suite of tools for self-assessment and to document your progress.
- **Web Seminars.** Update your content knowledge with these free, 90-minute, live online presentations. Voice questions and share in rich conversations with the presenters and other educators.
- **SciGuides.** Use these online resources, aligned with the national Standards, to locate lessons organized by grade level and specific content themes.

Expand Your Mind

- **NSTA Press®** publishes 25 new titles each year that offer professional development to science educators. Visit the Science Bookstore to view new releases, best sellers, and titles that help performance in the classroom. Connect with authors to have your new book signed. Submit your new book idea to <http://mc.manuscriptcentral.com/nstapress>.
- **SciLinks®.** Link to science resources on the internet, with sites recommended by science educators. Find accurate information and effective pedagogy—the best content available online.

Add Your Voice

- **Science Matters** is a major public awareness and engagement campaign designed to rekindle a national sense of urgency and action among schools and families about the importance of science education and science literacy.

- **The John Glenn Center for Science Education Campaign.** NSTA’s five year, \$43 million national campaign to make excellence in science teaching and learning a reality for all will fund a series of forward-thinking programs and a state of the art facility designed to promote leadership, learning, and advocacy in science education.

Distinguish Yourself

- **NSTA Awards.** 17 programs offer awards to science teachers, K–College.
- **Toshiba/NSTA ExploraVision®** is a team-based K–12 competition that awards up to \$240,000 in savings bonds annually.
- **Toyota TAPESTRY** awards \$550,000 in grants for science teachers, K–12, each year.
- **THE DUPONT CHALLENGE® Science Essay Competition** is for grades 7–12 with cash prizes and an expenses-paid trip to The Walt Disney World® Resort and the Kennedy Space Center.
- **Siemens We Can Change the World Challenge**, sponsored by Siemens, Discovery Education, and NSTA, offers a national student sustainability competition that encourages students to develop actionable local solutions for a “greener” world.
- **Disney’s Planet Challenge** is a project-based environmental competition for grades 4–6 meant to empower students to make a difference in their homes, schools, and communities.
- The **Conrad Foundation** presents the **2010 Spirit of Innovation Awards**, a competition that challenges teams of high school students to create innovative products in four categories: aerospace exploration, space nutrition, renewable energy and green schools.
- The **NSTA New Science Teacher Academy**, co-founded by the Amgen Foundation, supports science teachers during the often challenging, initial teaching years by enhancing confidence, classroom excellence, and improving teacher content knowledge.

2:00–7:30 PM Special Session

NSRC National Science Education Leadership Development Forum: Professional Development Programs for K–12 Science Educators (Gen)

(Open to Education Leaders) Grand Salon E, Marriott

Lynn Ritter, The Exploratorium, San Francisco, Calif.

Ted Britton, WestEd, Redwood City, Calif.

Joyce M. Gleason, Educational Consultant, Punta Gorda, Fla.

Dennis Schatz, Pacific Science Center, Seattle, Wash.

Steven Ricks, Alabama Math, Science, and Technology Initiative, Montgomery

What are the critical issues in science teacher professional development? How can they be addressed? How do you scale up a professional development program? Participate in presentations and discussions with experts in the field and network with education leaders who are wrestling with these issues. The program runs from 2:00 to 6:00 PM followed by a special reception from 6:00 to 7:30 PM. Interested participants may register for this event online through NSRC at www.nsrconline.org.

5:00–7:00 PM Reception

NSTA New Science Teacher Academy Reception

(By Invitation Only) Commonwealth B&C, Loews

6:30–7:30 PM Reception



NSTA President's International Reception

(Open to International Visitors & Invited Guests) JW's, Marriott
Sponsored by Pearson.

6:30–8:30 PM Reception

Joint Reception for NSELA and CSSS

(By Invitation Only) Symphony Ballroom, Doubletree

6:30–10:00 PM Dinner

PSTA Science Education Leadership Dinner

Grand Salon A/B, Marriott

The PSTA Science Education Leadership Dinner is an opportunity for leaders to have an opportunity to network and discuss current topics related to science education with leaders and colleagues from across Pennsylvania. Please visit www.pascience.org for more information.

7:30–10:30 PM Meeting

Science Olympiad Advisory Board Meeting

(By Invitation Only) Grand Salon I, Marriott



Hands-On Workshops

Friday, March 19 - Room 112A

- 8:00-9:00 - Tough Topics in Chemistry & Physical Science: Gas Laws
- 9:30-10:30 - Carolina Biology Investigations for SPARKscience: A Novel Approach to the "Ruler-Drop" Lab
- 11:00-12:00 - Tough Topics in Chemistry & Physical Science: Chemical Reactions
- 12:30-1:30 - Tough Topics in Biology: Circulatory Physiology
- 2:00-3:00 - Advanced Placement Chemistry: Determining the Rate Constant of a Chemical Reaction
- 3:30-4:30 - Advanced Placement Environmental Science: Modeling an Ecosystem

Friday, March 19 - Room 113A

- 8:00-9:00 - Sally Ride Science & PASCO: Our Changing Climate
- 9:30-10:30 - Tough Topics in Physics & Physical Science: Motion
- 11:00-12:00 - Tough Topics in Life Science: Modeling Pressure Changes in the Lungs
- 12:30-1:30 - Tough Topics in Physics & Physical Science: Circuits

Friday, March 19 - Room 113A (cont)

- 2:00-3:00 - Renewable Energy Exploration: Solar Energy and Photovoltaic Cells
- 3:30-4:30 - Tough Topics in Elementary School Science: What is a Circuit?

Friday, March 19 - Room 114/Auditorium

- 5:00-6:30 PM - PASCO Presents the 8th Annual Just Physics Evening

Saturday, March 20 - Room 112A

- 8:00-9:00 - Tough Topics in Earth Science: Plate Tectonics with My World GIS
- 9:30-10:30 - Advanced Placement Biology: Investigating Mitochondrial Genetics, A Novel Approach to AP Biology Lab 6

Saturday, March 20 - Room 113A

- 8:00-9:00 - Advanced Placement Physics: Momentum & Impulse
- 9:30-10:30 - Tough Topics in Earth Science: Greenhouse Gases

Booth# 805, 914



—Jim McWilliams

Thursday, March 18

	Presentations/Workshops	General Sessions/Special Events	Shell Seminars	Exhibitor Workshops
8:00 AM	<p>First-Timers' Meeting 8:00–9:00 AM Grand Salon E, Marriott</p>			
9:00 AM				
10:00 AM		<p>Featured Presentation 9:30–10:30 AM 201 C, Convention Center Speaker: John Mooy</p>		
11:00 AM				
12 Noon		<p>General Session 11:00 AM–12:30 PM Ballroom A/B, Convention Center Speaker: Greg Marshall</p>		
1:00 PM		<p>Mary C. McCurdy Lecture 12:30–1:30 PM 201 C, Convention Center Speaker: Julie Czerneda</p>		
2:00 PM				
3:00 PM		<p>The Planetary Society Lecture 2:00–4:00 PM Ballroom A/B, Convention Center Speaker: Bill Nye</p>		
4:00 PM	<p>First-Timers' Meeting 3:30–4:30 PM Grand Salon E, Marriott</p>	<p>Featured Presentation 3:30–4:30 PM 201 C, Convention Center Speaker: Howard G. Adams</p>		
5:00 PM				
6:00 PM				
7:00 PM		<p>Special Evening Session 6:00 PM–12 Midnight Commonwealth C, Loews <i>A Video Showcase of Inspiring Award-winning Teachers, Part I</i></p>		
8:00 PM				

7:30–9:00 AM Exhibitor Workshops

Boppin’ with Bloops: Groovy Genetics (Bio)

(Grades 5–9) 104A/B, Convention Center

Sponsor: Science Kit & Boreal Laboratories

Boppin’ Timmy Montondo (*tmontondo@vwreducation.com*), WARD’s Natural Science, Tonawanda, N.Y.

What’s a Bloop you ask? A strange little creature created by teacher developer Anthony Garfalo to make teaching genetics a swing and a snap. Create your own composition covering the melodious Mendelian genetics, genotypes, phenotypes, dominant and recessive traits, and more.

Explore the Next Generation of Instructional Technology on Biology.com (Bio)

(Grades 9–12) 113C, Convention Center

Sponsor: Pearson

Karlie Termotto, Pearson, Manalapan, N.J.

Join Pearson presenter Karlie Termotto as she explores the dynamic digital components of the Miller & Levine *Biology* collection—Biology.com. This robust digital support includes a wealth of assets, such as complete online student and teacher’s editions with audio and editable worksheets, interactive multimedia, games, and online assessments with remediation—a sophisticated classroom management system that offers a seamless transition from the textbook.

7:30–10:00 AM Breakfasts

NSELA/Pearson Annual Breakfast and Business Meeting

(By Invitation Only) Howe, Loews

NSTA New Science Teacher Academy Breakfast

(By Invitation Only) Regency B, Loews

7:30 AM–2:00 PM International Conference



Global Conversations in Science Education Conference (M-2)

(General) Grand Salon H, Marriott

Tickets Required, no charge; by preregistration only

NSTA will host this special day dedicated to science education from an international perspective. The theme of this conference is “Assessing Student Understanding of Science: Perspectives and Solutions.” During the day, there will be numerous opportunities for international visitors to network with science educators from various cultures, including those from North America.

- 7:30–8:30 AM NSTA Conference Orientation
- 8:30–9:00 AM Welcome and Introductions
Norman Lederman, Conference Chair
Patricia Shane, NSTA President
Manoj Chitnavis, Chair, The Association for Science Education
Al Hovey, Chair, NSTA International Advisory Board
- 9:00–9:30 AM Plenary Session (p. 104)
Assessing Scientific Literacy: International Perspectives and Classroom Possibilities
Rodger W. Bybee, Chair, PISA 2006 Science Expert Group, Golden, Colo.
- 9:30–9:45 AM Break
- 9:45–10:45 AM Concurrent Sessions (K–12 Assessment and College-Level Assessment) (p. 116)
- 10:45–11:15 AM Poster Session (p. ??)
- 11:15 AM–12:15 PM Concurrent Sessions (K–12 Assessment and College-Level Assessment) (p. 124)
- 12:15–1:15 PM Luncheon Plenary Session (p. 131)
Assessment: A Key Lever of Change in Science Education
Robin Millar, Chair, Departmental Research Committee, University of York, U.K.
- 1:15–1:45 PM Panel Discussion (p. 147)
- 1:45–1:55 PM Updates from Around the World
- 1:55–2:00 PM Closing Remarks
Norman Lederman, Conference Chair

8:00–8:30 AM Presentations

SESSION 1

Teaching Module for the German Atomic Bomb Project for High School and College Teachers (Phys)

(High School–College) Washington C, Loews

Nathan C. Hansell, Cedar Crest High School, Lebanon, Pa.

Michael A. Day (day@lvc.edu), Lebanon Valley College, Annville, Pa.

Presider: Nathan C. Hansell

Come review the literature on the German atomic bomb project and develop a teaching module based on this review.

SESSION 2

Teacher, What Did I Miss When I Was Absent?

(Gen)

(High School)

Franklin 9, Marriott

Patrick Ashby (pashby@marymountnyc.org), Marymount School of New York, N.Y.

Learn how to incorporate innovative, interactive whiteboard lessons into your high school science curriculum.

8:00–9:00 AM Presentations

SESSION 1



ISTE: Integrating Technology into the Classroom (Gen)

(General) Hall D/Room 1, Convention Center

Ben Smith (ben@edtechinnovators.com), York, Pa.

Jared Mader (jared@edtechinnovators.com), Red Lion Area (Pa.) School District

The National Education Technology Standards for Students (NETS•S) provide a map for what 21st-century students should be able to do. Learn how to integrate technology seamlessly into the science classroom.

SESSION 2 (two presentations)

(High School) Hall D/Room 5, Convention Center

✓ The NOAA-CREST Weather Camp: Field and Classroom Experiences to Support Urban Students' Recognition of the Connection Between the Local Environment and Weather Conditions (Earth)

Brian L. Vant-Hull (brianvh@ce.cuny.cuny.edu), City College of New York, N.Y.

Susan M. Kelly (susankelly.ct@gmail.com), Blind Brook High School, Rye Brook, N.Y.

Experience classroom and field activities from a two-week urban and rural-based weather program developed by NOAA-CREST partners for New York City students.



How a Professional Learning Community (PLC) Increases Chemistry Participation at an Urban High School (Chem)

Matthew L. Brodeur (brodeur.ml@easthartford.org), **Melissa Gavarrino**, **Nicole Shea**, and **Bob Dee**, East Hartford High School, East Hartford, Conn.

We used the PLC model to increase chemistry participation in our urban school, decreasing teacher isolation, increasing student motivation, and helping us more effectively assess and deliver instruction.

SESSION 3 (two presentations)

(General) Hall D/Room 6, Convention Center



Connecting Quality Science Lessons with Children's Literature to Enhance Science and Reading Skills (Gen)

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

Get some ideas for connecting children's literature with hands-on science following the 5-E model of science learning and reinforcing important reading skills.



Mesozoic Mania: Multidisciplinary Integration Through Dinosaurs! (Gen)

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

James H. Wandersee (jwander@lsu.edu), Louisiana State University, Baton Rouge

Dinosaurs excite students on multiple levels. Discover methods to integrate biology, geology, and more in your classroom through our Bone Wars, Adopt-A-Dino, and DinoViz projects.

SESSION 4 (two presentations)

(Preschool–Elementary) Hall D/Room 8, Convention Center

Presider: Sherri Reed, Seabury Hall, Makawao, Hawaii

Developing Children’s Thinking Through Literacy and Inquiry (Bio)

Sandy Buczynski (*sandyb@sandiego.edu*), University of San Diego, Calif.

Come solve problems presented by original story starters. We’ll tap into prior knowledge, apply the scientific method, and use rubrics to evaluate thinking.

Trailquests: Discovering Awe in Nature (Bio)

Stacy S. Stetzel (*ssstetzel@manchester.edu*), Manchester College, North Manchester, Ind.

Trailquest activities link children’s literature with outdoor nature activities and online webquests. I will demonstrate cross-curricular integration through sample projects, mock trailquests, and hands-on brainstorming.

SESSION 5 (two presentations)

(General)

Hall D/Room 10, Convention Center

Integrative STEM Education: Breaking Down the Silos from Theory and Practice (Gen)

Joel D. Donna (*joel.donna@state.mn.us*), Minnesota Dept. of Education, Roseville

Michele H. Lee, University of Missouri, Columbia

Explore intersections of the STEM domains’ concepts, processes, and best practices as well as teacher- and school-based models of integration and professional development.

Student and School Factors Predicting STEM College Major Choice and Subsequent Career Entrance (Gen)

Darryl Williams, University of Pennsylvania, Philadelphia

This study uses data from the National Longitudinal Study of Adolescent Health (Add Health) to model how student, family, and school factors relate to three STEM outcomes: high school GPA, probability of STEM college major choice, and probability of entering into a STEM career.

First-Time Attendee Sessions

Is This Your First NSTA Conference?

If your answer is “YES,” then please join us at one of two conveniently offered first-time-conference-attendee sessions where we’ll walk through the program and you’ll learn how to get the most from your conference experience.

Session I

Thursday, March 18

8:00–9:00 AM

Philadelphia Marriott

Grand Salon E

This session is generously supported by Carolina Biological Supply Company.

Session II

Thursday, March 18

3:30–4:30 PM

Philadelphia Marriott

Grand Salon E

SESSION 6

The Art and Science of Integration (Gen)

(Elementary) Hall D/Room 11, Convention Center

Lisa M. Nyberg (*lmyberg@csufresno.edu*), California State University, Fresno

Learn how to develop an engaging, integrated science unit with an elementary classroom. We'll share amazing student work products achieved with a young English learner class.

SESSION 7

Inquiry Projects in the Elementary Classroom

(Gen)

(Elementary) Hall D/Room 14, Convention Center

Steven D. Wade, NBCT (*swade@penncharter.com*), William Penn Charter School, Philadelphia, Pa.

Learn how to conduct simple investigations and find out how students can participate in self-assessment.

SESSION 8

Connecting Your Students to Authentic Scientific Research (Gen)

(Informal Education) Hall D/Room 17, Convention Center

Bancha Srikacha, David Randle (*drandle@amnh.org*), and **Ro Kinzler**, American Museum of Natural History, New York, N.Y.

Deepen student understanding of the scientific method and illustrate real-world research in your classroom using free online videos of science in action.

SESSION 9

Teaching Physical Science with Magic (Chem)

(Middle Level) Hall D/Room 19, Convention Center

Robert M. Ellis, South County Secondary School, Lorton, Va.

Become a magician and engage students with inquiry-based demonstrations and activities. It's standards based and it's fun!

SESSION 10

Attracting Testable Questions: Student Scientists Lead the Way! (Gen)

(Elementary) Hall D/Room 20, Convention Center

Judi J. Kur (*jjk11@scasd.org*) and **Kimber A. Hershberger** (*kham12@scasd.org*), Radio Park Elementary School, State College, Pa.

These introductory lessons engage students in developing testable questions for guiding units such as magnets, rocks and minerals, light, and simple machines.

SESSION 11

Innovation in Science-related Continuing Professional Development Programs (Gen)

(General) Hall D/Room 25, Convention Center

Julie A. Jordan (*j.jordan@shu.ac.uk*) and **Emily Perry** (*e.perry@shu.ac.uk*), Sheffield Hallam University, Sheffield, U.K.

Explore strategies for encouraging professional development leaders to develop engaging and relevant science and STEM-related continuing professional development programs.

SESSION 12

Wow! How'd You Do That? (Gen)

(General) Hall D/Room 26, Convention Center

Todd F. Hoover (*thoove2@bloomu.edu*), Bloomsburg University, Bloomsburg, Pa.

What better way to engage students and initiate scientific thinking than to present them with something that goes against the way they have interpreted the world in the past?

SESSION 13

STEM: In Practice (Gen)

(General) Hall D/Room 27, Convention Center

Celeste H. Pea (*cpea@nsf.gov*), National Science Foundation, Arlington, Va.

Michael J. Kaspar (*mikekaspar@aol.com*), District of Columbia STEM Alliance, Washington, D.C.

Melvina Jones, NSTA Director, Preschool/Elementary, and John Burroughs Education Campus, Washington, D.C.

Prsider: **Alma Miller**, Science Education Consultant, Washington, D.C.

Learn about engaging STEM activities in schools/districts across the nation and how your school/district can compete for funds from NSF to do similar activities.

SESSION 14

Outstanding Print Resources, Science Literacy Skills, and Hands-On Investigations: Don't Settle for One Without the Others! (Gen)

(General) Hall D/Room 28, Convention Center

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

Explore quality science print resources and appropriate hands-on explorations to accompany them. We'll also look at literacy strategies to assist students in reading and writing science text.

SESSION 15**Science Olympiad: The Best-Kept Secret in Science Education (Gen)**

(Elementary–High School) Hall D/Room 30, Convention Center
Thomas B. Grayson, Jr., and **Tami G. Grayson** (*bt1981@att.net*), Greenhill School, Addison, Tex.

Learn the what, how, and why of Science Olympiad and get some tips on how to start a competitive and successful team. It's a great program for any school!

SESSION 16**NARST Session: Developing Pedagogical Content Knowledge (PCK) for Teaching the Nature of Science: Lessons from a Mentor-Mentee Relationship (Gen)**

(General) Anthony, Loews

Deborah L. Hanuscin (*hanuscind@missouri.edu*), University of Missouri, Columbia

We will focus on developing knowledge of learners, curriculum, pedagogy, and assessment of the nature of science. Come learn how you can develop your PCK!

SESSION 17 (two presentations)

(Elementary/College/Supervision) Commonwealth A, Loews

SCST Session: Rekindling Science Education Through a Collaboration Between an Urban School and College (Gen)

Anne Coleman (*amc729@cabrini.edu*) and **Joe Clark** (*jc738@cabrini.edu*), Cabrini College, Radnor, Pa.

In this collaboration, preservice teachers evaluate science process skills, model inquiry science, and develop curriculum supports for classroom teachers in an urban school.

SCST Session: Comparing Faculty Perceptions with Classroom Observations in Undergraduate Science Courses (Gen)

Donna Turner, The University of Alabama, Tuscaloosa
 Undergraduate science instructors' perceptions of teaching were observed to vary from their observed teaching of science concepts in entry-level courses.

SESSION 18**Professional Development: Using Trends, Practices, and Research to Strengthen Science Teaching and Learning (Gen)**

(Supervision/Administration) Regency C1, Loews

LaMoine L. Motz (*llmotz@comcast.net*), 1988–1989 NSTA President, and Oakland County Schools, Waterford, Mich.

Jack Rhoton (*rhotonj@etsu.edu*), East Tennessee State University, Johnson City

Emma L. Walton (*elwalton@aol.com*), 1999–2000 NSTA President, and Science Consultant, Anchorage, Alaska

Prsider: LaMoine L. Motz

Join our team of national science education leaders as we share research, models, case studies, and collaborative initiatives for improving science teaching and learning through sustained professional development and leadership.

SESSION 19**Understanding the Science Understanding of Pre-service Elementary Teachers (Gen)**

(College) Regency C2, Loews

Charles Fidler (*cfidler@wheelock.edu*), **Ellen Faszewski**, and **Peter Holden** (*pholden@wheelock.edu*), Wheelock College, Boston, Mass.

Karen Worth (*kworth@edc.org*), Education Development Center, Inc., Newton, Mass.

Are students' attitudes changing? Do they understand basic concepts? Can they use what they know to teach children? We will look at a web-based assessment system that addresses these questions.

SESSION 20**ASTE Session: What Is ASTE? (Phys)**

(General) Tubman, Loews

Jon E. Pedersen (*jep@unl.edu*), ASTE President, and University of Nebraska–Lincoln

Network with ASTE members and hear what exciting things this organization is doing for science teacher education.

SESSION 21**Picturing to Learn (Gen)**

(Middle Level–College) Washington A, Loews

Felice Frankel (*felice_frankel@harvard.edu*) and **Rebecca Rosenberg** (*rebeccar@seas.harvard.edu*), Harvard University, Cambridge, Mass.

Drawing is a useful tool in the classroom. Students clarify their understanding of scientific concepts by creating explanatory drawings, and drawings serve as an evaluation tool identifying students' misconceptions.

SESSION 22

The Virtual Newsroom at the Saint Louis Science Center: Support of In-School Science (Gen)

(Middle Level–High School/Informal Education) 303, Marriott Diane Miller (dmiller@slsc.org), Saint Louis Science Center, St. Louis, Mo.

Learn about increasing engagement and deepening science literacy through the Saint Louis Science Center’s NSF-funded Virtual Newsroom, which is staffed by teens who write, edit, and digitally publish science articles.

SESSION 23

PDI CSME Pathway Session: Watershed Exploration Using Project WET and Project Learning Tree Curricula (Env)

(Elementary–Middle Level) 403, Marriott

Sarah Haines (shaines@towson.edu) and **Robert W. Blake, Jr.** (rblake@towson.edu), Towson University, Towson, Md.

See how PLT and Project WET activities can be used to introduce the concepts of watersheds and water cycles to your students.

SESSION 24

PDI LHS Pathway Session: Developing Literacy and Addressing Content Standards Through Issue-oriented Science (Gen)

(Middle Level–High School) 404, Marriott

Laura Lenz (lalenz@berkeley.edu), Lawrence Hall of Science, University of California, Berkeley

Engage in literacy strategies that work well in issue-oriented science lessons and discuss ways to use these strategies in your secondary science classroom. Examples will include strategies for reading, writing, and discussion.

SESSION 25

PDI BSCS Pathway Session: Review the Research: Teaching Science for Effective Understanding (Gen)

(General) 414/415, Marriott

Janet Carlson, BSCS, Colorado Springs, Colo.

Get the resources you need to teach science the way research says it should be taught—using a conceptually coherent inquiry-based approach.

SESSION 26

Will You Go GMO? (Bio)

(High School) Franklin 3, Marriott

Sarah Berke (sberke@curenet.org), **Kerry Donahue** (kdonahue@curenet.org), and **Julie Potter** (jpotter@curenet.org), BioScience Explorations, New Haven, Conn.

Are your students confused about GMOs? Learn some of the interesting science behind GMOs that can help your students on state assessments. Free resources and curricula.

SESSION 27

Creating True Zero Gravity Experiences with Your Students (Phys)

(Elementary–High School) Franklin 6, Marriott

Mark R. Malone (mmalone@uccs.edu), University of Colorado at Colorado Springs

Learn how to create a microgravity chamber to view common objects in a weightless environment and use miniature cameras and DVRs to create video images viewable in real time and slow motion.

SESSION 28

Behind the Scenes: Demonstrating an Inquiry Science “Meta-Lesson” Making PCK Visible (Phys)

(General) Franklin 7, Marriott

David Schuster (david.schuster@wmich.edu), **Brandy Skjold** (brandy.pleasants@wmich.edu), and **Betty Adams**, Western Michigan University, Kalamazoo

Adriana Undreiu (au8e@uvawise.edu), University of Virginia’s College at Wise

Take part in an inquiry science lesson on force and motion while simultaneously examining its design features at a meta-level.

SESSION 29 (two presentations)

(Middle Level–High School) Franklin 8, Marriott

Bringing History, Art, and Literature into the Biology Classroom (Bio)

Michael J. Vieira Lazaroff (mjvlazaroff@gmail.com), Staples High School, Westport, Conn.

Make your teaching interdisciplinary with history, art, and literature—and your course will come alive!

**Bell Ringers, Get Readies, and Focus Questions:
How to Engage, Excite, and Encourage Learning**
(Bio)

Abbie N. Martin (*martina@wjcc.k12.va.us*), Jamestown High School, Williamsburg, Va.

Learn to design quality questions that students will want to answer. I'll share successful strategies for eliciting curiosity and motivating students with classroom bell ringers.

SESSION 30

FDA Symposium Session: Food Allergies (Gen)
(General) Franklin 10, Marriott

Stefano Luccioli, U.S. Food and Drug Administration, College Park, Md.

Learn about food allergies and allergens.

SESSION 31

Conserving Money and Mass: Teaching the Conservation of Mass on a Budget (Chem)

(Middle Level–High School) Franklin 11, Marriott

Matt R. Moffitt (*mmoffitt@gmail.com*), Iowa State University, Ames

Overcome misconceptions about the conservation of mass with this inexpensive hands-on activity. Handouts.

SESSION 32

Content and Scientific Practices That Define the New AP Chemistry Course (Chem)

(Middle Level–High School) Grand Salon B, Marriott

Trinna S. McKay and **Tanya Sharpe**, The College Board, Duluth, Ga.

Angelica M. Stacy (*astacy@berkeley.edu*), University of California, Berkeley

The College Board recently undertook a review of AP Biology, Chemistry, Environmental Science, and Physics courses. Four teams comprised of university and high school faculty identified essential concepts that frame enduring understandings and the appropriate scope of each concept. This presentation will focus on the content and scientific practices that define the revised AP Chemistry course.

SESSION 33

Making Flexbooks Using CK–12.org Software (Phys)
(Middle Level–College) Grand Salon D, Marriott

James H. Dann (*jamdann@gmail.com*), Menlo School, Atherton, Calif.

James J. Dann (*dannja22@hotmail.com*), Natomas School District, Vacaville, Calif.

Discover free, innovative software developed by CK–12.org that enables teachers to make their own textbooks by modifying and/or combining books.

SESSION 34

Is This Your First NSTA Conference? (Gen)
(General) Grand Salon E, Marriott

NSTA Board and Council

Feeling overwhelmed by all there is to see and do at an NSTA Conference on Science Education? Join us for an interactive and participatory (fun!) walk through the conference program book. By the end of the session we guarantee you'll know just how to get the most from your conference experience. This event is generously supported by Carolina Biological Supply Company.

SESSION 35

Managing a Digital Curriculum: Lessons Learned (Gen)

(High School) Grand Salon K, Marriott

Pete Vreeland (*pvreeland@umasd.org*) and **Dave Montalvo** (*dmontalvo@umasd.org*), Upper Merion Area High School, King of Prussia, Pa.

We will share the important questions and issues we encountered as we developed digital tools for the curriculum, instruction, and assessment in our science program.

SESSION 36

NASA: Bring NASA Science into Your Classroom (Gen)

(General) *Freedom F, Sheraton*

John D. Ensworth (*john_ensworth@strategies.org*), The Institute for Global Environmental Strategies, Arlington, Va.

Denise Smith, Space Telescope Science Institute, Baltimore, Md.

Come get an overview of NASA's Science Mission Directorate (SMD). NASA's SMD EPO groups provide unique K–college education programs, products, and experiences related to heliophysics, planetary science, astrophysics, and earth science. This presentation will also serve as an introduction to NASA SMD sponsored presentations, workshops, and short courses at the conference, helping teachers to navigate the many NASA earth and space science sessions. This presentation will be relevant not only to earth and space science teachers, but also physics, chemistry, biology, and general science teachers from elementary to college levels.

SESSION 37 (two presentations)

(General) *Independence C, Sheraton*

Outdoor Education: A Science Collaboration with Schools, Community, and Parents (Env)

Mike J. Wilson (*mwilson@findlayschools.org*), Findlay (Ohio) City Schools

Environmental science concepts are best taught in the field, but cost and finding help can be a problem. Learn how we developed a program that benefits our students, parents, and preservice teachers.

The 3 Cs in School: Bringing Your Classroom Outdoors (Env)

Allison Roach (*aroach@earthwatch.org*) and **Adam Seidman** (*aseidman@earthwatch.org*), Earthwatch Institute, Maynard, Mass.

This session will illustrate strategies and techniques to engage students in scientific inquiry while involving local communities in improved environmental sustainability.

SESSION 38

Polar Activities Share-a-Thon: Polar Bears to Penguins—There's Something for Everyone (Gen)

(Elementary–High School) *Liberty C, Sheraton*

Jean Pennycook (*jean.pennycook@gmail.com*), Fresno (Calif.) Unified School District

Find an activity about the polar regions, climate change, geosciences, biology, ice, or oceans for your grade level. We have something for everyone.

8:00–9:00 AM Workshops



Differentiated Science Inquiry (Gen)

(Elementary–High School) *Hall D/Room 7, Convention Center*

Douglas J. Llewellyn (*dllewell@rochester.rr.com*), St. John Fisher College, Rochester, N.Y.

Explore different levels of scientific inquiry and engage in a hands-on investigation to illustrate each approach.

Nanotechnology for the Classroom: The Next BIG Thing! (Phys)

(Elementary) *Hall D/Room 9, Convention Center*

Zoe T. Downing (*ztd102@psu.edu*), **Cecilia H. Tang**, and **Elizabeth M. Haggerty** (*emh5013@psu.edu*), The Pennsylvania State University, University Park

Presider: Ronald D. Redwing, The Pennsylvania State University, University Park

Learn innovative ways to incorporate nanotechnology in your curriculum and how to use informal resources as part of your daily lessons.

Centering Around the Science Standards, Grades K–2 (Gen)

(Elementary) *Hall D/Room 15, Convention Center*

Meri Johnson (*johnson_m@ccesc.org*), Clermont County Educational Service Center, Batavia, Ohio

Experience a sample group of centers that teach science concepts to students with different ability levels. These hands-on centers incorporate the learning cycle to address common misconceptions

Experience Counts! (Gen)

(Elementary) *Hall D/Room 16, Convention Center*

Shirley M. Willingham (*smwillingham@aldine.k12.tx.us*), Houston Academy, Houston, Tex.

Integrate science instruction throughout the curriculum and help students make meaning of abstract concepts and natural phenomena.

Fantastic Voyage: The Human Body in Space (Bio)

(Elementary–Middle Level) *Hall D/Room 18, Convention Center*

Gregory L. Vogt, Baylor College of Medicine, Houston, Tex.

With plans in store for going to the Moon and Mars, let's find out what changes will occur in the human body.

Diagonal Alley or Diagonally? Magic or Science?**(Gen)**

(Elementary–Middle Level) Hall D/Room 21, Convention Center
Dee Goldston (*dgoldsto@bamaed.ua.edu*), The University of Alabama, Tuscaloosa

Laura Downey (*ldowney@kacee.org*), Kansas Association for Conservation and Environmental Education, Manhattan

Enter the world of Diagonal Alley and wizardry by participating in science inquiries directly from the pages of *Harry Potter and the Chamber of Secrets*.

Can You Keep a Secret?**(Gen)**

(Preschool–Middle Level) Hall D/Room 22, Convention Center

Cheryl W. Sundberg (*sundbergc@att.net*), Creative Educational Consulting, LLC, Millbrook, Ala.

These engaging hands-on/minds-on activities involve the science of disappearing ink, puzzles, and more. Lessons are related to the science standards of solubility, material science, and energy.

Bring Live Theater into the Science Classroom**(Gen)**

(Elementary–Middle Level) Hall D/Room 23, Convention Center

Sanghee Choi (*schoi6@memphis.edu*), The University of Memphis, Tenn.

Experience “authentic activities” that involve reading science trade books, writing skits, and acting out and analyzing the play to recognize, explore, and understand science content.

Connect the Dots to Help Students Develop Literacy Skills Along with Science Content**(Gen)**

(General) Hall D/Room 29, Convention Center

Karen L. Ostlund (*klostlund@mail.utexas.edu*), The University of Texas at Austin

Learn how to integrate reading strategies and science activities to increase literacy skills and science content knowledge. I’ll share a three-pronged approach that uses an engaging instructional design, a variety of reading strategies, and continuous assessment.

NMLSTA Session: Secrets of Fun in Science**(Gen)**

(Preschool–Middle Level) Commonwealth B, Loews

Annette Barzal (*abarzal@earthlink.net*), NMLSTA, Medina, Ohio

Here are 10 teacher-tested activities that will make your students giggle, wonder, enjoy, and—best of all!—learn science concepts.

Kidney Crisis**(Bio)**

(High School–College)

Commonwealth C, Loews

Dina G. Markowitz (*dina_markowitz@urmc.rochester.edu*) and **Susan Holt** (*sholtbmn@aol.com*), University of Rochester, N.Y.

Follow the case of a young woman whose diabetes leads to kidney failure, kidney dialysis, and the need for an organ transplant. Experience two hands-on activities: Diagnosing Diabetes and Kidney Problems. Take home a “lab in a bag” kit.

Empirical Evidence vs. Intuition and the Let’s Make a Deal Game Show**(Gen)**

(High School–College)

Commonwealth D, Loews

Ken Overway (*koverway@bridgewater.edu*), Bridgewater College, Bridgewater, Va.

Students investigate the scientific method and learn the difference between intuition and evidence using the format of the *Let’s Make a Deal* game show.

Have Your Cake and Eat It, Too**(Bio)**

(General)

Franklin 1, Marriott

Scott L. Kubista-Hovis (*scott_hovis@yahoo.com*), Fairfax County Public Schools, Alexandria, Va.

Do you feel that state testing prevents you from fully utilizing the power of PBL? Learn how to integrate PBL into your classroom while students ace state testing.

RAIN (Research Applications in Neurobiology)**(Bio)**

(Middle Level–High School)

Franklin 4, Marriott

Christie Orlosky (*cz23@aol.com*), Armstrong School District, Ford City, Pa.

Imagine a light rain falling in September. Fall turns to winter, and winter to spring. As the rain continues, a stream turns into a river; difficult to stop. Learn how our district-wide project guides students in determining their learning capacity while studying the anatomy and physiology of the brain.

Build a Battery of Batteries**(Chem)**

(Middle Level–High School)

Franklin 5, Marriott

Julie Yu (*jyu@exploratorium.edu*), The Exploratorium, San Francisco, Calif.

Build several batteries using inexpensive materials, including the most powerful battery for a classroom. Learn hands-on ways to teach electric cells and alternative energy sources.

Redesigning the Laboratory Investigation: Integrating Inquiry into Chemistry (Chem)

(High School) Franklin 12, Marriott

Cece Schwennsen (*cschwenn@yahoo.com*), Cate School, Carpinteria, Calif.

Angela Powers, Metropolitan State College of Denver, Colo.

Learn how tried-and-true chemistry laboratory activities can be transformed into investigations that engage students while helping them develop abilities for and understandings about inquiry.

Seven Inquiry-based Labs That Integrate the Physical Sciences and Algebra (Phys)

(High School) Grand Salon C, Marriott

David A. Young (*dayoung7@gmail.com*), Fayetteville High School, Fayetteville, Ark.

These seven tried-and-true labs bring lasting understandings of physical science concepts and allow students to actually use the algebra they have been taught.

Launch of the NASA Global Snowflake Network: Protocols and Classroom Integration (Earth)

(Informal Education) Freedom E, Sheraton

Tim McCollum, Charleston Middle School, Charleston, Ill.

Involve your students in snowflake science and all your hesitations about incorporating field research in the classroom will melt away.

Playing with Ecosystem Science: Informal Modeling Games to Explore the Delicate Balance (Env)

(Middle Level/Informal Education) Freedom G, Sheraton

Lisa Gardiner (*egardine@ucar.edu*), University Corporation for Atmospheric Research, Boulder, Colo.

Learn games that model the living components, nutrient cycles, and human impacts on ecosystems. Expand student content knowledge through inquiry. Handouts.

Biotechnology and Environmental Risk: Project Learning Tree's New Secondary Program (Env)

(Informal Education) Independence A, Sheraton

Al Stenstrup (*astenstrup@forestfoundation.org*) and **Jackie Stallard** (*jstallard@forestfoundation.org*), American Forest Foundation, Washington, D.C.

Explore biotechnology from an environmental and societal perspective using new activities and case studies. Each participant will receive the *PLT Exploring Environmental Issues: Focusing on Risk* module and biotechnology supplement.

NMEA Session: Whale of a Share-a-Thon (Gen)

(General) Liberty A/B, Sheraton

Adam Frederick (*frederic@mdsg.umd.edu*), Maryland Sea

Grant, Baltimore

Sharon H. Walker, University of Southern Mississippi, Ocean Springs

Becky J. Cox (*beckyc@utm.edu*), The University of Tennessee at Martin

Pam Stryker, Barton Creek Elementary School, Austin, Tex.

Johnette Bosarge, National Marine Educators Association, Ocean Springs, Miss.

Jim Wharton (*jimwharton@mote.org*), Mote Marine Laboratory, Sarasota, Fla.

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

Lynn N. Whitley (*lwhitley@usc.edu*), University of Southern California, Los Angeles

Michiko J. Martin (*michiko.martin@noaa.gov*), NOAA Office of National Marine Sanctuaries, Silver Spring, Md.

David M. Christopher (*dchristopher@aqua.org*), National Aquarium in Baltimore, Md.

Perrin Chick (*p.chick@seacentr.org*), Seacoast Science Center, Rye, N.H.

Justine F. Glynn (*justine@gmri.org*), Gulf of Maine Research Institute, Portland

Judith D. Lemus (*jlemus@hawaii.edu*), University of Hawaii, Kaneohe

Meghan Marrero (*mmarrero@us-satellite.net*), U.S. Satellite Laboratory, Inc., Rye, N.Y.

Diana Payne (*diana.payne@uconn.edu*), Connecticut Sea Grant, Groton

Sarah Pedemonte, Lawrence Hall of Science, University of California, Berkeley

Christopher J. Petrone (*petrone@vims.edu*), Virginia Institute of Marine Science, Gloucester Point

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

Joe Rozak (*jrozak@germantownacademy.org*), Germantown Academy, Fort Washington, Pa.

President: Diana Payne

Join the National Marine Educators Association as members share marine science activities, lessons, and opportunities. Handouts and demonstrations.

NASA Astrobiology Institute: Life on Earth...and Elsewhere? (Gen)

(Middle Level–High School) Logans 2, Sheraton

Leah Bug (*leahbug@psu.edu*), The Pennsylvania State University, University Park

Pamela K. Harman (*pharman@seti.org*), SETI Institute, Mountain View, Calif.

Interested in astrobiology? Habitability? Extremophiles? Join the NASA Astrobiology Institute for hands-on activities and resources connecting the latest in interdisciplinary science to the classroom.

More Than Just Crossing Circles: Overhauling Your Earthquake Location Exercise (Earth)

(Middle Level–High School) Philadelphia South, Sheraton

Michael Hubenthal (*hubenth@iris.edu*), IRIS Consortium, Washington, D.C.

Robert M. de Groot (*degroot@usc.edu*), University of Southern California, Los Angeles

Do your students locate earthquakes from old textbook seismograms? Learn how to access online data from recent newsworthy earthquakes.

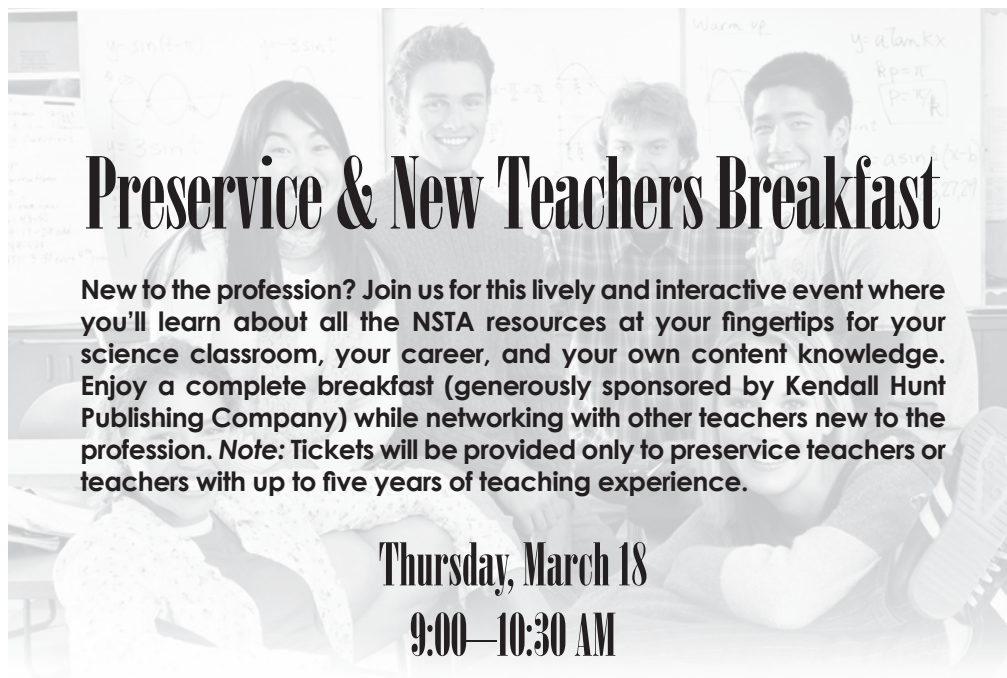
Teaching Science with GLOBE Student Data

(Earth)

(General) Philadelphia North, Sheraton

Gary Randolph (*randolph@globe.gov*), **Sheila Yule** (*syule@globe.gov*), and **Martos Hoffman** (*mhoffman@globe.gov*), The GLOBE Program, Boulder, Colo.

The GLOBE Program database currently houses 20 million student-collected environmental data available for teachers and students to use in Earth system science.



Preservice & New Teachers Breakfast

New to the profession? Join us for this lively and interactive event where you'll learn about all the NSTA resources at your fingertips for your science classroom, your career, and your own content knowledge. Enjoy a complete breakfast (generously sponsored by Kendall Hunt Publishing Company) while networking with other teachers new to the profession. *Note:* Tickets will be provided only to preservice teachers or teachers with up to five years of teaching experience.

Thursday, March 18

9:00–10:30 AM

Philadelphia Marriott, Grand Salon A

Tickets Required (M-1; \$12) and, if still available, must be purchased at the Registration Area by 8:00 PM on **Wednesday, March 17**.

This event is generously sponsored by Kendall Hunt Publishing Company.



8:00–9:00 AM Exhibitor Workshops

Bio-Rad—How to Start a Biotech Program (Bio)

(Grades 7–College) 103B, Convention Center

Sponsor: Bio-Rad Laboratories

Essy Levy (*biotechnology_explorer@bio-rad.com*) and **Sherri Andrews** (*biotechnology_explorer@bio-rad.com*), Bio-Rad Laboratories, Hercules, Calif.

Biotech is where it's at! Hear the words of wisdom from the nation's leading biotech programs and find out how they got to where they are now. Learn how to set the foundation for engaging students using relevant real-world lab experiences and the building blocks that will allow you to continue to address the world's rapidly changing scientific landscape.

The Educational EarthBox®: A Versatile, Easy-to-Use Instructional Tool (Bio)

(Grades K–12) 303A/B, Convention Center

Sponsor: Fisher Science Education

Jill Jones, Fisher Science Education, Pittsburgh, Pa.

EarthBox K–12 standards-based curriculum support packages bring science to life with hands-on, cross-curricula lesson plans that teach students the innate principles and properties of water, light, soil, plants, and nutrition. This curriculum uses the scientific method in student-driven experiments that take place in a scientifically engineered container garden system, the EarthBox Ready-to-Grow Kits.

8:00–9:15 AM Exhibitor Workshops

Experimental Design (Gen)

(Grades K–6) 108B, Convention Center

Sponsor: Delta Education, School Specialty Science

Johanna Strange, Consultant, Richmond, Ky.

Tom Graika, Consultant, Lemont, Ill.

Having trouble getting students ready for science fairs? Learn how to take students from guided investigations to open inquiries. This strategy helps students develop investigative questions, learn the process of experimental design, and implement the scientific method. Delta products will be featured and teacher resources will be provided.

Inquiry Investigations™ Biotechnology Curriculum Modules and Kits (Gen)

(Grades 7–12) 109A/B, Convention Center

Sponsor: Frey Scientific, School Specialty Science

Ken Rainis and **Lisa Bowman**, Frey Scientific, School Specialty Science, Ann Arbor, Mich.

With our new Inquiry Investigations biotechnology series, students learn foundational analysis skills that help them understand foundational science concepts. See how program software allows the preparation of web-based content along with individualized assessment. Compare both virtual and actual gel electrophoretic separations and conduct a DNA chip investigation.

8:00–9:30 AM Presentation

SESSION 1

PDI **McREL Pathway Session: How Do We Know That Students Understand? (Gen)**

(General) 401/402, Marriott

Bj Stone (*bstone@mcrel.org*), Mid-continent Research for Education and Learning, Denver, Colo.

Learn how to make decisions during your instructional planning about what students should understand about the science content and how you will know that they have understood. Planning templates and examples provided.

8:00–9:30 AM Exhibitor Workshops

Chemistry and the Atom: Fun with the Atom-building Game (Chem)

(Grades 5–12) 108A, Convention Center

Sponsor: CPO Science, School Specialty Science

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

Our understanding of matter at the atomic level can be abstract and students can have a hard time making sense of these fascinating concepts. Come experience innovative games and activities that give students fun opportunities to explore and grasp atomic structure and the periodic table.

Chemistry with Vernier**(Chem)***(Grades 9–College)**202A, Convention Center*

Sponsor: Vernier Software & Technology

Dan Holmquist (*info@vernier.com*), Vernier Software & Technology, Beaverton, Ore.

Experiments such as acid-base titration and Boyle's law from our popular *Chemistry with Vernier* and *Advanced Chemistry with Vernier* lab books will be performed in this hands-on workshop. Conduct these experiments using LabQuest and our new LabQuest Mini. See our new Mini GC Gas Chromatograph and SpectroVis Plus spectrophotometer in action!

Forensics with Vernier**(Gen)***(Grades 7–12)**202B, Convention Center*

Sponsor: Vernier Software & Technology

Rick Sorensen (*info@vernier.com*), Vernier Software & Technology, Beaverton, Ore.

Add technology to your forensics curriculum with our *Forensics with Vernier* lab manual. Attend this workshop to see activities that deal with various aspects of forensic science using sensor technology. These activities can be done using LabQuest, our new LabQuest Mini, or a TI graphing calculator.

8:00–10:00 AM Workshop**CSSS Session: Advancing Science as Inquiry: Professional Development Tools You Can Use** **(Gen)***(Elementary–High School)**Congress C, Loews***Marsha S. Winegarner** (*equscied@defuniak.com*), Florida Coordinator of *Science Matters*, DeFuniak Springs**Linda K. Jordan** (*linda.k.jordan@tn.gov*), Tennessee Dept. of Education, Nashville**Deborah L. Tucker** (*deborahlt@aol.com*), Independent Science Education Consultant, Napa, Calif.

Inquiry seeks to build student understanding of how we know what we know. Become familiar with six professional development tools that promote inquiry-based science.

Free Baby Butterfly!

Be one of the first 150 people **each day** of the convention to flutter by the Insect Lore booth and receive a **free necklace** containing a cute, **live Painted Lady** caterpillar!

**Booth
#1425**



8:00–10:30 AM Exhibitor Workshops

Bio-Rad Crime Scene Investigator PCR Basics Kit (Bio)

(Grades 7–College) 103A, Convention Center

Sponsor: Bio-Rad Laboratories

Kirk Brown (*biotechnology_explorer@bio-rad.com*), Tracy High School, Tracy, Calif.

Stan Hitomi (*biotechnology_explorer@bio-rad.com*), San Ramon Valley Unified School District, Danville, Calif.

Which human DNA sequences are used in crime scene investigations and why? Learn how to use the polymerase chain reaction (PCR) and gel electrophoresis to identify which suspects can be exonerated—based on DNA evidence. Learn how the statistics of chance are integral to modern DNA fingerprinting.

Using Science Notebooks with FOSS Middle School (Gen)

(Grades 6–8) 107A/B, Convention Center

Sponsor: Delta Education, School Specialty Science—FOSS Virginia Reid, Consultant, Olympia, Wash.

Chris Sheridan, Consultant, Sammamish, Wash.

The FOSS Middle School curriculum will be used to demonstrate the use of science notebooks with students, grades 6–8. Learn how to implement student science notebooks in your classroom to increase student understanding of inquiry and science content and to enhance literacy skills. Sample materials will be distributed.

8:00–11:00 AM Presentations

SESSION 1

PDI WestEd Pathway Session: Selecting Quality Instructional Materials: Analyzing Instructional Materials (AIM) (Gen)

(General) 409, Marriott

Jo Topps (*jtopps@wested.org*), WestEd, Santa Ana, Calif.

Take the guesswork out of selecting instructional materials! AIM helps collaborative teams of teacher use evidence to select instructional materials that meet the needs of their students.

SESSION 2

PDI FACET Innovations Pathway Session: Collecting with Intention: Effectively Using Questions and Probes (Gen)

(General) 410, Marriott

Eric Magi (*erim@spokaneschools.org*), Spokane (Wash.) Public Schools

Jim Minstrell (*jimminstrell@facetinnovations.com*), FACET Innovations, Seattle, Wash.

Good formative assessment is “smart assessment,” intended to hone in on ever more specific student learning needs. The main objective is to collect high-quality useful information. Through the evaluation of written probes and excerpts from classroom practice, participants will learn about question types, and the associated cognitive demand, and will evaluate and practice specific questioning strategies.

8:00 AM–12 Noon Short Course



Computer Software for Chemistry/Physical Science Teachers (SC-1)

(High School) Aria A, Doubletree

Tickets Required: \$24

Hubert C. MacDonald (*macdonald@pittcon.org*) and **John A. Varine** (*varine@pittcon.org*), Society for Analytical Chemists of Pittsburgh, Pa.

For description, see page 59.

8:00 AM–5:00 PM Short Course



The NOAA Ocean Data Education Portal: Using Digital Technology to Teach Environmental Science (SC-2)

(Middle Level–College) Off-site (School Dist. of Philadelphia)

Tickets Required: \$104

Michiko Martin (*sanctuaries@noaa.gov*) and **Kate Thompson** (*kate.thompson@noaa.gov*), NOAA Office of National Marine Sanctuaries, Silver Spring, Md.

Kenneth Casey (*ken.casey@noaa.gov*), National Oceanographic Data Center, Silver Spring, Md.

Caroline Joyce (*caroline@uwm.edu*), University of Wisconsin, Milwaukee

For description, see page 59.

8:30–9:00 AM Presentations**SESSION 1****Tag-Team Teaching: Successful Co-teaching in the Science Classroom (Bio)***(Middle Level–High School)* 306, Marriott**Leslie L. Prall** (lprall@dover.k12.pa.us) and **Stacy Billet** (sbille@dover.k12.pa.us), Dover Area High School, Dover, Pa.

Learn how to tag-team teach in the classroom. We will examine the different styles of co-teaching and share which works best and how to make it work.

SESSION 2**Biology Bob: Philadelphia Fliers (Bio)***(General)* 307, Marriott**Robert M. Everett** (everett@mail.ucf.edu), University of Central Florida, Orlando

Join Biology Bob as he sings several new songs about birds, bugs, and other airborne organisms.

SESSION 3**Translating Authentic Research Experiences for Teachers into the Real Deal for Students (Earth)***(High School)* Independence B, Sheraton**Eileen B. Grzybowski** (eileeng@norman.k12.ok.us), Norman North High School, Norman, Okla.

Learn how I bridge the gap between summer authentic research experiences and translate them into classroom inquiry.

8:30–10:00 AM Exhibitor Workshop**Innovative Science and Literacy Integration: Seeds of Science/Roots of Reading® (Gen)***(Grades 2–5)* 106A/B, Convention CenterSponsor: Delta Education, School Specialty Science—Seeds **Jacqueline Barber, Jen Tilson, Jonathan Curley, and Traci Wierman**, Lawrence Hall of Science, University of California, Berkeley

Immerse yourself in the Seeds of Science/Roots of Reading Variation and Adaptation unit by investigating adaptations that enable a species to survive in its habitat. See how firsthand inquiry, content-rich science books, scientific discourse, and writing activities integrate to provide rich, varied opportunities to learn important earth and life science concepts and vocabulary.

8:30–10:30 AM Meetings**Science and Children Advisory Board Meeting**

301, Marriott

Science Scope Advisory Board Meeting

302, Marriott

The Science Teacher Advisory Board Meeting

310, Marriott

Journal of College Science Teaching Advisory Board Meeting

Conference Suite I, Marriott

Awards and Recognitions Committee Meeting

Conference Suite II, Marriott

Science Safety Advisory Board Meeting

Conference Suite III, Marriott

Special Education Advisory Board Meeting

Registration I, Marriott

8:30–11:30 AM Meetings**Urban Science Education Advisory Board Meeting**

308, Marriott

Informal Science Committee Meeting

309, Marriott

8:30 AM–12:30 PM Short Course**✓ Project-Based Learning and the 4Rs of Inquiry: Engaging Students in Urban Explorations (SC-3)***(Grades K–5)* Concerto A/B, Doubletree**Tickets Required: \$24****Karen L. Anderson** (karenanderson@stonehill.edu), **Susan Mooney** (smooney@stonehill.edu), **Dana Gilfeather** (dgilfeather@students.stonehill.edu), **Nicole Klemonsy** (nklemonsy@students.stonehill.edu), and **Brittany Montano** (bmontano@students.stonehill.edu), Stonehill College, Easton, Mass.**Dean M. Martin** (anderson.martin@netzero.com), Gardner Pilot Academy, Boston, Mass.

For description, see page 59.

8:30 AM–1:30 PM Meeting**RET Networking Meeting and Poster Session**

Grand Salon G, Marriott

**9:00–9:30 AM International Conference
Plenary Session**



Assessing Scientific Literacy: International Perspectives and Classroom Possibilities (Gen)

(General) *Grand Salon H, Marriott*

Tickets required; by preregistration only.



Rodger W. Bybee, Chair, PISA 2006 Science Expert Group, Golden, Colo.

All of us regularly hear about global issues related to the environment, resources, and health. Professional science teachers ask: How competent are my students to address these situations? Science teachers' point of view is not significantly different from the PISA 2006 perspective. This presentation describes the contexts, competencies, content, and attitudes assessed by PISA. The discussion will include implications for the instructional core of science teaching.

address these situations? Science teachers' point of view is not significantly different from the PISA 2006 perspective. This presentation describes the contexts, competencies, content, and attitudes assessed by PISA. The discussion will include implications for the instructional core of science teaching.

Rodger W. Bybee is chair of the Science Forum and Science Expert Group, and Questionnaire Panel Consultant for PISA 2006. Until 2007, Dr. Bybee was executive director of the Biological Sciences Curriculum Study (BSCS), a nonprofit organization that develops curriculum materials, provides professional development for the science education community, and conducts research and evaluation on curriculum reform. Prior to joining BSCS, he was executive director of the National Research Council's Center for Science, Mathematics, and Engineering Education (CSMEE) in Washington, D.C. Between 1985 and 1995, he participated in the development of the National Science Education Standards, and from 1992 to 1995 he chaired the content working group of that National Research Council project.

9:00–10:30 AM Breakfast

Preservice and New Teachers Breakfast (M-1)

(Tickets Required: \$12) *Grand Salon A, Marriott*

Sponsored by Kendall Hunt Publishing Co.

As someone new to the profession, join us as experienced discussion leaders tell you how to get the most out of your conference experience, and share the latest ideas and techniques for the science classroom. Enjoy a complete breakfast (generously sponsored by Kendall Hunt Publishing Company) while networking with other teachers new to the profession.

Tickets, if still available, must be purchased at the Ticket Sales Counter in the NSTA Registration Area before 8:00 PM on Wednesday.

Note: Tickets will be provided only to preservice teachers or teachers with up to five years of teaching experience.

9:00 AM–5:00 PM Meeting



NSTA International Lounge

Registration II, Marriott

Please stop by the NSTA International Lounge to relax or meet colleagues while you're at the conference.

9:30–10:00 AM Presentations

SESSION 1

Science Experiments (Gen)

(Elementary) *Hall D/Room 14, Convention Center*

Whitney L. Madison, Prairie Grove, Ark.

Do hands-on experiments affect knowledge of science concepts in a kindergarten classroom? I will share the results of my study.

SESSION 2

Reinventing the Science Fair (Gen)

(Middle Level) *Hall D/Room 22, Convention Center*

Kelly J. Anthony (*anthonkj@pwcs.edu*), E.H. Marsteller Middle School, Bristow, Va.

See how our school reinvented the science fair to increase student interest, creativity, and achievement.

SESSION 3

Climate Literacy in the Informal Setting (Env)

(General) *Independence C, Sheraton*

Jeff Lockwood, TERC, Cambridge, Mass.

Kiku Johnson, Girls, Inc. of Alameda County, San Leandro, Calif.

Melissa Koch, SRI International, Menlo Park, Calif.

Working together, TERC, SRI, and Girls, Inc., leaders developed a climate literacy program to raise girls' confidence and competence in the science of climate change and energy use. We'll share the results.

9:30–10:30 AM Featured Presentation

Class, I'd Like You to Meet Mr. Einstein (Gen)
(General) 201C, Convention Center



John Mooy (*wendyhalperin@aol.com*), Storyteller and Author, South Haven, Mich.

Presider: Christine Lijoi (*clijoi@fc.summit.k12.nj.us*), NJSTA President, Summit

Make scientific facts, concepts, and events past and present come to life in your classroom through story... a most powerful tool.

Author, songwriter, stone carver, teacher, and inspirational speaker, John Mooy touches American lives in many ways. Soon to be published, Once Upon a Mail Route is the poignant story of his father's 1950s southwestern Michigan rural postal delivery route. Lyrics to Fingertip Friends tell about those who served in Vietnam and whose names appear on the Vietnam Memorial Wall in Washington, D.C. After the Oklahoma City bombing, John helped federal prosecutors construct a story understandable to a jury.

Recently, the Grand Rapids Whitecaps baseball team adopted A Pitch for Reading, John's program to promote a love of reading. John has done commentary for Public Radio and speaks nationally on his uncomplicated approach to developing positive character and a work ethic known as 7-24-21-5.

9:30–10:30 AM Presentations**SESSION 1**

NSTA Avenue Session: Siemens We Can Change the World Challenge: Going Green (and Digital) in the 21st Century (Env)

(Elementary–High School) 307, Convention Center

Lance Rougeux (*lance_rougeux@discovery.net*), Discovery Education, Silver Spring, Md.

More than ever our students are driving change and transforming the world into a greener place. Help your students learn how they can make an impact everyday, in the classroom and at home, as you learn a “green” tech tip for every day of the week. We’ll also discuss the free resources available through the Siemens We Can Change the World Challenge, the premier national K–12 student sustainability competition.

SESSION 2

ISTE: Eliciting Student Creativity Using Technology (Gen)

(General) Hall D/Room 1, Convention Center

Ben Smith (*ben@edtechinnovators.com*), York, Pa.

Jared Mader (*jared@edtechinnovators.com*), Red Lion (Pa.) Area School District

Today’s students are digital natives and learn best in a constructivist environment through media interaction, hands-on learning practices, and problem-based strategies. The use of technology facilitates this model. We’ll share real student examples to help you make it happen in your own classroom.

SESSION 3

Equity and Excellence: Implementation and Assessment of Rigorous, Heterogeneous Science Courses (Gen)

(High School) Hall D/Room 5, Convention Center

Matthew Anthes-Washburn (*mfa6@cornell.edu*), **Bonnie LaFleur** (*bonnie_lafleur@dpsk12.org*), **Nathan Grover** (*nathan_grover@dpsk12.org*), and **John Youngquist**, Denver East High School, Denver, Colo.

Learn about a heterogeneous grouping project at a diverse urban public high school and its effects on curriculum, classroom culture, and student achievement.

SESSION 4



Connecting the Dots: Fun, Fascinating, and Functional Integration of Science, Technology, and Literacy (Env)

(Elementary) Hall D/Room 6, Convention Center

Elizabeth S. Cullin (esc11@scasd.org), **Jennifer L. Cody** (jlc36@scasd.org), and **Donnan M. Stoicovy** (dms11@scasd.org), Park Forest Elementary School, State College, Pa.

Presider: Patricia L. Vathis, Pennsylvania Dept. of Education, Harrisburg

Our project engages students in authentic, purposeful science writing about our schoolyard. Students created individual “zines” about self-chosen topics and published a schoolyard field guide.

SESSION 5



Simple Methods for Improving Student Performance and Motivation (Gen)

(General) Hall D/Room 7, Convention Center

Donald A. White (donald.white@cowetaschools.org), Coweta County School System, Newnan, Ga.

Discover some simple, low-cost/no-cost methods for improving student performance and motivation in the science classroom.

SESSION 6

Connecting with Animals in the Classroom (Bio)

(Preschool–Elementary) Hall D/Room 8, Convention Center

Stephanie Selznick (stephanie@super8records.com), Curley K–8 School, Jamaica Plain, Mass.

Suzanne M. Flynn (suzannemflynn@earthlink.net), Cambridge College, Cambridge, Mass.

Come observe animals, then discuss their habitats and classroom lifestyles. Connections link science with math, ELA, geography, and technology via standards-based handouts and student work.

SESSION 7 (two presentations)

Assessing Immersive Full-Dome Planetarium Technology in Teaching the Sun–Earth–Moon System to Elementary Students (Earth)

(Elementary) Hall D/Room 10, Convention Center

Marsha Bednarski (bednarskim@ccsu.edu) and **Kristine Larsen** (larsen@ccsu.edu), Central Connecticut State University, New Britain

Do 3-D models of the Earth–Moon–Sun system improve the learning of abstract concepts? We compared the learning experience of students who went to the planetarium to see the Sun, Earth, and Moon show before and after classroom activities.

Using Children’s Observations to Guide Explanations in Astronomy (Earth)

Julia D. Plummer (plummerj@arcadia.edu), Arcadia University, Glenside, Pa.

Cynthia Slagle, Colonial Middle School, Plymouth Meeting, Pa.

We’ll share classroom-based research that highlights successful kinesthetic and visual modeling strategies and uncovers challenges students face in explaining their observations of the day/night sky.

SESSION 8

Everyone Loves CHEESESTEAK! (Cool, Hands-On, Exciting, Economical Science Explorations Science Teachers Everywhere “Aughta” Know) (Gen)

(Elementary) Hall D/Room 15, Convention Center

Sharon R. Anibal (sharon.anibal@mobot.org) and **Tracie F. Cain** (tracie.cain@mobot.org), Missouri Botanical Garden, St. Louis

Sharon F. Kassing, Saint Louis Zoo, St. Louis, Mo.

Betsy King (bking@slsc.org), Saint Louis Science Center, St. Louis, Mo.

These proven K–6 Science Alliance activities use inexpensive materials and are guaranteed to satisfy your hunger! Come enjoy some CHEESESTEAK today!

SESSION 9

Bringing Cutting-Edge Research to the Middle School Classroom (Chem)

(Middle Level) Hall D/Room 19, Convention Center

Tracy N. Vassiliev (tvassiliev@bangorschools.net), James F. Doughty School, Bangor, Maine

I will share several middle level inquiry activities I created through a RET (research experience for teachers) program at the University of Maine.

SESSION 10**Family Science Night—Excite the Entire Community!** (Gen)*(Middle Level)* Hall D/Room 20, Convention Center**Robert T. Jefferson, Jr.** (*mrrtj@yahoo.com*), Tantasqua Regional Junior High School, Fiskdale, Mass.

Family science nights engage the entire school community in the thrill of science. As an added bonus—they learn real science!

SESSION 11**The Last Book Project** (Gen)*(Middle Level)* Hall D/Room 21, Convention Center**Merrie Southgate**, Agnes Pflumm and Co., Charleston, S.C.

Join the author of the acclaimed Agnes Pflumm science education novels to learn how you and your students can set sail for free on a literacy-based, arts-infused, science-centered, technology-driven quest for ocean literacy.

SESSION 12**Building Up, Not Dumbing Down: Making Science Curriculum Accessible to English Language Learners and Other Struggling Readers** (Gen)*(Elementary–High School)* Hall D/Room 25, Convention Center**Kathleen W. Osgood, Kay S. Roberts, Lovinda G. Weaver**, and **Lisa Jacinto-Cassidy**, Rose Tree Media School District, Media, Pa.

Elementary, middle, or high school teachers—learn strategies and activities to help ELLs and other struggling readers comprehend science content.

Special Activities and Events for Preservice and New Teachers

Is This Your First NSTA Conference?

See description on page 95.

First-Time Attendee Session I

Thursday, March 18

8:00–9:00 AM

*Philadelphia Marriott, Grand Salon E***First-Time Attendee Session II**

Thursday, March 18

3:30–4:30 PM

*Philadelphia Marriott, Grand Salon E***Preservice and New****Teachers Breakfast**

See description on page 104.

Thursday, March 18

9:00–10:30 AM

Philadelphia Marriott, Grand Salon A

Tickets Required (M-1; \$12) and, if still available, must be purchased at the Registration Area by 8:00 PM on

Wednesday, March 17.

SESSION 13

NARST Session: Content-Area Literacy in New Teachers' Secondary Science Classrooms: Challenges and Possibilities (Gen)

(Middle Level–High School)

Anthony, Loews

Ann Rivet (rivet@tc.columbia.edu) and **Audrey Rabi Whittaker** (arw2131@columbia.edu), Teachers College Columbia University, New York, N.Y.

Derek Dubossi (ddubossi@yahoo.com) and **Sarah Snyder** (sarah.rachael.snyder@gmail.com), Bronx Academy of Letters, Bronx, N.Y.

We will examine the links between literacy and science learning and describe three new teachers' philosophies and attempts to integrate literacy strategies into their science instruction.

SESSION 14 (two presentations)

(General)

Commonwealth A, Loews

SCST Session: Mini Journals: A Model for Authentic Inquiry-based Investigations in the College Science Classroom (Gen)

Stephen Witzig (sbwitzig@mizzou.edu) and **Sandra K. Abell** (abells@missouri.edu), University of Missouri, Columbia

Explore a model for inquiry that mirrors authentic scientific practice using mini journals (mock scientific papers).

SCST Session: 21st-Century Learning Skills: Striving to Enhance Student Learning in Science (Gen)

Thomas R. Lord (trlord@iup.edu) and **Benjamin Tost**, Indiana University of Pennsylvania, Indiana

Studies find that students in the United States remember the sciences they've taken in school for only a short time. National organizations in science education have developed a document, 21-Century Learning Skills, to guide future science teaching.

SESSION 15

As Easy as "One" in Dimensional Analysis and Stoichiometry (Chem)

(High School–College)

Congress A, Loews

Wai S. Chan (waisum.chan@yahoo.com), W.P. Clements High School, Sugar Land, Tex.

Help students overcome obstacles in dimensional analysis and stoichiometry with the concept of "one."

SESSION 16

Science Instruction for Diverse Learners: Closing the Science Achievement Gap (Gen)

(Supervision/Administration)

Regency C2, Loews

Lashaunda R. Smith-Norman (lrnorman@ksu.edu), Kansas State University, Manhattan

Learn practical strategies, other than reading, that can be implemented immediately to improve science achievement in diverse learners.

SESSION 17

ASTE Session: Information, Networking, and Support for Preservice and New Teachers (Gen)

(General)

Tubman, Loews

Jon E. Pedersen (jep@unl.edu), ASTE President, and University of Nebraska–Lincoln

David A. Wiley (david.wiley@lr.edu), NSTA Director, Preservice Teacher Preparation, and Lenoir-Rhyne University, Hickory, N.C.

Come network with preservice teachers, new teachers, and science teacher educators as we talk about issues of importance to you.

SESSION 18

Podcasting to Learn: Digital Learning in the Global Society (Gen)

(General)

Washington A, Loews

Sheila F. Pirkles (pirkles@apsu.edu), Austin Peay State University, Clarksville, Tenn.

Learn about a joint venture between preservice science teachers in the southeastern United States and Northern Ireland.

SESSION 19

Google Sky, WorldWide Telescope, and Celestia in the Undergraduate Nonscience-Major Classroom and Lab (Phys)

(High School–College/Informal Ed.)

Washington C, Loews

Randall H. Landsberg (randy@oddjob.uchicago.edu), University of Chicago, Ill.

Explore innovative, interactive labs and self-directed modules that use new, emerging software tools such as Google Sky, WorldWide Telescope (WWT), and Celestia.

SESSION 20

Poop Happens**(Gen)***(Middle Level–High School)*

303, Marriott

Julie Heintz (jheintz@tfd215.org), T.F. North High School, Calumet City, Ill.

See how every student's favorite topic can be used in a variety of settings in the classroom. Handouts.

SESSION 21

How Do We Know DNA Is the Genetic Material? An Example for Teachers**(Bio)***(High School)*

307, Marriott

J. Steve Oliver (soliver@uga.edu) and **Kyung-A Kwon** (kakwon@uga.edu), University of Georgia, Athens

Science is the activity that explains “how we know” with regard to the natural world. We'll explore this question from laboratory and classroom perspectives.

SESSION 22

PDI LHS Pathway Session: Alternative Energy for Transportation: Hydrogen and Fuel Cells**(Env)***(Informal Education)*

404, Marriott

Barbara Nagle (bnagle@berkeley.edu), Lawrence Hall of Science, University of California, Berkeley

Learn about the chemistry, environmental science, and issues related to the use of hydrogen and fuel cells for transportation. Take home classroom activities on alternative energy for transportation and how hydrogen fuel cells work.

SESSION 23

NSTA NSTA Avenue Session: How to Write Grants for Your Classroom: Tips from the Toshiba America Foundation Team**(Gen)***(Elementary–High School)*

Franklin 2, Marriott

Toshiba America Foundation, New York, N.Y.

Come learn about science and math classroom grants for K–12. For more information, please visit www.taf.toshiba.com.

SESSION 24

All Heated Up**(Phys)***(Middle Level–High School)*

Franklin 6, Marriott

Mandy P. Frantti (mpfrantti@hotmail.com), Munising (Mich.) Public Schools

Consider heat energy and temperature with examples both commonplace (baking a cake) and impressive (space). Try some activities and learn about current NASA missions.

SESSION 25

Tesla Tales**(Phys)***(General)*

Franklin 7, Marriott

Carlos R. Villa (villa@magnet.fsu.edu), National High Magnetic Field Laboratory, Tallahassee, Fla.

Take a journey through the history of electromagnetic discovery. Learn how to re-create the experiments of some of history's greatest scientists.

SESSION 26

FDA Symposium Session: Food-borne Outbreak Investigations**(Gen)***(General)*

Franklin 10, Marriott

Sherri McGarry, U.S. Food and Drug Administration, College Park, Md.

Learn how FDA investigates outbreaks of food-borne illness.

SESSION 27

Using Metacognition and Formative Assessment to Improve Student Learning in Chemistry**(Chem)***(High School)*

Franklin 11, Marriott

Angela Powers, Metropolitan State College of Denver, Colo.

Learn how to incorporate metacognitive strategies and formative assessment in introductory chemistry.

SESSION 28

Fun Demos That Will Get You Excited About Teaching Physical Science!**(Chem)***(Middle Level–High School)*

Grand Salon B, Marriott

Patti Duncan, Wallenpaupack Area High School, Hawley, Pa.

Nothing gets both teachers and students excited about the classroom as much as really cool demos. Come experience the best I have to offer!

SESSION 29

Virtual Tools, Digital Kids**(Gen)***(Middle Level–High School)*

Grand Salon K, Marriott

Caysie H. Heil, Malden High School, Malden, Mo.

Feel overwhelmed by all the resources online? Get a firsthand look at how to navigate the virtual world, including online activities, dry labs, educational games, testing sites, and even grant opportunities. The best part...they are all FREE!

SESSION 30

NASA’s High-Energy Vision: Chandra and the X-ray Universe (Earth)

(General) *Freedom F, Sheraton*

Donna L. Young (*donna.young@tufts.edu*), The Wright Center for Science Education, Tufts University, Medford, Mass.

Explore the latest discoveries from NASA’s Chandra X-ray Observatory concerning black holes, supernovae, colliding galaxies, stellar evolution, and the structure of the universe.

SESSION 31 (two presentations)

(General) *Freedom H, Sheraton*

President: **Janet Warburton** (*warburton@arcus.org*), Arctic Research Consortium of the United States, Fairbanks, Alaska

Cultivating Teacher-Researcher Relationships for Professional Development and Improvements in Science Education (Gen)

Kristin Timm (*kristin@arcus.org*) and **Janet Warburton** (*warburton@arcus.org*), Arctic Research Consortium of the United States, Fairbanks, Alaska

Explore networks and tools available to support discussion, collaboration, and professional relationships among teachers and researchers to improve science content and pedagogical approaches in education.

Using Real-Time Communication Technology to Connect Students with Real Science Research (Gen)

Kristin Timm (*kristin@arcus.org*) and **Janet Warburton** (*warburton@arcus.org*), Arctic Research Consortium of the United States, Fairbanks, Alaska

Learn how to use simple internet technology to engage students with scientists and real research activities from around the world.

SESSION 32

No Folds, No Outcrop, No Structures, No Problem! (Earth)

(High School) *Independence B, Sheraton*

James Naum-Bedigian (*naumb@marist.com*), Marist School, Atlanta, Ga.

Have your students do hands-on field work with anticlines, synclines, and structural geology even if you have no outcrops to examine. Take home a CD.

9:30–10:30 AM Workshops

“Write-On!” Integrating Science and ELA Through Inquiry-based, Hands-On Investigations and Interactive Writing (Chem)

(Preschool–Elementary) *Hall D/Room 9, Convention Center*

Dee Mock (*dmock@houstonisd.org*), **Sandra R. Antalis**, and **Daniel Alcazar-Roman** (*dalcazar@houstonisd.org*), Houston (Tex.) Independent School District

Science and English language arts are a natural integration. Motivate K–2 students to write using hands-on science investigations and interactive writing.

Science Connections Are Everywhere: Using Children’s Literature to Connect Science Lessons in All Content Areas (Gen)

(Elementary) *Hall D/Room 11, Convention Center*

Aimee Ayers (*aimee.ayers@ttu.edu*) and **Sarah J. Anderson** (*sarah.anderson@ttu.edu*), Texas Tech University, Lubbock

Bring science to life with your favorite children’s books. We will model a read-aloud approach followed by a related science activity.

Oobleck, Slime, and Dancing Spaghetti: Using Children’s Literature to Enhance Your Science Curriculum (Gen)

(Preschool–Elementary) *Hall D/Room 16, Convention Center*

Jennifer C. Williams (*jwilliams@newmanschool.org*), Isidore Newman School, New Orleans, La.

Explore the seamless blend of “story time” and science. Promote enthusiasm and understanding of scientific concepts by integrating children’s literature into hands-on, inquiry-based experiments and activities

Close the Digital Generation Gap with a National Park Service Multimedia Education Program (Gen)

(Informal Education) *Hall D/Room 17, Convention Center*

Kristen Nein, National Park Service, Lakewood, Colo.

Views of the National Parks, a multimedia education program, is a resource for teachers wanting to use technology as a bridge between science and literacy.

Teaching Nature of Science Beyond the Classroom (Gen)

(Informal Education) Hall D/Room 18, Convention Center

Judith S. Lederman (ledermanj@iit.edu) and **Gary M. Holliday** (ghollida@iit.edu), Illinois Institute of Technology, Chicago

Informal science settings provide a unique opportunity to improve the scientific literacy of both teachers and students. We'll share activities and practical applications.

We're Bored...Get the Board! (Gen)

(Elementary–Middle Level) Hall D/Room 23, Convention Center

Georgia Robinett (gkrobin@hotmail.com), Palestine, Tex.

Learn how to use inexpensive materials to create board games and other games that can be adapted for any unit.

Engaging and Interdisciplinary Climate Change: Global Connections and Sustainable Solutions (Gen)

(General) Hall D/Room 28, Convention Center

Pamela Whiffen (pwpwr@aol.com), NASA Educator Ambassador, Phoenix, Ariz.

Experience hands-on lessons that demonstrate the interconnections between natural systems and human actions using carbon footprint, emissions trading, and energy policy. Free curriculum!

Point, Game, Set, Match: Science Wins with Tennis Ball Containers (Gen)

(General) Hall D/Room 29, Convention Center

David F. Mastie (mastie@umich.edu), Retired Educator, Chelsea, Mich.

Sandra Henderson, University Corporation for Atmospheric Research, Boulder, Colo.

Free, “green,” transparent, unbreakable, and infinitely adaptable, used tennis ball containers offer hands-on activities making density, porosity, permeability, capillarity, core-sampling, and other elusive ideas visible.

Fibonacci: Connecting Subjects and Topics and Having Fun with Science (Gen)

(General) Hall D/Room 30, Convention Center

Marilyn M. Brodie (m.m.brodie@shu.ac.uk) and **Nicky A. Fuller** (n.a.fuller@shu.ac.uk), Sheffield Hallam University, Sheffield, U.K.

Discover the applications of Fibonacci numbers in science, engineering, art, music, and many other areas.

NMLSTA Session: Hop to It! Integrating Math and Science Is Easy and Fun with Frog Jumping (Gen)

(Middle Level) Commonwealth B, Loews

MaryLou Lipscomb (lipscomb@imsa.edu), Illinois Mathematics and Science Academy, Aurora

President: Liz Martinez, Illinois Mathematics and Science Academy, Aurora, Ill.

These integrated lessons in our after-school program keep kids coming back for more. Come construct origami frogs, collect and analyze jumping data, and discuss variables.

Making Biology Come Alive Through Bioinformatics (Bio)

(High School) Commonwealth C, Loews

Presenter to be announced

Enhance relevance of protein synthesis and mutation lessons using bioinformatic websites and model construction. Take home a CD with lesson plans and student documents.

Science Department Overhaul (Gen)

(High School) Commonwealth D, Loews

Angela B. Caylor (angela.caylor@cobbk12.org), **Gretchen Davis** (gretchen.davis@cobbk12.org), and **Suzanne Keel** (suzanne.keel@cobbk12.org), McEachern High School, Powder Springs, Ga.

Is your department interested in using collaboration and data teams more effectively? Learn how to create common threads between biology, chemistry, and earth and environmental science using inquiry, the use of “power words,” outside reading, and lab processing skills.

Nourishing the Planet in the 21st Century (Bio)

(Elementary–High School) Franklin 1, Marriott

Nancy Bridge (nancy.bridge@ocps.net), Olympia High School, Orlando, Fla.

President: Christina W. Altenau, FleishmanHillard, Houston, Tex.

Food, glorious food! In this inquiry-based workshop we will explore properties of soil, soil plant interactions, plant mineral nutrition, and fertilizer usage. Engage in hands-on lab activities and receive copies of Nutrients for Life curricula for elementary and middle school. All of these activities can be taken directly back to the classroom.

Spork & Beans: Addressing Evolutionary Misconceptions (Bio)

(General) *Franklin 4, Marriott*

Christopher Dobson (dobsonc@gvsu.edu) and **Stephen Burton** (burtonst@gvsu.edu), Grand Valley State University, Allendale, Mich.

Address documented misconceptions your students have about evolution with this engaging inquiry activity recently published in *The American Biology Teacher*. Take home a detailed 5E lesson plan.

Do More Than You Thought Possible in the First Week of School (Phys)

(Middle Level–High School) *Grand Salon C, Marriott*

John L. Sweeney (john.sweeney@sfaschool.cdom.org), St. Francis of Assisi Catholic School, Cordova, Tenn.

Gather, organize, and interpret data; learn the scientific method; design and conduct an experiment; complete a science fair project; and become the coolest teacher in school—all in the first three days!

NASA Brings You Newton’s Laws of Motion (Phys)

(Middle Level–High School) *Grand Salon D, Marriott*

David P. Beier (dbeier@barstowschool.org), The Barstow School, Kansas City, Mo.

Be a part of Newton’s laws of motion with these 20 hands-on investigations. A NASA Astrophysics Ambassador will walk you through the program. FREE NASA materials!

NASA Data, Activities, and Analysis in Your Classroom (Earth)

(High School) *Freedom E, Sheraton*

James Lochner (james.c.lochner@nasa.gov), USRA and NASA Goddard Space Flight Center, Greenbelt, Md.

Barbara Mattson (barb.mattson@nasa.gov), ADNET and NASA Goddard Space Flight Center, Greenbelt, Md.

Bring the stars down to Earth with Student Hera, NASA software for studying satellite data! We’ll share hands-on activities and computer software for student analysis.

Round Goes the Water! (Earth)

(Elementary–Middle Level) *Freedom G, Sheraton*

Paulette Donald, Los Angeles (Calif.) Unified School District

These activities explore the hydraulic cycle and how it transforms itself between evaporation, condensation, and precipitation.

FOCUS: Environmental Art and Science Campaign (Env)

(Elementary–High School) *Independence A, Sheraton*

Jonathan Shannon (jonathan.shannon@noaa.gov), NOAA Office of National Marine Sanctuaries, Silver Spring, Md.

A new partnership and educational campaign, FOCUS (Forests, Ocean, Climate, and US) bridges the worlds of art and science to inspire people of all ages to become better stewards of our precious water resources.

The Science of Energy (Gen)

(Middle Level–High School) *Logans 2, Sheraton*

Mary Spruill (info@need.org), The NEED Project, Manassas, Va.

Confidently teach energy concepts with these center-based hands-on activities that investigate forms of energy—motion, sound, thermal and radiant energy, electrical and chemical energy—and the energy transformations between them.

Whose Fault Is It? Earthquake Locating (Earth)

(General) *Philadelphia North, Sheraton*

Eric P. Muller (emuller@exploratorium.edu), Exploratorium, San Francisco, Calif.

Locate earthquake epicenters with a true hands-on activity— shaking hands!

An Inquiry Approach to Teaching About the Force of Gravity (Earth)

(Middle Level–High School) *Philadelphia South, Sheraton*

Christie Orlosky (cz23@aol.com), Armstrong School District, Ford City, Pa.

Explore a constructivist approach to learning about gravity and the role it plays in the solar system. We’ll use a simulation to observe the relationship between mass and force of gravity before applying the equation. Take home a standards-based lesson and simulation on CD.

9:30–11:00 AM Presentation

SESSION 1

PDI **McREL Pathway Session: Using a Formative Assessment Process to Determine Evidence of Student Understanding** (Gen)

(General) 401/402, Marriott

Anne L. Tweed (atweed@mcrel.org), 2004–2005 NSTA President, and Mid-continent Research for Education and Learning, Denver, Colo.

Bj Stone (bstone@mcrel.org), Mid-continent Research for Education and Learning, Denver, Colo.

Using a formative assessment process helps teachers gather evidence of student learning that can be used to inform instruction and adapt to students' learning needs. Learn about a feedback process and formative assessment strategies that will close students' learning gaps. Handouts provided.

9:30–11:00 AM Exhibitor Workshops

Stuck in the Middle with You (Gen)

(Grades 5–9) 104A/B, Convention Center

Sponsor: Science Kit & Boreal Laboratories

Razzle Dazzle Patty Muscatello (pmuscatello@vwreducation.com), Science Kit & Boreal Laboratories, Tonawanda, N.Y.

Middle school science for today's students requires a good bit of dazzle. Discover how to dazzle your students with fresh, interactive activities that transform natural curiosity into science inquiry skills.



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GIS for Earth Science Inquiry (Earth)
(Grades 6–College) 105A/B, Convention Center

Sponsor: ESRI

Joseph Kerski (jkerski@esri.com), ESRI, Redlands, Calif.
Roger T. Palmer (roger@gisetc.com), GISetc, Dallas, Tex.
Explore how and why GIS (geographic information systems) and other geospatial technologies (GPS and remote sensing) are essential in earth science education and careers. Investigate local to global topics via practical classroom activities supporting science standards and inquiry. Receive free GIS software and classroom resources. For more information, visit us online at <http://edcommunity.esri.com>.

EDVOTEK Biotechnology: Biotechnology on a Budget (Bio)
(Grades 6–College) 110A/B, Convention Center

Sponsor: EDVOTEK

Jack Chirikjian (info@edvotek.com), EDVOTEK, Bethesda, Md.

Bring DNA, genetics, and biotechnology to life in your classroom with exciting, affordable, and ready-to-use activities, including genetics games, DNA extraction, spooling, and DNA electrophoresis using fluorescent dyes. Participants are automatically entered into a raffle for a FREE classroom electrophoresis setup (a \$500 value)!

Science and the Real World: 21st-Century Learning Tools from NBC News (Gen)
(General) 113A, Convention Center

Sponsor: NBC Learn

Beth Nissen (beth.nissen@nbcuni.com), **Michael Levin**, and **Norman Cohen** (norman.cohen@nbcuni.com), NBC Learn, New York, N.Y.

Understanding science—and how it applies to everyday life—is critical in preparing students for 21st-century success. Learn how NBC News Archives on Demand delivers a broad spectrum of constantly updated multimedia content, connecting today’s visual learners with the physics, chemistry, life sciences, and technologies that surround them.

From Science to Engineering (Gen)
(Grades K–8) 113B, Convention Center

Sponsor: Pearson

Kathryn C. Thornton, University of Virginia, Charlottesville

Typical science activities focus on demonstrating a science concept whereas engineering focuses on solving a problem. Brainstorm ideas on how to extend your science activities into engineering design.

Green Approaches to Inquiry in the Chemistry Classroom (Chem)
(Grades 9–12) 113C, Convention Center

Sponsor: Pearson

Ed Waterman, Retired Educator, Fort Collins, Colo.

Learn how to implement simple, material-conserving, time-efficient, and effective inquiry activities using hands-on and virtual labs. Each activity teaches core content and fosters problem solving, creativity, and invention. Safety and differentiation are built in.

Inquiring Minds Want to Know: An Introduction to Inquiry (Bio)
(Grades K–5) 201B, Convention Center

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

This workshop will introduce you to the inquiry method for teaching science and math. Learn how student-guided hands-on lessons, conceptual development, and literacy supplements combine to make inquiry a proven alternative to textbook programs.

Learning Chemistry with Software for Molecular-Level Visualization (Chem)
(Grades 9–College) 203A, Convention Center

Sponsor: Wavefunction, Inc.

Paul Price (sales@wavefun.com), Wavefunction, Inc., Irvine, Calif.

Do you see your students struggle with the key concepts of molecular science? Would you like to teach more effectively with the help of molecular simulations that are scientifically sound? Attend this hands-on workshop and learn how to truly engage your students using topics from the regular high school chemistry curriculum. Laptop computers provided for workshop.

Nano in Your Classroom: Easy Lessons Tied to Basic Science Concepts (Gen)*(Grades 6–12) 203B, Convention Center*

Sponsor: National Nanotechnology Infrastructure Network

Joyce Palmer (*joyce.palmer@mirc.gatech.edu*) and **Nancy Healy** (*nancy.healy@mirc.gatech.edu*), National Nanotechnology Infrastructure Network, Atlanta, Ga.

The National Nanotechnology Infrastructure Network will present secondary science nanotechnology-focused lessons connected to basic science concepts and NSES content standards. Participants will do hands-on activities that demonstrate how nano can be part of the secondary science classroom. Each participant will receive a CD of all instructional materials.

Need “Energy” in Your Environmental Classes? Learn About Carolina’s NEW INQUIRIES IN SCIENCE™ Environmental Series (Env)*(Grades 9–12) 204A, Convention Center*

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Looking for relevant, exciting lab activities for environmental science? Investigate climate change and explore alternative energy sources in this inquiry-based workshop. Carolina’s Inquiries in Science Environmental series provides hands-on activities to make teaching challenging topics effortless. Free teacher materials and door prizes!

Comparative Vertebrate Anatomy with Carolina’s Perfect Solution® Specimens (Bio)*(Grades 6–12) 204B, Convention Center*

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Hands-on, inquiry-based cooperative learning with dissection has been proven the most effective method to teach comparative anatomy. Come use this scientific inquiry to observe, describe, and discover characteristics of vertebrates. Experience superior quality with Carolina’s Perfect Solution specimens, which offer a safe alternative to formaldehyde and require no special ventilation or disposal.

The Layered Earth: Geology Curriculum from the Makers of Starry Night (Earth)*(Grades 8–12) 303A/B, Convention Center*

Sponsor: Fisher Science Education

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

What powers the internal processes that produce volcanoes, earthquakes, and mountains? What is the rock cycle and how does it work? What is an earthquake? How are volcanoes formed? What will Earth look like in the future? Join Fisher Science Education and Starry Night Education on the big screen and experience the Layered Earth, the geology curriculum from the makers of Starry Night.

Teaching Chemistry Without “When Am I Going to Need This?” (Chem)*(Grades 9–12) 304, Convention Center*

Sponsor: Kendall Hunt Publishing Co.

Kelly Deters, Shawnee Heights High School, Tecumseh, Kans.

Discover an inquiry-based college prep chemistry curriculum that is completely thematic and taught in contexts that interest students, such as the chemistry involved in airbags, sports drinks, and glow-in-the-dark phenomena. Your students will learn the content you need them to understand!

A Natural Approach to Chemistry: Teaching About Heat and Temperature (Chem)*(Grades 10–12) Hall D/Room 2, Convention Center*

Sponsor: LAB-AIDS, Inc.

Tom Hsu, Author, Andover, Mass.

Join author Tom Hsu for a special preview and hands-on examination of selected laboratory activities from *A Natural Approach to Chemistry*, a new high school program that takes a fresh look at chemistry today. It features an innovative new probeware system that is rugged, simple to use, and makes accurate, quantitative measurements accessible to all students. Selected lab activities will address concepts related to heat, specific heat, and temperature. Selected labs and other program materials will be provided for all participants.

9:30–11:30 AM Presentations

SESSION 1

PDI CSME Pathway Session: Integrating Biotechnology in Environmental Education (Bio)

(Elementary–Middle Level) 403, Marriott

Cindy Ghent (*cghent@towson.edu*), Towson University, Towson, Md.

Use the hands-on/minds-on approach to understanding the integration of technology as it applies to environmental education. We'll fingerprint plant DNA by electrophoresis, discuss the development of edible vaccines, simulate a viral epidemic to better understand the use of epidemiology, and map the progression of fungal infection of the American chestnut through history.

SESSION 2

PDI TERC Pathway Session: Didn't We Do Graphs Like That in Math? (Gen)

(Elementary–Middle Level) 406, Marriott

Karen Economopoulos (*karen_economopoulos@terc.edu*) and **Sally Crissman** (*sally_crissman@terc.edu*), TERC, Cambridge, Mass.

Explore strategies for synchronizing data literacy teaching in math and science and helping connect and synthesize learning about data in these content areas.

SESSION 3

PDI FHL Pathway Session: Consider the Evidence—Using Student Journals to Drive Instruction (Gen)

(Elementary–Middle Level) 407/408, Marriott

Therese Arsenault, Harvard Graduate School of Education, Cambridge, Mass.

Daily journal assessment in middle school science classes provides direction for science instruction. We'll analyze student journal entries and discuss strategies for using journals to drive instruction.

SESSION 4

PDI EDC Pathway Session: Connecting Science and Literacy: The Role of Explicit Teaching (Gen)

(Elementary) 411/412, Marriott

Jeff Winokur (*jwinokur@edc.org*) and **Karen Worth** (*kworth@edc.org*), Education Development Center, Inc., Newton, Mass.

Martha Heller-Winokur (*martha.heller_winokur@tufts.edu*), Tufts University, Medford, Mass.

We will share ways to use mini lessons to support the connection between inquiry science and literacy instruction at the upper elementary level.

9:30 AM–12:30 PM Presentations

SESSION 1

PDI Skills Pathway Session: Infusing 21st-Century Skills into Your Science Classes (Phys)

(High School) 405, Marriott

Jackie Miller (*jsmiller@edc.org*) and **Marian Pasquale** (*mpasquale@edc.org*), Education Development Center, Inc., Newton, Mass.

Students must know how to work collaboratively; gather, sort, and synthesize information; apply information to solving real-world challenges and problems; and communicate their ideas clearly and effectively. In this session we will examine these 21st-century skills and demonstrate how they can be integrated into the science curriculum.

SESSION 2

PDI BSCS Pathway Session: The BSCS 5E Instructional Model—Constructing Your Own Understanding (Gen)

(General) 414/415, Marriott

Betty Stennett, BSCS, Colorado Springs, Colo.

Do you use the BSCS 5E Instructional Model in planning your units? Does your curriculum use this instructional model? Engage with BSCS (the birthplace of the 5Es) to deepen your understanding of this instructional model.



9:45–10:45 AM International Conference Concurrent Sessions

These sessions will feature papers from international science educators on issues of assessment of students' and teachers' knowledge. *Tickets required; by preregistration only.*

K–12 Assessment #1

(Grades K–12)

Grand Salon H, Marriott

President: Judith Lederman, Illinois Institute of Technology, Chicago

Using Assessment to Improve Learning: Effective Marking

Douglas A. Buchanan, University of Edinburgh, U.K.

Improving Student Achievement on Assessments of Science Concepts

Jane Konrad, University of Pittsburgh, Pa.

Evaluating the ENEM High School Science Exam in Brazil. Constraints and Possibilities

Everaldo dos Santos, Parana State Educational Board, Curitiba, Brazil

Christiane Gioppo, The Federal University of Parana, Curitiba, Brazil

K–12 Assessment #2

(Grades K–12)

Grand Salon I, Marriott

Presider: Norman Lederman, Illinois Institute of Technology, Chicago

Assessing Student Understanding of Science: Perspectives and Solutions (Sweden)

Hans Persson, University of Stockholm, Sweden

Elisabeth Hagman and **Anna Lindblom**, Haninge, Sweden

Assessing Students' HOCS Understanding of Science

Uri Zoller, University of Haifa–Oranim, Tivon, Israel

Assessing High School Students' Understanding of Weightlessness

Ming-Liang Lin, Tsoying Senior High School, Zuoying, Kaohsiung, Taiwan

Ming Jun Su, Shu-Te University, YanChou, Kaohsiung County, Taiwan

Shing-Ho Chiang, National Kaohsiung Normal University No. 62, Yanchao, Kaohsiung County, Taiwan

College-Level Assessment

(College)

Grand Salon J, Marriott

Presider: Kevin White, Illinois Institute of Technology, Chicago

Initiating Intercultural, Interdisciplinary Programs

Peter Lynch, Green Across the Pacific, Shoreham, Vt.

Tomomichi Kobayashi, Tottori University of Environmental Studies, Shoreham, Vt.

Assessing the Relationship Between Achievement Goals and Teaching Self-Efficacy of Turkish Preservice Science Teachers

Burcu Senler, Mugla University, Turkey

Assessment IS a Four-Letter Word: TOOL

Linda Schoen-Giddings, South Carolina Dept. of Education, Columbia

10:00–10:10 AM Exhibits Opening/Ribbon Cutting Ceremony

Lobby, Exhibit Hall B, Convention Center

Presider: Pat Shane, NSTA President, and The University of North Carolina at Chapel Hill

Welcoming Remarks: Christine Anne Royce, Chairperson, NSTA Philadelphia National Conference, NSTA Director, Professional Development, and Shippensburg University, Shippensburg, Pa.

Musical Entertainment: Northeast High School Brass Ensemble under the direction of William Scheible, Class Instrumental Music Teacher, and William Wenglicki, Director of Instrumental Music

Special Guests: Pat Shane; Christine Anne Royce; Page Keeley, NSTA Retiring President, and Maine Mathematics and Science Alliance, Augusta; Alan J. McCormack, NSTA President-Elect, and San Diego State University, San Diego, Calif.; Patricia Simmons, NSTA President-Elect, and North Carolina State University, Raleigh; Carli Yeager-Hall, President, Pennsylvania Science Teachers Association, Program Committee, NSTA Philadelphia National Conference, and Athens Area High School, Athens, Pa; Lynn Gatto, NSTA Director, District IV, and University of Rochester, Honeoye Falls, N.Y.; Francis Q. Eberle, NSTA Executive Director, Arlington, Va.; Donald Kline, Program Coordinator, NSTA Philadelphia National Conference, and Lebanon Valley College, Annville, Pa; Ambra Hook, Local Arrangements Coordinator, NSTA Philadelphia National Conference, and School District of Philadelphia, Pa; Rick Smith, NSTA Managing Director, Advertising, Exhibits, and Workshops, Arlington, Va.

10:00–11:15 AM Exhibitor Workshops

Bio-Rad ELISA and Swine Flu (Bio)

(Grades 7–College)

103B, Convention Center

Sponsor: Bio-Rad Laboratories

Sherri Andrews (biotechnology_explorer@bio-rad.com) and **Essy Levy** (biotechnology_explorer@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.

What do pigs and people have in common? Swine flu is thought to be a rearrangement of four known strains of influenza A virus: one normally infecting humans, one normally infecting birds, and two normally infecting pigs (swine). The new strain, H1N1, is transmitted from person to person. An ELISA assay is a powerful diagnostic tool that enables the rapid detection of disease-causing agents such as H1N1.

Inquiry and Literacy in Grades 5–8 (Gen)
(Grades 5–8) 108B, Convention Center

Sponsor: Delta Education, School Specialty Science

Johanna Strange, Consultant, Richmond, Ky.

Tom Graika, Consultant, Lemont, Ill.

Participate in investigations involving magnetism and electricity and learn how to turn guided investigations into challenging and open inquiries. You'll learn how to extend science knowledge and skills through Delta literacy connections that improve language arts skills. Take home a resource packet and related Delta products.

Introducing Inquiry Investigations™: Hands-On Inquiry Activities Focusing On Technology (Gen)

(Grades 7–10) 109A/B, Convention Center

Sponsor: Frey Scientific, School Specialty Science

Ken Rainis and **Lisa Bowman**, Frey Scientific, School Specialty Science, Ann Arbor, Mich.

Explore new hands-on, active learning science modules and kits geared for students in grades 7–10. See how technology and inquiry help students understand essential science content in 10 science areas: Forensics, Physical Science, Cellular World, Biotechnology, Genetics, Life's Kingdoms, Environmental Issues and Solutions, Chemistry, Earth's Resources, and Human Biology. Leave with software samplers.

10:00–11:30 AM Exhibitor Workshops

Crazy Traits: Genetics and Adaptations Games for All (Bio)

(Grades 5–12)

108A, Convention Center

Sponsor: CPO Science, School Specialty Science

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

Use a one-a-kind creature building system to explore the role that change plays in an organism's heredity. Use your creature to model how the environment can influence a species' traits and its survival. Preview a new technique for teaching the concepts of genes, traits, heredity, and probability.

Biology with Vernier (Bio)

(Grades 9–College)

202A, Convention Center

Sponsor: Vernier Software & Technology

Mike Collins (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

Experiments such as transpiration, cell respiration, and EKG from our popular *Biology with Vernier* and *Advanced Biology with Vernier* lab books will be performed in this hands-on workshop. Try these experiments using LabQuest and our new LabQuest Mini. See our new SpectroVis Plus spectrophotometer and White Light Transilluminator in action!

What's New at Vernier? (Gen)

(Grades 7–College)

202B, Convention Center

Sponsor: Vernier Software & Technology

Rick Sorensen (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

Come see our latest and greatest sensors, interfaces, and software developments. These include LabQuest Mini computer interface, SpectroVis Plus spectrophotometer/fluorometer, Mini GC Gas Chromatograph, Wide-Range Temperature Probe, Watts Up Pro power meter, Power Amplifier, and White Light Transilluminator.

10:00 AM–1:00 PM Meeting

AMSE Board Meeting

(By Invitation Only)

Roberts Board Room, Loews

10:10 AM–6:00 PM Exhibits

Exhibit Hall B, Convention Center

Come see the most up-to-date science textbooks, software, equipment, and other teaching materials. Some exhibitors will offer materials for sale.

National Earth Science Teachers Association



Events at Philadelphia NSTA 2010

All NESTA events will be held in the Sheraton Philadelphia City Center Hotel Liberty A/B except as indicated.

Friday March 19

9:30 NESTA Geology Share-a-Thon

11:00 NESTA Oceans and Atmospheres Share-a-Thon

12:30 NESTA Space Science Share-a-Thon

2:00 Don't miss the American Geophysical Union Lecture!

Predicting Earthquakes and Volcanic Eruptions: What Can and Can Not Now Be Done?

Dr. Stephen Malone

2010 IRIS/SSA Distinguished Lecturer, University of Washington

Location: Room 201C of the Philadelphia Convention Center

6:30-8:00 NESTA Friends of Earth Science Reception

Location: Sheraton Horizons Rooftop Ballroom

Saturday March 20

NESTA Earth and Space Science Resource Day: Earth System Science and the Environment

7:00-8:30 NESTA Resource Day Breakfast

Location: Sheraton Logans I Room

(Advance purchase tickets required)

Building meaningful Earth system science education partnerships across the K-20 community

Professors Tanya Furman (The Pennsylvania State University)

and Laura Guertin (Pennsylvania State Brandywine)

9:30 NESTA Earth System Science and the Environment Share-a-Thon

11:00 ***Meteorology drives everything: the sensitivity of pollution episodes to atmospheric conditions in the mid-Atlantic region***

Professor Richard Clark, Millersville University of Pennsylvania

12:30 ***Changing Seas, Changing Life: Paleontological Research with Student Participation***

Dr. Robert Ross, Paleontological Research Institution

2:00 ***Environmental Earth System Science for Education in Urban Areas***

Professor Alexander Gates, Rutgers University

3:30-5:00 NESTA Rock and Mineral Raffle

5:00-6:30 NESTA Membership Meeting



These events are cosponsored by the American Geophysical Union, Carolina Biological Supply, UCAR, and Windows to the Universe.

<http://www.nestanet.org>

10:30 AM–12 Noon Exhibitor Workshop

Innovative Science and Literacy Integration: Seeds of Science/Roots of Reading® (Gen)

(Grades 2–5) 106A/B, Convention Center

Sponsor: Delta Education, School Specialty Science—Seeds
Jacqueline Barber, Jen Tilson, Jonathan Curley, and Traci Wierman, Lawrence Hall of Science, University of California, Berkeley

Immerse yourself in the Seeds of Science/Roots of Reading Shoreline Science unit by investigating the properties of earth science materials! See how firsthand inquiry, content-rich science books, scientific discourse, and writing activities integrate to provide rich and varied opportunities to learn important science concepts and vocabulary. Samples provided.



10:45–11:15 AM International Conference Poster Session

(General)

Grand Salon H, Marriott

Tickets required; by preregistration only.

President: Norman Lederman, Illinois Institute of Technology, Chicago

Here's an opportunity to have focused, unrestricted interactions with your science teaching colleagues from around the world. Posters representing all grade levels focus on projects related to assessment of learning.

Cultivation of Scientific Thinking and Innovation Ability with Practical Courses for College Students

Cai Zhenming, Taiwan

Sun Qiao, Dalian University, Dalian/Liaoning Province, China

Developing Preservice Teacher Data Literacy: A Canadian Perspective

G. Michael Bowen, Mount Saint Vincent University, Halifax, N.S., Canada

Anthony Bartley, Lakehead University, Thunder Bay, Ont., Canada

Leo MacDonald, St. Francis Xavier University, Antigonish, N.S., Canada

J. Lawrence Bencze, OISE/UT, Toronto, Ont., Canada

Teaching Chemistry with Logical Puzzles

Carlos M. Castro-Acuna and Ramiro E. Dominguez-Danache, National Autonomous University of Mexico, Mexico City

Learning NOS Through the Musical

Eun Ah Lee, KOFAC, Seoul National Science Museum, Seoul, Korea

Ki Sang Kim, KOFAC, Seoul, Korea

The European PARSEL Project

Martin Lindner and Wolfgang Graeber, IPN at the University of Kiel, Germany

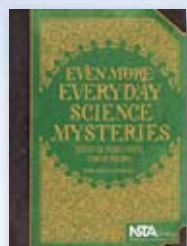
Green Across the Pacific Environmental Leadership Exchange Programs

Peter Lynch, Green Across the Pacific, Shoreham, Vt.

An Integrated Module of Inquiry-based Activities: A World of Pendulums

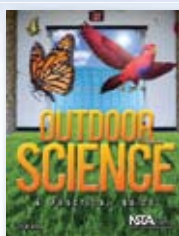
Yun-Ju Chiu, Chang Gung University, Kwei-shan, Taoyun, Taiwan

Explore NEW Resources from NSTA Press!



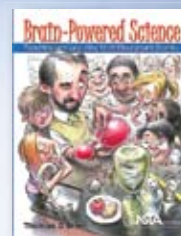
Even More Everyday Science Mysteries

Grades K–8
Member: \$19.96
Nonmember: \$24.95



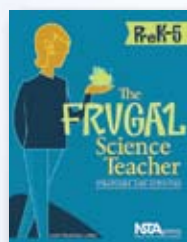
Outdoor Science

Grades 3–8
Member: \$19.96
Nonmember: \$24.95



Brain-Powered Science

Grades 5–12
Member: \$26.36
Nonmember: \$32.95



The Frugal Science Teacher, PreK–5

Grades PreK–5
Member: \$18.36
Nonmember: \$22.95



Science Education Leadership

Grades K–College
Member: \$30.36
Nonmember: \$37.95



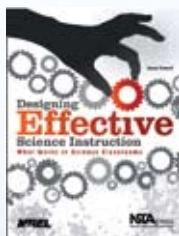
The Big Ideas of Nanoscale Science and Engineering

Grades 7–12
Member: \$22.36
Nonmember: \$27.95



Lecture-Free Teaching

College
Member: \$26.36
Nonmember: \$32.95



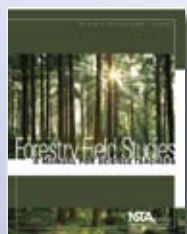
Designing Effective Science Instruction

Grades K–12
Member: \$24.76
Nonmember: \$30.95



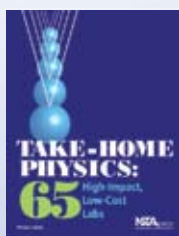
Answers to Science Questions From the *Stop Faking It! Guy*

Grades K–8
Member: \$19.16
Nonmember: \$23.95



Forestry Field Studies

Grades 9–12
Member: \$19.96
Nonmember: \$24.95



Take-Home Physics

Grades 9–12
Member: \$19.96
Nonmember: \$24.95

NSTApress
National Science Teachers Association

To preview a book or place an order, visit the **NSTA Science Bookstore** or www.nsta.org/store.

Phone orders call **1-800-277-5300**.

Assessing Athlete-Students' Interest and Engagement in Learning Physics

Ming Jun Su, Shu-te University, Yanchao, Kaohsiung County, Taiwan

Jang Jenq Chern, Kaohsiung Municipality Tsoying Senior High School, Tsoying District, Kaohsiung City, Taiwan

Three AMAZING Teaching Aids—Singing Cups, Gyroscopes, and Auto-returning Airplanes

Cheng-Ming Tsai, Taiwan Creative Science Center, Beinan, Taitung, Taiwan

Exploring Teaching Strategies in Physics for Vocational Students in Taiwan

Wan Ying Lin, Kaohsiung Chung-Cheng Vocation High School, Kaohsiung City, Taiwan

Ming jun Su, Shu-Te University, YanChou, Kaohsiung County, Taiwan)

Assessment Project from a Municipality Outside Stockholm, Sweden

Anneli Pettersson and **Kathrine Ahlqvist**, Haninge, Sweden

Assessment Project: Preschool Science Project from a Municipality Outside Stockholm, Sweden

Linda Karlsson and **Anna Berg**, Haninge, Sweden

Green Building Literacy

Yu Chao-Ching, National Taiwan Normal University, Jung-Li, Taiwan

Sung Quo-chen, Ching Yun University, Jung-Li, Taiwan

Three Marvelous Teaching Aids for Revealing Magnetic Field

Cheng-Ming Tsai, Taiwan Creative Science Center, Beinan, Taitung, Taiwan

Mexico's Role in Iberoamerican Chemistry Olympiads

Carlos M. Castro-Acuna and **Ramiro E. Dominguez-Danache**, National Autonomous University of Mexico, Mexico City

Changing Teaching Perspectives, Behaviors, and Attitudes—Costa Rica

Sandy Doss, Holbrook Travel, Gainesville, Fla.

Marylin Lisowski, Pittsburgh, Pa.

Paulo Valerio, Costa Rica

Ann Simpson and **Rob Simpson**, Lord Fairfax Community College, Middletown, Va.

11:00 AM–12 Noon Meeting

GLBT Educator Group Annual Meeting

Adams, Loews

Gay and lesbian science educators are invited to join colleagues for dialogue in a safe, respectful environment. For more information, e-mail bflywriter@comcast.net.

11:00 AM–12 Noon Workshop

NMEA Session: Sustainable Seafood—It's Good for You and for the Oceans (Env)

(High School/Informal Education) Liberty A/B, Sheraton

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

Explore Monterey Bay Aquarium's Seafood Watch program, investigate fishy issues troubling our waters, and participate in classroom activities. Door prizes!

11:00 AM–12 Noon Exhibitor Workshop

Moon Phases: Teaching in an Immersive Environment (Earth)

(Grades K–8) Booth #641, Exhibit Hall, Convention Center

Sponsor: Spitz, Inc.

David Bradstreet (shuggins@spitzinc.com), Eastern University, St. Davids, Pa.

Moon phases is a frequently taught, challenging subject. Unfortunately, misconceptions are often taught or reinforced. Join educator/astronomer Dr. David Bradstreet and learn how our curriculum for immersive 3-D dome teaching is used to explore moon phases in a memorable, entertaining way.

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Environmental Science

[Your World, Your Turn]

by Jay Withgott

Real Issues

Bring current environmental issues to life with an integrated case-study approach

Real Data

Supports the science with current and comprehensive data

Real Choices

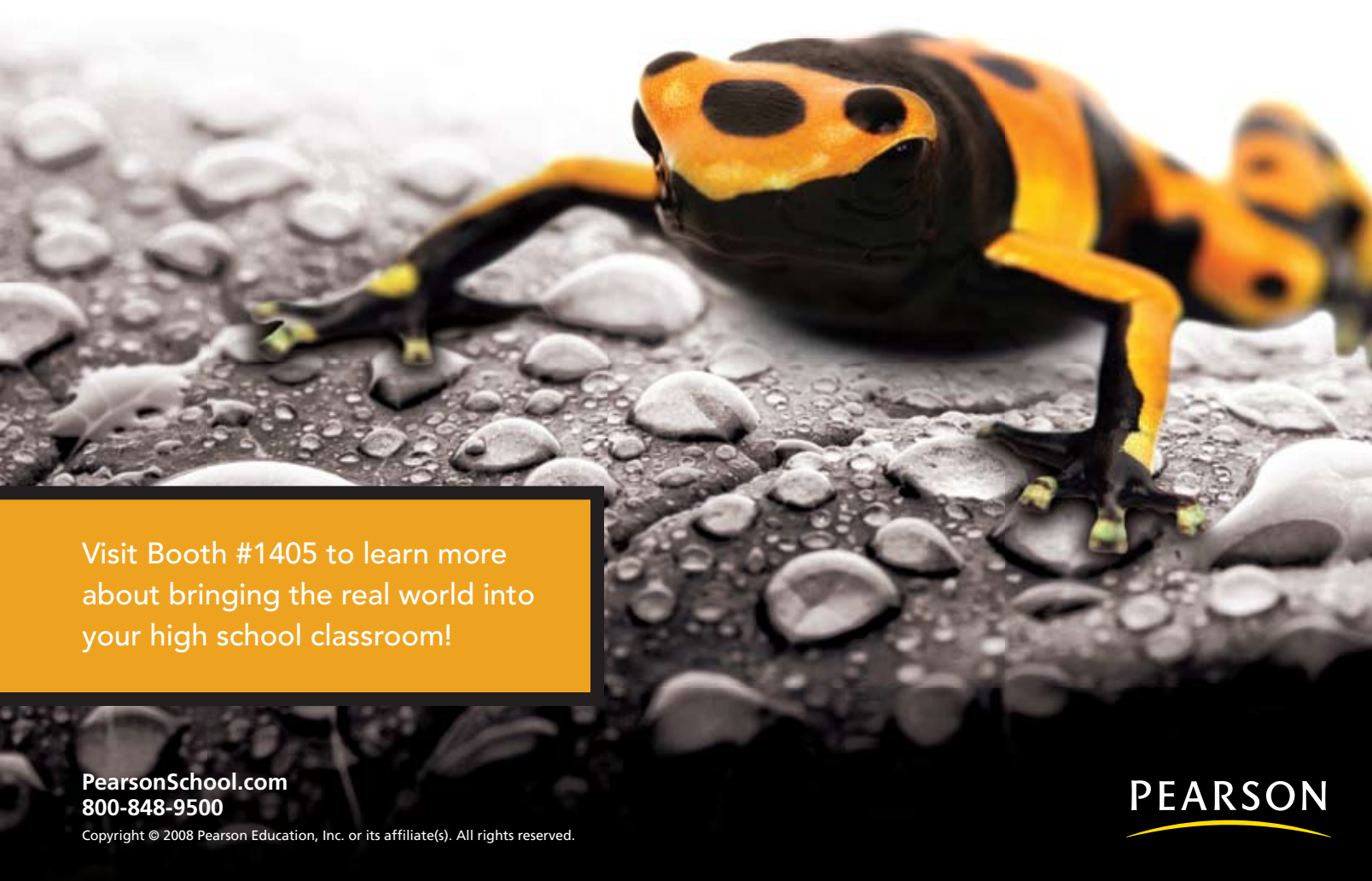
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PEARSON



11:00 AM–12:30 PM General Session

Crittercam: Science Exploration from the Wild

(General)

Ballroom A/B, Convention Center

Sponsored by National Geographic School Publishing



Greg Marshall, Vice President, Remote Imaging, National Geographic, Washington, D.C.

Presider: Pat Shane, NSTA President, and The University of North Carolina at Chapel Hill

Introduction of Speaker: John Fahey, President and CEO, National Geographic Society, Washington, D.C.

Platform Guests: Greg Marshall; Pat Shane; John Fahey; Page Keeley, NSTA Retiring President, and Maine Mathematics and Science Alliance, Augusta; Alan J. McCormack, NSTA President-Elect, and San Diego State University, San Diego, Calif.; Patricia Simmons, NSTA President-Elect-Elect, and North Carolina State University, Raleigh; Carli Yeager-Hall, President, Pennsylvania Science Teachers Association, Program Committee, NSTA Philadelphia National Conference, and Athens Area High School, Athens, Pa.; Lynn Gatto, NSTA Director, District IV, and University of Rochester, Honeoye Falls, N.Y.; Randy Johnson, NSTA Treasurer, and Gering High School, Gering, Neb.; Francis Q. Eberle, NSTA Executive Director, Arlington, Va.; Christine Anne Royce, Chairperson, NSTA Philadelphia National Conference, NSTA Director, Professional Development, and Shippensburg University, Shippensburg, Pa.; Donald Kline, Program Coordinator, NSTA Philadelphia National Conference, and Lebanon Valley College, Annville, Pa.; Ambra Hook, Local Arrangements Coordinator, NSTA Philadelphia National Conference, and School District of Philadelphia, Pa.

Greg Marshall will speak about the exciting world of exploration, discovery, research, interpretation, and communication as seen through the prism of his cutting-edge Crittercam research program. Marshall invented this unique imaging system to study the behavior and ecology of wild, free-ranging animals in their natural habitats. National Geographic's Crittercam helps scientists and students see how creatures function under critical life history stages that cannot be otherwise directly observed.

Greg Marshall is a scientist, inventor, and filmmaker who has dedicated the last 25 years to studying, exploring, and documenting life in the oceans. While diving in Belize in 1986, Greg conceived the Crittercam, a revolutionary research tool borne by an animal that records images, sound, and data from the animal's perspective.

11:00 AM–1:00 PM Workshop

NSTA Science Talk: A Tool for Making Meaning

(Gen)

(Elementary)

Hall D/Room 15, Convention Center

Kathy Renfrew (kathy.renfrew@state.vt.us), Vermont Dept. of Education, Montpelier

Talk is an integral part of inquiry science. Science talk is a critical piece in the process of making meaning and should be the prelude to writing in science.



11:15 AM–12:15 PM International Conference Concurrent Sessions

These sessions will feature papers from international science educators on issues of assessment of students' and teachers' knowledge. *Tickets required; by preregistration only.*

K–12 Assessment #1

(Grades K–12)

Grand Salon H, Marriott

Presider: Judith Lederman, Illinois Institute of Technology, Chicago

Assessment in Early Childhood Science Education: Going Beyond Worksheets

Thelma R. Mingoa, de la Salle University, Manila

Assessing Chinese Science Teachers' Pedagogical Content Knowledge

Ma Min, East China Normal University, Shanghai

Assessing Chinese Middle School Science Teachers' Conceptions of Nature of Science

Miancheng Guo, Illinois Institute of Technology, Chicago

K–12 Assessment #2

(Grades K–12)

Grand Salon I, Marriott

Presider: Norman Lederman, Illinois Institute of Technology, Chicago

Applying Fuzzy Multi-Criteria to Assess Experimental Performance in the Science Lab

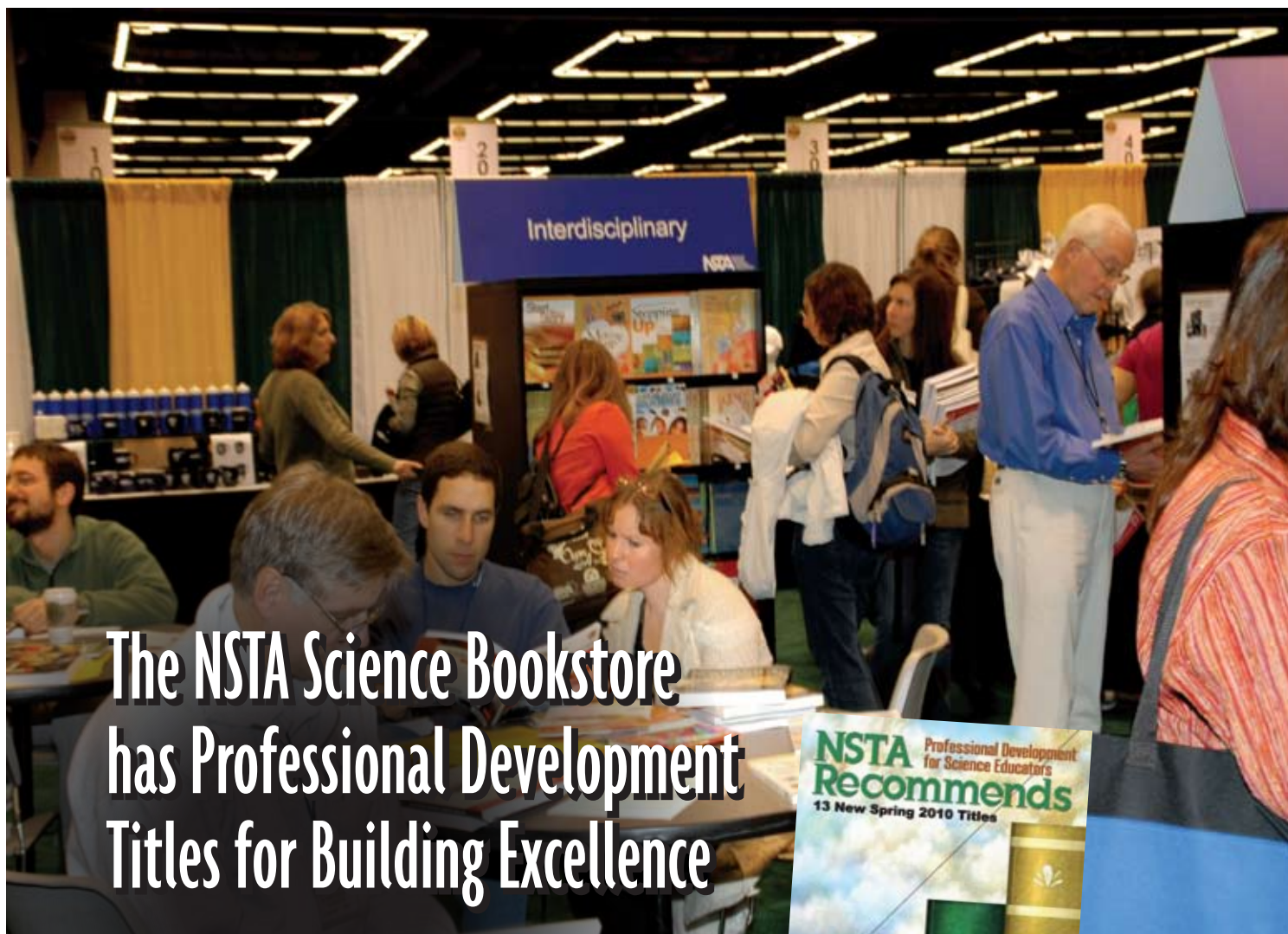
Jing Jou Su, Li-Chih Senior High School, Sanmin District, Kaohsiung City, Taiwan

Ming jun Su, Shu-Te University, YanChou, Kaohsiung County, Taiwan

Performance Assessment Strategies for an Internet-based Native High School

Anthony W. Bartley and **John Friesen**, Lakehead University, Thunder Bay, Ont., Canada

Eli K. Pivnick, Keewaytinook Internet High School, Sachigo Lake, Ont., Canada



The NSTA Science Bookstore has Professional Development Titles for Building Excellence

- Award-winning PD books filled with best practices, science content, teaching tips, and lesson plans
- Pick up *Even More Everyday Science Mysteries*, *Science Education Leadership*, or *The Frugal Science Teacher, PreK–5* to name a few new titles.
- Check out our “New Teacher Welcome Packs”—grade-specific, hand-picked titles designed to serve as your science survival resource.
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Thursday	7:00 AM–6:00 PM
Friday	7:00 AM–5:00 PM
Saturday	7:00 AM–5:00 PM
Sunday	7:30 AM–12 Noon

NSTA National
Science
Teachers
Association

Hands-On Performance Assessment for K–12 Students: Assessing Student Understanding of and Abilities in Inquiry

Deborah L. Tucker, Napa, Calif.

Grant M. Gardner, Assessment Services, Inc., Pepperell, Mass.

College-Level Assessment

(College)

Grand Salon J, Marriott

President: **Kevin White**, Illinois Institute of Technology, Chicago

Science Teacher Education in Chile: A Curriculum Assessment

Hernan Cofre, **Claudia Vergara**, and **Johanna Camacho**, Universidad Catolica Silva Henriquez, Santiago, Chile

Which Are the Most Important Science Teacher Competencies? The Voice of Inservice Teachers

David Santibanez, **Alberto Galaz**, and **Javier Jimenez**, Universidad Catolica Silva Henriquez, Santiago, Chile

Inservice Science Teacher Conceptions About Learning, Teaching, and Assessment

Claudia Vergara and **Hernan Cofre**, Universidad Catolica Silva Henriquez, Santiago, Chile



11:30 AM–1:00 PM Exhibitor Workshops

Make Safety a Habit! Flinn Scientific Workshop

(Chem)

(Grades 6–12)

103C, Convention Center

Sponsor: Flinn Scientific, Inc.

Larry Flinn III, Flinn Scientific, Inc., Batavia, Ill.

Simple, practical, effective solutions to increase safety awareness and improve safety in the science classroom! If you have questions about how to get students to comply with safety rules—or how to get help from your administrator—this workshop will help you solve your safety problems. Issues to be discussed include the right-to-know laws and teacher liability; lab ventilation; purchase, storage, and disposal of chemicals; chemical inventory; spill control; and more.

Iron Teacher

(Bio)

(Grades 5–12)

104A/B, Convention Center

Sponsor: WARD's Natural Science

Chef Tim Montondo (tmontondo@vwreducation.com), WARD's Natural Science, Tonawanda, N.Y.

Much like the popular chef competition on TV, this workshop pits educator vs. educator in a battle of experimental design. Using live critters, common items, and secret ingredients, participants will have 30 minutes to create an experiment around animal behavior.

GIS for Environmental Science Inquiry

(Env)

(Grades 5–College)

105A/B, Convention Center

Sponsor: ESRI

Joseph Kerski (jkerski@esri.com), ESRI, Redlands, Calif.

Roger T. Palmer (roger@gisetc.com), GISetc, Dallas, Tex.

Explore how and why GIS (geographic information systems) and other geospatial technologies (GPS and remote sensing) are essential in environmental science education and careers. Investigate local to global topics such as biodiversity and human/environment interaction via practical classroom activities supporting science standards and inquiry. Receive free GIS software and resources.

EDVOTEK Biotechnology: Teaching DNA Forensics (Bio)*(Grades 6–College)**110A/B, Convention Center*

Sponsor: EDVOTEK

Jack Chirikjian (*info@edvotek.com*), EDVOTEK, Bethesda, Md.

Learn how to teach students this core concept of molecular biology with fun pre-lab exercises and a hands-on experiment to increase comprehension. This workshop will introduce applications of DNA analysis using restriction enzymes and PCR specifically designed for general and upper level biology. Participants are automatically entered into a raffle for a FREE classroom electrophoresis setup (a \$500 value)!

Layers of Learning with Google Earth: A Free Round-trip Ticket to Anywhere in the World (Gen)*(Grades 5–12)**112A/B, Convention Center*

Sponsor: Discovery Education

Lance Rougeux (*lance.rougeux@discovery.com*), Discovery Education, Silver Spring, Md.**Adam Controy**, Central Bucks School District, Doylestown, Pa.

You have probably used Google Earth at some point to locate your house or school, but how deep have you gone? Google Earth has many layers, literally. Come explore the layers within Google Earth and see how you can use them in your instruction. We'll investigate up-to-date seismic activity, weather data, sea surface temperatures, and more. Then we'll use a real-life expedition from Discovery Student Adventures as the framework for showing you how easy it is to build and customize your own virtual science trips with videos, podcasts, images, and other digital content.

Choose an element, create a video

It's Elemental!

Announcing a nationwide video competition for high school students

Encourage your students to accept the challenge and create a 2-3 minute video, based on one of the elements, which will be incorporated into an interactive periodic table on the CHF Web site.

For competition guidelines, criteria, and prize information, visit www.chemheritage.org



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What's at the Heart of Science Teaching? Inquiry, Evidence, and Thinking! (Gen)

(Grades K–8)

113B, Convention Center

Sponsor: Pearson

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

Inquiry continues to be a major force in science education as entities like the Partnership for 21st Century Skills call for improved student thinking across all disciplines. Come explore the concepts of inquiry and evidence and learn teaching strategies that you can use to develop these important ideas.

The Next Generation of Physical Science Virtual Labs—No Cleanup Required! (Phys)

(Grades 6–12)

113C, Convention Center

Sponsor: Pearson

Brian Woodfield, Brigham Young University, Provo, Utah

Brian Woodfield, author and creator of Pearson's innovative Virtual Lab series, will demo some of his latest eye-popping physical science virtual labs, which are so visually realistic you have to see them to believe them. Whether you are short on time or short on lab material, virtual labs give you the flexibility to experiment. Virtual labs meet your students where they are in the digital world and give them the opportunity to experiment numerous times with various materials...with no cleanup required, of course! Leave with handouts and free physical science virtual lab CDs.

Setting the Standard for PreK Science (Phys)

(Kindergarten)

201B, Convention Center

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Using a fun-filled unit on eggs, you'll explore their form and function and the relationship between their shape and how they move. Math skills such as sorting, graphing, and statistics are integrated with life, physical, and inquiry science skills to create an engaging early-childhood science unit.

Teaching AP Chemistry with Molecular-Level Visualization and Simulation Tools (Chem)

(Grades 9–College)

203A, Convention Center

Sponsor: Wavefunction, Inc.

Paul Price (sales@wavefun.com), Wavefunction, Inc., Irvine, Calif.

Widely recognized as a powerful teaching tool, molecular modeling is now a common component of introductory chemistry classes at the college level. Join us for this hand-on workshop and learn how to integrate state-of-the-art modeling into your teaching of AP chemistry. Laptop computers provided for workshop.

Foundations in Biotechnology (Bio)

(Grades 10–College)

203B, Convention Center

Sponsor: Energy Concepts, Inc.

Jeanne Moldenhauer, Excellent Pharma Consulting, Mundelein, Ill.

Merrill Rudes, Energy Concepts, Inc., Mundelein, Ill.

This workshop will provide an overview of a biotechnology laboratory course, including funding, course curriculum, job opportunities, and more.

Strawberry DNA and Molecular Models (Bio)

(Grades 8–12)

204A, Convention Center

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Introduce students to the fascinating world of DNA through age-appropriate hands-on activities designed to make biology fun. These activities—from a kit series developed in cooperation with the DNA Learning Center, Cold Spring Harbor Laboratory—use DNA models and real DNA from strawberries to present genetic studies.

Comparative Mammalian Organ Dissection with Carolina's Perfect Solution® Specimens (Bio)

(Grades 6–12)

204B, Convention Center

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Experience a far superior and safer alternative to formaldehyde with Carolina's Perfect Solution specimens. Participants dissect a sheep brain, cow eye, pig heart, and pig kidney and observe major internal and external structures to gain a better understanding of these mammalian organs. An excellent comparative dissection with Carolina's best specimens!

Forensic Science for High School: An Inquiry-rich Curriculum (Gen)

(Grades 9–12) 304, Convention Center

Sponsor: Kendall Hunt Publishing Co.

Michele Richards, Manchester High School, Midlothian, Va.

Learn about an exciting curriculum designed specifically for high school students. Engage in several hands-on inquiry activities involving blood, bugs, and bones! Handouts provided.

A Natural Approach to Chemistry: Teaching About Heat and Temperature (Chem)

(Grades 10–12) Hall D/Room 2, Convention Center

Sponsor: LAB-AIDS, Inc.

Tom Hsu, Author, Andover, Mass.

Join author Tom Hsu for a special preview and hands-on examination of selected laboratory activities from *A Natural Approach to Chemistry*, a new high school program that takes a fresh look at chemistry today. It features an innovative new probeware system that is rugged, simple to use, and makes accurate, quantitative measurements accessible to all students. Selected lab activities will address concepts related to heat, specific heat, and temperature. Selected labs and other program materials will be provided for all participants.

Build your content knowledge through NSTA's Online Learning Center

- **Quality**—The Learning Center's online professional development materials have been researched, field-tested, and reviewed for content, accuracy and pedagogy by experts.
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To view, try, and buy individual resources visit: <http://learningcenter.nsta.org/>

To purchase unlimited access to the NSTA Learning Center for your school or district, contact us at: 1-800-722-6782 or sales@nsta.org

*Formative Research conducted by external experts to ensure scientific accuracy and credibility. Research Results to be published in an upcoming article in the Journal of Science Education and Technology titled "Evaluation of Online, On-Demand Science Professional Development Materials Involving Two Different Implementation Models."



12 Noon–1:15 PM Exhibitor Workshop

Educational Science Lab Design and Implementation for the 21st Century Made Easy (Gen)

(Grades K–12) 109A/B, Convention Center

Sponsor: Frey Scientific, School Specialty Science

Gordon Strohminger, Frey Scientific, School Specialty Science, Mansfield, Ohio

Come explore the process of designing and implementing educational science labs. See how technology and room design can push conventional boundaries to help students better understand science concepts. We'll discuss the lab design process, furniture and equipment basics, safety and accessibility, integration of technology, and 21st-century trends.



12 Noon–1:30 PM Exhibitor Workshops

Optics with Light and Color: Bright Ideas—Our New Take on an Old Favorite (Phys)

(Grades 5–12) 108A, Convention Center

Sponsor: CPO Science, School Specialty Science

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

Our new Optics with Light and Color kit comes with LED flashlights, a laser, lenses, a prism, and more. Mix colors of light, learn about human vision, use diffraction grating glasses, measure angles of reflection and refraction, and experience total internal reflection when you shine a laser into a prism.

K–8 Science with Vernier (Gen)

(Grades K–8) 202A, Convention Center

Sponsor: Vernier Software & Technology

Robyn Johnson (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

Learn how easy it is to measure temperature, gas pressure, magnetic field, and more. Try experiments from our popular elementary and middle school lab books using LabQuest, our new LabQuest Mini, and our low-cost line of Go! products on a computer.

Advanced Instrumentation: Spectroscopy and Gas Chromatography (Gen)

(Grades 9–College) 202B, Convention Center

Sponsor: Vernier Software & Technology

Dan Holmquist (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

This presentation will feature the new SpectroVis Plus, Vernier's low-cost visible-array spectrophotometer/fluorometer. See a full spectrum of absorbance in less than one second. The new Vernier Mini GC Gas Chromatograph will also be demonstrated. This affordable compact instrument uses room air as the carrier gas. Both of these devices can be used with either the Vernier LabQuest or a computer.


12:15–1:15 PM International Conference Luncheon Plenary Session
Assessment: A Key Lever of Change in Science Education (Gen)

(General)

Grand Salon H, Marriott

Tickets required; by preregistration only.

Robin Millar, Chair, Departmental Research Committee, University of York, U.K.

Assessment is critically important in science education because many of the key outcomes that we seek, such as increased student understanding, are not directly observable. The assessment instruments that we use then become the clearest statements of our real objectives. I will explore the role of assessment instruments in changing science teachers' practices using evidence from two recent research and development projects. One shows how teachers' practices can be changed by providing them with assessment instruments; the other illustrates the key role of assessment instruments in communicating intentions and enabling change. Together they suggest that assessment instruments are key levers of change in science education practices and that we should learn to exploit more fully their potential for stimulating the kinds of changes we desire.

Robin Millar is Salters' Professor of Science Education at the University of York. Prior to joining the University of York, he taught physics and integrated science in secondary schools in the Edinburgh area. Robin has written and published widely on many aspects of science teaching and learning. His main areas of research are students' learning in science, curriculum design, and development in science, particularly the implications of focusing on scientific literacy for curriculum and teaching and the relationship between research and practice in science teaching.

12:30–1:00 PM Presentations

SESSION 1


Mentoring Science “Un-experts” (Gen)

(General)

Hall D/Room 7, Convention Center

Karen Fiedler (kfiedler@columbus.k12.oh.us) and **Wendy Jones**, Columbus (Ohio) City Schools

These strategies can be used by mentors, coaches, coordinators, and anyone who wants to “light a fire” in teachers.

SESSION 2

(Elementary–Middle Level) Hall D/Room 19, Conv. Center

The Reflective Assessment Technique: Fifteen Minutes to Improved Instruction (Phys)

Cathleen A. Kennedy (cathy@kacgroup.com), Education Research Consultant, San Carlos, Calif.

Kathy J. Long (klong@berkeley.edu), Lawrence Hall of Science, University of California, Berkeley

Arthur H. Camins (arthurcamins@gmail.com), Jefferson County Public Schools, Louisville, Ky.

Learn a quick assessment technique that pinpoints what students need to learn next—without giving a quiz. See how it improved student performance and teacher practice in a national study.

SESSION 3

Keeping Science Teachers in the Classroom: Professional Development Experiences That Make a Difference (Gen)

(Middle Level–College/Supervision)

Regency C1, Loews

John W. Tillotson (jwtillot@syr.edu), **Monica J. Young** (moyoung@syr.edu), and **Glenn R. Dolphin**, Syracuse University, Syracuse, N.Y.

We will share professional development experiences that have proven effective in preparing and retaining new science teachers in secondary classrooms.

SESSION 4


NSTA Press Session: Interpreting Assessment Data: Statistical Techniques (Gen)

(General)

306, Marriott

Edwin P. Christmann, Slippery Rock University, Slippery Rock, Pa.

Learn how to interpret student assessments statistically and how to measure and explain the validity and reliability of those assessments.

SESSION 5

It's Elemental

(High School)

(Chem)

Grand Salon B, Marriott

Gigi Naglak (gnaqlak@chemheritage.org) and **Shelley Geehr** (shelleyg@chemheritage.org), Chemical Heritage Foundation, Philadelphia, Pa.

It's Elemental is a national cross-curricular video project designed to engage students of different learning styles and interests in the history of chemistry.

SESSION 6

(Middle Level–High School/Informal Ed.) Grand Salon D, Marriott

Hip-Hop in the Science Classroom: Engaging Reluctant Students with High-Interest Strategies

(Gen)

Brenda Farkas (brenda.farkas@browardschools.com), Glades Middle School, Miramar, Fla.

Discover a teaching strategy that integrates science and hip-hop music to reach the reluctant learner.



12:30–1:30 PM **Mary C. McCurdy Lecture**



Engage the Wonder: Developing Scientific Literacy Using Science Fiction

(Gen)

(General)

201C, Convention Center

— Roger H. Czerneda



Julie Czerneda, Science Fiction Author and Editor, Orillia, Ont., Canada

President: Joey Rider-Bertrand (rid-erj@lmsd.org), Supervisor, Science and Technology Education, Lower Merion School District, Ardmore, Pa.

Science is a human activity, full of passion, imagination, and creativity. The consequences of science matter to each of us, as well as to society, yet reading and discussing science ideas present an insurmountable challenge to many citizens. Explore the humanity and consequence of science ideas with your students through the “what if?” question at the heart of good science fiction storytelling. Discover how to develop the skills of scientific literacy, from critical thinking to informed decision-making, in students of any and all abilities. Engage the wonder of imagination in your classroom and prepare your students to cope with a future of change.

Julie E. Czerneda is an award-winning, best-selling science fiction author and editor. A former biologist who studied the evolution of animal behavior, she began writing professionally in 1985. As a science author and editor, Julie has contributed to over 200 student and teacher resources used worldwide in science, math, and career education from elementary to college. Her work has won several awards, including four Prix Aurora Awards, Canada's top honor, in all categories (novel, short story, editing), and the Golden Duck Award of Excellence for Science and Technology Education.

12:30–1:30 PM Presentations

SESSION 1

NSTA Avenue Session: The State of Science Teacher Education: Updates and Opportunities for Political Advocacy with NSTA and ASTE (Gen)

(General) 307, Convention Center

Jodi Peterson (*jpeterson@nsta.org*), Assistant Executive Director, Legislative and Public Affairs, NSTA, Arlington, Va.

Regina Toolin (*rtoolin@uvm.edu*), University of Vermont, Burlington

Jon E. Pedersen (*jep@unl.edu*), ASTE President, and University of Nebraska–Lincoln

Joseph W. Shane (*jwshan@ship.edu*), Shippensburg University, Shippensburg, Pa.

We will examine the current status of national policies, including implications for preservice and inservice teacher education and general strategies for grassroots advocacy.

SESSION 2

✓ **SPARK! Bringing STEM Mentors into the Classroom (Gen)**

(General) Hall D/Room 5, Convention Center

Darryl Williams and **Sandra Dunham** (*sdunham@gse.upenn.edu*), University of Pennsylvania, Philadelphia

Providing urban students experience with STEM professionals can impact their interest and future STEM aspirations. We'll share strategies for incorporating STEM mentors in the classroom.

Climate Change is Happening in Your Backyard... Now!

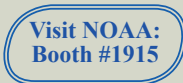


Dr. Jane Lubchenco, NOAA Administrator
Shell Science Seminar: Building an Environmentally Literate Workforce through STEM Education

Friday, March 19, *Pennsylvania Convention Center, 201C, 10:30am-12:00pm*



Symposium: Thursday, March 18
Climate Change Here and Now: Coastal, Ocean and Atmospheric Impacts
 1-6 pm, *Philadelphia Marriot, Franklin 11*



Presentation Series: Friday, March 19, Philadelphia Marriot, Franklin 11

8:00 - 9:00am Corals and Climate Change	2:00-3:00pm Climate Information in Your Neighborhood
9:30 - 10:30am Coastal Impacts: Sea Level Rise	3:30-4:30pm Climate Change Toolkit
11:00am - 12:00pm Arctic Sea Ice	5:00-6:00pm Using Data to Teach Climate Change
12:30 - 1:30pm Explore Earth Systems using GLOBE	

Free Ongoing Climate Change Webinar Series: http://learningcenter.nsta.org/products/symposia_seminars/fall09/NOAA/webseminar.aspx
 Visit us at <http://www.climate.gov>

SESSION 3 (two presentations)

(Preschool) *Hall D/Room 8, Convention Center*

Using Nature Study to Foster Science Process Skills in Rural Early Childhood Learners (Bio)

J. William Hug (*hug@calu.edu*), **Deborah A. Farrer** (*farrer@cup.edu*), **Charlotte Orient** (*orient@cup.edu*), **John Shimkanin** (*shimkanin@calu.edu*), and **Clover Wright** (*wright@calu.edu*), California University of Pennsylvania, California, Pa.

Experience hands-on explorations, wildlife observation techniques, children’s literature, and nature journaling activities that help at-risk children develop proficiency in science process skills and readiness for school success.

From Curiosity to Inquiry: A Preschool Natural Science Program (Bio)

Margaret Barker Weiss (*sugiew@gmail.com*) and **Sue Suratt** (*suesuratt@msn.com*), Rivendell School, Brooklyn, N.Y. Get science out of the corner and into the classroom environment with this curriculum.

SESSION 4

Invention Convention: Bringing Together Science, Social Studies, Reading, and Writing in First Grade (Gen)

(Elementary) *Hall D/Room 11, Convention Center*

Brian Bortz (*bbortz@cantoncountryday.org*) and **Maura Cotter** (*mcotter@cantoncountryday.org*), Canton Country Day School, Canton, Ohio

Students study the invention process, learn about inventors, read biographies, and write their own autobiography in this integrated unit that culminates in an invention convention.

SESSION 5

Science Through Song (Gen)

(Preschool–Middle Level) *Hall D/Room 23, Convention Center*

Leigh A. Russ (*l_a_bits@yahoo.com*), South River Middle School, South River, N.J.

Leigh Russ is a middle school science teacher and song writer who performs for his own classes and others. His music has a “folksy” sound that instantly attracts young listeners while his unique phrasing allows students to gain an understanding of scientific concepts with minimal effort.

SESSION 6

Extended Investigation of Trees and Pond Organisms Using Digital Photography (Bio)

(Elementary–Middle Level) *Hall D/Room 25, Convention Center*

Bernie Zubrowski (*bzubrowski@edc.org*), Education Development Center, Inc., Newton, Mass.

Let’s look at the challenge of sustaining a long-term (school year) investigation, drawing on findings from a current project and focusing on the role of digital cameras and drawing.

SESSION 7

From Lab to Life: Making Connections and Making a Difference (Gen)

(General) *Hall D/Room 27, Convention Center*

Pamela G. Christol (*pamelagale47@hotmail.com*), NSTA Director, District XIII, and Northeastern State University, Broken Arrow, Okla.

I teach preservice teachers using my “green” home and inquiry-based activities to integrate science, math, and literature.

SESSION 8

Using Virtual Inquiry to Bridge the Digital Divide (Gen)

(General) *Hall D/Room 29, Convention Center*

Robert E. Landsman and **Cindy Colomb** (*cindy@anovascience.com*), ANOVA Science Education Corp., Honolulu, Hawaii

Denise M. Evans, Mesa View Middle School, Farmington, N.Mex.

Crystal N. Doi, Lili’uokalani Elementary School, Honolulu, Hawaii

Jennifer Evans, Central Consolidated School District #22, Shiprock, N.Mex.

Carrie Bashaw, Kaimuki High School, Honolulu, Hawaii
President: Irene H. Kamimura, Hawaii Dept. of Education, Honolulu

Use digital technology to bridge classrooms across thousands of miles to create a single virtual laboratory for student collaboration in scientific inquiry.

SESSION 9

Reaching and Teaching the Reluctant Science Student (Gen)

(General) *Hall D/Room 30, Convention Center*

Judith Ann Pauley (*jfpauley1@earthlink.net*), California State University, San Marcos

Learn the concepts of process communication so you can reach, motivate, and teach every student, especially the hard-to-reach science student.

SESSION 10

NARST Session: Fostering Development of Pedagogical Content Knowledge in Physics (Phys)

(Elementary–Middle Level/Supervision) Anthony, Loews

Mary Kay Kelly (kellymaz@notes.udayton.edu) and **Todd B. Smith** (todd.smith@notes.udayton.edu), University of Dayton, Ohio

Beth Basista (beth.basista@wright.edu), Wright State University, Dayton, Ohio

We will examine how physical science content and science teaching pedagogy are integrated to ready elementary and middle school teachers to be effective science teachers.

SESSION 11 (three presentations)

(General) Commonwealth A, Loews

SCST Session: Teaching to the Nature of Science Content Standards (Gen)

Anthony Carpi (acarpi@jjay.cuny.edu), John Jay College, New York, N.Y.

We have created and tested a series of resources to teach about the nature and practice of science by incorporating research histories.

SCST Session: Physics of Medicine: Investigations into Inquiry (Phys)

Nancy Donaldson (nancy.donaldson@rockhurst.edu), Rockhurst University, Kansas City, Mo.

We'll look at the implementation of a new Physics of Medicine minor designed to deepen students' understanding of physics principles and the applicability of those principles to the medical fields.

SCST Session: Service Learning in an Undergraduate Introductory Environmental Science Course: Getting Students Involved with the Community (Env)

Grace Eason (geason@maine.edu), University of Maine, Farmington

How can students be inspired to make a difference on a college campus? I will share two project paths students may choose from, one involving the creation of wiki websites and the other working with the Sustainable Campus Coalition.



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Interactive science software simulations

SESSION 12

Nanotechnology Training and Degree Options in Pennsylvania (Gen)

(High School–College)

Regency B, Loews

Amy E. Brunner (abrunner@engr.psu.edu) and **Robert K. Ehrmann** (rke2@psu.edu), The Pennsylvania State University, University Park

Presider: Amy E. Brunner

Pennsylvania is a national leader in nanotechnology education and is now helping other states mimic its unique hands-on technical training program. We'll discuss the infrastructure and outreach efforts.

SESSION 13 (two presentations)

(College/Supervision)

Regency C2, Loews

Increasing the Reflective Practice of Student Teachers with Blogging and Web Conferencing (Gen)

Matthew E. Vick (vickm@uww.edu), University of Wisconsin–Whitewater

Web conferencing software helps connect student teachers for support. Explore the results of a study of one cohort of student teachers who used blogging and web conferencing during their student teaching placements.

Career Changers Can Be Great Science Teachers (Gen)

Russell G. Wright (russ@gwu.edu), The George Washington University, Washington, D.C.

Kathleen A. Travers (katravers15@gmail.com), University of Maryland, College Park

The Transition from Lab to Classroom Project has been very successful at turning scientists into teachers. Learn the secrets that lead to success.

SESSION 14 (two presentations)

(General)

Tubman, Loews

ASTE Session: Using Digital Media to Develop Ecology Units for Middle School Students (Bio)

Janice Koch (janice.koch@hofstra.edu), Hofstra University, Long Island, N.Y.

This project uses web-based Science Bulletins, digital slide-shows from the American Museum of Natural History, to develop secondary school ecology units.

ASTE Session: Factors Affecting Teacher Implementation of Student-centered Lab Investigations (Gen)

Jeffrey Thomas (thomasjed@ccsu.edu), Central Connecticut State University, New Britain

Science education reform aims to improve student understanding of the nature of science. Yet, what factors might impede teachers from successfully implementing inquiry-oriented instruction?

SESSION 15

Taking the “Sigh” Out of Science (Gen)

(Elementary–High School)

Washington A, Loews

Joseph M. Holm (jholm@crsd.org), Holland Middle School, Holland, Pa.

Get students begging for science with back-to-school night, “fun Fridays,” and more.

SESSION 16 (two presentations)

(High School–College)

Washington C, Loews

Teaching Teachers the Conceptual History of Physics and the Physics Education Research Literature (Phys)

Peter Garik (garik@bu.edu), Boston University, Boston, Mass.

Chuck Winrich, Babson College, Babson Park, Mass.

Improve the teaching of physics with these methods of instruction that emphasize the history of physics and the physics education research literature.

Contexts for Teaching Physics Concepts in a General Education Science Course (Phys)

Michael J. Cullin (mcullin@lhup.edu), Lock Haven University, Lock Haven, Pa.

We'll look at four contexts used in a general education STS course to teach physics concepts, associated technologies, and the impact of these technologies on society.

SESSION 17

Experimental Design in High School Science (Gen)

(High School)

303, Marriott

Sarah Eales (sarah_eales@gwinnett.k12.ga.us) and **Christine Wahl** (christine_wahl@gwinnett.k12.ga.us), Peachtree Ridge High School, Suwanee, Ga.

Learn how to make science fairs fun and accessible for all students. We'll share handouts and examples from three different courses.

SESSION 18

Science and Students of Poverty (Gen)

(General) Franklin 3, Marriott

Cindy Moss (*cindy.moss@cms.k12.nc.us*), Charlotte-Mecklenburg Schools, Charlotte, N.C.

Jerry D. Valadez (*jdvsience@yahoo.com*), California State University, Fresno

Cindy Workosky (*cworkosky@nsta.org*), Communications Specialist, NSTA, Arlington, Va.

Paul Keidel (*paul_keidel@bismarckschools.org*), NSTA Director, District IX, and Bismarck (N.Dak.) Public Schools

An NSTA expert panel is developing a position statement focused on science and students of poverty. Join us to view the draft document and provide feedback.

SESSION 19

ELLs and Science: YouTube to the Rescue! (Phys)

(Middle Level–High School) Franklin 6, Marriott

Alan D. Dorado (*adorado@coramar.edu.ec*), Unidad Educativa Bilingüe Torrey, Guayaquil, Ecuador

As an alternative to afterschool tutoring, we created and uploaded videos to YouTube. The response was overwhelming, and ELL grades improved significantly. We'll share our experience and provide helpful tips.

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SESSION 20

How to Inspire and Equip Urban Minority Children to Become Scientists and Engineers (Phys)

(General) Franklin 7, Marriott

Tara Chklovski (tara@iridescentlearning.org) and **Lindsey Jenkins-Stark** (lindsey@iridescentlearning.org), Iridescent, Los Angeles, Calif.

Learn tips for recruiting and engaging urban minority parents and children in inquiry-based engineering courses. We will also share curricula for 10 different topics (developed and tested by engineers), including the biomechanics of breakdancing, bird flight aerodynamics, and energy-efficient houses.

SESSION 21 (two presentations)

(Middle Level–High School) Franklin 8, Marriott

Presider: Kathleen M. Jones (jones@juniata.edu), Juniata College, Huntingdon, Pa.

Engaging Urban Students in Exploration of Medical Careers (Bio)

Robert L. Ferguson (r.l.ferguson1@csuohio.edu), Cleveland State University, Cleveland, Ohio

I will share the structure and science content lessons we used to implement a Health Careers Summer Institute for urban high school students.

Hands On, Minds On (Bio)

Judith T. Witmer (jtwtimer@aol.com), Penn State Harrisburg, Hummelstown, Pa.

Terri O'Neal (toneil@raiderweb.org) and **Brianna Miller** (bmiller@raiderweb.org), Middletown Area High School, Middletown, Pa.

Kathleen M. Jones (jones@juniata.edu), Juniata College, Huntingdon, Pa.

The Hands On, Minds On program provides high-interest professional development for science teachers through life sciences laboratory experiences at a major research medical center.

SESSION 22

DVDs, YouTube, and Hollywood for a Millennium Education! (Chem)

(General) Grand Salon F, Marriott

Steven J. Carbone (carbonsj@pwcs.edu) and **Michael D. Dyre** (dyremd@pwcs.edu), Forest Park High School, Woodbridge, Va.

Linda L. Gulden (linda.gulden@loudoun.k12.va.us), Loudoun Academy of Science, Bristow, Va.

Presider: Steven J. Carbone

The Vista Generation requires a multimedia approach to instruction. Take home a CD/DVD of interactive content, including movie clips, links, and analysis unique to each science.

SESSION 23

Differentiated Instruction in Science for Students with Special Needs (Gen)

(Middle Level–High School) Grand Salon K, Marriott

Gregory Borman (gborman@ccny.cuny.edu), The City College of New York, N.Y.

Derek Ramdass (dramdas@schools.nyc.gov), New York City Dept. of Education, Brooklyn, N.Y.

Presider: Lionel Callender, New York City Dept. of Education, Ozone Park, N.Y.

We will examine a variety of strategies for differentiating instruction for students with special needs.

SESSION 24

NASA: Inquiry Activities for Learning About Light and the EM Spectrum and Multi-Wavelength Astronomy (Earth)

(Middle Level–High School/Informal Ed.) Freedom F, Sheraton

Edna K. DeVore (edevore@seti.org), SETI Institute, Mountain View, Calif.

Denise Smith (dsmith@stsci.edu), Space Telescope Science Institute, Baltimore, Md.

Experience inquiry activities for learning about visible and invisible light using simple classroom technologies and explore multi-wavelength astronomical applications. Take home standards-based lessons, colorful posters, and spectrometers. For more information, please visit www.seti.org.



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Delta Science Modules™:
Food Chains and Webs



**Seeds of Science/
Roots of Reading®:**
Shoreline Science

Student Reader

2010 Workshop Schedule



Workshops

■ THURSDAY

- 8:00–10:30 Using Science Notebooks with FOSS Middle School
- 12:30–3:00 FOSS Chemical Interactions for Middle School Students
- 4:00–5:00 Beyond the Classroom Walls with FOSS

■ FRIDAY

- 8:30–11:30 Using Student Science Notebooks to Assess Student Learning *(for Experienced Users)*
- 12:00–2:00 Taking Science Outdoors with FOSS K–8
- 3:00–4:30 A Sneak Preview of the FOSS 2010 Planetary Science Middle School Course
- 3:00–4:30 FOSS and DSM Kit Refurbishment/Material Management

■ SATURDAY

- 8:00–10:30 Introducing Science Notebooks with FOSS K–6
- 11:00–1:00 FOSS Assessment—Valuing Academic Progress in Grades 3–6
- 1:30–4:00 Making Sense of Science Notebooks with FOSS 3–6 *(for Experienced Users)*



Workshops

■ THURSDAY

- 8:00–9:15 Experimental Design
- 10:00–11:15 Inquiry and Literacy in Grades 5–8
- 1:00–2:30 What's Going On in There? Inquiry Science for Supervisors, Teacher Trainers, and Teachers
- 3:00–4:30 Science Gnus: Inquiry Skills in the Stories of Scientists, Famous and Not So Famous

■ FRIDAY

- 8:00–9:15 Put Some Spark into Science Investigations
- 10:00–11:15 Integrating Science and Literacy in Grades 1–6
- 1:00–2:15 Working as One with Hands and Minds



Workshops

■ THURSDAY

- 8:30–10:00 Innovative Science and Literacy Integration: *Seeds of Science/Roots of Reading®*
- 10:30–12:00 Innovative Science and Literacy Integration: *Seeds of Science/Roots of Reading®*
- 1:00–2:30 Innovative Science and Literacy Integration: *Seeds of Science/Roots of Reading®*
- 3:30–5:00 Reading Skills in the Science Classroom: *Seeds of Science/Roots of Reading®*

SESSION 25

Living and Working at the Bottom of Earth (Gen)

(General) *Freedom H, Sheraton*

Casey O'Hara (*cohara@seq.org*), Belmont, Calif.

James Madsen (*james.madsen@uwrf.edu*), University of Wisconsin, River Falls

Steve Stevenoski (*steve.stevenoski@wrps.org*), Lincoln High School, Wisconsin Rapids, Wis.

Come hear about what it was like to work on the IceCube project at the South Pole. The IceCube collaboration is an international group of more than 33 institutions and 200 scientists that are building two telescopes at the South Pole.

SESSION 26

How to Succeed at Grant Writing for Funding Opportunities from NOAA (Env)

(General) *Independence A, Sheraton*

Sarah E. Schoedinger (*sarah.schoedinger@noaa.gov*), NOAA Office of Education, Charlotte, N.C.

Bronwen Rice (*bronwen.rice@noaa.gov*) and **Stacey Rudolph** (*stacey.rudolph@noaa.org*), NOAA, Washington, D.C.

Learn what NOAA looks for in a grant application. We'll cover the "do's and don'ts" for applying to grant programs offered by NOAA.

SESSION 27 (two presentations)

(General) *Independence B, Sheraton*

Developing Teachers' Science Content and Pedagogy Through an Authentic Fossil Investigation (Earth)

Daniel K. Capps (*dkc39@cornell.edu*) and **Barbara A. Crawford** (*bac45@cornell.edu*), Cornell University, Ithaca, N.Y.

Robert M. Ross (*rmr16@cornell.edu*) and **Trisha A. Smrecek**, Paleontological Research Institution, Ithaca, N.Y.

We'll share an inquiry-based professional development program focusing on evolution, geology, and nature of science. This session will be useful for teacher educators and museums.

Nature of Science Instruction in the General Education Course (Earth)

L. Lynn Marquez (*lynn.marquez@millersville.edu*) and **Nicole Wilson** (*nlwilso1@marauder.millersville.edu*), Millersville University of Pennsylvania, Millersville, Pa.

Create the foundation for superior science in elementary schools. These instructional strategies effectively convey not just earth science content but also the process and nature of science.

SESSION 28

Time and Space for Science: Peaking over the Shoulders of Astronauts (Earth)

(Middle Level) *Independence C, Sheraton*

Jessica Payeur (*jpayeur@londonderry.org*) and **Paula S. Chessin** (*pchessin@londonderry.org*), Londonderry Middle School, Londonderry, N.H.

Virginia J. Moore (*vjmoore@olemiss.edu*), The University of Mississippi, Tupelo

Debby A. Chessin (*dchessin@olemiss.edu*), The University of Mississippi, University, Miss.

President: Virginia J. Moore

Learn how a middle school science teacher, literacy coach, and media specialist integrate the Nature and History of Science with literacy and research skills.

SESSION 29 (two presentations)

(General) *Liberty C, Sheraton*

ARKive.org: Using Audiovisuals to Promote Conservation Education (Env)

Liana Vitali (*liana.vitali@wildscreenusa.org*), Wildscreen USA/ARKive, Washington, D.C.

ARKive.org is the Noah's ark of the internet era, a global initiative gathering together the best films, photographs, and audio recordings of Earth's threatened species. Each species' audiovisual profile depicts typical characteristics and behavior— what it looks like, where it lives, how it behaves, and why it is special.

The Personal Energy Audit Activity: Analyzing Personal Energy Use, Resource Availability, and Conservation Practices (Env)

Tamara E. Peffer (*tep205@lehigh.edu*), **Alec M. Bodzin** (*amb4@lehigh.edu*), and **Violet A. Kulo** (*vak4@lehigh.edu*), Lehigh University, Bethlehem, Pa.

Encourage students' examination, analysis, and reduction of their personal energy use with this personal energy audit activity.

12:30–1:30 PM Workshops



Aligning Science Curriculum and Assessment to Raise Science Achievement Scores Through a “Train-the-Trainers” Model (Gen)

(Elementary) Hall D/Room 6, Convention Center

Stacey Miller (*smiller@basd.net*) and **Jen Roth** (*jroth@basd.net*), Pleasant Gap Elementary School, Pleasant Gap, Pa.

Presider: Tammie Burnaford, Pleasant Gap Elementary School, Pleasant Gap, Pa.

Elementary teachers in a rural school district used the “train-the-trainers” model to align science curriculum and assessment district wide and raise science achievement scores.

Preparing for Liftoff

(Earth)

(Elementary)

Hall D/Room 10, Convention Center

Usha Rajdev, Marymount University, Arlington, Va.

Imagine your students as budding scientists excitedly discussing the activities of their latest math and science integrated unit. Come see how preservice students carry out hands-on teaching approach in their own classrooms. Immerse yourself in a child’s world and conduct activities that can be carried out easily through a teacher’s perspective. Enhance, enrich, and inspire even the most reluctant learners with these cost-effective and truly out-of-this-world experiences.

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Thursday, March 18*
2:00–3:00 Page Keeley

Friday, March 19*
1:00–2:00 Bill Robertson
2:00–3:00 Dennis Smithenry and John Gallagher-Bolos

Saturday, March 20*
10:00–11:00 Anne Tweed
1:00–2:00 Neil Cornins
1:00–2:00 Richard Konicek-Moran

NSTApress
National Science Teachers Association

*Times are tentative, check the NSTA Science Bookstore for more information.

Going Fishing for Rainbows: Connecting Content for Diverse Learners (Gen)

(Elementary) Hall D/Room 14, Convention Center
Linda Pickett (pickettl@winthrop.edu) and **Deborah V. Mink** (minkd@winthrop.edu), Winthrop University, Rock Hill, S.C.

Here are some practical ideas for connecting hands-on science and mathematics to children's literature and writing through the use of thematic units. We will model strategies to accommodate the learning needs of diverse student populations.

Through the Eyes of Scientists: A Language Arts/Science Series (Gen)

(Elementary) Hall D/Room 16, Convention Center
Julie Taylor, Consultant/Solar System Educator, Victorville, Calif.

Discover a brand-new, free language arts/science series from JPL. Learn to use science notebooks, experiment like real scientists, and learn expository writing skills.

Nanoparticles: Exciting Activities with Nanotechnology (Gen)

(Informal Education) Hall D/Room 17, Convention Center
Joe Muskin (jmuskin@illinois.edu), University of Illinois at Urbana-Champaign, Urbana

Learn a simple procedure for making nanoparticles and how to apply them to either a chemistry or biology classroom. We'll share hands-on laboratory activities suitable for high school and college students.

A Great Solution: Science Combined with Literature (Chem)

(Elementary) Hall D/Room 18, Convention Center
Mickey Sarquis (sarquiam@muohio.edu), Miami University, Middletown, Ohio

Start with a literature book, go for the science! Learn how with these fun, literature-based science activities. A special feature of these activities is the incorporation of children's literature that represents a diversity of cultures.

Toys—They're Not Just for Physics Anymore (Chem)

(Elementary–Middle Level) Hall D/Room 22, Convention Center
Lynn Hogue (hoguelm@muohio.edu), Miami University, Middletown, Ohio

Using toys as scientific tools is the perfect way to capture interest in science concepts for students. Guaranteed fun for teachers, too.

Podcasts—Not Just for Kids Anymore! (Gen)

(General) Hall D/Room 28, Convention Center
Marguerite A. Sognier (masognie@utmb.edu) and **Michele Marquette** (mlmarque@utmb.edu), The University of Texas Medical Branch, Galveston

Tap into your students' love for podcasts by making them an effective teaching tool. Learn some practical applications you can use now.

NMLSTA Session: The Ubiquitous Middle Level Science Classroom (Phys)

(Middle Level) Commonwealth B, Loews
Claudia M. Toback (cmt.edconsulting@ix.netcom.com), NMLSTA, Staten Island, N.Y.

Science teaching can be inclusive, integrating ELA, math, social sciences, and the arts. Learn some effective strategies for middle level classes.

Using Web Resources to Explore Computational Biology (Bio)

(High School–College) Commonwealth C, Loews
Deborah F. McGann (mcgannnd@mssm.org), Maine School of Science and Mathematics, Limestone

Engage advanced high school biology students in mathematical applications of genetic research using web-based Quantitative Trait Loci (QTL) data.

Teaching Chemistry with Hydrogen and Fuel Cells (Chem)

(High School–College) Commonwealth D, Loews
Barbara Nagle, Lawrence Hall of Science, University of California, Berkeley

Learn how to use the chemistry of hydrogen fuel cells to teach chemistry topics related to the standards, including conservation of energy, stoichiometry, redox reactions, and chemical thermodynamics.

NSELA Session: TNT (Teach North Texas)—Getting a Bang Out of STEM Integration (Gen)

(Middle Level–College) Congress C, Loews
David Wojnowski (david.wojnowski@unt.edu) and **Pamela Esprivalo Harrell** (pam.harrell@unt.edu), University of North Texas, Denton

Teach North Texas (TNT) is a UTEACH replication program at the University of North Texas. Learn how STEM subjects are integrated within this inquiry-based instruction course.

Aquavision Videoconferencing: We Bring the Dolphins to You! (Bio)

(General) Franklin 4, Marriott

Adriana Reza (*areza@txstateaq.org*), Texas State Aquarium, Corpus Christi

Experience the Texas State Aquarium without leaving the classroom! Come learn about Aquavision’s standards-based programs, participate in hands-on demonstrations, and enjoy video from the aquarium.

Smarter Science in High School: Literacy and Numeracy in Action (Gen)

(High School) Franklin 5, Marriott

Michael J. Newnham (*mike@smarterscience.ca*), Youth Science Canada, London, Ont., Canada

Smarter Science’s research-based inquiry program teaches key concepts and process skills through hands-on investigations. Take home materials and door prizes.

Making Units Mean Something (Phys)

(Middle Level–High School) Grand Salon C, Marriott

Aaron R. Osowiecki (*aosowiecki@gmail.com*), Boston Latin School, Boston, Mass.

This introductory physics activity requires students to develop their own units of measurement and convert between different units.

NSTA Chapters and Associated Groups Events

Friday, March 19

Dorothy K. Culbert Chapters and Associated Groups Breakfast

7:00–8:30 AM

Philadelphia Marriott, 304

Ticket Required (M-3; \$40)

This event is a great way for NSTA chapters and associated groups leaders to kick off their conference experience!


NSTA District Meet and Greet in Honor of Wendell G. Mohling

2:00–3:30 PM

Convention Center, Exhibit Hall

Join us in the exhibit hall for free refreshments, networking, and your chance to get to know your NSTA leadership! Discover ways to get and stay involved in all the workings of NSTA at the local, regional, and national level!



 **NSTA Press Session: Using the National Science Facilities Standards to Plan and Design Your School Science Labs** (Gen)

(General) *Grand Salon L, Marriott*

LaMoine L. Motz (*llmotz@comcast.net*), 1988–1989 NSTA President, and Oakland County Schools, Waterford, Mich.

Juliana Texley (*jtexley@att.net*), Palm Beach Community College, Boca Raton, Fla.

Sandra West Moody (*sw04@txstate.edu*), Texas State University, San Marcos

Presider: LaMoine L. Motz

Join us for an action-packed session on planning and designing your new science labs. Learn how the latest research on effective teaching provides you with a guide to effective, flexible/modular, and safe teaching and learning spaces for science, and how your input can influence the planning and designing of effective facilities. The authors of *NSTA Guide to Planning School Science Facilities* (Second Edition) will guide you through the planning process. Participants will receive a course packet and copy of *NSTA Guide to Planning School Science Facilities*, and view science facilities from all over the country.

Stellar Evolution—From Stellar Nurseries to Black Holes (Earth)

(General) *Freedom E, Sheraton*

Donna L. Young (*donna.young@tufts.edu*), The Wright Center for Science Education, Tufts University, Medford, Mass.

Pamela Perry (*pperry@lewistonpublicschools.org*), Lewiston High School, Brunswick, Maine

Use beautiful multi-wavelength images of stellar nurseries, proto-stars, supernova remnants, planetary nebulae, neutron stars, pulsars, and black holes to investigate the processes of stellar evolution.

NMEA Session: Applications of GPS to the Everyday Science Class (Gen)

(General) *Liberty A/B, Sheraton*

Greg R. Graeber, Dauphin Island Sea Lab, Dauphin Island, Ala.

Presider: Stephanie Wright, Dauphin Island Sea Lab, Dauphin Island, Ala.

Get a GPS in your hands and learn how to easily integrate and apply this technology to your science classroom.

Fueling the Future: Energy Interconnections and Sustainable Options (Gen)

(Middle Level–High School/Informal Ed.) *Logans 2, Sheraton*

Pamela Whiffen (*pwpwr@aol.com*), NASA Educator Ambassador, Phoenix, Ariz.

Experience hands-on lessons that demonstrate the interconnections between energy sources, human choices, economic challenges, and environmental impacts. Includes free curriculum!

What You Need to Know to Teach About Ice and Snow: The History of Winter Project (Earth)

(General) *Philadelphia North, Sheraton*

Kenneth J. Harasty (*kenharasty@yahoo.com*), Clarksville, Pa.

Get equipped to lead hands-on inquiry activities focusing on the properties of ice and snow—in the classroom and in the field.

Using Macroinvertebrates to Teach About Land Use Change (Env)

(Informal Education) *Philadelphia South, Sheraton*

Cornelia B. Harris (*harrisc@caryinstitute.org*), **Alan R. Berkowitz** (*berkowitza@caryinstitute.org*), and **Kim Notin** (*notink@caryinstitute.org*), Cary Institute of Ecosystem Studies, Millbrook, N.Y.

Connect land use to invertebrate diversity using live macroinvertebrates and take home materials to conduct the lesson in your own classroom.



12:30–2:00 PM Presentations

SESSION 1

PDI McREL Pathway Session: Instructional Technology and Virtual Manipulatives That Support Student Understanding (Gen)*(General)* 401/402, Marriott**Anne L. Tweed** (*atweed@mcrel.org*), 2004–2005 NSTA President, and Mid-continent Research for Education and Learning, Denver, Colo.

Learn how to incorporate technology-based inquiry learning tools, such as virtual manipulatives, into high-quality science instruction. Used correctly, technological simulations intellectually engage students and provide opportunities for using evidence-based data to support an understanding of science concepts.

SESSION 2

PDI LHS Pathway Session: Using Hands-On, Issue-oriented Science to Investigate Important Concepts in Physical Science (Phys)*(Middle Level–High School)* 404, Marriott**David Slavsky** (*dslavsk@luc.edu*), Loyola University, Chicago, Ill.

Use issue-oriented science to engage students in the study of principles of physical science, such as motion, force, momentum, and kinetic energy.

12:30–2:30 PM Presentations

SESSION 1

PDI TERC Pathway Session: From Data to Explanation: The Challenges of Investigations in Inclusive Science Classrooms (Gen)*(Elementary–Middle Level)* 406, Marriott**Gilly Puttick** (*gilly_puttick@terc.edu*) and **Karen Mutch-Jones** (*karen_mutch-jones@terc.edu*), TERC, Cambridge, Mass.

Examine the challenges that organizing and interpreting data pose for students with learning disabilities and learn strategies to support them in developing science understanding.

SESSION 2

PDI EDC and FHL Pathway Session: Active Literacy Learning in Science (Bio)*(Elementary–Middle Level/Informal Ed.)* 411/412, Marriott**E. Wendy Saul**, University of Missouri–St. Louis
Promote literacy using trade books as exemplars and descriptive writing as a source for reflection. Observation and critical thinking build from firsthand experiences.**12:30–2:30 PM Workshop****ISTE: Wikis for Students and Teachers in Science (Gen)***(General)*

Hall D/Room 1, Convention Center

Ben Smith (*ben@edtechinnovators.com*), York, Pa.**Jared Mader** (*jared@edtechinnovators.com*), Red Lion (Pa.) Area School District

Bring your laptop and set up your own wiki. You'll learn how to create and maintain a wiki, including adding images, links, and audio. Return to your classroom with a tremendous resource already in place.

12:30–3:00 PM Exhibitor Workshop**FOSS Chemical Interactions for Middle School Students (Chem)***(Grades 5–8)*

107A/B, Convention Center

Sponsor: Delta Education, School Specialty Science–FOSS
Terry J. Shaw, **Larry Malone**, and **Jessica Penchos**, Lawrence Hall of Science, University of California, Berkeley

Join FOSS developers for an introduction to the particulate nature of matter. We'll investigate substances to learn about properties of matter, changes in matter, and energy interaction and transfer. Student books and course CD-ROMs will be distributed.

12:30–3:30 PM Presentation

SESSION 1

PDI FACET Innovations Pathway Session: What Next? Matching Instructional Actions to Identified Student Needs (Gen)*(General)*

410, Marriott

Jim Minstrell (*jimminstrell@facetinnovations.com*) and **Ruth Anderson** (*randerson@facetinnovations.com*), FACET Innovations, Seattle, Wash.**Eric Magi** (*ericm@spokaneschools.org*), Spokane (Wash.) Public Schools

So now that the teacher has the results of the Probe, Elicitation Question, or other formative assessment—what next? This session will take participants from having formative assessment data to planning and deciding what action to take based on the results. Moving from the identification and interpretation of specific learner needs, participants will learn to make decisions about the most salient need “variables” to address in subsequent instruction.

1:00–1:30 PM Presentation

SESSION 1

Creating Living Ecosystems in Title I Urban Schools (Env)

(Elementary) Hall D/Room 9, Convention Center

Holly Kundrock (kundrock@sbcglobal.net), Spring Shadows Elementary School, Houston, Tex.

Carolyn N. Dennis, William P. Hobby Middle School, San Antonio, Tex.

Presider: Diane Higginbotham, Spring Branch Independent School District, Houston, Tex.

Life among the concrete dwellers turns into a paradise when living habitats are created, attracting a wealth of life cycles ground to sky.

1:00–2:15 PM Exhibitor Workshop

Bio-Rad—Light Up Your Classroom with Prize-winning Science (Bio)

(Grades 7–College) 103A, Convention Center

Sponsor: Bio-Rad Laboratories

Kirk Brown (biotechnology_explorer@bio-rad.com), Tracy High School, Tracy, Calif.

Stan Hitomi (biotechnology_explorer@bio-rad.com), San Ramon Valley Unified School District, Danville, Calif.

What happens when you cross a jellyfish with *E. coli*? You can create your own pGLO green glowing bacteria! By the end of this workshop you'll become an actual genetic engineer—modifying genes and transforming bacteria with the Green Fluorescent Protein (GFP) AP Biology Lab 6. Take home a free UV pen light and lab prep DVD!

1:00–2:30 PM Exhibitor Workshops

Bio-Rad Enzymes and Biofuels: Go from Grass to Gas! (AP Lab 2) (Bio)

(Grades 7–College)

103B, Convention Center

Sponsor: Bio-Rad Laboratories

Sherri Andrews (biotechnology_explorer@bio-rad.com) and

Essy Levy (biotechnology_explorer@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.

Need energy? Reveal the power of enzyme kinetics by illustrating the theory through a real-world application to biofuels. Through guided inquiry activities, your students will determine how temperature, pH, the concentration of substrate, and the concentration of enzyme will affect an enzymatic reaction. Throughout the world, biofuels are commonly used to power vehicles, heat homes, and provide fuel for cooking. Can biofuels solve global warming? Let your students decide if this is possible!

Innovative Science and Literacy Integration: Seeds of Science/Roots of Reading® (Gen)

(Grades 2–5)

106A/B, Convention Center

Sponsor: Delta Education, School Specialty Science—Seeds

Jacqueline Barber, Jen Tilson, Jonathan Curley, and Traci Wierman, Lawrence Hall of Science, University of California, Berkeley

Immerse yourself in the Seeds of Science/Roots of Reading Chemical Changes unit by investigating chemical reactions and the particulate nature of matter! See how firsthand inquiry, content-rich science books, scientific discourse, and writing activities integrate to provide rich, varied opportunities to learn important earth and life science concepts and vocabulary.

What's Going On in There? Inquiry Science for Supervisors, Teacher Trainers, and Teachers (Gen)

(Grades K–8)

108B, Convention Center

Sponsor: Delta Education, School Specialty Science

John Cafarella, Consultant, Canadensis, Pa.

Support and evaluate an inquiry-based science lesson/program and learn how to observe an inquiry science lesson. We'll define inquiry and look at the use of inquiry skills in questioning, notebooking, and assessment while engaging in interactive, inquiry-based activities. We will highlight standards-based science content/materials and implementation.

1:00–5:00 PM Meeting

NESTA Board of Directors Meeting

Logans 1, Sheraton



**1:15–1:45 PM International Conference
Panel Discussion**

(General)

Grand Salon H, Marriott

Tickets required; by preregistration only.

Rodger W. Bybee, Chair, PISA 2006 Science Expert Group, Golden, Colo.

Robin Millar, Chair, Departmental Research Committee, University of York, U.K.

Presider: Norman Lederman, Illinois Institute of Technology, Chicago, Ill.

This concluding session will engage scholars from each of the educational levels regarding common issues that cut across grade levels when designing and implementing assessment approaches and protocols. Both benefits and obstacles will be addressed and the discussion will engage both the panel and audience.



1:30–3:00 PM Exhibitor Workshops

Hands-On Integrated Science Activities for Middle School **(Gen)**

(Grades 6–8)

103C, Convention Center

Sponsor: Flinn Scientific, Inc.

Janet Hoekenga, Flinn Scientific, Inc., Batavia, Ill.

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

Hand Jive of Hands-On Chemistry **(Chem)**

(Grades 6–12)

104A/B, Convention Center

Sponsor: Sargent-Welch

Super-Safe Mark Meszaros (mark_meszaros@vwr.com), Sargent-Welch, Buffalo, N.Y.

Safety rocks! Well, at least it does when ScholAR Chemistry is leading the charge with safe, exciting, and easy-to-perform chemistry demonstrations for the classroom. Prepare to perform six actual demonstrations using simple materials and learn how to address concepts and misconceptions, incorporating student worksheets.

BrainPOP in the 21st-Century Science Classroom

(Gen)

(Grades K–8)

105A/B, Convention Center

Sponsor: BrainPOP

Annie Choi (anniec@brainpop.com), BrainPOP, New York, N.Y.

Bring POP and sizzle to your science classroom with 21st-century learning content from BrainPOP, including Earth systems, chemistry, ecology, internet safety, blogs, e-mail and IM, and more!

Pluto and the Dwarf Planets: A Celestial Rock Group! **(Earth)**

(Grades 5–12)

110A/B, Convention Center

Sponsor: Simulation Curriculum Corp.

Herb Koller (hkoller@simcur.com), Simulation Curriculum Corp., Edina, Minn.

Why can Pluto no longer “harmonize” with the other planets? Is being head of an “Ice-Rock” group a bad thing? “Roll” over to our workshop and see how Starry Night on the big screen can help you and your students answer these questions. You decide whether Pluto’s status change was justified!

Knowing How, Knowing What, Knowing Why (Gen)

(Grades K–8) 111A/B, Convention Center

Sponsor: McGraw-Hill School Education Group

Jo Anne Vasquez, 1996–1997 NSTA President, and Helios Education Foundation, Phoenix, Ariz.

Michael Comer, McGraw-Hill School Education Group, Columbus, Ohio

The tools and traits of highly effective science teachers are identified, explained, and modeled in this hands-on workshop. Come join noted science educator and past NSTA President Dr. Jo Anne Vasquez as she describes these effective strategies.

The STEM Academy (Gen)

(General) 112A/B, Convention Center

Sponsor: DS SolidWorks Corp.

Russ Mickelson (russell.mickelson@thecadacademy.com), The CAD Academy, Surprise, Ariz.

Learn how The STEM Academy engages all learners in K–12 STEM education, not just the top 15% of upper classmen. This program scaffolds from K–12 and features discovery-based courses (K–8) and mainline education to advanced courses for 9–12. The program maps to ITEA, ABET, NSTA, and NCTM standards and features student certification and articulation with leading universities. The STEM Academy creates Engineering Habits of the Mind!

Science and the Real World: 21st-Century Learning Tools from NBC News (Gen)

(General) 113A, Convention Center

Sponsor: NBC Learn

Beth Nissen (beth.nissen@nbcuni.com), **Michael Levin**, and **Norman Cohen** (norman.cohen@nbcuni.com), NBC Learn, New York, N.Y.

Understanding science—and how it applies to everyday life—is critical in preparing students for 21st-century success. Learn how NBC News Archives on Demand delivers a broad spectrum of constantly updated multimedia content, connecting today’s visual learners with the physics, chemistry, life sciences, and technologies that surround them.

Planet Diary: Using Current Events to Engage Your Grades K–8 Students in Science (Gen)

(Grades 5–8) 113B, Convention Center

Sponsor: Pearson

Jack Hankin, Pacifica, Calif.

Planet Diary author Jack Hankin will take you on an exciting professional development scavenger hunt using up-to-date journal entries and activities that engage students in real-world science. Handouts and free lesson activities will be provided from Pearson’s innovative new K–8 science program *Interactive Science*.

Methods and Resources to Improve Scores on the AP* Chemistry Exam (Chem)

(Grades 9–12) 113C, Convention Center

Sponsor: Pearson

Ed Waterman, Retired Educator, Fort Collins, Colo.

Acquire ideas and resources designed to improve your students’ scores on the Advanced Placement exam in chemistry.

**AP is a registered trademark of the College Board, which was not involved in the production of this product.*

Moving Cars: Driving Learning with the STC Program™ (Phys)

(Grades 6–8) 201B, Convention Center

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Get yourself in gear with hands-on experiences that explore force and motion. Come investigate the motion of a K’NEX® car propelled by a battery-operated fan and a K’NEX mousetrap-propelled car. This workshop uses sample activities and materials from the STC Program. Take-home materials will be provided.

Learning Chemistry with Software for Molecular-Level Visualization (Chem)

(Grades 9–College) 203A, Convention Center

Sponsor: Wavefunction, Inc.

Paul Price (sales@wavefun.com), Wavefunction, Inc., Irvine, Calif.

Do you see your students struggle with the key concepts of molecular science? Would you like to teach more effectively with the help of molecular simulations that are scientifically sound? Attend this hands-on workshop and learn how to truly engage your students using topics from the regular high school chemistry curriculum. Laptop computers provided for workshop.

Watershed Investigation: Delaware Statewide Recommended Science Curriculum (Env)

(Grade 7) 203B, Convention Center

Sponsor: LaMotte Co.

April McCrae, Dover, Del.

Guide your seventh-grade students through a virtual/field watershed experience and investigate drinking water, the water cycle, topographic mapping, land use effects on water, and water quality monitoring. Using new skills, students develop a land/water management action plan for researching and restoring the health of their local watershed. Takeaways and door prize!

Energize Your Chemistry Students' Inquiry Skills with Carolina's Inquiries in Science® Chemistry Series (Chem)

(Grades 9–12) 204A, Convention Center

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Learn how our new hands-on kit series improves student performance and makes teaching challenging topics effortless. Experience our five-step learning cycle and guided-inquiry approach as you perform activities from our “Exploring Voltaic and Electrolytic Cells” Kit. Free teacher materials and door prizes.

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

(Grades 9–12) 204B, Convention Center

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

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

The Green Roof Model: Building a Greener World (Env)

(Grades 3–8) 303A/B, Convention Center

Sponsor: Fisher Science Education

Andrew Shykofsky, Fisher Science Education, Pittsburgh, Pa.

In this interactive, hands-on workshop, Fisher Science Education and Eisco, USA will introduce you to the NEW Green Roof Model. See how it can make real-world technology accessible for your students and discover the benefits of energy-efficient alternatives to standard commercial and residential roofing using this realistic model. Door prizes will be awarded.

Bring Biology to Life (Bio)

(Grades 9–12) 304, Convention Center

Sponsor: Houghton Mifflin Harcourt

Jeannie Dennard, Houghton Mifflin Harcourt, Austin, Tex.

Engage and motivate students by connecting biology to their daily lives. Show students that studying biology is more than just memorizing facts and terms. Identify “cool connections” and construct meaningful bridges to make biology matter to students.

A Natural Approach to Chemistry: Teaching About Electrochemistry (Chem)

(Grades 10–12) Hall D/Room 2, Convention Center

Sponsor: LAB-AIDS, Inc.

Tom Hsu, Author, Andover, Mass.

Join author Tom Hsu for a special preview and hands-on examination of selected laboratory activities from *A Natural Approach to Chemistry*, a new high school program that takes a fresh look at chemistry today. It features an innovative new probeware system that is rugged, simple to use, and makes accurate, quantitative measurements accessible to all students. Selected lab activities will address concepts related to how batteries work, electrochemistry, and electroplating. Selected labs and other program materials will be provided for all participants.

1:30–4:00 PM Meetings

Preschool/Elementary Science Teaching Committee Meeting

301, Marriott

Middle Level Science Teaching Committee Meeting

302, Marriott

NSTA Reports Advisory Board Meeting

304, Marriott

Professional Development in Science Education Committee Meeting

305, Marriott

Coordination and Supervision of Science Teaching Committee Meeting

308, Marriott

Preservice Teacher Preparation Committee Meeting

309, Marriott

High School Science Teaching Committee Meeting

310, Marriott

Multicultural/Equity in Science Education Committee Meeting

413, Marriott

College Science Teaching Committee Meeting

Conference Suite I, Marriott

Nominations Committee Meeting

Conference Suite II, Marriott

Research in Science Teaching Committee Meeting

Conference Suite III, Marriott

Retired Members Advisory Board Meeting

Meeting Room 502, Marriott

1:30–6:00 PM NSTA Symposium

Climate Change Here and Now: Coastal, Ocean, and Atmospheric Impacts (SYM-1)

(Grades 5–12)

Franklin 11, Marriott

Tickets Required: \$54

Katharine Hayhoe, Texas Tech University, Lubbock

Paulo S. Maurin and **Frank Niepold**, NOAA, Silver Spring, Md.

Britt-Anne A. Parker, NOAA Coral Reef Watch, Silver Spring, Md.

Peggy Steffen and **William Sweet**, NOAA National Ocean Service, Silver Spring, Md.

For description, see page 56.

2:00–3:00 PM Presentations

SESSION 1

✓ **Engaging Parents in Science Learning: Bridging the Worlds of Home and School (Gen)**

(General)

Hall D/Room 5, Convention Center

Dale McCreedy (mccreedy@fi.edu), The Franklin Institute, Philadelphia, Pa.

Jessica Luke (luke@ilinet.org), Institute for Learning Innovation, Edgewater, Md.

Parent Partners in School Science, a multi-year museum/urban elementary school partnership, offers resources and research findings focused on understanding home/school connections that support learning and achievement.

SESSION 2

★ **Bring the Science of Cars into the Classroom (Phys)**

(Informal Education)

Hall D/Room 7, Convention Center

Andrew G. Nydam (andrewnydam@hotmail.com), Olympia High School, Olympia, Wash.

Debbie Goodwin (nywin@hotmail.com), Chillicothe High School, Chillicothe, Mo.

Students love cars but dislike science? These lessons use the car to teach major science concepts. Yes, even if you are mechanically challenged!

SESSION 3

Nature-ally Good Teaching in Early Childhood Education (Env)

(Preschool–Elementary)

Hall D/Room 9, Convention Center

Beth A. Clark-Thomas and **Nancy Varian**, Malone University, Canton, Ohio

Nature deficit can be evidenced in students' behaviors and preparedness for learning. Explore ways to integrate inquiry-based experiences in early childhood settings.

SESSION 4

Science Olympiad Fun Day for Grades K–5 (Gen)

(General) *Hall D/Room 10, Convention Center*

Kelly R. Price (*price_kel@yahoo.com*), NSTA Director, District V, and Forsyth County Schools, Cumming, Ga.

Turn your elementary students into raving fans of science by hosting a Science Olympiad Fun Day.

SESSION 5 (two presentations)

(Preschool–Elementary) *Hall D/Room 14, Convention Center*

Science and Math Through Literature (Gen)

Lee German (*leegerman@sylvandellpublishing.com*), Sylvan Dell Publishing, Mount Pleasant, S.C.

Learn how picturebooks can be used as a cross-curricular teaching program. Discover how picturebooks take advantage of Teachable Moments, Experiential Learning, and Differentiated Instruction. Integrate “high-format” eBooks into a daily reading regimen and see improved reading and language skills. Share classroom resources and draw parents into the process.

Hidden Gems: Science Content Embedded in Poetry (Gen)

Kristin T. Rearden (*krearden@utk.edu*) and **Amy D. Broemmel** (*broemmel@utk.edu*), University of Tennessee, Knoxville

Explore strategies to blend your language arts and science standards through the beauty of science-based poetry. We’ll share resources and examples.

SESSION 6

Have a Wired Classroom—Don’t Let the Classroom Wire You Up! (Gen)

(Elementary–Middle Level) *Hall D/Room 20, Convention Center*

Danta C. Alexander, Miles Davis Magnet Academy, Chicago, Ill.

Get tips on how to create an interactive environment for your students and become more comfortable with computers, promethean boards, and creating podcasts.

You're invited...
to the NSTA New Member
Orientation

Please join us for this exceptional opportunity to meet your colleagues, make new friends, and enjoy refreshments while hearing about how preservice and new teachers can save money on BOTH their NSTA membership dues as well as auto insurance! If you joined NSTA as a member after June 1, 2009, and/or received an e-mail invitation to this event from NSTA, please join us!

Friday, March 19 • 2:00–3:00 PM
Philadelphia Marriott • Grand Salon A/B
Compliments of GEICO


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geico.com

SESSION 7

Keeping Them Hooked! (Gen)

(Middle Level) Hall D/Room 22, Convention Center

Stephanie Rafanelli (srafanelli@bentleyschool.net), Bentley School, Oakland, Calif.

Keeping middle school students engaged in science is critical to a scientifically literate society. We'll examine strategies and activities that nurture scientific interest.

SESSION 8

Kitchen Junk + Corny Lesson Titles/Science Journals X Hands-On Activities - Dress-Up Science Characters = 36 Lunch Bag Science Experiments (Gen)

(Middle Level) Hall D/Room 23, Convention Center

David E. Hussey (dshussey@gmail.com), McKinley Middle School, Boston, Mass.

Learn how I teach science through inquiry to students with emotional/behavioral issues. We'll look at how to introduce the lessons and set up the experiments, and I'll share activity sheets integrating science concepts to language arts, math, and history.

SESSION 9 (two presentations)

(High School–College) Hall D/Room 25, Convention Center



An Energy-Balance Model for Use in the Science Classroom (Earth)

Randal L.N. Mandock (rmandock@netzero.net) and **Ebony R. Winfield**, Clark Atlanta University, Atlanta, Ga.

In this interactive energy-balance module, students model realistic scenarios of how solar energy is partitioned at Earth's surface.

Quantitative Earth Science: Understanding Earthquake Dynamics and Magnitudes (Earth)

Randal L.N. Mandock (rmandock@netzero.net) and **Ebony R. Winfield**, Clark Atlanta University, Atlanta, Ga.

Improve the quantitative literacy of your earth science students. We'll share examples of earthquake magnitude calculations, fault geometry, and plate dynamics from the USGS Earthquake Hazards website.

SESSION 10

I Love Free (Gen)

(General) Hall D/Room 28, Convention Center

Jan Coley (coleyj@k12tn.net), Jefferson County Schools, Dandridge, Tenn.

Use free and open-source software to engage digital learners in exciting science activities. Resources are user friendly and help teachers gain confidence with digital tools.

SESSION 11

NARST Session: Constraints or Structural Necessities? Teachers' Conceptualizations of the "Messy" Elements of Problem-Based Learning (Gen)

(General) Anthony, Loews

Rashmi Kumar (rashmik@dolphin.upenn.edu), University of Pennsylvania, Philadelphia

Our study examined how teachers conceptualize the structural components of PBL. We'll share the results and offer an alternative model to increase the sustainability of PBL as a pedagogical tool.

SESSION 12 (three presentations)

(General) Commonwealth A, Loews

SCST Session: Getting Students to Work Without Offering Them Points: A Test of Formative Assessment in Inquiry Labs (Gen)

Donald French (dfrench@okstate.edu), **Lindsey D. Carter** (lindsey.d.carter@okstate.edu), and **Traci Richardson** (traci.k.richardson@okstate.edu), Oklahoma State University, Stillwater

Learn how we shifted our methods from formative to summative to encourage students to take feedback on lab reports more seriously.

SCST Session: Project Advance Biology: A Bridge Between High School and College (Bio)

Marvin Druger (mdrugr@syr.edu), 1994–1995 NSTA President, and Syracuse University, Syracuse, N.Y.

Project Advance Program at Syracuse University enables high school students to complete college courses for college credit.

SCST Session: Encouraging Underrepresented Girls to Enter STEM Fields Through Informal Education Opportunities (Gen)

Michelle Edgcomb (medgcomb@mail.bradley.edu), Bradley University, Peoria, Ill.

We worked with STEM professionals, university personnel, and college students in a semester-long, informal STEM education program for fourth-grade girls.

SESSION 13

Science In Motion Drives Discovery (Gen)

(High School–College) *Congress A, Loews*
Wendy K. Griest (*griestw@etown.edu*), Elizabethtown College, Boiling Springs, Pa.

Directors and Mobile Educators of Science In Motion Program

The Science In Motion program delivers science equipment, teaching assistance and support, and professional development to high school science teachers throughout Pennsylvania.

SESSION 14 (two presentations)

(College) *Regency B, Loews*
 Presider: Scott Brown, The University of West Alabama, Livingston

Forensic Science in Song Lyrics—Really! (Gen)

Marilyn T. Miller (*mtmiller@vcu.edu*), Virginia Commonwealth University, Richmond

Song lyrics are a great way of summarizing forensic science in a senior seminar class.

The Digital Generation: Assessing Teacher Candidates (Gen)

Tammy C. Brown, The University of West Alabama, Livingston

Explore the use of e-portfolios and e-assessment processes to capture undergraduate teacher candidates' science teaching and learning.

SESSION 15

How Do You Meet All the Standards When Using Inquiry Science Programs? (Gen)

(Supervision/Administration) *Regency C1, Loews*

Kathleen K. Blouch (*kkblouch@aol.com*), Elizabethtown College, Elizabethtown, Pa.

Presider: Patti Vathis, Pennsylvania Dept. of Education, Harrisburg

How do you meet all the standards when using inquiry science programs with fidelity? We'll look at the choices we have to make.

SESSION 16

Identifying and Assessing Power Standards: Focusing On Critical Learning (Gen)

(Middle Level–High School/Supervision) *Regency C2, Loews*
Bill Dinkelman (*bdinkelm@casd.org*), Ottawa Area Independent School District, Holland, Mich.

Learn how our school district identified critical-learning standards for high school science as defined within the Michigan Merit Curriculum. We also created an online item bank to support classroom assessment.

SESSION 17 (two presentations)

(Preschool–Elementary/Supervision) *Tubman, Loews*

ASTE Session: Using Video Analysis to Improve Beginning Elementary Teachers' Ability to Orchestrate Evidence-based Science Talks (Gen)

Carla Zembal-Saul (*czem@psus.edu*), The Pennsylvania State University, University Park

Kimber A. Hershberger (*kham12@scasd.org*) and **Judi J. Kur** (*jjk11@scasd.org*), Radio Park Elementary School, State College, Pa.

Learn how mentor teachers and teacher educators have been using new video analysis tools to help preservice and beginning teachers better orchestrate science talks that involve children in constructing scientific claims from evidence.

ASTE Session: An Integrated Curriculum for Elementary Children (Gen)

Carole K. Lee (*yuen111222@hotmail.com*), University of Arkansas, Fayetteville

These activities integrate elementary science with other curricula such as mathematics, social studies, language, and character education.

SESSION 18

Training Teachers and Students as Science Journalists: Developing Interdisciplinary Media Programs (Gen)

(General) *Washington A, Loews*

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

Janet Raddish (*janet.raddish@ops.org*), Bryan High School, Omaha, Neb.

Kristina Mazur (*kristina.mazur@ops.org*), Morton Magnet Middle School, Omaha, Neb.

Learn to develop interdisciplinary media programs in your school. Science and English teachers and students combine research and narrative to create original, relevant science documentaries.

SESSION 19

Conference Learning: An Inquiry-based Activity (Gen)

(High School) 306, Marriott
John Clark (*jeclark@volusia.k12.fl.us*), Deltona High School, Deltona, Fla.

Link your science content to improved literacy. Have your students read their textbook and have fun doing it while you facilitate their discovery of key learning points within the chapter.

SESSION 20

PDI CSME Pathway Session: Constructing Essential Ideas of Topography with Elementary Children (Gen)

(Elementary–Middle Level) 403, Marriott
Pamela S. Lottero-Perdue (*plottero@towson.edu*), Towson University, Towson, Md.

Participants will learn to implement a field-tested, inquiry-based, elementary-level outdoor lesson that addresses essential ideas in topography. The lesson uses real topographic maps, a simple 3-D wooden mountain model, and an ordinary hill that can be found in many outdoor environments.

SESSION 21

PDI LHS Pathway Session: Integrating Biodiversity Issues into Ecology and Evolution Units (Bio)

(Middle Level–High School) 404, Marriott
Laura Lenz, Lawrence Hall of Science, University of California, Berkeley

Participate in activities that integrate biodiversity issues into standards-based units at the high school level. Take home classroom-tested strategies for your biology or environmental science classroom.

SESSION 22

PDI Skills Pathway Session: Introducing Cutting-Edge Science into the Classroom (Gen)

(High School) 405, Marriott
Jackie Miller (*jsmiller@edc.org*), Education Development Center, Inc., Newton, Mass.

The challenge of bringing the latest research into the science classroom is twofold—where to find it and how to integrate it. We will look at both these issues.

SESSION 23

Content and Scientific Practices of the New AP Biology Course (Bio)

(High School–College/Supervision) Franklin 2, Marriott
Kathy M. Takayama (*kathy_takayama@brown.edu*), Brown University, Providence, R.I.

Tanya Sharpe, The College Board, Duluth, Ga.

Elizabeth Carzoli (*elizabeth.carzoli@suhsd.k12.ca.us*), Castle Park High School, Chula Vista, Calif.

We will examine the content and scientific practices that define the new AP Biology course that has emerged from a recent review by The College Board.

SESSION 24

The Case of the Coughing Construction Worker (Bio)

(Middle Level–High School) Franklin 3, Marriott
Joel Gluck (*jglucl@aol.com*) and **John Santangelo** (*jsantangelo13@verizon.net*), NEL-CPS Construction Career Academy, Cranston, R.I.

Learn how to use The Case of the Coughing Construction Worker to stimulate inquiry and active learning in your biology, anatomy, and physiology classes. Free curriculum.

SESSION 25 (two presentations)

(Middle Level–High School) Franklin 6, Marriott

The Middle School Aerospace Consortium (MSAC) (Phys)

Vincent O. Hughes (*vincent_hughes@ccpsnet.net*), Tomahawk Creek Middle School, Midlothian, Va.

Paula R. Marshall-Hughes, Manchester Middle School, Richmond, Va.

The Middle School Aerospace Consortium (MSAC) uses digital technology to advance STEM skills in school and after-school programs.

Ready to Join the International Baccalaureate Diploma Programme (IBDP)? Here Are Tips and Practices That Work! (Gen)

Nikos Tasopoulos (*tatotos@hotmail.com*) and **Ilias Liakatas** (*liakatas@gmx.net*), Geitonas School, Vari, Greece

New physics/chemistry/biology teacher at the IBDP? Discover its curriculum, assessment, and correlation with the AP program. Join us for IBDP-specific resources and practices from experienced teachers.

SESSION 26 (two presentations)*(Middle Level–High School)**Franklin 7, Marriott***Using Personal-Response Systems to Facilitate Pre-Lab and Post-Lab Discussions (Phys)****Jesus E. Hernandez**, Lawrence High School for Math, Science, and Technology, Lawrence, Mass.

Since I started to use clickers or personal-response systems, degree of participation and quality of discussions have improved in my classroom.

Demonstrating Understanding of Physics Concepts Through Projects (Phys)**Julie A. Carver**, Jesuit College Preparatory School, Dallas, Tex.

Move beyond traditional testing and check understanding through projects (Rube Goldbergs, student-produced videos, or raps). This is a great technique for reinforcement as well as identifying misconceptions.

SESSION 27**FDA Symposium Session: Dreaming at the Frontiers of BioScience: Five Technologies That Will Change Your Life! (Gen)***(General)**Franklin 10, Marriott***Sufian Alkhalidi** (*sufian.alkhalidi@fda.hhs.gov*), U.S. Food and Drug Administration, College Park, Md.

Learn cutting-edge technologies used to study food-borne pathogens and advance scientific capabilities. These technologies could have a huge impact not only on our daily lives but also on future generations of students.

SESSION 28**FDA Symposium Session: Nutrition Education (Gen)***(General)**Franklin 13, Marriott***Crystal Rasnake**, U.S. Food and Drug Administration, College Park, Md.

Learn about FDA-developed nutrition education tools. Free nutrition education CDs for all participants.

SESSION 29**5E Hands-On Chemistry Lessons (Chem)***(Middle Level–High School)**Grand Salon B, Marriott***Carla L. Hoyer** (*choyer@houstonisd.org*) and **Deborah Campbell** (*dcampbel@houstonisd.org*), Houston (Tex.) Independent School District

Increase student engagement and improve student outcomes using hands-on 5E lessons. Come preview 5E lesson activities and take home a CD with 5E chemistry lessons.

SESSION 30**Demonstrating Physics Using Inquiry and Constructivism (Phys)***(Middle Level–College)**Grand Salon D, Marriott***Borislav Bilash** (*bbilash@pascack.k12.nj.us*), Pascack Valley High School, Hillsdale, N.J.**David Maiullo** (*maiullo@physics.rutgers.edu*), Rutgers University, Piscataway, N.J.

Review the research on using demonstrations in teaching physics and learn how presentation styles can be modified to maximize learning. We'll share 25 demonstrations.

SESSION 31**Collaborative Science Inquiry (Gen)***(Middle Level–High School)**Grand Salon K, Marriott***Jennifer L. Maeng**, **Randy L. Bell** (*rlb6f@virginia.edu*), and **Bridget K. Mulvey**, University of Virginia, Charlottesville**Lara K. Smetana** (*smetanall@southernct.edu*), Southern Connecticut State University, New Haven

President: Lara K. Smetana

We will share an interdisciplinary forensic science unit in which students gather and analyze data to solve a crime. Materials will be provided.

SESSION 32**NSTA Press Session: What Every Science Teacher Needs to Know About Laboratory Safety! (Gen)***(Elementary–High School)**Grand Salon L, Marriott***Kenneth R. Roy** (*royk@glastonburyus.org*), Glastonbury (Conn.) Public Schools

NSTA's Safety Compliance consultant/author/columnist will share the latest laboratory safety issues critical to every science teacher in the laboratory or field.

SESSION 33 (two presentations)*(General)**Freedom F, Sheraton***Outreach Options for Science Teachers (Earth)****Kenneth J. Harasty** (*kenharasty@yahoo.com*), Clarksville, Pa.**Jerry Fetter**, Council Rock High School South, Holland, Pa.

Get out of the classroom! Learn where, how, and why to expand your outreach efforts for the benefit of science and to enhance your career.

NASA Endeavor Teaching Certificate Project (Earth)
Glen Schuster and **Meghan Marrero** (*mmarrero@us-satellite.net*), U.S. Satellite Laboratory, Inc., Rye, N.Y.
Explore K–12 STEM Fellowship opportunities and see the program in action!

SESSION 34

Mohawk Guy Teams Up to Connect the Poles to the Tropics (Gen)

(*Elementary–High School*) *Freedom H, Sheraton*
Tina King (*tinakingtn@hotmail.com*), Wilson County Schools, Lebanon, Tenn.

Bob King (*kingwhhs47@hotmail.com*), Friendship Christian School, Lebanon, Tenn.

Presider: Bob King

We will connect two related CSI-type investigations integrating real-world science— an Antarctic field experience and deep-sea sediment cores collected from the equatorial Pacific.

SESSION 35

Arctic Climate Modeling Project (Earth)

(*General*) *Independence B, Sheraton*
Emma L. Walton (*elwalton@aol.com*), 1999–2000 NSTA President, and Science Consultant, Anchorage, Alaska

Glenda Findlay (*gkfindlay@alaska.edu*), Geophysical Institute/UAF, Fairbanks, Alaska

Explore an interactive multimedia learning system on climate change in the Arctic. We'll look at online workbooks for K–12 Alaska standards-based lessons.

SESSION 36

Investigating Land Use Environmental Issues with Google Earth and Satellite Imagery (Env)

(*Elementary–High School*) *Liberty C, Sheraton*
Alec M. Bodzin (*amb4@lehigh.edu*), Lehigh University, Bethlehem, Pa.

Learn about inquiry-based activities that incorporate Google Earth and NASA satellite imagery to investigate local and global environmental issues related to changes in land use.

2:00–3:00 PM Workshops

Cultivating Literacy: Linking Children's Literature and Plant Science (Bio)

(*Elementary*) *Hall D/Room 8, Convention Center*

Pamela A. Koch (*pkoch@tc.edu*), Teachers College, Columbia University, New York, N.Y.

Aleta Damm (*adamm@jpsmail.org*), Middle School at Parkside, Jackson, Mich.

Explore ways to use children's literature to introduce form and function in plants. Review a selection of books and participate in a plant-parts lab.

The Science, Engineering, and Literacy Connection in the Primary Grades (Gen)

(*Preschool–Elementary*) *Hall D/Room 11, Convention Center*

Carol Shields (*carol.shields@stevens.edu*), Stevens Institute of Technology, Hoboken, N.J.

Experience hands-on engineering lessons based on science concepts that are introduced in grades K–3. All lessons connect with children's literature.

Problem Solvers as a Science Classroom Asset (Gen)

(*Informal Education*) *Hall D/Room 17, Convention Center*

Ellen Rubin (*ellenr5@verizon.net*), Exploring Options, New York, N.Y.

Maryann Stimmer (*mstimmer@aed.org*), Educational Equity Center at AED, New York, N.Y.

Every child has a different skill. Kids with disabilities bring their problem-solving strength to the science classroom and everyone benefits.

It's All About the Food (Bio)

(*Elementary–Middle Level*) *Hall D/Room 18, Convention Center*

Ann B. Nunan (*anunan@aol.com*), Science Education Consultant, Fayetteville, Ga.

Katherine Griffin (*kgriffin@ipni.net*), International Plant Nutrition Institute, Norcross, Ga.

Barbara King (*barbara.king@gscs.org*), Griffin-Spalding County School System, Griffin, Ga.

This exciting, fast-paced workshop will feature many demos and hands-on investigations focusing on foods and plants. Take home lesson plans, illustrated booklets, and a CD.

Fun Chemistry for Kids (Chem)
(Elementary–Middle Level) Hall D/Room 19, Convention Center
John W. McBride (*jwm1303@utpa.edu*) and **K. Christopher Smith** (*kcsmith@utpa.edu*), University of Texas–Pan American, Edinburg
 Help your students learn about the structure of matter and its applications with these simple chemistry activities exploring the particulate nature of matter. Handout.

Graphiti! (Gen)
(General) Hall D/Room 26, Convention Center
Sarah Draper (*sarah.draper@ttu.edu*), Texas Tech University, Lubbock
 Presider: Sarah J. Anderson (*sarah.anderson@ttu.edu*), Texas Tech University, Lubbock
 Make graphs powerful and relevant through cooperative learning and engaging investigations. Graphs don't have to be a foreign language!

National Girls Collaborative Project: Connecting Science, Technology, Engineering, and Mathematics (Gen)
(General) Hall D/Room 27, Convention Center
Karen A. Peterson (*kp@edlabgroup.org*), EdLab Group, Lynnwood, Wash.
 The National Girls Collaborative Project brings together science, technology, engineering, and mathematics (STEM) programs to encourage collaboration between programs and encourage more girls to engage in STEM programs.

Student Peer Coaching and Feedback: How to Enhance Student Learning Through Peer Interaction (Gen)
(General) Hall D/Room 29, Convention Center
Deana K. Senn (*deanasenn@gmail.com*), Learning Network, Cold Lake, Alb., Canada
 We will examine how to have students collaborate daily, as well as how to facilitate more peer feedback and interaction as students complete summative assessments.

Starting an NSTA Student Chapter: Faculty & Student Perspectives

**Saturday
 March 20**

8:00–9:00 AM

Philadelphia Marriott, 308

Interested in getting your preservice teachers more involved in the profession? You won't want to miss this must-see panel discussion conducted by NSTA student chapter advisors on the advantages of starting an NSTA student chapter at your college or university.



STEAM: Incorporating Art into Cross-curricular Science Learning (Gen)

(General) *Hall D/Room 30, Convention Center*
Megan A. Simmons (*megan@iskme.org*), Institute for the Study of Knowledge Management, Half Moon Bay, Calif.
Learn how we engage students by incorporating science, technology, engineering, art, and math, with a focus on sustainable design.

The Virtual Genetics Lab: A Free Interactive Computer Simulation of Genetics (Bio)

(High School–College) *Commonwealth C, Loews*
Brian T. White (*brian.white@umb.edu*), University of Massachusetts, Boston
The Virtual Genetics Lab allows students to explore genetics by designing their own crosses and analyzing the resulting offspring. This software is freely available on the web. For more information, see <http://intro.bio.umb.edu/vgl>.

Going Beyond 1,2,3: Successful Differentiated Grouping Strategies (Gen)

(Middle Level–High School) *Commonwealth D, Loews*
Angela B. Caylor (*angela.caylor@cobbk12.org*), McEachern High School, Powder Springs, Ga.
Want to form collaborative groups of students that actually function? Here are some differentiated grouping strategies that can be used easily and effectively in any science classroom.

NSELA Session: Dragon Genetics (Bio)

(Middle Level) *Congress C, Loews*
David Wojnowski and **Pamela Esprivalo Harrell** (*pam.harrell@unt.edu*), University of North Texas, Denton
In this hands-on simulation we fertilize dragon eggs and explore dominant/recessive traits, sex-linked traits, and other fundamentals of genetics. Explore inheritance patterns for presence/absence of wings, color of wings, and length of tail using dragon genetics Punnett squares. Free CD.

Engaging Students in the Study of Biology: Real-World Connections (Bio)

(Middle Level–High School) *Franklin 1, Marriott*
Alan Ascher (*alanascher@aol.com*), College of Staten Island, N.Y.
Barbara Poseluzny (*poseluzny1@aol.com*), Ossining, N.Y.
Explore activities that involve the human genome, environmental health science, cancer education, and medical mysteries about epidemics. We'll share POGIL (Process Oriented Guided Inquiry Learning) activities and a toolbox of teaching strategies.

What's Up with Learning and Memory? (Bio)

(General) *Franklin 4, Marriott*
Barbara Z. Tharp (*btharp@bcm.edu*) and **Michael Vu** (*mv12@bcm.edu*), Baylor College of Medicine, Houston, Tex.
Many learning styles must be addressed in any classroom, from the lone learner to the cooperative kid. Give students insight into how they learn.

Easy Hands-On Labs and Projects for Physics and Physical Science You Can Use Right Now (Phys)

(Middle Level–High School) *Franklin 5, Marriott*
Deborah E. Carder (*carderd@mail.fruitvaleisd.com*), Fruitvale High School, Fruitvale, Tex.
Kathey Roberts (*kathey_roberts@lakesidesd.org*), Lakeside High School, Hot Springs, Ark.
Explore Newton's Laws, electricity, forces, acceleration, general motion, thermodynamics, sound, and waves with these inexpensive activities. All supplies can be found at your local hardware or discount store.

The Science of Alcohol: Moving Health and Prevention into Inquiry-based Science (Bio)

(Middle Level–High School/Supervision) *Franklin 9, Marriott*
Jason I. Lazarow (*jlazarow@rtmsd.org*), Springton Lake Middle School, Media, Pa.
Come get a *free*, complete NSES-aligned curriculum module and learn how to implement engaging, research-based curricula in your classroom.

Life in a Fluid: How Are Bacteria Similar to Whales? (Phys)

(Informal Education) *Grand Salon C, Marriott*
Tara Chklovski (*tara@iridescentlearning.org*) and **Lindsey Jenkins-Stark** (*lindsey@iridescentlearning.org*), Iridescent, Los Angeles, Calif.
Dive into the world of fluid dynamics. Learn about Reynolds number and how organisms develop neat adaptations that help them defy viscosity, density, buoyancy, and gravity. Design, build, and test your very own hybrid bird-fish!

NASA: The Size and Scale of the Universe (Earth)

(Middle Level–High School) *Freedom E, Sheraton*
Bryan J. Mendez (*bmendez@berkeley.edu*), University of California, Berkeley
Explore hands-on, standards-based activities to help your students grasp the size and scale of the universe and to understand how astronomers measure such incredible distances.

What Causes the Seasons? Motion and Math (Earth)

(Elementary–Middle Level) Freedom G, Sheraton

Jill Black, Missouri State University, Springfield

Conceptual-change activities include whole-body modeling of the moving tilted Earth and seasonal constellation views, and hands-on science/math exercises involving Sun angle and Sun-Moon distances.

Can You Hear Me Now? Using Cell Phones and Role Play to Promote Interdisciplinary Classroom Connections (Env)

(Elementary–High School) Independence A, Sheraton

Michelle L. Klosterman (*klosteml@gmail.com*) and **Katie Brkich Milton** (*ecobeagl@ufl.edu*), University of Florida, Gainesville

Jennifer Mesa (*uloa@ufl.edu*), Terwillirer Elementary School, Gainesville, Fla.

Students use cell phones but do they know anything about their environmental impacts? Engage in a cell phone role-play targeting interdisciplinary standards.

NMEA Session: GMRI: VitalVenture—Engaging Learners, Exploring Watersheds, and Connecting Communities (Env)

(Middle Level/Informal Education) Liberty A/B, Sheraton

Sarah Kirn (*skirn@gmri.org*), Gulf of Maine Research Institute, Portland

GMRI's VitalVenture program engages Maine science students with locally relevant watershed issues. Learn how this curriculum can work within your watershed community.

Engaging Students in Science Content Through Global Issues and Sustainability (Gen)

(Middle Level–High School) Logans 2, Sheraton

Pamela Whiffen (*pwpwr@aol.com*), NASA Educator Ambassador, Phoenix, Ariz.

Bring global issues to your classroom using ecological footprint, renewable resources, and sustainability audits. Free curriculum!

Using Ongoing Eruptions to Study the Basic Characteristics of Volcanoes (Earth)

(Elementary–High School) Philadelphia North, Sheraton

Stacia K. Schipper (*schippst@mail.gvsu.edu*) and **Steve R. Mattox** (*mattoxs@gvsu.edu*), Grand Valley State University, Allendale, Mich.

Use Google Earth to visit 15 continuously erupting volcanoes and train students to measure relief, basal diameter, and slope, and to classify volcano type, materials, and explosivity.

Schoolyards as Classrooms (Env)

(Informal Education) Philadelphia South, Sheraton

David B. Yarmchuk (*dyarmchuk@gmail.com*), Alice Ferguson Foundation, Accokeek, Md.

Learn how to turn your schoolyard—whether grass, asphalt, or otherwise—into a classroom that will help students form meaningful connections to the outdoors.

2:00–3:15 PM Exhibitor Workshop

Inquiry Investigations™ Forensics Science Curriculum Module and Kits (Gen)

(Grades 7–10) 109A/B, Convention Center

Sponsor: Frey Scientific, School Specialty Science

Ken Rainis and **Lisa Bowman**, Frey Scientific, School Specialty Science, Ann Arbor, Mich.

With our new Inquiry Investigations forensic series, students learn foundational analysis skills that help them solve multifaceted cases. See how program software allows the preparation of web-based content along with individualized assessment. Perform skill-based investigative techniques and case investigations and receive a program resource CD and correlations.

2:00–3:30 PM Presentation

SESSION 1

PDI McREL Pathway Session: Constructing Understanding Using Visual Tools (Gen)

(General) 401/402, Marriott

Bj Stone (*bstone@mcrel.org*), Mid-continent Research for Education and Learning, Denver, Colo.

Research indicates that development of visual representations enhances student understanding of content. Learn more about graphic organizers, models, thinking maps, pictures, and other strategies that help students understand content.

2:00–3:30 PM Exhibitor Workshops

The BEST Buoyancy Experiment Ever! Understanding Archimedes's Principle and Density (Phys)

(Grades 5–12) 108A, Convention Center

Sponsor: CPO Science, School Specialty Science

Patsy Eldridge, CPO Science, School Specialty Science, Nashua, N.H.

Steel is denser than water. So how does a steel boat float? Use modeling clay and displacement tanks to discover how and why boats can be made of materials denser than water. Learn a practical, simple, quantitative, and instructional way to present density and buoyancy.

Using Inquiry in Environmental Science and Biology with Vernier (Gen)

(Grades 7–12) 202A, Convention Center

Sponsor: Vernier Software & Technology

Gretchen Stahmer DeMoss (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

In this hands-on workshop, you will become the student as you investigate cell respiration through inquiry. This experiment from *Investigating Environmental Science Through Inquiry* is also applicable in biology and AP Biology classes. Learn how to collect data using LabQuest and our new LabQuest Mini with a CO₂ gas sensor.

Advanced Logger Pro and LabQuest (Gen)

(Grades 9–12) 202B, Convention Center

Sponsor: Vernier Software & Technology

Dan Holmquist (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

If you already use Vernier's Logger Pro or LabQuest APP software with your students, join us to see what's new or learn some new tricks. Learn how to insert pictures and movies, create a multiple-page lab report, plot your data along with GPS sensor readings on a Google map, and much more.

2:00–4:00 PM The Planetary Society Lecture

LightSail-1: Launching a New Solar Sail (Gen)

(General) Ballroom A/B, Convention Center



Bill Nye, Vice President, The Planetary Society, and Scientist, Author, and Host, The Science Channel's *100 Greatest Discoveries*

LightSail is an innovative program that will launch three separate solar sail spacecraft over the course of several years, beginning with LightSail-1, which will demonstrate

that sunlight alone can propel a spacecraft in Earth orbit. LightSails 2 and 3, more ambitious still, will reach farther into space. Taking advantage of the technological advances in micro- and nano-spacecraft over the past five years, The Planetary Society will build LightSail-1 with three Cubesat spacecraft. LightSail seeks to create and prove solar sail technologies that in a few years can monitor the Sun for solar storms, provide stable Earth observation platforms, and explore our solar system without carrying heavy propellants. Sailing on light pressure (from lasers rather than sunlight) is also the only known technology that might carry out practical interstellar flight, helping pave our way to the stars..

As a student at Cornell University, Bill Nye the Science Guy[®] was introduced to the wonders of astronomy in a class taught by Carl Sagan himself, one of the original founders of The Planetary Society. So, for Nye it was like coming full circle to join the Society's board of directors and later to become the organization's newest vice president. Scientist, comedian, teacher, and author, Nye became a household name with his innovative, fast-paced television series Bill Nye the Science Guy. His latest TV program, 100 Greatest Discoveries, airs on the Science Channel. Nye earned a degree in mechanical engineering at Cornell University and spent several years working as an engineer until he combined his dual love of science and comedy to create the Science Guy.

2:00–4:00 PM Meeting

CESI Presidents' Roundtable

(By Invitation Only)

Congress B, Loews

2:00–4:00 PM Presentation

SESSION 1

PDI BSCS Pathway Session: Inquiry in the Classroom—It's Elementary (Gen)

(Elementary/Supervision)

414/415, Marriott

Sam Spiegel, BSCS, Colorado Springs, Colo.

Consider how inquiry is defined in national documents and learn ways to apply the research on scientific explanations as sense-making strategies for elementary students.

2:00–5:00 PM Short Courses



Nanotechnology: Bringing Frontier Research into STEM Classrooms (SC-4)

(Middle Level–High School)

Aria A, Doubletree

Tickets Required: \$34

Morton M. Sternheim (*mort@umassk12.net*) and **Rob Snyder** (*snyder@umassk12.net*), University of Massachusetts, Amherst

For description, see page 60.

Taking K–8 Science Outdoors: It Works! It's Easy! and Anyone (Anywhere) Can Do It! (SC-5)

(Elementary–Middle Level)

Maestro A/B, Doubletree

Tickets Required: \$24

Erica Beck Spencer (*erica@indigoinventions.com*) and **Joanna Snyder** (*joanna_snyder@berkeley.edu*), Lawrence Hall of Science, University of California, Berkeley

Kristin Metz (*kristinmetz@schoolyards.org*), Boston Schoolyard Initiative, Boston, Mass.

For description, see page 61.

2:30–3:00 PM Presentations

SESSION 1



The Science of Survival

(Phys)

(General)

Hall D/Room 6, Convention Center

Chadd W. McGlone (*cwmcglone@yahoo.com*), Trinity School of Durham and University of North Carolina, Chapel Hill
In this unit, students employ scientific and mathematical concepts to explore how individuals in native cultures survive. Students then devise a survival strategy of their own.

SESSION 2

From Student to Spielberg: Using Student-created Short Films to Support Authentic Learning Experiences (Gen)

(Middle Level–High School)

303, Marriott

Carrie-Anne Sherwood (*csherwood@codmanacademy.org*), Codman Academy Charter Public School, Dorchester, Mass.

Student-created films about energy, conservation, and the environment were used to support authentic learning experiences in an urban high school physics class.

SESSION 3

F.O.C.U.S. on Assessment

(Bio)

(High School)

Franklin 8, Marriott

Sheila R. Clements (*sclements@tvsd.us*) and **Kristen N. Conkel** (*kconkel@tvsd.us*), Teays Valley High School, Ashville, Ohio

Learn assessment strategies that are fun, ongoing, collaborative, unique, and simple. We'll share technology-based projects, hands-on activities, and science "events."

SESSION 4

Broadening Participation of Rural Students with Estuarine Scientists (Env)

(Middle Level/College)

Independence C, Sheraton

Sandra Bickerstaff (*sbickers@scsu.edu*), South Carolina State University, Orangeburg

Elizabeth Vernon Bell (*elizabeth.vernon@scseagrant.org*), South Carolina Sea Grant Consortium, Charleston
President: Sandra Bickerstaff

Innovative collaborations and strategies engage rural middle school students and university mentors with research scientists in field and classroom investigations.

3:00–4:00 PM Meeting

Investment Advisory Board Meeting

Registration I, Marriott

3:00–4:00 PM Exhibitor Workshops

**Bio-Rad Cloning and Sequencing Explorer Series
(Bio)**

(Grades 7–College) 103B, Convention Center

Sponsor: Bio-Rad Laboratories

Sherri Andrews (*biotechnology_explorer@bio-rad.com*) and **Essy Levy** (*biotechnology_explorer@bio-rad.com*), Bio-Rad Laboratories, Hercules, Calif.

Get your students published in *GenBank*! In this unique modular lab series, students are guided through an innovative research work flow identical to those performed in genomics labs worldwide. Learn about this multiple-week lab course, where students combine traditional and cutting-edge molecular biology techniques and bioinformatics to clone, sequence, and analyze a housekeeping gene from a plant of your choice, ensuring that each class produces unique and novel data.

**Moon Phases: Teaching in an Immersive Environment
(Earth)**

(Grades K–8) Booth #641, Exhibit Hall, Convention Center

Sponsor: Spitz, Inc.

David Bradstreet (*dbradstr@eastern.edu*), Eastern University, St. Davids, Pa.

Moon phases is a frequently taught, challenging subject. Unfortunately, misconceptions are often taught or reinforced. Join educator/astronomer Dr. David Bradstreet and learn how our curriculum for immersive 3-D dome teaching is used to explore moon phases in a memorable, entertaining way.

3:00–4:15 PM Exhibitor Workshop

Bio-Rad—Take pGLO to the Next Level! (Bio)

(Grades 7–College) 103A, Convention Center

Sponsor: Bio-Rad Laboratories

Kirk Brown (*biotechnology_explorer@bio-rad.com*), Tracy High School, Tracy, Calif.

Stan Hitomi (*biotechnology_explorer@bio-rad.com*), San Ramon Valley Unified School District, Danville, Calif.

Transformation is just one step in the process of creating novel proteins for medical, environmental, and research applications. Once your pGLO transformation is complete, you can use the molecular factory within *E. coli* to mass produce your designer protein, GFP. Discover more about GFP and how genetic engineers use the properties of designer proteins to isolate them from the complex mixture of bacterial proteins by purifying GFP from transformed bacteria using a key process in biomanufacturing—chromatography.

3:00–4:30 PM Exhibitor Workshop

Science Gnus: Inquiry Skills in the Stories of Scientists, Famous and Not So Famous (Gen)

(Grades K–6) 108B, Convention Center

Sponsor: Delta Education, School Specialty Science

John Cafarella, Consultant, Canadensis, Pa.

Learn some fascinating stories of scientists and their discoveries, plus the sometimes fine line between being famous (Alexander Graham Bell) or being forgotten by history (Antonio Meucci). We'll replicate some famous experiments, too. Science stories contain something of interest for everyone. Liberal doses of Science Gnus humor!

3:30–4:00 PM Presentations**SESSION 1****CSSS Session: Linking Assessment, STEM Instruction, and Student Learning (Gen)***(General)**Regency C1, Loews***Richard Audet**, (raudet@mtsu.edu), Nashville, Tenn.**Linda K. Jordan** (linda.k.jordan@tn.gov), Tennessee Dept. of Education, Nashville

The Test Item Analysis Procedure uses released test items and state test data as “starting points” for designing lessons and formative assessments linked with standards.

SESSION 2**ASTE Session: Cogenerative Dialogues, Coteaching, and Cosmopolitanism: Tools for Improving Science Teaching and Learning (Gen)***(General)**Tubman, Loews*

Christopher Emdin (ce2165@columbia.edu), **Shelia I. Borges** (sib2110@columbia.edu), **Alissa Berg** (abb2142@columbia.edu), and **Tanzina Taher** (tt2137@columbia.edu), Teachers College, Columbia University, New York, N.Y.

In order to address the achievement gap in urban schools, the 3 Cs—Cogenerative Dialogues, Coteaching, and Cosmopolitanism—have been implemented as a means to enculturate students to the scientific process and enhance teaching and learning in the science classroom.



Come to FLINN SCIENTIFIC'S *Morning of Chemistry*

Chemistry Demonstration Carnival!

By Jeff Bracken, Westerville North High School, Westerville, OH

Step Right Up! Come One, Come All! Discover how you can inspire your students with these great demonstrations. Lively learning is guaranteed! See 20 of Jeff Bracken's newest and most effective demos including “The Flaming Ferris Wheel” and “Fuel Cell Football” plus “Exploding Eggs” and the “Giant Alcohol Cannon.” Bring your science-teaching friends to this free, must-see event.

Jeff's creative, entertaining style helps students realize that learning chemistry can be fun! Engaging games, music and glowing lights are all part of this spirited Chemical Demonstration Carnival. You'll learn new and exciting ways to present these innovative demonstrations your students will never forget!

Come to Flinn Scientific's *Morning of Chemistry*.
Handouts will be provided.

Friday, March 19, 2010 • 10:00 a.m. – 11:45 a.m.

Room 114/Auditorium, Pennsylvania Convention Center

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SESSION 3

(High School)

Franklin 8, Marriott

Digital Video Composing Infused into the Curriculum (Bio)

Jennifer S. Borowicz, West Seneca East Senior High School, West Seneca, N.Y.

I will share a digital composition strategy that requires students to perform all aspects of digital movie making to demonstrate content understanding.

SESSION 4

Astronomy Inquiries: Four Hands-On Investigations (Earth)

(Middle Level–High School)

Freedom F, Sheraton

Sarah R. Young (sarahyoung@rowlandhall.org), Rowland Hall Middle School, Salt Lake City, Utah

Explore four unique inquiry-based astronomy projects that use math/science skills to study the Moon's path, telescope design, space agriculture, and extraterrestrial life.

3:30–4:30 PM NSTA ESP Symposium I

NSTA Exemplary Science Program (ESP)...Realizing the Visions of the National Standards: It Takes ESP to Find Exemplary Science Programs (Gen)

(General)

Grand Salon K, Marriott

Organized by **Robert E. Yager**, 1982–1983 NSTA President and Editor of the NSTA ESP Program

Coordinator: **Robert E. Yager**, University of Iowa, Iowa City

This session will include brief descriptions of programs that exemplify how the four NSES goals have been met. Discussion will center on how NSES *More Emphasis* suggestions have guided instruction. Participants in this symposium will include the following authors from specific monographs in the series.

Exemplary Science Programs: Best Practices in Professional Development

Valarie L. Akerson (vakerson@indiana.edu), Indiana University, Bloomington

Susan B. Koba (skoba@cox.net), Science Education Consultant, Omaha, Neb.

Sondra Akins (akinss@upunj.edu), William Paterson University, Wayne, N.J.

Exemplary Science Programs: Informal Education Settings

Kim Cleary Sadler (ksadler@mtsu.edu), Middle Tennessee State University, Murfreesboro

Emily V. Wade (evwade@mits.org), Museum Institute for Teaching Science, Boston, Mass.

3:30–4:30 PM Featured Presentation

Enhancing the Academic, Personal, and Career Growth and Development of Students Through Mentoring (Gen)

(General)

201C, Convention Center

Sponsored by Sigma Xi



Howard G. Adams, President, H.G. Adams & Associates, nc., Norfolk, Va.

Prsident: **William Ayers** (weahea@enter.net), Pennsylvania Science Teachers Association Past President, Slatington

It is generally agreed that sharing in a mentoring relationship can boost students' academic/personal/career growth and development. But what is mentoring? How does mentoring work? What is the difference in mentoring and coaching? How do students benefit from mentoring? What are the roles and responsibilities of mentors? What factors/issues are germane to mentoring students from a diversity perspective? This presentation examines the myths and issues behind these and other questions and provides participants with strategies for developing and implementing effective mentorship alliances.

Howard G. Adams is a leading expert on mentoring and mentorship program development and has written, lectured, and consulted extensively on career, educational, personal, and professional development. He has authored or coauthored 15 self-help guides and handbooks, including Negotiating the Graduate School Process: A Guide for Minority Students and Techniques for Effective Undergraduate Mentoring, and three books, most recently Career Management 101. Dr. Adams is the recipient of many awards, among them a Presidential Award for Excellence in Science, Mathematics, Engineering, and Mentoring in 1996 and the QEM Catalyst in STEM award in 2006.

3:30–4:30 PM Presentations**SESSION 1****✓ Student as Scientist: Increase Interest and Achievement (Env)***(Elementary)* Hall D/Room 5, Convention Center**Charles G. Tansey** (tanseycg@kalamazoo.k12.mi.us) and **Matthew A. Johnson** (johnsonma@kalamazoo.k12.mi.us), Edison Environmental Science Academy, Kalamazoo, Mich.

Challenge students to use their knowledge of science to solve real-world problems, creating deep understanding of why we learn what we learn.

SESSION 2**Chicka, Chicka, KABOOM: Exploring Amazing Hands-On Science and Literature Connections with Young Learners (Gen)***(Preschool–Elementary)* Hall D/Room 11, Convention Center**Julie Gintzler** (jdjgint@earthlink.net), Maywood Elementary School, Hammond, Ind.

Embark on a wonder-filled journey of amazing science and literature connections while reinforcing fundamental parts of your early-childhood science curriculum.

SESSION 3**Young Scientists' Discovery of Genetics (Gen)***(Preschool–Elementary)* Hall D/Room 14, Convention Center**Eun Kyung Ko**, National-Louis University, Chicago, Ill.

Follow the process of producing genetics investigation and experience how to best use resources from a local grocery store—sugar snap pea, string beans, etc.—to energize inquiry in your classroom.

SESSION 4**Bringing Science to Life for Students, Teachers, and the Community (Env)***(Elementary)* Hall D/Room 15, Convention Center**Kimberly F. Pratt** (kpratt@nhusd.k12.ca.us), Alvarado Elementary School, Union City, Calif.

Learn about a comprehensive watershed education program that increases test scores, promotes community involvement, and creates environmental stewards in the family. Free handouts and resources.

SESSION 5**Targeted Connections: Pendulums (Phys)***(Middle Level)* Hall D/Room 19, Convention Center**Crystall S. Gomillion** (crystall.gomillion@rockhurst.edu), Rockhurst University, Kansas City, Mo.

Explore alignment of science, mathematics, and communication arts through a unit on pendulums. We'll use inquiry steps, notebooking, and interactive simulations.

SESSION 6**Engaging Students in a Diverse Classroom (Gen)***(Middle Level)* Hall D/Room 20, Convention Center**Jane E. Callery** (jcallery@crec.org), CREC Magnet Schools, Hartford, Conn.

Increase student engagement and accountability in the learning process with student-led learning groups. Students build confidence and practice leadership skills in an intimate small group setting.

SESSION 7**Free Innovative Science Resources to Engage Student Learners (Gen)***(Middle Level)* Hall D/Room 21, Convention Center**Katherine Hayden** (khayden@csusm.edu), California State University, San Marcos**Nancy Taylor** (ntaylor@sdcoc.net), San Diego County Office of Education, San Diego, Calif.**Donna Markey** (donnamarkey@cox.net), Vista Magnet Middle School, Vista, Calif.

Discover some free resources that support science and technology standards and engage middle school learners in the innovative use of web-based tools.

SESSION 8**Developing a Hybrid Model of Professional Development (Gen)***(General)* Hall D/Room 25, Convention Center**Karen Bledsoe** (bledsoek@wou.edu), Western Oregon University, Monmouth**Heidi Kellar**, Oregon Science Teachers Partnership, Warrenton**Edith Gummer**, Education Northwest, Portland, Ore.

This model of professional development uses online and face-to-face meetings to increase teacher content knowledge, reform-based teaching, and student content knowledge.

SESSION 9

Inquiry for Dummies (Gen)

(General) Hall D/Room 29, Convention Center

Teresa A. Bender (*teresa.bender@ops.org*) and **Kristine K. Denton** (*kristine.denton@ops.org*), King Science and Technology Magnet, Omaha, Neb.

Learn the basics of inquiry-based science. We'll explore the four levels of inquiry, focusing on choosing the appropriate level to maximize student learning, and how to adapt the lessons you are already using.

SESSION 10

UTeach Natural Sciences: A Model for Science Teacher Professional Development (Gen)

(Middle Level–College) Hall D/Room 30, Convention Center

Mary H. Walker (*mwalker@austin.utexas.edu*) and **Kimberly Hughes** (*khughes@austin.utexas.edu*), The University of Texas at Austin

UTeach Natural Sciences has institutionalized a preservice to inservice teacher professional development continuum that has increased the number of new science teachers entering the profession, provided induction support for retention, and created teacher leaders through a summer masters program.

SESSION 11

NARST Session: Creating Scientific Discourse Communities in Your Classroom, Part 1 and Part 2 (Gen)

(Middle Level–High School) Anthony, Loews

Dale R. Baker (*dale.baker@asu.edu*) and **Nievita Bueno Watts** (*nbueno@asu.edu*), Arizona State University, Tempe
Elizabeth B. Lewis (*eb1@unlserve.unl.edu*), University of Nebraska—Lincoln

Presider: Dale R. Baker

Create a scientific discourse community in the classroom to support academic writing, talking, and language development.

SESSION 12 (three presentations)

(General) Commonwealth A, Loews

SCST Session: Last Chance: Using Nontraditional Pedagogies to Improve Nonmajors' Appreciation and Understanding of Science (Bio)

Barbara Blonder (*bblonder@flagler.edu*), Flagler College, St. Augustine, Fla.

Learn how to increase student engagement and understanding of content while building community support.

SCST Session: The Stages of Inquiry Grief: Answers to Commonly Voiced Concerns and Excuses (Gen)

Kerry L. Cheesman (*kcheesma@capital.edu*), Capital University, Columbus, Ohio

As teachers learn about inquiry teaching, the process may seem overwhelming, leading to a sense of hopelessness. Learn how to recognize the stages of grief and overcome them.

SCST Session: Serendipity: Student-led Teaching Models (Gen)

Bonnie S. Wood (*bonnie.s.wood@umpi.edu*), University of Maine at Presque Isle

By serendipity I stumbled upon what would become the foundation of my upper-level genetics course—student-led teaching models.

SESSION 13

Building Successful Partnerships with Business and Industry and Local School Districts to Support Quality, Sustained Professional Development for K–12 Science and Math Teachers (Gen)

(Supervision/Administration) Regency C2, Loews

Jack Rhoton (*rhotonj@etsu.edu*), East Tennessee State University, Johnson City

Successful partnerships between higher education and K–12 districts with business and industry advance the support of science and math learning. I'll share a model proposal.

SESSION 14

Building Bridges Between Science and Literature: Enhancing the Potential of Every Child (Gen)

(General) Washington A, Loews

Sally C. Mayberry, Florida Gulf Coast University, Fort Myers

I'll share examples of children's literature and activities that have been proven effective in promoting the integration of science content and literature. Handouts.

SESSION 15

PDI **CSME Pathway Session: Talking Dirty (Env)**
(Elementary–Middle Level) 403, Marriott

Mark Herzog (mark.herzog@hcps.org), Harford County Public Schools, Bel Air, Md.

Explore out-of-the-classroom lessons on the structure, function, and art of dirt. We'll look at ways to take students outside and remain outside while exploring and experimenting with the foundation upon which all else depends...dirt.

SESSION 16

PDI **LHS Pathway Session: Getting Kids Invested with Stories: The Car of the Future (Phys)**

(Middle Level–High School) 404, Marriott

Charles Judson Hill (chill@wheelock.edu), Education Development Center, Inc., Newton, Mass.

See how being invested in a story facilitates the learning process with this example using hybrid cars to teach energy transformations.

SESSION 17

Gaming: A Learning Opportunity for Students and Teachers (Bio)

(Supervision/Administration) Franklin 2, Marriott

Karen M. Smits (kmsmits@marietta-city.k12.ga.us), **Linda Hutchinson**, and **Nancy Dodd** (ndodd@marietta-city.k12.ga.us), Marietta Center for Advanced Academics, Marietta, Ga.

Learn how elementary students and teachers are creating an educational video game on oceanography through a partnership with a technical university and a private company.

SESSION 18

Bio-ITEST: New Frontiers in Bioinformatics and Computational Biology (Bio)

(High School) Franklin 3, Marriott

Karen Peterson (kp@edlabgroup.org), EdLab Group, Lynnwood, Wash.

Jeanne T. Chowning (jchowning@nwabr.org), Northwest Association for Biomedical Research, Seattle, Wash.

This three-year NSF grant provides funding for education outreach programs that help secondary school teachers and their students learn how information technology is used in biological research.

SESSION 19

Bring Physics to Life with Public Media (Phys)
(Middle Level–High School) Franklin 7, Marriott

Jessica Neely (scienceed@kqed.org), KQED Public Media, San Francisco, Calif.

Incorporate media into your physics curriculum to teach science content standards. I'll use real-life examples of forces and waves.

SESSION 20

Inquiry in AP Biology: It Doesn't Have to Be an Oxymoron! (Bio)

(High School) Franklin 9, Marriott

Linda Morris (linda_morris@dpsk12.org), Denver (Colo.) Public Schools

Presider: **Christopher Planetta** (cplanetta@stansteadcollege.com), Stanstead College, Derby Line, Vt.

This session will present several strategies, with examples, for adding inquiry “chunks” to existing and future curricula in both AP and “regular” biology classes.

SESSION 21

FDA Symposium Session: Elementary-Level Curricula in Food Safety (Gen)

(Preschool–Middle Level) Franklin 10, Marriott

Laurie A. Hayes (lhayes@cart.org), Center for Advanced Research and Technology, Clovis, Calif.

Susan Hartley (susan.hartley@nisd.us), Navarro High School, Geronimo, Tex.

Learn about and take home food safety curricula for elementary schools.

SESSION 22

Slam Dunk Science: Teaching Physics Through Sports (Phys)

(General) Grand Salon D, Marriott

Kathleen S. Fresh NBCT (kathleen.fresh@hcps.org) and **Karen Leffew NBCT** (karen.leffew@hcps.org), Southampton Middle School, Bel Air, Md.

Get students excited about physics by using different sports. We'll share labs, handouts, and lessons plans.

SESSION 23

Conferences Tips for First-Timers (Gen)
(General) Grand Salon E, Marriott

NSTA Board and Council

This session identifies the must-sees and do's for your first conference experience.



SESSION 24

NSTA Press Session: SAFETY & LIABILITY: Is The Jury Out On Your Class? (Gen)

(General) *Grand Salon L, Marriott*

Kenneth R. Roy (*royk@glastonburyus.org*), Glastonbury (Conn.) Public Schools

Explore critical safety strategies to protect yourself from legal issues when students do hands-on science.

SESSION 25

Arctic Impact: Meteors, Sediments, and Climate Change (Earth)

(General) *Freedom H, Sheraton*

Tim Martin (*tmartin@greensboroday.org*), Greensboro Day School, Greensboro, N.C.

Discover earth science content and hands-on activities based on scientific research at Lake El'gygytyn in the Siberian Arctic.

SESSION 26

Simulating Earthquakes for Science and Society: New Earthquake Visualizations Ideal for Use in Science Education (Earth)

(Middle Level–College) *Independence B, Sheraton*

Robert M. de Groot (*degroot@usc.edu*), University of Southern California, Los Angeles

Michael Hubenthal (*hubenth@iris.edu*), IRIS Consortium, Washington, D.C.

High-performance computing has revolutionized the modeling and visualization of complex natural phenomena. Learn how these tools can enhance teaching and learning.

SESSION 27 (two presentations)

(Elementary–Middle Level) *Independence C, Sheraton*

Hats Off to Service Learning: Leadership and Learning Through Environmental Service (Env)

Joann Engel (*engeljoann@aasd.k12.wi.us*), **Marisa Gressler** (*gresslermarisa@aasd.k12.wi.us*), and **Sandra J. Vander Velden** (*vanderveldensa@aasd.k12.wi.us*), Fox River Academy, Appleton, Wis.

Service learning experiences offer students opportunities to wear many hats as scientists, leaders, and stewards. Develop curricular connections and partnerships that work for your students.

Students Are Scientists: Inquiry-based Learning Through Citizen Science (Env)

Nancy M. Trautmann (*nmt2@cornell.edu*), Cornell University, Ithaca, N.Y.

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

Through BirdSleuth and similar citizen science projects, students participate in professional research and conduct their own investigations. Take home classroom-ready resources designed for inquiry-based learning.

SESSION 28

Motivating Students with Real Science (Env)

(General) *Liberty C, Sheraton*

Jennifer Fee (*jms327@cornell.edu*), Cornell Lab of Ornithology, Ithaca, N.Y.

Robin Ellwood (*rellwood@sau50.org*), Rye Junior High School, Rye, N.H.

Norma J. Griffin (*ngriffin@mexico.cnyric.org*), New Haven Elementary School, New Haven, N.Y.

Open your students' eyes to their local environment while they contribute to scientific research in a citizen science project.

3:30–4:30 PM Workshops



ISTE: Using Google Apps in the Science Classroom (Gen)

(General) Hall D/Room 1, Convention Center

Ben Smith (*ben@edtechinnovators.com*), York, Pa.

Jared Mader (*jared@edtechinnovators.com*), Red Lion (Pa.) Area School District

Google is more than a search engine. Bring your laptop and learn how to using Google Docs in this hands-on session. You'll create documents as well as an online form to collect and share information.



Cut It, Stab It, Slice It, Dice It: Using the Potato in the Science Classroom (Gen)

(General) Hall D/Room 6, Convention Center

David F. Mastie (*mastie@umich.edu*), Retired Educator, Chelsea, Mich.

Try these hands-on activities using potatoes—solve Pangaea puzzles; study stratigraphy; create topographic maps; draw conclusions about mass, volume, and density; and more. Handouts provided.

Age is just a number.
Life is what you make of it.



The NSTA Retired Advisory Board invites you to a vibrant and useful information-sharing session. Join your fellow colleagues and share your ideas about staying active both in and out of the profession.

Before and After Retirement:
Practicalities and Possibilities

Saturday, March 20
11:00 AM–12 Noon
Philadelphia Marriott, 308

For information on the Retired Members Advisory Board, contact Marily DeWall, chair, at *mdewall@cox.net*.



★ **CSI Meets Woodsy the Owl: Environmental Forensics** (Env)

(Middle Level–High School/Inf. Ed.) Hall D/Room 7, Conv. Center
Jennifer K. Perrella (finnek@gmail.com), Cesar Chavez Public Charter School, Washington, D.C.

Students are increasingly interested in forensic science thanks to TV, but what about environmental crimes? Environmental forensics combines the two.

So You Want to Make Supermodels and Super Scientists! (Gen)

(General) Hall D/Room 8, Convention Center
Katie D. McDilda (katie.mcdilda@marshall.edu) and **Tina J. Cartwright** (tina.cartwright@marshall.edu), Marshall University, Huntington, W.Va.

Have fun while you learn to make science “supermodels” constructed of easily acquired materials. Maximize student learning in both formal and informal classrooms.

The Magic and Mystery of Light! (Earth)

(Elementary) Hall D/Room 10, Convention Center
Lynne H. Hehr (lhehr@uark.edu), **John G. Hehr** (jghehr@uark.edu), and **Lesley Merritt** (lmerritt@uark.edu), University of Arkansas, Fayetteville

Investigate the magic of light while taking the mystery out of the electromagnetic spectrum. We will explore both the visible and invisible with hands-on, grade-level-appropriate activities, K–4.

Science Outreach: Leading the Way (Gen)

(Informal Education) Hall D/Room 17, Convention Center
Steven C. Smith (mrsmith@purdue.edu), Purdue University, West Lafayette, Ind.

University outreach programs bring the standards and current scientific research right to your classroom. Leave this session with hands-on ideas and resources.

Raptor Challenge: Using Birds of Prey to Grab Student Interest (Bio)

(Elementary–Middle Level) Hall D/Room 18, Convention Center
Lee Schisler and **Celeste A. Voyer**, Hawk Mountain Sanctuary, Kempton, Pa.

Engage students in uncovering STEM concepts using birds of prey. Come see live birds and take home free activities you can use in your classroom.

Read a Good Science Book Lately? Science and Literature—What a Great Mix! (Gen)

(Elementary–Middle Level) Hall D/Room 22, Convention Center
Nancy K. Byrd (nbyrd@nps.k12.va.us), Blair Middle School, Norfolk, Va.

Janne Walker (jwalker757@aol.com), Retired Educator, Norfolk, Va.

Dawn Lock, Northside Middle School, Norfolk, Va.

Science comes alive through great stories filled with engaging characters and twisting plots that ignite students’ imaginations. Grab your students’ interest with our innovative approach.

Language Arts and Science: Double Dipping for Student Success (Gen)

(Elementary–Middle Level) Hall D/Room 23, Convention Center
Fred C. Arnold (farnold@monroe2boces.org), **Antonietta C. Quinn** (aquinn@monroe2boces.org), and **Mary W. Thomas** (mthomas@monroe2boces.org), Monroe 2–Orleans BOCES, Spencerport, N.Y.

President: **Kathy Arminio** (karminio@monroe2boces.org), Monroe 2–Orleans BOCES, Spencerport, N.Y.

Students learn more when teachers and students apply comprehension skills developed for language arts to hands-on science. Take home strategies to use next week.

The Early Years Go Birding: Using Bird Shape Rubbings to Record Data (Gen)

(General) Hall D/Room 26, Convention Center
Peggy Ashbrook (scienceissimple@yahoo.com), Preschool Science Teacher and Writer, Alexandria, Va.

Make and take life-sized bird shapes and learn strategies for teaching about common urban and rural birds using bird shape rubbings, observation, counting and recording data, and children’s literature.

Storytelling and Magical Tesseract Antenarrative: A New Model for Making Connections Between Science, Math, Literacy, and Art (Gen)

(General) Hall D/Room 27, Convention Center
Diane Walker (dwalker@nmsu.edu), New Mexico State University, Las Cruces

Here is an innovative model for using conceptual knowledge from science, math, and literacy to provide interesting, appropriate, and relevant connections across the curriculum.

Vlogs, Blogs, and Podcasts: Providing Content and Vocabulary Support at Home to Increase Student Retention (Gen)

(General) Hall D/Room 28, Convention Center

Michelle M. Halvorsen (*michelle.halvorsen@tsd.state.tx.us*), Texas School for the Deaf, Austin

Learn how video logs (vlogs), podcasts, and blogs can help your students succeed in science. Come with your laptop, webcam, and/or camera and leave with your first completed vlog.

The Physics of Supernovae (Phys)

(High School–College/Informal Ed.) Commonwealth B, Loews

Donna L. Young (*donna.young@tufts.edu*), The Wright Center for Science Education, Tufts University, Medford, Mass.

Pamela Perry (*pperry@lewistonpublicschools.org*), Lewiston High School, Brunswick, Maine

Prsider: Donna L. Young

Use analysis software, graphs, and basic physics gravitation and centripetal acceleration equations to determine if an object is a white dwarf or a neutron star.

Epigenetics: Beyond the Central Dogma (Bio)

(High School–College) Commonwealth C, Loews

Molly A. Malone, University of Utah, Salt Lake City

The environment interacts with the epigenome to control gene expression. Interactive activities that explore epigenetics and how it confounds conventional notions of inheritance are available free at <http://learn.genetics.utah.edu>.

NSELA Session: Biology, Government, Geometry, English...Oh My! An Interdisciplinary Lesson Addressing Wind Energy (Bio)

(High School) Congress C, Loews

Tiffany N. Neill (*tneill@ou.edu*), University of Oklahoma, Norman

Prsider: Jean Cate, University of Oklahoma, Norman

This project-based lesson incorporates four core content areas and engages students in environmental engineering practices.

Science as Inquiry: Converting Cookbook Labs into Inquiry-based Activities (Bio)

(Middle Level–High School) Franklin 1, Marriott

Lindsay M. Kasug (*lmckasuga@gmail.com*), Iowa State University, Ames

Learn how to convert cookbook labs into inquiry activities.

A Universal Design for Learning Approach to Understanding Cells (Bio)

(Middle Level–College) Franklin 4, Marriott

Dawn A. Tamarkin (*tamarkin@stcc.edu*), Springfield Technical Community College, Springfield, Mass.

Try out new approaches to learning about cells. One of these approaches includes new NSF-supported cell models.

A Lab Exercise Using the Modeling Method (Phys)

(High School) Franklin 5, Marriott

Douglas Johnson (*djohnson44@ameritech.net*), West High School, Madison, Wis.

Experience a lab exercise that uses the modeling method of instruction, empowering students and deepening their understanding.



NSTA Press Session: More Picture-Perfect Science Lessons, Grades K–4 (Gen)

(Elementary) Grand Salon B, Marriott

Emily R. Morgan (*emily@pictureperfectscience.com*), Picture-Perfect Science, West Chester, Ohio

Karen Ansberry (*karen@pictureperfectscience.com*), Mason (Ohio) City Schools

Authors and classroom veterans Karen Ansberry and Emily Morgan know you're short on time...so they've integrated science and reading in a natural way to help you teach both subjects at once.

From Out of School to Outer Space with NASA

(Earth)

(Informal Education) Freedom E, Sheraton

Shari E. Asplund (*shari.e.asplund@jpl.nasa.gov*), NASA Jet Propulsion Laboratory, Pasadena, Calif.

Maryann Stimmer (*mstimmer@aed.org*), Educational Equity Center at AED, New York, N.Y.

Use the excitement of space exploration to build understanding of science concepts. Engage in fun hands-on activities tied to NASA's exploration of the solar system.

Magnetism Activities, Earth’s Magnetism, and Space Weather from Windows to the Universe (Earth)

(Informal Education) *Freedom G, Sheraton*

Randy Russell and **Roberta M. Johnson** (*rmjohnsn@ucar.edu*), University Corporation for Atmospheric Research, Boulder, Colo.

Explore tested hands-on activities and resources about the basics of magnetism, Earth’s magnetic field and poles, and space weather. Handouts provided.

Using Rain Forests to Teach Across Disciplines: Educational Resources About Forestry in Guatemala

(Env)

(Elementary–High School) *Independence A, Sheraton*

Maria Ghiso, Rainforest Alliance, New York, N.Y.

Al Stenstrup (*astenstrup@forestfoundation.org*), American Forest Foundation, Washington, D.C.

Sample multidisciplinary lessons created by the Rainforest Alliance and Project Learning Tree to teach about rain forests and the importance of sustainable forestry in protecting Guatemala’s resources.

NMEA Session: Learning About Ocean Aerosols Through Games and Manipulatives (Gen)

(Preschool–Middle Level/Informal Ed.) *Liberty A/B, Sheraton*

Perrin Chick (*p.chick@seacentr.org*), Seacoast Science Center, Rye, N.H.

Amy H. Cline, University of New Hampshire, Durham
Learn how to translate ocean research, specifically the topic of ocean aerosols, for elementary students through engaging games and the right props.

The Coriolis Effect in Weather and Oceans (Earth)

(General) *Logans 2, Sheraton*

Steven R. Carson (*steve_carson@monet.prs.k12.nj.us*), John Witherspoon Middle School, Princeton, N.J.

Explore the Coriolis effect using streams of water on turntables. See how these observations relate to global winds, hurricanes, and ocean currents, but not drains.

Rock and Roll Through Earth Science (Earth)

(Elementary–High School) *Philadelphia North, Sheraton*

Reeda Hart (*hartr@nku.edu*), **C. Dale Elifrits** (*elifritsc@nku.edu*), and **Thomas Brackman** (*brackmant1@nku.edu*),

Northern Kentucky University, Highland Heights

President: **Betty Stephens** (*stephensb@nku.edu*), Northern Kentucky University, Highland Heights

A geophysicist, a mining engineer, and an elementary teacher will showcase rock and mineral lessons for teachers of grades 3–8. Free CD of resources!

NASA Aquarius: Connecting the Water Cycle, Ocean Salinity, and Satellites (Earth)

(Elementary–High School) *Philadelphia South, Sheraton*

Annette V. deCharon (*annette.decharon@maine.edu*), University of Maine, Walpole

A key goal of the NASA Aquarius mission is to demonstrate how better understanding of ocean salinity can benefit student learning and society as a whole.

3:30–5:00 PM Exhibitor Workshops**Flinn Scientific Presents Best Practices for Teaching Chemistry™: Experiments and Demonstrations (Chem)***(Grades 9–12) 103C, Convention Center*

Sponsor: Flinn Scientific, Inc.

Irene Cesa, Flinn Scientific, Inc., Batavia, Ill.

Join us as we present exciting and interactive demonstrations, show video clips, and demonstrate the features and benefits of our new comprehensive Teaching Chemistry professional development program. Imagine learning best practices from 20 award-winning master teachers as they carry out their favorite experiments, demonstrations, and chemistry lab activities. The activities in the online *Flinn Scientific Teaching Chemistry* eLearning Video Series will have a major impact on the way you teach chemistry. Presenters will share the inspiration, stories, and strategies that have proven successful in their classrooms. Each 40-minute video will help you build content knowledge and improve your pedagogical skills and confidence. Handouts provided for all lab activities.

Forensics Jukebox (Bio)*(Grades 6–12) 104A/B, Convention Center*

Sponsor: WARD's Natural Science

DJ Kathy Mirakovits, Portage Northern High School, Portage, Mich.

An eclectic mix of forensic activities, experiments, demos, and more, this workshop introduces the vast variety of applications for forensic science. Discover cross-curricular ties and learn techniques for introducing your students to CSI-style science.

Literacy Strategies in the Sciences (Gen)*(Grades 6–12) 105A/B, Convention Center*

Sponsor: Wright Group/McGraw-Hill

Mitch Rosin, Wright Group/McGraw-Hill, Chicago, Ill. This workshop will profile Wright Group/McGraw-Hill's new science textbooks. Discover literacy strategies that can be used to enhance reading comprehension and content acquisition in every science classroom. Take home literacy materials designed for all students, including struggling readers, English language learners, and remedial learners.

Reading Skills in the Science Classroom: Seeds of Science/Roots of Reading® (Gen)*(Grades 2–6) 106A/B, Convention Center*

Sponsor: Delta Education, School Specialty Science—Seeds
Jacqueline Barber, Jen Tilson, Jonathan Curley, and Traci Wierman, Lawrence Hall of Science, University of California, Berkeley

Discover how engaging new student books for grades 2–6 support reading comprehension and science knowledge simultaneously. Each book features a corresponding *Strategy Guide* that introduces powerful instructional strategies that will help students read science texts with greater understanding and learn new vocabulary. Take home samples.

Living by Chemistry: Create a Table (Chem)*(Grades 9–12) 110A/B, Convention Center*

Sponsor: Key Curriculum Press

Jeffrey Dowling (jdowling@keypress.com), Key Curriculum Press, Emeryville, Calif.

Teach rigorous chemistry with guided inquiry! Let's explore activities that introduce the periodic table and other core chemistry concepts. Sample lessons from the Living by Chemistry curriculum will be provided.

I See What You Mean: Developing Visual Literacy (Gen)*(Grades K–8) 111A/B, Convention Center*

Sponsor: McGraw-Hill School Education Group

Jo Anne Vasquez, 1996–1997 NSTA President, and Helios Education Foundation, Phoenix, Ariz.**Michael Comer**, McGraw-Hill School Education Group, Columbus, Ohio

Interpreting and understanding science textbook visuals and illustrations is more than just luck. See what the current research says and experience some new strategies for improving student reading skills and science content understanding.

Middle School Hands-On Life Science (Bio)

(Grades 5–9) 112A/B, Convention Center

Sponsor: DNA Depot

Jack Chirikjian, EDVOTEK, Bethesda, Md.

Vasna Nontanovan, DNA Depot, Rockville, Md.

This DNA Depot workshop will focus on life science experiments for middle school classes. Participants will be introduced to some basic hands-on activities through two experiments—the Peanut Food Allergy and How Is Substance Abuse Determined. There will be a drawing of registered individuals at the end of the workshop and five participants will return to their classrooms with a DNA Depot experiment.

The Digital Path and New Media Literacies for K–8 (Gen)

(Grades K–8) 113B, Convention Center

Sponsor: Pearson

Don Buckley, The School at Columbia University, New York, N.Y.

Learn how Pearson’s digital path that accompanies the “write-in student edition” can aid teaching and learning essential new media literacies. Most of the new media literacies involve social skills developed through collaboration and networking. These skills build on the foundation of traditional literacy, research skills, technical skills, and critical analysis skills taught in the classroom. Literacies such as appropriation, multitasking, collective intelligence, and more will be discussed as well as how they can be applied through teaching science using the digital path.

The Next Generation of Life Science Virtual Labs—No Cleanup Required! (Bio)

(Grades 6–12) 113C, Convention Center

Sponsor: Pearson

Brian Woodfield, Brigham Young University, Provo, Utah

Brian Woodfield, author and creator of Pearson’s innovative Virtual Lab series, will demo some of his latest eye-popping life science virtual labs, which are so visually realistic you have to see them to believe them. Whether you are short on time or short on lab materials, virtual labs give you the flexibility to experiment. Virtual labs meet your students where they are in the digital world and give them the opportunity to experiment numerous times with various materials... with no cleanup required, of course! Leave with handouts and free life science virtual lab CDs.

Science Libraries: Reading for Content (Gen)

(Grades K–5) 201B, Convention Center

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Elementary classrooms are busy places, with much of the activity focused on reading, writing, and math. Connecting literacy to other classroom activities makes reading relevant for children, establishing a strong foundation for learning throughout life. Explore how to effectively integrate science with other subjects by expanding your science library.

The Case of the Missing Joules (Chem)

(Grades 8–12) 203A, Convention Center

Sponsor: ADAM Equipment

Penney Sconzo, The Westminster Schools, Atlanta, Ga.

If you believe in the Law of Conservation of Energy, then try this thermochemistry experiment that tracks the movement of heat during an experiment incorporating measurement, data collection, data analysis, and drawing conclusions.

Student Success with Inquiry (Gen)

(Grades K–5) 203B, Convention Center

Sponsor: National Geographic School Publishing

Judith S. Lederman, Illinois Institute of Technology, Chicago

Carl Benoit and **Jeff Dannemiller**, National Geographic School Publishing, Carmel, Calif.

Engage in the “doing” part of science with National Geographic. Explore how different levels of inquiry can help students build science knowledge and inquiry skills. See how teachers can support student investigations through directed, guided, and open inquiry.

Creating Habitats in the Classroom (Bio)

(Grades K–12) 204A, Convention Center

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Use live organisms in the classroom for teaching hands-on science. Live animals draw the attention and curiosity of students. Invertebrate animals such as insects and arthropods are hardy, easy to handle, simple to maintain in the classroom, harmless to people, available year-round, and provide interesting biology or behavior study specimens. Come join us as we create simple-to-maintain classroom habitats. We’ll discuss how the National Science Education Standards for Content can be addressed.

Forensics for the Biology Laboratory (Bio)

(Grades 9–12) 204B, Convention Center

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Take a new approach with traditional biology labs—use forensics! Come perform sample activities from the innovative *Forensics for the Biology Laboratory* manual and associated kits. The inquiry-based, cooperative learning activities offer real-world applications as students collect forensic evidence and perform experiments to yield results for the courtroom.

Introducing a New Data Logging System for Your Science Lab! (Gen)

(Grades 7–12) 303A/B, Convention Center

Sponsor: Fisher Science Education

Isaac Rosen, Fisher Science Education, Pittsburgh, Pa.

A simple and affordable technology solution for a 21st-century classroom! Fisher Science Education is introducing a brand-new flexible data logging system that will help you breathe life into your biology classroom, get a reaction in your chemistry classroom, and accelerate your physics labs. NeuLog modular sensors work independently to collect and

record data using self-contained memory or link sensors together and collect multiple measurements at once. These sensors are great for use in the classroom or in the field. Door prizes will be awarded.

Motivating Students Through Project-Based Learning (PBL) (Gen)

(Grades K–8) 304, Convention Center

Sponsor: Houghton Mifflin Harcourt

Michael Heithaus, Florida International University, North Miami

Michael DiSpezio, Science Writer and Educational Consultant, North Falmouth, Mass.

Join Houghton Mifflin Harcourt authors Mike Heithaus and Michael DiSpezio to learn how you can motivate students in the classroom using PBL. They will demonstrate how you can incorporate PBL activities to take students along for an adventure with scientists. Using high-paced video and exciting research, students are challenged to develop their own hypotheses, join research teams as they collect data, and then conduct their own data collection and analysis.



By invitation only, join your fellow NSTA Life Members for a breakfast filled with memories as well as meaning. Catch up with old friends, make new ones, trade war stories, and discuss ways to share your talents and vitality with the science education community.

NSTA Life Members' Buffet Breakfast

Sunday, March 21

7:00–9:00 AM

Philadelphia Marriott, 304/305

Tickets are required (M-12; \$45)

Participation is limited to NSTA life members only.



3:30–5:30 PM Presentations

SESSION 1

PDI TERC Pathway Session: The Shape of the Data: Seven Common Patterns (Phys)

(Elementary–Middle Level) 406, Marriott

Jacalyn Crowe, Lexington High School, Lexington, Mass.

Data and graphs indicating change over time typically fall into seven common patterns that can help students explain observed phenomena using mathematical models.

SESSION 2

PDI FHL Pathway Session: Nature Journals and Field Guides: Tools for Linking Science and Literacy (Bio)

(Elementary–Middle Level/Informal Ed.) 407/408, Marriott

Mark Baldwin (mbaldwin@rtpi.org), Roger Tory Peterson Institute of Natural History, Jamestown, N.Y.

Learn how to link nature journals as tools to propel inquiry and use field guides as tools to promote literacy.

SESSION 3

PDI EDC Pathway Session: Establishing Science Notebook Habits and Skills: Successes and Challenges from the Field (Gen)

(Elementary) 411/412, Marriott

Jeff Winokur (jwinokur@edc.org) and **Karen Worth** (kworth@edc.org), Education Development Center, Inc., Newton, Mass.

Lori A. Fulton (fultola@interact.ccsd.net), Jay Jeffers Elementary School, Las Vegas, Nev.

Martha Heller-Winokur (martha.heller_winokur@tufts.edu), Tufts University, Medford, Mass.

Sally Crissman (sally_crissman@terc.edu), TERC, Cambridge, Mass.

A panel of teachers, science mentors, and professional developers will discuss the successes and challenges they are experiencing as they work to make science notebooks authentic tools of inquiry.

3:30–6:30 PM Presentation

SESSION 1

PDI WestEd Pathway Session: Providing Feedback: Rubric Development/Feedback Loops (Gen)

(General) 409, Marriott

Jo Topps (jtopps@wested.org), WestEd, Santa Ana, Calif.

Learn a collaborative process that includes the development or refinement of rubrics found in instructional materials for student work, planning interventions, and providing feedback to students.

4:00–4:30 PM Presentations

SESSION 1

Investigating Sound Through Research, Exploration, and Experimentation (Phys)

(Elementary) Hall D/Room 9, Convention Center

Tonielise R. Admans (toniadmans@yahoo.com), Orchard Hills Elementary School, Milford, Conn.

Students used a variety of resources to investigate, explore, experiment, and teach others what they've learned about their own questions regarding sound.

SESSION 2

(Preschool–Elementary) Hall D/Room 16, Convention Center

Outside the Box Day: A Schoolwide Engineering Experience for All! (Gen)

Betsy S. Ablott (elizabeth_ablott@apvsa.us), Arlington Science Focus School, Arlington, Va.

During this schoolwide engineering day, each grade level uses creativity and problem solving to build a developmentally appropriate project. Parents acting as consultants provide encouragement and support.

4:00–5:00 PM Exhibitor Workshop

Beyond the Classroom Walls with FOSS (Gen)

(Grades 5–8) 107A/B, Convention Center
 Sponsor: Delta Education, School Specialty Science–FOSS
Habiba Noor, Lawrence Hall of Science, University of California, Berkeley

Enhance your science teaching with outdoor learning experiences, digital photography, and other connections to your local environment available through FOSSweb. You'll be guided through outdoor learning activities and explore digital photo sharing on Planet FOSS. These activities seek to personalize and engage student learning beyond the walls of the classroom.

4:00–5:15 PM Exhibitor Workshop

A Closer Look at Biology, Chemistry, and Earth Science Virtual Labs (Gen)

(Grades 7–10) 109A/B, Convention Center
 Sponsor: Frey Scientific, School Specialty Science

Ken Rainis and **Lisa Bowman**, Frey Scientific, School Specialty Science, Ann Arbor, Mich.

Learn how virtual labs constitute a “laboratory experience” while exploring unique, object-manipulative, network-capable virtual labs for general and AP subjects. Perform actual lab investigations onscreen and view, record, analyze, and report results. We'll also share ideas for creating custom web content and individualized assessment. Take home software samplers.

4:00–5:30 PM Exhibitor Workshop

Electric Circuits: Fun with Electricity and Circuits (Gen)

(Grades 5–12) 108A, Convention Center
 Sponsor: CPO Science, School Specialty Science

Patsy Eldridge, CPO Science, School Specialty Science, Nashua, N.H.

In this hands-on, inquiry-based workshop, participants use electric circuit kits and digital meters to explore the basic concepts of electricity. Gain a thorough understanding of types of circuits, charge, voltage, current, and resistance during this quest to discover how to build and analyze circuits that perform simple tasks.

4:30–6:00 PM Meeting

NSTA/CBC Outstanding Science Tradebooks Committee Meeting

(By Invitation Only) 302, Marriott

5:00–6:00 PM Presentations

SESSION 1 (two presentations)

(College) Commonwealth A, Loews

SCST Session: The Nuts and Bolts of a Science Study Skills Curriculum (Gen)

Kathryn H. Sorensen (*sorenskh@arc.losrios.edu*), American River College, Sacramento, Calif.

Examine training sequences from the Science Skills Center at American River College. The curriculum includes teaching strategies and specific study skills modules.

SCST Session: What Biological Concepts Must Be Covered in an Introductory Course for Biology Majors? (Bio)

Eileen Gregory (*egregory@rollins.edu*), Rollins College, Winter Park, Fla.

Amanda Orenstein (*orensteina@centenarycollege.edu*), Centenary College, Hackettstown, N.J.

Hear the results of a national survey to determine which topics should be covered and which may be deleted in introductory biology for majors.

SESSION 2



NSTA Press Session: Magnetic Moments, Electrifying Connections, and Analogies for Interactive Teaching (Phys)

(Middle Level–College) Grand Salon B, Marriott

Thomas O'Brien (*tobrien@binghamton.edu*), Binghamton University, Binghamton, N.Y.

President: Bhavna Rawal, Northbrook High School, Houston, Tex.

These dual-purpose, inquiry-oriented activities can be used as discrepant events to teach electromagnetism and as visual participatory analogies to teach science teachers principles of research-informed Curriculum-Instruction-Assessment.

5:00–6:00 PM Workshops

CSSS Session: A Primer on Resources from the National Academy of Sciences (Gen)

(Supervision/Administration) Congress C, Loews

Thomas E. Keller (*tkeller@nas.edu*) and **Michael Feder** (*mfeder@nas.edu*), National Academy of Sciences, Washington, D.C.

Let's explore resources from the Academy's Center for Education. This session will be especially valuable for state, regional, and district science supervisors and lead teachers who appreciate the bigger picture.

NMEA Session: The New NOAA Ship *Okeanos Explorer*: Teacher and Student Involvement in Exploration and Discovery (Gen)

(Informal Education) Liberty A/B, Sheraton

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

Discover NOAA's new Ocean Exploration Online Learning Community and a series of online teacher courses centered on the explorations of the NOAA ship *Okeanos Explorer*.

7:00–9:00 PM Reception

Informal Science Reception

(By Invitation Only) Planetarium, The Franklin Institute

The Informal Science Division of NSTA holds this casual reception for fellowship and hospitality. Invited attendees will meet and be greeted by members across the informal science community. Attendees will learn more about the Informal Science Division and its activities, meet new colleagues, and reunite with old friends. This reception is graciously sponsored in part by The Franklin Institute.

8:00–9:30 PM Reception

Glenn Campaign Leadership Reception

(By Invitation Only) JW's, Marriott

NSTA Student Member Events

Friday, March 19

NSTA Student Chapter Faculty Advisor Roundtable

8:00–9:00 AM
Philadelphia Marriott
Grand Salon G

NSTA Student Chapter Action Session

9:30–10:30 AM
Philadelphia Marriott
Grand Salon G

Becoming an NSTA Student Chapter Leader

11:00 AM–12 Noon
Philadelphia Marriott
Grand Salon G

Getting Connected: NSTA Student Chapter Interactive Television (ITV) Meetings

12:30–1:30 PM
Philadelphia Marriott
Grand Salon G

Increase Science Enthusiasm on Your Higher Education Campus: Start an NSTA Student Chapter

2:00–3:00 PM
Philadelphia Marriott
Grand Salon G

Assisting Preservice Teachers in Presenting at NSTA and Other Science Conferences: An NSTA Student Chapter Roundtable

3:30–4:30 PM
Philadelphia Marriott
Grand Salon G

Student Chapter and Student Member Reception

5:30–7:00 PM
Philadelphia Marriott
Grand Salon G

Saturday, March 20

Starting an NSTA Student Chapter: Faculty and Student Perspectives

8:00–9:00 AM
Philadelphia Marriott, 308



A Video Showcase of Inspiring Award-winning Teachers and Their Engaging Courses, Part 1

Thursday, March 18 • Commonwealth C, Loews



Mitchell E. Batoff, Past President, New Jersey Science Teachers Association, Nutley

Gordon D. Clark, Retired Science Department Chair, Manalapan, N.J.

Nina Visconti-Phillips (*ninavp@ymail.com*), New Jersey Science Teachers Association, Cranbury

President: Gordon D. Clark

Join us for a new three-part program never before presented at any conference. The screenings will be interspersed with commentary, discussion, and some live demonstrations. There will be laughs and perplexity mixed with much information on a wide range of topics. Pick up ideas and content that will broaden your knowledge and that you can use in your own teaching. Help select from an extensive menu of course excerpts:

BONNIE BASSLER of Princeton on Cell-to-Cell Communication; JOHN RENTON of West Virginia University on Damage from Earthquakes; STEVEN STROGATZ of Cornell on The Chaos Revolution; PHILIP MORRISON of MIT on Evidence for Atoms; ANTHONY GOODMAN of Montana State on How We Fail and How We Heal; MICHAEL STARBIRD of The University of Texas on Change and Motion; CARL SAGAN of Cornell on The Shores of the Cosmic Ocean; NEIL deGRASSE TYSON of Princeton on My Favorite Universe; BASSAM SHAKHASHIRI of the University of Wisconsin presenting several lecture-demonstrations aimed at sparking an interest in science among children and adolescents; and much more.

Dozens of door prizes directly related to this session will be raffled off through the entire evening. Receive a useful handout. Come and go, stay as long as you wish. Bring your dinner!



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ADAM Equipment (Booth #1452)

Thursday, March 18 3:30–5:00 PM 203A, Conv. Center The Case of the Missing Joules (p. 174)

Bio-Rad Laboratories (Booth #1619)

Thursday, March 18 8:00–9:00 AM 103B, Conv. Center Bio-Rad—How to Start a Biotech Program (p. 100)
 Thursday, March 18 8:00–10:30 AM 103A, Conv. Center Bio-Rad Crime Scene Investigator PCR Basics Kit (p. 102)
 Thursday, March 18 10:00–11:15 AM 103B, Conv. Center Bio-Rad ELISA and Swine Flu (p. 117)
 Thursday, March 18 1:00–2:15 PM 103A, Conv. Center Bio-Rad—Light Up Your Classroom with Prize-winning Science (p. 146)
 Thursday, March 18 1:00–2:30 PM 103B, Conv. Center Bio-Rad Enzymes and Biofuels: Go from Grass to Gas! (AP Lab 2) (p. 146)
 Thursday, March 18 3:00–4:00 PM 103B, Conv. Center Bio-Rad Cloning and Sequencing Explorer Series (p. 162)
 Thursday, March 18 3:00–4:15 PM 103A, Conv. Center Bio-Rad—Take pGLO to the Next Level! (p. 162)

BrainPOP (Booth #2150)

Thursday, March 18 1:30–3:00 PM 105A/B, Conv. Center BrainPOP in the 21st-Century Science Classroom (p. 147)

Carolina Biological Supply Co. (Booth #1105)

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 Thursday, March 18 9:30–11:00 AM 204B, Conv. Center Comparative Vertebrate Anatomy with Carolina’s Perfect Solution® Specimens (p. 115)
 Thursday, March 18 11:30 AM–1:00 PM 201B, Conv. Center Setting the Standard for PreK Science (p. 128)
 Thursday, March 18 11:30 AM–1:00 PM 204A, Conv. Center Strawberry DNA and Molecular Models (p. 128)
 Thursday, March 18 11:30 AM–1:00 PM 204B, Conv. Center Comparative Mammalian Organ Dissection with Carolina’s Perfect Solution® Specimens (p. 128)
 Thursday, March 18 1:30–3:00 PM 201B, Conv. Center Moving Cars: Driving Learning with the STC Program™ (p. 148)
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 Thursday, March 18 3:30–5:00 PM 201B, Conv. Center Science Libraries: Reading for Content (p. 174)
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CPO Science, School Specialty Science (Booth #1341)

Thursday, March 18 8:00–9:30 AM 108A, Conv. Center Chemistry and the Atom: Fun with the Atom-building Game (p. 100)
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 Thursday, March 18 12 Noon–1:30 PM 108A, Conv. Center Optics with Light and Color: Bright Ideas—Our New Take On an Old Favorite (p. 130)
 Thursday, March 18 2:00–3:30 PM 108A, Conv. Center The BEST Buoyancy Experiment Ever! Understanding Archimedes’s Principle and Density (p. 160)
 Thursday, March 18 4:00–5:30 PM 108A, Conv. Center Electric Circuits: Fun with Electricity and Circuits (p. 177)

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Thursday, March 18	10:00–11:15 AM	108B, Conv. Center	Inquiry and Literacy in Grades 5–8 (p. 118)
Thursday, March 18	1:00–2:30 PM	108B, Conv. Center	What’s Going On in There? Inquiry Science for Supervisors, Teacher Trainers, and Teachers (p. 146)
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Delta Education, School Specialty Science–FOSS (Booth #1440)

Thursday, March 18	8:00–10:30 AM	107A/B, Conv. Center	Using Science Notebooks with FOSS Middle School (p. 102)
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Thursday, March 18	4:00–5:00 PM	107A/B, Conv. Center	Beyond the Classroom Walls with FOSS (p. 177)

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Thursday, March 18	8:30–10:00 AM	106A/B, Conv. Center	Innovative Science and Literacy Integration: Seeds of Science/Roots of Reading® (p. 103)
Thursday, March 18	10:30 AM–12 Noon	106A/B, Conv. Center	Innovative Science and Literacy Integration: Seeds of Science/Roots of Reading® (p. 120)
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Discovery Education (Booth #1022 and #1025)

Thursday, March 18	11:30 AM–1:00 PM	112A/B, Conv. Center	Layers of Learning with Google Earth: A Free Round-trip Ticket to Anywhere in the World (p. 127)
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DNA Depot (Booth #817)

Thursday, March 18	3:30–5:00 PM	112A/B, Conv. Center	Middle School Hands-On Life Science (p. 174)
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DS SolidWorks Corp. (Booth #2052)

Thursday, March 18	1:30–3:00 PM	112A/B, Conv. Center	The STEM Academy (p. 148)
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EDVOTEK (Booth #816)

Thursday, March 18	9:30–11:00 AM	110A/B, Conv. Center	EDVOTEK Biotechnology: Biotechnology on a Budget (p. 114)
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Energy Concepts, Inc. (Booth #1632)

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ESRI (Booth #1431)

Thursday, March 18	9:30–11:00 AM	105A/B, Conv. Center	GIS for Earth Science Inquiry (p. 114)
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Thursday, March 18	1:30–3:00 PM	303A/B, Conv. Center	The Green Roof Model: Building a Greener World (p. 149)
Thursday, March 18	3:30–5:00 PM	303A/B, Conv. Center	Introducing a New Data Logging System for Your Science Lab! (p. 175)

Flinn Scientific, Inc. (Booth #1605)

Thursday, March 18	11:30 AM–1:00 PM	103C, Conv. Center	Make Safety a Habit! Flinn Scientific Workshop (p. 126)
Thursday, March 18	1:30–3:00 PM	103C, Conv. Center	Hands-On Integrated Science Activities for Middle School (p. 147)
Thursday, March 18	3:30–5:00 PM	103C, Conv. Center	Flinn Scientific Presents Best Practices for Teaching Chemistry™: Experiments and Demonstrations (p. 173)

Frey Scientific, School Specialty Science (Booth #1441)

Thursday, March 18	8:00–9:15 AM	109A/B, Conv. Center	Inquiry Investigations™ Biotechnology Curriculum Modules and Kits (p. 100)
Thursday, March 18	10:00–11:15 AM	109A/B, Conv. Center	Introducing Inquiry Investigations™: Hands-On Inquiry Activities Focusing On Technology (p. 118)
Thursday, March 18	12 Noon–1:15 PM	109A/B, Conv. Center	Educational Science Lab Design and Implementation for the 21st Century Made Easy (p. 130)
Thursday, March 18	2:00–3:15 PM	109A/B, Conv. Center	Inquiry Investigations™ Forensics Science Curriculum Module and Kits (p. 159)
Thursday, March 18	4:00–5:15 PM	109A/B, Conv. Center	A Closer Look at Biology, Chemistry, and Earth Science Virtual Labs (p. 177)

Houghton Mifflin Harcourt (Booth #940)

Thursday, March 18	1:30–3:00 PM	304, Conv. Center	Bring Biology to Life (p. 149)
Thursday, March 18	3:30–5:00 PM	304, Conv. Center	Motivating Students Through Project-Based Learning (PBL) (p. 175)

Kendall Hunt Publishing Co. (Booth #1928)

Thursday, March 18	9:30–11:00 AM	304, Conv. Center	Teaching Chemistry Without “When Am I Going to Need This?” (p. 115)
Thursday, March 18	11:30 AM–1:00 PM	304, Conv. Center	Forensic Science for High School: An Inquiry-rich Curriculum (p. 129)

Key Curriculum Press (Booth #735)

Thursday, March 18	3:30–5:00 PM	110A/B, Conv. Center	Living by Chemistry: Create a Table (p. 173)
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LAB-AIDS, Inc. (Booth #1529)

Thursday, March 18	9:30–11:00 AM	Hall D/2, Conv. Center	<i>A Natural Approach to Chemistry</i> : Teaching About Heat and Temperature (p. 115)
Thursday, March 18	11:30 AM–1:00 PM	Hall D/2, Conv. Center	<i>A Natural Approach to Chemistry</i> : Teaching About Heat and Temperature (p. 129)
Thursday, March 18	1:30–3:00 PM	Hall D/2, Conv. Center	<i>A Natural Approach to Chemistry</i> : Teaching About Electrochemistry (p. 149)

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LaMotte Co. (Booth #923)

Thursday, March 18	1:30–3:00 PM	203B, Conv. Center	Watershed Investigation: Delaware Statewide Recommended Science Curriculum (p. 149)
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McGraw-Hill School Education Group (Booth #531)

Thursday, March 18	1:30–3:00 PM	111A/B, Conv. Center	Knowing How, Knowing What, Knowing Why (p. 148)
Thursday, March 18	3:30–5:00 PM	111A/B, Conv. Center	I See What You Mean: Developing Visual Literacy (p. 173)

National Geographic School Publishing (Booth #1641)

Thursday, March 18	3:30–5:00 PM	203B, Conv. Center	Student Success with Inquiry (p. 174)
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National Nanotechnology Infrastructure Network (Booth #2155)

Thursday, March 18	9:30–11:00 AM	203B, Conv. Center	Nano in Your Classroom: Easy Lessons Tied to Basic Science Concepts (p. 115)
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NBC Learn (Booth No. 1760)

Thursday, March 18	9:30–11:00 AM	113A, Conv. Center	Science and the Real World: 21st-Century Learning Tools from NBC News (p. 114)
Thursday, March 18	1:30–3:00 PM	113A, Conv. Center	Science and the Real World: 21st-Century Learning Tools from NBC News (p. 148)

Pearson (Booth #1405)

Thursday, March 18	7:30–9:00 AM	113C, Conv. Center	Explore the Next Generation of Instructional Technology on Biology.com (p. 89)
Thursday, March 18	9:30–11:00 AM	113B, Conv. Center	From Science to Engineering (p. 114)
Thursday, March 18	9:30–11:00 AM	113C, Conv. Center	Green Approaches to Inquiry in the Chemistry Classroom (p. 114)
Thursday, March 18	11:30 AM–1:00 PM	113B, Conv. Center	What's at the Heart of Science Teaching? Inquiry, Evidence, and Thinking! (p. 128)
Thursday, March 18	11:30 AM–1:00 PM	113C, Conv. Center	The Next Generation of Physical Science Virtual Labs—No Cleanup Required! (p. 128)
Thursday, March 18	1:30–3:00 PM	113B, Conv. Center	<i>Planet Diary</i> : Using Current Events to Engage Your Grades K–8 Students in Science (p. 148)
Thursday, March 18	1:30–3:00 PM	113C, Conv. Center	Methods and Resources to Improve Scores on the AP* Chemistry Exam (p. 148)
Thursday, March 18	3:30–5:00 PM	113B, Conv. Center	The Digital Path and New Media Literacies for K–8 (p. 174)
Thursday, March 18	3:30–5:00 PM	113C, Conv. Center	The Next Generation of Life Science Virtual Labs—No Cleanup Required! (p. 174)

Sargent-Welch (Booth #1629)

Thursday, March 18	1:30–3:00 PM	104A/B, Conv. Center	Hand Jive of Hands-On Chemistry (p. 147)
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Science Kit & Boreal Laboratories (Booth #1727)

Thursday, March 18	7:30–9:00 AM	104A/B, Conv. Center	Boppin' with Bloops: Groovy Genetics (p. 89)
Thursday, March 18	9:30–11:00 AM	104A/B, Conv. Center	Stuck in the Middle with You (p. 113)

Simulation Curriculum Corp. (Booth #741)

Thursday, March 18	1:30–3:00 PM	110A/B, Conv. Center	Pluto and the Dwarf Planets: A Celestial Rock Group! (p. 147)
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Spitz, Inc. (Booth #641)

Thursday, March 18	11:00 AM–12 Noon	Booth #641, Conv. Ctr.	Moon Phases: Teaching in an Immersive Environment (p. 122)
Thursday, March 18	3:00–4:00 PM	Booth #641, Conv. Ctr.	Moon Phases: Teaching in an Immersive Environment (p. 162)

Vernier Software & Technology (Booth #1417)

Thursday, March 18	8:00–9:30 AM	202A, Conv. Center	<i>Chemistry with Vernier</i> (p. 101)
Thursday, March 18	8:00–9:30 AM	202B, Conv. Center	<i>Forensics with Vernier</i> (p. 101)
Thursday, March 18	10:00–11:30 AM	202A, Conv. Center	<i>Biology with Vernier</i> (p. 118)
Thursday, March 18	10:00–11:30 AM	202B, Conv. Center	What's New at Vernier? (p. 118)
Thursday, March 18	12 Noon–1:30 PM	202A, Conv. Center	K–8 Science with Vernier (p. 130)
Thursday, March 18	12 Noon–1:30 PM	202B, Conv. Center	Advanced Instrumentation: Spectroscopy and Gas Chromatography (p. 130)
Thursday, March 18	2:00–3:30 PM	202A, Conv. Center	Using Inquiry in Environmental Science and Biology with Vernier (p. 160)
Thursday, March 18	2:00–3:30 PM	202B, Conv. Center	Advanced Logger Pro and LabQuest (p. 160)

WARD's Natural Science (Booth #1826)

Thursday, March 18	11:30 AM–1:00 PM	104A/B, Conv. Center	Iron Teacher (p. 126)
Thursday, March 18	3:30–5:00 PM	104A/B, Conv. Center	Forensics Jukebox (p. 173)

Wavefunction, Inc. (Booth #815)

Thursday, March 18	9:30–11:00 AM	203A, Conv. Center	Learning Chemistry with Software for Molecular-Level Visualization (p. 114)
Thursday, March 18	11:30 AM–1:00 PM	203A, Conv. Center	Teaching AP Chemistry with Molecular-Level Visualization and Simulation Tools (p. 128)
Thursday, March 18	1:30–3:00 PM	203A, Conv. Center	Learning Chemistry with Software for Molecular-Level Visualization (p. 148)

Wright Group/McGraw-Hill (Booth #531)

Thursday, March 18	3:30–5:00 PM	105A/B, Conv. Center	Literacy Strategies in the Sciences (p. 173)
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Schedule at a Glance

G = General	M = Middle School	S = Supervision/Administration	T = Teacher Preparation
P = Preschool	H = High School	I = Informal Education	E = Elementary
C = College	R = Research		

Biology/Life Science

7:30–9:00 AM	5–9	104A/B, Conv. Center	Boppin' with Bloops: Groovy Genetics (p. 89)
7:30–9:00 AM	9–12	113C, Conv. Center	Explore the Next Generation of Instructional Technology on Biology.com (p. 89)
8:00–8:30 AM	E	Hall D/8, Conv. Center	Developing Children's Thinking Through Literacy and Inquiry (p. 91)
8:00–8:30 AM	M–H	Franklin 8, Marriott	Bringing History, Art, and Literature into the Biology Classroom (p. 94)
8:00–9:00 AM	7–C	103B, Conv. Center	Bio-Rad—How to Start a Biotech Program (p. 100)
8:00–9:00 AM	K–12	303A/B, Conv. Center	The Educational EarthBox®: A Versatile, Easy-to-Use Instructional Tool (p. 100)
8:00–9:00 AM	E–M	Hall D/18, Conv. Center	Fantastic Voyage: The Human Body in Space (p. 96)
8:00–9:00 AM	H–C	Commonwealth C, Loews	Kidney Crisis (p. 97)
8:00–9:00 AM	G	Franklin 1, Marriott	Have Your Cake and Eat It, Too (p. 97)
8:00–9:00 AM	H	Franklin 3, Marriott	Will You Go GMO? (p. 94)
8:00–9:00 AM	M–H	Franklin 4, Marriott	RAIN (Research Applications in Neurobiology) (p. 97)
8:00–10:30 AM	7–C	103A, Conv. Center	Bio-Rad—Crime Scene Investigator PCR Basics Kit (p. 102)
8:30–9:00 AM	P–E	Hall D/8, Conv. Center	Trailquests: Discovering Awe in Nature (p. 91)
8:30–9:00 AM	M–H	306, Marriott	Tag-Team Teaching: Successful Co-teaching in the Science Classroom (p. 103)
8:30–9:00 AM	G	307, Marriott	Biology Bob: Philadelphia Fliers (p. 103)
8:30–9:00 AM	M–H	Franklin 8, Marriott	Bell Ringers, Get Readies, and Focus Questions: How to Engage, Excite, and Encourage Learning (p. 95)
9:30–10:30 AM	P–E	Hall D/8, Conv. Center	Connecting with Animals in the Classroom (p. 106)
9:30–10:30 AM	H	Commonwealth C, Loews	Making Biology Come Alive Through Bioinformatics (p. 111)
9:30–10:30 AM	H	307, Marriott	How Do We Know DNA Is the Genetic Material? An Example for Teachers (p. 109)
9:30–10:30 AM	E–H	Franklin 1, Marriott	Nourishing the Planet in the 21st Century (p. 111)
9:30–10:30 AM	G	Franklin 4, Marriott	Spork & Beans: Addressing Evolutionary Misconceptions (p. 112)
9:30–11:00 AM	6–C	110A/B, Conv. Center	EDVOTEK Biotechnology: Biotechnology on a Budget (p. 114)
9:30–11:00 AM	K–5	201B, Conv. Center	Inquiring Minds Want to Know: An Introduction to Inquiry (p. 114)
9:30–11:00 AM	6–12	204B, Conv. Center	Comparative Vertebrate Anatomy with Carolina's Perfect Solution® Specimens (p. 115)
9:30–11:30 AM	E–M	403, Marriott	CSME Pathway Session: Integrating Biotechnology in Environmental Education (p. 116)
10:00–11:15 AM	7–C	103B, Conv. Center	Bio-Rad ELISA and Swine Flu (p. 117)
10:00–11:30 AM	5–12	108A, Conv. Center	Crazy Traits: Genetics and Adaptations Games for All (p. 118)
10:00–11:30 AM	9–C	202A, Conv. Center	<i>Biology with Vernier</i> (p. 118)
11:30 AM–1:00 PM	6–C	110A/B, Conv. Center	EDVOTEK Biotechnology: Teaching DNA Forensics (p. 127)
11:30 AM–1:00 PM	5–12	104A/B, Conv. Center	Iron Teacher (p. 126)
11:30 AM–1:00 PM	10–C	203B, Conv. Center	Foundations in Biotechnology (p. 128)
11:30 AM–1:00 PM	8–12	204A, Conv. Center	Strawberry DNA and Molecular Models (p. 128)
11:30 AM–1:00 PM	6–12	204B, Conv. Center	Comparative Mammalian Organ Dissection with Carolina's Perfect Solution® Specimens (p. 128)
12:30–1:00 PM	P	Hall D/8, Conv. Center	Using Nature Study to Foster Science Process Skills in Rural Early Childhood Learners (p. 134)
12:30–1:00 PM	M–H	Tubman, Loews	ASTE Session: Using Digital Media to Develop Ecology Units for Middle School Students (p. 136)
12:30–1:00 PM	H	Franklin 8, Marriott	Engaging Urban Students in Exploration of Medical Careers (p. 138)
12:30–1:30 PM	E–M	Hall D/25, Conv. Center	Extended Investigation of Trees and Pond Organisms Using Digital Photography (p. 134)
12:30–1:30 PM	H–C	Commonwealth C, Loews	Using Web Resources to Explore Computational Biology (p. 142)
12:30–1:30 PM	G	Franklin 4, Marriott	Aquavision Videoconferencing: We Bring the Dolphins to You! (p. 143)
12:30–2:30 PM	E–M/I	411/412, Marriott	EDC and FHL Pathway Session: Active Literacy Learning in Science (p. 145)
1:00–1:30 PM	P	Hall D/8, Conv. Center	From Curiosity to Inquiry: A Preschool Natural Science Program (p. 134)
1:00–1:30 PM	M–H	Franklin 8, Marriott	Hands On, Minds On (p. 138)

Schedule at a Glance Biology/Life Science, cont.

1:00–2:15 PM	7–C	103A, Conv. Center	Bio-Rad—Light Up Your Classroom with Prize-winning Science (p. 146)
1:00–2:30 PM	7–C	103B, Conv. Center	Bio-Rad Enzymes and Biofuels: Go from Grass to Gas! (AP Lab 2) (p. 146)
1:30–3:00 PM	9–12	204B, Conv. Center	AUTOPSY: Forensic Dissection Featuring Carolina's Perfect Solution® Pigs (p. 149)
1:30–3:00 PM	9–12	304, Conv. Center	Bring Biology to Life (p. 149)
2:00–3:00 PM	E	Hall D/8, Conv. Center	Cultivating Literacy: Linking Children's Literature and Plant Science (p. 156)
2:00–3:00 PM	E–M	Hall D/18, Conv. Center	It's All About the Food (p. 156)
2:00–3:00 PM	H–C	Commonwealth C, Loews	The Virtual Genetics Lab: A Free Interactive Computer Simulation of Genetics (p. 158)
2:00–3:00 PM	M	Congress C, Loews	NSELA Session: Dragon Genetics (p. 158)
2:00–3:00 PM	M–H	404, Marriott	LHS Pathway Session: Integrating Biodiversity Issues into Ecology and Evolution Units (p. 154)
2:00–3:00 PM	M–H	Franklin 1, Marriott	Engaging Students in the Study of Biology: Real-World Connections (p. 158)
2:00–3:00 PM	H–C/S	Franklin 2, Marriott	Content and Scientific Practices of the New AP Biology Course (p. 154)
2:00–3:00 PM	M–H	Franklin 3, Marriott	The Case of the Coughing Construction Worker (p. 154)
2:00–3:00 PM	G	Franklin 4, Marriott	What's Up with Learning and Memory? (p. 158)
2:00–3:00 PM	M–H/S	Franklin 9, Marriott	The Science of Alcohol: Moving Health and Prevention into Inquiry-based Science (p. 158)
2:20–2:40 PM	H–C	Commonwealth A, Loews	SCST Session: Project Advance Biology: A Bridge Between High School and College (p. 152)
2:30–3:00 PM	H	Franklin 8, Marriott	F.O.C.U.S. on Assessment (p. 161)
3:00–4:00 PM	7–C	103B, Conv. Center	Bio-Rad Cloning and Sequencing Explorer Series (p. 162)
3:00–4:15 PM	7–C	103A, Conv. Center	Bio-Rad—Take pGLO to the Next Level! (p. 162)
3:30–3:50 PM	C	Commonwealth A, Loews	SCST Session: Last Chance: Using Nontraditional Pedagogies to Improve Nonmajors' Appreciation and Understanding of Science (p. 166)
3:30–4:00 PM	H	Franklin 8, Marriott	Digital Video Composing Infused into the Curriculum (p. 164)
3:30–4:30 PM	E–M	Hall D/18, Conv. Center	Raptor Challenge: Using Birds of Prey to Grab Student Interest (p. 170)
3:30–4:30 PM	H–C	Commonwealth C, Loews	Epigenetics: Beyond the Central Dogma (p. 171)
3:30–4:30 PM	H	Congress C, Loews	NSELA Session: Biology, Government, Geometry, English...Oh My: An Interdisciplinary Lesson Addressing Wind Energy (p. 171)
3:30–4:30 PM	S	Franklin 2, Marriott	Gaming: A Learning Opportunity for Students and Teachers (p. 167)
3:30–4:30 PM	H	Franklin 3, Marriott	Bio-ITEST: New Frontiers in Bioinformatics and Computational Biology (p. 167)
3:30–4:30 PM	M–C	Franklin 4, Marriott	A Universal Design for Learning Approach to Understanding Cells (p. 171)
3:30–4:30 PM	H	Franklin 9, Marriott	Inquiry in AP Biology: It Doesn't Have to Be an Oxymoron! (p. 167)
3:30–5:00 PM	6–12	104A/B, Conv. Center	Forensics Jukebox (p. 173)
3:30–5:00 PM	5–9	112A/B, Conv. Center	Middle School Hands-On Life Science (p. 174)
3:30–5:00 PM	6–12	113C, Conv. Center	The Next Generation of Life Science Virtual Labs—No Cleanup Required! (p. 174)
3:30–5:00 PM	K–12	204A, Conv. Center	Creating Habitats in the Classroom (p. 174)
3:30–5:00 PM	9–12	204B, Conv. Center	Forensics for the Biology Laboratory (p. 175)
3:30–5:30 PM	E–M/I	407/408, Marriott	FHL Pathway Session: Nature Journals and Field Guides: Tools for Linking Science and Literacy (p. 176)
5:30–6:00 PM	C	Commonwealth A, Loews	SCST Session: What Biological Concepts Must Be Covered in an Introductory Course for Biology Majors? (p. 177)

Chemistry/Physical Science

8:00–9:00 AM	M	Hall D/19, Conv. Center	Teaching Physical Science with Magic (p. 92)
8:00–9:00 AM	M–H	Franklin 5, Marriott	Build a Battery of Batteries (p. 97)
8:00–9:00 AM	H	Franklin 12, Marriott	Redesigning the Laboratory Investigation: Integrating Inquiry into Chemistry (p. 98)
8:00–9:00 AM	M–H	Grand Salon B, Marriott	Content and Scientific Practices That Define the New AP Chemistry Course (p. 95)
8:00–9:30 AM	5–12	108A, Conv. Center	Chemistry and the Atom: Fun with the Atom-building Game (p. 100)
8:00–9:30 AM	9–C	202A, Conv. Center	<i>Chemistry with Vernier</i> (p. 101)
8:30–9:00 AM	H	Hall D/5, Conv. Center	How a Professional Learning Community (PLC) Increases Chemistry Participation at an Urban High School (p. 90)

Schedule at a Glance Chemistry/Physical Science, cont.

9:30–10:30 AM	P–E	Hall D/9, Conv. Center	“Write-On!” Integrating Science and ELA Through Inquiry-based, Hands-On Investigations and Interactive Writing (p. 110)
9:30–10:30 AM	M	Hall D/19, Conv. Center	Bringing Cutting-Edge Research to the Middle School Classroom (p. 106)
9:30–10:30 AM	H–C	Congress A, Loews	As Easy as “One” in Dimensional Analysis and Stoichiometry (p. 108)
9:30–10:30 AM	H	Franklin 11, Marriott	Using Metacognition and Formative Assessment to Improve Student Learning in Chemistry (p. 109)
9:30–10:30 AM	M–H	Grand Salon B, Marriott	Fun Demos That Will Get You Excited About Teaching Physical Science! (p. 109)
9:30–11:00 AM	9–12	113C, Conv. Center	Green Approaches to Inquiry in the Chemistry Classroom (p. 114)
9:30–11:00 AM	9–C	203A, Conv. Center	Learning Chemistry with Software for Molecular-Level Visualization (p. 114)
9:30–11:00 AM	9–12	304, Conv. Center	Teaching Chemistry Without “When Am I Going to Need This?” (p. 115)
9:30–11:00 AM	10–12	Hall D/2, Conv. Center	<i>A Natural Approach to Chemistry: Teaching About Heat and Temperature</i> (p. 115)
11:30 AM–1:00 PM	6–12	103C, Conv. Center	Make Safety a Habit! Flinn Scientific Workshop (p. 126)
11:30 AM–1:00 PM	9–C	203A, Conv. Center	Teaching AP Chemistry with Molecular-Level Visualization and Simulation Tools (p. 128)
11:30 AM–1:00 PM	10–12	Hall D/2, Conv. Center	<i>A Natural Approach to Chemistry: Teaching About Heat and Temperature</i> (p. 129)
12:30–1:00 PM	H	Grand Salon B, Marriott	It’s Elemental (p. 132)
12:30–1:30 PM	E	Hall D/18, Conv. Center	A Great Solution: Science Combined with Literature (p. 142)
12:30–1:30 PM	E–M	Hall D/22, Conv. Center	Toys—They’re Not Just for Physics Anymore (p. 142)
12:30–1:30 PM	H–C	Commonwealth D, Loews	Teaching Chemistry with Hydrogen and Fuel Cells (p. 142)
12:30–1:30 PM	G	Grand Salon F, Marriott	DVDs, YouTube, and Hollywood for a Millennium Education! (p. 138)
12:30–3:00 PM	5–8	107A/B, Conv. Center	FOSS Chemical Interactions for Middle School Students (p. 145)
1:30–3:00 PM	6–12	104A/B, Conv. Center	Hand Jive of Hands-On Chemistry (p. 147)
1:30–3:00 PM	9–12	113C, Conv. Center	Methods and Resources to Improve Scores on the AP* Chemistry Exam (p. 148)
1:30–3:00 PM	9–C	203A, Conv. Center	Learning Chemistry with Software for Molecular-Level Visualization (p. 148)
1:30–3:00 PM	9–12	204A, Conv. Center	Energize Your Chemistry Students’ Inquiry Skills with Carolina’s Inquiries in Science® Chemistry Series (p. 149)
1:30–3:00 PM	10–12	Hall D/2, Conv. Center	<i>A Natural Approach to Chemistry: Teaching About Electrochemistry</i> (p. 149)
2:00–3:00 PM	E–M	Hall D/19, Conv. Center	Fun Chemistry for Kids (p. 157)
2:00–3:00 PM	M–H	Grand Salon B, Marriott	5E Hands-On Chemistry Lessons (p. 155)
3:30–5:00 PM	9–12	103C, Conv. Center	Flinn Scientific Presents Best Practices for Teaching Chemistry™: Experiments and Demonstrations (p. 173)
3:30–5:00 PM	9–12	110A/B, Conv. Center	Living by Chemistry: Create a Table (p. 173)
3:30–5:00 PM	8–12	203A, Conv. Center	The Case of the Missing Joules (p. 174)

Earth/Space Science

8:00–8:30 AM	H	Hall D/5, Conv. Center	The NOAA-CREST Weather Camp: Field and Classroom Experiences to Support Urban Students’ Recognition of the Connection Between the Local Environment and Weather Conditions (p. 90)
8:00–9:00 AM	I	Freedom E, Sheraton	Launch of the NASA Global Snowflake Network: Protocols and Classroom Integration (p. 98)
8:00–9:00 AM	G	Philadelphia N, Sheraton	Teaching Science with GLOBE Student Data (p. 99)
8:00–9:00 AM	M–H	Philadelphia S, Sheraton	More Than Just Crossing Circles: Overhauling Your Earthquake Location Exercise (p. 99)
8:30–9:00 AM	H	Independence B, Sheraton	Translating Authentic Research Experiences for Teachers into the Real Deal for Students (p. 103)
9:30–10:00 AM	E	Hall D/10, Conv. Center	Assessing Immersive Full-Dome Planetarium Technology in Teaching the Sun-Earth-Moon System to Elementary Students (p. 106)
9:30–10:30 AM	H	Freedom E, Sheraton	NASA Data, Activities, and Analysis in Your Classroom (p. 112)
9:30–10:30 AM	G	Freedom F, Sheraton	NASA’s High-Energy Vision: Chandra and the X-ray Universe (p. 110)
9:30–10:30 AM	E–M	Freedom G, Sheraton	Round Goes the Water! (p. 112)
9:30–10:30 AM	H	Independence B, Sheraton	No Folds, No Outcrop, No Structures, No Problem! (p. 110)
9:30–10:30 AM	G	Philadelphia N, Sheraton	Whose Fault Is It? Earthquake Locating (p. 112)
9:30–10:30 AM	M–H	Philadelphia S, Sheraton	An Inquiry Approach to Teaching About the Force of Gravity (p. 112)
9:30–11:00 AM	6–C	105A/B, Conv. Center	GIS for Earth Science Inquiry (p. 114)

Schedule at a Glance Earth/Space Science, cont.

9:30–11:00 AM	8–12	303A/B, Conv. Center	The Layered Earth: Geology Curriculum from the Makers of Starry Night (p. 115)
10:00–10:30 AM	E	Hall D/10, Conv. Center	Using Children’s Observations to Guide Explanations in Astronomy (p. 106)
11:00 AM–12 Noon	K–8	Booth #641, Exhibit Hall	Moon Phases: Teaching in an Immersive Environment (p. 122)
12:30–1:00 PM	G	Independence B, Sheraton	Developing Teachers’ Science Content and Pedagogy Through an Authentic Fossil Investigation (p. 140)
12:30–1:30 PM	E	Hall D/10, Conv. Center	Preparing for Liftoff (p. 141)
12:30–1:30 PM	G	Freedom E, Sheraton	Stellar Evolution—From Stellar Nurseries to Black Holes (p. 144)
12:30–1:30 PM	M–H/I	Freedom F, Sheraton	NASA: Inquiry Activities for Learning About Light and the EM Spectrum and Multiwavelength Astronomy (p. 138)
12:30–1:30 PM	M	Independence C, Sheraton	Time and Space for Science: Peeking over the Shoulders of Astronauts (p. 140)
12:30–1:30 PM	G	Philadelphia N, Sheraton	What You Need to Know to Teach About Ice and Snow: The History of Winter Project (p. 144)
1:00–1:30 PM	H–C	Independence B, Sheraton	Nature of Science Instruction in the General Education Course (p. 140)
1:30–3:00 PM	5–12	110A/B, Conv. Center	Pluto and the Dwarf Planets: A Celestial Rock Group! (p. 147)
1:30–3:00 PM	G	113A, Conv. Center	Science and the Real World: 21st-Century Learning Tools from NBC (p. 148)
2:00–2:30 PM	H–C	Hall D/25, Conv. Center	An Energy-Balance Model for Use in the Science Classroom (p. 152)
2:00–2:30 PM	I	Freedom F, Sheraton	Outreach Options for Science Teachers (p. 155)
2:00–3:00 PM	M–H	Freedom E, Sheraton	NASA: The Size and Scale of the Universe (p. 158)
2:00–3:00 PM	E–M	Freedom G, Sheraton	What Causes the Seasons? Motion and Math (p. 159)
2:00–3:00 PM	G	Independence B, Sheraton	Arctic Climate Modeling Project (p. 156)
2:00–3:00 PM	E–H	Philadelphia N, Sheraton	Using Ongoing Eruptions to Study the Basic Characteristics of Volcanoes (p. 159)
2:30–3:00 PM	G	Freedom F, Sheraton	NASA Endeavor Teaching Certificate Project (p. 156)
2:30–3:00 PM	H–C	Hall D/25, Conv. Center	Quantitative Earth Science: Understanding Earthquake Dynamics and Magnitudes (p. 152)
3:00–4:00 PM	K–8	Booth #641, Exhibit Hall	Moon Phases: Teaching in an Immersive Environment (p. 162)
3:30–4:00 PM	M–H	Freedom F, Sheraton	Astronomy Inquiries: Four Hands-On Investigations (p. 164)
3:30–4:30 PM	E	Hall D/10, Conv. Center	The Magic and Mystery of Light! (p. 170)
3:30–4:30 PM	I	Freedom E, Sheraton	From Out of School to Outer Space with NASA (p. 171)
3:30–4:30 PM	I	Freedom G, Sheraton	Magnetism Activities, Earth’s Magnetism, and Space Weather from Windows to the Universe (p. 172)
3:30–4:30 PM	G	Freedom H, Sheraton	Arctic Impact: Meteors, Sediments, and Climate Change (p. 168)
3:30–4:30 PM	M–C	Independence B, Sheraton	Simulating Earthquakes for Science and Society: New Earthquake Visualizations Ideal for Use in Science Education (p. 168)
3:30–4:30 PM	G	Logans 2, Sheraton	The Coriolis Effect in Weather and Oceans (p. 172)
3:30–4:30 PM	E–H	Philadelphia N, Sheraton	Rock and Roll Through Earth Science (p. 172)
3:30–4:30 PM	E–H	Philadelphia S, Sheraton	NASA Aquarius: Connecting the Water Cycle, Ocean Salinity, and Satellites (p. 172)

Environmental Science

8:00–8:30 AM	M–C	Independence C, Sheraton	Outdoor Education: A Science Collaboration with Schools, Community, and Parents (p. 96)
8:00–9:00 AM	E–M	403, Marriott	CSME Pathway Session: Watershed Exploration Using Project WET and Project Learning Tree Curricula (p. 94)
8:00–9:00 AM	M/I	Freedom G, Sheraton	Playing with Ecosystem Science: Informal Modeling Games to Explore the Delicate Balance (p. 98)
8:00–9:00 AM	I	Independence A, Sheraton	Biotechnology and Environmental Risk: Project Learning Tree’s New Secondary Program (p. 98)
8:30–9:00 AM	G	Independence C, Sheraton	The 3 Cs in School: Bringing Your Classroom Outdoors (p. 96)
9:30–10:00 AM	G	Independence C, Sheraton	Climate Literacy in the Informal Setting (p. 104)
9:30–10:30 AM	E–H	307, Conv. Center	NSTA Avenue Session: Siemens We Can Change the World Challenge: Going Green (and Digital) in the 21st Century (p. 105)
9:30–10:30 AM	E	Hall D/6, Conv. Center	Connecting the Dots: Fun, Fascinating, and Functional Integration of Science, Technology, and Literacy (p. 106)

Schedule at a Glance Environmental Science, cont.

9:30–10:30 AM	I	404, Marriott	LHS Pathway Session: Alternative Energy for Transportation: Hydrogen and Fuel Cells (p. 109)
9:30–10:30 AM	E–H	Independence A, Sheraton	FOCUS: Environmental Art and Science Campaign (p. 112)
9:30–11:00 AM	9–12	204A, Conv. Center	Need “Energy” in Your Environmental Classes? Learn About Carolina’s NEW Inquiries in Science™ Environmental Series (p. 115)
11:00 AM–12 Noon	H/I	Liberty A/B, Sheraton	NMEA Session: Sustainable Seafood—It’s Good for You and for the Oceans (p. 122)
11:30 AM–1:00 PM	5–C	105A/B, Conv. Center	GIS for Environmental Science Inquiry (p. 126)
12:30–1:00 PM	G	Liberty C, Sheraton	ARKive.org: Using Audiovisuals to Promote Conservation Education (p. 140)
12:30–1:30 PM	G	Independence A, Sheraton	How to Succeed at Grant Writing for Funding Opportunities from NOAA (p. 140)
12:30–1:30 PM	I	Philadelphia S, Sheraton	Using Macroinvertebrates to Teach About Land Use Change (p. 144)
1:00–1:30 PM	E	Hall D/9, Conv. Center	Creating Living Ecosystems in Title I Urban Schools (p. 146)
1:00–1:30 PM	G	Liberty C, Sheraton	The Personal Energy Audit Activity: Analyzing Personal Energy Use, Resource Availability, and Conservation Practices (p. 140)
1:10–1:30 PM	G	Commonwealth A, Loews	SCST Session: Service Learning in an Undergraduate Introductory Environmental Science Course: Getting Students Involved with the Community (p. 135)
1:30–3:00 PM	7	203B, Conv. Center	Watershed Investigation: Delaware Statewide Recommended Science Curriculum (p. 149)
1:30–3:00 PM	3–8	303A/B, Conv. Center	The Green Roof Model: Building a Greener World (p. 149)
2:00–3:00 PM	P–E	Hall D/9, Conv. Center	Nature-ally Good Teaching in Early Childhood Education (p. 150)
2:00–3:00 PM	M/I	Liberty A/B, Sheraton	NMEA Session: GMRI: VitalVenture—Engaging Learners, Exploring Watersheds, and Connecting Communities (p. 159)
2:00–3:00 PM	E–H	Liberty C, Sheraton	Investigating Land Use Environmental Issues with Google Earth and Satellite Imagery (p. 156)
2:00–3:00 PM	E–H	Independence A, Sheraton	Can You Hear Me Now? Using Cell Phones and Role Play to Promote Interdisciplinary Classroom Connections (p. 159)
2:00–3:00 PM	I	Philadelphia S, Sheraton	Schoolyards as Classrooms (p. 159)
2:30–3:00 PM	M/C	Independence C, Sheraton	Broadening Participation of Rural Students with Estuarine Scientists (p. 161)
3:30–4:00 PM	E–M	Independence C, Sheraton	Hats Off to Service Learning: Leadership and Learning Through Environmental Service (p. 168)
3:30–4:30 PM	E	Hall D/5, Conv. Center	Student as Scientist: Increase Interest and Achievement (p. 165)
3:30–4:30 PM	M–H/I	Hall D/7, Conv. Center	CSI Meets Woodsy the Owl: Environmental Forensics (p. 170)
3:30–4:30 PM	E	Hall D/15, Conv. Center	Bringing Science to Life for Students, Teachers, and the Community (p. 165)
3:30–4:30 PM	E–M	403, Marriott	CSME Pathway Session: Talking Dirty (p. 167)
3:30–4:30 PM	E–H	Independence A, Sheraton	Using Rain Forests to Teach Across Disciplines: Educational Resources About Forestry in Guatemala (p. 172)
3:30–4:30 PM	G	Liberty C, Sheraton	Motivating Students with Real Science (p. 168)
4:00–4:30 PM	M	Independence C, Sheraton	Students Are Scientists: Inquiry-based Learning Through Citizen Science (p. 168)

Integrated/General Science

8:00–8:30 AM	P–M	Hall D/6, Conv. Center	Connecting Quality Science Lessons with Children’s Literature to Enhance Science and Reading Skills (p. 90)
8:00–8:30 AM	G	Hall D/10, Conv. Center	Integrative STEM Education: Breaking Down the Silos from Theory and Practice (p. 91)
8:00–8:30 AM	E/C/S	Commonwealth A, Loews	SCST Session: Rekindling Science Education Through a Collaboration Between an Urban School and College (p. 93)
8:00–8:30 AM	H	Franklin 9, Marriott	Teacher, What Did I Miss When I Was Absent? (p. 90)
8:00–9:00 AM	G	Hall D/1, Conv. Center	ISTE: Integrating Technology into the Classroom (p. 90)
8:00–9:00 AM	E–H	Hall D/7, Conv. Center	Differentiated Science Inquiry (p. 96)
8:00–9:00 AM	E	Hall D/11, Conv. Center	The Art and Science of Integration (p. 92)
8:00–9:00 AM	E	Hall D/14, Conv. Center	Inquiry Projects in the Elementary Classroom (p. 92)
8:00–9:00 AM	E	Hall D/15, Conv. Center	Centering Around the Science Standards, Grades K–2 (p. 96)
8:00–9:00 AM	E	Hall D/16, Conv. Center	Experience Counts! (p. 96)
8:00–9:00 AM	I	Hall D/17, Conv. Center	Connecting Your Students to Authentic Scientific Research (p. 92)

Schedule at a Glance Integrated/General Science, cont.

8:00–9:00 AM	E	Hall D/20, Conv. Center	Attracting Testable Questions: Student Scientists Lead the Way! (p. 92)
8:00–9:00 AM	E–M	Hall D/21, Conv. Center	Diagonal Alley or Diagonally? Magic or Science? (p. 97)
8:00–9:00 AM	P–M	Hall D/22, Conv. Center	Can You Keep a Secret? (p. 97)
8:00–9:00 AM	E–M	Hall D/23, Conv. Center	Bring Live Theater into the Science Classroom (p. 97)
8:00–9:00 AM	G	Hall D/25, Conv. Center	Innovation in Science-related Continuing Professional Development Programs (p. 92)
8:00–9:00 AM	G	Hall D/26, Conv. Center	Wow! How'd You Do That? (p. 92)
8:00–9:00 AM	G	Hall D/27, Conv. Center	STEM: In Practice (p. 92)
8:00–9:00 AM	G	Hall D/28, Conv. Center	Outstanding Print Resources, Science Literacy Skills, and Hands-On Investigations: Don't Settle for One Without the Others! (p. 92)
8:00–9:00 AM	G	Hall D/29, Conv. Center	Connect the Dots to Help Students Develop Literacy Skills Along with Science Content (p. 97)
8:00–9:00 AM	E–H	Hall D/30, Conv. Center	Science Olympiad: The Best-Kept Secret in Science Education (p. 93)
8:00–9:00 AM	G	Anthony, Loews	NARST Session: Developing Pedagogical Content Knowledge (PCK) for Teaching the Nature of Science: Lessons from a Mentor-Mentee Relationship (p. 93)
8:00–9:00 AM	P–M	Commonwealth B, Loews	NMLSTA Session: Secrets of Fun in Science (p. 97)
8:00–9:00 AM	H–C	Commonwealth D, Loews	Empirical Evidence vs. Intuition and the <i>Let's Make a Deal</i> Game Show (p. 97)
8:00–9:00 AM	S	Regency C1, Loews	Professional Development: Using Trends, Practices, and Research to Strengthen Science Teaching and Learning (p. 93)
8:00–9:00 AM	C	Regency C2, Loews	Understanding the Science Understanding of Preservice Elementary Teachers (p. 93)
8:00–9:00 AM	M–C	Washington A, Loews	Picturing to Learn (p. 93)
8:00–9:00 AM	M–H/I	303, Marriott	The Virtual Newsroom at the Saint Louis Science Center: Support of In-School Science (p. 94)
8:00–9:00 AM	M–H	404, Marriott	LHS Pathway Session: Developing Literacy and Addressing Content Standards Through Issue-oriented Science (p. 94)
8:00–9:00 AM	G	414/415, Marriott	BSCS Pathway Session: Review the Research: Teaching Science for Effective Understanding (p. 94)
8:00–9:00 AM	G	Franklin 10, Marriott	FDA Session: Food Allergies (p. 95)
8:00–9:00 AM	G	Grand Salon E, Marriott	Is This Your First NSTA Conference? (p. 95)
8:00–9:00 AM	H	Grand Salon K, Marriott	Managing a Digital Curriculum: Lessons Learned (p. 95)
8:00–9:00 AM	G	Freedom F, Sheraton	NASA: Bring NASA Science into Your Classroom (p. 96)
8:00–9:00 AM	G	Liberty A/B, Sheraton	NMEA Session: Whale of a Share-a-Thon (p. 98)
8:00–9:00 AM	E–H	Liberty C, Sheraton	Polar Activities Share-a-Thon: Polar Bears to Penguins—There's Something for Everyone (p. 96)
8:00–9:00 AM	M–H	Logans 2, Sheraton	NASA Astrobiology Institute: Life on Earth...and Elsewhere? (p. 99)
8:00–9:15 AM	K–6	108B, Conv. Center	Experimental Design (p. 100)
8:00–9:15 AM	7–12	109A/B, Conv. Center	Inquiry Investigations™ Biotechnology Curriculum Modules and Kits (p. 100)
8:00–9:30 AM	7–12	202B, Conv. Center	<i>Forensics with Vernier</i> (p. 101)
8:00–9:30 AM	G	401/402, Marriott	McREL Pathway Session: How Do We Know That Students Understand? (p. 100)
8:00–10:00 AM	E–H	Congress C, Loews	CSSS Session: Advancing Science as Inquiry: Professional Development Tools You Can Use (p. 101)
8:00–10:30 AM	6–8	107A/B, Conv. Center	Using Science Notebooks with FOSS Middle School (p. 102)
8:00–11:00 AM	G	409, Marriott	WestEd Pathway Session: Selecting Quality Instructional Materials: Analyzing Instructional Materials (AIM) (p. 102)
8:00–11:00 AM	G	410, Marriott	FACET Innovations Pathway Session: Collecting with Intention: Effectively Using Questions and Probes (p. 102)
8:30–9:00 AM	G	Hall D/6, Conv. Center	Mesozoic Mania: Multidisciplinary Integration Through Dinosaurs! (p. 90)
8:30–9:00 AM	G	Hall D/10, Conv. Center	Student and School Factors Predicting STEM College Major Choice and Subsequent Career Entrance (p. 91)
8:30–9:00 AM	E/C/S	Commonwealth A, Loews	SCST Session: Comparing Faculty Perceptions with Classroom Observations in Undergraduate Science Courses (p. 93)
8:30–10:00 AM	2–5	106A/B, Conv. Center	Innovative Science and Literacy Integration: Seeds of Science/Roots of Reading® (p. 103)

Schedule at a Glance Integrated/General Science, cont.

9:00–9:30 AM	G	Grand Salon H, Marriott	International Conference Plenary Session: Assessing Scientific Literacy: International Perspectives and Classroom Possibilities (Speaker: Rodger W. Bybee) (p. 104)
9:30–10:00 AM	E	Hall D/14, Conv. Center	Science Experiments (p. 104)
9:30–10:00 AM	M	Hall D/22, Conv. Center	Reinventing the Science Fair (p. 104)
9:30–10:00 AM	G	Commonwealth A, Loews	SCST Session: Mini Journals: A Model for Authentic Inquiry-based Investigations in the College Science Classroom (p. 108)
9:30–10:00 AM	G	Freedom H, Sheraton	Cultivating Teacher-Researcher Relationships for Professional Development and Improvements in Science Education (p. 110)
9:30–10:30 AM	G	201C, Conv. Center	Featured Presentation: Class, I'd Like You to Meet Mr. Einstein (Speaker: John Mooy) (p. 105)
9:30–10:30 AM	G	Hall D/1, Conv. Center	ISTE: Eliciting Student Creativity Using Technology (p. 105)
9:30–10:30 AM	H	Hall D/5, Conv. Center	Equity and Excellence: Implementation and Assessment of Rigorous, Heterogeneous Science Courses (p. 105)
9:30–10:30 AM	G	Hall D/7, Conv. Center	Simple Methods for Improving Student Performance and Motivation (p. 106)
9:30–10:30 AM	E	Hall D/11, Conv. Center	Science Connections Are Everywhere: Using Children's Literature to Connect Science Lessons in All Content Areas (p. 110)
9:30–10:30 AM	E	Hall D/15, Conv. Center	Everyone Loves CHEESESTEAK! (Cool, Hands-On, Exciting, Economical Science Explorations Science Teachers Everywhere "Aughta" Know) (p. 106)
9:30–10:30 AM	P–E	Hall D/16, Conv. Center	Oobleck, Slime, and Dancing Spaghetti: Using Children's Literature to Enhance Your Science Curriculum (p. 110)
9:30–10:30 AM	I	Hall D/17, Conv. Center	Close the Digital Generation Gap with a National Park Service Multimedia Education Program (p. 110)
9:30–10:30 AM	I	Hall D/18, Conv. Center	Teaching Nature of Science Beyond the Classroom (p. 111)
9:30–10:30 AM	M	Hall D/20, Conv. Center	Family Science Night—Excite the Entire Community! (p. 107)
9:30–10:30 AM	M	Hall D/21, Conv. Center	The Last Book Project (p. 107)
9:30–10:30 AM	E–M	Hall D/23, Conv. Center	We're Bored...Get the Board! (p. 111)
9:30–10:30 AM	E–H	Hall D/25, Conv. Center	Building Up, Not Dumbing Down: Making Science Curriculum Accessible to English Language Learners and Other Struggling Readers (p. 107)
9:30–10:30 AM	G	Hall D/28, Conv. Center	Engaging and Interdisciplinary Climate Change: Global Connections and Sustainable Solutions (p. 111)
9:30–10:30 AM	G	Hall D/29, Conv. Center	Point, Game, Set, Match: Science Wins with Tennis Ball Containers (p. 111)
9:30–10:30 AM	G	Hall D/30, Conv. Center	Fibonacci: Connecting Subjects and Topics and Having Fun with Science (p. 111)
9:30–10:30 AM	M–H	Anthony, Loews	NARST Session: Content-Area Literacy in New Teachers' Secondary Science Classrooms: Challenges and Possibilities (p. 108)
9:30–10:30 AM	M	Commonwealth B, Loews	NMLSTA Session: Hop to It! Integrating Math and Science Is Easy and Fun with Frog Jumping (p. 111)
9:30–10:30 AM	H	Commonwealth D, Loews	Science Department Overhaul (p. 111)
9:30–10:30 AM	S	Regency C2, Loews	Science Instruction for Diverse Learners: Closing the Science Achievement Gap (p. 108)
9:30–10:30 AM	G	Tubman, Loews	ASTE Session: Information, Networking, and Support for Preservice and New Teachers (p. 108)
9:30–10:30 AM	G	Washington A, Loews	Podcasting to Learn: Digital Learning in the Global Society (p. 108)
9:30–10:30 AM	M–H	303, Marriott	Poop Happens (p. 109)
9:30–10:30 AM	E–H	Franklin 2, Marriott	NSTA Avenue Session: How to Write Grants for Your Classroom: Tips from the Toshiba America Foundation Team (p. 109)
9:30–10:30 AM	G	Franklin 10, Marriott	FDA Session: Food-borne Outbreak Investigations (p. 109)
9:30–10:30 AM	M–H	Grand Salon K, Marriott	Virtual Tools, Digital Kids (p. 109)
9:30–10:30 AM	M–H	Logans 2, Sheraton	The Science of Energy (p. 112)
9:30–11:00 AM	5–9	104A/B, Conv. Center	Stuck in the Middle with You (p. 113)
9:30–11:00 AM	G	113A, Conv. Center	Science and the Real World: 21st-Century Learning Tools from NBC News (p. 114)
9:30–11:00 AM	K–8	113B, Conv. Center	From Science to Engineering (p. 114)
9:30–11:00 AM	6–12	203B, Conv. Center	Nano in Your Classroom: Easy Lessons Tied to Basic Science Concepts (p. 115)
9:30–11:00 AM	G	401/402, Marriott	McREL Pathway Session: Using a Formative Assessment Process to Determine Evidence of Student Understanding (p. 113)

Schedule at a Glance Integrated/General Science, cont.

9:30–11:30 AM	E–M	406, Marriott	TERC Pathway Session: Didn't We Do Graphs Like That in Math? (p. 116)
9:30–11:30 AM	E–M	407/408, Marriott	FHL Pathway Session: Consider the Evidence—Using Student Journals to Drive Instruction (p. 116)
9:30–11:30 AM	E	411/412, Marriott	EDC Pathway Session: Connecting Science and Literacy: The Role of Explicit Teaching (p. 116)
9:30 AM–12:30 PM	G	414/415, Marriott	BSCS Pathway Session: The BSCS 5E Instructional Model—Constructing Your Own Understanding (p. 116)
9:45–10:45 AM	G	Grand Salon H, Marriott	International Conference Concurrent Sessions (p. 116)
10:00–10:30 AM	C	Commonwealth A, Loews	SCST Session: 21st-Century Learning Skills: Striving to Enhance Student Learning in Science (p. 108)
10:00–10:30 AM	G	Freedom H, Sheraton	Using Real-Time Communication Technology to Connect Students with Real Science Research (p. 110)
10:00–11:15 AM	5–8	108B, Conv. Center	Inquiry and Literacy in Grades 5–8 (p. 118)
10:00–11:15 AM	7–10	109A/B, Conv. Center	Introducing Inquiry Investigations™: Hands-On Inquiry Activities Focusing On Technology (p. 118)
10:00–11:30 AM	7–C	202B, Conv. Center	What's New at Vernier? (p. 118)
10:30 AM–12 Noon	2–5	106A/B, Conv. Center	Innovative Science and Literacy Integration: Seeds of Science/Roots of Reading® (p. 120)
10:45–11:15 AM	G	Grand Salon H, Marriott	International Conference Poster Session (p. 120)
11:00 AM–12:30 PM	G	Blrm. A/B, Conv. Center	General Session: Crittercam: Science Exploration from the Wild (Speaker: Greg Marshall) (p. 124)
11:00 AM–1:00 PM	E	Hall D/15, Conv. Center	NSTA Science Talk: A Tool for Making Meaning (p. 124)
11:15 AM–12:15 PM	G	Grand Salon H, Marriott	International Conference Concurrent Sessions (p. 124)
11:30 AM–1:00 PM	5–12	112A/B, Conv. Center	Layers of Learning with Google Earth: A Free Round-trip Ticket to Anywhere in the World (p. 127)
11:30 AM–1:00 PM	K–8	113B, Conv. Center	What's at the Heart of Science Teaching? Inquiry, Evidence, and Thinking! (p. 128)
11:30 AM–1:00 PM	9–12	304, Conv. Center	Forensic Science for High School: An Inquiry-rich Curriculum (p. 129)
12 Noon–1:15 PM	K–12	109A/B, Conv. Center	Educational Science Lab Design and Implementation for the 21st Century Made Easy (p. 130)
12 Noon–1:30 PM	K–8	202A, Conv. Center	K–8 Science with Vernier (p. 130)
12 Noon–1:30 PM	9–C	202B, Conv. Center	Advanced Instrumentation: Spectroscopy and Gas Chromatography (p. 130)
12:15–1:15 PM	G	Grand Salon H, Marriott	International Conference Luncheon Plenary Session: Assessment: A Key Lever of Change in Science Education (Speaker: Robin Millar) (p. 131)
12:30–12:50 PM	G	Commonwealth A, Loews	SCST Session: Teaching to the Nature of Science Content Standards (p. 135)
12:30–1:00 PM	G	Hall D/7, Conv. Center	Mentoring Science “Un-experts” (p. 131)
12:30–1:00 PM	M–C/S	Regency C1, Loews	Keeping Science Teachers in the Classroom: Professional Development Experiences That Make a Difference (p. 131)
12:30–1:00 PM	C/S	Regency C2, Loews	Increasing the Reflective Practice of Student Teachers with Blogging and Web Conferencing (p. 136)
12:30–1:00 PM	G	306, Marriott	NSTA Press Session: Interpreting Assessment Data: Statistical Techniques (p. 131)
12:30–1:00 PM	M–H	Grand Salon D, Marriott	Hip-Hop in the Science Classroom: Engaging Reluctant Students with High-Interest Strategies (p. 132)
12:30–1:30 PM	G	201C, Conv. Center	Mary C. McCurdy Lecture: Engage the Wonder: Developing Scientific Literacy Using Science Fiction (Speaker: Julie Czerneda) (p. 132)
12:30–1:30 PM	G	307, Conv. Center	NSTA Avenue Session: The State of Science Teacher Education: Updates and Opportunities for Political Advocacy with NSTA and ASTE (p. 133)
12:30–1:30 PM	G	Hall D/5, Conv. Center	SPARK! Bringing STEM Mentors into the Classroom (p. 133)
12:30–1:30 PM	E	Hall D/6, Conv. Center	Aligning Science Curriculum and Assessment to Raise Science Achievement Scores Through a “Train-the-Trainers” Model (p. 141)
12:30–1:30 PM	E	Hall D/11, Conv. Center	Invention Convention: Bringing Together Science, Social Studies, Reading, and Writing in First Grade (p. 134)
12:30–1:30 PM	E	Hall D/14, Conv. Center	Going Fishing for Rainbows: Connecting Content for Diverse Learners (p. 142)
12:30–1:30 PM	E	Hall D/16, Conv. Center	Through the Eyes of Scientists: A Language Arts/Science Series (p. 142)
12:30–1:30 PM	I	Hall D/17, Conv. Center	Nanoparticles: Exciting Activities with Nanotechnology (p. 142)
12:30–1:30 PM	P–M	Hall D/23, Conv. Center	Science Through Song (p. 134)

Schedule at a Glance Integrated/General Science, cont.

12:30–1:30 PM	G	Hall D/27, Conv. Center	From Lab to Life: Making Connections and Making a Difference (p. 134)
12:30–1:30 PM	G	Hall D/28, Conv. Center	Podcasts—Not Just for Kids Anymore! (p. 142)
12:30–1:30 PM	G	Hall D/29, Conv. Center	Using Virtual Inquiry to Bridge the Digital Divide (p. 134)
12:30–1:30 PM	G	Hall D/30, Conv. Center	Reaching and Teaching the Reluctant Science Student (p. 134)
12:30–1:30 PM	M–C	Congress C, Loews	NSELA Session: TNT (Teach North Texas)—Getting a Bang Out of STEM Integration (p. 142)
12:30–1:30 PM	H–C	Regency B, Loews	Nanotechnology Training and Degree Options in Pennsylvania (p. 136)
12:30–1:30 PM	E–H	Washington A, Loews	Taking the “Sigh” Out of Science (p. 136)
12:30–1:30 PM	H	303, Marriott	Experimental Design in High School Science (p. 136)
12:30–1:30 PM	G	Franklin 3, Marriott	Science and Students of Poverty (p. 137)
12:30–1:30 PM	H	Franklin 5, Marriott	Smarter Science in High School: Literacy and Numeracy in Action (p. 143)
12:30–1:30 PM	M–H	Grand Salon K, Marriott	Differentiated Instruction in Science for Students with Special Needs (p. 138)
12:30–1:30 PM	G	Grand Salon L, Marriott	NSTA Press Session: Using the National Science Facilities Standards to Plan and Design Your School Science Labs (p. 144)
12:30–1:30 PM	G	Freedom H, Sheraton	Living and Working at the Bottom of Earth (p. 140)
12:30–1:30 PM	G	Liberty A/B, Sheraton	NMEA Session: Applications of GPS to the Everyday Science Class (p. 144)
12:30–1:30 PM	M–H/I	Logans 2, Sheraton	Fueling the Future: Energy Interconnections and Sustainable Options (p. 144)
12:30–2:00 PM	G	401/402, Marriott	McREL Pathway Session: Instructional Technology and Virtual Manipulatives That Support Student Understanding (p. 145)
12:30–2:30 PM	G	Hall D/1, Conv. Center	ISTE: Wikis for Students and Teachers in Science (p. 145)
12:30–2:30 PM	E–M	406, Marriott	TERC Pathway Session: From Data to Explanation: The Challenges of Investigations in Inclusive Science Classrooms (p. 145)
12:30–3:30 PM	G	410, Marriott	FACET Innovations Pathway Session: What Next? Matching Instructional Actions to Identified Student Needs (p. 145)
1:00–1:30 PM	C/S	Regency C2, Loews	Career Changers Can Be Great Science Teachers (p. 136)
1:00–1:30 PM	G	Tubman, Loews	ASTE Session: Factors Affecting Teacher Implementation of Student-centered Lab Investigations (p. 136)
1:00–2:30 PM	2–5	106A/B, Conv. Center	Innovative Science and Literacy Integration: Seeds of Science/Roots of Reading® (p. 146)
1:00–2:30 PM	K–8	108B, Conv. Center	What’s Going On in There? Inquiry Science for Supervisors, Teacher Trainers, and Teachers (p. 146)
1:15–1:45 PM	G	Grand Salon H, Marriott	International Conference Panel Discussion (p. 147)
1:30–3:00 PM	6–8	103C, Conv. Center	Hands-On Integrated Science Activities for Middle School (p. 147)
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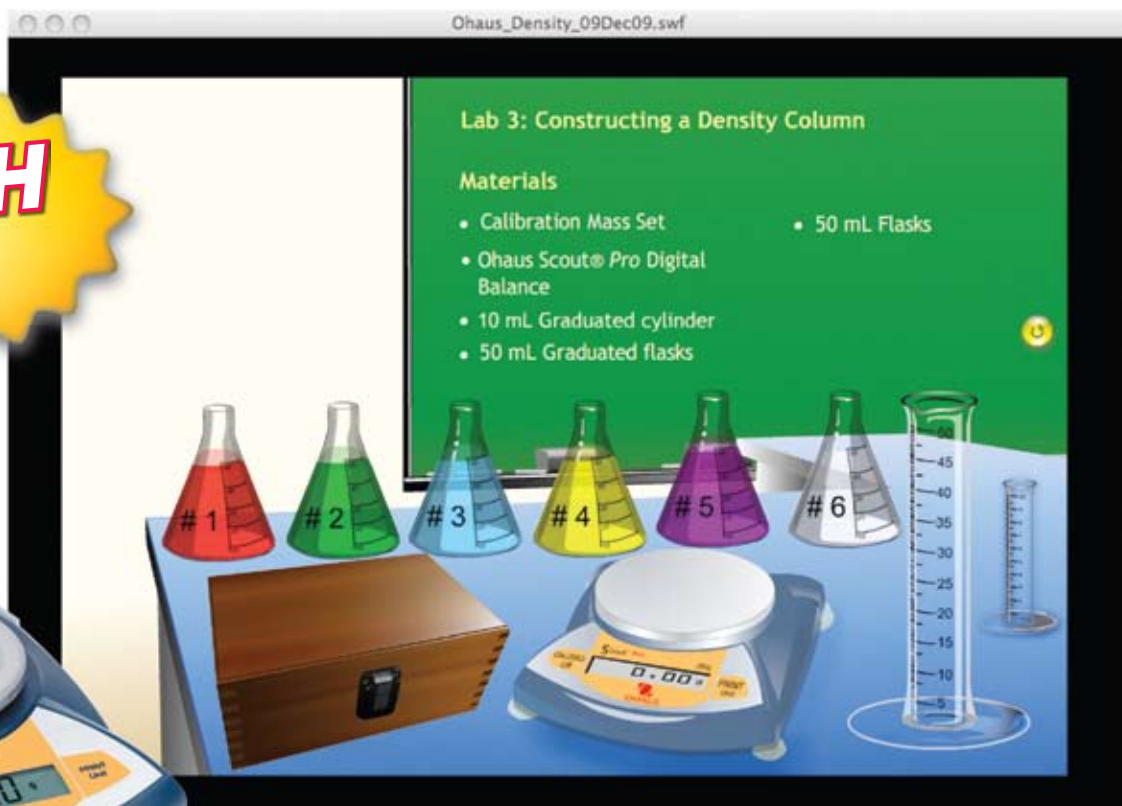




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