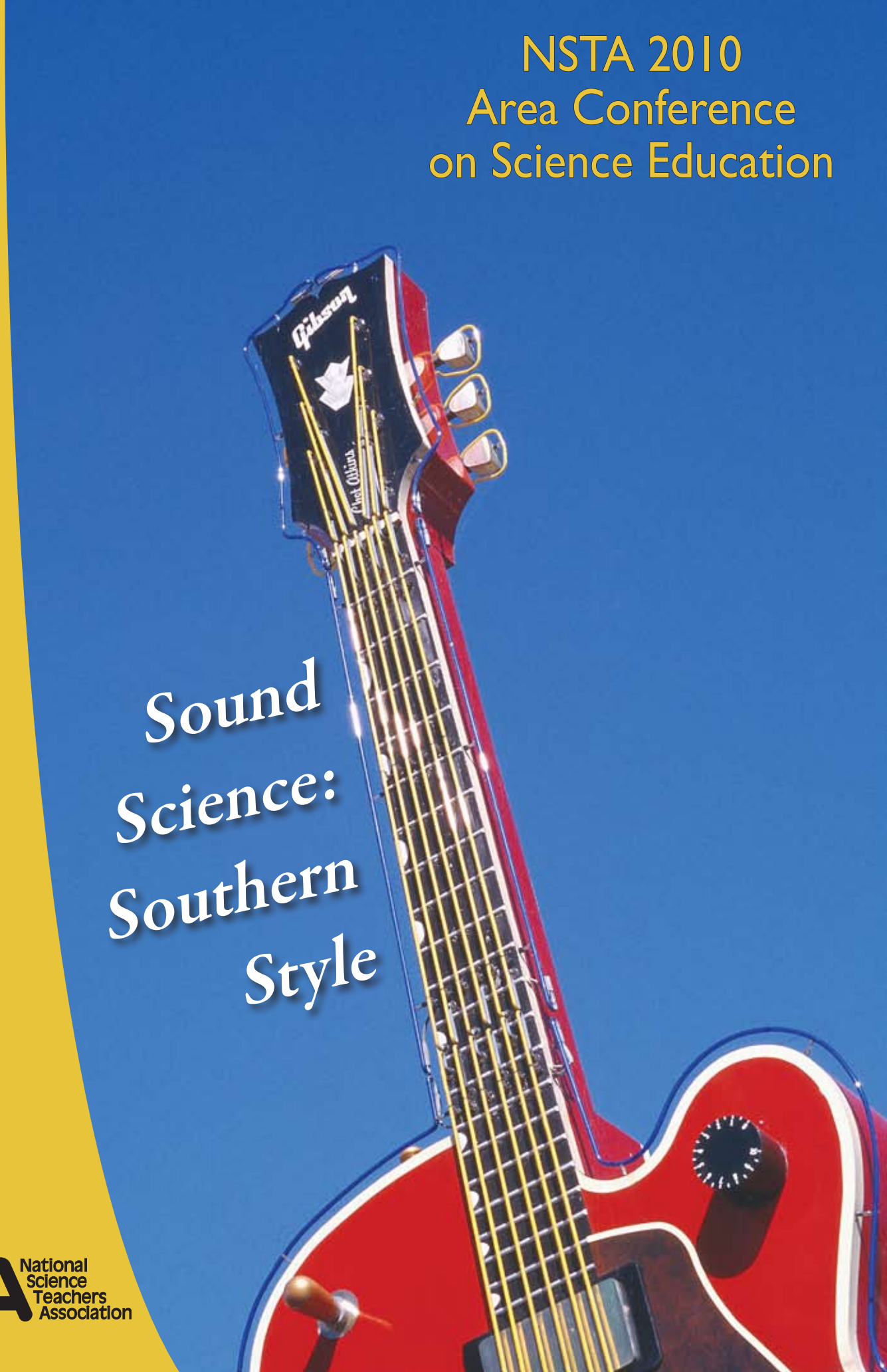
NASHVILLE

NSTA 2010 Area Conference on Science Education



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FRIDAY • December 3 • Room Bayou A	
8:00 – 9:30 A.M.	K-8 SCIENCE WITH VERNIER
10:00 – 11:30 A.M.	DEVELOPING 21ST-CENTURY MINDS WITH VERNIER
12:00 – 1:30 P.M.	DEVELOPING 21ST-CENTURY MINDS WITH VERNIER
2:00 – 3:30 P.M.	DEVELOPING 21ST-CENTURY MINDS WITH VERNIER

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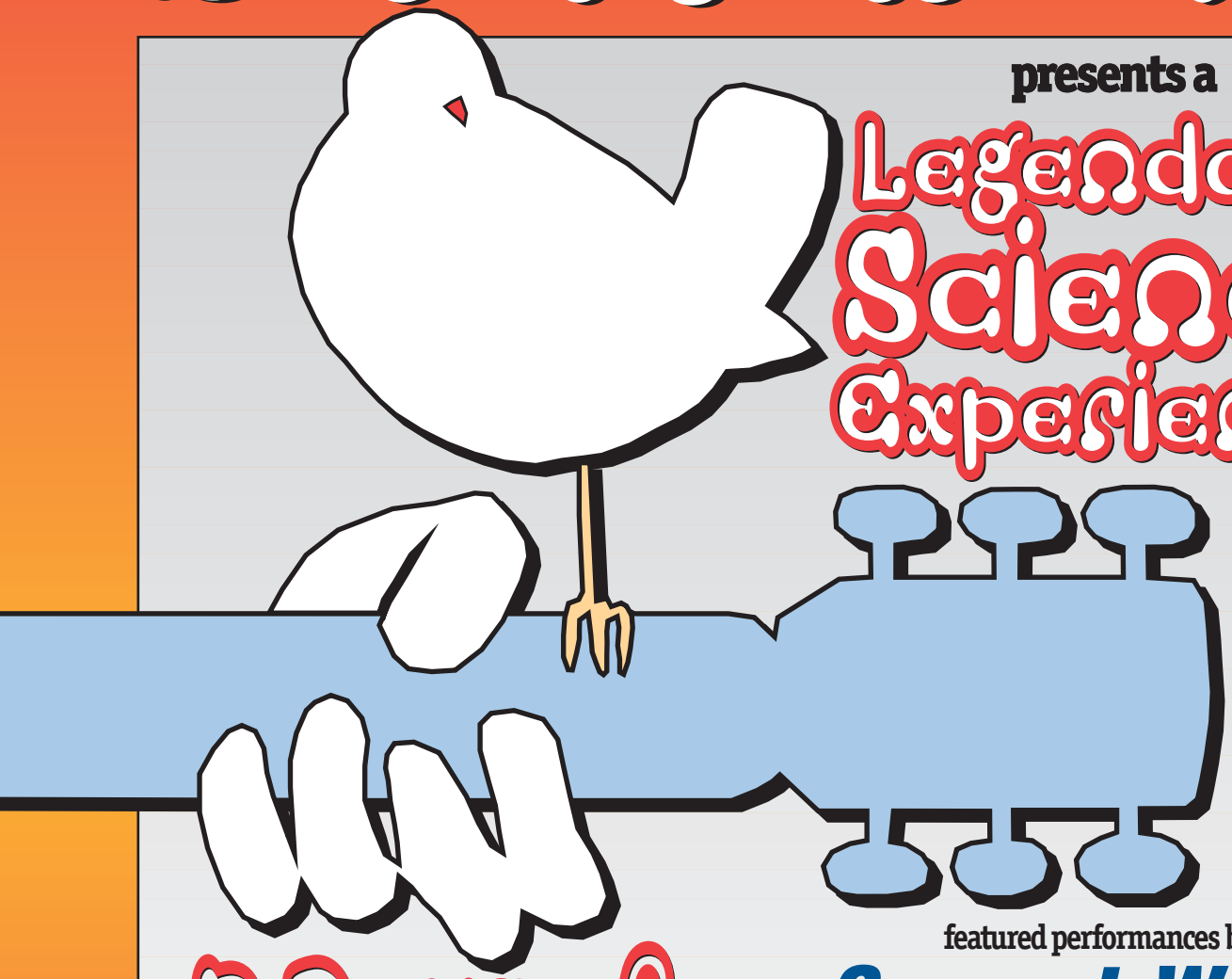

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NSTA 2010 Area Conference on Science Education

Nashville, Tennessee • December 2–4, 2010

Registration, Travel, and Hotels

Conference Resources

Conference Resources, cont.

Conference Program

Indexes

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

Cover Photo
Photo courtesy of PCL/Alamy

NSTA Affiliates

Association for Multicultural Science Education (AMSE)
Association for Science Teacher Education (ASTE)
Association of Science-Technology Centers (ASTC)
Council for Elementary Science International (CESI)
Council of State Science Supervisors (CSSS)
National Association for Research in Science Teaching (NARST)
National Middle Level Science Teachers Association (NMLSTA)
National Science Education Leadership Association (NSELA)
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Welcome to Nashville


Ruth Woodall


Diane Vaughn


Donna Daly

Welcome to Nashville and "Sound Science: Southern Style." We are thrilled that you could join us for the reopening of the Gaylord Opryland along with more than 400 presenters and workshop leaders from all over the United States.

You will be energized by the featured speakers and the sessions in the three strands that have been carefully selected. Additionally, numerous exhibits, field trips, and networking opportunities will be available at this conference.

Jeff Lieberman, our keynote speaker, and other renowned speakers who are experts in their fields will address selected topics related to the conference strands:

- *Building Capacity to Lead Professional Learning*: Diana Nunnaley, featured speaker
- *The Brain-considerate Classroom*: Kenneth Wesson, featured speaker
- *Understanding a Designed World*: Wilfred M. Post, featured speaker

This is an exciting time to be in Nashville. Experience the beauty of the Gaylord Opryland at Christmastime, the Grand Ole Opry, shopping, Southern-style hospitality, the sounds of Nashville in a variety of conference venues, and the best science professional development in the United States.

We are excited about being your hosts and welcome you to Nashville.

2010 Nashville Conference Committee Leaders
Ruth Woodall, Diane Vaughn, and Donna Daly

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

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Nashville Conference Committee

Program Committee

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Becky Ashe
Knox County Schools
Knoxville, TN

Gloria Ramsey
Educational Consultant
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Strand Leader: The Brain-considerate Classroom
Lindsay Talarico
Collierville Middle School
Collierville, TN

Strand Leader: Understanding a Designed World
Barry Farris
Columbia Academy
Columbia, TN

District VI Representative
Gregory MacDougall
South Carolina Dept. of Education
Aiken, SC

Conference Advisory Board Representative
Page Keeley
Maine Mathematics and Science Alliance
Augusta, ME

Local Arrangements Committee

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Hendersonville, TN

Guides Manager
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Manager of Services for People with Disabilities
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Jacksboro Middle School
Jacksboro, TN

Volunteers Manager
Jamie Phifer Schimenti
Meigs Magnet School
Nashville, TN

NSTA Membership

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Members enjoy the best teaching resources, plus online and face-to-face professional development to build skills and improve performance.

- Award winning journals, grade-specific and filled with teaching strategies.
- National and regional conferences for the best face-to-face, hands-on learning across the nation—institutes, symposia, workshops, and presentations.
- 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

NSTA National Science Teachers Association

President's Welcome

More Than Just Learning—Imagine, Invent, and Create Great Science Education!

Welcome to the Nashville Area Conference on Science Education. I believe your experiences here will immerse you in the passion of my presidential theme: *Imagine and Invent: Create a Great Future*. Imagine your involvement in learning new and exciting approaches to teaching. Invent ways to adapt the treasures you will find in our exhibit hall, workshops, and in sharing with colleagues at social events. Create a better world of science education for yourself and your students. In these tough times, it can be tempting to be discouraged, but we have fashioned a program that will rekindle your spirit and send you back to your workplace refreshed and eager to innovate.

Our overall conference theme—Sound Science: Southern Style—reflects our focus on how science can positively prepare for a seemingly scary tomorrow. Science provides the motivation, activating attitudes, dependable skills, and essential understandings for coping with problems, new challenges, and career development. In the future, every person will need to apply at least some of the skills of science.

Three strands of highly engaging sessions bolster our theme.

• *Building Capacity to Lead Professional Learning*. Find new ways to make professional development highly useful for teachers. Help fellow teachers harness high-tech means to collect and analyze data. Inspire teachers to greatness! Check out Diana Nunnaley's presentation, "Responding to Imperatives—Good Teachers Moving to GREAT!"

• *The Brain-considerate Classroom*. Learn to avoid the too-common pitfall—shallow and superficial "learning" of science concepts. Many sessions will provide tools from cognitive science for intellectually enmeshing students in truly deep understandings. You especially need to attend Kenneth Wesson's session: "Brain-considerate Learning: How the Human Brain Learns Best."

• *Understanding a Designed World*. Innovation is not just for inventors and artists—everyone needs to innovate in many ways to cope with life's problems. Science, with its inherent problem-solving processes, provides what is needed to cope with "real-world" complexities. Many sessions will equip you with skills and new discoveries from cognitive sciences your students can adapt to unleash dormant creative brain power. Be sure to catch Jeff Lieberman's general session: "Cultivating Curiosity."

Join us—imagine, invent, and create superb science education for all! I look forward to innovating with you.

Alan J. McCormack
2010–2011 NSTA President

Contributors to the Nashville Conference

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

American Association of Physics Teachers and the Kentucky and Tennessee Sections of AAPT

American Chemical Society

American Chemical Society, Education Division

Carolina Biological Supply Co.

It's About Time Publishing

Kendall Hunt Publishing Co.

National Association of Biology Teachers (NABT)

Sargent-Welch ~ Science Kit ~ WARD'S Natural Science

Tennessee Science Teachers Association (TSTA)

Special thanks to the *Journal of Chemical Education* for providing the e-mail stations for this conference.

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

Message from The Honorable Phil Bredesen, Governor of Tennessee

Dear Friends,

On behalf of the great State of Tennessee, I am pleased to extend a warm welcome to the participants and guests of the National Science Teachers Association Nashville Area Conference on December 2–4, 2010.

I hope this time provides you with ample opportunity to meet with friends and colleagues while making new acquaintances.

May you find encouragement as you listen to speakers, participate in sessions, and interact with others in the field. You are all performing an invaluable service to our state, and I would like to personally thank you for your service. If you have the chance, take time to enjoy Nashville and all it has to offer.

I sincerely hope you will accept this welcome, and I wish all participants and guests a great success.

Warmest regards,
Phil Bredesen
Governor of Tennessee

Message from The Honorable Karl F. Dean, Mayor of Nashville

Dear Friends,

I am happy to welcome you to our great city as you come together for the National Science Teachers Association's Nashville Area Conference on Science Education. We are pleased that you chose Nashville to host such an important gathering.

While in the Music City, I encourage you to visit our city's many landmarks such as the Frist Center for the Visual Arts, the Country Music Hall of Fame and Museum, and historical sites such as the Hermitage (home of President Andrew Jackson), Fort Nashborough, and Fort Negley.

In addition, please consider visiting the Parthenon, one of our most beloved icons, located in beautiful Centennial Park.

It is my sincere wish that your visit is a great success. I am certain that you will witness firsthand the Southern hospitality and friendliness that our city is famous for.

Thank you for choosing Nashville. We hope to see you back in years to come.

Regards,
Karl F. Dean
Mayor of Nashville

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 the NSTA 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.

Eco-friendly Exhibition Practices

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

Green Initiatives at the Gaylord Opryland Resort & Convention Center

The Gaylord Opryland Resort & Convention Center is committed to reducing the environmental impact of operations and services by providing the following:

- **Atrium Maintenance.** The horticultural pest control team for the garden atriums uses the most environmentally friendly options available. For example, the team uses biorational pesticides instead of chemically engineered ones—some derived from trees or fungi, others with ingredients such as fatty soaps and vegetable oils.
- **Waste Reduction/Recycling.** Nearly 275 tons of cardboard were recycled in 2007, using on-site bailers and compactors. Office paper recycling comprises another 75 tons annually. In 2007, 1,760 gallons of motor oil were recycled.
- **Green Awards.** In 2008, Opryland was awarded Good Earth Keeping Awards from both the Tennessee Hotel & Lodging Association and the Greater Nashville Hotel & Lodging Association. The hotel also earned an Environ-Management Award in 2006 from the American Hotel & Lodging Association.
- **Water Consumption.** Opryland has decreased its reliance on city water by 1.2 million gallons using a well-water filtration system for nonconsumption uses, including laundry, irrigation, power house boilers, cooling towers, and the man-made, indoor Delta River. Low-flow toilets, faucets, and showerheads have been installed in every guest room and suite. In the hotel laundry facility, tunnel washers recycle clean water as long as it is reusable.
- **Energy.** Opryland produces an impressive 35% of its own energy at an on-site energy center called the "Power House." The energy from this Power House provides steam, chilled water, and electricity to the complex, using a process called "co-generation," in which clean-burning natural gas is used to produce electricity and steam.

Recycled Paper and Sustainable Print Services

The conference program is printed on recycled paper. In addition, our printer, Goodway Graphics, is FSC certified and offers a variety of recycled and post-consumer recycled products. Goodway Graphics receives energy credits from Dominion Virginia Power and recycles wherever possible. Goodway also uses soy-based inks, and, whenever possible, low-VOC chemicals.

"Go Green" at the Nashville Conference!

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

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Friday • December 3 • Workshop Room Bayou E

Visit Booth 610

8:00 - 9:00 A.M.	Discovery-based Physics with SPARKscience Science: Harmonic Motion
9:30 - 10:30 A.M.	Discovery-based Biology with SPARKscience: Measuring Reaction Time to a Visual Stimulus, a Guided Inquiry Approach
11:00 - 12:00 P.M.	Discovery-based Chemistry with SPARKscience: Chemical Reactions
1:00 - 2:00 P.M.	Discovery-based Middle School Science: Sally Ride Science & SPARKscience
2:30 - 4:00 P.M.	Renewable Energy Exploration – Solar, Wind, and Hydrogen Fuel Cells

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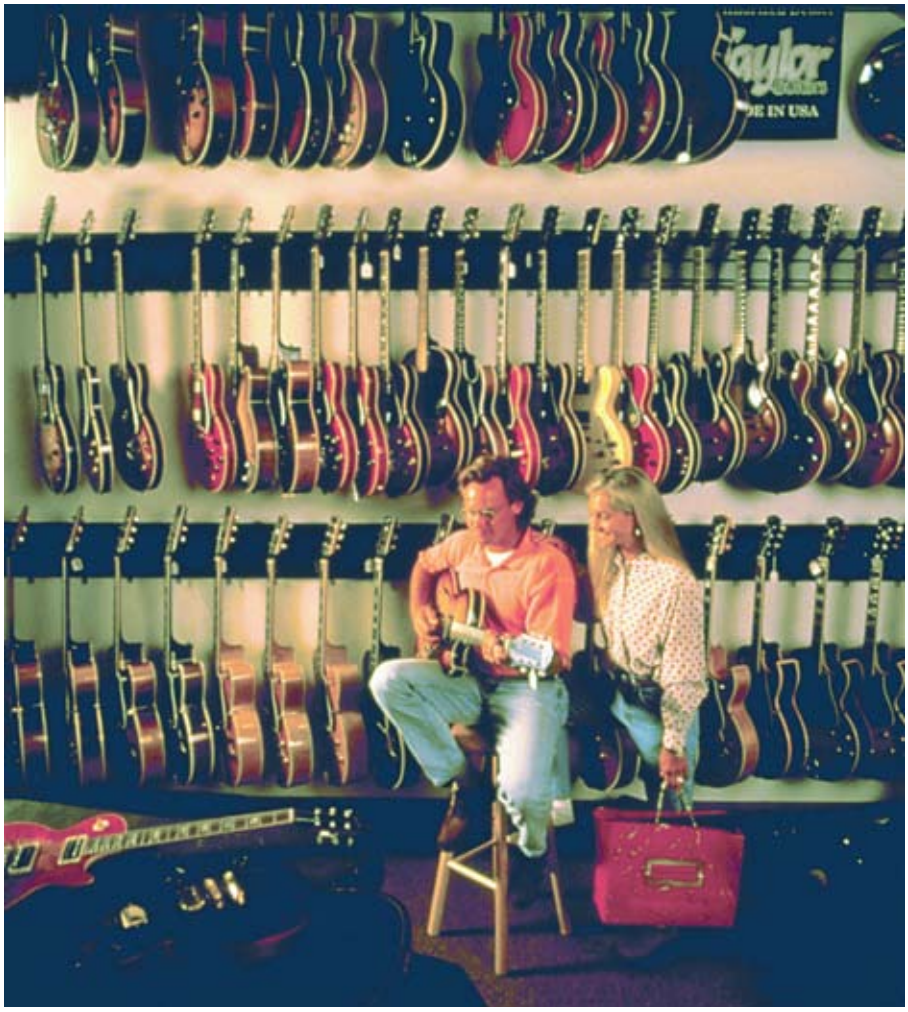


—Nashville Convention &Visitors Bureau

Meeting Location and Times

The conference hotel is the Gaylord Opryland Resort & Convention Center. Conference registration, the exhibits, the NSTA Exhibit Booth, the NSTA Science Bookstore, and all sessions will be located at the Gaylord Opryland. The conference will begin on Thursday, December 2, at 8:00 AM, and end on Saturday, December 4, at 12 Noon.

Registration

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

The NSTA Registration Area located in Ryman Exhibit Hall C2 will be open during the following hours:

Wed., Dec. 1	5:00–7:00 PM
Thu., Dec. 2	7:00 AM–5:00 PM
Fri., Dec. 3	7:00 AM–5:00 PM
Sat., Dec. 4	7:30 AM–12 Noon

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

Purchasing Ticketed Events

The Nashville Planning Committee has scheduled a variety of ticketed events. Each of these events requires a separate fee and ticket. You may purchase tickets for these events, space permitting, in the NSTA Registration Area. See the Conference Program section (starting on page 22) for details. Note that some events may have required advance registration.

Airlines

The toll-free numbers to contact NSTA-designated airlines are as follows:

AirTran	866-683-8368	NSTA10*
American	800-433-1790	5210TT
Continental	800-468-7022	C7XLNFS and Z Code ZGE4
United	800-521-4041	510CK

**For phone reservations only*

Ground Transportation to/from Airport

Gaylord Opryland offers daily round-trip shuttle service from the airport to the hotel. Visit the Gaylord Opryland Welcome Desk on the lower level of the airport to purchase a ticket ($30 one way, $40 round-trip). Or, if you prefer, you can take a taxi to the Gaylord Opryland for a flat fee of $25.

Getting Around Town/Parking

Gaylord Opryland offers guests rides to Gaylord Springs Golf Links and to the Grand Ole Opry.

Standard parking is available at Gaylord Opryland for $18/day, and valet parking is $25/day.

Discounted Rental Cars

The toll-free numbers to contact NSTA-designated car rental companies are as follows:

Enterprise	800-593-0505	32H7476
Hertz	800-433-1790	CV#031C0015

Don't forget to visit the newly redesigned NSTA Science Bookstore. We offer a wide range of books as well as "Science Matters" and "I Love Science" NSTA Gear product lines.

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 starts on page 111. A foldout map of the Exhibit Hall floor plan is available at Program Pickup.

Exhibit Hall Hours. Located at Gaylord Opryland, exhibits will be open for viewing during the following hours:

Thu. Dec. 2	11:00 AM–5:00 PM
Fri. Dec. 3	9:00 AM–5:00 PM
Sat. Dec. 4	9:00 AM–12 Noon

Ribbon Cutting. An opening ceremony is scheduled on Thursday at 11:00 AM at Ryman Exhibit Hall C2.

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 booths. With the leads retrieval system, an exhibitor scans your badge as you visit the booth. This allows exhibitors to send information to you while the conference is still fresh in your mind.

Exhibitor Workshops. Exhibitor-sponsored workshops for science teachers are offered throughout the conference. These workshops give you an opportunity to use a variety of commercial instructional materials. Attendance is on a first-come, first-served basis. See page 124 for a complete listing of exhibitor workshops.

NSTA Avenue

Stop by 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 page 119 for a complete list of NSTA services and programs.

NSTA Science Bookstore

Attendees are invited to browse the newly redesigned NSTA Science Bookstore, where you're sure to find hundreds of professional development titles for science educators of all grade bands and disciplines. Not only do we offer a wide range of books to sharpen your content knowledge and expand your teaching strategies, we also offer dozens of wonderful "Science Matters" and "I Love Science" NSTA Gear product lines.

Examine our new fall titles: *Developing Visual Literacy in Science K–8; Predict, Observe, Explain: Activities Enhancing Scientific Understanding;* Rodger Bybee's *The Teaching of Science: 21st-Century Perspectives;* and many more. Meet NSTA Press® authors and have your books signed.

The Science Bookstore is located in the NSTA Registration Area. All attendees enjoy discounts of 20% on NSTA Press items and 10% on books from other publishers. Enjoy our free shipping option when you place your order online for both books and gear.

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.

TSTA Booth

The Tennessee Science Teachers Association booth is located in the NSTA Registration Area. All TSTA members should stop by and vote for state elections—everyone who votes gets a conference souvenir. Visit us for information about Tennessee and the benefits of becoming a member of TSTA. Membership forms and information on association activities will be available. Update your information, renew your membership, or become a member and enter in our drawing for prizes. Find out what is happening in science education in Tennessee!

Presenters and Presiders Check-In

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

Conference Evaluation

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

Lost and Found

All lost-and-found items will be turned in to staff at Exhibitor Registration during the conference and will be turned over to Gaylord Opryland's Lost and Found after the conference. Opryland's Lost and Found is located in the Cascades section, close to the C1 elevator on the main level. They can be contacted by calling Security (dial 5555 from a guest room phone or 615-458-5555 from a cell phone).

First Aid Services

The First Aid room is located in the Magnolia South section (level one) of Gaylord Opryland. For assistance, call Security (dial 5555 from a guest room phone or 615-458-5555 from a cell phone).

Audiovisual Needs

NSTA will fulfill AV needs originally requested on the program proposals as long as the request is within the limits of equipment that NSTA provides. For any last-minute AV needs, presenters must arrange and pay for their own equipment. Audiovisual services will be located in the following room:

- Washington A, Opryland

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.

Business Services

The full-service IKON Business Center is centrally located adjacent to the Presidential Ballroom in the Convention Center. The center is open every day from 7:00 AM to 9:00 PM. Internet access and self-service printing and copying are available 24 hours a day.

NEW! Online Session Evaluations and Tracking Professional Development

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

Help NSTA's **GREEN** efforts by completing session evaluations online December 2–23, 2010, at *www.nsta.org/evaluations.* Online session evaluations can be completed on the computers at the Presenters/Presiders booth in the Registration Area or on the e-mail stations in both the Exhibit Hall and the Registration Area. Attendees should follow these steps:

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

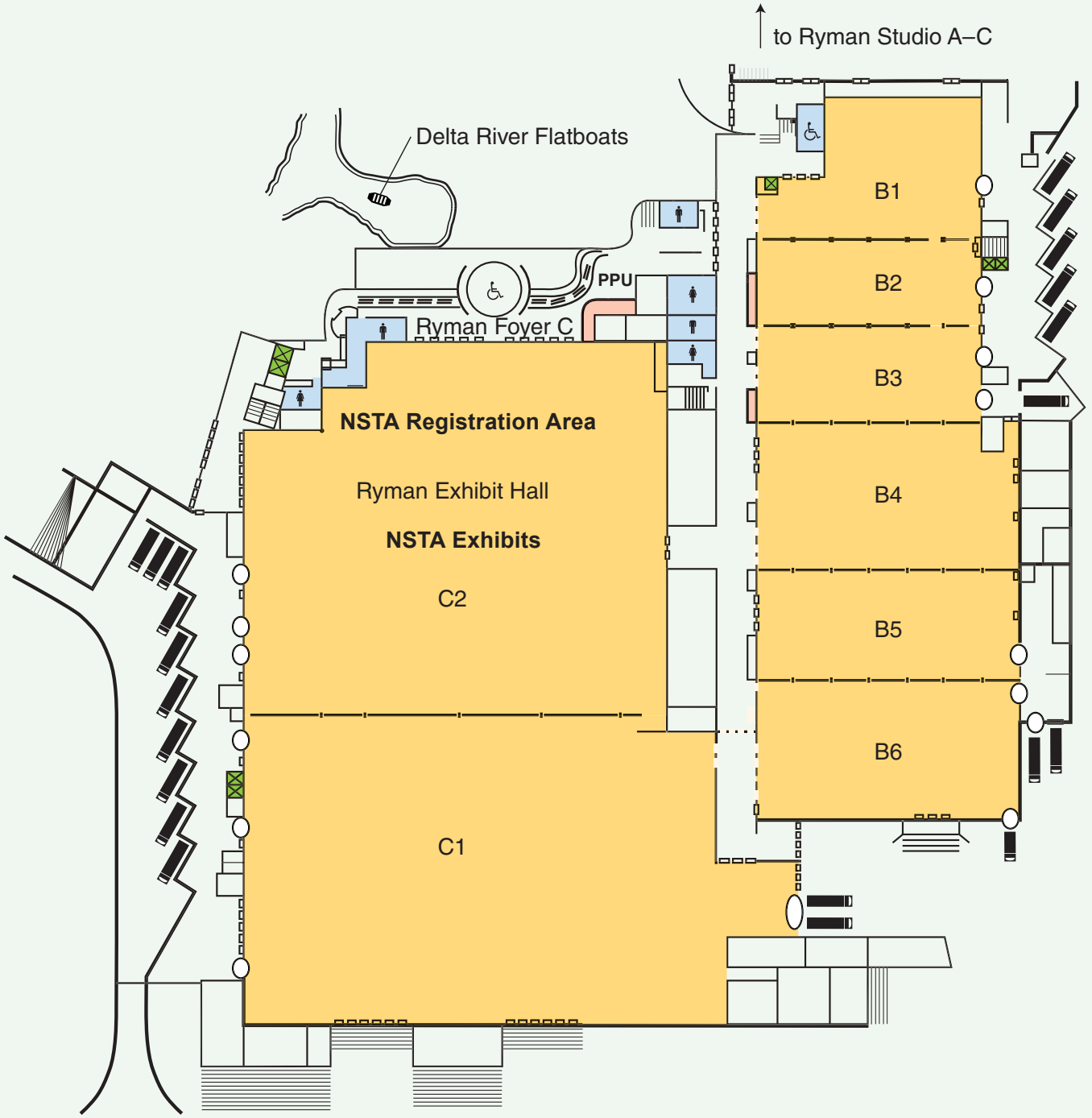
Concurrent session presenters may also complete evaluation forms for their own sessions in order to track professional development credit.

A Professional Development Documentation Form is included following page 40 to help attendees keep track of sessions/events attended that are NOT available for online session evaluation. This form can also be used to take notes on sessions attended that are available for online session evaluation.

Beginning January 6, 2011, an attendee can visit *www.nsta.org/transcripts* to access a transcript of his or her attendance at specific sessions and to document credit for activities 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 or her own attendance at such events. The transcript can be printed here and presented to an administrator who requires documentation of participation in the conference. All information in these transcripts will be maintained (and can be accessed) indefinitely as part of an attendee's individual profile.

Gaylord Opryland Resort & Convention Center

Level 0 (Exhibit Hall)

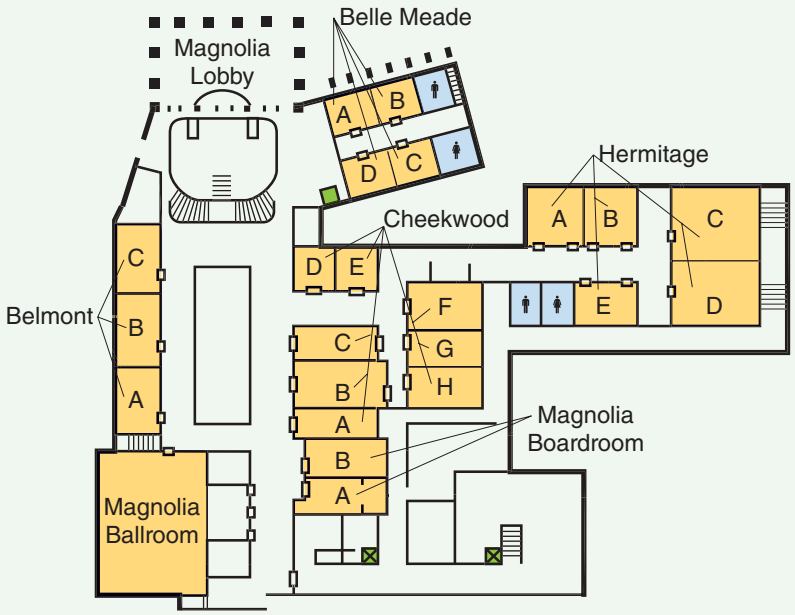


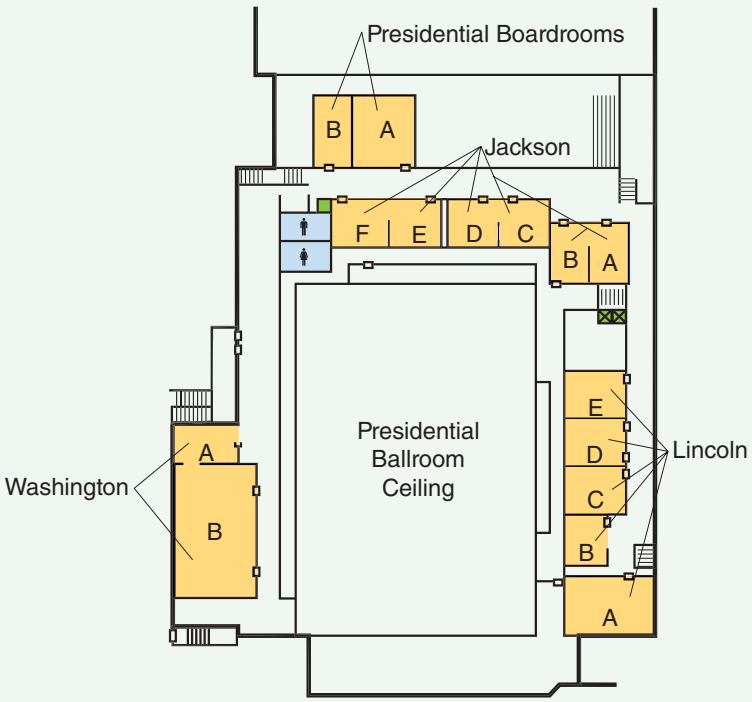
Gaylord Opryland Resort & Convention Center

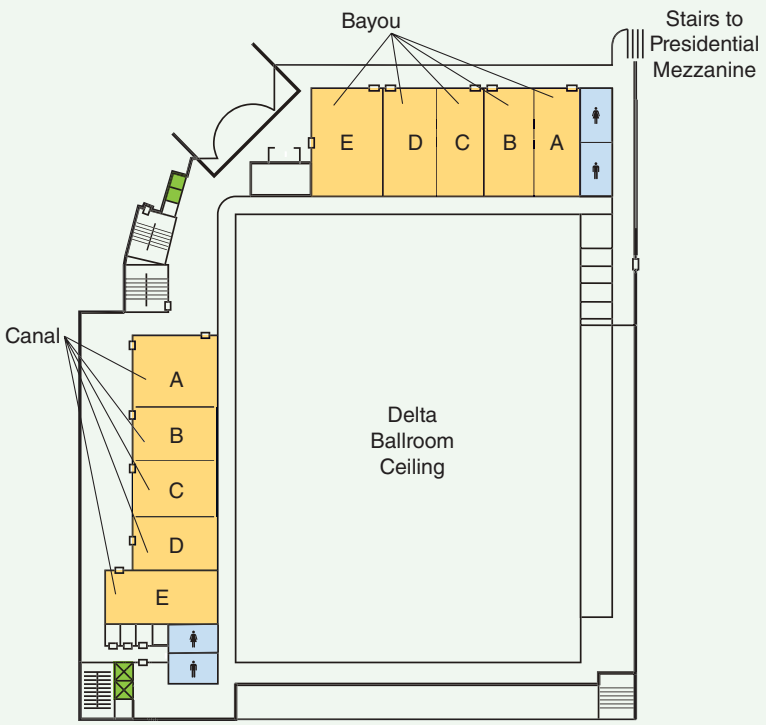
Level 2

Gaylord Opryland Resort & Convention Center

Level M







Visit the New and Improved
Science Bookstore

Enjoy all of these and more:

- Award-winning PD books filled with best practices, science content, teaching tips, and lesson plans.
- New books hot off the press: *Hop Into Action; Predict, Observe, Explain;* and *Developing Visual Literacy in Science, K–8,* to name a few.
- Plus *Picture-Perfect Science Lessons, Expanded 2nd Edition,* along with Class Packs containing all the materials necessary to conduct each lesson.
- T-shirts, polos, totes, mugs, pens, and other science gifts to take back to your classroom.
- One-on-one book signings with your favorite authors.
- 20% off all NSTA Press titles for all attendees.

Pick up the new Fall NSTA catalog!

Store Hours

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

Visit *www.nsta.org/store* to make a purchase today, or call 1-800-277-5300.

NSTA National Science Teachers Association

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Francis Q. Eberle, Executive Director

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NSTA Mission Statement

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

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All cities are subject to change pending final negotiation.

National Conferences on Science Education

San Francisco, California
March 10–13, 2011

Indianapolis, Indiana
March 29–April 1, 2012

San Antonio, Texas
April 11–14, 2013

2011 Area Conferences on Science Education

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 an NSTA conference

INVOLVED!

2011 Area Conferences on Science Education
Deadline: January 15, 2011

Hartford, Connecticut
October 27–29, 2011

New Orleans, Louisiana
November 10–12, 2011

Seattle, Washington
December 8–10, 2011

2012 National Conference on Science Education
Deadline: April 15, 2011

Indianapolis, Indiana
March 29–April 1, 2012

NSTA National Science Teachers Association

2011 National Conference on Science Education

Your International Gateway to STEM Education

San Francisco, CA • March 10–13, 2011

Celebrating the Joy of Science: Imagine and Create

Professional Development Strands:

- Embracing Technology in the 21st Century Classroom
- Accessing Language Through Science and Mathematics Content
- Exploring Earth, Wind, and Fire
- Building Scientific Minds: Inspiring Teaching and Effective Learning

Featured Speakers:

- Safety expert, **Dr. Ken Roy,** will discuss How to Cure Safety Stress and Legal Sweats.
- **Art Sussman,** author and star of *Dr. Art's Planet Earth Show* will provide an entertaining way to teach and learn key principles that explain how our planet works.

Register by January 14 and save!

Professional Development Institutes

Pre-conference (Wed. March 9), full day, comprehensive learning sessions on the most critical issues in education. Formatted for both small and full-group work and discussion, topics include ELL, Formative Assessment, Inquiry-based Classroom, Designing Effective Science Instruction and more. Most include follow-on Pathway sessions for deeper understanding.

Visit *www.nsta.org* for information or to register.

NSTA National Science Teachers Association

Is This Your First NSTA Conference?

Yes, you say? Then you are invited to attend a special session on Thursday, 8:00–9:00 AM. Learn how you can gain the most from your conference experience and have fun doing it! See page 41 for details.

Ribbon-Cutting Ceremony

An opening ceremony is scheduled on Thursday at 11:00 AM at the entrance to the NSTA exhibits at Ryman Exhibit Hall C2. See page 46.

Thursday, December 2

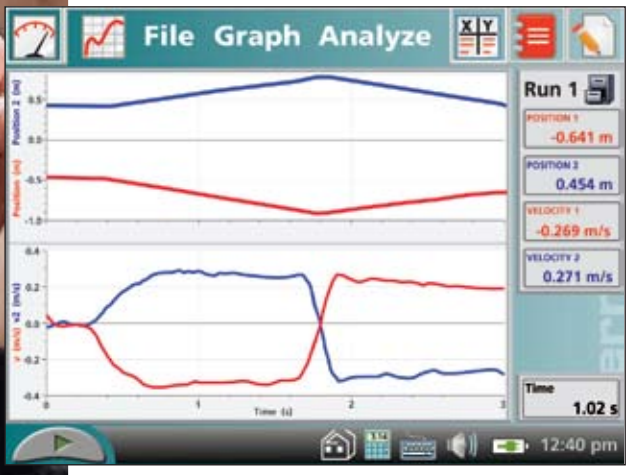
Friday, December 3

Saturday, December 4

Remember the first time you fell in love with science?

We do. It is the reason we believe in hands-on scientific technology. It engages students in a meaningful way, develops keen analytical skills, and awakens a love for discovery.

Stop by **booth 409**, or attend one of our FREE hands-on workshops. Enter the drawing to Win a FREE Vernier LabQuest.



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

Building Capacity to Lead Professional Learning

In recent years school systems have found the need to develop new structures to engage educators in order to disseminate knowledge throughout their workforce. This strand provides understanding, strategies, models, and tools to build and expand the efficacy of collaborative learning and in the process achieve higher student outcomes.

The Brain-considerate Classroom

How does the brain work in learning? How does my brain work? More importantly, how do my students' brains work? This strand will provide research, tools, and strategies to help participants more clearly comprehend the ways in which we all learn and assist them in creating a brain-considerate classroom.

Understanding a Designed World

We live in a world shaped by human creativity and actions. Our future depends on our understanding of the interplay between the designed and the natural worlds. This strand will address the abilities and understandings of science and technology in our increasingly changing world.

Building Capacity to Lead Professional Learning

Thursday, December 2

2:00–3:00 PM
Featured Presentation: Responding to Imperatives—Good Teachers Moving to GREAT!
(Speaker: Diana Nunnaley)

Friday, December 3

9:30–10:30 AM
Science with a Cultural Twist

11:00 AM–12 Noon
Professional Learning Communities: Setting the Stage for Sustainability

2:00–3:00 PM
Organically Nurturing Professional Learning: A "Fresh Start" Campus

Saturday, December 4

8:00–9:00 AM
Lesson Study: Unfolding the Nature of Science for Students and Novice Teachers

The Brain-considerate Classroom

Thursday, December 2

8:00–9:00 AM
Neuroscience 101: Applying Neuroscience Research in and out of the Classroom

12:30–1:30 PM
Get SIMulated!

Science Trifecta: Effectively Combining Picture Books, Foldables®, and Science Curriculum Standards

2:00–3:00 PM
Biology We Can't Control and Classrooms We Can

5:00–6:00 PM
Teaching an Integrated Unit on the Ocean

Friday, December 3

8:00–9:00 AM
Cross-curricular Instruction to Engage Students and Improve Performance

9:30–10:30 AM
Scaffolded Inquiry: A Brain-based Model

11:00 AM–12 Noon
FIRE Up the Classroom: Teaching and Assessment Using the FIRE Critical-thinking Model

12:30–1:30 PM
Differentiation in the Secondary Science Classroom

1:00–4:00 PM
SC-5: Enriching High School Chemistry and Biology Teaching Through POGIL
(Tickets required: $24)

2:00–3:00 PM
Featured Presentation: Brain-considerate Learning: How the Human Brain Learns Best
(Speaker: Kenneth Wesson)

2:00–3:00 PM
Boosting Higher-Level Thinking in K–6 Science Assessments

3:30–4:30 PM
Teaching Chemistry in a 21st-Century Urban Classroom

5:00–6:00 PM
Creating K–6 Classrooms That Embrace Science Inquiry: Helping Students Think and Work Like Scientists

Saturday, December 4

8:00–9:00 AM
Square Pegs: Science for Those "Other" Kids

11:00–11:30 AM
Eat It! Edible Science Labs

Understanding a Designed World

Thursday, December 2

8:00–9:00 AM
STEM in Action—Do It the Technology Way

12:30–1:30 PM
Leveraging STEM Resources Through GRITS

1:00–4:00 PM
SC-2: Renewable Energy
(Tickets required: $21)

2:00–3:00 PM
Alternative Energy Sources: Inquiry-based Life Science Activities

3:30–4:30 PM
Just Add Humans! Helping Students Understand How Design and Development Choices Affect the Planet

Friday, December 3

8:00–9:00 AM
Designing Your Own STEM-based Curriculum

8:30 AM–12:30 PM
SC-3: A Solid Science Background for Designing a New Tomorrow
(Tickets required: $46)

9:30–10:30 AM
Featured Presentation: Global Environmental Impact of Fossil Fuel Burning
(Speaker: Wilfred M. Post)

11:00 AM–12 Noon
Making Lemonade: Using Construction as Curriculum

12:30–1:30 PM
Electricity and Electric Circuits for the Elementary Grades

2:00–3:00 PM
Teaching Energy Conservation with an Emphasis on Biofuels

3:30–4:30 PM
Using Children's Literature as a Springboard to Creating Inventions

Saturday, December 4

8:00–9:00 AM
Seeing the Designed World in Hollywood Films

9:30–10:30 AM
From Tree to Chair, From Mud to Brick

It Takes ESP to Find Exemplary Science Programs!

NSTA Exemplary Science Program (ESP)

Meeting the Reform Features from the National Science Education Standards

Friday, December 3 • Presidential Boardroom A, Opryland

The NSTA Exemplary Science Program (ESP) was initiated to highlight programs that have been proven to produce superior student learning. Under the guidance of Robert E. Yager, 1982–1983 NSTA president, five monographs have been produced thus far—PreK–4, 5–8, 9–12, informal education, and best practices in professional development—each detailing exemplary programs selected by a national advisory board of National Science Education Standards and NSTA leaders.

9:30–11:30 AM Symposium I *(page 76)*

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

Coordinators: Robert E. Yager, University of Iowa, Iowa City, and Brenda Wojnowski, Wojnowski and Associates, Inc., Dallas, Tex.

From Wyoming to Florida They Ask, "Why Wasn't I Taught This Way?" (from ESP #6)

Knowledge and Wonder (from ESP #5)

Developing Expertise in Project-based Science (from ESP #7)

2:00–3:00 PM Symposium II *(page 88)*

Eight Facets of Science "Content" Recommended by the National Standards: How to Teach and Assess Learning in All Eight

Coordinators: Robert E. Yager, University of Iowa, Iowa City, and Brenda Wojnowski, Wojnowski and Associates, Inc., Dallas, Tex.

Biomedical Engineering and Your High School Science Classroom (from ESP #3)

"Shouldn't We Be Doing Science?" (from ESP #6)

3:30–4:30 PM Symposium III *(page 94)*

Realizing Goals Two and Three of the NSES

Coordinators: Robert E. Yager, University of Iowa, Iowa City, and Bonnie Brunkhorst, California State University, San Bernardino

Sowing the Seeds of Future Success (from ESP #6)

Developing Inquiry Skills Along a Teacher Professional Continuum (from ESP #6)

"Who Ate Our Corn?" (from ESP #7)

ACS Chemistry for Life™

Chemistry Day

Chemical Bonding and Its Consequences

For Grades 9–12

Friday, December 3, 8:00 AM–4:30 PM

Hermitage C, Opryland

Sponsored by the American Chemical Society, Education Division

Engage in activities, discussion, analyses, and assessment that help understanding of the chemical bond and how it is responsible for the properties of matter. Education research indicates a positive correlation between teacher content knowledge and student learning. The goals of this workshop are to enhance and enrich secondary chemistry teachers' knowledge of chemical bonding and its effects on the properties of matter and to engage teachers in activities, discussion, and analyses that demonstrate how lessons on chemical bond properties can be presented in a way that stimulates student thinking and prompts exploration of the complexity of the concepts in advanced and honors level courses.

The content and structure of this program draw on several decades of experience the American Chemical Society has in activity-based curricula development. The program consists of a daylong series of lessons on the chemical bond and its relationship to the properties and reactions of molecules—topics central to understanding the behavior of matter and chemical change. A complementary theme of Chemistry Day is the incorporation of activities as part of the assessment of student learning.

8:00–9:00 AM	**What's Matter Made Of?** (p. 64)
9:30–10:30 AM	**What Holds Molecules Together?** (p. 70)
11:00 AM–12 Noon	**Why Is Water Different?** (p. 80)
12:30–1:30 PM	**Bond Connections in More Complex Molecules** (p. 85)
2:00–3:00 PM	**Chemistry of Aqueous Solutions of Gases** (p. 90)
3:30–4:30 PM	**Coupled Reactions, Energetics, and Chemical Bonds** (p. 96)

Middle School Chemistry Day

Big Ideas About the Very Small

Friday, December 3, 8:00 AM–4:30 PM

Hermitage B, Opryland

Sponsored by the American Chemical Society

Come to one, two, or as many sessions as you like during this full day of activities and information for teaching and learning middle school chemistry. Staff from the American Chemical Society (ACS) will introduce participants to the new online and free ACS Middle School Chemistry Unit—Big Ideas About the Very Small. Each of the six sessions will include hands-on activities and explanations that participants can easily incorporate into their teaching to support their current textbook and curriculum. Handouts of the session activities will be available for all participants.

8:00–9:00 AM	**Solids, Liquids, and Gases: The Kinetic Theory of Matter** (p. 64)
9:30–10:30 AM	**Heat Transfer and Changes of State** (p. 70)
11:00 AM–12 Noon	**Density** (p. 80)
12:30–1:30 PM	**The Periodic Table, Energy Levels, and Bonding** (p. 85)
2:00–3:00 PM	**Polarity of the Water Molecule and Dissolving** (p. 90)
3:30–4:30 PM	**Chemical Change and Energy** (p. 96)

Biology Day at NSTA

Friday, December 3, 8:00 AM–12 Noon

Hermitage A, Opryland

Sponsored by the National Association of Biology Teachers

The National Association of Biology Teachers (NABT) is proud to present Biology Day, highlighting programs designed to provide the resources and tools you need to excel as a biology and life science teacher. Featuring informative speakers and hands-on workshops, Biology Day provides relevant information and pedagogy for every biology teacher at every level.

Featured session topics include Writing for the *American Biology Teacher,* HHMI's Exploring Biodiversity: The Search for New Medicines and Treatments, and Resources to Enrich Your Lessons on AIDS/HIV Using HHMI Materials.

Engage your students, enhance your teaching, and join NABT for Biology Day!

8:00–9:00 AM	**Writing for the *American Biology Teacher*** (p. 64)
9:30–10:30 AM	**Free Teaching Resources from the Howard Hughes Medical Institute: Exploring Biodiversity: The Search for New Medicines and Treatments** (p. 70)
11:00 AM–12 Noon	**Teacher-generated Materials, Demos, and Resources from the Howard Hughes Medical Institute to Enrich AIDS/HIV Lessons** (p. 80)

Physics Day at NSTA

Friday, December 3, 8:00 AM–4:30 PM

Hermitage D, Opryland

Sponsored by the American Association of Physics Teachers (AAPT) and the Kentucky and Tennessee Sections of AAPT

The American Association of Physics Teachers offers a full day of physics content. Physics Day consists of presentations on physics topics of current interest, physics demonstrations for the pre-college classroom, and a make and take session where participants can construct a piece of physics apparatus for use as a demonstration or as a laboratory experiment. Physics Day in Nashville is being organized by the Kentucky and Tennessee sections of the American Association of Physics Teachers.

8:00–9:00 AM	**Newton's Laws Explained, Centripetal Motion Examined** (p. 64)
9:30–10:30 AM	**How Old Is Your Universe?** (p. 70)
11:00 AM–12 Noon	**Making Magnetism Visible** (p. 80)
12:30–1:30 PM	**Interactive Teaching Resources for Introductory Astronomy** (p. 85)
2:00–3:00 PM	**Addressing Student Difficulties with Motion and Force** (p. 90)
3:30–4:30 PM	**Using Physics to Design a Better Sports Car** (p. 96)

NSTA Press Sessions

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

Thursday, December 2

8:00–9:00 AM	Take a Walk on the Safe Side (p. 41)
12:30–1:30 PM	Spotlighting Books Co-Published by NSTA and NSELA and How to Use Them to Inform Science Programs (p. 49)
2:00–3:00 PM	Activities Linking Science and Math with Art (p. 54)
3:30–4:30 PM	Stop Faking It! Finally Understand FORCE AND MOTION So You Can Teach It (p. 58)

Friday, December 3

8:00–9:00 AM	Making Science Reading Come Alive (p. 65)
9:30–10:30 AM	Stop Faking It! Finally Understand ENERGY So You Can Teach It (p. 72)
11:00 AM–12 Noon	Stop Faking It! Finally Understand MATH So You Can Teach It (p. 82)
12:30–1:30 PM	Outdoor Science: A Practical Guide (p. 86)
2:00–3:00 PM	So You Want New Science Facilities (Science Facilities 101) (p. 91)
3:30–4:30 PM	The Architects Have Started Without Me: What Do I Do Now? (Science Facilities 102) (p. 96)

NSTA Avenue Sessions

Visit the NSTA Avenue, our marketplace in the Exhibit Hall, to learn about member benefits, products and services, programs and partners...all created for you! Meet staff, register for the NSTA 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, December 2

12:30–1:30 PM	Siemens We Can Change the World Challenge: 21st-Century Tools for Project Based Learning (see Program Changes)

Friday, December 3

8:00–9:00 AM	Toshiba/NSTA ExploraVision Awards (p. 63)
9:30–10:30 AM	SciLinks: Using the Online Assignment Tool (p. 70)
11:00 AM–12 Noon	Siemens We Can Change the World Challenge: 21st-Century Tools for Project Based Learning (p. 80)
2:00–3:00 PM	Toyota TAPESTRY Grants for Science Teachers = $$$ for Your School! (p. 90)
3:30–4:30 PM	The NSTA Learning Center: Free Professional Development Resources and Opportunities for Educators (p. 95)

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

Building Physical Science Demonstration Models (SC-1)

Martha M. Day *(martha.day@wku.edu),* Western Kentucky University, Bowling Green
Level: Middle Level–High School
Date: Thursday, December 2, 1:00–4:00 PM
SOLD OUT
Location: Belmont A, Opryland
Registration Fee: $43

Participants will make and take classroom demonstration models for teaching the gas laws, conductivity, Bernoulli's principle, and waves. Each demonstration model is accompanied by a 5E (engage, explore, explain, elaborate, evaluate) science inquiry lesson appropriate for use in middle or high school physical science or high school chemistry classrooms.

Renewable Energy (SC-2)

Mary Spruill *(info@need.org),* The NEED Project, Manassas, Va.
Level: General
Date: Thursday, December 2, 1:00–4:00 PM
Location: Belmont C, Opryland
Registration Fee: $21

Renewable energy is the fasting growing sector of the energy economy. Renewable energy infrastructure has become a common sight—from solar panels on parking meters to wind turbines in the open plains. We will discuss the renewable energy used today as well as renewable energy development for the future. Participants will use interdisciplinary materials incorporating science, math, language arts, art, and music to learn and teach about renewable resources. Hands-on kits will allow participants to build a wind turbine and water wheel and test the electrical output of each and explore photovoltaics to measure electrical output. Materials provided are correlated to the National Science Content Standards and available to participants at *www.need.org.*

A Solid Science Background for Designing a New Tomorrow (SC-3)

Arloa Woolford *(wimef@womeninmining.org),* Women in Mining Education Foundation, Winnemucca, Nev.
Phyllis Lyday, Member, Women in Mining, Reform, Ala.
Level: Grades 4–9
Date: Friday, December 3, 8:30 AM–12:30 PM
Location: Belmont B, Opryland
Registration Fee: $46

Increasing awareness of tools and resources available for teaching STEM needs to be integrated with the benefits

and consequences of design and technology on social, political, economic, and environmental systems. Our future leaders will have to be well-rounded and able to grasp the impact of each decision they make. A firm background in Earth science will be crucial for them to make these decisions. This will ensure our country maintains its role as a leader without damaging the economy and our way of life.

Using our hands-on integrated activities will open your minds as to how our natural resources play a role in every aspect of our lives. Participants will learn how to research the role of geoscientists in tomorrow's world and gain a better understanding of how innovative designs and programs can work to the betterment of all. Each participant will leave with a CD of all activities, websites, and other relevant material. For more information, please visit *www.womeninmining.org*.

Dynamics of Physical Science Demonstrations (SC-4)

Glyn Burton, University School of Nashville and Vanderbilt University, Nashville, Tenn.
Howard Rosen, University School of Nashville, Tenn.
Level: Middle Level–High School
Date: Friday, December 3, 9:00 AM–12 Noon
Location: Belmont A, Opryland
Registration Fee: $20

CANCELED

Physical science demonstrations begin with exciting inquiry demonstrations that can enliven and direct a new study as well as spark and foster curiosity in students' minds. Through this hands-on/minds-on interactive demonstration presentation, participants will investigate cloud formation and air pressure science; sound and music science, including inventing musical instruments and sound lab design; light science and building a model of the eye; chemical mixtures of alcohol and water in relationship to decors and sprinkles; forensic science of footprints at the scene; writing science fiction; and using animals in physical science.

Enriching High School Chemistry and Biology Teaching Through POGIL (SC-5)

Paula W. Butler *(butlerp@countryday.net)*, Cincinnati Country Day School, Cincinnati, Ohio
Megan M. Hoffman *(hoffmanm@berea.edu)*, Berea College, Berea, Ky.
Level: High School
Date: Friday, December 3, 1:00–4:00 PM
Location: Belmont C, Opryland
Registration Fee: $24

Discover why so many teachers are finding Process Oriented Guided Inquiry Learning (POGIL) to be an intriguing and powerful teaching technique! POGIL activities are designed to teach science content and key process skills. Participants will experience learning in a POGIL environment and examine POGIL activities that have been written and classroom tested by high school chemistry and biology teachers. This course will include short video clips of high school POGIL classes in action and student testimonials about their experience. Participants will receive copies of lessons developed as part of the High School POGIL Initiative (HSPI), which is funded through a grant from the Toyota U.S.A. Foundation. Visit *www.pogil.org* for more information.

Photo courtesy of the Adventure Science Center

Tickets for field trips may be purchased (space permitting) at the Ticket Sales Counter in the NSTA Registration Area. Meet your field trip leader at the Presidential Portico (the entrance at the Presidential Lobby) 15 minutes prior to departure time.

Rocky Topper Scenic Walking Tour and Adventure Trip **$72**

#T-1 Thursday, December 2 9:00 AM–5:30 PM

Come see what waits beneath the surface in Tennessee! Discover Cumberland Caverns, Tennessee's largest show cave and a National Natural Landmark. The cave consists of some of the largest underground rooms and most spectacular formations in America. This field trip to the caverns consists of two tours, the first a 90-minute, one-and-a-half-mile guided walk through the caverns. We'll see the huge underground ballroom, complete with a crystal chandelier, a beautiful waterfall and sparkling pools, historic saltpeter artifacts, and the spectacular "God of the Mountain" sound and light pageant.

The second tour can be strenuous. Do not participate in spelunking if you have a heart or respiratory condition or knee or back problems. On this adventure trip through a cave, first-time spelunkers will get a taste of the untamed underground, and experienced cavers will be impressed by the challenges. There will be some crawling, climbing, and squeezing through tight crawl spaces. The smallest crawl is 11 inches by 30 inches. Don't worry, no one gets stuck and we're in capable hands! Please wear kneepads, gloves, boots, and old clothes. Each participant needs to bring a flashlight and may bring a camera if desired. Helmets are provided. Lunch, included in the ticket price, will be provided after the walking tour.

LEAF: New Electric Vehicle **$24**

#T-2 Thursday, December 2 12 Noon–3:30 PM

Located in Smyrna, Tennessee, Nissan's first U.S. manufacturing operation is widely recognized as one of the most productive vehicle assembly plants in the world. The Smyrna plant, which covers more than 5.2 million square feet, has the capacity to produce half a million vehicles annually. The plant produces the Nissan Altima and Maxima sedans, the Xterra and Pathfinder SUVs, and the Frontier truck. In late 2012, the Smyrna plant will also support the assembly of the Nissan LEAF, "the first in a range of forthcoming Nissan electric vehicles being heralded as the world's first affordable, mass-produced, zero emission car." On our visit to the plant we'll see a short video then load onto trams. We'll tour the stamping and body assembly plants, learn about the paint plants, tour the trim and chassis plant, and finish in the company store.

No cell phones, cameras, or recording devices are allowed. Wear comfortable clothing. For safety reasons, you must wear long pants, shirts with at least a four-inch sleeve, and shoes with closed toes.

Rocking Out in Limestone Cedar Glades $27

#T-3 Thursday, December 2 12 Noon–5:00 PM

The Central Basin of Tennessee is home to the limestone cedar glades, a unique and extremely fragile habitat rich in marine fossils. The scarcity of soil in these open glades and poor water drainage create a harsh, desert-like environment that is wet and cold in winter and hot in summer. The glades are home to their own unique plant community adapted to survive in these inhospitable conditions. Nineteen rare and endangered species of plants grow profusely here and nowhere else in the world. Join us for a visit to Cedars of Lebanon State Park to explore this unusual environment. Our trip will begin at the Merritt Nature Center, which features exhibits of rare plants and other natural features of the park. We'll then take an easy two-mile hike to explore the geology and ecology of the area. Wear comfortable shoes and dress for the weather.

For more details, visit *http://frank.mtsu.edu/~gladectr* and *www.state.tn.us/environment/parks/Cedars/index.shtml.*

Road Trip to the Stars: A Visit to Adventure Science Center $50

#T-4 Thursday, December 2 2:00–6:00 PM

Road trip! Join Adventure Science Center *(www.adventuresci.com)* staff for an afternoon of interactive (and educational) exploration. The adventure begins with a meet and greet, followed by free exploration of 45,000 square feet of exhibits. Experience a moonwalk or find out what you weigh on Jupiter at the Space Chase exhibit. Spend a day in the life of your body at BodyQuest. Get ready to climb, slide, explore, and discover at Adventure Tower, seven levels of amazing interactive exhibits. Enjoy a special showing of the award-winning planetarium show STARS in the state-of-the-art Sudekum Planetarium's Judith Payne Turner Theatre. The evening ends with a mini-reception offering light snacks and beverages.

Tomorrow's Science, Today's Classroom: Oak Ridge National Laboratory $35

#F-1 Friday, December 3 7:00 AM–5:30 PM

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

On this field trip to the laboratory, we'll tour the historic Graphite Reactor, the supercomputer center, the Spallation Neutron source, and the Center for Nanophase Materials Sciences. We'll also see the BioEnergy Science Center and the Aquatic Ecology Laboratory. Lunch is on your own at the facility's cafeteria. Dress for the weather and wear comfortable shoes. No cameras allowed! All participants are required to have a photo ID. For more information, visit *www.ornl.gov.*

Teacher-friendly Guide to the Geology of the Southeastern U.S. $102

#F-2 Friday, December 3 7:00 AM–6:00 PM

Want to collect your own fossils and rocks for the classroom? Want to get professional help designing curricula? Want to spend the day reconstructing a 400-million-year-old ocean environment? This field trip links regional geology to standards-based curricula. Professional paleontologists will provide hands-on inquiry modeling of geologic processes and fossils and discuss their importance as resources and archives of global change. The *Teacher-friendly Guide to the Geology of the Southeastern U.S.* covers all aspects of geology of the Southeast, namely plate tectonics, minerals and rocks, fossils, geologic history, and fossil fuels and geologic resources that are stipulated in both national and state standards.

We will first visit Vulcan Materials Parsons Quarry to collect specimens and do inquiry-based activities that make sense of rocks, fossils, and landforms. The role of limestone in society will be featured, highlighting the interplay between the designed and natural worlds. You will be able to collect copious quantities of sedimentary rock, some minerals for your classroom sets, and fossils. Additional time will be spent at nearby UT Martin Parsons Center engaged in laboratory activities using your collected fossil, mineral, and rock samples to learn about identification and use, geologic history reconstruction, and paleontological reconstruction of past oceans as part of global change. All participants will receive a rock hammer, hard hat, and hand lens, as well as additional collecting materials.

A box lunch is included. Participants should wear loose-fitting, sturdy clothing. Hiking boots or canvas boots are required; no sandals or open-toed shoes. Hard hats will be provided. Rain gear or a pancho is recommended in case of rain. This field trip is cosponsored by the Paleontological Research Institution, the Paleontological Society, Tennessee Earth Science Teachers (TEST), and Vulcan Materials.

—Photo courtesy of the Nashville Zoo

—Photo courtesy of the Cheekwood Botanical Garden

Teacher Education Workshop at the Nashville Zoo at Grassmere **$67**

#F-3 Friday, December 3 8:30 AM–4:30 PM

CANCELED

The Nashville Zoo at Grassmere *(www.nashvillezoo.org)* has developed a number of educational programs that can help teachers combine science with literacy, math, and social studies. Get a glimpse of how the zoo can benefit you on this special field trip. After a light breakfast, participants will engage in the Wild Encounter Program, a team-building exercise featuring some of the zoo residents. We'll then have a guided tour of the centerpiece of Grassmere Historic Farm, historic Croft Home, and the Bio-Facts Room at the lending library. Learn about outreach opportunities (Wildlife on Wheels) at the online resource center. Finally, learn what the zoo can do for you at a question and answer session. Enjoy lunch, included in the ticket price, at the Zoofari Café. Take home lesson plans, activity handouts, and a teacher workshop bag. Tour the zoo on your own at the conclusion of the field trip at 2:30 PM.

Star for a Day! The Country Music Hall of Fame $51

#F-4 Friday, December 3 9:00 AM–2:00 PM

Follow the footsteps of country music's greatest stars on this visit to Music Row and the Country Music Hall of Fame *(http://countrymusichalloffame.org)*. Our star treatment begins at historic RCA Studio on Music Row, where Elvis, Roy Orbison, The Everly Brothers, Dolly, Waylon, and many others made their hit recordings. After our personal tour and hearing some classics, we'll step up to the microphone and be professionally recorded by one of the studio engineers! A keepsake CD of your recording is yours to share with family and friends.

We'll then board the bus and make the short trip downtown to the Country Music Hall of Fame Museum, where we'll enjoy the ever-changing exhibit Sing Me Back Home and two special exhibits—Family Tradition: The Williams Family Legacy (Hank, Sr.; Hank, Jr.; and all the rest of the family) and Tammy Wynette. After touring the museum, enjoy lunch on your own at the Curb Conservatory.

Garden Reflections: Cheekwood Botanical Garden and Museum of Art **$50**

#F-5 Friday, December 3 9:00 AM–2:45 PM

One of Nashville's most inspiring attractions, historic Cheekwood Botanical Garden *(www.cheekwood.org)* is brimming with stunning gardens as well as outstanding exhibitions in its Museum of Art. Learn the intriguing story of the estate that Maxwell House Coffee built and the history of the Cheek family, who built the magnificent Georgian-style mansion and gardens during the Depression and later donated them as a public institution. We'll enjoy the artwork on display in the former Cheek mansion as well as the annual "Trees of Christmas" exhibit. We'll then walk the grounds with a knowledgeable guide to learn more about the plants in Cheekwood's collections as well as landscape architect Bryant Fleming's design for integrating the mansion and the landscape. Enjoy the stunning Color Garden, the charming Wildflower Garden, the intriguing Herb Garden, and the elegant Japanese Garden. Not all areas are handicapped accessible.

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NSTA Express (weekly)

Delivers the latest news, events, classes, seminars, and NSTA happenings.

Science Class (monthly)

With separate editions for elementary, middle, and high school teachers, theme-based content that is supported with pertinent resource suggestions.

NSTA Scientific Principals (monthly)

Exclusively for elementary school principals and based on typical themes found in elementary science curricula, each issue offers a science toolbox full of new ideas and practical applications.

NSTA Book Beat (monthly)

Our newest electronic publication is aimed to keep NSTA Press readers and the wider audience of science teachers informed on the latest books and teacher resources. Each issue highlights selected topics in science education, with links to free sample chapters and lessons.

Sign up today using promo code ENEWS to enter a raffle for an iPod Touch!

www.nsta.org/publications/enewsletters.aspx

National Science Teachers Association

Thursday, December 2

Preservice and New Teachers Luncheon
(Tickets required: M-1, $12)
Sponsored by Kendall Hunt Publishing Co.
Presidential Boardroom A, Opryland .... 12 Noon–1:30 PM

CESI Board Meeting
(By Invitation Only)
Lincoln B, Opryland..... 3:00–9:00 PM

Friday, December 3

Tennessee STEM Council Meeting
(By Invitation Only)
Lincoln B, Opryland..... 8:00–9:30 AM

Council for Elementary Science International (CESI) Luncheon
(Tickets required: M-2; $57)
Speaker: Deborah Manchester
Lincoln A, Opryland..... 12 Noon–2:00 PM

Energizing Break for Tennessee Teachers Reception
(By Invitation Only)
Presidential Boardroom B, Opryland..... 3:00–4:00 PM

NMLSTA Ice Cream Social
(Open to All Middle Level Teachers)
Presidential A, Opryland ..... 3:30–5:00 PM

Saturday, December 4

Association for Multicultural Science Education (AMSE)
Board Meeting
(By Invitation Only)
Magnolia Boardroom A, Opryland.....9:00–11:00 AM

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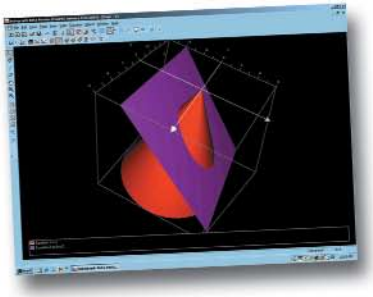

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Association for Multicultural Science Education (AMSE)

President: Eddie A. Chevis

Saturday, December 4

9:00–11:00 AM	Association for Multicultural Science Education (AMSE) Board Meeting (By Invitation Only)	Magnolia Boardroom A, Opryland

Council for Elementary Science International (CESI)

President: Kay Atchison Warfield

Thursday, December 2

3:00–9:00 PM	CESI Board Meeting (By Invitation Only)	Lincoln B, Opryland

Friday, December 3

8:00–9:00 AM	Girls Engaged in Math and Science University (GEMS–U): Helping Girls in Every Classroom Accept the STEM Challenge	Cheekwood C, Opryland
9:30–10:30 AM	Council for Elementary Science International Share-a-Thon	Tennessee D/E, Opryland
12 Noon–2:00 PM	CESI Luncheon (Ticket M-2) Speaker: Deborah Manchester	Lincoln A, Opryland

Council of State Science Supervisors (CSSS)

President: Peter McLaren

Thursday, December 2

12:30–1:30 PM	High School STEM Redesign	Cheekwood F, Opryland
2:00–3:00 PM	Common Core Standards: A Big Deal for Education	Cheekwood F, Opryland

National Association for Research In Science Teaching (NARST)

President: Dana L. Zeidler

Friday, December 2

11:00 AM–12 Noon	Strategies for Managing Elementary Students' Ideas, Questions, and Contributions in Inquiry-based Science	Cheekwood B, Opryland
12:30–1:30 PM	What Cognitive Processes Do Students Use When Learning from Multimedia Presentations?	Cheekwood B, Opryland

National Middle Level Science Teachers Association (NMLSTA)

President: Rajeev Swami

Thursday, December 2

2:00–3:00 PM	Inquiry Science on the Cheap	Ryman Studio A–C, Opryland

Friday, December 3

3:30–5:00 PM	NMLSTA Ice Cream Social (Open to All Middle Level Teachers)	Presidential A, Opryland

National Science Education Leadership Association (NSELA)

President: Janey Kaufmann

Friday, December 3

2:00–3:00 PM	Tools and Ideas for Leaders	Cheekwood B, Opryland
3:30–4:30 PM	NSELA Working Groups—Network with Science Education Leaders	Cheekwood B, Opryland

Society for College Science Teachers (SCST)

President: Connie Russell

Friday, December 3

8:00–9:00 AM	Lessons from a South Carolina Evolution Survey of High School Science Teachers	Cheekwood B, Opryland
	Pedagogical Content Knowledge of Preservice Secondary Science Teachers: An Action Research Study	
	Lost in Translation: Bridging the Gaps Between Science and Education	
9:30–10:30 AM	Jazzin' Up General College Chemistry	Cheekwood B, Opryland
	CPS: A Faculty Perspective on Benefits and Barriers	
	Attitudes Toward Academic Honesty of Early Academic Career Science Majors	

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

NSTA 2010 Nashville Area Conference
Professional Development Documentation Form

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

Beginning January 6, 2011, Nashville transcripts can be accessed at *www.nsta.org/transcripts* by logging on with your Nashville Badge ID#. Keep this form and use it to add the following activities to your Nashville transcript. Completed transcripts can be printed from this website and presented to an administrator who requires documentation of participation in the conference. All information in these transcripts will be maintained (and can be accessed) indefinitely as part of an attendee's individual profile.

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

Visit ***www.nsta.org/evaluations*** to evaluate sessions (workshops, presentations, and exhibitor workshops) online. Attendees can use the computers at the Presenters/Presiders booth in the Registration Area or on the e-mail stations in both the Exhibit Hall and the Registration Area. See page 13 of the conference program for instructions.

Sample Questions:

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

Sample Responses:
1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree

Wednesday, December 1 7:30 AM–4:00 PM

Start Time	End Time	Activity/Event Title

Thursday, December 2 8:00 AM–9:00 PM

Start Time	End Time	Activity/Event Title

Thursday, December 2, cont.

Start Time	End Time	Activity/Event Title

Friday, December 3 7:00 AM–6:00 PM

Start Time	End Time	Activity/Event Title

Saturday, December 4 8:00 AM–12 Noon

Start Time	End Time	Activity/Event Title

—Photo courtesy of Adventure Science Center

8:00–9:00 AM Presentations

SESSION 1

Bring the Science of Cars into the Classroom **(Chem)**

(High School) *Cheekwood B, Opryland*

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? Here are some lessons using cars to teach major science concepts…yes, even if you are mechanically challenged!

SESSION 2

The NSF ITEST Experience in Kentucky Classrooms **(Env)**

(General) *Cheekwood C, Opryland*

Carol D. Hanley *(chanley@uky.edu),* University of Kentucky, Lexington

Students across Kentucky say their experiences were enhanced by the Innovative Technology Experiences for Students and Teachers (ITEST) program. They will present their findings and show how technology has furthered their scientific study.

SESSION 3

Science Literacy: More Than Reading Strategies **(Gen)**

(Elementary–High School) *Lincoln A, Opryland*

Michael A. Kelly *(michael_kelly@gwinnett.k12.ga.us)* and **Heather Switzer** *(heather_switzer@gwinnett.k12.ga.us),* Snellville Middle School, Snellville, Ga.

Learn how to move beyond traditional reading strategies as we share research into building science literacy through background knowledge and vocabulary.

SESSION 4

Neuroscience 101: Applying Neuroscience Research in and out of the Classroom **(Bio)**

(Middle Level–High School) *Magnolia Boardroom B, Opryland*

Nancy P. Cowdin *(ncowdin@gmail.com),* Georgetown University Medical Center, Washington, D.C.

Explore general neuroscience concepts and ways to promote understanding of brain structure and function in the classroom.

Science Area

A science area category is associated with each session. These categories are abbreviated in heavy type at the right immediately following the session title. On page 129, you will find the conference sessions grouped according to their assigned science area category.

The science areas and their abbreviations are:

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

Strands

The Nashville Conference Committee has planned the conference around the following three strands, enabling you to focus on a specific area of interest or need. Strand events are identified by icons throughout the daily program. For strand descriptions, see pages 24–25.

Building Capacity to Lead Professional Learning

The Brain-considerate Classroom

Understanding a Designed World

SESSION 5

Is This Your First NSTA Conference? **(Gen)**

(General) *Presidential A, Opryland*

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. Refreshments courtesy of Carolina Biological Supply Company.

SESSION 6

NSTA Press Session: Take a Walk on the Safe Side **(Gen)**

(Elementary–High School) *Tennessee A, Opryland*

Kelly Price *(price_kel@yahoo.com),* Forsyth County Schools, Cumming, Ga.

Take a virtual tour through typical schools, including your own, to identify safety hazards. Then brainstorm some effective and often quite inexpensive fixes.

8:00–9:00 AM Workshops

Forensics Science in Your Physics Classroom (Phys)
(Middle Level–High School) *Hermitage B, Opryland*
Jacklyn Bonneau *(bonneau@wpi.edu),* Massachusetts Academy of Math & Science, Worcester
Make physics topics interesting with forensics. Use these hands-on experiences with students at all levels.

What's My Disorder? An Endocrine Lab Activity Using a Case Study Approach (Bio)
(High School–College) *Hermitage D, Opryland*
Gabriele M. Aborn *(gabriele.aborn@chattanoogastate.edu),* Chattanooga State Community College, Chattanooga, Tenn.
Come see an interactive endocrine lab activity that uses case study scenarios and a team-based learning format.

Global Connections: Forests of the World (Env)
(Informal Education) *Hermitage E, Opryland*
Al Stenstrup *(astenstrup@forestfoundation.org)* and **Jackie Stallard** *(jstallard@forestfoundation.org),* Project Learning Tree, Washington, D.C.
Explore Project Learning Tree's new secondary module Global Connections: Forest of the World. Take home the activity module and poster sets.

STEM in Action—Do It the Technology Way (Earth)
(Elementary–High School) *Lincoln D, Opryland*
Barry Fried *(bfried@schools.nyc.gov)* and **Honora Dash** *(hdash@schools.nyc.gov),* John Dewey High School, Brooklyn, N.Y.
Learn how we establish partnerships and support deeper science understandings through STEM initiatives. We integrate problem-solving and communication skills, interpretation of live data, integration of technology, and the opportunity to engage in teamwork, journal writing, and presentations relating to space mission science.

Engaging Students with Math and Science Through Global Issues (Gen)
(General) *Ryman Studio A–C, Opryland*
Amanda G. Patrick *(amanda_patrick@fws.gov),* Wolf Creek National Fish Hatchery, Jamestown, Ky.
Bring climate change, sustainable design, and population growth alive in your class with these hands-on lessons that use real-world data to integrate math and science. Receive a free curriculum!

Oh, Me! Oh, My! Mitosis and Meiosis! (Bio)
(Elementary–High School) *Tennessee B, Opryland*
Kim Cleary Sadler *(ksadler@mtsu.edu)* and **Cindi Smith-Walters** *(csmithwa@mtsu.edu),* Middle Tennessee State University, Murfreesboro
Carice Ambruster *(ambrusterc@wcschools.com),* West Elementary School, Mount Juliet, Tenn.
Christy Serpas *(christys2@wcs.edu),* Spring Station Middle School, Spring Hill, Tenn.
Learn multiple interactive strategies to teach cell division in this hands-on workshop. Receive a free M&M kit!

8:00–9:15 AM Exhibitor Workshops

Experimental Design (Gen)
(Grades K–6) *Bayou B, Opryland*
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.

Introducing Inquiry Investigations™: Hands-On Inquiry Activities Focusing On Technology (Gen)
(Grades 7–10) *Bayou E, Opryland*
Sponsor: Frey Scientific/School Specialty Science
Lou Loftin, Wassau County Public Schools, Reno, Nev.
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. As teams work together to construct a working telephone, participants learn about new USB technology (direct to computer data recording) using Datalogger probes.

Inquiry in the Classroom **(Gen)**
(Grades 5–8) *Canal A, Opryland*
Sponsor: Pearson
Zipporah Miller, Author, Bowie, Md.
More inquiry in more places, whether you're a lab-oriented teacher or a textbook-focused teacher, Zipporah Miller will show you a variety of hands-on/minds-on inquiry options to keep all your students engaged.

Introducing Classroom Electrophoresis That Can Be Completed in 30 Minutes **(Bio)**
(Grades 6–College) *Jackson D, Opryland*
Sponsor: EDVOTEK
Jack Chirikjian *(info@edvotek.com)* and **Khuyen Mai** *(info@edvotek.com),* EDVOTEK, Bethesda, Md.
EDVOTEK Dye Molecular Biology™ experiments are designed for ANY age group. They include DNA fingerprinting, paternity determination, and gene sizing. Using colorful dyes makes results easy to understand and no staining is needed. Our QuickStrips™ conveniently provide each student group with the required samples and eliminate the need for pre-lab preparation.

The Layered Earth **(Earth)**
(Grades 5–12) *Jackson E/F, Opryland*
Sponsor: Simulation Curriculum Corp.
Herb Koller *(hkoller@simcur.com),* Simulation Curriculum Corp., Aurora, Ont., Canada
What powers the internal processes that produce volcanoes, earthquakes, and mountains? What is the rock cycle and how does it work? Exactly how are volcanoes formed? What might Earth look like in the future? Join us on the big screen and experience The Layered Earth, the new geology curriculum from the makers of the award-winning Starry Night!

First-Time Attendee Session

Is This Your First NSTA Conference?

If your answer is "YES," then please join us at our first-time-conference-attendee session where we'll walk through the program and you'll learn how to get the most from your conference experience.

Thursday, December 2
8:00–9:00 AM
Gaylord Opryland Resort and Convention Center
Presidential A

This session is generously supported by Carolina Biological Supply Company.

CAROLINA
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NSTA National Science Teachers Association

8:00–9:30 AM Exhibitor Workshop

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

(Grades 5–12) *Bayou C, Opryland*

Sponsor: CPO Science/School Specialty Science

Erik Benton and **Patsy Eldridge,** CPO Science/School Specialty Science, Nashua, N.H.

Our understanding of matter is so abstract that students have a hard time making sense of these fascinating concepts. In this workshop, you will experience innovative games and activities that give students with different learning styles opportunities to explore and grasp atomic structure and the periodic table.

8:00–10:00 AM Exhibitor Workshop

Using Science Notebooks with FOSS Middle School (Gen)

(Grades 5–8) *Bayou D, Opryland*

Sponsor: Delta Education/School Specialty Science–FOSS

Jessica Penchos, Lawrence Hall of Science, University of California, Berkeley

Virginia Reid, Consultant, Olympia, 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.

9:00–11:00 AM Exhibitor Workshop

Innovative Science and Literacy Integration: Seeds of Science/Roots of Reading® (Gen)

(Grades 2–5) *Bayou A, Opryland*

Sponsor: Delta Education/School Specialty Science–Seeds

Traci Wierman, Jen Tilson, Suzy Loper, and **Megan Goss,** Lawrence Hall of Science, University of California, Berkeley

Immerse yourself in the new Seeds of Science/Roots of Reading Chemical Changes unit by investigating chemical reactions. Experience an integrated approach to firsthand inquiry using content-rich science books, scientific discourse, and writing activities that provide rich and varied opportunities to learn essential science concepts and vocabulary (free samples).

9:15–10:30 AM General Session

Cultivating Curiosity

(General) *Presidential Ballroom C–E, Opryland*

Jeff Lieberman, Star of Discovery Channel's *Time Warp*

Presider: Alan McCormack, NSTA President, and San Diego State University, San Diego, Calif.

Introduction: Stanford N. Peppenhorst, Exhibits Liaison, NSTA Nashville Area Conference, and Science Education Consultant, Memphis, Tenn.

Platform Guests: Jeff Lieberman; Alan McCormack; Stanford Peppenhorst; Pat Shane, NSTA Retiring President, and The University of North Carolina at Chapel Hill; Patricia Simmons, NSTA President-Elect, and North Carolina State University, Raleigh; Ruth Woodall, Chairperson, NSTA Nashville Area Conference, and Tennessee Chamber of Commerce & Industry, Nashville; Diane Vaughn, Program Coordinator, NSTA Nashville Area Conference, TSTA Past President, and Educational Consultant, Clarkrange, Tenn.; Donna Daly, Local Arrangements Coordinator, NSTA Nashville Area Conference, and Metropolitan Nashville (Tenn.) Public Schools; Gloria Ramsey, President Pro Tempore, Tennessee Science Teachers Association, and Educational Consultant, Austin, Tex.; Becky Ashe, Interim President, Tennessee Science Teachers Association, and Knox County Schools, Knoxville, Tenn.; Greg MacDougall, NSTA Director, District VI, and South Carolina Dept. of Education, Aiken; Francis Q. Eberle, NSTA Executive Director, Arlington, Va.

We sense less than 1% of the universe around us, and the sciences attempt to give us insights into the rest. With the right use of technology and the arts, we have the potential to reach students in an emotional and exhilarating style—to change science education from the collection of facts into the cultivation of passion and curiosity.

Jeff Lieberman isn't just the host of Discovery Channel's Time Warp, *he's a musician wrapped in a roboticist sculptor wrapped in a photographer. Lieberman is currently pursuing his doctorate at MIT's Media Lab, studying how art and science can be combined to bring people together.*

Time Warp *focuses on the use of high-speed photography to show viewers new things about the world. Lieberman takes regular events or actions, such as a cat licking its paw, and slows them down enough so the human brain can process exactly what is happening. These wonders are both beautiful and scientific, an intermingling of genres that Lieberman has perfected.*

10:00–11:15 AM Exhibitor Workshops

Introducing the Delta Science Module Program (Gen)
(Grades K–8) *Bayou B, Opryland*
Sponsor: Delta Education/School Specialty Science
Johanna Strange, Consultant, Richmond, Ky.
Tom Graika, Consultant, Lemont, Ill.
The Delta Science Modules (DSM) program is a complete K–8 hands-on, literacy-enhanced science curriculum. Come get involved with all parts of the DSM program, including activities, literacy connections, kit components, assessments, and ideas for building a standards-based curriculum. Receive literacy samples and activity resources.

Inquiry Investigations™ Forensics Science Curriculum Module and Kits (Gen)
(Grades 7–10) *Bayou E, Opryland*
Sponsor: Frey Scientific/School Specialty Science
Lou Loftin, Wassau County Public Schools, Reno, Nev.
Using our new Inquiry Investigations forensic series with more than 55 activities, 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. Participants will perform skill-based investigative techniques and case investigations, and receive a program resource CD and correlations.

It's Here! The All-new *Pearson Chemistry* © 2012 (Chem)
(Grades 9–12) *Canal A, Opryland*
Sponsor: Pearson
Ed Waterman, Retired Educator, Fort Collins, Colo.
The most successful chemistry text ever just got better! In addition to digital and print formats, we use small-scale and virtual chemistry laboratory to promote effective inquiry and differentiation that facilitate learning content while students discover how to design and carry out experiments to solve problems.

Need "Energy" in Your Environmental Classes? Learn About Carolina's Inquiries in Science™ Environmental Series (Env)
(Grades 9–12) *Canal C, Opryland*
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!

Teaching AP Chemistry with Molecular-Level Visualization and Simulation Tools (Chem)
(Grades 9–College) *Jackson C, Opryland*
Sponsor: Wavefunction, Inc.
Jurgen Schnitker *(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 hands-on workshop and learn how to integrate state-of-the-art modeling into your AP chemistry teaching.

Experiments for AP Environmental Science and Ecotechnology (Bio)
(Grades 6–College) *Jackson D, Opryland*
Sponsor: EDVOTEK
Jack Chirikjian *(info@edvotek.com)* and **Khuyen Mai** *(info@edvotek.com),* EDVOTEK, Bethesda, Md.
This workshop links biotechnology to AP environmental science and ecology courses. New experiments feature activities in bioremediation, detection of environmental infectious agents in water and the environment, and the detection of biological-based toxicants. Take home resource materials to help integrate new experiments into your courses.

ScholAR Chemistry In-the-Bag Inquiry (Chem)
(Grades 6–12) *Jackson E/F, Opryland*
Sponsor: Sargent-Welch
Mark Meszaros, Sargent-Welch, Rochester, N.Y.
These easy-to-perform demonstrations are designed to engage students and incorporate guided inquiry exercises so students can further explore and understand the concept. Participants will learn how to perform four different In-the-Bag inquiry demonstrations and two In-the-Bag learning activities.

Flinn Scientific Presents Best Practices for Teaching Chemistry™: Experiments and Demonstrations (Chem)
(Grades 9–12) *Presidential B, Opryland*
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 the opportunity to learn best practices from 20 award-winning master teachers as they carry out their favorite experiments, demonstrations, and chemistry lab activities.

10:00–11:30 AM Exhibitor Workshop

Genetics: Crazy Traits and Adaptation Survivor (Gen)

(Grades 5–12) *Bayou C, Opryland*

Sponsor: CPO Science/School Specialty Science

Erik Benton and **Patsy Eldridge,** CPO Science/School Specialty Science, Nashua, N.H.

Students learn new vocabulary when they study genetics such as traits, alleles, and genotypes. How can you predict the traits of offspring when you know the genetic makeup of the parents? These ideas will come alive as you create crazy creatures with a unique kit, and study the resulting population.

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

Entrance to Ryman Exhibit Hall C2, Opryland

Presider: Alan McCormack, NSTA President, and San Diego State University, San Diego, Calif.

Welcoming Remarks: Ruth Woodall, Chairperson, NSTA Nashville Area Conference, and Tennessee Chamber of Commerce & Industry, Nashville

Special Guests: Pat Shane, NSTA Retiring President, and The University of North Carolina at Chapel Hill; Patricia Simmons, NSTA President-Elect, and North Carolina State University, Raleigh; Donna Daly, Local Arrangements Coordinator, NSTA Nashville Area Conference, and Metropolitan Nashville (Tenn.) Public Schools; Diane Vaughn, Program Coordinator, NSTA Nashville Area Conference, TSTA Past President, and Educational Consultant, Clarkrange, Tenn.; Greg MacDougall, NSTA Director, District VI, and South Carolina Dept. of Education, Aiken; Gloria Ramsey, President Pro Tempore, Tennessee Science Teachers Association (TSTA), and Educational Consultant, Austin, Tex.; Becky Ashe, Interim President, Tennessee Science Teachers Association (TSTA), and Knox County Schools, Knoxville, Tenn.; Francis Q. Eberle, NSTA Executive Director, Arlington, Va.; Rick Smith, NSTA Managing Director, Advertising, Exhibits, and Workshops, Arlington, Va.

Musical Entertainment by Curb Recording Artists Bombshel.

11:05 AM–5:00 PM Exhibits

Ryman Exhibit Hall C2, Opryland

Come see the most up-to-date science textbooks, software, equipment, and other teaching materials. Some exhibitors will offer materials for sale.

11:00 AM–1:30 PM Exhibitor Workshop

A Sneak Preview of the New Planetary Science Middle School Course from FOSS (Gen)

(Grades 5–8) *Bayou D, Opryland*

Sponsor: Delta Education/School Specialty Science–FOSS

Larry Malone, Alan Gould, and **Jessica Penchos,** Lawrence Hall of Science, University of California, Berkeley

How have we come to understand the Solar System? How many other planetary systems are there and how do we find and explore them? These are some of the questions students engage with in FOSS Planetary Science 2011. This sneak preview will highlight new features and strategies incorporated into the course.

11:30 AM–1:30 PM Exhibitor Workshop

Innovative Science and Literacy Integration: Seeds of Science/Roots of Reading® (Gen)

(Grades 2–5) *Bayou A, Opryland*

Sponsor: Delta Education/School Specialty Science–Seeds

Traci Wierman, Jen Tilson, Suzy Loper, and **Megan Goss,** Lawrence Hall of Science, University of California, Berkeley

Immerse yourself in the new Seeds of Science/Roots of Reading Chemical Changes unit by investigating chemical reactions. Experience an integrated approach to firsthand inquiry using content-rich science books, scientific discourse, and writing activities that provide rich and varied opportunities to learn essential science concepts and vocabulary (free samples).

12 Noon–1:15 PM Exhibitor Workshop

Educational Science Lab Design and Implementation for the 21st Century Made Easy (Gen)
(Grades 5–College) *Bayou E, Opryland*
Sponsor: Frey Scientific/School Specialty Science
John Flockenzier and **Gordon Strohminger,** Frey Scientific/School Specialty Science, Nashua, N.H.
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. Open discussions will include the lab design process, furniture and equipment basics, safety and accessibility, integration of technology, and 21st-century trends.

12 Noon–1:30 PM Luncheon

Preservice and New Teachers Luncheon (M-1)
(Tickets Required; $12) *Presidential Boardroom A, Opryland*
Sponsored by Kendall Hunt Publishing Co.

New to the profession? Join us for this lively and interactive function where you'll learn about all the NSTA resources at your fingertips for your science classroom, your career, and your own content knowledge. Enjoy lunch (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.

Tickets, if still available, must be purchased at the Ticket Sales Counter in the NSTA Registration Area before 7:00 PM on Wednesday.

Tickets Required (M-1; $12 on-site) and, if still available, must be purchased at the Registration Area by 7:00 PM on **Wednesday, December 1.**

This event is generously sponsored by Kendall Hunt Publishing Company.

Kendall Hunt publishing company

NSTA National Science Teachers Association

12 Noon–1:30 PM Exhibitor Workshop

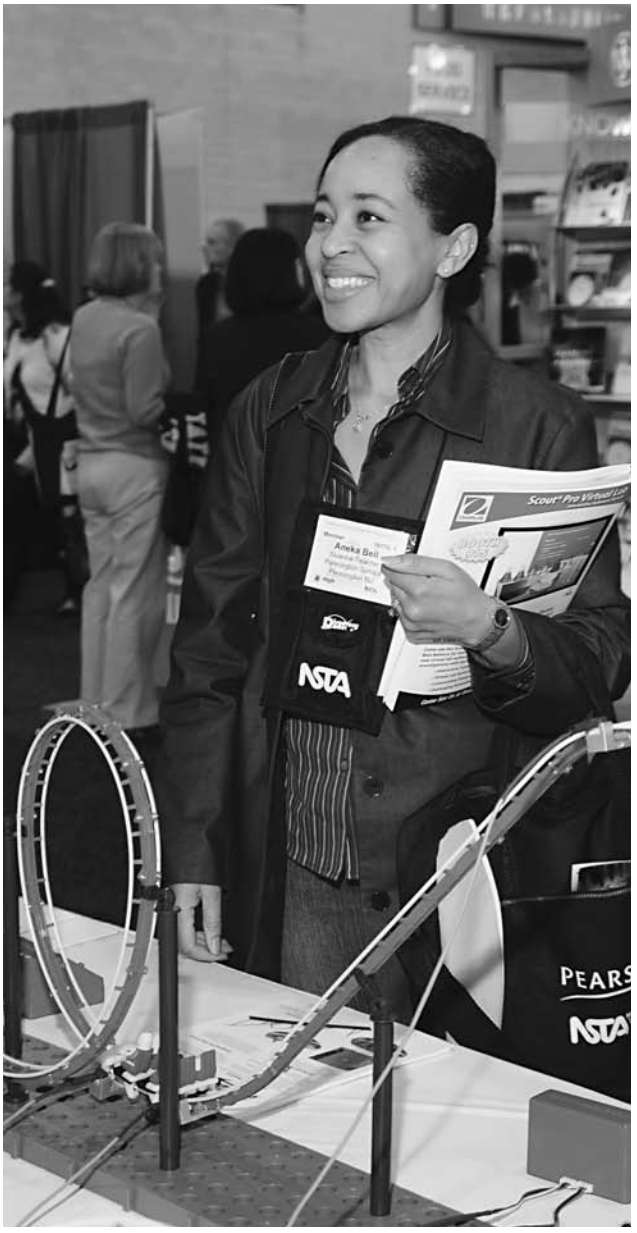
CPO SmartTrack with Velocity Sensor and Energy Car (Gen)

(Grades 5–12) *Bayou C, Opryland*

Sponsor: CPO Science/School Specialty Science

Erik Benton and **Patsy Eldridge,** CPO Science/School Specialty Science, Nashua, N.H.

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



12:30–1:30 PM Presentations

SESSION 1

VoiceThread 101: Engaging Your Students Through Media (Gen)

(General) *Cheekwood B, Opryland*

Kellie A. Shumack *(kshumack@aum.edu),* **Jennifer A. Brown** *(jbrown3@aum.edu),* **Michael R. Gilchrist,** and **Erin Reilly,** Auburn University at Montgomery, Ala.

See how VoiceThread is used in education. We'll show you how to to set up a free account.

SESSION 2

Student-driven Research on Water Quality (Env)

(Middle Level–High School) *Cheekwood C, Opryland*

James S. Watson *(jwats134@hotmail.com),* Ivy Academy, Soddy-Daisy, Tenn.

Students from Ivy Academy and partners are conducting a mine drainage water quality project that will attempt to restore water conditions to those of pre-mining days.

SESSION 3

CSSS Session: High School STEM Redesign (Chem)

(High School) *Cheekwood F, Opryland*

Linda Jordan *(linda.k.jordan@tn.gov),* Tennessee Dept. of Education, Nashville

Dale Rudolph *(dale.rudolph@cmcss.net),* Clarksville Montgomery County School System, Clarksville, Tenn.

Learn how the Montgomery County (Tennessee) School System implemented an inverted science curriculum sequence (High School STEM Redesign) that is supported by a modeling instruction approach.

SESSION 4

Asking Better Questions (Gen)

(High School) *Lincoln A, Opryland*

Jennifer Dye *(jennifer.dye@jp2hs.org),* Pope John Paul II High School, Hendersonville, Tenn.

When students learn to ask better questions they develop a deeper understanding of science. Discuss how to develop these skills through inquiry and independent research.

SESSION 5

Get SIMulated! (Gen)

(Elementary–High School) *Lincoln D, Opryland*

Diane L. Kasparie *(dkasparie@quincynotredame.org),* Quincy Notre Dame High School, Quincy, Ill.

Online science simulations are research-proven, student-centered, relevant tools that empower great teaching and active learning. Come get SIMulated!

SESSION 6

Leveraging STEM Resources Through GRITS (Gen)
(General) *Magnolia Boardroom B, Opryland*
Judith Iriarte-Gross *(jiriarte@mtsu.edu),* Middle Tennessee State University, Murfreesboro
Presider: Ruth Woodall, Chairperson, NSTA Nashville Area Conference, and Tennessee Chamber of Commerce & Industry, Nashville
Girls Raised in Tennessee Science (GRITS) advances knowledge and understanding of STEM education and careers for middle and high school girls by leveraging shared resources.

SESSION 7

NSTA Press Session: Spotlighting Books Co-Published by NSTA and NSELA and How to Use Them to Inform Science Programs (Gen)
(General) *Tennessee A, Opryland*
Jack Rhoton, East Tennessee State University, Johnson City
Pat Shane, NSTA Retiring President, and The University of North Carolina at Chapel Hill
We will examine the six books that have been co-published by NSTA and NSELA, focusing on how these resources can be used to inform existing K–16 science programs and spotlighting the most recent NSTA/NSELA book.

SESSION 8

Using Energy Data in the Classroom (Gen)
(Elementary–Middle Level) *Washington B, Opryland*
Mary Spruill *(info@need.org),* The NEED Project, Manassas, Va.
Analyze real-time energy data. Use these sources to teach important math and graphing skills while learning about renewable energy and energy efficiency.

12:30–1:30 PM Workshops

Engaging Students with Climate Change: Global Connections and Sustainable Solutions (Earth)
(Middle Level–High School/Informal Ed.) *Hermitage A, Opryland*
Amanda G. Patrick *(amanda_patrick@fws.gov),* Wolf Creek National Fish Hatchery, Jamestown, Ky.
Experience hands-on lessons that demonstrate the interconnections between natural systems and human actions using carbon footprint, emissions trading, and energy policy. Free curriculum!

Building Understanding and an Atomic Force Microscope (Phys)
(Middle Level–High School) *Hermitage B, Opryland*
Elvis H. Cherry *(elvis.cherry@mnps.org),* H.G. Hill Middle School, Nashville, Tenn.
Introduce your students to some of the tools of nanotechnology with microscopy modules from the National Center for Learning and Teaching Nanosciences and Nanoengineering. Build and use a simulated atomic force microscope mode.

Be a Butterfly Doctor with Project MonarchHealth (Env)
(Elementary–High School) *Hermitage D, Opryland*
Donna L. Gast *(dlgast@ix.netcom.com)* and **Shari Travers** *(stravers@oconee.k12.ga.us),* Oconee County Middle School, Watkinsville, Ga.
Learn techniques used by scientists to study diseased monarchs and how students can contribute data to Project MonarchHealth. Lesson plans and freebies.

R.E.A.D. (Gen)
(Elementary) *Hermitage E, Opryland*
Dale Campbell *(campbell@jsu.edu),* **Phyllis Taylor** *(ptaylor@jsu.edu),* **Jennifer Strain** *(jstrain@jsu.edu),* and **Debra Weingarth** *(dweingarth@jsu.edu),* Jacksonville State University, Jacksonville, Ala.
Presider: Phyllis Taylor
Read, Enjoy, Associate, and Dive into science using children's literature. We'll share books, activities, and detailed handouts.

Stellar Bar Codes **(Earth)**
(High School–College) *Lincoln C, Opryland*
Donna L. Young *(donna.young@tufts.edu),* Wright Center for Science Education, Tufts University, Medford, Mass.
Doug Lombardi *(lombardi.doug@gmail.com),* Southern Nevada Regional Professional Development Program, North Las Vegas
The study of spectra provides scientists with important information about stellar temperatures and evolutionary history. We'll examine spectra of different types of stars.

Science Trifecta: Effectively Combining Picture Books, Foldables®, and Science Curriculum Standards (Gen)
(General) *Lincoln E, Opryland*
Nancy F. Wisker *(sara@dinah.com),* Dinah-Might Adventures, San Antonio, Tex.
Learn by doing in this fast-paced hands-on workshop aimed at successfully merging science curriculum, picture books, and 3-D interactive graphic organizers (Foldables).

The New Biology in a Box Unit—STEM (Bio)
(High School) *Tennessee B, Opryland*
Suzanne Lenhart *(lenhart@math.utk.edu),* The University of Tennessee, Knoxville
Kathy DeWein *(deweink@apsu.edu),* Biology in a Box, Clarksville, Tenn.
Biology in a Box and the National Institute for Mathematical and Biological Synthesis (NIMBioS) present the new STEM Box, the 11th unit in the Biology in a Box program for K–12 public schools.

National Earth Science Teachers Association Earth Science Share-a-Thon (Earth)
(Elementary–High School) *Tennessee D/E, Opryland*
Roberta M. Johnson *(rmjohnsn@gmail.com),* National Earth Science Teachers Association, Boulder, Colo.
Ardis Herrold, Grosse Pointe North High School, Grosse Pointe Woods, Mich.
Teresa J. Kennedy and **Nandini McClurg,** The GLOBE Program, Tyler, Tex.
H. Michael Mogil *(hmmogil@weatherworks.com),* How the Weatherworks/Howard University, Naples, Fla.
Eileen G. Poling *(eileenon@hotmail.com),* Tucker County Schools, Hambleton, W.Va.
Join NESTA members and other education specialists as they share their favorite classroom activities. Lots of free handouts!

12:30–1:45 PM Exhibitor Workshops

The Next Generation of Science Virtual Labs—No Cleanup Required (Gen)
(Grades 9–12) *Canal A, Opryland*
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 science virtual labs that are so visually realistic you have to see them to believe them! Whether you are short on time or short on lab materials in the classroom, virtual labs give you the flexibility to experiment. Handouts and free science virtual lab sample CDs will be provided so you can use them in your classroom next week.

Living by Chemistry: Feeling Under Pressure (Chem)
(Grades 9–12) *Canal B, Opryland*
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 help students understand gas behavior and gas laws through a weather context. Sample lessons from the Living by Chemistry curriculum will be provided.

Comparative Mammalian Organ Dissection with Carolina's Perfect Solution® Specimens (Bio)
(Grades 6–12) *Canal C, Opryland*
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!

Introduction to Blood Typing and Blood Spatter (Bio)
(Grades 6–12) *Jackson E/F, Opryland*
Sponsor: WARD'S Natural Science
Mark Meszaros, Sargent-Welch, Rochester, N.Y.
By using simulated blood, participants will learn to conduct blood typing tests as well as learn to interpret and understand blood spatter. This experience will be a great introduction into the forensic sciences.

Flinn Favorite Biology Lab Activities and Games (Bio)

(Grades 7–12) *Presidential B, Opryland*

Sponsor: Flinn Scientific, Inc.

Maureen Hunt, Flinn Scientific, Inc., Batavia, Ill.

Students learn better and faster when they are actively involved in hands-on activities that are fun to try and that create learning opportunities along the way. We'll share some inquiry-based labs, interactive demonstrations, and collaborative games you can use to motivate your students. We'll focus on core topics like cell biology, genetics, ecology, and more—you're sure to find a Flinn Favorite that works for you! Handouts provided for all activities.

1:00–2:30 PM Exhibitor Workshop

What's Going on in There? Inquiry Science for Supervisors, Teacher Trainers, and Teachers (Gen)

(Grades K–8) *Bayou B, Opryland*

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.

1:00–4:00 PM Short Courses

Building Physical Science Demonstration Models (SC-1)

(Middle–High School) SOLD OUT *Belmont A, Opryland*

Tickets Required: $43

Martha M. Day *(martha.day@wku.edu)*, Western Kentucky University, Bowling Green

For description, see page 30.

Renewable Energy (SC-2)

(General) *Belmont C, Opryland*

Tickets Required: $21

Mary Spruill *(info@need.org),* The NEED Project, Manassas, Va.

For description, see page 30.

What could be more engaging?

Every FOSS classroom is filled with wide-eyed students discovering the joy of active science discovery. Research-based and extensively field-tested in classrooms nationwide, the FOSS K–6 program invites students to learn science by *doing* science. And when students are engaged, learning becomes a very exciting experience.

To learn more, schedule a presentation, or participate in a pilot, call 800-258-1302 or visit www.DeltaEducation.com/FOSS.

FOSS® students *experience* science

FOSS FULL OPTION SCIENCE SYSTEM®

NSF

Developed by: LHS™ Lawrence Hall of Science

Published and Distributed by: Delta Education ...because children learn by doing.® School Specialty Science

2:00–3:00 PM Featured Presentation

Responding to Imperatives—Good Teachers Moving to GREAT! (Gen)

(General) *Tennessee Ballroom C, Opryland*

Diana Nunnaley *(diana_nunnaley@terc.edu),* Director, Using Data Projects, TERC, Cambridge, Mass.

Prsider: Diane Vaughn, Program Coordinator, NSTA Nashville Area Conference, and Educational Consultant, Clarkrange, Tenn.

New competitions for education dollars target finding ways to guarantee teacher quality. Business headlines highlight shortages in U.S. manpower in engineering and advanced scientific fields. Budget realities at the local level shift scant resources away from science classrooms. The implications of issues such as saving the environment and global warming require increasing understanding of basic science concepts by every citizen. We receive many different messages about science, science teaching, the future of our kids, and the future of our environment. Everyone seems to have a different opinion about what's important, what isn't working, and how we can fix the problems.

Right now, teachers are shaping the next Generation (X, Y, or Z). In spite of a shifting playing field, good teachers are moving to GREAT. Where and how is data making a difference for our kids?

Diana Nunnaley has been a cheerleader for educators for almost 30 years. In every role, her work has been at the service of teachers intent on extending their professional expertise, whether through the infusion of technologies into their practice or fundamental shifts in how teaching and learning are organized and delivered in the classroom. At the heart of her commitment to educators is a deeply held belief that all kids can learn at amazingly higher levels than our "system" and policies typically support.

Currently director of Using Data at TERC, Nunnaley works with grade- and course-level teams in every subject to help teachers analyze their student data. She has witnessed the lowest performing schools in a state rise to Blue Ribbon status as a result of teachers' interrogation of data and transformation into cultures of continuous inquiry. Her decade at TERC has given her access to phenomenal research, materials, and products that are transforming the ways that science and mathematics can be taught.

2:00–3:00 PM Presentations

SESSION 1

Science and Service Learning (Gen)

(General) *Cheekwood B, Opryland*

James T. McDonald *(jim.mcdonald@cmich.edu),* Central Michigan University, Mount Pleasant

Service learning is a proven instructional methodology that connects service learning with science content. Learn how to include service learning in your course. Book and DVD provided.

SESSION 2

Fly Me to the Moon—The Best in Books (Gen)

(General) *Cheekwood C, Opryland*

Juliana Texley *(jtexley@att.net),* Palm Beach State College, Boca Raton, Fla.

Reader? Teacher? Student? Author? Publisher? Join representatives of two NSTA publication committees to explore the criteria through which the best in science literature is identified. Please join us for the official announcement of the 2011 winners of the NSTA/CBC Outstanding Science Trade Books for Students K–12 annual award.

SESSION 3

CSSS Session: Common Core Standards: A Big Deal for Education (Bio)

(General) *Cheekwood F, Opryland*

Linda Jordan *(linda.k.jordan@tn.gov),* Tennessee Dept. of Education, Nashville

Richard H. Audet *(richardaudet414@gmail.com),* STEM Solutions, Inc., Nashville, Tenn.

We'll look at the current status of the Common Core State Standards for Science Initiative and review important implementation concerns for teachers and administrators.

SESSION 4

U.S. Regional GLOBE Networking Session (Env)

(General) *Lincoln A, Opryland*

Teresa J. Kennedy and **Nandini McClurg,** The GLOBE Program, Tyler, Tex.

GLOBE facilitates student learning, offers a hands-on/minds-on environment, and enables students to learn science through international networks of their peers and scientists around the world. GLOBE's vision promotes students, teachers, and scientists to work in close partnership with NASA, NOAA, and NSF Earth System Science Projects (ESSPs).

SESSION 5

Alternative Energy Sources: Inquiry-based Life Science Activities (Gen)

(Middle Level–High School) *Magnolia Boardroom B, Opryland*

Sarah E. Sealey *(sealeys.rms@robeson.k12.nc.us),* Rowland Middle School, Rowland, N.C.

Peter A. Wish, Rachel A. McBroom *(rachel.mcbroom@uncp.edu),* and **Rowena Bullard** *(marcabull@yahoo.com),* The University of North Carolina at Pembroke

Presider: Sarah E. Sealey

Come get an overview of alternative energy sources (focusing on biofuels) and explore a variety of student-tested, inquiry-based activities. Handouts provided.

SESSION 6

Forestry Field Studies for High School Students (Env)

(High School–College) *Washington B, Opryland*

David D. Glenn *(sdglenn@comcast.net),* Retired Educator, Oakland, Mich.

Put your students in the field collecting data on a forest ecosystem so they can construct a sustainable resource management plan. I'll show you how.

2:00–3:00 PM Workshops

How to Fit Nanotechnology into Your Classroom: Lessons Tied to Current Science Teaching (Gen)

(Middle Level–High School) *Hermitage B, Opryland*

Joyce Palmer *(joyce.palmer@mirc.gatech.edu),* Georgia Institute of Technology, Atlanta

Come try some standards-based hands-on activities from the National Nanotechnology Infrastructure Network. Take home a CD of all instructional materials.

WonderWorks in the Classroom (Phys)

(General) *Hermitage D, Opryland*

Andrea R. Wilson *(awilson@wonderworkstn.com),* WonderWorks, Pigeon Forge, Tenn.

Turn your classroom upside down. WonderWorks in the Classroom gives teachers hands-on ideas for presenting easy science activities that are standard aligned.

Inquiry Matters: Incorporating Inquiry into Elementary and Middle School Physical Science (Chem)

(Elementary–Middle Level) *Hermitage E, Opryland*

Patti M. Galvan *(p_galvan@acs.org),* American Chemical Society, Washington, D.C.

Explore characteristic physical properties of four similar-looking household liquids and identify four unknowns. Handouts.

Effective Outdoor Biology Instructional Strategies for Your Classroom (Env)

(Elementary–Middle Level/Informal Ed.) *Lincoln C, Opryland*

Joanna Snyder *(joanna_snyder@berkeley.edu),* Lawrence Hall of Science, University of California, Berkeley

Experience meaningful outdoor activities that connect easily with classroom learning. I'll share strategies, teaching resources, and an interactive website. We will be going outdoors!

Stellar Life Cycles (Earth)

(Middle Level–High School) *Lincoln D, Opryland*

Donna L. Young *(donna.young@tufts.edu),* Wright Center for Science Education, Tufts University, Medford, Mass.

Doug Lombardi *(lombardi.doug@gmail.com),* Southern Nevada Regional Professional Development Program, North Las Vegas

Use actual NASA images and artist renderings in a card set to explore how different stars progress through their life cycles.

Biology We Can't Control and Classrooms We Can (Gen)

(College/Supervision) *Lincoln E, Opryland*

Amy Alexander *(aalexander@fourcounty.net),* Four County Career Center, Archbold, Ohio

Learn the basics of brain development and try some engaging activities that demonstrate multiple intelligences.

NMLSTA Session: Inquiry Science on the Cheap (Gen)

(Middle Level–High School) *Ryman Studio A–C, Opryland*

Annette Barzal *(abarzal@earthlink.net),* Science Adventures, Medina, Ohio

Rajeev Swami *(chem276@yahoo.com),* NMLSTA President, and Central State University, Wilberforce, Ohio

Susan L. Clay, Ashland University, Ashland, Ohio

Join us for more than 10 teacher-time-tested successful science classroom activities that will make your students smile, giggle, wonder, and engage in learning science concepts.

NSTA Press Session: Activities Linking Science and Math with Art (Gen)

(Elementary–Middle Level) *Tennessee A, Opryland*

John Eichinger, California State University, Los Angeles

We'll engage in several hands-on activities from my new NSTA Press books *Activities Linking Science with Math, K–4,* and *Activities Linking Science with Math, 5–8*.

Hands-On Learning Activities for AP Biology (Bio)

(High School) *Tennessee B, Opryland*

Kristen R. Dotti *(kristen.dotti@catalystlearningcurricula.com),* Christ School, Arden, N.C.

Water noodle operons, human protein chains, redox reaction games—could this be AP science? Come see hands-on learning with rigorous AP content.

National Earth Science Teachers Association Rock and Mineral Raffle (Earth)

(General) *Tennessee D/E, Opryland*

Roberta M. Johnson *(rmjohnsn@gmail.com),* National Earth Science Teachers Association, Boulder, Colo.

Parker Pennington *(parkiv@umich.edu),* Retired Educator, Ann Arbor, Mich.

Here's a chance to win display-quality specimens of rocks, minerals, fossils, and other Earth science–related materials while learning about Earth science materials from areas other than your own.

2:00–3:15 PM Exhibitor Workshop

Bring Your Science Lab into the 21st Century Using iNeo/SCI™ Virtual Science Solutions (Gen)

(Grades 10–12) *Bayou E, Opryland*

Sponsor: Frey Scientific/School Specialty Science

Lou Loftin, Wassau County Public Schools, Reno, Nev.

Extend e-Learning with virtual laboratory experiences to your students anywhere! iNeo/SCI provides web-based tools to facilitate teaching and learning with our new e-Learning series content, including virtual laboratory experiences, tutorials, assessment, and the active monitoring of student progress! Participants receive free 21-day trial access to iNeo/SCI.

2:00–3:30 PM Exhibitor Workshop

Springs and Swings: Harmonic Motion and Hooke's Law (Gen)

(Grades 5–12) *Bayou C, Opryland*

Sponsor: CPO Science/School Specialty Science

Erik Benton and **Patsy Eldridge,** CPO Science/School Specialty Science, Nashua, N.H.

Use CPO Science's new Springs and Swings to explore the concepts of harmonic motion, oscillation, natural frequency, resonance, and Hooke's Law. This new, versatile piece of equipment uses a swinging pendulum, two different extension springs, and one compression spring to make observations, measurements, and predictions in a hands-on investigation activity.

2:15–3:30 PM Exhibitor Workshops

If You Teach AP Chemistry, You Gotta Get This! (Chem)

(Grades 9–12) *Canal A, Opryland*

Sponsor: Pearson

Ed Waterman, Retired Educator, Fort Collins, Colo.

Finally an AP Test Prep workbook that gets results! Acquire rich resources that help students learn to score well on the Advanced Placement Chemistry exam, even with limited time. Correlated to *Chemistry: The Central Science* by Brown and Le May, everything you need is here.

Introduction to Wisconsin Fast Plants® (Bio)

(Grades K–12) *Canal C, Opryland*

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

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

Science Starters **(Gen)**
(Grades 1–8) *Jackson A/B, Opryland*
Sponsor: Scientific Minds, LLC
Katherine M. Reeves *(info@scientificminds.com),* Scientific Minds, LLC, Orange, Tex.
The web-based Science Starters Program is a series of daily teacher-directed presentations that provide the constant review, remediation, and Response to Intervention (RtI) strategies necessary for success. This process spirals through all tested objectives with visual presentations that brain research has proven to promote learning. This program is available for grades 1–8 and the elementary version is available in Spanish.

Master of Science in Geosciences via Distance Learning from Mississippi State University **(Earth)**
(Grades K–12) *Jackson D, Opryland*
Sponsor: Mississippi State University
Doug Gillham *(dmg3@msstate.edu),* Mississippi State University, Mississippi State, Miss.
Discover how you can earn an MS degree in geosciences via distance learning through the Teachers in Geosciences program. Our 12-course, 36-credit hour graduate program includes courses in meteorology, geology, planetary science, oceanography, hydrology, and environmental geosciences. We have alumni in all 50 states and all students qualify for in-state tuition rates.

The Sky Through the Ages **(Earth)**
(Grades 5–12) *Jackson E/F, Opryland*
Sponsor: Simulation Curriculum Corp.
Herb Koller *(hkoller@simcur.com),* Simulation Curriculum Corp., Aurora, Ont., Canada
When our ancestors looked up at the night sky, what did they see and how did they explain what they saw? Where are Earth and its constellation headed? What will the sky look like in 2012? Join us on the big screen as we use the Starry Night curriculum to recreate the night skies at different times throughout history!

Bringing Biology to Life **(Bio)**
(Grades 9–12) *Presidential B, Opryland*
Sponsor: Houghton Mifflin Harcourt
Lory Heron, Houghton Mifflin Harcourt, Austin, Tex.
Engage and motivate students by connecting biology to their daily lives. Experience ways to teach biology using tools for today's learners and identify "cool connections" and construct meaningful bridges to make biology matter to your students. Come prepared to interact and engage as you explore ways to bring biology to life!

2:15–4:30 PM Exhibitor Workshop

Stream Assessment: An Active, Integrated Approach to Science Learning **(Env)**
(Grades 6–12) *Canal B, Opryland*
Sponsor: Water Environment Federation
Michael Kemp, Murray State University, Murray, Ky.
Laura Alex and **Vena Jones,** Cumberland River Compact, Nashville, Tenn.
Participate in a hands-on simulation of chemical, biological, and geophysical assessment of stream water quality. Take-home resources, including a World Water Monitoring Day™ test kit, will be supplied.

2:30–4:30 PM Exhibitor Workshop

Using Science Notebooks with FOSS K–6 **(Gen)**
(Grades K–6) *Bayou D, Opryland*
Sponsor: Delta Education/School Specialty Science–FOSS
Brian Campbell, Lawrence Hall of Science, University of California, Berkeley
Ellen Mintz, Charleston County Schools, Charleston, S.C.
Jeri Calhoun, Science Associate, Isle of Palms, S.C.
Learn the essential components for creating and effectively using science notebooks with your students. Through a hands-on FOSS investigation, you'll discover how science notebooks can be used to impact student achievement and how to use science notebooks as an effective tool for building conceptual understanding. Sample FOSS materials will be distributed.

3:00–4:30 PM Exhibitor Workshop

The Craft of Questioning and Delta Science Modules **(Gen)**
(Grades K–8) *Bayou B, Opryland*
Sponsor: Delta Education/School Specialty Science
John Cafarella, Consultant, Canadensis, Pa.
Using activities and strategies from Delta Science Modules units, we'll examine effective questions and effective questioning through a lens of "Bloomish" taxonomy as well as explore some appropriate questions for the stages of your lesson development—questions that assess, enhance student understanding, and inform your teaching.

3:00–9:00 PM Meeting

CESI Board Meeting
(By Invitation Only) *Lincoln B, Opryland*

3:30–4:30 PM Presentations

SESSION 1

How to Put on a Family Science Night at Your School (Gen)

(General) *Cheekwood B, Opryland*

James T. McDonald *(jim.mcdonald@cmich.edu)* and **Rob Cundy** *(cundy1rk@cmich.edu),* Central Michigan University, Mount Pleasant

The advisor and students of the Central Michigan University NSTA preservice chapter will share how to put on a family science night and present some family activities that you can use right away.

SESSION 2

Create a Learning Revolution: Using Enhanced Podcasts to Prepare Students for Life in a Digital World (Gen)

(General) *Cheekwood C, Opryland*

Shannon E. Parks *(sparks@alsde.edu)* and **Stephanie A. Baird** *(sabaird@uab.edu),* Alabama Dept. of Education, Montgomery

Gallery360°, the latest addition to the Alabama Learning Exchange (ALEX), contains a treasure chest of podcast jewels. Come join the staff on a tour of content podcasts aligned to the Alabama Courses of Study and ALEX lesson plans.

SESSION 3

Teaching About Corals: Using NOAA Resources (Earth)

(General) *Cheekwood F, Opryland*

Lindsay Knippenberg *(robert.c.hansen@noaa.gov),* Einstein Fellow, NOAA, Washington, D.C.

Coral reefs are a barometer of our planet's health. Learn about NOAA resources that bring corals to life in the classroom.

SESSION 4

Starting an NSTA Student Chapter: Faculty and Student Perspectives (Gen)

(General) *Magnolia Boardroom B, Opryland*

Howard Wahlberg *(hwahlberg@nsta.org),* Assistant Executive Director, Member, Chapter, and Customer Relations, NSTA, Arlington, Va.

Interested in getting your preservice teachers more involved in the profession? Don't 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.

SESSION 5

Creating a Powerful Synergy with Hands-On Investigations, Science Literacy Skills, and Science Content in the K–6 Science Classroom (Gen)

(Preschool–Middle Level) *Washington B, Opryland*

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

Explore the powerful synergy that develops when investigative processes, science knowledge, and science literacy skills are developed side by side in the K–6 classroom. We'll look at top-quality books, print and technology resources, and investigative opportunities.

3:30–4:30 PM Workshops

The Invisible Universe (Earth)

(Middle Level–High School) *Hermitage A, Opryland*

Rae McEntyre *(rae.mcentyre@education.ky.gov),* Kentucky Dept. of Education, Frankfort

If we can't see it, does it really exist? Explore the properties of light waves in an effort to answer this question. Free NASA materials!

The Mathematics of Human Population Growth (Gen)

(Middle Level–High School) *Hermitage B, Opryland*

William H. Leonard *(leonard@clemson.edu),* Clemson University, Clemson, S.C.

Assume the roles of five hypothetical families, each with very different reproductive strategies. The total populations after 100 years show amazing differences.

How to Direct a Science Olympiad Fun Day/Night That Will WOW Your Students (Gen)
(General) *Hermitage D, Opryland*
Kelly R. Price *(price_kel@yahoo.com),* Forsyth County Schools, Cumming, Ga.
Jennifer Kopach *(jrkopach@comcast.net),* Science Olympiad, Oakbrook Terrace, Ill.
Host a Science Olympiad Fun Day/Night without breaking your back or your budget. Learn how to collaborate with teachers and parents to create an exciting and educational event.

Global Sustainability Science Connections: Engaging Lessons for the Primary Grades (Gen)
(Elementary/Informal Ed) *Hermitage E, Opryland*
Cindi Smith-Walters *(csmithwa@mtsu.edu),* Middle Tennessee State University, Murfreesboro
Carice Ambruster *(ambrusterc@wcschools.com),* West Elementary School, Mount Juliet, Tenn.
Global sustainability is an engaging context for elementary science skills and content. Experience hands-on lessons about food and environment, systems, and biodiversity. Free curriculum guide!

MoonKAM: Exploring Lunar Images (Earth)
(Middle Level) *Lincoln C, Opryland*
Leesa Hubbard *(astropoet@aol.com),* Sally Ride Science, San Diego, Calif.
Julie Miller *(jmillerirc@olatheschools.com),* Olathe (Kans.) District Schools
Teach using imagery from the lunar surface. Learn about the exciting GRAIL mission to the Moon and how students can take pictures with MoonKAM cameras.

Just Add Humans! Helping Students Understand How Design and Development Choices Affect the Planet (Env)
(Middle Level) *Lincoln D, Opryland*
Roberta M. Johnson *(rmjohnsn@gmail.com),* National Earth Science Teachers Association, Boulder, Colo.
These hands-on inquiry activities encourage student exploration of how humans live in the landscape and help students understand the environmental science implications of their choices. Handouts.

Starting an NSTA Student Chapter:
Faculty & Student Perspectives

Thursday
December 2
3:30–4:30 PM
Gaylord Opryland Resort and Convention Center
Magnolia Boardroom B

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.

National Science Teachers Association NSTA

Exciting Engineering Projects (Gen)
(Middle Level) *Ryman Studio A–C, Opryland*
Alison Fine, Rashi School, Dedham, Mass.
This hands-on session focuses on the design process and how to incorporate engineering into all areas of science. You will explore several projects, including balloon-powered cars, bridges, animal habitats, and more! Join me for this fun, interactive session!

NSTA Press Session: Stop Faking It! Finally Understand FORCE AND MOTION So You Can Teach It (Phys)
(Elementary–Middle Level) *Tennessee A, Opryland*
Bill Robertson *(wrobert9@ix.netcom.com),* NSTA Press Author, Woodland Park, Colo.
Tired of teaching a subject you don't fully understand yourself? Join the author of the *Stop Faking It!* books for sample activities designed to help you gain a deep understanding of force and motion concepts. No tuxedos, please.

Portable Affordable Simple Science (P.A.S.S. ©) for PreK–2: Linking Home and School (Gen)
(Preschool–Elementary) *Tennessee B, Opryland*
Renee G. O'Leary *(drpeggydee@verizon.net)* and **Margaret "Peggy" Dee** *(drpeggydee@verizon.net),* Caravel Academy, Bear, Del.
P.A.S.S., a multisensory, hands-on, process-oriented science approach, assures success for every child. Each child has a science lesson bag with safe, inexpensive materials. Take home two lesson bags and teaching materials.

4:00–5:15 PM Exhibitor Workshops

Inquiry Investigations™ Biotechnology Activities with E-Gels® (Gen)
(Grades 7–10) *Bayou E, Opryland*
Sponsor: Frey Scientific/School Specialty Science
Lou Loftin, Wassau County Public Schools, Reno, Nev.
With our new Inquiry Investigations biotechnology series, students learn foundational analysis skills used in biotechnology. See how program software allows the preparation of web-based content, along with individualized assessment. Participants will compare both virtual and actual E-Gel electrophoretic separations.

Untamed Science! How to Make Your Own Science Videos from Scratch (Gen)
(Grades K–12) *Canal A, Opryland*
Sponsor: Pearson
Untamed Science
Join the fun and engaging Untamed Science video crew on a science video adventure! Passionate about education, this team of young scientists develops exciting videos that address the Big Questions of Science and bring real-world applications to the classroom. They will show you how to best implement video in the classroom and even how you and your students can create your own videos on a shoestring budget. Handouts and free lesson activities will be provided so you can use them in your classroom next week.

Energize Your Chemistry Students' Inquiry Skills with Carolina's Inquiries in Science™ Chemistry Series (Chem)
(Grades 9–12) *Canal C, Opryland*
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.

The Watershed Tour **(Env)**
(Grades 4–8) *Jackson E/F, Opryland*
Sponsor: LaMotte Co.
Christina Medved, Stroud Water Research Center, Avondale, Pa.
Join us for a virtual tour of four stream sites and gather data on the chemistry and biology of the stream. Filled with hands-on experiences, the Watershed Tour, developed by Stroud Water Research Center and LaMotte, is an ideal introduction to watersheds, stream ecology, and the impact of land use on water quality. Door prize!

Sparking Interest and Learning with Chemistry **(Chem)**
(Grades 9–12) *Presidential B, Opryland*
Sponsor: Houghton Mifflin Harcourt
Jerry Sarquis and **Mickey Sarquis,** Miami University, Middletown, Ohio
Modern Chemistry authors Jerry and Mickey Sarquis show you how to spark imagination and interest in chemistry with simple but powerful tricks and tips! The two are recognized leaders in chemistry education initiatives.

4:00–5:30 PM Exhibitor Workshop

Gas Laws Kit: Chemistry and the DataCollector—Charles' and Boyle's Laws Uncovered **(Gen)**
(Grades 5–12) *Bayou C, Opryland*
Sponsor: CPO Science/School Specialty Science
Erik Benton and **Patsy Eldridge,** CPO Science/School Specialty Science, Nashua, N.H.
Are pressure, volume, and temperature related? Use CPO Science's DataCollector, temperature probes, pressure sensors, and reliable lab equipment from our Gas Laws Kit to take real-time measurements and digitally log data while viewing on-screen graphs to uncover how Charles' and Boyle's laws explain gas laws through hands-on discovery activities.

5:00–6:00 PM Presentations

SESSION 1
Give Science a Voice! Digital Storytelling in the Science Classroom **(Env)**
(Elementary–High School) *Cheekwood C, Opryland*
Roger D. Pence *(rogpence@yahoo.com),* Benicia Middle School, Benicia, Calif.
The creation of multimedia digital stories about science concepts fosters engagement, literacy, content knowledge, and final product ownership. We'll investigate techniques, tips, and copyright-friendly resources.

SESSION 2
Differentiating with Science Cafés **(Gen)**
(General) *Lincoln A, Opryland*
Margie Gifford *(margiebg@gmail.com),* Castle Heights Upper Elementary School, Lebanon, Tenn.
Science cafés do it all—backwards design, differentiated instruction, Project Based Learning, cooperative groups, Bloom's Taxonomy, metacognition, technology integration, and standards-based learning. Learn how to develop your own "science café."

SESSION 3
Teaching an Integrated Unit on the Ocean **(Gen)**
(Elementary–Middle Level) *Magnolia Boardroom B, Opryland*
David Purvis *(david.purvis@marist.edu),* Marist College, Poughkeepsie, N.Y.
Learn how to design interesting classes for an oceans unit and create a relaxed, brain-balanced learning environment where students complete integrated activities.

5:00–6:00 PM Workshops

NASA Mysteries of the Universe: Dark Matter (Earth)

(High School) *Hermitage A, Opryland*

Janet L. Moore *(janetmoore@gmail.com),* NASA/Illinois State University, Bloomington

Explore dark matter through mathematical reasoning. Investigate the evidence that dark matter exists and learn what we know and don't know about it. Free NASA materials!

Ramps and Pathways: Teaching Physical Science Through Children's Creative Design (Phys)

(Preschool–Elementary) *Hermitage B, Opryland*

Beth D. Van Meeteren *(beth.vanmeeteren@uni.edu),* University of Northern Iowa, Cedar Falls

Experiment with ramps and pathways and learn how to support young children's learning about force, motion, and inquiry as they design ramp systems.

Daytime Astronomy with Robotic Telescopes (Earth)

(Middle Level–College) *Hermitage D, Opryland*

Robert T. Sparks *(rsparks@noao.edu),* National Optical Astronomy Observatory, Tucson, Ariz.

Learn how your students can take their own daytime astronomical images using robotic telescopes courtesy of NASA. Free teacher's guide and software.

Growing Students That Love Science by Using Foldables® (Gen)

(General) *Ryman Studio A–C, Opryland*

DiAnn B. Casteel *(dcasteel@tusculum.edu),* Tusculum College, Greeneville, Tenn.

Danielle Trent *(misstrent09@hotmail.com),* Special Education, Rogersville, Tenn.

Bring lessons to life and grow students eager to learn with a focused teaching strategy using Foldables.

Experience "ah-ha" moments with NSTA's *Uncovering Student Ideas in Science* Series

"Finally a down-to-earth, research-based source that teachers can read today and begin using tomorrow."
— K–12 Science Supervisor

- Ideal for K–12 science teachers, preservice teachers, professional developers, and college science and methods professors.
- 4 bestsellers packed with lesson plans and teaching strategies that dispel students' preconceptions about science
- 100 easy-to-administer questionnaires or "probes" that focus on fundamental ideas in science
- Probes serve as formative assessment tools, with accompanying teacher materials that explain science content and link to national standards
- Explanations on content are specific but brief, and connect important ideas for students and teachers
- Topics explored include physical, life, Earth and space science, and the nature of science.

Buy all 4 volumes together and save!

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$23.96 – Member Price $29.95 – Nonmember Price

Visit *www.nsta.org/store* to place an order.
Call 1-800-277-5300 to order by phone.

NSTA National Science Teachers Association


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BALD

8:00–9:00 AM Presentations

SESSION 1

Using NOAA's Climate Change Resources in the Classroom (Earth)

(General) *Cheekwood A, Opryland*

Lindsay Knippenberg *(robert.c.hansen@noaa.gov),* Einstein Fellow, NOAA, Washington, D.C.

Improve your students' knowledge of climate change using NOAA's data and high-interest educational materials about this critical topic.

SESSION 2 (three presentations)

(General) *Cheekwood B, Opryland*

Presider: Linda L. Tichenor *(lticheno@uafortsmith.edu),* University of Arkansas at Fort Smith

SCST Session: Lessons from a South Carolina Evolution Survey of High School Science Teachers (Bio)

Kelly C. Smith *(kcs@clemson.edu),* Clemson University, Clemson, S.C.

A comprehensive survey of South Carolina science teachers assessed their attitudes toward evolution and the challenges they face teaching evolution in the classroom. I'll share the results.

SCST Session: Pedagogical Content Knowledge of Preservice Secondary Science Teachers: An Action Research Study (Gen)

April A. Nelms *(aanelms@crimson.ua.edu),* University of Alabama, Tuscaloosa

An action research study was conducted to assess the level of pedagogical content knowledge in preservice secondary science teachers in a specific science methods course. I'll share the results.

SCST Session: Lost in Translation: Bridging the Gaps Between Science and Education (Gen)

Amanda Lee Glaze *(amlee1@crimson.ua.edu),* The University of Alabama, Tuscaloosa

We will examine the formation of learning communities among science teachers, scientists, and teacher educators for the purpose of professional mentoring, growth, and support as well as improved student achievement.

SESSION 3

CESI Session: Girls Engaged in Math and Science University (GEMS-U): Helping Girls in Every Classroom Accept the STEM Challenge (Gen)

(Informal Education) *Cheekwood C, Opryland*

Susan Young *(youngsu@bibbed.org),* Brent Elementary School, Brent, Ala.

See some stellar examples of more than 500 GEMS-U ALEX lesson plans designed to engage girls in math and science learning with 21st-century tools.

SESSION 4

EPA Tools for Teachers for Air Quality and Climate Change Education (Env)

(Middle Level–High School/Informal Ed.) *Cheekwood F, Opryland*

Karen Scott *(scott.karen@epa.gov)* and **Donna Rogers** *(rogers.donna@epa.gov),* U.S. Environmental Protection Agency, Washington, D.C.

Presider: Ruth McCully *(mccully.ruth@epa.gov),* U.S. Environmental Protection Agency, Washington, D.C.

EPA's online resources will have your students in the control seat as they discover the causes and effects of pollution as well as the impacts of climate change on wildlife and habitat. We will demonstrate seven online tools, including Air Pollution: What's the Solution? and the Climate Change, Wildlife, and Wildlands Toolkit.

SESSION 5

Before and After Retirement: Practicalities and Possibilities (Gen)

(General) *Magnolia Boardroom B, Opryland*

Howard Wahlberg *(hwahlberg@nsta.org),* Assistant Executive Director, Member, Chapter, and Customer Relations, NSTA, Arlington, Va.

The NSTA Retired Advisory Board invites you to a vibrant and useful information-sharing session. Join your colleagues and share your ideas about staying active both in and out of the profession.

SESSION 6

NSTA Avenue Session: Toshiba/NSTA ExploraVision Awards (Gen)

(General) *Presidential Chamber B, Opryland*

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

ExploraVision is a K–12 competition that motivates students and challenges them to think creatively about scientific innovation 20 years into the future. Discover how students can win up to $240,000 in savings bonds for envisioning new technologies. Learn how ExploraVision supports classroom goals; illustrates connections between science and technology; and offers recognition, computers, and other prizes for schools, students, teachers, and mentors. Session participants have a chance to win a Toshiba product!

SESSION 7

How'd He Do That? (Gen)

(General) *Tennessee B, Opryland*

Josh W. Davis *(davisjw@wcschools.com),* West Wilson Middle School, Mount Juliet, Tenn.

Join me as I present a variety of discrepant events in science and demonstrate how these events can be used to teach scientific principles.

SESSION 8

The Reflective Assessment Technique: Fifteen Minutes to Improved Instruction (Gen)

(Elementary–Middle Level) *Washington B, Opryland*

Kathy 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.

8:00–9:00 AM Workshops

NABT Session: Writing for the *American Biology Teacher* (Bio)

(General) *Hermitage A, Opryland*

William H. Leonard *(leonard@clemson.edu),* Clemson University, Clemson, S.C.

Learn techniques for writing a successful article for the *American Biology Teacher.* I'll share author guidelines and sample articles.

ACS Middle Level Session: Solids, Liquids, and Gases: The Kinetic Theory of Matter (Chem)

(Middle Level) *Hermitage B, Opryland*

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

Explore solids, liquids, and gases on the molecular level to discover how heating and cooling affect matter.

ACS Session One: What's Matter Made Of? (Chem)

(High School) *Hermitage C, Opryland*

Jerry A. Bell *(j_bell@acs.org),* American Chemical Society, Washington, D.C.

Visualizing the constituents of matter and their properties is sometimes difficult for students. Putting the concepts in textbooks to work explaining observations from activities and extending the activities as an assessment reinforces and deepens understanding. Bring your USB flash drive and take away the presentation and activities to use in your classes.

AAPT Session: Newton's Laws Explained, Centripetal Motion Examined (Phys)

(Middle Level) *Hermitage D, Opryland*

Kenny D. Lee *(kenny.lee1@warren.kyschools.us),* Warren Central High School, Bowling Green, Ky.

Motion and forces are explained in this make-and-take session aimed at middle grades and integrated science teachers. Topics include inertia, velocity, acceleration, and force.

Dark Sky Rangers (Earth)

(Informal Education) *Hermitage E, Opryland*

Robert T. Sparks *(rsparks@noao.edu)* and **Constance E. Walker** *(cwalker@noao.edu),* National Optical Astronomy Observatory, Tucson, Ariz.

Learn how dark skies relate to wildlife, human health, energy conservation, and astronomy, and how your students can participate in the citizen science program Globe at Night.

Environmental Education Activities Based on the PreK–8 Standards (Env)

(Preschool–Middle Level) *Lincoln C, Opryland*

James S. Watson *(jwats134@hotmail.com),* Ivy Academy, Soddy-Daisy, Tenn.

Explore six environmental education activities based on the standards as you move through this exhibit-type presentation.

Designing Your Own STEM-based Curriculum (Earth)

(Supervision/Administration) *Lincoln D, Opryland*

Barry Fried *(bfried@schools.nyc.gov)* and **Honora Dash** *(hdash@schools.nyc.gov),* John Dewey High School, Brooklyn, N.Y.

Learn how to create student-centered environments to foster an understanding of science concepts in astrobiology and Earth system sciences, increase science literacy through differentiated instruction, and create opportunities for students and teachers in the STEM field through authentic science learning experiences.

Cross-curricular Instruction to Engage Students and Improve Performance (Gen)
(General) *Lincoln E, Opryland*
Marsha S. Winegarner *(equscied@defuniak.com),* K–12 Educational Consultant, DeFuniak Springs, Fla.
The brain does not work in isolation! Learn techniques to guide instruction across the curriculum, make learning more relevant, and improve comprehension.

Making Music with Palm Pipes (Phys)
(Elementary–High School) *Ryman Studio A–C, Opryland*
Iris D. Trent, Jefferson County High School, Dandridge, Tenn.
Wanda Hillhouse *(wandahillhouse@aol.com),* Lawrence County High School, Lawrenceburn, Tenn.
Make a set of palm pipes and receive a songbook with familiar tunes. This is a low-cost activity that can be adapted to fit any age group.

NSTA Press Session: Making Science Reading Come Alive (Gen)
(Middle Level–High School) *Tennessee A, Opryland*
Jodi L. Wheeler-Toppen *(jwt@uga.edu),* University of Georgia, Athens
Do your students struggle to understand their textbook? Find out why kids have trouble with science reading and try some proven techniques for turning your students into successful science readers.

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

Friday, December 3, 2010
8:00–9:00 AM
Gaylord Opryland Resort and Convention Center
Magnolia Boardroom B

For information on the Retired Members Advisory Board, contact Phyllis Frysinger, chair, at *phyllis.frysinger@wright.edu.*

National Science Teachers Association NSTA

8:00–9:00 AM Exhibitor Workshops

Discovery-based Physics with SPARKscience™: Harmonic Motion (Phys)
(Grades 6–12) *Bayou E, Opryland*
Sponsor: PASCO Scientific
Presenter to be announced
This session explores motion—one of the toughest aspects of high school physics investigations—using PASCO's state-of-the-art science teaching solutions. In this hands-on workshop, you will participate in standards-based probeware lab activities from PASCO's new physics curriculum. Be one of the first to experience how the SPARK Science Learning System can enhance your teaching practice and improve student understanding of core topics.

How to Start a Biotech Program (Bio)
(Grades 7–College) *Jackson A/B, Opryland*
Sponsor: Bio-Rad Laboratories
Sherri Andrews *(sherri_andrews@bio-rad.com),* Bio-Rad Laboratories, Hercules, Calif.
Stan Hitomi, San Ramon Valley Unified School District, Danville, Calif.
Biotech is where it's at! Hear 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 building blocks that will allow you to continue to address the world's rapidly changing scientific landscape.

Project-Based Inquiry Science: The Next Generation of Middle School Programs (Bio)
(Grades 6–8) *Presidential C, Opryland*
Sponsor: It's About Time
Mary Starr, The University of Michigan, Ann Arbor
When you see this video footage of students collaborating and working to complete their projects, you'll understand why Project-Based Inquiry Science (PBIS) is truly the next generation of science programs. We'll review the latest cognitive research about how middle school students learn best and how this research has been put into practice in real-world classrooms You'll see a transformation in your students as they become enthusiastic, collaborative learners and rigorous thinkers. Also see how Fourier probeware enhances project-based activities.

8:00–9:15 AM Exhibitor Workshops

Put Some Spark into Science Investigations (Gen)
(Grades 2–8) *Bayou B, Opryland*
Sponsor: Delta Education/School Specialty Science
Johanna Strange, Consultant, Richmond, Ky.
Tom Graika, Consultant, Lemont, Ill.
Using the science topics of magnetism and electricity, learn how to turn guided investigations into challenge investigations and open inquiries. These strategies will help your students become independent thinkers and inquirers. Participants will receive a complimentary resource packet and related Delta products.

Science Under Siege? Teaching Evolution in a Climate of Controversy (Bio)
(Grades 9–12) *Canal A, Opryland*
Sponsor: Pearson
Kenneth Miller, Brown University, Providence, R.I.
The nationwide struggle over the place of evolution in the biology curriculum continues. As lead witness in the 2005 Dover "Intelligent Design" trial, I will discuss the continuing controversy and suggest how educators can deal with it successfully. This workshop will review some of the commonly held misconceptions about the process as well as answers to some of the widely used arguments against evolution. Participants will receive resources that can be used to respond to challenges commonly faced in the classroom and community when teaching evolution.

Living by Chemistry: What Shape Is That Smell? (Chem)
(Grades 9–12) *Canal B, Opryland*
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 help students understand molecular structure and other core chemistry concepts through a smell context. Sample lessons from the Living by Chemistry curriculum will be provided.

AUTOPSY: Forensic Dissection Featuring Carolina's Perfect Solution® Pigs (Bio)
(Grades 9–12) *Canal C, Opryland*
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Are you ready for a cutting-edge forensic dissection activity? Engage students and revitalize your instruction of mammalian structure and function with a "real" classroom autopsy! Participants, working in pairs, dissect a pig by modeling the autopsy protocols of a forensic pathologist.

Teaching About the Rock Cycle and Earth Time (Earth)
(Grades 6–8) *Jackson C, Opryland*
Sponsor: LAB-AIDS, Inc.
Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.
Do your middle-level students have trouble with complex concepts like the rock cycle and geologic time? Maybe it has something to do with understanding small, incremental changes over millions of years. Come experience motivating, hands-on techniques and strategies for learning about these and related topics, like plate tectonics and continental drift. Support for literacy and technology will be addressed.

Come Learn How to Fingerprint Your Own DNA: Classroom PCR That Works (Bio)
(Grades 6–College) *Jackson D, Opryland*
Sponsor: EDVOTEK
Jack Chirikjian *(info@edvotek.com)* and **Khuyen Mai** *(info@edvotek.com),* EDVOTEK, Bethesda, Md.
Learn how to prepare your own DNA for fingerprinting, and how these procedures can be integrated into classroom experiments using Polymerase Chain Reaction (PCR) and electrophoresis. We will demonstrate gel staining with InstaStain™, a safe, nonliquid method that also reduces time and mess. One kit will be raffled (a $75 value)!

Test Making at Its Easiest: Let Examgen Show You How! (Gen)
(Grades 5–12) *Jackson E/F, Opryland*
Sponsor: Fisher Science Education
Luke Masouras, Examgen, Inc., Syracuse, N.Y.
How many hours per week do you spend making tests and finding questions and formatting them into exams, quizzes, homework, and review material? We can help you minimize the time spent creating all this material. All our material is aligned to your state standards and curriculum.

Help Students Flourish with New Digital Learning Tools (Gen)
(Grades K–12) *Presidential B, Opryland*
Sponsor: Kendall Hunt Publishing Co.
Jerilyn Hilse, Kendall Hunt Publishing Co., Dubuque, Iowa
Bring inquiry-based science to life in your classroom through digital learning! *Flourish,* Kendall Hunt's new online learning network for grades K–12, engages teachers, students, and parents with interactive curricula and educational tools that make every aspect of teaching, learning, and communication accessible within the classroom and at home.

Fun, Fabulous Foldables® (Gen)
(Grades K–12) *Presidential E, Opryland*
Sponsor: McGraw-Hill School Education Group
Dinah D. Zike, Dinah-Might Adventures, LP, San Antonio, Tex.
Experience how these 3-D graphic organizers can transform your science lesson into an engaging, interactive learning experience. These interactive tools offer endless possibilities for collecting data, building understanding, and assessing student comprehension.

8:00–9:30 AM Meeting

Tennessee STEM Council Meeting
(By Invitation Only) *Lincoln B, Opryland*

8:00–9:30 AM Exhibitor Workshops

K–8 Science with Vernier **(Gen)**
(Grades K–8) *Bayou A, Opryland*
Sponsor: Vernier Software & Technology
Gretchen Stahmer DeMoss *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
Learn how easy it is for your students to collect temperature data, heart rates, magnetic field data, and more using Vernier probeware. Try experiments from our popular *Elementary Science with Vernier* and *Middle School Science with Vernier* lab books using LabQuest or our low-cost line of Go! products on a computer.

Genetics: Crazy Traits and Adaptation Survivor **(Gen)**
(Grades 5–12) *Bayou C, Opryland*
Sponsor: CPO Science/School Specialty Science
Erik Benton and **Patsy Eldridge,** CPO Science/School Specialty Science, Nashua, N.H.
Students learn new vocabulary when they study genetics such as traits, alleles, and genotypes. How can you predict the traits of offspring when you know the genetic makeup of the parents? These ideas will come alive as you create crazy creatures with a unique kit, and study the resulting population.

8:00–10:30 AM Exhibitor Workshop

Using Middle School Science Notebooks to Assess Learning with FOSS (For Experienced Users) **(Gen)**
(Grades 5–8) *Bayou D, Opryland*
Sponsor: Delta Education/School Specialty Science–FOSS
Jessica Penchos, Lawrence Hall of Science, University of California, Berkeley
Virginia Reid, Consultant, Olympia, Wash.
Now that you're using student science notebooks, what more can you do with them? Student work samples and the FOSS Middle School Curriculum can be used to engage students in assessment practices and strategies that advance student learning. Sample FOSS materials will be distributed.

8:30 AM–12:30 PM Short Course

A Solid Science Background for Designing a New Tomorrow (SC-3)
(Grades 4–9) *Belmont B, Opryland*
Tickets Required: $46
Arloa Woolford *(wimef@womeninmining.org),* Women in Mining Education Foundation, Winnemucca, Nev.
Phyllis Lyday, Member, Women in Mining, Reform, Ala.
For description, see page 30.

9:00 AM–12 Noon Short Course

Dynamics of Physical Science Demonstrations (SC-4)
(Middle Level–High School) *Belmont A, Opryland*
Tickets Required: $20
CANCELED
Glyn Burton, University School of Nashville and Vanderbilt University, Nashville, Tenn.
Howard Rosen, University School of Nashville, Tenn.
For description, see page 31.

9:00 AM–5:00 PM Exhibits

Ryman Exhibit Hall C2, Opryland
Come see the most up-to-date science textbooks, software, equipment, and other teaching materials. Some exhibitors will offer materials for sale.

9:30–10:30 AM Featured Presentation

Global Environmental Impact of Fossil Fuel Burning (Gen)

(General) *Tennessee Ballroom C, Opryland*

Wilfred M. Post *(postwmiii@ornl.gov),* Senior Scientist, Environmental Science Div., Oak Ridge National Laboratory, Oak Ridge, Tenn.

Presider: Linda Gale Stanley, Jacksboro Middle School and Biology in a Box, Jacksboro, Tenn.

The burning of fossil fuel over the past century by human society has had a profound effect on the atmospheric concentration of CO_2 in the atmosphere. Rising CO_2 concentration is anticipated to accelerate over the next century. We will review the latest research on the impact of this change in atmospheric composition on climate-, natural-, and human-dominated terrestrial ecosystems and ocean chemistry. These effects will be placed in geological and paleo-historical context of past changes in atmospheric CO_2 changes. Strategies to reduce atmospheric CO_2 concentrations will be discussed.

Wilfred Post is senior scientist in the Environmental Sciences Division at Oak Ridge National Laboratory. Post has more than 90 open literature publications in terrestrial ecosystem ecology. Particular emphasis is on the role of global terrestrial ecosystems in carbon cycling and exchanges of CO_2 with the atmosphere. He is a recognized expert on soil carbon dynamics, nutrient relationships between soil and vegetation, and the impact of species composition on ecosystem processes. Post has developed new approaches to representing the impact of land-use change and climate change in terrestrial biogeochemistry models, and also developed global data sets for the evaluation of global terrestrial biogeochemistry models. His current work now centers on developing data-assimilation methods to confront terrestrial ecosystem models with data from a variety of sources (atmospheric trace gas measurements, eddy-covariance networks, and soil and biomass inventories) to estimate model parameters and initial conditions and to improve ecosystem models.

9:30–10:30 AM Presentations

SESSION 1

Just What Qualifies as Science? (Bio)

(High School/Supervision) *Cheekwood A, Opryland*

Lisa Culberson *(lisa.culberson@sdhc.k12.fl.us),* Gaither High School, Tampa, Fla.

Nancy Johnson Marsh *(marshnj@gmail.com),* Retired Educator, Tampa, Fla.

Help your students recognize and distinguish between science, pseudoscience, emerging science, and nonscience. We'll share strategies and lessons from the Evolution and the Nature of Science (ENSI) website.

SESSION 2 (three presentations)

(General) *Cheekwood B, Opryland*

Presider: Linda L. Tichenor, University of Arkansas at Fort Smith

SCST Session: Jazzin' Up General College Chemistry (Chem)

Elizabeth T. Wise *(ewise@lourdes.edu),* Lourdes College, Sylvania, Ohio

Jazz up college chemistry with group research projects, service learning, inquiry-based learning, the use of a computer interface in the lab, or the use of an online course management system.

SCST Session: CPS: A Faculty Perspective on Benefits and Barriers (Gen)

Lynda P. Nelson *(lnelson@uafortsmith.edu)* and **Rodney K. Nelson** *(rnelson@uafortsmith.edu),* University of Arkansas at Fort Smith

Learn the problems, pitfalls, and benefits encountered by faculty as CPS is integrated into the science instructional environment.

SCST Session: Attitudes Toward Academic Honesty of Early Academic Career Science Majors (Gen)

Rodney K. Nelson *(rnelson@uafortsmith.edu)* and **Lynda P. Nelson** *(lnelson@uafortsmith.edu),* University of Arkansas at Fort Smith

We examined science students' attitudes and perceptions concerning academic honesty. We'll share the results.

SESSION 3

Designing and Using an Essential Question for a Mammoth Cave Extended Classroom (Earth)

(Informal Education) *Cheekwood F, Opryland*

Jeanine M. Huss *(jeanine.huss@wku.edu),* Western Kentucky University, Bowling Green

Cheryl Messenger *(cheryl_messenger@nps.gov),* Mammoth Cave National Park, Mammoth Cave, Ky.

Addressing the essential question "What is the above/below ground connection?," students became active participants using observational and questioning skills in an overnight Mammoth Cave experience.

SESSION 4

NSTA High School Committee Presents Leading Beyond the Classroom (Gen)

(High School) *Magnolia Boardroom B, Opryland*

Michael Lowry, NSTA Director, High School Science Teaching, and The McCallie School, Chattanooga, Tenn.

Looking for opportunities to expand your leadership outside the classroom? We'll share strategies for being an effective leader in your school as well as leadership opportunities with NSTA.

SESSION 5

NSTA Avenue Session: SciLinks: Using the Online Assignment Tool (Gen)

(Elementary–High School) *Presidential Chamber B, Opryland*

Tyson Brown *(tbrown@nsta.org),* Director, SciLinks, NSTA, Arlington, Va.

Virginie L. Chokouanga, Customer Service and Database Administrator, SciLinks, NSTA, Arlington, Va.

The SciLinks assignment tool allows your students to show what they have learned from the web resources SciLinks provides. Learn to create and distribute assignments.

SESSION 6

How Does Research Experience for Teachers Impact Students in the Classroom? (Env)

(General) *Washington B, Opryland*

Adrian R.T. Nix *(adrian.nix@eku.edu)* and **Susan Crain Neumann** *(susan.neumann@eku.edu),* Model Lab School, Richmond, Ky.

April Gonzalez *(april.gonzalez@rockcastle.kyschools.us),* Rockcastle County High School, Mount Vernon, Ky.

A Research Experience for Teachers (RET) program gave three teachers real-world experience in using research data as a starting point for an effective instructional unit. See how this affected our students positively.

9:30–10:30 AM Workshops

NABT Session: Free Teaching Resources from the Howard Hughes Medical Institute: Exploring Biodiversity: The Search for New Medicines and Treatments (Bio)

(Middle Level–College) *Hermitage A, Opryland*

Anthony Bertino *(abertino@nycap.rr.com),* University at Albany, Scotia, N.Y.

Patricia Nolan Bertino *(nolanp@nycap.rr.com),* Scotia, N.Y.

Learn how biodiversity among venomous snails and bacterial communication has led to new medical discoveries. Receive FREE Howard Hughes Medical Institute (HHMI) DVDs, virtual lab CDs, and materials developed by teacher-presenters.

ACS Middle Level Session: Heat Transfer and Changes of State (Chem)

(Middle Level) *Hermitage B, Opryland*

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

Explore heat transfer by conduction and apply these ideas to evaporation and condensation.

ACS Session Two: What Holds Molecules Together? (Chem)

(High School) *Hermitage C, Opryland*

Jerry A. Bell *(j_bell@acs.org),* American Chemical Society, Washington, D.C.

Discussions of electron wave properties often get bogged down in the complexities of the wave descriptions and lose sight of the fundamental basis for bonding: attraction of positive and negative charges. Simple models help to focus attention on this attraction and complement other descriptions. Bring your USB flash drive and take away the presentation and activities to use in your classes.

AAPT Session: How Old Is Your Universe? (Earth)

(Middle Level) *Hermitage D, Opryland*

Richard Gelderman *(richard.gelderman@wku.edu),* Western Kentucky University, Bowling Green

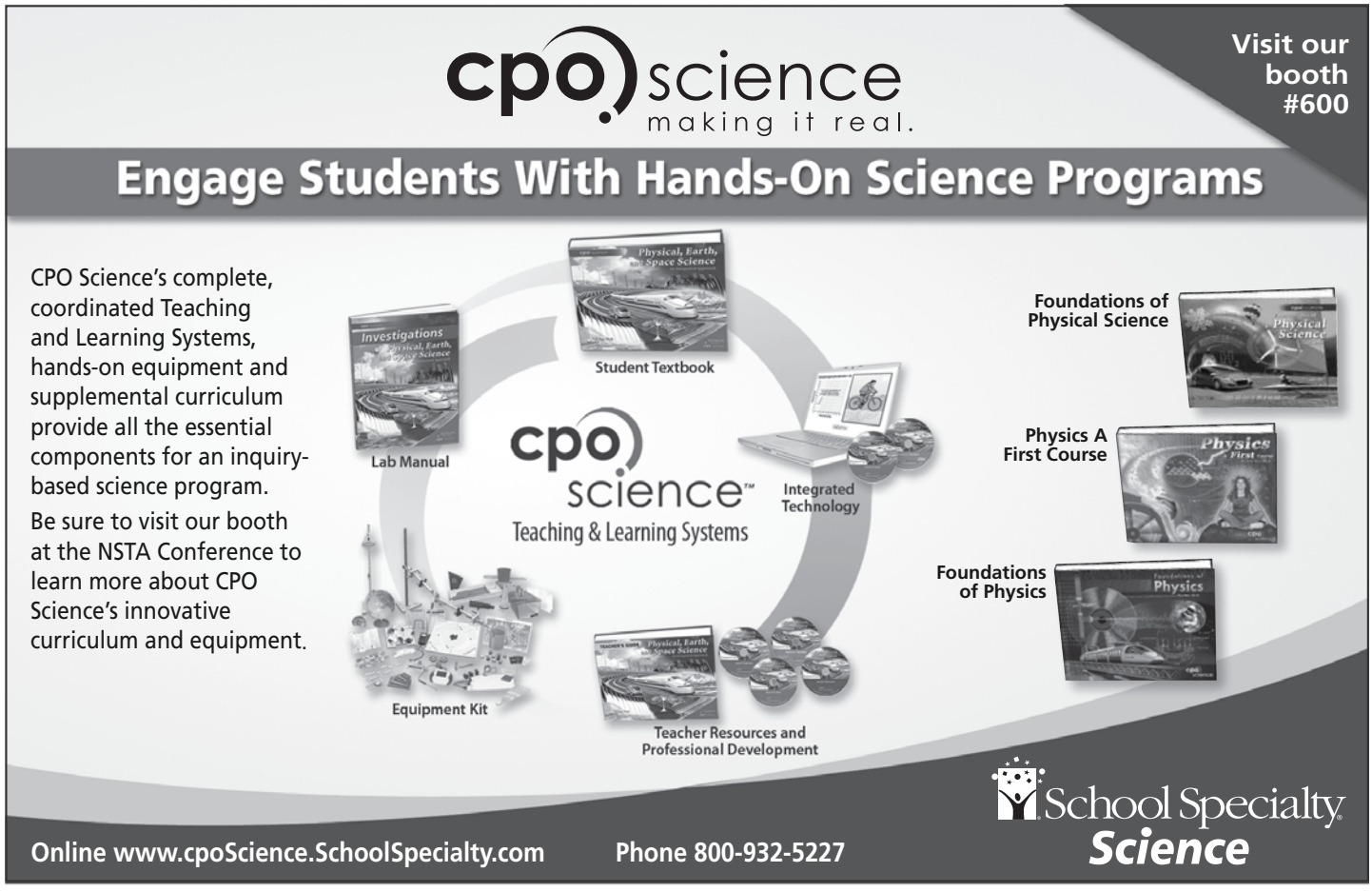
We will provide ready-to-implement, student-centered investigations on the age and size of the cosmos that encourage students to take responsibility for their own learning.

Using Children's Picture Books to Teach Environmental Science (Env)
(Elementary) *Hermitage E, Opryland*
Sarah A. Keller *(skeller@tntech.edu),* Tennessee Tech University, Knoxville
Use children's literature to differentiate instruction in thematic units. I'll share lesson plans, strategies, and children's literature.

Using the Hardy-Weinberg Equilibrium to Illustrate Evolutionary Change (Bio)
(High School–College) *Lincoln C, Opryland*
William H. Leonard *(leonard@clemson.edu),* Clemson University, Clemson, S.C.
Engage in a mathematical and calculator population genetics activity using a single trait among participants that shows evolutionary change through founder effect and natural selection.

Science with a Cultural Twist (Gen)
(Elementary–High School) *Lincoln D, Opryland*
Susan E. Thomas *(twothom@bellsouth.net)* and **Angela R. Edwards** *(aedwards@kingwoodchristianschool.com),* Kingwood Christian School, Alabaster, Ala.
There are more than 200,000 foreign-adopted children living in America. These science activities have a cultural twist.

Scaffolded Inquiry: A Brain-based Model (Gen)
(General) *Lincoln E, Opryland*
Karen L. Ostlund *(klostlund@mail.utexas.edu),* Retired Professor, Austin, Tex.
Let's conduct scaffolded inquiry to demonstrate engaging strategies based on principles derived from understanding the brain.



Activities from Across the Earth System (Bio)
(Elementary–High School) *Ryman Studio A–C, Opryland*
Becca Hatheway *(hatheway@ucar.edu),* University Corporation for Atmospheric Research, Boulder, Colo.
Roberta M. Johnson *(rmjohnsn@gmail.com),* National Earth Science Teachers Association, Boulder, Colo.
David F. Mastie *(mastie@umich.edu),* Retired Educator, Chelsea, Mich.
Educators and scientists share hands-on, inquiry-based activities spanning the five "spheres" of Earth system science. Handouts provided.

NSTA Press Session: Stop Faking It! Finally Understand ENERGY So You Can Teach It (Phys)
(Elementary–Middle Level) *Tennessee A, Opryland*
Bill Robertson *(wrobert9@ix.netcom.com),* NSTA Press Author, Woodland Park, Colo.
Do you know that it's wrong to equate potential energy with stored energy? Would you like to know how to make the formulas for potential and kinetic energy make sense for you and your students? These questions and more addressed by the author of the *Stop Faking It!* book series. Lame jokes a definite possibility.

NASA's Pi in the Sky (Earth)
(Middle Level–High School) *Tennessee B, Opryland*
Janet L. Moore *(janetmoore@gmail.com),* NASA/Illinois State University, Bloomington
Enhance your astronomy lessons with mathematics concepts. Angles, circles, and ratios can be powerful tools for investigating objects in our sky. Free NASA materials!

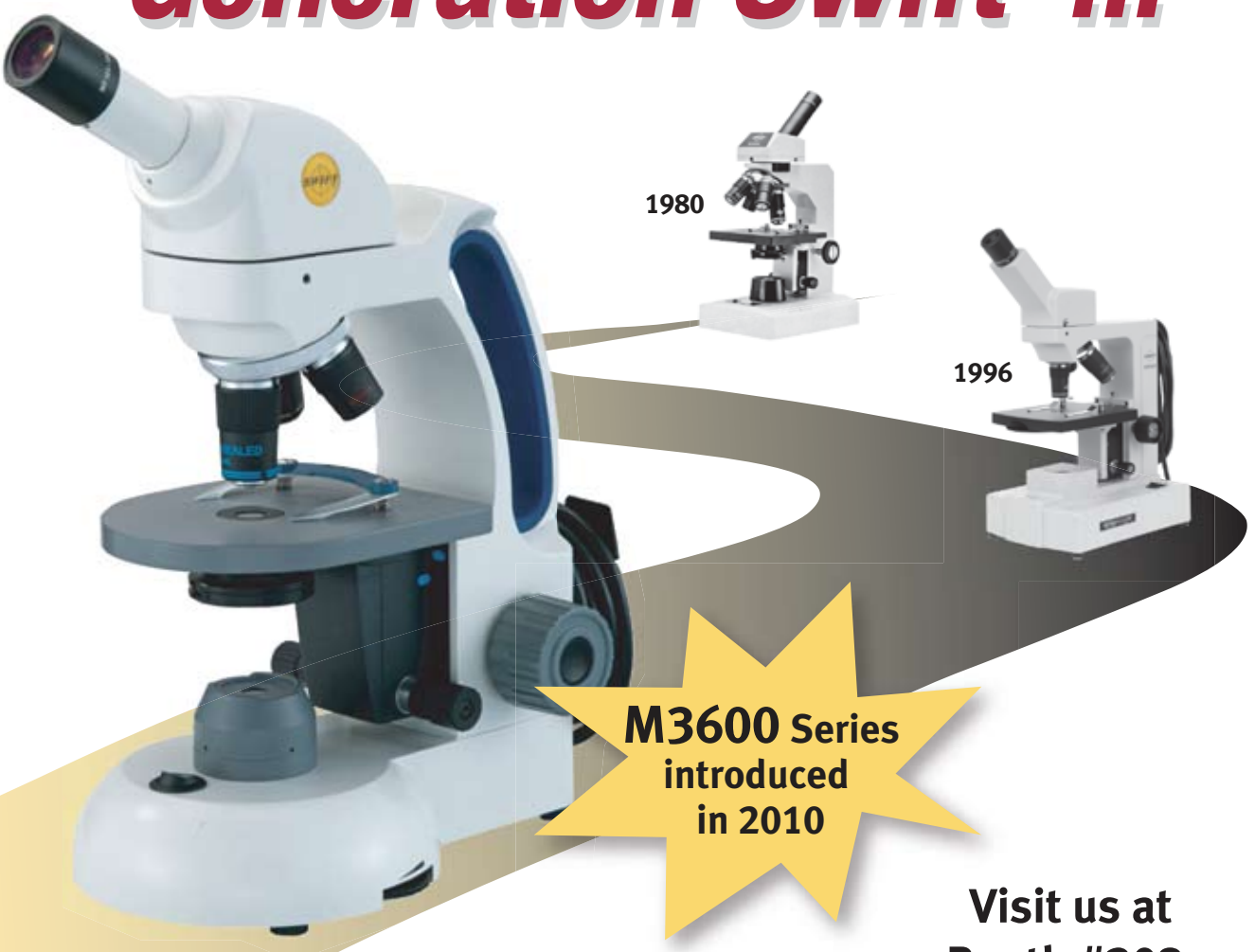
CESI Session: Council for Elementary Science International Share-a-Thon (Gen)
(Preschool–Middle Level) *Tennessee D/E, Opryland*
Barbara Z. Tharp *(btharp@bcm.edu)* and **Michael Vu,** Baylor College of Medicine, Houston, Tex.
Sherry A. Smith *(sherrys@dawson.dsc.k12.ar.us),* Dawson Education Cooperative, Arkadelphia, Ark.
Betty Crocker, Retired Educator, Denton, Tex.
Jeanelle Day *(dayj@easternct.edu),* Eastern Connecticut State University, Willimantic
Mary Beth Katz *(mbkatz@bellsouth.net),* Alabama Science Teachers Association, Birmingham
Cheryl W. Sundberg, Retired Educator, Millbrook, Ala.
Kay Atchison Warfield *(kaw@alsde.edu),* CESI President, and Alabama Dept. of Education, Montgomery
Join CESI for a wealth of ready-to-use, classroom-tested hands-on activities created just for the elementary teacher. Handouts and website links.

9:30–10:30 AM Exhibitor Workshops

Discovery-based Biology with SPARKscience™—Measuring Reaction Time to a Visual Stimulus: A Guided Inquiry Approach (Bio)
(Grades 6–12) *Bayou E, Opryland*
Sponsor: PASCO Scientific
Presenter to be announced
Try one of the new Carolina™ Biology SPARKlabs, made possible through a partnership between PASCO and Carolina Biological Supply Company. Participate in a guided inquiry activity measuring reaction time to a visual stimulus. Created for general-level high school students, this state-of-the-art science teaching solution can enhance your teaching practice.

There's More to Project-Based Inquiry Science Than Just a Project (Bio)
(Grades 6–8) *Presidential C, Opryland*
Sponsor: It's About Time
Mary Starr, The University of Michigan, Ann Arbor
In Project-Based Inquiry Science (PBIS), projects drive the learning from beginning to end. Learning by Design™ guides students in the engineering design cycle in which they become student scientists engaged in sustained projects. Watch what happens when students get a chance to flex their creative muscles on projects that they care about—the excitement is contagious…and the learning is sustained. Also see how Fourier probeware enhances project-based activities.

"Generation Swift"...



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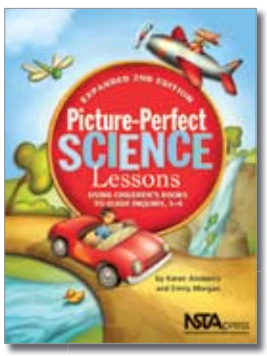
Picture-Perfect Science Lessons, Expanded 2nd Edition

Using Children's Books to Guide Inquiry, 3–6

Grades 3–6



Time-pressed teachers will love the revised edition of the original award-winning resource that perfectly combines the appeal of children's picture books with Standards-based science content. The authors offer hands-on, inquiry activities coupled with diverse children's trade books to engage struggling and reluctant readers and promote scientific discovery. This edition offers five brand-new, classroom-tested lessons.

Members: $27.96
Non-Members: $34.95

Predict, Observe, Explain

Activities Enhancing Scientific Understanding

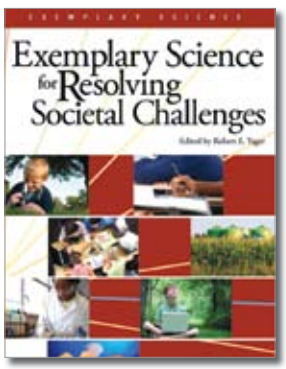
Grades 7–12

This research-based, field-tested book provides middle and high school science teachers with more than 100 student activities designed to foster student inquiry and challenge existing conceptions through the use of Predict, Observe, Explain sequences (POEs). Each activity is accompanied by worksheets, scientific explanations of the phenomenon being studied, a summary of student responses, research findings, and a list of required materials.

Members: $23.96
Non-Members: $29.95

Exemplary Science for Resolving Societal Challenges

Grades PreK–College



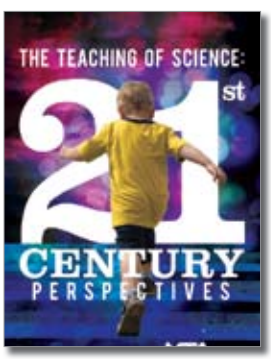
As with all of the *Exemplary Science* titles, this book provides resources, ideas, and case studies to stimulate science education faculties across the country to begin substantive discussions that will drive them to re-embrace curiosity, invention, inquiry, and societal connection in the classroom and move them toward *exemplary* science instruction.

Members: $20.76
Non-Members: 25.95

The Teaching of Science

21st-Century Perspectives

Grades K–12



Renowned educator Rodger Bybee provides the perfect opportunity for science teachers, administrators, curriculum developers, and science teacher educators to reflect on the basic issues in science education today and in the coming years. He addresses topics such as contemporary need for reform, curriculum and instruction, teaching science as inquiry, and developing 21st-century skills.

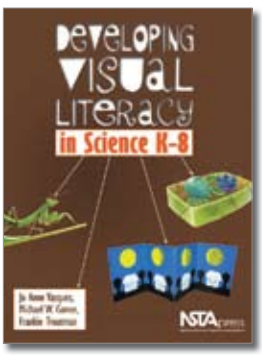
Members: $22.36
Non-Members: $27.95

Preview free chapters before you buy or

Attendee Preview

Developing Visual Literacy in Science, K–8

Grades K–8



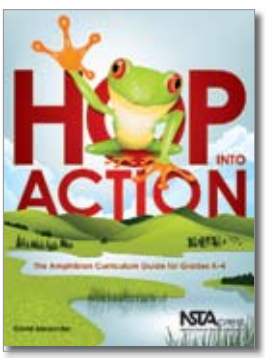
More than 50% of science lessons in today's elementary textbooks use visual information to help demonstrate concepts. This book assists students in developing visual literacy in science—for example, interpreting photographs, charts, diagrams, figures, labels, and graphic symbols. This practical resource enhances classroom instruction and is especially relevant for students who pursue careers in science, technology, engineering, and math.

Members: $19.96
Non-Members: $24.95

Hop Into Action

The Amphibian Curriculum Guide for Grades K-4

Grades K–4



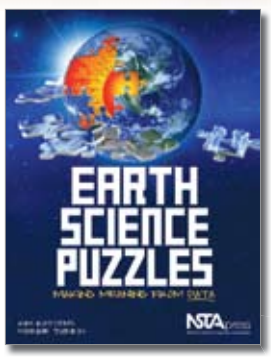
K–4 teachers, homeschoolers, camp leaders, and naturalists will find the standards-based lessons in this volume the perfect introduction to environmental science for young learners. Developed in response to a global amphibian extinction crisis, this book will equip children with the necessary tools to appreciate and protect amphibians and their environments through 20 hands-on investigations that involve scientific inquiry and knowledge building.

Members: $18.36
Non-Members: $22.95

Earth Science Puzzles

Making Meaning From Data

Grades 8–12



Available November 2010

Teachers of Earth and environmental sciences will embrace this activity book centered on six "data puzzles" that foster critical-thinking skills and support science and math standards. Featuring professionally gathered Earth science data—including graphs, maps, tables, images, and narratives—this book helps students step into scientists' shoes using temporal, spatial, and quantitative reasoning. Each puzzle is supported by extensive background information, required skills, common misconceptions, answers to student questions, and a bank of resources to further examine topics.

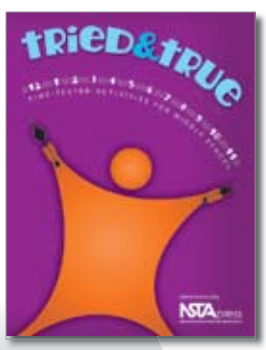
Members: $20.76
Non-Members: $25.95

Tried and True

Time-Tested Activities for Middle School

Grades 5–8

Available November 2010



A compilation of popular columns originally published in the award-winning journal *Science Scope*, this new book is filled with teachers' best classroom activities—time-tested and perfected. Organized by topic, including physical science, life science, Earth and space science, and instructional strategies, these favorites will pique students' interest and demonstrate important science concepts.

Members: $20.76
Non-Members: $25.95

place your order at *www.ntsa.org/store.*

NSTA National Science Teachers Association

9:30–11:30 AM NSTA ESP Symposium I

NSTA Exemplary Science Programs (ESP)…Meeting the Reform Features from the National Science Education Standards (Gen)

(General) *Presidential Boardroom A, Opryland*

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

Organized by Robert E. Yager, 1982–1983 NSTA President and Editor of the NSTA ESP Program

Coordinators: Robert E. Yager (robert-yager@uiowa.edu), *University of Iowa, Iowa City,* and *Brenda Wojnowski* (bwojnowski@gmail.com), *Wojnowski and Associates, Inc., Dallas, Tex.*

This session 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. Participants in this symposium will include the following authors from specific monographs in the series.

From Wyoming to Florida They Ask, "Why Wasn't I Taught This Way?" (from ESP #6)

Joseph I. Stepans *(jstepans@uwyo.edu),* University of Wyoming, Laramie

Knowledge and Wonder (from ESP #5)

Stephen M. Pompea *(spompea@noao.edu),* National Optical Astronomy Observatory, Tucson, Ariz.

Developing Expertise in Project-based Science (from ESP #7)

Gail Dickinson *(dickinson@txstate.edu),* Texas State University–San Marcos

9:30 AM–12 Noon Exhibitor Workshop

Bio-Rad Crime Scene Investigator PCR Basics Kit (Bio)

(Grades 9–College) *Jackson A/B, Opryland*

Sponsor: Bio-Rad Laboratories

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

Stan Hitomi, San Ramon Valley Unified School District, Danville, Calif.

Which human DNA sequences are used in crime scene investigations, and why? In this hands-on workshop, you will learn to use 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.

10:00–11:15 AM Exhibitor Workshops

Integrating Science and Literacy, Grades 1–6 (Gen)

(Grades 1–6) *Bayou B, Opryland*

Sponsor: Delta Education/School Specialty Science

Johanna Strange, Consultant, Richmond, Ky.

Tom Graika, Consultant, Lemont, Ill.

Join us as we share various strategies and Delta products that you can use to integrate reading and language arts into your science programs. Learn how your students can experience the enjoyment of learning science with Delta Science Modules and make the literacy connection. Receive a workshop packet and related Delta materials.

What's at the Heart of Science Teaching? Inquiry, Evidence, and Thinking (Gen)

(Grades 5–8) *Canal A, Opryland*

Sponsor: Pearson

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

Inquiry continues to be a major thrust in science education as entities like the Partnership for 21st Century Skills call for improved student thinking across all disciplines. Join us and develop an understanding of inquiry and evidence and outline teaching strategies that you can use to develop these important ideas.

Discover the Solar System and Beyond (Earth)
(Grades 3–8) *Canal B, Opryland*
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
The universe is as vast and wide as the topics a teacher needs to teach space science. However, meeting space science educational standards with the classroom time allotted can be challenging. GEMS® Space Science Sequences allow you to teach exactly what you need to cover in a timely manner.

Hands-On Science with Classroom Critters (Bio)
(Grades K–12) *Canal C, Opryland*
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Here's a surefire boost to your class—live organisms. Whether you use hands-on curricula (e.g., STC®, FOSS®) or develop your own lessons, animals broaden students' inquiry-based explorations and increase their interest in science. Participate in fun, simple hands-on activities and receive free product samples and literature, including care and handling information.

Fast and Furious: Force and Motion for Middle School! (Chem)
(Grades 6–8) *Jackson C, Opryland*
Sponsor: LAB-AIDS, Inc.
Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.
This engaging middle level unit from SEPUP's Issues and Physical Science course lets students study core force and motion concepts using a scenario of a family who has just survived a serious car accident and is in the market for a safer car. Students learn about Newton's laws, balanced and unbalanced forces, speed and acceleration, friction, and collisions. They then apply this knowledge in practical terms to understand braking distance, safe driving, and SUV-type rollovers. Join us for a hands-on look at measuring speed, motion graphs, and circular motion.

Using Modern Molecular Modeling Techniques in Middle and High School Science Classrooms **(Chem)**

(Grades 7–12) *Jackson D, Opryland*

Sponsor: Wavefunction, Inc.

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

Modeling and simulation with state-of-the-art software provides a very effective way to convey the molecular concepts of physical science and chemistry. Join us for this hands-on workshop and learn how take advantage of powerful 3-D visualization in classroom demonstrations and student labs.

The Layered Earth **(Earth)**

(Grades 5–12) *Jackson E/F, Opryland*

Sponsor: Simulation Curriculum Corp.

Herb Koller *(hkoller@simcur.com),* Simulation Curriculum Corp., Aurora, Ont., Canada

What powers the internal processes that produce volcanoes, earthquakes, and mountains? What is the rock cycle and how does it work? Exactly how are volcanoes formed? What might Earth look like in the future? Join us on the big screen and experience The Layered Earth, the new geology curriculum from the makers of the award-winning Starry Night!

Promote Inquiry Using Chemistry Demonstrations **(Chem)**

(Grades 9–12) *Presidential B, Opryland*

Sponsor: Flinn Scientific, Inc.

Irene Cesa, Flinn Scientific, Inc., Batavia, Ill.

Looking for new ways to incorporate more inquiry-based experiments in your chemistry classroom? Asking questions is the heart of inquiry, and there is no better way to get students to ask questions than by presenting exciting, engaging demonstrations! Join us as we present classic demonstrations and describe a series of inquiry-based activities that were developed based on these demonstrations.

Fun, Fabulous Foldables® **(Gen)**

(Grades K–12) *Presidential E, Opryland*

Sponsor: McGraw-Hill School Education Group

Dinah D. Zike, Dinah-Might Adventures, LP, San Antonio, Tex.

Experience how these 3-D graphic organizers can transform your science lesson into an engaging, interactive learning experience. These interactive tools offer endless possibilities for collecting data, building understanding, and assessing student comprehension.

10:00–11:30 AM Exhibitor Workshops

Transforming the Science Lab with Vernier Technology **(Gen)**

(Grades 7–College) *Bayou A, Opryland*

Sponsor: Vernier Software & Technology

Gretchen Stahmer DeMoss *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.

Discover how technology transforms your classroom into a 21st-century laboratory. Explore state-of-the-art probeware solutions that teach core science topics in physics, chemistry, biology, Earth science, and environmental science. Learn tips and tricks from master teachers and technology experts. Receive hands-on training with both Logger *Pro* software and the Vernier LabQuest handheld.

Light and Optics: A Series of EnLIGHTening Experiments! **(Gen)**

(Grades 5–12) *Bayou C, Opryland*

Sponsor: CPO Science/School Specialty Science

Erik Benton and **Patsy Eldridge,** CPO Science/School Specialty Science, Nashua, N.H.

Experience the Optics with Light and Color kit, with LED flashlights, filters, a laser, and more. Try color mixing, relate it to human vision, and see different spectra of light with diffraction glasses. See the phenomenon of internal reflection by shining a laser through a prism and tracing incident and refracted rays.

11:00–11:30 AM Presentation

SESSION 1

Stepping Out of My Technology Classroom Box **(Gen)**

(Middle Level–High School) *Cheekwood A, Opryland*

Terry A. Carter *(terry.carter@sumnerschools.org),* Hawkins Middle School, Hendersonville, Tenn.

See how a teacher's experience with the Research Experiences for Teachers (RET) program at Vanderbilt enabled him to become a more effective teacher by using the Legacy Cycle.

11:00 AM–12 Noon Presentations

SESSION 1

NARST Session: Strategies for Managing Elementary Students' Ideas, Questions, and Contributions in Inquiry-based Science (Bio)

(Elementary) *Cheekwood B, Opryland*

William R. Penuel *(william.penuel@sri.com),* SRI International, Menlo Park, Calif.

Use these strategies to manage some of the challenges of inquiry-based science instruction.

SESSION 2

I Love Free (Gen)

(General) *Cheekwood C, Opryland*

Jan Coley *(coleyj@k12tn.net),* Jefferson County Schools, Dandridge, Tenn.

Explore shareware and Web 2.0 tools to enhance teaching and learning in the science classroom and laboratory. We'll look at Photo Story 3, Movie Maker, Google Earth, Picasa™, Wetpaint, PB Wikis, Visualization software, software from Concord Consortium, and more. Take home an interactive CD with active links.

SESSION 3

Making Lemonade: Using Construction as Curriculum (Gen)

(Elementary–High School) *Cheekwood F, Opryland*

Juliana Texley *(jtexley@att.net),* Palm Beach State College, Boca Raton, Fla.

Whether those jackhammers are renovating your school across the street, they are a distraction! Here is a set of activities that can help students understand the physical science of engineering and building.

SESSION 4

FIRE Up the Classroom: Teaching and Assessment Using the FIRE Critical-thinking Model (Bio)

(General) *Magnolia Boardroom B, Opryland*

Theresa M. Hornstein *(t.hornstein@lsc.edu),* Lake Superior College, Duluth, Minn.

Whatever your preferred thinking style—factual, imaginative, rational, or emotional—you'll reach more students with the FIRE critical-thinking model.

SESSION 5

NSTA Avenue Session: Siemens We Can Change the World Challenge: 21st-Century Tools for Project Based Learning (Gen)

(General) *Presidential Chamber B, Opryland*

Lance Rougeux, Discovery Education, Silver Spring, Md.

Project Based Learning enables students to explore and develop solutions to real-world problems and challenges. Empower your students to make a difference in their schools, communities, and around the world through the Siemens We Can Change the World Challenge *(http://wecanchange.com),* the premier national K–12 student sustainability competition. In this session, we'll highlight a dozen free tools, from glogs to wikis to Google Earth, to help you and your class make an impact.

SESSION 6

Add Some POP to Your Lessons with BrainPOP! (Earth)

(Elementary–Middle Level) *Washington B, Opryland*

Teryl J. Magee, Knox County Schools, Knoxville, Tenn.

Make your science lessons POP with BrainPOP's award-winning media!

11:00 AM–12 Noon Workshops

NABT Session: Teacher-generated Materials, Demos, and Resources from the Howard Hughes Medical Institute to Enrich AIDS/HIV Lessons (Bio)

(Middle Level–College) *Hermitage A, Opryland*

Anthony Bertino *(abertino@nycap.rr.com),* University at Albany, Scotia, N.Y.

Patricia Nolan Bertino, Scotia, N.Y.

Receive FREE Howard Hughes Medical Institute (HHMI) DVDs, virtual lab CD-ROMs, and materials developed by teacher-presenters on HIV topics, including evolution, life cycle, effects on the immune system, drugs, and vaccines.

ACS Middle Level Session: Density (Chem)

(Middle Level) *Hermitage B, Opryland*

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

Measure mass and volume of objects made of different materials and discover how their densities can be explained on the molecular level.

ACS Session Three: Why Is Water Different? (Chem)

(High School) *Hermitage C, Opryland*

Jerry A. Bell *(j_bell@acs.org),* American Chemical Society, Washington, D.C.

An immediate response is, "hydrogen bonding." What is a hydrogen bond and what are its properties? Other simple molecules form strong hydrogen bonds, but do not show the same properties as water. Why? Models that incorporate hydrogen bonding provide the insight to answer these questions. Bring your USB flash drive and take away the presentation and activities to use in your classes.

AAPT Session: Making Magnetism Visible (Phys)

(Middle Level) *Hermitage D, Opryland*

Keith Andrew *(keith.andrew@wku.edu),* Western Kentucky University, Bowling Green

We present a series of illustrative, motivating demonstrations of magnetism in action that are also inexpensive and easy to integrate into a middle grades or integrated science classroom.

Science on a Shoestring Budget (Gen)
(Elementary) *Hermitage E, Opryland*
Dale Campbell *(campbell@jsu.edu),* **Phyllis Taylor** *(ptaylor @jsu.edu),* **Jennifer Strain** *(jstrain@jsu.edu),* and **Debra Weingarth** *(dweingarth@jsu.edu),* Jacksonville State University, Jacksonville, Ala.
Presider: Phyllis Taylor
We'll share more than 25 hands-on activities using household products and jars, plastic bottles, zippered bags, or plastic containers. Handouts.

NSpiring Data Collection (Phys)
(High School) *Lincoln C, Opryland*
Jacklyn Bonneau, Massachusetts Academy of Math & Science, Worcester
Explore the techniques and the power of technology with a wealth of hands-on science activities.

Boot Camp for Professional Development Providers: Learning the Basics (Gen)
(General) *Lincoln D, Opryland*
Christine A. Royce *(caroyce@aol.com),* NSTA Director, Professional Development, and Shippensburg University, Shippensburg, Pa.
Are you increasing or developing professional development skills to add to your repertoire? Join the NSTA Professional Development Committee to explore strategies and skills associated with conducting professional development presentations.

Professional Learning Communities: Setting the Stage for Sustainability (Gen)
(General) *Lincoln E, Opryland*
Diane Vaughn *(dvaughn@twlakes.net),* Program Coordinator, NSTA Nashville Area Conference, and Educational Consultant, Clarkrange, Tenn.
Setting the stage to ensure buy-in, development, and sustainability of professional learning communities is a critical step. This workshop provides strategies for this critical step.

Nature—It's Closer Than You Think! (Env)
(Elementary–High School) *Ryman Studio A–C, Opryland*
Kristi Backe, Rebecca L. Ammann, and **Celina Petersen,** Peggy Notebaert Nature Museum, Chicago, Ill.
Engage students in the inquiry process and global science issues using local native species.

NSTA Press Session: Stop Faking It! Finally Understand MATH So You Can Teach It (Gen)
(Elementary–Middle Level) *Tennessee A, Opryland*
Bill Robertson *(wrobert9@ix.netcom.com),* NSTA Press Author, Woodland Park, Colo.
Why do you have to have a common denominator to add fractions? Where do formulas for area and volume come from? What's behind the distributive property? We all know the rules for math, but we often don't know the reasoning behind the rules. Join the author of the *Stop Faking It!* books for sample activities from the math book that address why the rules make sense. Take home leftover vegetable oil if you want!

The Cosmic Zoo (Earth)
(Middle Level–High School) *Tennessee B, Opryland*
Rae McEntyre *(rae.mcentyre@education.ky.gov),* Kentucky Dept. of Education, Frankfort
Show real-world applications of science inquiry using high-energy astronomical objects and the excitement of NASA science. Take home classroom-ready materials.

11:00 AM–12 Noon Exhibitor Workshops

Discovery-based Chemistry with SPARKscience™: States of Matter (Chem)
(Grades 6–12) *Bayou E, Opryland*
Sponsor: PASCO Scientific
Presenter to be announced
This session explores states of matter—one of the most challenging high school chemistry topics to teach—using PASCO's state-of-the-art science teaching solutions. In this hands-on workshop, you will participate in standards-based probeware lab activities from PASCO's new chemistry curriculum. Be one of the first to experience how SPARKscience can enhance your teaching practice and improve student understanding of core topics.

***Active Physics,* Newly Revised Third Edition (Phys)**
(Grades 9–12) *Presidential C, Opryland*
Sponsor: It's About Time
Arthur Eisenkraft, 2000–2001 NSTA President, and University of Massachusetts, Boston
Let's perform a series of guided inquiry activities that prepare students to do a voice-over of a sports video and explain the physics of the action appearing on the screen. Watch what happens to the quality of students' work when they take ownership of real-world scientific challenges that matter to them. Leave with the practical hands-on activity that you can do in your classroom. Also see how Fourier probeware enhances project-based activities.

11:30 AM–1:30 PM Exhibitor Workshop

Taking Science Outdoors with FOSS K–8 (Gen)
(Grades K–8) *Bayou D, Opryland*
Sponsor: Delta Education/School Specialty Science–FOSS
Joanna Snyder and **Erica Beck Spencer,** Lawrence Hall of Science, University of California, Berkeley
Learn about the groundbreaking work done by the Boston Schoolyard Initiative (BSI) and about new Lawrence Hall of Science environmental education initiatives. Explore how to use effective strategies to engage children in powerful science learning experiences in their own school yards and local outdoor environments. Participants will go outside, so dress accordingly.

12 Noon–1:15 PM Exhibitor Workshops

Incorporating STEM Activities into Your Elementary Classroom (Gen)
(Grades 3–5) *Canal A, Opryland*
Sponsor: Pearson
Kristi Anderson Zenchak, Oakton Community College, Des Plaines, Ill.
The world is and will be continually faced with challenges ranging from designing the best shoes for different sports to larger challenges such as global warming, natural disasters, and shortages of food, water, and energy. In order to meet these challenges, scientific concepts must be understood and used to develop practical solutions. Science, Technology, Engineering, and Math (STEM) activities promote the problem-solving skills necessary to apply scientific concepts to designing solutions for real-world problems.

Energy Works! **(Phys)**
(Grades 3–5) *Canal B, Opryland*
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Build an electric circuit, connect a solar cell, light a bulb, get a buzzer buzzing, and set a motor spinning. Participants work like scientists to trace the flow of energy through a circuit, then investigate alternative, potential, and kinetic energy in systems powered by wind, Sun, and water.

Introduction to Electrophoresis **(Bio)**
(Grades 9–12) *Canal C, Opryland*
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Join us and explore the basics of electrophoresis. We'll separate brightly colored dyes on agarose gels to determine which dyes are present in an unknown mix. Gels are run using economical, sturdy gel boxes that can be powered by inexpensive power supplies or batteries. Participants will load their own gels and perform electrophoresis.

SGI Biology: Putting the Life Back in Life Science! **(Bio)**
(Grades 9–12) *Jackson C, Opryland*
Sponsor: LAB-AIDS, Inc.
Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.
SGI Biology is the new high school biology program from SEPUP. Developed with support from the National Science Foundation, this course uses an issues-based, inquiry-oriented approach to content from cell biology, ecology, genetics, and evolution. Join us for a hands-on look at activities dealing with photosynthesis and gene expression and take home materials to use in class next week.

Stream Ecology: Slimy Leaves for Clean Streams **(Env)**
(Grades 4–College) *Jackson E/F, Opryland*
Sponsor: LaMotte Co.
Christina Medved, Stroud Water Research Center, Avondale, Pa.
Observe aquatic macroinvertebrate specimens, conduct experiments, learn classification skills, and calculate a biotic index in this hands-on introduction to stream ecology. Learn from the Stroud scientists. Door prize!

Teaching Nuclear Topics **(Phys)**
(Grades 7–12) *Presidential B, Opryland*
Sponsor: Idaho National Laboratory
Bob Skinner *(teri.ehresman@inl.gov),* Idaho National Laboratory, Idaho Falls
Let's discuss topics relating to radioactive materials and nuclear power, including radiation, biological effects of radiation, uses of radioactive material, nuclear power, and radioactive waste. There will be a wealth of handouts and a drawing for a limited number of Geiger counters.

I See What You Mean! Developing Visual Literacy **(Gen)**
(Grades K–8) *Presidential E, Opryland*
Sponsor: McGraw-Hill School Education Group
Jo Anne Vasquez, 1996–1997 NSTA President, and Helios Education Foundation, Phoenix, Ariz.
Interpreting and understanding the visuals and illustrations students encounter in their science texts is more than just luck. See what the current research says and experience some new strategies for improving student understanding. Activities, handouts, and prizes.

12 Noon–1:30 PM Exhibitor Workshops

Transforming the Science Lab with Vernier Technology **(Gen)**
(Grades 7–College) *Bayou A, Opryland*
Sponsor: Vernier Software & Technology
Gretchen Stahmer DeMoss *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
Discover how technology transforms your classroom into a 21st-century laboratory. Explore state-of-the-art probeware solutions that teach core science topics in physics, chemistry, biology, Earth science, and environmental science. Learn tips and tricks from master teachers and technology experts. Receive hands-on training with both Logger *Pro* software and the Vernier LabQuest handheld.

Gas Laws Kit: Chemistry and the DataCollector—Charles' and Boyle's Laws Uncovered **(Gen)**
(Grades 5–12) *Bayou C, Opryland*
Sponsor: CPO Science/School Specialty Science
Erik Benton and **Patsy Eldridge,** CPO Science/School Specialty Science, Nashua, N.H.
Are pressure, volume, and temperature related? Use CPO Science's DataCollector, temperature probes, pressure sensors, and reliable lab equipment from our Gas Laws Kit to take real-time measurements and digitally log data while viewing on-screen graphs to uncover how Charles' and Boyle's laws explain gas laws through hands-on discovery activities.

12 Noon–2:00 PM CESI Luncheon

Inquiring Minds Want to Know: Why Is Science the Key to Our Long-Term Economic Recovery…and What Can I Do? (M-2)

(Tickets Required; $57) *Lincoln A, Opryland*

Deborah Manchester, CEO, Founder, and Chief Creative Officer, Zula International, Burbank, Calif.

Join our keynote speaker Deborah Manchester and members of CESI for this luncheon. Dr. Manchester came to early elementary science through a very intriguing and compelling path. Her first career as an audiologist led her from the lab where she performed experiments with chinchillas to a private practice specializing in auditory disorders in newborns to the classroom at Ohio State University as an adjunct professor. Her passion for science and her entrepreneurial spirit led her to form her company, Zula, which provides professional development training and a multidisciplinary science inquiry curriculum for the preK–3 and Out-of-School-Time markets.

Dr. Manchester will discuss the economic and social repercussions facing the United States that are associated with the decline of science education over the past 40 years…and the road to recovery. She will connect the dots between science, critical thinking, and social and economic success… and why the key factor in re-establishing the United States as the world leader in science and innovation is the TEACHER! Having connected those dots, she will describe what you, as a teacher, can do to make this happen.

Tickets, if still available, must be purchased at the Ticket Sales Counter in the NSTA Registration Area before 12 Noon on Thursday.

12:30–1:00 PM Presentations

SESSION 1

The AMS Education Program: Professional Development Courses Exploring the Atmosphere, Ocean, and Climate (Earth)

(Elementary–High School) *Cheekwood A, Opryland*

James A. Brey *(brey@ametsoc.org),* American Meteorological Society, Washington, D.C.

The American Meteorological Society (AMS) Education Program offers teachers a suite of content-rich professional development courses and training workshops on the atmosphere, ocean, and climate.

SESSION 2

Earn Your Lab License (Gen)

(Middle Level) *Washington B, Opryland*

Marsha W. Sega *(marshasega@comcast.net)* and **Cathy Lowden** *(clowden@comcast.net),* St. Mary's School, Oak Ridge, Tenn.

Start the school year with students practicing lab skills and earning a lab license upon successful completion of a lab practical and safety exam.

12:30–1:30 PM Presentations

SESSION 1

NARST Session: What Cognitive Processes Do Students Use When Learning from Multimedia Presentations? (Gen)

(General) *Cheekwood B, Opryland*

Michelle Cook *(mcook@clemson.edu),* Clemson University, Clemson, S.C.

We investigated the cognitive processes students use when interacting with multimedia presentations. Learn the results and what they indicate about designing effective multimedia instruction.

SESSION 2

Problem Based Learning as a Model for Integrating Instruction (Gen)

(General) *Cheekwood C, Opryland*

Sheila F. Pirkle *(pirkles@apsu.edu)* and **Rebecca S. McMahan** *(mcmahanb@apsu.edu),* Austin Peay State University, Clarksville, Tenn.

Learn some hands-on Problem Based Learning (PBL) activities. Create and apply the model and produce a podcast by the end of the session.

SESSION 3

Differentiation in the Secondary Science Classroom—It Can Be Done! (Gen)

(General) *Cheekwood F, Opryland*

Amy Alexander *(aalexander@fourcounty.net),* Four County Career Center, Archbold, Ohio

A tiered instruction model that allows students to choose activities based on learning style, ability, and interests will be presented.

SESSION 4

AAPT Session: Interactive Teaching Resources for Introductory Astronomy (Phys)

(High School–College) *Hermitage D, Opryland*

Spencer L. Buckner *(buckners@apsu.edu),* Austin Peay State University, Clarksville, Tenn.

We will look at some research-proven, student-centered activities, both web based and paper based, that are available for teaching introductory astronomy.

SESSION 5

NASA Explorer Schools: Preparing the Next Generation of Explorers (Gen)

(Middle Level–High School) *Magnolia Boardroom B, Opryland*

Rob LaSalvia, NASA Glenn Research Center, Cleveland, Ohio

Presider: Jodie Rozzell, Director, NASA Explorer Schools, NSTA, Arlington, Va.

NASA Explorer Schools is NASA's classroom-based gateway to middle and high school classrooms—inspiring students and teachers to participate in NASA's mission through inquiry-based experiences.

12:30–1:30 PM Workshops

ACS Middle Level Session: The Periodic Table, Energy Levels, and Bonding (Chem)

(Middle Level) *Hermitage B, Opryland*

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

Perform an activity to explore the first 20 elements of the periodic table and take a fresh look at covalent and ionic bonding.

ACS Session Four: Bond Connections in More Complex Molecules (Chem)

(High School) *Hermitage C, Opryland*

Jerry A. Bell *(j_bell@acs.org),* American Chemical Society, Washington, D.C.

Molecules are three dimensional and physical molecular models can help bring them to life. Models can demonstrate alternative bond connections and structural differences that are difficult to visualize in a two-dimensional drawing, but have important consequences for observable properties of the compounds that can be readily demonstrated. Bring your USB flash drive and take away the presentation and activities to use in your classes.

Rockin' Out in Tennessee Limestone Cedar Glades (Env)

(Informal Education) *Hermitage E, Opryland*

Kim Cleary Sadler *(ksadler@mtsu.edu),* **Abby Drumwright** *(abbydrumwright@gmail.com),* and **Marrie Lasater** *(mlasater@mtsu.edu),* Middle Tennessee State University, Murfreesboro

Kim Hinton *(k.hinton06@comcast.net),* Siegel High School, Murfreesboro, Tenn.

Investigate the unique features of limestone glades through interactive lessons that include science, technology, and mathematics. Free CD with activity lessons and other resources!

Formative Assessment and Data Collection with the TI-Nspire™ Navigator™ (Phys)

(High School) *Lincoln C, Opryland*

Sean M. Bird, Covenant Christian High School, Indianapolis, Ind.

Explore the latest in wireless handheld technology that easily integrates probes and sensors—Texas Instruments' TI-NspireCAS. Get instant feedback, track responses for assessment, and distribute activities.

Electricity and Electric Circuits for the Elementary Grades (Phys)

(Elementary–Middle Level) *Lincoln D, Opryland*

Stanford N. Peppenhorst *(sp4scienceed@aol.com),* Science Education Consultant, Memphis, Tenn.

Increase student learning and understanding of electricity, batteries, conductors and insulators, switches, series circuits, parallel circuits, and electromagnetism with these methods and activities.

Differentiation in the Secondary Science Classroom (Chem)

(Middle Level–High School) *Lincoln E, Opryland*

Gilda D. Lyon *(glyon@doe.k12.ga.us),* Georgia Dept. of Education, Atlanta

Put theory to work and use these hands-on strategies to differentiate your secondary science classroom.

Morph Science Notebooks Using Dinah Zike's Foldables® (Gen)

(General) *Ryman Studio A–C, Opryland*

Nancy F. Wisker, Dinah-Might Adventures, San Antonio, Tex.

Morph your students' science notebooks into brain-smart tools with 3-D interactive graphic organizers known as Foldables.

NSTA Press Session: Outdoor Science: A Practical Guide (Env)

(Elementary–Middle Level) *Tennessee A, Opryland*

Steve A. Rich *(bflywriter@comcast.net),* Georgia Dept. of Education, Atlanta

No teacher left inside! Insects, seeds, and sundials can help you integrate all subjects in outdoor lessons with practical ideas and inexpensive materials. Free seeds!

Cruisin' to Food Safety: Integrating Food Safety in Your Science Curriculum (Bio)

(Middle Level–High School) *Tennessee B, Opryland*

Laurie A. Hayes *(lhayes@cart.org),* Center for Advanced Research and Technology, Clovis, Calif.

Explore an FDA activity-based curriculum that integrates food safety while still covering science and health standards. Free teaching materials from the FDA and door prizes!

12:30–1:30 PM Exhibitor Workshop

Active Chemistry (Chem)

(Grades 9–12) *Presidential C, Opryland*

Sponsor: It's About Time

Arthur Eisenkraft, 2000–2001 NSTA President, and University of Massachusetts, Boston

Active Chemistry is an NSF inquiry-based curriculum that makes chemistry accessible to ALL high school students. Come join us and learn how Active Chemistry can enhance your chemistry instruction and how your students can become artists using chemistry, cooks using chemistry, and game developers using chemistry. We will demonstrate how Active Chemistry differentiates instruction so that all students succeed in chemistry. Also see how Fourier probeware enhances project-based activities.

1:00–2:00 PM Exhibitor Workshop

Discovery-based Middle School Science with Sally Ride Science and SPARKscience™ (Earth)
(Grades 6–12) *Bayou E, Opryland*
Sponsor: PASCO Scientific
Presenter to be announced
This session explores "Our Changing Climate" using a hands-on SPARKlab activity from Sally Ride Science and PASCO's state-of-the-art SPARK Science Learning System. See for yourself how these 21st-century standards-based activities can deepen students' knowledge of fundamental concepts and increase their understanding of the world around them.

1:00–2:15 PM Exhibitor Workshop

Working as One with Hands and Minds (Gen)
(Grades K–8) *Bayou B, Opryland*
Sponsor: Delta Education/School Specialty Science
Johanna Strange, Consultant, Richmond, Ky.
Tom Graika, Consultant, Lemont, Ill.
Students learn best when both their minds and their hands are engaged in classroom activities. A problem-solving approach to teaching promotes this kind of student learning. Delta Science Modules and technological activities will illustrate a variety of problem-solving strategies that lead to real learning. Take home a resource packet.

1:00–2:30 PM Exhibitor Workshop

Bio-Rad: Enzymes and Biofuels—Go from Grass to Gas! (AP Lab 2) (Bio)
(Grades 9–College) *Jackson A/B, Opryland*
Sponsor: Bio-Rad Laboratories
Sherri Andrews *(sherri_andrews@bio-rad.com),* Bio-Rad Laboratories, Hercules, Calif.
Stan Hitomi, San Ramon Valley Unified School District, Danville, Calif.
Need energy? Reveal the power of enzyme kinetics by illustrating the theory through a real-world application to biofuels. In this workshop, you will determine the rate of reaction for the enzyme cellobiase, a key enzyme in the production of cellulosic ethanol (a highly researched biofuel). Can biofuels solve global warming? Let your students decide if this is possible!

1:00–4:00 PM Short Course

Enriching High School Chemistry and Biology Teaching Through POGIL (SC-5)
(High School) *Belmont C, Opryland*
Tickets Required: $24
Paula W. Butler *(butlerp@countryday.net),* Cincinnati Country Day School, Cincinnati, Ohio
Megan M. Hoffman *(hoffmanm@berea.edu),* Berea College, Berea, Ky.
For description, see page 31.

2:00–2:30 PM Presentation

SESSION 1
Building Capacity to Lead Professional Learning (Gen)
(College) *Washington B, Opryland*
Innocent I. Usoh *(innocent.usoh@nscc.edu),* Nashville State Community College, Nashville, Tenn.
Use case studies in Problem Based Learning style to enhance problem-solving skills, teamwork, leadership, and communication.

2:00–3:00 PM NSTA ESP Symposium II

NSTA Exemplary Science Programs (ESP)…Meeting the Reform Features from the National Science Education Standards (Gen)

(General) *Presidential Boardroom A, Opryland*

ESP: Eight Facets of Science "Content" Recommended by the National Standards: How to Teach and Assess Learning in All Eight

Organized by Robert E. Yager, 1982–1983 NSTA President and Editor of the NSTA ESP Program

Coordinators: Robert E. Yager (robert-yager@uiowa.edu), *University of Iowa, Iowa City, and Brenda Wojnowski* (bwojnowski@gmail.com), *Wojnowski and Associates, Inc., Dallas, Tex.*

This session 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. Participants in this symposium will include the following authors from specific monographs in the series.

Biomedical Engineering and Your High School Science Classroom (from ESP #3)

Stacy S. Klein-Gardner *(stacy.klein-gardner@vanderbilt.edu),* Vanderbilt University, Nashville, Tenn.

"Shouldn't We Be Doing Science?" (from ESP #6)

Tina Harris *(taharris79@yahoo.com),* Anderson Community School Corp., Anderson, Ind.

2:00–3:00 PM Featured Presentation

Brain-considerate Learning: How the Human Brain Learns Best (Gen)

(General) *Tennessee Ballroom C, Opryland*

Kenneth Wesson *(kenawesson@aol.com),* Educational Consultant, Neuroscience, and Vice President, Western Division and International Divisions, Delta Education/School Specialty Science, San Jose, Calif.

Presider: Diane Vaughn, Program Coordinator, NSTA Nashville Area Conference, and Educational Consultant, Clarkrange, Tenn.

Perplexed by the "hits" and "misses" in the teaching-learning equation, educators have become some of the most voracious consumers of research on what, when, and how to apply the latest findings in brain science. The brain is not only the human body's most complex organ (composed of more than 150 different types of cells), but this "Three-Pound Universe" has also been described as the most complex object known to mankind.

As we actively search for reliable instructional strategies to improve learning and cognitive development by enhancing the efficiency of information encoding, the endurance of memory, and the effective use of stored information, new answers are coming to us from the cognitive neurosciences. Devising methodologies that accommodate the brain's natural processing inclinations can increase every student's prospects for academic success. The goals in education and neuroscience are overlapping and many of them are becoming indissociable. With these discoveries, the human brain is re-emerging as the centerpiece in all thought-provoking conversations about academic learning. The cognitive neurosciences offer new promise in reshaping the future of teaching and learning in our classrooms.

Kenneth Wesson works as an educational consultant for preschool through university institutions and organizations. An expert on the neuroscience of learning and methods for creating classrooms and learning environments that are "brain-considerate," Wesson regularly addresses psychological, medical, and educational associations, as well as parenting organizations, on establishing "brain-considerate" learning environments. In addition to his seminars on learning, Wesson also speaks on the topics of brain development, diversity in learning, the neuropsychology of prejudice, curriculum development, and how children learn.

2:00–3:00 PM Presentations

SESSION 1

Data: It's Not a Four-Letter Word (Gen)

(General) *Cheekwood A, Opryland*

Lindsay Knippenberg *(robert.c.hansen@noaa.gov),* Einstein Fellow, NOAA, Washington, D.C.

NOAA's data are your grandfather's data! Learn about NOAA data resources that rival MTV (well, almost) and are readily available for your use.

SESSION 2

NSELA Session: Tools and Ideas for Leaders (Gen)

(General) *Cheekwood B, Opryland*

Janey Kaufmann, NSELA President, Scottsdale, Ariz.

Brenda Wojnowski *(bwojnowski@gmail.com),* Wojnowski and Associates, Inc., Dallas, Tex.

Meet with National Science Education Leadership Association members as we trade tips, tools, and tactics that enhance the work of science leaders.

SESSION 3

What Paideia Looks Like in the Classroom (Gen)

(Elementary–High School) *Cheekwood C, Opryland*

CANCELED

Jolyn B. Mitchell, Merrol Hyde Magnet School, Hendersonville, Tenn.

Let's discuss practical ideas and strategies using Paideia methods in the classroom setting using the three columns of instruction—didactic, coaching, and seminar.

SESSION 4

Organically Nurturing Professional Learning: A "Fresh Start" Campus (Env)

(High School) *Cheekwood F, Opryland*

Cliff Cockerham *(clifford.cockerham@mnps.org),* School of Community Health & Public Service, Whites Creek, Tenn.

After a "fresh start" was enacted and a "new faculty assembled," cross-curricular teams were organized into small themed academies. Weekly professional development was focused on collegial sharing and collective wisdom.

SESSION 5

Boosting Higher-Level Thinking in K–6 Science Assessments (Gen)

(Preschool–Middle Level) *Magnolia Boardroom B, Opryland*

Rebecca Stobaugh and **Martha M. Day** *(martha.day@wku.edu),* Western Kentucky University, Bowling Green

Presider: Janet Tassell, Western Kentucky University, Bowling Green

Learn how to create science assessments and activities that are less fact based and more reflective of higher-level thinking experiences. We'll share common teacher misconceptions and exemplary assessments.

SESSION 6

NSTA Avenue Session: Toyota TAPESTRY Grants for Science Teachers = $$$ for Your School! (Gen)

(Elementary–High School) *Presidential Chamber B, Opryland*

Eric V. Crossley *(ecrossley@nsta.org),* Director, Science Education Competitions, NSTA, Arlington, Va.

Find out how to increase your chances of winning one of 50 Toyota TAPESTRY $10,000 large grants! This year the focus for Toyota TAPESTRY grants will be the environment. We will share keys to success and review ways to increase your chances of funding your innovative, community-based environmental science project. Open to middle or high school science teachers and elementary teachers who teach some science in the classroom.

SESSION 7

NSTA High School Committee Share Session (Gen)

(High School) *Tennessee D/E, Opryland*

Michael Lowry, NSTA Director, High School Science Teaching, and The McCallie School, Chattanooga, Tenn.

The NSTA High School Committee highlights excellent presenters sharing inquiry and assessment through best practices, teaching tips, labs, and activities. Join us for some GREAT ideas!

2:00–3:00 PM Workshops

ACS Middle Level Session: Polarity of the Water Molecule and Dissolving (Chem)

(Middle Level) *Hermitage B, Opryland*

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

Explore why water is a polar molecule and perform dissolving activities that can be explained on the molecular level.

ACS Session Five: Chemistry of Aqueous Solutions of Gases (Chem)

(High School) *Hermitage C, Opryland*

Jerry A. Bell *(j_bell@acs.org),* American Chemical Society, Washington, D.C.

The electrical conductivity and pH of aqueous solutions of N_2, O_2, HCl, CO_2, and NH_3 are very different. The characteristics of the chemical bonding in these molecules provide the information necessary to understand and explain their behavior when dissolved in water. Bring your USB flash drive and take away the presentation and activities to use in your classes.

AAPT Session: Addressing Student Difficulties with Motion and Force (Phys)

(Middle Level–High School) *Hermitage D, Opryland*

Scott Bonham *(scott.bonham@wku.edu),* Western Kentucky University, Bowling Green

Some student difficulties with motion and force have roots in intuition. I'll share assessment data, cognitive theory, and teaching strategies.

Digging Dinos (Gen)

(Elementary) *Hermitage E, Opryland*

Becky Wolfe *(beckyw@childrensmuseum.org),* The Children's Museum of Indianapolis, Ind.

Explore fossils and dinosaurs with hands-on activities.

Epigenetics: Beyond the Central Dogma (Bio)
(High School) *Lincoln C, Opryland*
Louisa A. Stark *(louisa.stark@utah.edu),* University of Utah, Salt Lake City
The environment interacts with the epigenome to control gene expression. These interactive activities explore epigenetics and how it confounds conventional notions of inheritance. Free materials at *http://learn.genetics.utah.edu.*

The Role of Advocacy in Promoting STEM Education (Gen)
(General) *Lincoln D, Opryland*
John K. Sanders *(jsanders@eastman.com),* American Chemical Society, Kingsport, Tenn.
Stanford N. Peppenhorst *(sp4scienceed@aol.com),* Science Education Consultant, Memphis, Tenn.
Preston J. MacDougall, Middle Tennessee State University, Murfreesboro
This session will focus on ways in which both individuals and organizations can interact with state policy makers in support of STEM Education. Examples will be given of STEM advocacy by the American Chemical Society and individuals across the state in education and industry.

Teaching Energy Conservation with an Emphasis on Biofuels (Gen)
(Elementary–Middle Level/Informal Ed.) *Lincoln E, Opryland*
Sue P. Kral *(spk@cdmfun.org),* Creative Discovery Museum, Chattanooga, Tenn.
Engage students in energy conservation with inquiry activities promoting understanding, while focusing on research and concepts to develop a nonfood alternative liquid fuel for transportation.

Modeling the Spectrum (Gen)
(Middle Level–High School) *Ryman Studio A–C, Opryland*
Donna L. Young *(donna.young@tufts.edu),* Wright Center for Science Education, Tufts University, Medford, Mass.
Doug Lombardi *(lombardi.doug@gmail.com),* Southern Nevada Regional Professional Development Program, North Las Vegas
Explore a complete unit from pre- to post-assessment that looks at different methods for examining the electromagnetic spectrum.

NSTA Press Session: So You Want New Science Facilities (Science Facilities 101) (Gen)
(General) *Tennessee A, Opryland*
LaMoine L. Motz *(llmotz@comcast.net),* 1988–1989 NSTA President, and Oakland County Schools, Waterford, Mich.
Sandra West Moody *(sw04@txstate.edu),* Texas State University, San Marcos
James T. Biehle *(biehlej@sbcglobal.net),* Inside/Out Architecture, Inc., Kirkwood, Mo.
Juliana Texley *(jtexley@att.net),* Palm Beach State College, Boca Raton, Fla.
Presider: LaMoine L. Motz
Do your science facilities define your curriculum or the other way around? In over 15 years of conducting visits to new and newly renovated school science facilities, we have discovered that the best science facilities can not only define but restrict the curriculum. Join the authors of *NSTA Guide to Planning School Science Facilities* (2nd Ed.) and learn the basics of science facility planning, design, and budgeting so you can guide your school/district toward improvements in functionality, safety, and sustainability.

What Is Your Cosmic Connection to the Elements? (Earth)
(Middle Level–High School) *Tennessee B, Opryland*
A. Marie Pool *(marie.pool@clintonokschools.org),* Clinton High School, Clinton, Okla.
We'll trace the chemical elements all around us to their origins in cosmic events—the Big Bang, stars, stellar explosions, and cosmic rays.

2:00–3:00 PM Exhibitor Workshop

Fourier Probeware and Nova5000 (Gen)
(Grades 6–12) *Presidential C, Opryland*
Sponsor: It's About Time
Brian DeSoto, Fourier Systems, Orland Park, Ill.
It's About Time and Fourier Systems have partnered to provide a world-class solution for curriculum and technology. Come participate in Fourier probeware and Nova5000 demonstrations for middle school and see why your students will be able to do more with Fourier. You'll see the benefits of Project-Based Inquiry Science and the integrated technology of Fourier Systems—the best of both worlds.

2:00–3:15 PM Exhibitor Workshops

From Science to Engineering (Gen)
(Grades 6–8) *Canal A, Opryland*
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.

Do They Get It? Assessment Strategies for an Inquiry Classroom (Gen)
(Grades K–5) *Canal B, Opryland*
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Learn to develop effective assessment strategies for your inquiry classroom. Using the STC Program™ and STC® assessment guides, participants devise a complete assessment program (including both pencil-and-paper tests and less traditional tools) that allows students to apply and restate their understandings about the world.

Amplify Your Genetics Teaching Skills with Carolina's Inquiries in Science™ Biology Units (Bio)
(Grades 9–12) *Canal C, Opryland*
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Want to crack the mystery of genetics for your students? Increase student achievement on difficult concepts such as nucleic acids, genetic inheritance, and biotechnology by using a guided inquiry approach. Carolina's Inquiries in Science Biology units provide hands-on activities to make teaching challenging topics effortless. Free teacher materials and door prizes!

Real Chemistry for All Students…But How? (Chem)
(Grades 9–12) *Jackson C, Opryland*
Sponsor: LAB-AIDS, Inc.
Tom Hsu, Author, Andover, Mass.
What are the barriers to teaching real, quantitative chemistry to all students in a way that they can succeed? Dr. Hsu will lead a hands-on exploration that will touch the areas of greatest student difficulty and show you many intuitive and practical solutions that can help your students engage with chemistry and learn. *A Natural Approach to Chemistry* doesn't require Bunsen burners or fume hoods, and all the experiments use nontoxic chemicals that are easily disposed of. This is real chemistry without expensive chemical disposal fees!

New Ways to Prepare Your Students Using 21st-Century STEM Initiatives—GO DIGITAL!! (Bio)
(Grades 7–College) *Jackson D, Opryland*
Sponsor: Swift Optical Instruments, Inc.
David Doty *(david@swiftoptical.com)* and **Cynthia Syverson-Mercer** *(cynthia@swiftoptical.com),* Swift Optical Instruments, Inc., San Antonio, Tex.
The future of science classrooms and workplaces is digital technology. Prepare your students for this future by incorporating Motic software, Swift digital cameras, and microscopes into your STEM curriculum. Learn how to integrate digital technology and assessment into your current teaching.

ScholAR Chemistry In-the-Bag Inquiry (Chem)
(Grades 6–12) *Jackson E/F, Opryland*
Sponsor: Sargent-Welch
Mark Meszaros, Sargent-Welch, Rochester, N.Y.
These easy-to-perform demonstrations are designed to engage students and incorporate guided inquiry exercises so students can further explore and understand the concept. Participants will learn how to perform four different In-the-Bag inquiry demonstrations and two In-the-Bag learning activities.

Get Charged Up with Educational Innovations! (Phys)
(Grades 5–9) *Presidential B, Opryland*
Sponsor: Educational Innovations, Inc.
Ken Byrne *(info@teachersource.com),* Educational Innovations, Inc., Norwalk, Conn.
Join us for fun activities with static electricity. Make your own Franklin electrostatic motor and discover a plethora of activities to get your class charged up. Make and take and door prizes!

Teaching Inquiry Science with Toys and Treats (Gen)
(Grades 6–12) *Presidential E, Opryland*
Sponsor: McGraw-Hill School Education Group
Ralph Feather, Jr., Bloomsburg University, Bloomsburg, Pa.
Learn fun, practical, and engaging hands-on teaching ideas using toys and treats. Take home a wealth of ideas for teaching difficult concepts in novel ways.

2:00–3:30 PM Exhibitor Workshops

Transforming the Science Lab with Vernier Technology (Gen)
(Grades 7–College) *Bayou A, Opryland*
Sponsor: Vernier Software & Technology
Gretchen Stahmer DeMoss *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
Discover how technology transforms your classroom into a 21st-century laboratory. Explore state-of-the-art probeware solutions that teach core science topics in physics, chemistry, biology, Earth science, and environmental science. Learn tips and tricks from master teachers and technology experts. Receive hands-on training with both Logger *Pro* software and the Vernier LabQuest handheld.

Chemistry and the Atom: Fun with Atom Building Games! (Gen)
(Grades 5–12) *Bayou C, Opryland*
Sponsor: CPO Science/School Specialty Science
Erik Benton and **Patsy Eldridge,** CPO Science/School Specialty Science, Nashua, N.H.
Our understanding of matter is so abstract that students have a hard time making sense of these fascinating concepts. In this workshop, you will experience innovative games and activities that give students with different learning styles opportunities to explore and grasp atomic structure and the periodic table.

Students Making a Difference
GPSA
for Health

www.gpsa.org

educational collaborators
Edgerton Center
Florida Gulf Coast University

What can your students do with four weeks of summer
Improve health care for hundreds of children.
Make a difference.

The summer starts on the FGCU campus, learning about the community they will be helping, learning about the work they'll be doing. They'll get to know the MIT and FGCU faculty and the rest of the team before everyone departs for the developing world.

Once there, they'll live and work in a community. They'll spend the afternoons in language and technical training with extraordinary faculty. Every morning, they'll put the training to the test, working in a clinic or community. They might be vaccinating against polio one day, training mothers on hygiene the next, witnessing a birth or helping the clinic expand its facilities the following day. Every day they'll have a chance to help MIT and FGCU facutly conduct research that will have long term, sustained impact.

2:00–4:30 PM Exhibitor Workshop

Using Elementary Science Notebooks for Formative Assessment with FOSS (For Experienced Users) (Gen)

(Grades K–6) *Bayou D, Opryland*

Sponsor: Delta Education/School Specialty Science–FOSS

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

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

Jeri Calhoun, Science Associate, Isle of Palms, S.C.

Through a hands-on FOSS investigation, we'll expand on the essential components of student-centered science notebooks for K–6, look for evidence of learning to inform practice, and explore ways to provide effective feedback. Discover how to use notebooks to guide instruction through embedded assessments and next-step strategies. Sample FOSS materials will be distributed.

2:30–4:00 PM Exhibitor Workshop

Renewable Energy Exploration—Solar, Wind, and Hydrogen Fuel Cells (Env)

(Grades 6–12) *Bayou E, Opryland*

Sponsor: PASCO Scientific

Presenter to be announced

This session highlights the state-of-the-art science teaching solutions created through a partnership between Horizon Fuel Cell Technologies and PASCO Scientific. In this hands-on workshop, you will investigate the energy output from various renewable energy sources, participate in a standards-based Earth science SPARKlab, and experience how SPARKscience™ can enhance your teaching practice and improve student understanding of relevant topics in alternative energy.

3:00–4:00 PM Reception

Energizing Break for Tennessee Teachers Reception

(By Invitation Only) *Presidential Boardroom B, Opryland*

A "meet and greet" sponsored by the Tennessee Energy Policy Office. Participants receive a gift and refreshments at this networking opportunity. Free tickets at the TSTA booth.

3:30–4:00 PM Presentation

SESSION 1

It's Alive! Promoting Critical Thinking on the First Day of Biology Class (Bio)

(Middle Level–High School) *Cheekwood F, Opryland*

Kerrie McDaniel and **Joye Beth Spinks,** Western Kentucky University, Bowling Green

Explore the use of nonliving objects to introduce the characteristics of life while forcing students to think critically and evaluate what they think they know.

3:30–4:30 PM NSTA ESP Symposium III

NSTA Exemplary Science Programs (ESP)…Meeting the Reform Features from the National Science Education Standards (Gen)

(General) *Presidential Boardroom A, Opryland*

ESP: Realizing Goals Two and Three of the NSES

Organized by Robert E. Yager, 1982–1983 NSTA President and Editor of the NSTA ESP Program

Coordinators: Robert E. Yager (robert-yager@uiowa.edu), *University of Iowa, Iowa City, and Bonnie Brunkhorst* (bbrunkho@csusb.edu), *1990–1991 NSTA President, and California State University, San Bernardino*

This session 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. Participants in this symposium will include the following authors from specific monographs in the series.

Sowing the Seeds of Future Success (from ESP #6)

Craig Wilson, *(cwilson@science.tamu.edu),* Texas A&M University, College Station

Developing Inquiry Skills Along a Teacher Professional Continuum (from ESP #6)

Michelle Edgcomb *(medgcomb@mail.bradley.edu),* Bradley University, Peoria, Ill.

"Who Ate Our Corn?" (from ESP #7)

Craig Wilson, *(cwilson@science.tamu.edu),* Texas A&M University, College Station

3:30–4:30 PM Presentations

SESSION 1

JetStream: An Online School for Weather (Earth)
(General) *Cheekwood A, Opryland*
Dennis Cain *(dennis.cain@noaa.gov),* National Weather Service, Fort Worth, Tex.
JetStream is a free online resource from the National Weather Service. Each module is designed with both text and graphic displays and includes "learning lessons."

SESSION 2

NSELA Session: NSELA Working Groups—Network with Science Education Leaders (Gen)
(General) *Cheekwood B, Opryland*
Janey Kaufmann, NSELA President, Scottsdale, Ariz.
Brenda Wojnowski *(bwojnowski@gmail.com),* Wojnowski and Associates, Inc., Dallas, Tex.
NSELA's Working Groups provide members with an avenue to pursue an area of interest in science education.

SESSION 3

NASA CERES S'COOL Project: Be a S'COOL Cloud Observer! (Earth)
(Elementary–High School) *Cheekwood C, Opryland*
Eileen G. Poling *(epoling@access.k12.wv.us),* Tucker County Schools, Hambleton, W.Va.
Diana Soehl *(dsoehl2@yahoo.com),* Elwood-John H. Glenn High School, Elwood, N.Y.
Engage your students in making real-world cloud and weather observations for NASA. Become a S'COOL cloud observer. Plenty of handouts!

SESSION 4

NSTA Student Chapter Meeting (Gen)
(General) *Magnolia Boardroom B, Opryland*
James T. McDonald *(jim.mcdonald@cmich.edu)* and **Rob Cundy** *(cundy1rk@cmich.edu),* Central Michigan University, Mount Pleasant
Any advisor, officer, or member of an NSTA student chapter is invited to come to this sharing session on what your chapter is doing. Interactive discussion format.

SESSION 5

NSTA Avenue Session: The NSTA Learning Center: Free Professional Development Resources and Opportunities for Educators (Gen)
(General) *Presidential Chamber B, Opryland*
Flavio Méndez *(fmendez@nsta.org),* Senior Director, NSTA Learning Center, NSTA, Arlington, Va.
Al S. Byers, Assistant Executive Director, e-Learning and Government Partnerships, NSTA, Arlington, Va.
Lost when it comes to finding online professional development resources to enhance your content knowledge and skills? With more than 4,400 resources (25% of which are free) and quality professional development opportunities to assist educators with core subject content, the NSTA Learning Center has the answers! Attend and receive free access to some of the fee-based resources. Refreshments provided.

SESSION 6

Medical Mysteries: A Free Online Adventure Game (Bio)
(Middle Level) *Washington B, Opryland*
Kristi G. Bowling, Rice University, Houston, Tex.
Lynn Lauterbach *(lynnlauterbach@gmail.com),* Loveland, Colo.
Need a fun way to reinforce the scientific method and encourage health and science careers? Experience a free website where students use the scientific method to investigate a disease outbreak.

3:30–4:30 PM Workshops

ACS Middle Level Session: Chemical Change and Energy (Chem)
(Middle Level) *Hermitage B, Opryland*
James H. Kessler *(jhkessler@acs.org),* American Chemical Society, Washington, D.C.
Explore the energy changes caused by the breaking and making of bonds in an endothermic and exothermic chemical reaction.

ACS Session Six: Coupled Reactions, Energetics, and Chemical Bonds (Chem)
(High School) *Hermitage C, Opryland*
Jerry A. Bell *(j_bell@acs.org),* American Chemical Society, Washington, D.C.
Chemical reactions always involve breaking and making chemical bonds—processes that require energy and give off energy, respectively. Relatively simple reactions where the net energy production of one process is coupled to the net energy requirement of another provide insight into the chemistry of life. Bring your USB flash drive and take away the presentation and activities to use in your classes.

AAPT Session: Using Physics to Design a Better Sports Car (Phys)
(Middle Level–College) *Hermitage D, Opryland*
Tom E. Hill, General Motors, Corvette Assembly Plant, Bowling Green, Ky.
Join me for an interactive discussion of the evolution of different generations of Corvettes. Physical principles such as acceleration, friction, center of gravity, and inertia are important for designing performance vehicles.

Climate Change: Classroom Tools to Explore the Past, Present, and Future (Env)
(Middle Level–High School/Informal Ed.) *Lincoln C, Opryland*
Roberta M. Johnson *(rmjohnsn@gmail.com),* National Earth Science Teachers Association, Boulder, Colo.
Explore the scientific foundations of what we know about climate change through data-rich hands-on classroom activities. Handouts provided.

Using Children's Literature as a Springboard to Creating Inventions (Env)
(Elementary–Middle Level) *Lincoln D, Opryland*
Leslie A. Suters *(lsuters@tntech.edu),* Tennessee Tech University, Cookeville
Create an invention using various children's trade books as inspiration and design an advertisement using persuasive propaganda devices.

Teaching Chemistry in a 21st-Century Urban Classroom (Chem)
(Middle Level–High School) *Lincoln E, Opryland*
Michael L. Osborne *(osbormic55@sbcglobal.net),* DeSoto High School, DeSoto, Tex.
Chemistry in the 21st Century has become an all-inclusive course for all students. I'll share strategies that motivate, energize, and provide success for all learners in the chemistry classroom.

The Science of Energy (Gen)
(Elementary–High School) *Ryman Studio A–C, Opryland*
Mary Spruill *(info@need.org),* The NEED Project, Manassas, Va.
Confidently teach energy concepts with these center-based hands-on activities investigating forms of energy—motion, sound, thermal, radiant, electrical, and chemical—and the energy transformations between them.

NSTA Press Session: The Architects Have Started Without Me: What Do I Do Now? (Science Facilities 102) (Gen)
(General) *Tennessee A, Opryland*
LaMoine L. Motz *(llmotz@comcast.net),* 1988–1989 NSTA President, and Oakland County Schools, Waterford, Mich.
Sandra West Moody *(sw04@txstate.edu),* Texas State University, San Marcos
James T. Biehle *(biehlej@sbcglobal.net),* Inside/Out Architecture, Inc., Kirkwood, Mo.
Juliana Texley *(jtexley@att.net),* Palm Beach State College, Boca Raton, Fla.
Presider: LaMoine L. Motz
Is your district designing new science facilities but you are not involved? You need to get involved before it is TOO LATE! In an advanced course on science facility planning and design, the authors of *NSTA Guide to Planning School Science Facilities* (2nd Ed.) will present detailed information and examples of functional and flexible science facilities for Project-Based Inquiry Science (PBIS). We'll examine budgeting, working with an architect, space requirements, technology, flexibility, safety, new types of spaces, and special adjacencies.

Environmental Toxicology: Introduction to Toxicity Testing (Env)

(Middle Level–High School) *Tennessee B, Opryland*

Jonathan E.H. Wilson *(jonathan.wilson@morgan.edu),* Morgan State University, Baltimore, Md.

Use hands-on activities and simulations to determine the LC50s of effluents, understand what LC50 means, and explore how LC50 is used.

3:30–4:30 PM Exhibitor Workshop

NEW! *Investigating Astronomy* from TERC/*EarthComm* from AGI (Earth)

(Grades 9–12) *Presidential C, Opryland*

Sponsor: It's About Time

Jack Deyton, It's About Time, Armonk, N.Y.

Developed by the education experts at TERC, *Investigating Astronomy* is the first comprehensive, yearlong astronomy curriculum designed specifically for high school students. *EarthComm* is brought to you by the geology education professionals at the American Geological Institute. Participate in activities and real-world projects that can motivate your students and leave with practical hands-on activities that you can do in your classroom. Also see how Fourier probeware enhances project-based activities.

3:30–4:45 PM Exhibitor Workshop

Bio-Rad: Light Up Your Classroom with pGLO™ Transformation (Bio)

(Grades 7–College) *Jackson A/B, Opryland*

Sponsor: Bio-Rad Laboratories

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

Stan Hitomi, 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.

3:30–5:00 PM Social

NMLSTA Ice Cream Social

Presidential A, Opryland

An invitation to all middle level educators interested in promoting innovative science education. Come meet, network, share ideas, get involved! Best of all, enjoy the ice cream! This event is organized by Rajeev Swami, NMLSTA President, and the NMLSTA Board of Directors.

4:00–5:15 PM Exhibitor Workshops

The Science Behind Climate Change: What Every Student (and Teacher) Should Know (Earth)

(Grades K–8) *Canal A, Opryland*

Sponsor: Pearson

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

Teaching about climate change at a K–8 level is very challenging. The subject is very important, yet very complicated. In fact, climate and climate change are some of the most complex subjects in all of Earth science. Renowned geosciences professor and Pearson author Michael Wysession will explain the fundamentals and latest discoveries about climate change in a way that everyone can understand, with tips on how to talk about it in the classroom.

Introduction to Inquiry in the Middle School Classroom (Gen)

(Grades 6–8) *Canal B, Opryland*

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.

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

(Grades 6–12) *Canal C, Opryland*

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. Participants 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.

What Is the Difference Between Heat and Temperature? (Chem)

(Grades 9–12) *Jackson C, Opryland*

Sponsor: LAB-AIDS, Inc.

Tom Hsu, Author, Andover, Mass.

How many of your students can answer this question? We will show you a powerful, intuitive, and nearly foolproof way to teach this key idea in chemistry. The concept of heat and the flow of energy is a modern way to look at a core concept that appears in many of your standards. We will also use a classroom-rugged new probe system that stores data on a portable SD card!

Detecting Radiation in Our Radioactive World **(Gen)**

(Grades 5–12) *Jackson D, Opryland*

Sponsor: American Nuclear Society

Toni Bishop *(outreach@ans.org),* American Nuclear Society, La Grange Park, Ill.

Discover how to use Geiger counters to detect radioactivity and teach principles of nuclear science. Expand your knowledge of ways nuclear technology is applied in the everyday life of our society.

Introduction to Blood Typing and Blood Spatter **(Bio)**

(Grades 6–12) *Jackson E/F, Opryland*

Sponsor: WARD'S Natural Science

Mark Meszaros, Sargent-Welch, Rochester, N.Y.

By using simulated blood, participants will learn to conduct blood typing tests as well as learn to interpret and understand blood spatter. This experience will be a great introduction into the forensic sciences.

Misconception Mania: Exciting and Engaging Ways to Address Common Misunderstandings in K–8 Science **(Gen)**

(Grades K–8) *Presidential B, Opryland*

Sponsor: Houghton Mifflin Harcourt

Michael DiSpezio, Science Writer and Educational Consultant, North Falmouth, Mass.

Join Houghton Mifflin Harcourt author Michael DiSpezio for an entertaining and eye-opening survey of common misconceptions in science. Participants will expand their awareness of common science myths through game show–style interactions and engage in a variety of easy-to-repeat and inexpensive activities that effectively correct students' misunderstandings.

Teaching Inquiry Science with Toys and Treats **(Gen)**

(Grades 6–12) *Presidential E, Opryland*

Sponsor: McGraw-Hill School Education Group

Ralph Feather, Jr., Bloomsburg University, Bloomsburg, Pa.

Learn fun, practical, and engaging hands-on teaching ideas using toys and treats. Take home a wealth of ideas for teaching difficult concepts in novel ways.

4:00–5:30 PM Exhibitor Workshop

CPO SmartTrack with Velocity Sensor and Energy Car **(Gen)**

(Grades 5–12) *Bayou C, Opryland*

Sponsor: CPO Science/School Specialty Science

Erik Benton and **Patsy Eldridge,** CPO Science/School Specialty Science, Nashua, N.H.

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

4:00–6:00 PM Workshop

Whale of a Share-a-Thon **(Gen)**

(General) *Tennessee D/E, Opryland*

Frances Hamilton *(hamiltonf@fcsboe.org),* Ralph Askins School, Fayetteville, Tenn.

Becky J. Cox *(beckyc@utm.edu),* The University of Tennessee at Martin

Courtney Thompson *(thompson@ripleys.com)* and **Jessica Hamlin** *(hamlin@ripleys.com),* Ripley's Aquarium of the Smokies, Gatlinburg, Tenn.

Kathy DeWein *(deweink@apsu.edu),* Austin Peay State University, Clarksville, Tenn.

Lisa Abel, Vance Middle School, Bristol, Tenn.

Rose Fekete, E.W. Grove School, Paris, Tenn.

Koren Livingston *(clivingston@tipton-county.com),* Munford Middle School, Munford, Tenn.

Join the National Marine Educators Association for marine science activities, lessons, and opportunities as well as handouts and demonstrations. The Tennessee Educators of Aquatic and Marine Science (TEAMS) will hold its mid-year meeting at the end of this workshop. Join us to learn more about the "world of water, both fresh and salt."

5:00–6:00 PM Presentations

SESSION 1

Corrosion Is Everywhere! Use It to Make Chemistry Relevant and Fun (Chem)

(High School) *Cheekwood A, Opryland*

Debbie Goodwin *(nywin@hotmail.com),* Chillicothe High School, Chillicothe, Mo.

Andrew G. Nydam *(andrewnydam@hotmail.com),* Olympia High School, Olympia, Wash.

Make reactivity, oxidation/reduction, solution chemistry, and corrosion prevention contextual and exciting using these inquiry-based labs. Handouts.

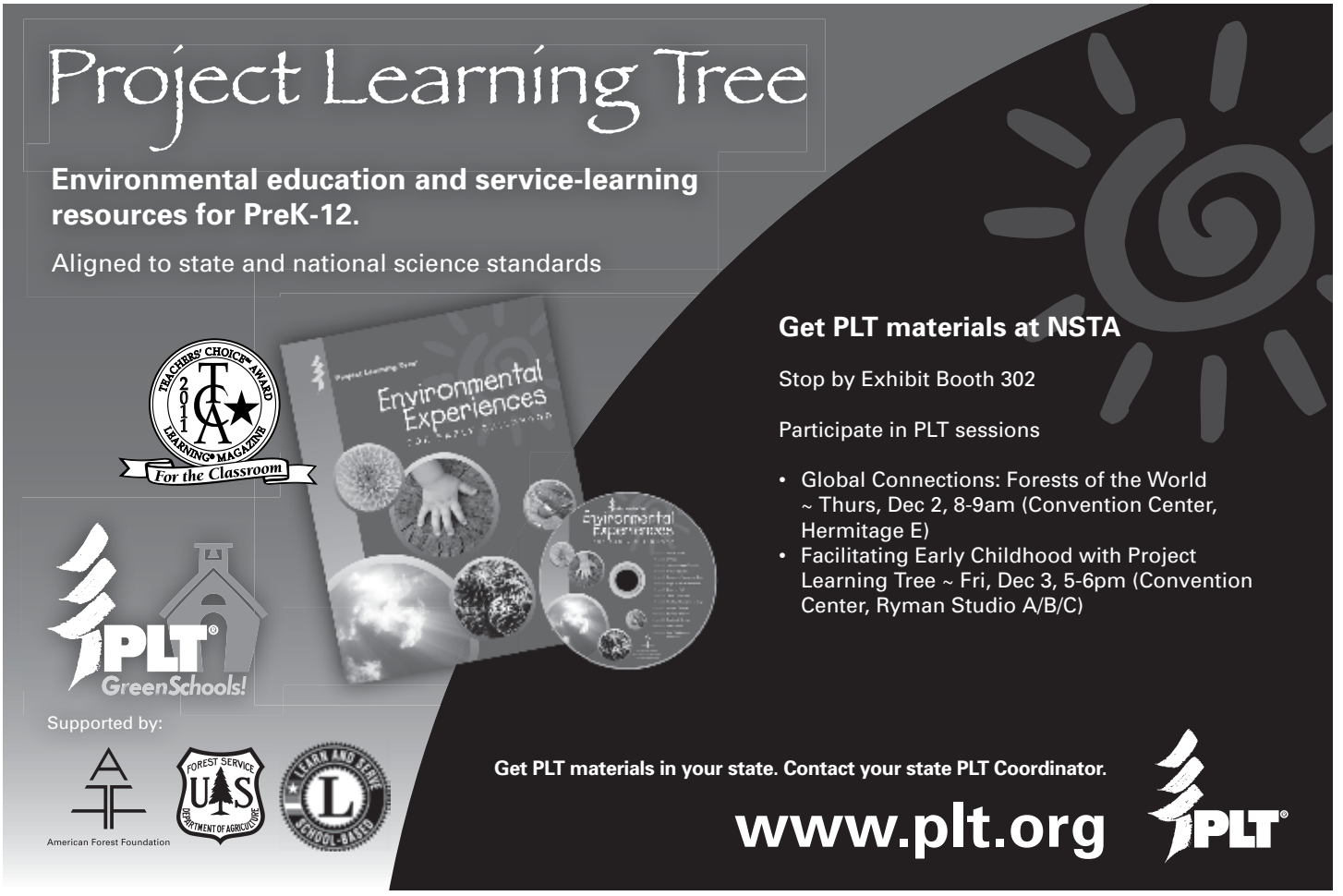
SESSION 2

The Missing Link: Using Inquiry to Engage Religious Students in Evolution (Gen)

(Middle Level–High School) *Cheekwood B, Opryland*

Lee Meadows *(lmeadows@uab.edu),* The University of Alabama at Birmingham

So you're teaching evolution to public school students with religious objections. Hear an approach that engages them in understanding the evidence but minimizes conflict.



SESSION 3

Weather in My World **(Gen)**

(Elementary–High School) *Cheekwood C, Opryland*

Eileen G. Poling *(eileenon@hotmail.com),* Tucker County Schools, Hambleton, W.Va.

Diana Soehl *(dsoehl2@yahoo.com),* Elwood-John H. Glenn High School, Elwood, N.Y.

Three collaborating teachers from different states have their students gather, share, map, and analyze weather data.

SESSION 4

Creating K–6 Classrooms That Embrace Science Inquiry: Helping Students Think and Work Like Scientists **(Gen)**

(General) *Magnolia Boardroom B, Opryland*

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

Learn what inquiry encompasses and how to create a classroom environment that embraces it.

5:00–6:00 PM Workshops

Paperless Integrated Math and Science Instruction **(Gen)**

(Middle Level–High School) *Lincoln C, Opryland*

Greg Dodd *(gbdodd@gmail.com),* George Washington High School, Charleston, W.Va.

Join me for a "green" hands-on workshop integrating math and science instruction. Technology enables paperless data collection and analysis in a 21st-century classroom.

Facilitating Early Childhood Education with Project Learning Tree **(Env)**

(General) *Ryman Studio A–C, Opryland*

Al Stenstrup *(astenstrup@forestfoundation.org)* and **Jackie Stallard** *(jstallard@forestfoundation.org),* Project Learning Tree, Washington, D.C.

Introduce science concepts to young children using Project Learning Tree's (PLT) new early childhood curriculum, Environmental Experiences for Early Childhood. Leave with an activity guide and accompanying music CD.

8:00–8:30 AM Presentations

SESSION 1

Incorporating Reading and Writing in Middle School Science (Gen)

(Middle Level) *Cheekwood B, Opryland*

Joseph M. Nunn *(joseph_nunn@gwinnett.k12.ga.us),* Twin Rivers Middle School, Buford, Ga.

Cary Sell *(cary_sell@gwinnett.k12.ga.us)* and **Brian Lucy** *(brian_lucy@gwinnett.k12.ga.us),* Trickum Middle School, Lilburn, Ga.

These creative lesson ideas use a variety of approaches, materials, and technologies to incorporate reading and writing in science.

SESSION 2

More Learning, Less Lecturing: Active Learning in the Community College Biology Classroom (Bio)

(High School–College) *Washington B, Opryland*

Libby W. Farrelly *(libby.farrelly@chattanoogastate.edu),* Chattanooga State Community College, Chattanooga, Tenn.

Encourage student engagement with hands-on modeling, 3-D graphic organizers, and case studies. Handouts.

8:00–9:00 AM Presentations

SESSION 1

Solids: The Neglected "State" of Chemistry (Chem)

(High School) *Cheekwood A, Opryland*

Andrew G. Nydam *(andrewnydam@hotmail.com),* Olympia High School, Olympia, Wash.

Debbie Goodwin *(nywin@hotmail.com),* Chillicothe High School, Chillicothe, Mo.

Use the "stuff" of the everyday world to make science relevant. Hands-on activities using solid materials (ceramics, metals, polymers) make concepts easier to teach/learn. Handouts.

SESSION 2

Seeing the Designed World in Hollywood Films (Gen)

(Middle Level–College) *Cheekwood F, Opryland*

Jacob Clark Blickenstaff *(jclarkblickenstaff@gmail.com),* University of Southern Mississippi, Hattiesburg

Movies use famous landmarks as backdrops. Come learn how you can show clips that reveal how these structures solve real scientific and technical challenges.

SESSION 3

Lesson Study: Unfolding the Nature of Science for Students and Novice Teachers (Gen)

(Elementary–High School) *Lincoln A, Opryland*

Amy V. McDowell *(amy.mcdowell@douglas.k12.ga.us),* Fairplay Middle School, Douglasville, Ga.

Sara B. Dwyer *(hobbsd@earthlink.net),* Holy Trinity Preschool, Peachtree City, Ga.

Use the framework of lesson study to provide support for both students' and novice teachers' understandings of teaching and learning the nature of science.

SESSION 4

Square Pegs: Science for Those "Other" Kids (Gen)

(Middle Level–High School) *Magnolia Boardroom B, Opryland*

Juliana Texley *(jtexley@att.net),* Palm Beach State College, Boca Raton, Fla.

Alternative education is becoming a more common path to achievement all over the country. But bright kids in special programs often have very unique learning styles—and almost no one is creating curricula for them.

8:00–9:00 AM Workshops

Use Technology to Integrate Science and Math! (Bio)

(Middle Level–High School) *Hermitage A, Opryland*

Jeff Lukens *(jeffrey.lukens@k12.sd.us),* Roosevelt High School, Sioux Falls, S.Dak.

Science and math should be natural curriculum partners. Use technology to bridge the gap between them and bring relevance to each classroom.

Analyzing Black Holes and Supernovae Through International X-ray Eyes (Earth)

(Middle Level–High School) *Hermitage B, Opryland*

A. Marie Pool *(marie.pool@clintonokschools.org),* Clinton High School, Clinton, Okla.

Learn how your students can explore the universe through X-ray light using recent data from the NASA-Japanese Suzaku satellite.

Environmental Science in a World of Seven Billion (Env)

(Middle Level–High School) *Hermitage C, Opryland*

J. Padgett Kelly *(jpkelly@mtsu.edu),* Middle Tennessee State University, Murfreesboro

These timely, interdisciplinary hands-on activities help students understand the connections between human population growth and a host of environmental challenges. Receive the curriculum on CD-ROM.

Fight Bac! Integrating Food Safety in Your Elementary Curriculum (Gen)

(Elementary) *Hermitage D, Opryland*

Laurie A. Hayes *(lhayes@cart.org),* Center for Advanced Research and Technology, Clovis, Calif.

Try some hands-on, ready-to-use activities that integrate science and health standards while teaching students about the importance of hand washing and food safety. Free teaching materials from the FDA and door prizes!

Stellar Evolution: Cosmic Cycles of Formation and Destruction (Earth)

(Informal Education) *Hermitage E, Opryland*

Doug Lombardi *(lombardi.doug@gmail.com),* Southern Nevada Regional Professional Development Program, North Las Vegas

Donna L. Young *(donna.young@tufts.edu),* Wright Center for Science Education, Tufts University, Medford, Mass.

Learn how stars evolve, from their formation in giant clouds of gas and dust to their destruction in catastrophic explosions.

Food Chains: Using Field Surveys That Give Real Numbers (Bio)

(Middle Level) *Lincoln C, Opryland*

Frederick E. Maier *(fmaier@itasca.com),* Village of Itasca Nature Center, Itasca, Ill.

Roy Tison *(globes@comcast.net),* Wheaton Park District, Wheaton, Ill.

Discover three hands-on survey techniques that allow students to calculate actual numbers of plants, herbivores, and carnivores in creating a food chain.

Amazing Things Cells Can Do (Bio)

(Middle Level–High School) *Tennessee B, Opryland*

Louisa A. Stark *(louisa.stark@utah.edu),* University of Utah, Salt Lake City

Bring your cell unit to life with a 3-D movie and interactive animations! Online and classroom activities explore organelles, cell communication, size, and scale. Free materials at *http://learn.genetics.utah.edu.*

8:00–9:00 AM Exhibitor Workshop

Bio-Rad Genes in a Bottle™ Kit (Bio)

(Grades 7–College) *Jackson A/B, Opryland*

Sponsor: Bio-Rad Laboratories

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

Stan Hitomi, San Ramon Valley Unified School District, Danville, Calif.

How do you fit a person in a bottle? Your DNA contains all of the information that makes you who you are. Isolate your own DNA and capture your unique essence in a stylish glass necklace!

8:00–9:15 AM Exhibitor Workshop

STEM Adventures: Motivating Students Through Project Based Learning (Gen)

(Grades K–8) *Presidential B, Opryland*

Sponsor: Houghton Mifflin Harcourt

Michael Heithaus, Florida International University, North Miami

Do you want to get your students out in the field doing science but can't take a field trip? Join Houghton Mifflin Harcourt author Mike Heithaus to learn how you can use new, exciting video-based lessons to transport your students into the field on scientific adventures! Using high-paced video and exciting research, students are challenged to develop their own hypotheses, join research teams to collect data, and then conduct their own data collection and analysis.

8:30–11:00 AM Special Event

Science Matters Community Event

(Elementary) *Ryman Exhibit Hall C2, Opryland*

Back by popular demand! NSTA is pleased to announce that it will again host a FREE community science event for elementary teachers, parents, school officials, and other community members. Engage in exciting hands-on activities and discover new ways to bring science to life for your students and children. And learn about NSTA's newest initiative, Science Matters, designed to rekindle a national sense of urgency and action among schools and families about the importance of science education. Lelan Statom, an Emmy award–winning meteorologist at WTVF NewsChannel 5 in Nashville, will give the keynote address. Free Science Matters tote bags filled with cool giveaways* will be distributed to the first 150 people who attend.

**One Science Matters bag per person. You must be at least 18 years old to receive a bag. Bags are for participants only.*

TEACHERS IN GEOSCIENCES

Mississippi State University offers a unique and exciting M.S. degree program through distance learning— the **Teachers in Geosciences (TIG)** program. Students who successfully complete this two-year, 12-course, 36-hour curriculum are awarded an **M.S. degree in Geosciences** The core courses in meteorology, geology, hydrology, oceanography, planetary science and environmental geoscience are taught via the internet. Over 300 students from across the country and around the world are enrolled.

Arizona field course

Program highlights include:

- DVD lectures created by Geoscience faculty
- course materials presented online
- Master of Science degree earned in two years
- little time spent away from home (8-10 days in the field)
- MSU in-state tuition rate offered to all students

GEOSCIENCES DISTANCE LEARNING PROGRAMS
distance.msstate.edu/geosciences

MISSISSIPPI STATE UNIVERSITY
Division of Academic Outreach & Continuing Education

Mississippi State University is fully accredited by the Southern Association of Colleges and Schools (SACS). Prospective students should check with the Department of Education in their states for local certification policies.

Mississippi State University is an equal opportunity employer.

9:00–11:00 AM Meeting

Association for Multicultural Science Education (AMSE) Board Meeting
(By Invitation Only) *Magnolia Boardroom A, Opryland*

9:00 AM–12 Noon Exhibits

Ryman Exhibit Hall C2, Opryland
Come see the most up-to-date science textbooks, software, equipment, and other teaching materials. Some exhibitors will offer materials for sale.

9:30–10:30 AM Presentations

SESSION 1
Carrying the Fire: A Classroom Teacher's Top 12 Lessons (Gen)
(Middle Level) *Cheekwood A, Opryland*
Gloria P. Fortner, Retired Educator, Nashville, Tenn.
Come see activities that engage students, their parents, and colleagues. Light the fire in your classroom all year long.

SESSION 2
Sixty Labs You Can Do with Little or No Money (Phys)
(High School) *Cheekwood B, Opryland*
Ted Koehn *(tkoehn@lps.org),* Lincoln East High School, Lincoln, Neb.
I will share more than 60 chemistry and physics labs that can be done on small budgets.

SESSION 3
From Galileo to Moon Dust: The Consilience of Science and Religion (Gen)
(General) *Cheekwood C, Opryland*
Clyde A. Selner *(cselner@swindsor.k12.ct.us),* South Windsor High School, South Windsor, Conn.
Let's look at a hypothesis that reconciles scientific and religious thought in a way that brings greater meaning to each. Expect some lively discussion!

SESSION 4
Chemistry in Comics (Chem)
(General) *Cheekwood F, Opryland*
Al Hazari *(ahazari@utk.edu),* The University of Tennessee, Knoxville
Comics that depict chemistry situations and/or materials are most effective as a teaching strategy when they reinforce a concept students are currently studying.

SESSION 5
Teaching Astronomy with Music: The Mighty Sky! (Earth)
(General) *Lincoln A, Opryland*
Rocky Alvey *(r.alvey@vanderbilt.edu)* and **Beth Nielsen Chapman,** Dyer Observatory, Vanderbilt University, Brentwood, Tenn.
Hit songwriter Beth Nielsen Chapman and Dyer Observatory director Rocky Alvey present The Mighty Sky science song project.

SESSION 6
Connecting Drug Education, Environmental Science, and Technology: The Game Is On! (Env)
(Middle Level) *Washington B, Opryland*
Yvonne Klisch *(yvonne.klisch@rice.edu),* Rice University, Houston, Tex.
Lynn Lauterbach *(lynnlauterbach@gmail.com),* Loveland, Colo.
Engage your students with a popular free web adventure that teaches how inhalants pollute the body.

9:30–10:30 AM Workshops

Science Rocks: Sharing Your Passion IS Teaching! (Gen)
(Elementary–Middle Level) *Hermitage A, Opryland*
Susan E. Thomas *(twothom@bellsouth.net),* Alabaster, Ala.
Let your science passion show. Try some activities that help promote science through professional development and receive information about untapped free resources, natural and otherwise, from businesses and corporations.

Polymers: New Twists on Old Favorites (Chem)
(Middle Level–High School) *Hermitage B, Opryland*
Debbie Goodwin *(nywin@hotmail.com),* Chillicothe High School, Chillicothe, Mo.
Andrew G. Nydam *(andrewnydam@hotmail.com),* Olympia High School, Olympia, Wash.
Enhance and deepen science and math concepts taught in traditionally "fun" polymer labs. Add more scientific processes to make them inquiry based. Handouts.

Fostering Junior Scientists: Hands-On Science for Early Childhood Educators (Gen)
(Preschool–Elementary) *Hermitage D, Opryland*
Lynn Arcuri *(larcuri@naturemuseum.org),* **Rebecca L. Ammann,** and **Kristi Backe,** Peggy Notebaert Nature Museum, Chicago, Ill.
Use everyday materials to foster curiosity and enhance developmentally appropriate science skills in young children.

Radiation Storm *vs.* the Magnetic Shield: Superheroes of Magnetism and Space Weather Education (Earth)
(Informal Education) *Hermitage E, Opryland*
Roberta M. Johnson *(rmjohnsn@gmail.com),* National Earth Science Teachers Association, Boulder, Colo.
Becca Hatheway *(hatheway@ucar.edu),* University Corporation for Atmospheric Research, Boulder, Colo.
Try some tested hands-on activities and resources about the basics of magnetism, Earth's magnetic field and poles, and space weather. Handouts provided.

The Physics of Supernovae (Phys)
(High School–College) *Lincoln C, Opryland*
Donna L. Young *(donna.young@tufts.edu),* Wright Center for Science Education, Tufts University, Medford, Mass.
Doug Lombardi *(lombardi.doug@gmail.com),* Southern Nevada Regional Professional Development Program, North Las Vegas
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.

From Tree to Chair, From Mud to Brick (Bio)
(Elementary) *Lincoln D, Opryland*
Barbara Z. Tharp *(btharp@bcm.edu)* and **Michael Vu** *(mv12@bcm.edu),* Baylor College of Medicine, Houston, Tex.
Our needs are met using natural resources and ingenuity. Help students discover that water is not from a faucet or food from a grocery store, but that processes are in play.

Paperless Formative and Summative Assessment (Gen)
(Middle Level–High School) *Tennessee B, Opryland*
Greg Dodd *(gbdodd@gmail.com),* George Washington High School, Charleston, W.Va.
Join me for a "green" hands-on experience using formative and summative assessment to evaluate and improve science instruction and student comprehension in a 21st-century classroom.

9:30–11:00 AM Exhibitor Workshop

Bio-Rad: Finding Funds for Biotechnology Studies: A Grant-writing Workshop (Bio)
(Grades 7–College) *Jackson A/B, Opryland*
Sponsor: Bio-Rad Laboratories
Stan Hitomi, San Ramon Valley Unified School District, Danville, Calif.
Sherri Andrews *(sherri_andrews@bio-rad.com),* Bio-Rad Laboratories, Hercules, Calif.
Whether you want to introduce hands-on laboratory coursework or build an entire biotechnology program at your school, this workshop will help you get started turning your dreams into reality. You'll receive grant-writing tools, including samples of proposals, letters of support, budgets, and justifications. For a practical application of the new tools, participants are encouraged to submit proposals for a competitive grant from Bio-Rad for $500 in materials.

11:00–11:30 AM Presentation

SESSION 1
Eat It! Edible Science Labs (Gen)
(Middle Level–High School) *Magnolia Boardroom B, Opryland*
Lee Ann Richardson *(richardsonl@rcs.k12.tn.us)* and **John D. Vaden** *(vadenj@rcs.k12.tn.us),* Riverdale High School, Murfreesboro, Tenn.
Here is an innovative way to use food to present science concepts such as freezing point depression and DNA.

11:00 AM–12 Noon Presentation

SESSION 1
SKyTeach at Western Kentucky University: Preparing America's Teachers to Teach in STEM Disciplines (Gen)
(General) *Cheekwood A, Opryland*
Martha M. Day *(martha.day@wku.edu),* **Vicki H. Metzgar** *(vicki.metzgar@wku.edu),* and **Melissa Rudloff** *(melissa.rudloff@wku.edu),* Western Kentucky University, Bowling Green
Presiders: Lee Ann Smith and Courtney F. Morrow, Western Kentucky University, Bowling Green
SKyTeach is a teacher preparation program for science and math majors. Try some inquiry-based lesson vignettes that are the hallmark of the SKyTeach program.

SESSION 2
Environmental Stewardship: Awards, Recognition, and Grants (Env)
(Elementary–High School) *Cheekwood B, Opryland*
Ruth McCully *(mccully.ruth@epa.gov),* U.S. Environmental Protection Agency, Washington, D.C.
Christiane Maertens *(christiane.maertens@disney.com),* Walt Disney Co., Burbank, Calif.
Learn about award, recognition, and grant programs for students engaged in environmental stewardship activities, including the President's Environmental Youth Award, the Disney Planet Challenge, and grants from the National Environmental Education Foundation.

SESSION 3
Inquiry: What and Why? (Gen)
(Elementary–High School) *Cheekwood C, Opryland*
Lee Meadows *(lmeadows@uab.edu),* The University of Alabama at Birmingham
You're trying to get a handle on inquiry. What exactly is it? Why are science teachers using it? Come hear practical, clear, and concise answers.

SESSION 4

Are You Practicing Safe Science? (Gen)
(General) *Cheekwood F, Opryland*
Al Hazari *(ahazari@utk.edu),* The University of Tennessee, Knoxville
One of the nation's leading experts and a former chairperson of the American Chemical Society's Committee on Chemical Safety will present ideas and resources to help keep your classroom safe.

SESSION 5

MY NASA DATA: Your Students Can Be Earth Scientists! (Earth)
(Middle Level–High School) *Lincoln A, Opryland*
Eileen G. Poling *(epoling@access.k12.wv.us),* Tucker County Schools, Hambleton, W.Va.
Diana Soehl *(dsoehl2@yahoo.com),* Elwood-John H. Glenn High School, Elwood, N.Y.
Engage your students in learning about our planet Earth by using MY NASA DATA to access Earth systems satellite data and imaging. Plenty of handouts!

SESSION 6

Engaging Upper Elementary and Middle School Students in International Science Inquiry (Earth)
(Elementary–Middle Level) *Washington B, Opryland*
Walter S. Smith *(walter.smith@ttu.edu),* Texas Tech University, Lubbock
Melissa Miller *(mmiller@farmcards.org),* NSTA Director, District VII, and Lynch Middle School, Farmington, Ark.
Presider: Kay Atchison Warfield, CESI President, and Alabama Dept. of Education, Montgomery
Involve your gifted students or all grades 4–8 students in free, standards-based, international science through the MOON Project. Participation requires only eyes and internet access.

11:00 AM–12 Noon Workshops

Infect Your Biology Classroom with Math (Bio)
(Middle Level–High School) *Hermitage A, Opryland*
Jeff Lukens *(jeffrey.lukens@k12.sd.us),* Roosevelt High School, Sioux Falls, S.Dak.
Integrating biology and mathematics shouldn't be just a good idea—it should be the law! Learn how easy, important, and fun it is to collect and analyze data as part of good, solid, responsible science education.

Science After School (Gen)
(Informal Education) *Hermitage B, Opryland*
Leigh Gostowski *(gostowsk@mtsu.edu)* and **Kim Cleary Sadler** *(ksadler@mtsu.edu),* Middle Tennessee State University, Murfreesboro
Carin Miranda *(mirandac@rcs.k12.tn.us)* and **Kevin Bracken** *(brackenk@rcs.k12.tn.us),* Smyrna Middle School, Smyrna, Tenn.
Learn how to create and run a successful after-school science program. We'll share easy, inexpensive activities you can do anywhere.

Igniting Curiosity Through Discrepant Events (Gen)
(General) *Hermitage C, Opryland*
David F. Mastie *(mastie@umich.edu),* Retired Educator, Ann Arbor, Mich.
Roberta M. Johnson *(rmjohnsn@gmail.com),* National Earth Science Teachers Association, Boulder, Colo.
Capture your students' curiosity and integrate life, physical, and Earth sciences with these "near-magic" K–12 discrepant events that are inexpensive, simple, and safe.

Bringing Literacy and Science Together (B.L.A.S.T. ©) for Grades 2–4: Linking Home and School (Gen)
(Elementary) *Hermitage D, Opryland*
Margaret "Peggy" Dee *(drpeggydee@verizon.net)* and **Renee G. O'Leary** *(drpeggydee@verizon.net),* Caravel Academy, Bear, Del.
By creatively linking science and literature, B.L.A.S.T. provides multisensory, hands-on, process-oriented science. Each student has a science lesson bag with safe, inexpensive materials. Take home two lesson bags and teaching materials.

Investigating Magnetism **(Phys)**
(Preschool–Elementary) *Hermitage E, Opryland*
Linda A. Fawcett *(lfawcett@ejourney.com),* Retired Educator, Gladwin, Mich.
Investigate how magnetic force causes the motions of attraction and/or repulsion with these hands-on activities that allow students to observe, organize, and articulate their thinking.

Hands-On Activities for Teaching the Basic Physical Quantities of Mechanics **(Phys)**
(Middle Level–High School) *Lincoln C, Opryland*
Rachel A. McBroom *(rachel.mcbroom@uncp.edu),* **Peter A. Wish, Timothy M. Ritter, Brian Postek** *(brian.postek@uncp.edu), and* **Kaila Spooner,** The University of North Carolina at Pembroke
These proven, low-cost classroom activities effectively teach the quantities of velocity, acceleration, force, work, and kinetic energy. Handouts.

Scale the Universe **(Gen)**
(Middle Level–High School) *Tennessee B, Opryland*
Rae McEntyre *(rae.mcentyre@education.ky.gov),* Kentucky Dept. of Education, Frankfort
How big is big? How small is small? Come "scale the universe" as we investigate size and scale. Free NASA materials.

11:00 AM–12 Noon Exhibitor Workshop

Bio-Rad Cloning and Sequencing Explorer Series **(Bio)**
(Grades 9–College) *Jackson A/B, Opryland*
Sponsor: Bio-Rad Laboratories
Sherri Andrews *(sherri_andrews@bio-rad.com),* Bio-Rad Laboratories, Hercules, Calif.
Stan Hitomi, San Ramon Valley Unified School District, Danville, 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 each class produces unique and novel data.

Some exhibitors have classified their products by grade level and subject area. Subject areas are abbreviated here as follows:

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

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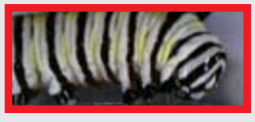

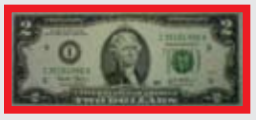

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Marion, IA 52302 6–12
Phone: 800-262-4872
E-mail: *nar.hq@nar.org*
Website: *www.nar.org*

National Association of Rocketry (NAR) wants to share the fun of model rocketry with educators. NAR is a nonprofit organization that for 50 years has provided services for teaching STEM through the safe launching of model rockets.

National Geographic School Publishing/Hampton-Brown **#419**
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Bldg. 1, Suite 200
Monterey, CA 93940
Phone: 904-287-5381
E-mail: *cbarton@ngsp.com*
Website: *www.ngsp.com*

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National Nanotechnology Infrastructure Network #426 Gen K–12
Georgia Institute of Technology
791 Atlantic Dr. NW
Atlanta, GA 30332
Phone: 404-385-4307
E-mail: *nancy.healy@mirc.gatech.edu*
Website: *www.nnin.org*

The National Nanotechnology Infrastructure Network (NNIN) is an NSF-sponsored partnership of 14 universities. The NNIN's education endeavors offer a variety of programs, including resources for K–12 teachers so that they may successfully incorporate nanoscale science into their currently taught secondary science curriculum.

National Optical & Scientific Instruments, Inc. #308
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Manassas, VA 20110 K–12, College
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The National Energy Education Development Project and the Tennessee Energy Education Network provide K–12 energy education curriculum, professional development, and support to educators in Tennessee and across the country. Materials cover the forms of energy, sources of energy, electricity, transportation fuels, and energy efficiency and are correlated to state standards.

NewPath Learning #222
760C Canning Pkwy. All
Victor, NY 14564 K–12
Phone: 800-507-0966
E-mail: *kgelke@newpathlearning.com*
Website: *www.newpathlearning.com*

NewPath Learning's curriculum mastery games, flip charts, presentation assessment software, visual learning guides, and study cards provide comprehensive coverage of the current national and state standards for grades 1–12 science as well as math, language arts, and social studies. The company's products are supplemented with web-based activities at *www.newpathlearning.com*.

NOAA #312
1401 Constitution Ave. NW Earth, Env
Suite 6863 K–12
Washington, DC 20230
Website: *www.education.noaa.gov*

National Oceanic and Atmospheric Administration (NOAA) is a federal science agency providing free information about weather, climate, oceans, coasts, satellite data, solar weather, and fisheries. Every day NOAA's science touches the lives of all Americans. In partnership with NSTA, NOAA supports and develops a suite of products, including SciGuides, Science Objects, and web seminars for the science classroom.

NSTA's Shell Science Lab Challenge #630
All
1840 Wilson Blvd. 6–12
Arlington, VA 22201
Phone: 703-312-9241
E-mail: *shellsciencelab@nsta.org*

NSTA's Shell Science Lab Challenge is a national competition that challenges middle and high school teachers around the country to illustrate replicable approaches to science lab instruction using limited school and laboratory resources. Awards for top entrants include additional tools, resources, and rich professional development opportunities that support high-quality science teaching and strengthen existing capabilities.

Ohaus Corp. #300
19 A. Chapin Rd. All
Pine Brook, NJ 07058 K–12, College
Phone: 973-944-7026
E-mail: *debbie.foreman@ohaus.com*
Website: *www.ohaus.com*

Omega Optical, Inc. #421
Delta Campus Chem, Phys, Tech
21 Omega Dr. 8–12, College
Brattleboro, VT 05301
Phone: 802-254-2690
E-mail: *dosborne@omegafilters.com*
Website: *www.omegafilters.com*

The Omega Optical Photonics Kit provides science educators with the tools they need to teach photonics, interactions of light and matter, and how to manipulate those interactions. Twelve laboratory activities encourage students to explore the environment around them and discover principles and photonics. Help your students get a head start on the exciting careers of tomorrow by introducing them to light. They can apply principles of photonics in light detection, metrology, telecommunications, medicine, visual art, agriculture, biophotonics, and many other areas.

PASCO Scientific #610
10101 Foothills Blvd. All
Roseville, CA 95747 K–12
Phone: 800-772-8700
E-mail: *sales@pasco.com*
Website: *www.pasco.com*

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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® Awards*** is a team-based K–12 competition that awards up to $240,000 in savings bonds annually.
- ***Toyato TAPESTRY*** has awarded over $11 million in grants for K–12 science teachers over the past 20 years.
- ***Siemens We Can Change the World Challenge.*** 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 3–8, 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*** supports science teachers during the often challenging, initial years by enhancing confidence, classroom excellence, and teacher content knowledge.

NSTA National Science Teachers Association

Pearson **#501**
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Project Learning Tree **#302**
1111 19th St. NW, Suite 780 Env
Washington, DC 20036 PreK–12
Phone: 202-463-2475
E-mail: *jstallard@forestfoundation.org*
Website: *www.plt.org*

Project Learning Tree is a nationally award-winning environmental education program designed for preK–12 formal and nonformal educators. The supplementary materials provide hands-on/minds-on multidisciplinary activities.

Quality Science Labs, LLC **#331**
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Quality Science Labs offers innovative science lab kits for distance education, independent study, and classrooms. Seasoned instructors with more than 120 years combined experience wrote the experiments. Designed as the hands-on portion of a science course, the kits offer a virtually fail-safe method to include real science labs, regardless of the classroom setting.

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Website: *www.qwizdom.com*

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Website: *www.renlearn.com*

Renaissance Learning™ is the world's leading provider of computer-based assessment technology for preK–12 schools. Adopted by more than 74,000 North American schools, Renaissance Learning's software and NEO 2™ laptops provide daily formative assessment and periodic progress-monitoring technology to enhance curriculum, support instruction, and personalize practice in reading, writing, and math.

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The web-based Science Starters Program is a series of daily teacher-directed presentations that provide the constant review, remediation, and RTI strategies necessary for success. This process spirals through all tested objectives with virtual presentations that brain research has proven to promote learning. Available for grades 1–8. Elementary is available in Spanish.

Seacamp Association, Inc. **#430**
1300 Big Pine Ave. Bio, Env, Gen
Big Pine Key, FL 33043 4–12, College
Phone: 305-872-2331
E-mail: *info@nhmi.org*
Website: *www.nhmi.org*

Seacamp Association is a private, nonprofit organization located on Big Pine Key, Florida, dedicated to educating youth through

experiential education. At the heart of our program is field-based marine and environmental education. Seacamp operates two programs: Newfound Harbor Marine Institute—a schoolbased program for grades 4–college; and Seacamp— a summer residential program for teens ages 12–17 years old.

Select-O-Sep, LLC **#719**
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Freeport, OH 43973
Phone: 740-994-4290/ 937-684-2639
E-mail: *crgilpin@selectosep.com*
Website: *www.selectosep.com*

Select-O-Sep markets products and services for K–12 and college settings, including computer-based teaching aids, classroom servers, web hosting, math and science textbooks, and laboratory equipment. A recent product is self-adapting software that emulates a laboratory setting using tactile controls to manipulate on-screen operations, teaching science in an inquiry-based format and maintaining pedagogically sound practices.

Siemens We Can Change the World Challenge **#621**
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Website: *www.simulationcurriculum.com*

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E-mail: *vandervoort@smenet.org*
Website: *www.smenet.org*

The SME/GEM Minerals Coalition booth is supported by the SME Foundation. The booth is sponsored by local volunteers who provide rock and mineral samples, literature, and CDs as well as answer any questions teachers may have.

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Website: *www.spacecamp.com*

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Arlington, VA 22201 — K–12
E-mail: *exploravision@nsta.org*
Website: *www.exploravision.org*

Now in its 19th year, ExploraVision is a science competition that encourages K–12 students of all interest, skill, and ability levels to create and explore a vision of future technology by combining their imaginations with the tools of science.

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Arlington, VA 22201-3000
E-mail: *ecrossley@nsta.org*

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Triangle Coalition for Science and Technology Education **#227**
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Arlington, VA 22201
Phone: 703-516-5960
E-mail: *cudneye@triangle-coalition.org*
E-mail: *www.triangle-coalition.org*

Learn more about the Albert Einstein Distinguished Educator Fellowship Program, managed by the Triangle Coalition, which brings K–12 math and science teachers to Washington, D.C., for a school year. Fellows serve in a congressional office or within a federal agency and receive a monthly stipend, moving expenses, and a professional travel allowance.

U.S. EPA SunWise Program **#420**
1200 Pennsylvania Ave. (6205-J) — Env
Washington, DC 20460 — K–8
Phone: 202-343-9591
E-mail: *hall-jordan.luke@epa.gov*
Website: *www.epa.gov/sunwise*

The Environmental Protection Agency's SunWise Program is an environmental and health education program that teaches how and why we should protect ourselves from ultraviolet overexposure. Our FREE toolkit provides cross-curricular, standards-based lesson plans and resources for K–8 students, plus a UV-sensitive Frisbee®!

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E-mail: *lcrews@utm.edu*
Website: *www.utonline.edu/utonline*

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Website: *www.webcamlaboratory.com*

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American Nuclear Society (Booth #710)

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Friday, December 3	4:00–5:15 PM	Canal C, Opryland	Comparative Vertebrate Anatomy with Carolina's Perfect Solution® Specimens (p. 98)

CPO Science/School Specialty Science (Booth #114)

Thursday, December 2	8:00–9:30 AM	Bayou C, Opryland	Chemistry and the Atom: Fun with Atom Building Games! (p. 44)
Thursday, December 2	10:00–11:30 AM	Bayou C, Opryland	Genetics: Crazy Traits and Adaptation Survivor (p. 46)
Thursday, December 2	12 Noon–1:30 PM	Bayou C, Opryland	CPO SmartTrack with Velocity Sensor and Energy Car (p. 48)
Thursday, December 2	2:00–3:30 PM	Bayou C, Opryland	Springs and Swings: Harmonic Motion and Hooke's Law (p. 54)
Thursday, December 2	4:00–5:30 PM	Bayou C, Opryland	Gas Laws Kit: Chemistry and the DataCollector—Charles' and Boyle's Laws Uncovered (p. 59)
Friday, December 3	8:00–9:30 AM	Bayou C, Opryland	Genetics: Crazy Traits and Adaptation Survivor (p. 68)
Friday, December 3	10:00–11:30 AM	Bayou C, Opryland	Light and Optics: A Series of EnLIGHTening Experiments! (p. 78)

CPO Science/School Specialty Science, cont.

Friday, December 3	12 Noon–1:30 PM	Bayou C, Opryland	Gas Laws Kit: Chemistry and the DataCollector—Charles' and Boyle's Laws Uncovered (p. 83)
Friday, December 3	2:00–3:30 PM	Bayou C, Opryland	Chemistry and the Atom: Fun with Atom Building Games! (p. 93)
Friday, December 3	4:00–5:30 PM	Bayou C, Opryland	CPO SmartTrack with Velocity Sensor and Energy Car (p. 99)

Delta Education/School Specialty Science (Booth #601)

Thursday, December 2	8:00–9:15 AM	Bayou B, Opryland	Experimental Design (p. 42)
Thursday, December 2	10:00–11:15 AM	Bayou B, Opryland	Introducing the Delta Science Module Program (p. 45)
Thursday, December 2	1:00–2:30 PM	Bayou B, Opryland	What's Going on in There? Inquiry Science for Supervisors, Teacher Trainers, and Teachers (p. 51)
Thursday, December 2	3:00–4:30 PM	Bayou B, Opryland	The Craft of Questioning and Delta Science Modules (p. 55)
Friday, December 3	8:00–9:15 AM	Bayou B, Opryland	Put Some Spark into Science Investigations (p. 66)
Friday, December 3	10:00–11:15 AM	Bayou B, Opryland	Integrating Science and Literacy, Grades 1–6 (p. 76)
Friday, December 3	1:00–2:15 PM	Bayou B, Opryland	Working as One with Hands and Minds (p. 87)

Delta Education/School Specialty Science–FOSS (Booth #601)

Thursday, December 2	8:00–10:00 AM	Bayou D, Opryland	Using Science Notebooks with FOSS Middle School (p. 44)
Thursday, December 2	11:00 AM–1:30 PM	Bayou D, Opryland	A Sneak Preview of the New Planetary Science Middle School Course from FOSS (p. 46)
Thursday, December 2	2:30–4:30 PM	Bayou D, Opryland	Using Science Notebooks with FOSS K–6 (p. 55)
Friday, December 3	8:00–10:30 AM	Bayou D, Opryland	Using Middle School Science Notebooks to Assess Learning with FOSS (For Experienced Users) (p. 68)
Friday, December 3	11:30 AM–1:30 PM	Bayou D, Opryland	Taking Science Outdoors with FOSS K–8 (p. 82)
Friday, December 3	2:00–4:30 PM	Bayou D, Opryland	Using Elementary Science Notebooks for Formative Assessment with FOSS (For Experienced Users) (p. 94)

Delta Education/School Specialty Science–Seeds (Booth #601)

Thursday, December 2	9:00–11:00 AM	Bayou A, Opryland	Innovative Science and Literacy Integration: Seeds of Science/Roots of Reading® (p. 44)
Thursday, December 2	11:30 AM–1:30 PM	Bayou A, Opryland	Innovative Science and Literacy Integration: Seeds of Science/Roots of Reading® (p. 46)

Educational Innovations, Inc. (Booth #511)

Friday, December 3	2:00–3:15 PM	Presidential B, Opryland	Get Charged Up with Educational Innovations! (p. 92)

EDVOTEK (Booth #209)

Thursday, December 2	8:00–9:15 AM	Jackson D, Opryland	Introducing Classroom Electrophoresis That Can Be Completed in 30 Minutes (p. 43)
Thursday, December 2	10:00–11:15 AM	Jackson D, Opryland	Experiments for AP Environmental Science and Ecotechnology (p. 45)
Friday, December 3	8:00–9:15 AM	Jackson D, Opryland	Come Learn How to Fingerprint Your Own DNA: Classroom PCR That Works (p. 67)

Fisher Science Education (Booth #309)

Friday, December 3	8:00–9:15 AM	Jackson E/F, Opryland	Test Making at Its Easiest: Let Examgen Show You How! (p. 67)

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Flinn Scientific, Inc. (Booth #701)

Thursday, December 2	10:00–11:15 AM	Presidential B, Opryland	Flinn Scientific Presents Best Practices for Teaching Chemistry™: Experiments and Demonstrations (p. 45)
Thursday, December 2	12:30–1:45 PM	Presidential B, Opryland	Flinn Favorite Biology Lab Activities and Games (p. 51)
Friday, December 3	10:00–11:15 AM	Presidential B, Opryland	Promote Inquiry Using Chemistry Demonstrations (p. 78)

Frey Scientific/School Specialty Science (Booth #604)

Thursday, December 2	8:00–9:15 AM	Bayou E, Opryland	Introducing Inquiry Investigations™: Hands-On Inquiry Activities Focusing On Technology (p. 42)
Thursday, December 2	10:00–11:15 AM	Bayou E, Opryland	Inquiry Investigations™ Forensics Science Curriculum Module and Kits (p. 45)
Thursday, December 2	12 Noon–1:15 PM	Bayou E, Opryland	Educational Science Lab Design and Implementation for the 21st Century Made Easy (p. 47)
Thursday, December 2	2:00–3:15 PM	Bayou E, Opryland	Bring Your Science Lab into the 21st Century Using iNeo/SCI™ Virtual Science Solutions (p. 54)
Thursday, December 2	4:00–5:15 PM	Bayou E, Opryland	Inquiry Investigations™ Biotechnology Activities with E-Gels® (p. 58)

Houghton Mifflin Harcourt (Booth #220)

Thursday, December 2	2:15–3:30 PM	Presidential B, Opryland	Bringing Biology to Life (p. 55)
Thursday, December 2	4:00–5:15 PM	Presidential B, Opryland	Sparking Interest and Learning with Chemistry (p. 59)
Friday, December 3	4:00–5:15 PM	Presidential B, Opryland	Misconception Mania: Exciting and Engaging Ways to Address Common Misunderstandings in K–8 Science (p. 99)
Saturday, December 4	8:00–9:15 AM	Presidential B, Opryland	STEM Adventures: Motivating Students Through Project Based Learning (p. 105)

Idaho National Laboratory (Booth #717)

Friday, December 3	12 Noon–1:15 PM	Presidential B, Opryland	Teaching Nuclear Topics (p. 83)

It's About Time (Booth #408)

Friday, December 3	8:00–9:00 AM	Presidential C, Opryland	Project-Based Inquiry Science: The Next Generation of Middle School Programs (p. 66)
Friday, December 3	9:30–10:30 AM	Presidential C, Opryland	There's More to Project-Based Inquiry Science Than Just a Project (p. 72)
Friday, December 3	11:00 AM–12 Noon	Presidential C, Opryland	*Active Physics,* Newly Revised Third Edition (p. 82)
Friday, December 3	12:30–1:30 PM	Presidential C, Opryland	Active Chemistry (p. 86)
Friday, December 3	2:00–3:00 PM	Presidential C, Opryland	Fourier Probeware and Nova5000 (p. 91)
Friday, December 3	3:30–4:30 PM	Presidential C, Opryland	NEW! *Investigating Astronomy* from TERC/*EarthComm* from AGI (p. 97)

Kendall Hunt Publishing Co. (Booth #200)

Friday, December 3	8:00–9:15 AM	Presidential B, Opryland	Help Students Flourish with New Digital Learning Tools (p. 67)

Key Curriculum Press (Booth #612)

Thursday, December 2	12:30–1:45 PM	Canal B, Opryland	Living by Chemistry: Feeling Under Pressure (p. 50)
Friday, December 3	8:00–9:15 AM	Canal B, Opryland	Living by Chemistry: What Shape Is That Smell? (p. 66)

LAB-AIDS, Inc. (Booth #500)

Friday, December 3	8:00–9:15 AM	Jackson C, Opryland	Teaching About the Rock Cycle and Earth Time (p. 67)
Friday, December 3	10:00–11:15 AM	Jackson C, Opryland	Fast and Furious: Force and Motion for Middle School! (p. 77)
Friday, December 3	12 Noon–1:15 PM	Jackson C, Opryland	SGI Biology: Putting the Life Back in Life Science! (p. 83)
Friday, December 3	2:00–3:15 PM	Jackson C, Opryland	Real Chemistry for All Students…But How? (p. 92)
Friday, December 3	4:00–5:15 PM	Jackson C, Opryland	What Is the Difference Between Heat and Temperature? (p. 98)

LaMotte Co. (Booth #418)

Thursday, December 2	4:00–5:15 PM	Jackson E/F, Opryland	The Watershed Tour (p. 59)
Friday, December 3	12 Noon–1:15 PM	Jackson E/F, Opryland	Stream Ecology: Slimy Leaves for Clean Streams (p. 83)

McGraw-Hill School Education Group (Booth #700)

Friday, December 3	8:00–9:15 AM	Presidential E, Opryland	Fun, Fabulous Foldables® (p. 67)
Friday, December 3	10:00–11:15 AM	Presidential E, Opryland	Fun, Fabulous Foldables® (p. 78)
Friday, December 3	12 Noon–1:15 PM	Presidential E, Opryland	I See What You Mean! Developing Visual Literacy (p. 83)
Friday, December 3	2:00–3:15 PM	Presidential E, Opryland	Teaching Inquiry Science with Toys and Treats (p. 92)
Friday, December 3	4:00–5:15 PM	Presidential E, Opryland	Teaching Inquiry Science with Toys and Treats (p. 99)

Mississippi State University (Booth #304)

Thursday, December 2	2:15–3:30 PM	Jackson D, Opryland	Master of Science in Geosciences via Distance Learning from Mississippi State University (p. 55)

PASCO Scientific (Booth #610)

Friday, December 3	8:00–9:00 AM	Bayou E, Opryland	Discovery-based Physics with SPARKscience™: Harmonic Motion (p. 66)
Friday, December 3	9:30–10:30 AM	Bayou E, Opryland	Discovery-based Biology with SPARKscience™—Measuring Reaction Time to a Visual Stimulus: A Guided Inquiry Approach (p. 72)
Friday, December 3	11:00 AM–12 Noon	Bayou E, Opryland	Discovery-based Chemistry with SPARKscience™: States of Matter (p. 82)
Friday, December 3	1:00–2:00 PM	Bayou E, Opryland	Discovery-based Middle School Science with Sally Ride Science and SPARKscience™ (p. 87)
Friday, December 3	2:30–4:00 PM	Bayou E, Opryland	Renewable Energy Exploration—Solar, Wind, and Hydrogen Fuel Cells (p. 94)

Pearson (Booth #501)

Thursday, December 2	8:00–9:15 AM	Canal A, Opryland	Inquiry in the Classroom (p. 43)
Thursday, December 2	10:00–11:15 AM	Canal A, Opryland	It's Here! The All-new *Pearson Chemistry* © 2012 (p. 45)
Thursday, December 2	12:30–1:45 PM	Canal A, Opryland	The Next Generation of Science Virtual Labs—No Cleanup Required (p. 50)
Thursday, December 2	2:15–3:30 PM	Canal A, Opryland	If You Teach AP Chemistry, You Gotta Get This! (p. 54)
Thursday, December 2	4:00–5:15 PM	Canal A, Opryland	Untamed Science! How to Make Your Own Science Videos from Scratch (p. 58)
Friday, December 3	8:00–9:15 AM	Canal A, Opryland	Science Under Siege? Teaching Evolution in a Climate of Controversy (p. 66)
Friday, December 3	10:00–11:15 AM	Canal A, Opryland	What's at the Heart of Science Teaching? Inquiry, Evidence, and Thinking (p. 76)
Friday, December 3	12 Noon–1:15 PM	Canal A, Opryland	Incorporating STEM Activities into Your Elementary Classroom (p. 82)
Friday, December 3	2:00–3:15 PM	Canal A, Opryland	From Science to Engineering (p. 92)

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Pearson, cont.

Friday, December 3	4:00–5:15 PM	Canal A, Opryland	The Science Behind Climate Change: What Every Student (and Teacher) Should Know (p. 98)

Sargent-Welch (Booth #201)

Thursday, December 2	10:00–11:15 AM	Jackson E/F, Opryland	ScholAR Chemistry In-the-Bag Inquiry (p. 45)
Friday, December 3	2:00–3:15 PM	Jackson E/F, Opryland	ScholAR Chemistry In-the-Bag Inquiry (p. 92)

Scientific Minds, LLC (Booth #726)

Thursday, December 2	2:15–3:30 PM	Jackson A/B, Opryland	Science Starters (p. 55)

Simulation Curriculum Corp. (Booth #712)

Thursday, December 2	8:00–9:15 AM	Jackson E/F, Opryland	The Layered Earth (p. 43)
Thursday, December 2	2:15–3:30 PM	Jackson E/F, Opryland	The Sky Through the Ages (p. 55)
Friday, December 3	10:00–11:15 AM	Jackson E/F, Opryland	The Layered Earth (p. 78)

Swift Optical Instruments, Inc. (Booth #308)

Friday, December 3	2:00–3:15 PM	Jackson D, Opryland	New Ways to Prepare Your Students Using 21st-Century STEM Initiatives—GO DIGITAL!! (p. 92)

Vernier Software & Technology (Booth #409)

Friday, December 3	8:00–9:30 AM	Bayou A, Opryland	K–8 Science with Vernier (p. 68)
Friday, December 3	10:00–11:30 AM	Bayou A, Opryland	Transforming the Science Lab with Vernier Technology (p. 78)
Friday, December 3	12 Noon–1:30 PM	Bayou A, Opryland	Transforming the Science Lab with Vernier Technology (p. 83)
Friday, December 3	2:00–3:30 PM	Bayou A, Opryland	Transforming the Science Lab with Vernier Technology (p. 93)

WARD'S Natural Science (Booth #205)

Thursday, December 2	12:30–1:45 PM	Jackson E/F, Opryland	Introduction to Blood Typing and Blood Spatter (p. 50)
Friday, December 3	4:00–5:15 PM	Jackson E/F, Opryland	Introduction to Blood Typing and Blood Spatter (p. 99)

Water Environment Federation (Booth #424)

Thursday, December 2	2:15–4:30 PM	Canal B, Opryland	Stream Assessment: An Active, Integrated Approach to Science Learning (p. 55)

Wavefunction, Inc. (Booth #525)

Thursday, December 2	10:00–11:15 AM	Jackson C, Opryland	Teaching AP Chemistry with Molecular-Level Visualization and Simulation Tools (p. 45)
Friday, December 3	10:00–11:15 AM	Jackson D, Opryland	Using Modern Molecular Modeling Techniques in Middle and High School Science Classrooms (p. 78)

G = General
P = Preschool
C = College
M = Middle School
H = High School
R = Research
S = Supervision/Administration
I = Informal Education
T = Teacher Preparation
E = Elementary

Biology/Life Science

Thursday

8:00–9:00 AM	H–C	Hermitage D, Opryland	What's My Disorder? An Endocrine Lab Activity Using a Case Study Approach (p. 42)
8:00–9:00 AM	M–H	Magnolia Bdrm. B, Opryland	Neuroscience 101: Applying Neuroscience Research in and out of the Classroom (p. 41)
8:00–9:00 AM	E–H	Tennessee B, Opryland	Oh, Me! Oh, My! Mitosis and Meiosis! (p. 42)
8:00–9:15 AM	6–C	Jackson D, Opryland	Introducing Classroom Electrophoresis That Can Be Completed in 30 Minutes (p. 43)
10:00–11:15 AM	6–C	Jackson D, Opryland	Experiments for AP Environmental Science and Ecotechnology (p. 45)
12:30–1:30 PM	H	Tennessee B, Opryland	The New Biology in a Box Unit—STEM (p. 50)
12:30–1:45 PM	6–12	Canal C, Opryland	Comparative Mammalian Organ Dissection with Carolina's Perfect Solution® Specimens (p. 50)
12:30–1:45 PM	6–12	Jackson E/F, Opryland	Introduction to Blood Typing and Blood Spatter (p. 50)
12:30–1:45 PM	7–12	Presidential B, Opryland	Flinn Favorite Biology Lab Activities and Games (p. 50)
2:00–3:00 PM	G	Cheekwood F, Opryland	CSSS Session: Common Core Standards: A Big Deal for Education (p. 52)
2:00–3:00 PM	H	Tennessee B, Opryland	Hands-On Learning Activities for AP Biology (p. 54)
2:15–3:30 PM	K–12	Canal C, Opryland	Introduction to Wisconsin Fast Plants® (p. 54)
2:15–3:30 PM	9–12	Presidential B, Opryland	Bringing Biology to Life (p. 55)

Friday

8:00–8:20 AM	G	Cheekwood B, Opryland	SCST Session: Lessons from a South Carolina Evolution Survey of High School Science Teachers (p. 63)
8:00–9:00 AM	G	Hermitage A, Opryland	NABT Session: Writing for the *American Biology Teacher* (p. 64)
8:00–9:00 AM	7–C	Jackson A/B, Opryland	How to Start a Biotech Program (p. 66)
8:00–9:00 AM	6–8	Presidential C, Opryland	Project-Based Inquiry Science (PBIS): The Next Generation of Middle School Programs (p. 66)
8:00–9:15 AM	9–12	Canal A, Opryland	Science Under Siege? Teaching Evolution in a Climate of Controversy (p. 66)
8:00–9:15 AM	9–12	Canal C, Opryland	AUTOPSY: Forensic Dissection Featuring Carolina's Perfect Solution® Pigs (p. 67)
8:00–9:15 AM	6–C	Jackson D, Opryland	Come Learn How to Fingerprint Your Own DNA: Classroom PCR That Works (p. 67)
9:30–10:30 AM	6–12	Bayou E, Opryland	Discovery-based Biology with SPARKscience™: Measuring Reaction Time to a Visual Stimulus—A Guided Inquiry Approach (p. 72)
9:30–10:30 AM	H/S	Cheekwood A, Opryland	Just What Qualifies as Science? (p. 69)
9:30–10:30 AM	M–C	Hermitage A, Opryland	NABT Session: Free Teaching Resources from the Howard Hughes Medical Institute: Exploring Biodiversity: The Search for New Medicines and Treatments (p. 70)
9:30–10:30 AM	H–C	Lincoln C, Opryland	Using the Hardy-Weinberg Equilibrium to Illustrate Evolutionary Change (p. 71)
9:30–10:30 AM	6–8	Presidential C, Opryland	There's More to Project-Based Inquiry Science Than Just a Project (p. 72)
9:30–10:30 AM	E–H	Ryman A–C, Opryland	Activities from Across the Earth System (p. 72)
9:30 AM–12 Noon	9–C	Jackson A/B, Opryland	Bio-Rad Crime Scene Investigator PCR Basics Kit (p. 76)
10:00–11:15 AM	K–12	Canal C, Opryland	Hands-On Science with Classroom Critters (p. 77)
11:00 AM–12 Noon	E	Cheekwood B, Opryland	NARST Session: Strategies for Managing Elementary Students' Ideas, Questions, and Contributions in Inquiry-based Science (p. 79)

11:00 AM–12 Noon	M–C	Hermitage A, Opryland	NABT Session: Teacher-generated Materials, Demos, and Resources from the Howard Hughes Medical Institute to Enrich AIDS/HIV Lessons (p. 80)
11:00 AM–12 Noon	G	Magnolia Bdrm. B, Opryland	FIRE Up the Classroom: Teaching and Assessment Using the FIRE Critical-thinking Model (p. 79)
12 Noon–1:15 PM	9–12	Canal C, Opryland	Introduction to Electrophoresis (p. 83)
12 Noon–1:15 PM	9–12	Jackson C, Opryland	SGI Biology: Putting the Life Back in Life Science! (p. 83)
12:30–1:30 PM	M–H	Tennessee B, Opryland	Cruisin' to Food Safety: Integrating Food Safety in Your Science Curriculum (p. 86)
1:00–2:30 PM	9–C	Jackson A/B, Opryland	Bio-Rad: Enzymes and Biofuels—Go from Grass to Gas! (AP Lab 2) (p. 87)
2:00–3:00 PM	H	Lincoln C, Opryland	Epigenetics: Beyond the Central Dogma (p. 91)
2:00–3:15 PM	9–12	Canal C, Opryland	Amplify Your Genetics Teaching Skills with Carolina's Inquiries in Science™ Biology Units (p. 92)
2:00–3:15 PM	7–C	Jackson D, Opryland	New Ways to Prepare Your Students Using 21st-Century STEM Initiatives—GO DIGITAL!! (p. 92)
3:30–4:00 PM	M–H	Cheekwood F, Opryland	It's Alive! Promoting Critical Thinking on the First Day of Biology Class (p. 94)
3:30–4:30 PM	M	Washington B, Opryland	Medical Mysteries: A Free Online Adventure Game (p. 95)
3:30–4:45 PM	7–C	Jackson A/B, Opryland	Bio-Rad: Light Up Your Classroom with pGLO™ Transformation (p. 98)
4:00–5:15 PM	6–12	Canal C, Opryland	Comparative Vertebrate Anatomy with Carolina's Perfect Solution® Specimens (p. 98)
4:00–5:15 PM	6–12	Jackson E/F, Opryland	Introduction to Blood Typing and Blood Spatter (p. 99)

Saturday

8:00–8:30 AM	H–C	Washington B, Opryland	More Learning, Less Lecturing: Active Learning in the Community College Biology Classroom (p. 103)
8:00–9:00 AM	M–H	Hermitage A, Opryland	Use Technology to Integrate Science and Math! (p. 104)
8:00–9:00 AM	7–C	Jackson A/B, Opryland	Bio-Rad Genes in a Bottle™ Kit (p. 104)
8:00–9:00 AM	M	Lincoln C, Opryland	Food Chains: Using Field Surveys That Give Real Numbers (p. 104)
8:00–9:00 AM	M–H	Tennessee B, Opryland	Amazing Thing Cells Can Do (p. 104)
9:30–10:30 AM	E	Lincoln D, Opryland	From Tree to Chair, From Mud to Brick (p. 107)
9:30–11:00 AM	7–C	Jackson A/B, Opryland	Bio-Rad: Finding Funds for Biotechnology Studies: A Grant-writing Workshop (p. 108)
11:00 AM–12 Noon	M–H	Hermitage A, Opryland	Infect Your Biology Classroom with Math (p. 109)
11:00 AM–12 Noon	9–C	Jackson A/B, Opryland	Bio-Rad Cloning and Sequencing Explorer Series (p. 110)

Chemistry/Physical Science

Thursday

8:00–9:00 AM	H	Cheekwood B, Opryland	Bring the Science of Cars into the Classroom (p. 41)
10:00–11:15 AM	9–12	Canal A, Opryland	It's Here! The All-new *Pearson Chemistry* © 2012 (p. 45)
10:00–11:15 AM	9–C	Jackson C, Opryland	Teaching AP Chemistry with Molecular-Level Visualization and Simulation Tools (p. 45)
10:00–11:15 AM	6–12	Jackson E/F, Opryland	ScholAR Chemistry In-the-Bag Inquiry (p. 45)
10:00–11:15 AM	9–12	Presidential B, Opryland	Flinn Scientific Presents Best Practices for Teaching Chemistry™: Experiments and Demonstrations (p. 45)
12:30–1:30 PM	H	Cheekwood F, Opryland	CSSS Session: High School STEM Redesign (p. 48)
12:30–1:45 PM	9–12	Canal B, Opryland	Living by Chemistry: Feeling Under Pressure (p. 50)
2:00–3:00 PM	E–M	Hermitage E, Opryland	Inquiry Matters: Incorporating Inquiry into Elementary and Middle School Physical Science (p. 53)
2:15–3:30 PM	9–12	Canal A, Opryland	If You Teach AP Chemistry, You Gotta Get This! (p. 54)

4:00–5:15 PM	9–12	Canal C, Opryland	Energize Your Chemistry Students' Inquiry Skills with Carolina's Inquiries in Science™ Chemistry Series (p. 58)
4:00–5:15 PM	9–12	Presidential B, Opryland	Sparking Interest and Learning with Chemistry (p. 59)

Friday

8:00–9:00 AM	M	Hermitage B, Opryland	ACS Middle Level Session: Solids, Liquids, and Gases: The Kinetic Theory of Matter (p. 64)
8:00–9:00 AM	H	Hermitage C, Opryland	ACS Session One: What's Matter Made Of? (p. 64)
8:00–9:15 AM	9–12	Canal B, Opryland	Living by Chemistry: What Shape Is That Smell? (p. 66)
9:30–9:50 AM	G	Cheekwood B, Opryland	SCST Session: Jazzin' Up General College Chemistry (p. 69)
9:30–10:30 AM	M	Hermitage B, Opryland	ACS Middle Level Session: Heat Transfer and Changes of State (p. 70)
9:30–10:30 AM	H	Hermitage C, Opryland	ACS Session Two: What Holds Molecules Together? (p. 70)
10:00–11:15 AM	6–8	Jackson C, Opryland	Fast and Furious: Force and Motion for Middle School! (p. 77)
10:00–11:15 AM	7–12	Jackson D, Opryland	Using Modern Molecular Modeling Techniques in Middle and High School Science Classrooms (p. 78)
10:00–11:15 AM	9–12	Presidential B, Opryland	Promote Inquiry Using Chemistry Demonstrations (p. 78)
11:00 AM–12 Noon	6–12	Bayou E, Opryland	Discovery-based Chemistry with SPARKscience™: States of Matter (p. 82)
11:00 AM–12 Noon	M	Hermitage B, Opryland	ACS Middle Level Session: Density (p. 80)
11:00 AM–12 Noon	H	Hermitage C, Opryland	ACS Session Three: Why Is Water Different? (p. 80)
12:30–1:30 PM	M	Hermitage B, Opryland	ACS Middle Level Session: The Periodic Table, Energy Levels, and Bonding (p. 85)
12:30–1:30 PM	H	Hermitage C, Opryland	ACS Session Four: Bond Connections in More Complex Molecules (p. 85)
12:30–1:30 PM	M–H	Lincoln E, Opryland	Differentiation in the Secondary Science Classroom (p. 86)
12:30–1:30 PM	9–12	Presidential C, Opryland	Active Chemistry (p. 86)
2:00–3:00 PM	M	Hermitage B, Opryland	ACS Middle Level Session: Polarity of the Water Molecule and Dissolving (p. 90)
2:00–3:00 PM	H	Hermitage C, Opryland	ACS Session Five: Chemistry of Aqueous Solutions of Gases (p. 90)
2:00–3:15 PM	9–12	Jackson C, Opryland	Real Chemistry for All Students…But How? (p. 92)
2:00–3:15 PM	6–12	Jackson E/F, Opryland	ScholAR Chemistry In-the-Bag Inquiry (p. 92)
3:30–4:30 PM	M	Hermitage B, Opryland	ACS Middle Level Session: Chemical Change and Energy (p. 96)
3:30–4:30 PM	H	Hermitage C, Opryland	ACS Session Six: Coupled Reactions, Energetics, and Chemical Bonds (p. 96)
3:30–4:30 PM	M–H	Lincoln E, Opryland	Teaching Chemistry in a 21st-Century Urban Classroom (p. 96)
4:00–5:15 PM	9–12	Jackson C, Opryland	What Is the Difference Between Heat and Temperature? (p. 98)
5:00–6:00 PM	H	Cheekwood A, Opryland	Corrosion Is Everywhere! Use It to Make Chemistry Relevant and Fun (p. 100)

Saturday

8:00–9:00 AM	H	Cheekwood A, Opryland	Solids: The Neglected "State" of Chemistry (p. 103)
9:30–10:30 AM	G	Cheekwood F, Opryland	Chemistry in Comics (p. 106)
9:30–10:30 AM	M–H	Hermitage B, Opryland	Polymers: New Twists on Old Favorites (p. 107)

Earth/Space Science

Thursday

8:00–9:00 AM	E–H	Lincoln D, Opryland	STEM in Action—Do It the Technology Way (p. 42)
8:00–9:15 AM	5–12	Jackson E/F, Opryland	The Layered Earth (p. 43)
12:30–1:30 PM	M–H/I	Hermitage A, Opryland	Engaging Students with Climate Change: Global Connections and Sustainable Solutions (p. 49)
12:30–1:30 PM	H–C	Lincoln C, Opryland	Stellar Bar Codes (p. 50)
12:30–1:30 PM	E–H	Tennessee D/E, Opryland	National Earth Science Teachers Association Earth Science Share-a-Thon (p. 50)

2:00–3:00 PM	M–H	Lincoln D, Opryland	Stellar Life Cycles (p. 53)
2:00–3:00 PM	G	Tennessee D/E, Opryland	National Earth Science Teachers Association Rock and Mineral Raffle (p. 54)
2:15–3:30 PM	K–12	Jackson D, Opryland	Master of Science in Geosciences via Distance Learning from Mississippi State University (p. 55)
2:15–3:30 PM	5–12	Jackson E/F, Opryland	The Sky Through the Ages (p. 55)
3:30–4:30 PM	G	Cheekwood F, Opryland	Teaching About Corals: Using NOAA Resources (p. 56)
3:30–4:30 PM	M–H	Hermitage A, Opryland	The Invisible Universe (p. 56)
3:30–4:30 PM	M	Lincoln C, Opryland	MoonKAM: Exploring Lunar Images (p. 56)
5:00–6:00 PM	H	Hermitage A, Opryland	NASA Mysteries of the Universe: Dark Matter (p. 60)
5:00–6:00 PM	M–C	Hermitage D, Opryland	Daytime Astronomy with Robotic Telescopes (p. 60)

Friday

8:00–9:00 AM	G	Cheekwood A, Opryland	Using NOAA's Climate Change Resources in the Classroom (p. 63)
8:00–9:00 AM	I	Hermitage E, Opryland	Dark Sky Rangers (p. 64)
8:00–9:00 AM	S	Lincoln D, Opryland	Designing Your Own STEM-based Curriculum (p. 64)
8:00–9:15 AM	6–8	Jackson C, Opryland	Teaching About the Rock Cycle and Earth Time (p. 67)
9:30–10:30 AM	I	Cheekwood F, Opryland	Designing and Using an Essential Question for a Mammoth Cave Extended Classroom (p. 70)
9:30–10:30 AM	M	Hermitage D, Opryland	AAPT Session: How Old Is Your Universe? (p. 70)
9:30–10:30 AM	M–H	Tennessee B, Opryland	NASA's Pi in the Sky (p. 72)
10:00–11:15 AM	3–8	Canal B, Opryland	Discover the Solar System and Beyond (p. 77)
10:00–11:15 AM	5–12	Jackson E/F, Opryland	The Layered Earth (p. 78)
11:00 AM–12 Noon	M–H	Tennessee B, Opryland	The Cosmic Zoo (p. 82)
11:00 AM–12 Noon	E–M	Washington B, Opryland	Add Some POP to Your Lessons with BrainPOP! (p. 80)
12:30–1:00 PM	E–H	Cheekwood A, Opryland	The AMS Education Program: Professional Development Courses Exploring the Atmosphere, Ocean, and Climate (p. 84)
1:00–2:00 PM	6–12	Bayou E, Opryland	Discovery-based Middle School Science with Sally Ride Science and SPARKscience™ (p. 87)
2:00–3:00 PM	M–H	Tennessee B, Opryland	What Is Your Cosmic Connection to the Elements? (p. 91)
3:30–4:30 PM	G	Cheekwood A, Opryland	JetStream: An Online School for Weather (p. 95)
3:30–4:30 PM	E–H	Cheekwood C, Opryland	NASA CERES S'COOL Project: Be a S'COOL Cloud Observer! (p. 95)
3:30–4:30 PM	9–12	Presidential C, Opryland	NEW! *Investigating Astronomy* from TERC/*EarthComm* from AGI (p. 97)
4:00–5:15 PM	K–8	Canal A, Opryland	The Science Behind Climate Change: What Every Student (and Teacher) Should Know (p. 98)

Saturday

8:00–9:00 AM	M–H	Hermitage B, Opryland	Analyzing Black Holes and Supernovae Through International X-ray Eyes (p. 104)
8:00–9:00 AM	I	Hermitage E, Opryland	Stellar Evolution: Cosmic Cycles of Formation and Destruction (p. 104)
9:30–10:30 AM	I	Hermitage E, Opryland	Radiation Storm *vs.* the Magnetic Shield: Superheroes of Magnetism and Space Weather Education (p. 107)
9:30–10:30 AM	G	Lincoln A, Opryland	Teaching Astronomy with Music: The Mighty Sky! (p. 106)
11:00 AM–12 Noon	M–H	Lincoln A, Opryland	MY NASA DATA: Your Students Can Be Earth Scientists! (p. 109)
11:00 AM–12 Noon	E–M	Washington B, Opryland	Engaging Upper Elementary and Middle School Students in International Science Inquiry (p. 109)

Environmental Science

Thursday

8:00–9:00 AM	G	Cheekwood C, Opryland	The NSF ITEST Experience in Kentucky Classrooms (p. 41)
8:00–9:00 AM	I	Hermitage E, Opryland	Global Connections: Forests of the World (p. 42)

10:00–11:15 AM	9–12	Canal C, Opryland	Need "Energy" in Your Environmental Classes? Learn About Carolina's Inquiries in Science™ Environmental Series (p. 45)
12:30–1:30 PM	M–H	Cheekwood C, Opryland	Student-driven Research on Water Quality (p. 48)
12:30–1:30 PM	E–H	Hermitage D, Opryland	Be a Butterfly Doctor with Project MonarchHealth (p. 49)
2:00–3:00 PM	G	Lincoln A, Opryland	U.S. Regional GLOBE Networking Session (p. 52)
2:00–3:00 PM	E–M/I	Lincoln C, Opryland	Effective Outdoor Biology Instructional Strategies for Your Classroom (p. 53)
2:00–3:00 PM	H–C	Washington B, Opryland	Forestry Field Studies for High School Students (p. 53)
2:15–4:30 PM	6–12	Canal B, Opryland	Stream Assessment: An Active, Integrated Approach to Science Learning (p. 55)
3:30–4:30 PM	M	Lincoln D, Opryland	Just Add Humans! Helping Students Understand How Design and Development Choices Affect the Planet (p. 57)
4:00–5:15 PM	4–8	Jackson E/F, Opryland	The Watershed Tour (p. 59)
5:00–6:00 PM	E–H	Cheekwood C, Opryland	Give Science a Voice! Digital Storytelling in the Science Classroom (p. 59)

Friday

8:00–9:00 AM	M–H/I	Cheekwood F, Opryland	EPA Tools for Teachers for Air Quality and Climate Change Education (p. 63)
8:00–9:00 AM	P–M	Lincoln C, Opryland	Environmental Education Activities Based on the PreK–8 Standards (p. 64)
9:30–10:30 AM	E	Hermitage E, Opryland	Using Children's Picture Books to Teach Environmental Science (p. 71)
9:30–10:30 AM	G	Washington B, Opryland	How Does Research Experience for Teachers Impact Students in the Classroom? (p. 70)
11:00 AM–12 Noon	E–H	Ryman A–C, Opryland	Nature—It's Closer Than You Think! (p. 82)
12 Noon–1:15 PM	4–C	Jackson E/F, Opryland	Stream Ecology: Slimy Leaves for Clean Streams (p. 83)
12:30–1:30 PM	I	Hermitage E, Opryland	Rockin' Out in Tennessee Limestone Cedar Glades (p. 86)
12:30–1:30 PM	E–M	Tennessee A, Opryland	NSTA Press Session: Outdoor Science: A Practical Guide (p. 86)
2:00–3:00 PM	H	Cheekwood F, Opryland	Organically Nurturing Professional Learning: A "Fresh Start" Campus (p. 90)
2:30–4:00 PM	6–12	Bayou E, Opryland	Renewable Energy Exploration—Solar, Wind, and Hydrogen Fuel Cells (p. 94)
3:30–4:30 PM	M–H/I	Lincoln C, Opryland	Climate Change: Classroom Tools to Explore the Past, Present, and Future (p. 96)
3:30–4:30 PM	E–M	Lincoln D, Opryland	Using Children's Literature as a Springboard to Creating Inventions (p. 96)
3:30–4:30 PM	M–H	Tennessee B, Opryland	Environmental Toxicology: Introduction to Toxicity Testing (p. 97)
5:00–6:00 PM	G	Ryman A–C, Opryland	Facilitating Early Childhood Education with Project Learning Tree (p. 101)

Saturday

8:00–9:00 AM	M–H	Hermitage C, Opryland	Environmental Science in a World of Seven Billion (p. 104)
9:30–10:30 AM	M	Washington B, Opryland	Connecting Drug Education, Environmental Science, and Technology: The Game Is On! (p. 106)
11:00 AM–12 Noon	E–H	Cheekwood B, Opryland	Environmental Stewardship: Awards, Recognition, and Grants (p. 108)

Integrated/General

Thursday

8:00–9:00 AM	E–H	Lincoln A, Opryland	Science Literacy: More Than Reading Strategies (p. 41)
8:00–9:00 AM	G	Presidential A, Opryland	Is This Your First NSTA Conference? (p. 41)
8:00–9:00 AM	G	Ryman A–C, Opryland	Engaging Students with Math and Science Through Global Issues (p. 42)
8:00–9:00 AM	E–H	Tennessee A, Opryland	NSTA Press Session: Take a Walk on the Safe Side (p. 41)
8:00–9:15 AM	K–6	Bayou B, Opryland	Experimental Design (p. 42)
8:00–9:15 AM	7–10	Bayou E, Opryland	Introducing Inquiry Investigations™: Hands-On Inquiry Activities Focusing On Technology (p. 42)
8:00–9:15 AM	5–8	Canal A, Opryland	Inquiry in the Classroom (p. 43)

8:00–9:30 AM	5–12	Bayou C, Opryland	Chemistry and the Atom: Fun with Atom Building Games! (p. 44)
8:00–10:00 AM	5–8	Bayou D, Opryland	Using Science Notebooks with FOSS Middle School (p. 44)
9:00–11:00 AM	2–5	Bayou A, Opryland	Innovative Science and Literacy Integration: Seeds of Science/Roots of Reading® (p. 44)
9:15–10:30 AM	G	Presidential C–E, Opryland	General Session: Cultivating Curiosity (Speaker: Jeff Lieberman) (p. 44)
10:00–11:15 AM	K–8	Bayou B, Opryland	Introducing the Delta Science Module Program (p. 45)
10:00–11:15 AM	7–10	Bayou E, Opryland	Inquiry Investigations™ Forensics Science Curriculum Module and Kits (p. 45)
10:00–11:30 AM	5–12	Bayou C, Opryland	Genetics: Crazy Traits and Adaptation Survivor (p. 46)
11:00 AM–1:30 PM	5–8	Bayou D, Opryland	A Sneak Preview of the New Planetary Science Middle School Course from FOSS (p. 46)
11:30 AM–1:30 PM	2–5	Bayou A, Opryland	Innovative Science and Literacy Integration: Seeds of Science/Roots of Reading® (p. 46)
12 Noon–1:15 PM	5–C	Bayou E, Opryland	Educational Science Lab Design and Implementation for the 21st Century Made Easy (p. 47)
12 Noon–1:30 PM	5–12	Bayou C, Opryland	CPO SmartTrack with Velocity Sensor and Energy Car (p. 48)
12:30–1:30 PM	G	Cheekwood B, Opryland	VoiceThread 101: Engaging Your Students Through Media (p. 48)
12:30–1:30 PM	E	Hermitage E, Opryland	R.E.A.D. (p. 49)
12:30–1:30 PM	H	Lincoln A, Opryland	Asking Better Questions (p. 48)
12:30–1:30 PM	E–H	Lincoln D, Opryland	Get SIMulated! (p. 48)
12:30–1:30 PM	G	Lincoln E, Opryland	Science Trifecta: Effectively Combining Picture Books, Foldables®, and Science Curriculum Standards (p. 50)
12:30–1:30 PM	G	Magnolia Bdrm. B, Opryland	Leveraging STEM Resources Through GRITS (p. 49)
12:30–1:30 PM	G	Tennessee A, Opryland	NSTA Press Session: Spotlighting Books Co-Published by NSTA and NSELA and How to Use Them to Inform Science Programs (p. 49)
12:30–1:30 PM	E–M	Washington B, Opryland	Using Energy Data in the Classroom (p. 49)
12:30–1:45 PM	9–12	Canal A, Opryland	The Next Generation of Science Virtual Labs—No Cleanup Required (p. 50)
1:00–2:30 PM	K–8	Bayou B, Opryland	What's Going on in There? Inquiry Science for Supervisors, Teacher Trainers, and Teachers (p. 51)
2:00–3:00 PM	G	Cheekwood B, Opryland	Science and Service Learning (p. 52)
2:00–3:00 PM	G	Cheekwood C, Opryland	Fly Me to the Moon—The Best in Books (p. 52)
2:00–3:00 PM	M–H	Hermitage B, Opryland	How to Fit Nanotechnology into Your Classroom: Lessons Tied to Current Science Teaching (p. 53)
2:00–3:00 PM	C/S	Lincoln E, Opryland	Biology We Can't Control and Classrooms We Can (p. 53)
2:00–3:00 PM	M–H	Magnolia Bdrm. B, Opryland	Alternative Energy Sources: Inquiry-based Life Science Activities (p. 53)
2:00–3:00 PM	M–H	Ryman A–C, Opryland	NMLSTA Session: Inquiry Science on the Cheap (p. 54)
2:00–3:00 PM	E–M	Tennessee A, Opryland	NSTA Press Session: Activities Linking Science and Math with Art (p. 54)
2:00–3:00 PM	G	Tennessee C, Opryland	Featured Presentation: Responding to Imperatives—Good Teachers Moving to GREAT! (Speaker: Diana Nunnaley) (p. 52)
2:00–3:15 PM	10–12	Bayou E, Opryland	Bring Your Science Lab into the 21st Century Using iNeo/SCI™ Virtual Science Solutions (p. 54)
2:00–3:30 PM	5–12	Bayou C, Opryland	Springs and Swings: Harmonic Motion and Hooke's Law (p. 54)
2:15–3:30 PM	1–8	Jackson A/B, Opryland	Science Starters (p. 55)
2:30–4:30 PM	K–6	Bayou D, Opryland	Using Science Notebooks with FOSS K–6 (p. 55)
3:00–4:30 PM	K–8	Bayou B, Opryland	The Craft of Questioning and Delta Science Modules (p. 55)
3:30–4:30 PM	G	Cheekwood B, Opryland	How to Put on a Family Science Night at Your School (p. 56)
3:30–4:30 PM	G	Cheekwood C, Opryland	Create a Learning Revolution: Using Enhanced Podcasts to Prepare Students for Life in a Digital World (p. 56)
3:30–4:30 PM	M–H	Hermitage B, Opryland	The Mathematics of Human Population Growth (p. 56)
3:30–4:30 PM	G	Hermitage D, Opryland	How to Direct a Science Olympiad Fun Day/Night That Will WOW Your Students (p. 57)
3:30–4:30 PM	E/I	Hermitage E, Opryland	Global Sustainability Science Connections: Engaging Lessons for the Primary Grades (p. 57)
3:30–4:30 PM	G	Magnolia Bdrm. B, Opryland	Starting an NSTA Student Chapter: Faculty and Student Perspectives (p. 56)
3:30–4:30 PM	M	Ryman A–C, Opryland	Exciting Engineering Projects (p. 58)

3:30–4:30 PM	P–E	Tennessee B, Opryland	Portable Affordable Simple Science (P.A.S.S. ©) for PreK–2: Linking Home and School (p. 58)
3:30–4:30 PM	P–M	Washington B, Opryland	Creating a Powerful Synergy with Hands-On Investigations, Science Literacy Skills, and Science Content in the K–6 Science Classroom (p. 56)
4:00–5:15 PM	7–10	Bayou E, Opryland	Inquiry Investigations™ Biotechnology Activities with E-Gels® (p. 58)
4:00–5:15 PM	K–12	Canal A, Opryland	Untamed Science! How to Make Your Own Science Videos from Scratch (p. 58)
4:00–5:30 PM	5–12	Bayou C, Opryland	Gas Laws Kit: Chemistry and the DataCollector—Charles' and Boyle's Laws Uncovered (p. 59)
5:00–6:00 PM	G	Lincoln A, Opryland	Differentiating with Science Cafés (p. 59)
5:00–6:00 PM	E–M	Magnolia Bdrm. B, Opryland	Teaching an Integrated Unit on the Ocean (p. 59)
5:00–6:00 PM	G	Ryman A–C, Opryland	Growing Students That Love Science by Using Foldables® (p. 60)

Friday

8:00–9:00 AM	I	Cheekwood C, Opryland	CESI Session: Girls Engaged in Math and Science University (GEMS-U): Helping Girls in Every Classroom Accept the STEM Challenge (p. 63)
8:00–9:00 AM	G	Lincoln E, Opryland	Cross-curricular Instruction to Engage Students and Improve Performance (p. 65)
8:00–9:00 AM	G	Magnolia Bdrm. B, Opryland	Before and After Retirement: Practicalities and Possibilities (p. 63)
8:00–9:00 AM	G	Pres. Chamber B, Opryland	NSTA Avenue Session: Toshiba/NSTA ExploraVision Awards (p. 63)
8:00–9:00 AM	M–H	Tennessee A, Opryland	NSTA Press Session: Making Science Reading Come Alive (p. 65)
8:00–9:00 AM	G	Tennessee B, Opryland	How'd He Do That? (p. 64)
8:00–9:00 AM	E–M	Washington B, Opryland	The Reflective Assessment Technique: Fifteen Minutes to Improved Instruction (p. 64)
8:00–9:15 AM	2–8	Bayou B, Opryland	Put Some Spark into Science Investigations (p. 66)
8:00–9:15 AM	5–12	Jackson E/F, Opryland	Test Making at Its Easiest: Let Examgen Show You How! (p. 67)
8:00–9:15 AM	K–12	Presidential B, Opryland	Help Students Flourish with New Digital Learning Tools (p. 67)
8:00–9:15 AM	K–12	Presidential E, Opryland	Fun, Fabulous Foldables® (p. 67)
8:00–9:30 AM	K–8	Bayou A, Opryland	K–8 Science with Vernier (p. 68)
8:00–9:30 AM	5–12	Bayou C, Opryland	Genetics: Crazy Traits and Adaptation Survivor (p. 68)
8:00–10:30 AM	5–8	Bayou D, Opryland	Using Middle School Science Notebooks to Assess Learning with FOSS (For Experienced Users) (p. 68)
8:20–8:40 AM	G	Cheekwood B, Opryland	SCST Session: Pedagogical Content Knowledge of Preservice Secondary Science Teachers: An Action Research Study (p. 63)
8:40–9:00 AM	G	Cheekwood B, Opryland	SCST Session: Lost in Translation: Bridging the Gaps Between Science and Education (p. 63)
9:30–10:30 AM	E–H	Lincoln D, Opryland	Science with a Cultural Twist (p. 71)
9:30–10:30 AM	G	Lincoln E, Opryland	Scaffolded Inquiry: A Brain-based Model (p. 71)
9:30–10:30 AM	H	Magnolia Bdrm. B, Opryland	NSTA High School Committee Presents Leading Beyond the Classroom (p. 70)
9:30–10:30 AM	E–H	Pres. Chamber B, Opryland	NSTA Avenue Session: SciLinks: Using the Online Assignment Tool (p. 70)
9:30–10:30 AM	G	Tennessee C, Opryland	Featured Presentation: Global Environmental Impact of Fossil Fuel Burning (Speaker: Wilfred M. Post) (p. 69)
9:30–10:30 AM	P–M	Tennessee D/E, Opryland	CESI Session: Council for Elementary Science International Share-a-Thon (p. 72)
9:30–11:30 AM	G	Presidential Bdrm. A, Opryland	NSTA ESP Symposium I (p. 76)
9:50–10:10 AM	G	Cheekwood B, Opryland	SCST Session: CPS: A Faculty Perspective on Benefits and Barriers (p. 69)
10:00–11:15 AM	1–6	Bayou B, Opryland	Integrating Science and Literacy, Grades 1–6 (p. 76)
10:00–11:15 AM	5–8	Canal A, Opryland	What's at the Heart of Science Teaching? Inquiry, Evidence, and Thinking (p. 76)
10:00–11:15 AM	K–12	Presidential E, Opryland	Fun, Fabulous Foldables® (p. 78)
10:00–11:30 AM	7–C	Bayou A, Opryland	Transforming the Science Lab with Vernier Technology (p. 78)
10:00–11:30 AM	5–12	Bayou C, Opryland	Light and Optics: A Series of EnLIGHTening Experiments! (p. 78)

10:10–10:30 AM	G	Cheekwood B, Opryland	SCST Session: Attitudes Toward Academic Honesty of Early Academic Career Science Majors (p. 69)
11:00–11:30 AM	M–H	Cheekwood A, Opryland	Stepping Out of My Technology Classroom Box (p. 78)
11:00 AM–12 Noon	G	Cheekwood C, Opryland	I Love Free (p. 79)
11:00 AM–12 Noon	E–H	Cheekwood F, Opryland	Making Lemonade: Using Construction as Curriculum (p. 79)
11:00 AM–12 Noon	E	Hermitage E, Opryland	Science on a Shoestring Budget (p. 81)
11:00 AM–12 Noon	G	Lincoln D, Opryland	Boot Camp for Professional Development Providers: Learning the Basics (p. 81)
11:00 AM–12 Noon	G	Lincoln E, Opryland	Professional Learning Communities: Setting the Stage for Sustainability (p. 81)
11:00 AM–12 Noon	G	Pres. Chamber B, Opryland	NSTA Avenue Session: Siemens We Can Change the World Challenge: 21st-Century Tools for Project Based Learning (p. 80)
11:00 AM–12 Noon	E–M	Tennessee A, Opryland	NSTA Press Session: Stop Faking It! Finally Understand MATH So You Can Teach It (p. 82)
11:30 AM–1:30 PM	K–8	Bayou D, Opryland	Taking Science Outdoors with FOSS K–8 (p. 82)
12 Noon–1:15 PM	3–5	Canal A, Opryland	Incorporating STEM Activities into Your Elementary Classroom (p. 82)
12 Noon–1:15 PM	K–8	Presidential E, Opryland	I See What You Mean! Developing Visual Literacy (p. 83)
12 Noon–1:30 PM	7–C	Bayou A, Opryland	Transforming the Science Lab with Vernier Technology (p. 83)
12 Noon–1:30 PM	5–12	Bayou C, Opryland	Gas Laws Kit: Chemistry and the DataCollector—Charles' and Boyle's Laws Uncovered (p. 83)
12:30–1:00 PM	M	Washington B, Opryland	Earn Your Lab License (p. 84)
12:30–1:30 PM	G	Cheekwood B, Opryland	NARST Session: What Cognitive Processes Do Students Use When Learning from Multimedia Presentations? (p. 85)
12:30–1:30 PM	G	Cheekwood C, Opryland	Problem Based Learning as a Model for Integrating Instruction (p. 85)
12:30–1:30 PM	G	Cheekwood F, Opryland	Differentiation in the Secondary Science Classroom—It Can Be Done! (p. 85)
12:30–1:30 PM	M–H	Magnolia Bdrm. B, Opryland	NASA Explorer Schools: Preparing the Next Generation of Explorers (p. 85)
12:30–1:30 PM	G	Ryman A–C, Opryland	Morph Science Notebooks Using Dinah Zike's Foldables® (p. 86)
1:00–2:15 PM	K–8	Bayou B, Opryland	Working as One with Hands and Minds (p. 87)
2:00–2:30 PM	C	Washington B, Opryland	Building Capacity to Lead Professional Learning (p. 87)
2:00–3:00 PM	G	Cheekwood A, Opryland	Data: It's Not a Four-Letter Word (p. 89)
2:00–3:00 PM	G	Cheekwood B, Opryland	NSELA Session: Tools and Ideas for Leaders (p. 89)
2:00–3:00 PM	E	Hermitage E, Opryland	Digging Dinos (p. 90)
2:00–3:00 PM	G	Lincoln D, Opryland	The Role of Advocacy in Promoting STEM Education 91)
2:00–3:00 PM	E–M/I	Lincoln E, Opryland	Teaching Energy Conservation with an Emphasis on Biofuels (p. 91)
2:00–3:00 PM	P–M	Magnolia Bdrm. B, Opryland	Boosting Higher-Level Thinking in K–6 Science Assessments (p. 90)
2:00–3:00 PM	G	Pres. Bdrm. A, Opryland	NSTA ESP Symposium II (p. 88)
2:00–3:00 PM	6–12	Presidential C, Opryland	Fourier Probeware and Nova5000 (p. 91)
2:00–3:00 PM	E–H	Pres. Chamber B, Opryland	NSTA Avenue Session: Toyota TAPESTRY Grants for Science Teachers = $$$ for Your School! (p. 90)
2:00–3:00 PM	M–H	Ryman A–C, Opryland	Modeling the Spectrum (p. 91)
2:00–3:00 PM	G	Tennessee A, Opryland	NSTA Press Session: So You Want New Science Facilities (Science Facilities 101) (p. 91)
2:00–3:00 PM	G	Tennessee C, Opryland	Featured Presentation: Brain-considerate Learning: How the Human Brain Learns Best (Speaker: Kenneth Wesson) (p. 88)
2:00–3:00 PM	H	Tennessee D/E, Opryland	NSTA High School Committee Share Session (p. 90)
2:00–3:15 PM	6–8	Canal A, Opryland	From Science to Engineering (p. 92)
2:00–3:15 PM	K–5	Canal B, Opryland	Do They Get It? Assessment Strategies for an Inquiry Classroom (p. 92)
2:00–3:15 PM	6–12	Presidential E, Opryland	Teaching Inquiry Science with Toys and Treats (p. 92)
2:00–3:30 PM	7–C	Bayou A, Opryland	Transforming the Science Lab with Vernier Technology (p. 93)
2:00–3:30 PM	5–12	Bayou C, Opryland	Chemistry and the Atom: Fun with Atom Building Games! (p. 93)
2:00–4:30 PM	K–6	Bayou D, Opryland	Using Elementary Science Notebooks for Formative Assessment with FOSS (For Experienced Users) (p. 94)
3:30–4:30 PM	G	Cheekwood B, Opryland	NSELA Session: NSELA Working Groups—Network with Science Education Leaders (p. 95)

3:30–4:30 PM	G	Magnolia Bdrm. B, Opryland	NSTA Student Chapter Meeting (p. 95)
3:30–4:30 PM	G	Pres. Bdrm. A, Opryland	NSTA ESP Symposium III (p. 94)
3:30–4:30 PM	G	Pres. Chamber B, Opryland	NSTA Avenue Session: The NSTA Learning Center: Free Professional Development Resources and Opportunities for Educators (p. 95)
3:30–4:30 PM	E–H	Ryman A–C, Opryland	The Science of Energy (p. 96)
3:30–4:30 PM	G	Tennessee A, Opryland	NSTA Press Session: The Architects Have Started Without Me: What Do I Do Now? (Science Facilities 102) (p. 96)
4:00–5:15 PM	6–8	Canal B, Opryland	Introduction to Inquiry in the Middle School Classroom (p. 98)
4:00–5:15 PM	5–12	Jackson D, Opryland	Detecting Radiation in Our Radioactive World (p. 99)
4:00–5:15 PM	K–8	Presidential B, Opryland	Misconception Mania: Exciting and Engaging Ways to Address Common Misunderstandings in K–8 Science (p. 99)
4:00–5:15 PM	6–12	Presidential E, Opryland	Teaching Inquiry Science with Toys and Treats (p. 99)
4:00–5:30 PM	5–12	Bayou C, Opryland	CPO SmartTrack with Velocity Sensor and Energy Car (p. 99)
4:00–6:00 PM	G	Tennessee D/E, Opryland	Whale of a Share-a-Thon (p. 99)
5:00–6:00 PM	M–H	Cheekwood B, Opryland	The Missing Link: Using Inquiry to Engage Religious Students in Evolution (p. 100)
5:00–6:00 PM	E–H	Cheekwood C, Opryland	Weather in My World (p. 101)
5:00–6:00 PM	M–H	Lincoln C, Opryland	Paperless Integrated Math and Science Instruction (p. 101)
5:00–6:00 PM	G	Magnolia Bdrm. B, Opryland	Creating K–6 Classrooms That Embrace Science Inquiry: Helping Students Think and Work Like Scientists (p. 101)

Saturday

8:00–8:30 AM	M	Cheekwood B, Opryland	Incorporating Reading and Writing in Middle School Science (p. 103)
8:00–9:00 AM	M–C	Cheekwood F, Opryland	Seeing the Designed World in Hollywood Films (p. 103)
8:00–9:00 AM	E	Hermitage D, Opryland	Fight Bac! Integrating Food Safety in Your Elementary Curriculum (p. 104)
8:00–9:00 AM	E–H	Lincoln A, Opryland	Lesson Study: Unfolding the Nature of Science for Students and Novice Teachers (p. 103)
8:00–9:00 AM	M–H	Magnolia Bdrm. B, Opryland	Square Pegs: Science for Those "Other" Kids (p. 103)
8:00–9:15 AM	K–8	Presidential B, Opryland	STEM Adventures: Motivating Students Through Project Based Learning (p. 105)
8:30–11:00 AM	E	Ryman Exh. Hall C2, Opryland	Science Matters Community Event (p. 105)
9:30–10:30 AM	M	Cheekwood A, Opryland	Carrying the Fire: A Classroom Teacher's Top 12 Lessons (p. 106)
9:30–10:30 AM	G	Cheekwood C, Opryland	From Galileo to Moon Dust: The Consilience of Science and Religion (p. 106)
9:30–10:30 AM	E–M	Hermitage A, Opryland	Science Rocks: Sharing Your Passion IS Teaching (p. 107)
9:30–10:30 AM	P–E	Hermitage D, Opryland	Fostering Junior Scientists: Hands-On Science for Early Childhood Educators (p. 107)
9:30–10:30 AM	M–H	Tennessee B, Opryland	Paperless Formative and Summative Assessment (p. 107)
11:00–11:30 AM	M–H	Magnolia Bdrm. B, Opryland	Eat It! Edible Science Labs (p. 108)
11:00 AM–12 Noon	G	Cheekwood A, Opryland	SKyTeach at Western Kentucky University: Preparing America's Teachers to Teach in STEM Disciplines (p. 108)
11:00 AM–12 Noon	E–H	Cheekwood C, Opryland	Inquiry: What and Why? (p. 108)
11:00 AM–12 Noon	G	Cheekwood F, Opryland	Are You Practicing Safe Science? (p. 109)
11:00 AM–12 Noon	I	Hermitage B, Opryland	Science After School (p. 109)
11:00 AM–12 Noon	G	Hermitage C, Opryland	Igniting Curiosity Through Discrepant Events (p. 109)
11:00 AM–12 Noon	E	Hermitage D, Opryland	Bringing Literacy and Science Together (B.L.A.S.T. ©) for Grades 2–4: Linking Home and School (p. 109)
11:00 AM–12 Noon	M–H	Tennessee B, Opryland	Scale the Universe (p. 110)

Physics/Physical Science

Thursday

8:00–9:00 AM	M–H	Hermitage B, Opryland	Forensics Science in Your Physics Classroom (p. 42)
12:30–1:30 PM	M–H	Hermitage B, Opryland	Building Understanding and an Atomic Force Microscope (p. 49)
2:00–3:00 PM	G	Hermitage D, Opryland	WonderWorks in the Classroom (p. 53)
3:30–4:30 PM	E–M	Tennessee A, Opryland	NSTA Press Session: Stop Faking It! Finally Understand FORCE AND MOTION So You Can Teach It (p. 58)
5:00–6:00 PM	P–E	Hermitage B, Opryland	Ramps and Pathways: Teaching Physical Science Through Children's Creative Design (p. 60)

Friday

8:00–9:00 AM	6–12	Bayou E, Opryland	Discovery-based Physics with SPARKscience™: Harmonic Motion (p. 66)
8:00–9:00 AM	M	Hermitage D, Opryland	AAPT Session: Newton's Laws Explained, Centripetal Motion Examined (p. 64)
8:00–9:00 AM	E–H	Ryman A–C, Opryland	Making Music with Palm Pipes (p. 65)
9:30–10:30 AM	E–M	Tennessee A, Opryland	NSTA Press Session: Stop Faking It! Finally Understand ENERGY So You Can Teach It (p. 72)
11:00 AM–12 Noon	M	Hermitage D, Opryland	AAPT Session: Making Magnetism Visible (p. 80)
11:00 AM–12 Noon	H	Lincoln C, Opryland	NSpiring Data Collection (p. 81)
11:00 AM–12 Noon	9–12	Presidential C, Opryland	*Active Physics,* Newly Revised Third Edition (p. 82)
12 Noon–1:15 PM	3–5	Canal B, Opryland	Energy Works! (p. 83)
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2:00–3:00 PM	M–H	Hermitage D, Opryland	AAPT Session: Addressing Student Difficulties with Motion and Force (p. 90)
2:00–3:15 PM	5–9	Presidential B, Opryland	Get Charged Up with Educational Innovations! (p. 92)
3:30–4:30 PM	M–C	Hermitage D, Opryland	AAPT Session: Using Physics to Design a Better Sports Car (p. 96)

Saturday

9:30–10:30 AM	H	Cheekwood B, Opryland	Sixty Labs You Can Do with Little or No Money (p. 106)
9:30–10:30 AM	H–C	Lincoln C, Opryland	The Physics of Supernovae (p. 107)
11:00 AM–12 Noon	P–E	Hermitage E, Opryland	Investigating Magnetism (p. 110)
11:00 AM–12 Noon	M–H	Lincoln C, Opryland	Hands-On Activities for Teaching the Basic Physical Quantities of Mechanics (p. 110)

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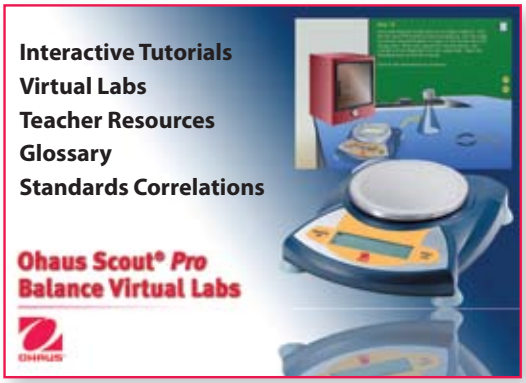

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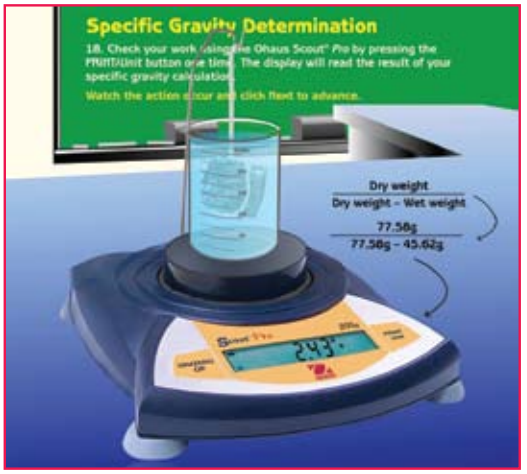

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