NSTA 2012 National Conference on Science Education

INDIANAPOLIS

3

Sat., March 31
Sun., April 1

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NSTA
National Science Teachers Association

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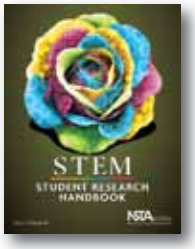

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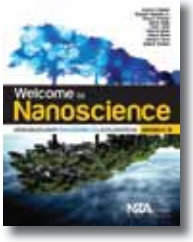

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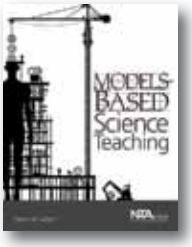

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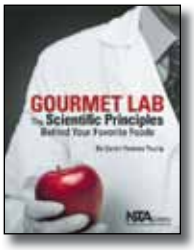

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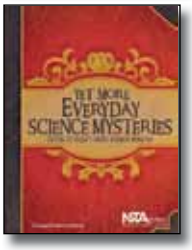

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National Science Teachers Association

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NSTA 60th National Conference on Science Education

Indianapolis, Indiana • March 29–April 1, 2012

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National Science Teachers Association
1840 Wilson Blvd.
Arlington, VA 22201-3000
703-243-7100
E-mail: *conferences@nsta.org*
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Cover Photo: Bronze sculpture of astronaut Neil Armstrong in front of the Neil Armstrong Hall of Engineering on Purdue's West Lafayette campus. Photo courtesy of Purdue University.

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

NSTA New Science Teacher Academy

Comprehensive Professional Development Scholarships for New Teachers 2012–2013

NSTA offers second- and third-year middle and high school science teachers the opportunity to participate in the New Science Teacher Academy, a one-year professional development and mentoring program. Emphasizing quality science teaching, enhanced teacher confidence, classroom excellence, and solid content knowledge, participants (Academy Fellows) enjoy top-notch face-to-face and online support and access to comprehensive education resources.

Academy Fellow Benefits:

- Full membership in the National Science Teachers Association
- Facilitated online curriculum focusing on science content and applicable classroom pedagogy
- Unlimited use of resources, including vetted web links for lesson plans, links to state and national standards, professional organizations, safety tips, and more
- E-mentoring from experts in the Fellow's science discipline and grade level
- All-expenses-paid (accommodations, airfare, meals, and registration fees) attendance to the NSTA National Conference on Science Education
- Attendance at a Professional Development Institute or a Research Dissemination Conference

Eligibility:

- Applicants must reside in the U.S.
- Applicants must be entering their second or third year of teaching
- Applicants must be working a schedule with 51% of their classes in middle or high school science

Visit *www.nsta.org/academy* to learn more or to apply by July 1, 2012.

"This was a great program that provided excellent resources and inspiration."

"The New Science Teacher Academy has made a huge impact on my teaching and my ability to cope with the stresses of teaching. I believe my third year is going much smoother and easier because of my participation in the academy. I hope that this program may be expanded and maintained for many years to come."

NSTA National Science Teachers Association

—Courtesy of Indiana Convention and Visitors Association Visitindy.org

Indianapolis Zoo, see field trips F-7, Vol. 1, page 80.

Mission Statement

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

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

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

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

Mapping Our Way to Success Through the New Core Standards

Science education standards ensure that all students have access and opportunity to experience success in science. Education is a partnership that requires support and dialogue among administrators, teachers, students, and the community. To achieve student success, science teachers must be knowledgeable about the strategies, tools, resources, and assessments available to them.

Pathways to a Sustainable Planet

The global community relies on science to understand the world around them. With the current issues in science (e.g., global disasters and shrinking resources) affecting us locally, nationally, and internationally, science teachers must know how to build partnerships and implement research-based practices in science education. It is imperative that we educate our students to be knowledgeable and active citizens for a sustainable planet.

Merging Inquiry, Creativity, and Innovation Through STEM

Inquiry provides the platform for educators and learners to explore STEM content. The resulting innovations lead to understanding and learning. The blending of creativity, innovation, and inquiry fosters the growth of human understanding. This provides educators with the foundation, tools, and resources to facilitate community conversations, promote STEM education, and generate effective assessments.

Traveling New Instructional Roads Through Technology

The global learning community grows daily through the use of technology. As educators we must prepare all learners for a future we can only imagine. It is imperative that students and educators be fluent in how the nature of science is supported through the use of strategies and technological tools. Facilitating alternative community partnerships will lead to innovations in science teaching. Engaging learners in creative partnerships will foster innovation in science teaching and learning.

Mapping Our Way to Success Through the New Core Standards

Saturday, March 31

8:00–9:00 AM
Drilling Through the Core: School Leadership in Transitioning to Common Core Standards

9:30–10:30 AM
Differentiating Content, Process, and Product via Strategies to Promote Understanding of Science Among Students with Special Needs

11:00 AM–12 Noon
Making Terrific Science Games

12:30–1:30 PM
Notebooking for Meaning

2:00–5:00 PM
Short Course: Science for ELL: Sheltered Content Instruction for Inquiry Science (SCI^2S) (By Ticket: SC-19)

3:30–4:30 PM
Changing Cookbook Labs into Inquiry Labs in Six Easy Steps

5:00–5:30 PM
Understanding Deep Time: "Wait, You Mean Dinosaurs Lived Before the Ice Age?"

Sunday, April 1

8:00–9:30 AM
The Future of Bioethics

9:30–10:00 AM
Addressing Core Standards Through Project-based Instruction: Keys to Success

11:00 AM–12 Noon
The Role of Argumentation in Inquiry: Doing What Real Scientists Really Do

Merging Inquiry, Creativity, and Innovation Through STEM

Saturday, March 31

8:00–9:00 AM
"Ms. Larson, We Have to Think So Much in This Class!"

8:00–11:00 AM
Short Course: Young Investigators in Environmental Health Science: Challenging and Exciting Young Minds with Novel, Inquiry-based Environmental Activities (By Ticket: SC-13)

9:30–10:30 AM
The Little Things That Run the World: Soil Ecology in the Classroom

11:00 AM–12 Noon
Activities That Integrate Concepts in Chemistry and Physics and Engage Students

12:30–1:30 PM
Celebrating African-American Scientists and Inventors Through Hands-On Science

1:00–5:00 PM
Short Course: Developing Learner-centered STEM Experiences in the Life Sciences (By Ticket: SC-18)

3:30–4:30 PM
Exploring Seafloor Spreading with Data from the Integrated Ocean Drilling Program (IODP)

Sunday, April 1

8:00–9:00 AM
Local Connections in Environmental Studies: The Science of Research in the Outdoor Classroom

9:30–10:30 AM
Forensic Toxicology: An Interdisciplinary Approach to Enhance Understandings in Biology and Chemistry

Pathways to a Sustainable Planet

Saturday, March 31

8:00–11:30 AM
Short Course: Thinking Green with Dr. Seuss
(By Ticket: SC-15)

11:00 AM–12 Noon
Marine Plastic Pollution: Examining Issues and Solutions in a Middle School Classroom

12:30–1:30 PM
Galápagos NEST

1:00–4:30 PM
Short Course: To Be or Not to Be? Solar-powered Cars, Is That Our Future?
(By Ticket: SC-17)

2:00–3:00 PM
Designing the City

3:30–4:30 PM
Math, Science, Literacy, and Technology: Teaching Sustainability Across the Curriculum

5:00–6:00 PM
Bringing the Tropical Rain Forest to the Urban Classroom

Sunday, April 1

8:00–9:00 AM
Developing Skills to Unveil "Nature's Operating Instructions" for 21st-Century Environmental Problem Solving

Traveling New Instructional Roads Through Technology

Saturday, March 31

8:00–9:00 AM
Teaching Science for Understanding in a Digital World

8:00 AM–12 Noon
Short Course: Explore Plate Tectonics and Earthquakes Through Web Tools and Apps (By Ticket: SC-16)

9:30–10:30 AM
Get Technology Down to a Science

11:00 AM–12 Noon
Integrating the NSTA Learning Center into Preservice Education

3:30–4:30 PM
Featured Presentation: Technology and Humanity (Speaker: Jason Snell)

5:00–6:00 PM
Customizing Science Instruction with Educational Digital Libraries

Sunday, April 1

8:00–9:00 AM
Promoting Scientific Discourse with Digital Tools

9:30–10:30 AM
Challenge: Create and Present an Interactive Science Course Online

Teacher Researcher Day

Saturday, March 31, 8:30 AM–5:00 PM
JW Grand Ballroom 5, JW Marriott

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

Saturday, March 31

8:30–9:30 AM	Poster Session
9:30–11:00 AM	Presentation: *Exploring Teacher Inquiry from the Dual Perspectives of New Teacher Researchers and Professional Development Leaders*
11:00 AM–12 Noon	Concurrent Sessions
12 Noon–12:30 PM	Science Inquiry Group Network
12:30–1:30 PM	Concurrent Sessions
2:00–3:00 PM	Concurrent Sessions
3:30–4:30 PM	Concurrent Sessions
4:30–5:00 PM	Presentation: *Fostering Teacher Researcher Collaborations*

NSTA/SCST Symposium

Nature Under Investigation—Forensic Science in the Classroom
Symposium Jointly Sponsored by NSTA and SCST

Saturday, March 31, 7:30 AM–12 Noon

204/205, JW Marriott

This year's symposium focuses on the integration of forensic sciences into the middle school and high school as well as undergraduate college-level classroom. The symposium starts with presentations by two renowned educators in the field of forensic sciences followed by a breakout session that provides attendees with hands-on experiences that can directly be translated into the classroom. This symposium is sponsored by the University of Florida, Distance Education program in Forensic Sciences. See page 20 for more information.

Saturday, March 31

8:00–9:00 AM	The Case for Forensic Science in the Classroom (Speaker: Jay Siegel)
9:15–10:15 AM	Implementation of Forensic Science in the Classroom (Speaker: Kathy Mirakovits)
10:30 AM–12 Noon	The Mystery of Lyle and Louise: A Forensic Science Curriculum with Hands-On Exercises (Speaker: Cassie Vickers)
12 Noon–1:30 PM	NSTA/SCST College Luncheon (Tickets Required: M-9) *Measuring Biological Expertise and Cultivating Expertise in Biology Teaching: Card Sorting, Superheroes, and Science Faculty with an Education Specialty* Kimberly D. Tanner, SEPAL: The Science Education Partnership and Assessment Laboratory, San Francisco State University, San Francisco, Calif.

Ticket C-1 •
$95, plus conference registration

*Preregistration only

Tickets, if still available, can be purchased at the Ticket Sales Counter in the NSTA Registration Area. Tickets must be purchased by 5:00 PM on Friday, March 30.

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

Looking Toward the New Framework for the Next Generation Science Standards: New Research on Promising Practices in Professional Development with a Focus on Curriculum Integration

A Research Dissemination Conference for K–12 Teachers, Administrators, Professional Development Providers, University Faculty, and Curriculum Specialists (Ticket C-1)

Saturday, March 31, 7:45 AM–3:00 PM *(Breakfast begins at 7:00 AM)*
White River Ballroom E, JW Marriott

Research on science teaching and learning plays an important role in improving science literacy, a goal called for in the National Science Education Standards (NRC 1996) and supported by the National Science Teachers Association (NSTA 2003). NSTA promotes a research agenda that is focused on the goal of enhancing student learning through effective teaching practices that connect research and practice. NSTA encourages ALL participants in science education, including K–16 teachers of science and administrators, to recognize the importance of research and assume active roles in research practices.

NSTA Position Statement: The Role of Research on Science Teaching and Learning

The synergistic relationship between research and practice includes teachers and researchers communicating goals, activities, and findings with the greater science education community in ways that make research accessible, understandable, meaningful, and relevant to teachers, administrators, and policy makers. Through the bridging of research and practice NSTA can promote science literacy for students in the 21st century as envisioned by *A Framework for K–12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* (NAS 2011).

In response to the need for knowledge of effective science education strategies, the National Science Teachers Association developed Research Dissemination Conferences (RDC) to highlight research topics and NSTA's expanding commitment to bring specific, meaningful, and practical professional development to science educators. By disseminating best practice and current research, RDCs have provided and supported high-quality professional development opportunities for educators since 2005. The goals of RDCs are to share tools and resources that support high-quality and effective science teaching; implement strategies to connect science educators with the broader science community; as well as promote the use of education research to inform policy and practice.

Focused professional development bridging research to instructional practice

The overall objective of this daylong event is to:

- Disseminate current research on K–12 science education to practitioners and policy makers in order to promote its wide application to improve science teaching and student learning;
- Emphasize results that address key issues and concerns such as student achievement, STEM integration, teacher content knowledge, scalability, and sustainability;
- Provide a forum for discussing issues and fostering ongoing collaboration in support of improving science teaching for learning;
- Allow teachers and administrators at school and district levels, as well as professional development providers, to learn about the implications of researchers' work for classroom practice and professional development.

The conference format includes plenary sessions that address issues of general interest and multiple concurrent small group sessions that focus on best practice and current research for a practitioner audience. Breakout session topics will include but are not limited to:

- Online and school-based professional development
- STEM Integration
- Questions, claims, and evidence as part of science assessment
- Formal and informal science education integration
- Science learning through simulations and games
- Science and literacy integration
- Teaching science in a social context

When registering for the conference, participants select breakout sessions that best match their needs and interests. Each breakout session targets the interests of specific groups, such as elementary teachers, secondary teachers, principals, curriculum coordinators, and professional development providers.

The RDC is designed to encourage greater dialogue among researchers, practitioners, and policy makers to bring about a better understanding of science education strategies.

Agenda

7:00–7:45 AM	Continental Breakfast
7:45–8:00 AM	Welcome and Introductions Zipporah Miller, *NSTA Associate Executive Director for Professional Programs and Conferences* Francis Q. Eberle, *NSTA Executive Director*
8:00–8:45 AM	Plenary Session I: *What You Should Know About the Framework for the Next Generation Science Standards*
8:50–10:20 AM	Breakout Block A
10:30 AM–12 Noon	Breakout Block B
12 Noon–12:45 PM	Lunch
12:50–2:20 PM	Breakout Block C
2:25–3:00 PM	Plenary Session II: *Reflection and Discussion*

Looking Toward the New Framework for the Next Generation Science Standards: Breakout Sessions

Breakout Block A (8:50–10:20 AM)
Breakout Block B (10:30 AM–12 Noon)
Breakout Block C (12:50–2:20 PM)
(White River Ballroom, JW Marriott)

Breakout Session 2

How Online Science Professional Development Can Improve Teacher Knowledge, Practice, and Student Learning
Lauren B. Goldenberg, Marian Pasquale, Alice Anderson, and **Camille Ferguson,** Educational Development Center, Inc., Newton, Mass.
Larry Gristanti, Aurora (N.Y.) Public Schools

Breakout Session 3

Mathematics Infusion into Science: Making Connections Across the STEM Curriculum During Middle School
James Lauckhardt, Center for Advanced Study in Education, CUNY Graduate Center, New York, N.Y.
Scott J. McMullen, Retired District Coordinator for Science and Technology, K–12, New York, N.Y.

Breakout Session 4

Increasing the Effectiveness of School-based Professional Development: A Model for Science Teacher Professional Growth: Observing for Evidence of Learning (OEL)
Caroline Kiehle, Center for Inquiry Science at the Institute for Systems Biology, Seattle, Wash.
Kathryn Kelsey, Seattle (Wash.) Public Schools

Breakout Session 5

Integrating Engineering Design Across the Curriculum and into Student Collaboration Skills: A Pedagogical Model for Classroom Practice
Ann P. McMahon, Engineer Educator and K–12 PD Provider, St. Louis, Mo.
Virginia Horowitz, Saul Mirowitz Day School–Reform Jewish Academy, St. Louis, Mo.

Breakout Session 6

Research-based Science Instruction for Climate Change: A Place-based Culturally Responsive Approach
Anne L. Kern and **Bree J. Reynolds,** University of Idaho, Coeur d'Alene
R. Justin Hougham, NASA–Intermountain Climate Education Network (ICE–Net), University of Idaho, Moscow
Gillian H. Roehrig and **Devarati Bhattacharya,** University of Minnesota, Minneapolis

Breakout Session 7

Situating Secondary Science in a Social Context
Lisa A. Borgerding (Donnelly), Alicia R. Crowe, Andrew Hostetler, Rajlakshmi Ghosh, Diane Smith, and **Elizabeth Fein,** Kent State University, Kent, Ohio

Breakout Session 8

SciGames: Integrating Formal and Informal Science Learning Environments to Improve All Students' Motivation and Science Content Knowledge
David Kanter, New York Hall of Science, Queens
Thomas McManus, P.S./M.S. 029 Melrose School, Bronx, N.Y.

Breakout Session 9

Understanding the Role of Questions, Claims, and Evidence in Assessment
Brian Hand, University of Iowa, Iowa City
Lori Norton-Meier, University of Louisville, Ky.
Lynn Hockenberry, Green Hills Area Education Agency, Council Bluffs, Iowa
Josh Steenhoek, Pella Intermediate School, Pella, Iowa

Breakout Session 10

Beyond the "Gee Whiz" Factor: Evaluating and Integrating Simulations and Games for the Science (Chemistry) Classroom
Catherine Milne and **Ruth N. Schwartz,** New York University, New York
Susan Price, Manhattan Comprehensive Day and Night High School, New York, N.Y.

Breakout Session 11

Weaving a Web of Reading and Writing in Science: Strategies for Science Literacy That Stick
Jennifer Hope, Angela Kohnen, and **Cathy Farrar,** University of Missouri–St. Louis
Rose Davidson, St. Joseph's Academy, St. Louis, Mo.
Tonya Barnes, Hazelwood East High School, St. Louis, Mo.

Breakout Session 12

Problems Worth Solving: Implementing CLA-Style Performance Tasks in the K–12 Science Classroom
Marc Chun, Council for Aid to Education, New York, N.Y.
Elizabeth McEneaney, University of Massachusetts Amherst
Alana MacDonald, ABC Unified School District, Cerritos, Calif.

We Have the Answers

Pick up your "NSTA Roadmap" to guide you through member benefits, products, services, programs, and partners—free gifts, too!

Share with Others

- **NSTA Membership.** Learn about NSTA member benefits, pick up a sample journal, and ask about our student chapters and other ways we support young professionals. Take charge of your professional development to become the best teacher you can be.

Enhance Your Skills

- **NSTA Learning Center.** Select high-quality, online learning opportunities to build content knowledge. Use our suite of tools for self-assessment and to document your progress.
- **Web Seminars.** Update your content knowledge with these free, 90-minute, online presentations and join the discussion. Voice questions and share in rich conversations with the presenters and other educators.
- **SciGuides.** Use these online resources, aligned with the national standards, to locate lessons organized by grade level and specific content themes to add to your classroom instruction.
- The **NSTA New Science Teacher Academy** supports science teachers during the often challenging, initial years by enhancing confidence, classroom excellence, and teacher content knowledge.

Expand Your Mind

- **NSTA Press®** publishes 20–25 new titles each year. Browse at the Science Bookstore and connect with authors to have your new book signed. Submit your new book idea to *http://mc.manuscriptcentral.com/nstapress.*
- **SciLinks®**. Link to science resources on the internet using sites recommended by science educators. You'll find vetted websites, effective pedagogy, and reliable content.

Add Your Voice

- **Science Matters,** our major public awareness campaign about science education and science literacy, is designed to rekindle a national sense of urgency and action among schools and families. Register to receive our monthly e-newsletter.
- The **John Glenn Center for Science Education 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 provides 17 awards programs to science teachers, K–College. Learn about them *www.nsta.org*.

Student Competitions:

- **Toshiba/NSTA ExploraVision®** is a team-based, K–12 student competition that awards up to $240,000 in savings bonds annually.
- **THE DUPONT CHALLENGE©** Science Essay Competition is for grades 7–12 students with cash prizes and an expense-paid trip to Disney World® and the Kennedy Space Center.
- **The *Siemens We Can Change the World Challenge, a*** premier national environmental sustainability competition for grades K–12 students, requires creative solutions that impact our planet. More than $300,000 in scholarships and prizes are awarded.
- **Disney's Planet Challenge** is a project-based environmental competition for grades 3–8 students to make a difference in their homes, schools, and communities.
- **Shell Science Lab Challenge** provides science laboratory equipment and professional development support to middle schools and high schools with limited resources. Learn how you can win a $20,000 lab makeover support package.
- **America's Home Energy Education Challenge**, sponsored by the U.S. Dept. of Energy, helps grades 3–8 students learn about energy usage, costs, and conservation for $200,000 in prizes.

NSTA National Science Teachers Association

Carolina Curriculum LEADERSHIP SERIES

Concerned about **STEM, Next Generation, Engineering,** and **Common Core**?

Please join a team of noted educators who've successfully implemented
STEM-oriented curricula in their school districts.

Carolina Curriculum Leadership Series
NSTA National Conference
Room 143, Indiana Convention Center
March 29–30, 2012

These sessions are filled with relevant information:

- Proven tips and techniques for implementing STEM and Next Generation programs that integrate engineering practices
- Strategies for integrating literacy and notebooking into science and math instruction
- Insights into managing change at the district level for increasing student performance and achievement

Thursday, March 29, 2012

An Invitation: Getting Started with the Next Generation Science Framework — **9:30 AM–11:00 AM**
Dr. Anne Grall Reichel — **(Grades E, M)**

From cross-cutting concepts to scientific and engineering practices, explore strategies and approaches that will bring the Next Generation Science Framework to life in your classroom.

Anne Grall Reichel, a faculty member of Lake Forest College, wrote *Expect More: Children Can Do Remarkable Things.*

Engineering in the Elementary and Middle School Classroom: — **11:30 AM–1:00 PM**
Opportunities for Integrating Across Your Curriculum — **(Grades E, M)**
Dr. Ann P. McMahon

Learn to integrate engineering design across your curriculum, develop collaboration skills in your students, and translate engineering processes into classroom best practices.

Ann P. McMahon was co-principal investigator of a Local Systemic Change Initiative in the Midwest.

Integrating Literacy Strategies into Science Instruction — **1:30 PM–3:00 PM**
Terri Sessoms — **(Grades E, M)**

Explore ways to provide students with opportunities to use language while solving meaningful problems. These skills lead to better understanding in writing, speaking, and reading science.

Terri Sessoms won Johnston County's (NC) Teacher of the Year award and the James B. Hunt Outstanding Teacher Award.

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Friday, March 30, 2012

The Science and Writing Connection:
Increasing Achievement of Diverse Learners in Both Domains — **8:00 AM–9:30 AM (Grades E, M)**
Betsy Rupp Fulwiler with Kirsten Nesholm and Ana Crossman

Through hands-on investigation, video, and discussion, learn a research-based approach that integrates inquiry-centered science with graphic organizers, word banks, and writing frames.

Betsy Rupp Fulwiler developed the Expository Writing and Science Notebooks Program for the Seattle Public Schools.

A Natural Fit: Scientific Inquiry and the Integration of Reading and Writing to Address Common Core Standards — **10:00 AM–11:30 AM (Grades E, M)**
Dr. Anne Grall Reichel

Explore the possibilities for the integration of inquiry-based science with reading and writing, and leave with classroom strategies to meet the demands of Common Core Standards.

Anne Grall Reichel, a faculty member of Lake Forest College, wrote *Expect More: Children Can Do Remarkable Things.*

Mathematics + Literacy + the Common Core — **12:00 PM–1:30 PM (Grades E, M)**
Dr. Jennifer L. Altieri

Learn to foster elementary students' literacy growth and strengthen their mathematical knowledge. This session will focus on mathematics standards and ELA Common Core State Standards.

Jennifer L. Altieri is the Division of Literacy Education coordinator in The Citadel's School of Education.

Moving Towards Inquiry: Managing Change in Your District — **2:00 PM–3:30 PM (Grades E, M, H)**
Mark Cheney with Amber Farthing

Using change research can be important to a district's plan. Discover how two regions in Washington State established and have sustained inquiry-based science programs since 1999.

Mark Cheney, co-director of the Heritage 105 Project, developed the South Central Washington LASER Alliance.

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Carolina Curriculum LEADERSHIP SERIES

NSTA Press Sessions

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

Saturday, March 31

8:00–9:00 AM

Teaching Evolution with Video and Activities

Classroom Activities for *Force and Motion: Stop Faking It!*

9:30–10:30 AM

Stop Faking It! Finally Understand Chemistry Basics So You Can Teach It

11:00 AM–12 Noon

Team-Teaching Science—You Can Do It!

12:30–1:30 PM

Promoting Learning Through Formative Assessment

2:00–3:00 PM

Developing Formative Assessment Probes

Read All About It! Teaching Through Trade Books—Authors Share Their New Book

3:30–4:30 PM

Top Ten Challenges of Learning Science

5:00–6:00 PM

Using Predict, Observe, and Explain Activities in Your Classroom

Sunday, April 1

8:00–9:00 AM

Watershed Investigations: 12 Labs for High School Science

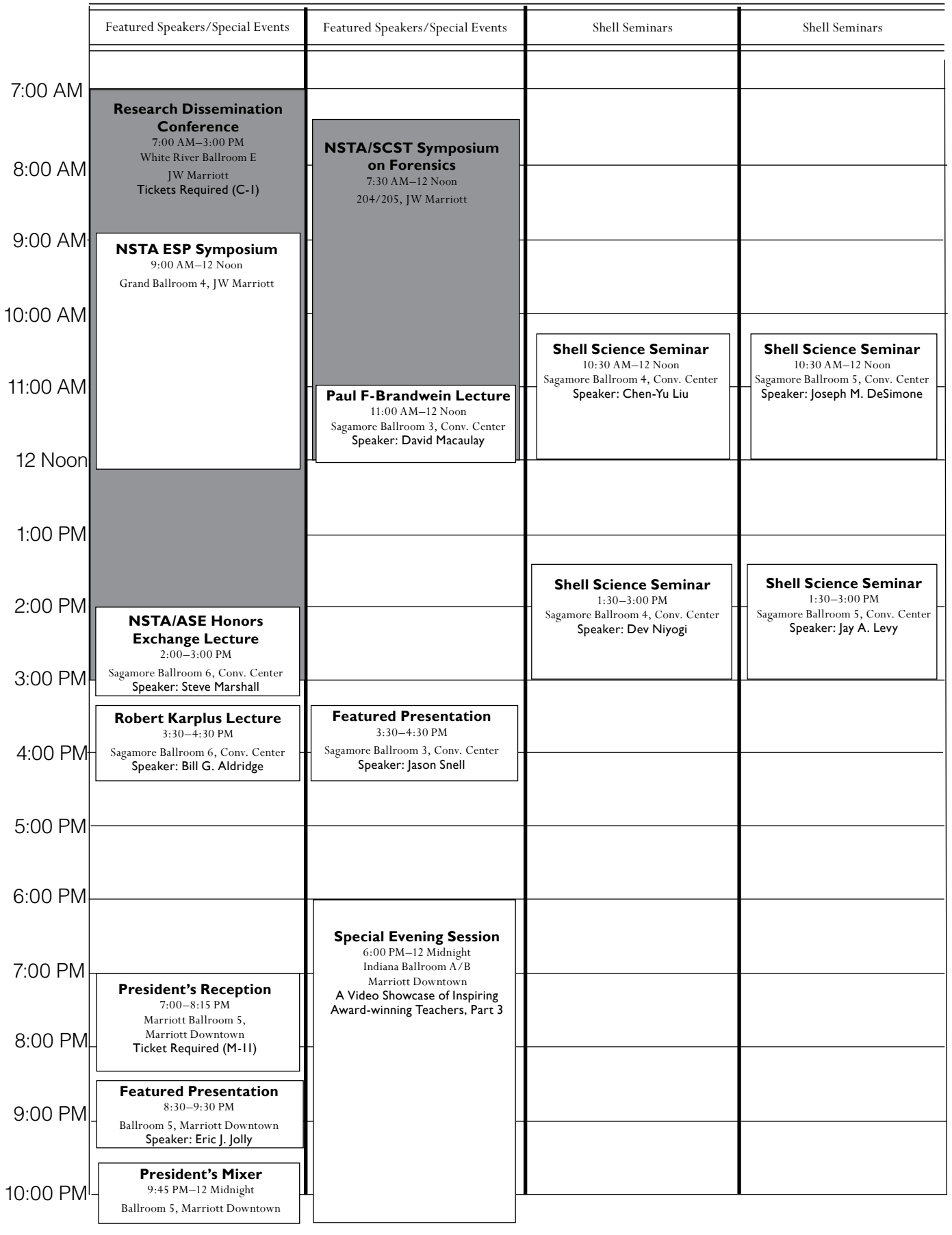
9:30–10:30 AM

Forensics in Chemistry: The Murder of Kirsten K.

11:00 AM–12 Noon

Implementing Research Projects as Part of the STEM Curriculum

Saturday, March 31



Looking for a One-Stop-Shop for Professional Development?

Attend a Conference on Science Education

ATLANTIC CITY
May 17–19, 2012

STEM Forum and Expo

Tools for STEM Education… Preparations and Applications for Elementary and Middle School Educators

Hundreds of STEM-related tools and resources will be shared by exhibiting companies and more than 200 presentations will fall into the following strands:

- PreK–2 (Early Childhood)
- Grades 3–5
- Grades 6–9
- Community/After-School/ Outreach Programs
- Administrators

LOUISVILLE
October 18–20, 2012

Strands:

- Everyday Connections: Science Across the Curriculum
- Everyday Applications: Putting STEM to Work
- Everyday Innovations: Creativity and Problem Solving with Science

ATLANTA
November 1–3, 2012

Strands:

- Providing Access for All Students to the Science in STEM
- Effective and Engaging K–8 Science
- No Student or Teacher Left Inside

PHOENIX
December 6–8, 2012

Strands:

- The STEM Puzzle—Putting It Together
- Sustainability: Growing, Nurturing, and Ensuring Our Future
- Literacy: Communicating and Understanding Science

For more information or to register, visit *www.nsta.org/conferences* or call 1-800-722-6782

NSTA National Science Teachers Association

—*Courtesy of Indiana State Museum*

During the days of the conference, attendees need only show their badge to gain free entrance to the Indiana State Museum as well as The Children's Museum of Indianapolis and the Eiteljorg Museum of American Indians and Western Art (*more details, Vol. 1, page 21*). The Indiana State Museum's collection contains hundreds of thousands of items ranging from prehistoric fossils to current popular culture items and everything in between.

7:00–8:15 AM Breakfast

NSTA Past Presidents Breakfast
(By Invitation Only) *JW Grand Ballroom 1, JW Marriott*

7:00 AM–3:00 PM Research Dissemination Conference

Looking Toward the New Framework for the Next Generation Science Standards: New Research on Promising Practices in Professional Development with a Focus on Curriculum Integration (C-1)
(Tickets Required: $95) *White River Blrm. E, JW Marriott*
Come experience strategies emerging from current research as we move toward understanding and applying the practices of science with literacy, math, engineering, and technology. Join in on the dialogue among researchers, practitioners, and policy makers to bring about a better understanding of science education as we move toward the next generation of standards. See pages 10–12 for complete details.

Continental breakfast and box lunch included in ticket price.

Tickets, if still available, must be purchased at the Ticket Sales Counter in the NSTA Registration Area before 5:00 PM on Friday.

7:30–9:30 AM Breakfast

AMSE/NSTA Minority Caucus George Washington Carver Breakfast
(By Invitation Only) *Grand Ballroom 1, Westin*
Please visit *www.amsek16.org* for more information.

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 128, 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 Indianapolis Conference Committee has planned the conference around the following four strands, enabling you to focus on a specific area of interest or need. Strand events are identified by icons throughout the daily program. For strand descriptions, see page 6.

Mapping Our Way to Success Through the New Core Standards

Pathways to a Sustainable Planet

Merging Inquiry, Creativity, and Innovation Through STEM

Traveling New Instructional Roads Through Technology

Other Icons

The following icons will be used throughout this program.

Global Conversations in Science Education Conference

NSTA Avenue Sessions

NSTA Press Sessions

Professional Development Institutes

7:30 AM–12 Noon NSTA/SCST Symposium

Nature Under Investigation: Forensic Science in the Classroom

(College) *204/205, JW Marriott*

The annual joint symposium by NSTA and the Society for College Science Teachers (SCST) attracts many science teachers with up-to-date teaching strategies and hands-on workshops. This year's symposium focuses on the integration of forensic sciences into the middle school and high school as well as undergraduate college-level classroom. The symposium starts with presentations by two renowned educators in the field of forensic sciences followed by a breakout session that provides participants with hands-on experiences that can directly be translated into the classroom. This symposium is sponsored by the University of Florida, Distance Education program in Forensic Sciences.

8:00–9:00 AM

The Case for Forensic Science in the Classroom

Jay Siegel, Indiana University–Purdue University Indianapolis

The explosion of crime scene investigation programs in the media has fueled interest in forensic science by just about everyone. This is both a positive and a negative. This talk touches on why educators should use this hype to excite students about science and careers in science.

9:15–10:15 AM

Implementation of Forensic Science in the Classroom

Kathy Mirakovits, Portage Northern High School, Portage, Mich.

Forensic science offers educators ways to easily use problem-solving and inquiry techniques coupled with science content in their classroom. Whether it is by infusing a topic into an existing science program or developing a forensic science course, the results are excited students doing science!

10:30 AM–12 Noon

The Mystery of Lyle and Louise: A Forensic Science Curriculum with Hands-On Exercises

Cassie Vickers, Vandalia Research, Inc., Salt Rock, W.V.

The Mystery of Lyle and Louise is a premier forensic science curriculum designed for high school and introductory undergraduate education. Comprised of independent hands-on laboratory modules, Lyle and Louise introduces students to a broad range of techniques in forensic analysis, including DNA Typing, Questioned Document Examination, Forensic Entomology, Blood Spatter Analysis, and more.

8:00–8:30 AM Presentations

SESSION 1

Low-Tech Biotech **(Bio)**

(Middle Level–High School) *208, Convention Center*

Jocelyn C. Koller and **Corrin McBride** *(cmcbrid5@jhu.edu),* Johns Hopkins University, Baltimore, Md.

By examining real-world biotechnology applications, students with limited biology backgrounds can learn the scientific concepts behind these ideas while understanding the importance of each development.

SESSION 2

Science, Math, and Technology "on the Same Wavelength" **(Gen)**

(Middle Level) *243, Convention Center*

Jo Anne Waldrip, Springdale (Ark.) Public Schools

Using the Engineering Design Loop, you can teach your students the necessary skills to solve a range of technological problems.

8:00–9:00 AM Coffee

NSTA Recommends Reviewer/Publisher Coffee

(By Invitation Only) *206, JW Marriott*

8:00–9:00 AM Presentations

SESSION 1

Improve Writing in Science with the Read-Around Strategy **(Gen)**

(Middle Level–High School) *111/112, Convention Center*

William P. Bintz *(wpbintz@gmail.com),* Kent State University, Kent, Ohio

Sara D. Moore *(sdm1146@gmail.com),* ETA/Cuisenaire, Vernon Hills, Ill.

Amy L. Moore *(almoore@henrico.k12.va.us),* Deep Run High School, Richmond, Va.

Receive an overview of the Read-Around strategy, a research-based instructional strategy that highlights student-generated rubrics and peer revision to improve writing in science for grades 6–12.

SESSION 2

Teaching Science for Understanding in a Digital World **(Gen)**

(General) *120, Convention Center*

Chuck McWilliams *(c.mcwilliams@mrhsd.k12.mo.us)* and **Ben Nims** *(b.nims@mrhsd.k12.mo.us),* Maplewood Richmond Heights High School, Maplewood, Mo.

How do you deliver content in an increasingly digital world? Learn how to translate your curriculum and instruction using an online content management system.

SESSION 3

Drilling Through the Core: School Leadership in Transitioning to Common Core Standards (Gen)

(Supervision/Administration) *121, Convention Center*

Linda Lacy *(lacy6@mchsi.com),* NSTA Director, Coordination and Supervision of Science Teaching, Excelsior Springs, Mo.

Join us as a panel of NSTA's Coordination and Supervision members share effective strategies to address challenges in developing school science leadership while transitioning to core standards.

SESSION 4

An Experiential Learning on Sound (Phys)

(High School) *125, Convention Center*

Yang Kian Hong *(khyang@rgs.edu.sg)* and **Tan Poh Poh** *(angela.teo@rgs.edu.sg),* Raffles Girls' School (Secondary), Singapore

Incorporate sound into your physics classroom by having your students explore their own voices and answer questions about pitch and frequencies using a portable multi-sensor interface device.

SESSION 5

Learning Physics Through Experiments: Significance of Students' Interpretation of Error (Phys)

(Middle Level–College) *126, Convention Center*

David C. Bonner *(dbonner@hinsdale86.org),* Hinsdale South High School, Darien, Ill.

Attention will be paid to critical issues and instructional suggestions regarding students' abilities to interpret experimental error in data to correctly identify trends and truly learn from experiments in physics.

SESSION 6

From Generation to Generation (Chem)

(High School) *127, Convention Center*

Mindy Bedrossian *(minjane@aol.com),* Strongsville High School, Strongsville, Ohio

Students interview the elderly to explore how science and technology has changed in their lives, and then create podcasts of the interviews.

SESSION 7

Let's Go Outside: Developing Inquiry Among Early Learners (Gen)

(Preschool) *210, Convention Center*

Marc A. LeFebre *(marcl@councilforee.org),* Council for Environmental Education, Houston, Tex.

Whether on urban asphalt or in the deep woods, outdoor settings provide opportunity for nurturing inquiry, investigation skills, and critical thinking among young children.

SESSION 8

Elementary Engineering for Schools (Gen)

(Elementary) *212, Convention Center*

Keith T. Adams *(ktadams@purdue.edu),* **Pamela McClure** *(pmcclure@purdue.edu),* and **Teresa Morris** *(morrist@purdue.edu),* Network for Earthquake Engineering Simulations, West Lafayette, Ind.

Learn how to meet the National Science Education Standards (and your state standards) in elementary school using engineering principles and inquiry-based instructional techniques.

SESSION 9 (two presentations)

(General) *232, Convention Center*

Science Olympiad and Academic Major Choice: The Power of Student/Teacher Relationships (Gen)

Jennifer H. Forrester *(jforres5@uwyo.edu),* University of Wyoming, Casper

Review research on the impact of student/teacher relationships and selection of a major in a STEM discipline. These relationships were developed during out-of-school time while preparing for Science Olympiad competitions. Hear about the positive impact that teachers had on students' inquiry and creativity nurtured throughout the time spent preparing for the competition.

Creativity, Communication, Collaboration, and Critical Thinking: Building the Four Cs by Building Robots (Gen)

Anita G. Welch *(anita.welch@ndsu.edu),* North Dakota State University, Fargo

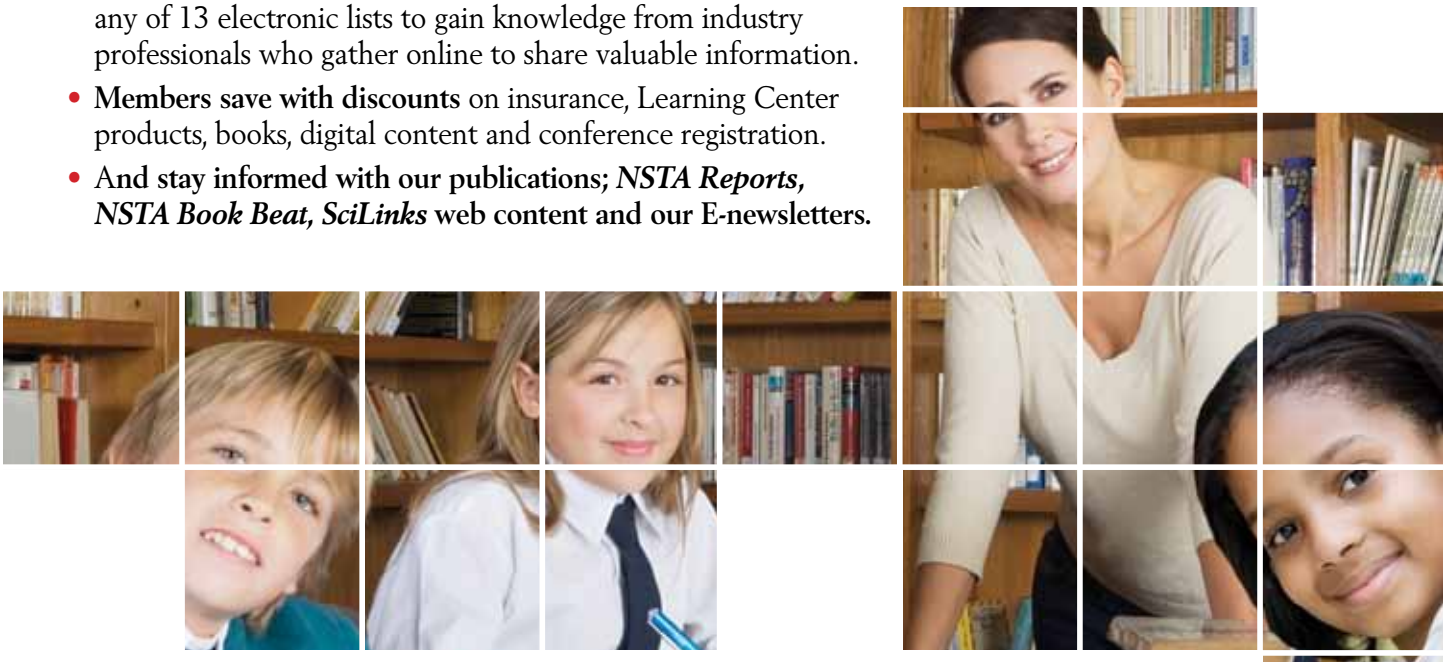
This presentation discusses the impact of robotics competitions on the development of 21st-century skills, such as creativity, innovation, critical thinking, problem solving, communication, and collaboration.

NSTA Membership

Become the Best Teacher You Can Be

Membership in NSTA delivers all the best professional development and resources a science educator needs.

- **Members select one or more of the idea-packed, peer-reviewed journals** designed for all grade levels. *Science and Children* (grades K–6); *Science Scope* (grades 6–9); *The Science Teacher* (grades 9–12), or *Journal of College Science Teaching*.
- **NSTA National and Area Conferences** are the world's largest gathering of science educators—an unparalleled professional development opportunity.
- **The NSTA Learning Center** offers year-round, face-to-face and online-learning opportunities with leading education providers.
- **NSTA Listserver Email Subscriptions** allow members to join any of 13 electronic lists to gain knowledge from industry professionals who gather online to share valuable information.
- **Members save with discounts** on insurance, Learning Center products, books, digital content and conference registration.
- And **stay informed with our publications; *NSTA Reports, NSTA Book Beat, SciLinks* web content and our E-newsletters.**



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

NSTA National Science Teachers Association

SESSION 10

Elementary Students as Renewable Energy Consultants: Changing the World One Greenhouse at a Time (Bio)

(Elementary) *235, Convention Center*

Ken Newbury *(kenneth.newbury@utoledo.edu),* The University of Toledo, Ohio

Peggy T. Riehl *(riehl@gmail.com),* Gesu School, Toledo, Ohio

Mary Obringer *(mobringer@nwstbernard.org),* St. Bernard Catholic School, New Washington, Ohio

Brooke Bradley *(bbradley@ccmtschool.org),* Queen of Apostles School, Toledo, Ohio

Learn how to integrate science content standards in grades 3–5 for renewable energy into an authentic project-based science approach to helping business "grow greener."

SESSION 11

Performance Based Assessments for Chemistry and Physics (Chem)

(Middle Level–College) *236, Convention Center*

Victor J. Chen *(dr.vjchen@gmail.com),* Lee M. Thurston High School, Redford, Mich.

Patti Schaefer *(schaefer1213@yahoo.com),* Mineral Point High School, Mineral Point, Wis.

Join us as we share insights on the rationale for using Performance Based Assessments (PBAs) in physics and chemistry classes, as well as how students can benefit from real-life problem solving associated with accomplishing a task.

SESSION 12

Creating Chemical Animations: A New Assessment Tool (Chem)

(Middle Level–High School) *237, Convention Center*

Sharon Sikora *(sfranz@punahou.edu),* **Paraluman Stice-Durkin** *(pstice-durkin@punahou.edu),* and **Gail A. Peiterson** *(gpeiterson@punahou.edu),* Punahou School, Honolulu, Hawaii

Animating chemical concepts supports learning, understanding, and creativity. Learn about this new assessment tool and how sharing animations online promotes community.

SESSION 13

Simulating Science in the Physical and Earth Science Classroom (Gen)

(Middle Level–High School) *240, Convention Center*

Randy L. Bell *(randybell@virginia.edu)* and **Lindsay Wheeler** *(lsb4u@virginia.edu),* University of Virginia, Charlottesville

Lara K. Smetana *(lksmetana@gmail.com),* Loyola University, Chicago, Ill.

Learn more about finding and using free computer simulations to enhance science instruction. We introduce and model best practices for using simulations effectively.

SESSION 14 (two presentations)

(Elementary–Middle Level/Informal) *242, Convention Center*

Virtual Field Experiences: Bringing the Field into the Classroom (Gen)

Justin Dimatteo *(jdimatt1@dryden.k12.ny.us),* Dryden Elementary School, Dryden, N.Y.

Barbara A. Crawford *(barbarac@uga.edu),* The University of Georgia, Athens

Daniel K. Capps *(daniel.capps@maine.edu),* University of Maine, Orono

Through this experience, you will learn about the basics of virtual field experiences (VFEs) and generate ideas for developing your own.

Scientists Help Others: Student Experiences with an Electronic Field Trip (Gen)

Jamie L. Loizzo *(jloizzo@purdue.edu),* Purdue University, West Lafayette, Ind.

What are students saying about interacting with scientist role models through an electronic field trip? Join us for a review of preliminary findings from a qualitative pilot study.

SESSION 15

ASTC Session: Evaluating Informal Science Education: Tales from the Evaluative Trenches (Gen)

(Informal Education) *103, JW Marriott*

Camellia Sanford *(camellia@rockman.com)* and **Jennifer Borland** *(jennifer@rockman.com),* Rockman et al, Bloomington, Ind.

We will highlight the results of numerous current and recent informal science education evaluation efforts, including museum-based exhibitions and programming, citizen science programs, and educational television programs and websites.

SESSION 16

ASTE Session: Science Stories Across Disciplines: Making Connections in Elementary and Middle School Science (Gen)

(Elementary–Middle Level) *108, JW Marriott*

Janice Koch *(janice.koch@hofstra.edu),* Professor Emerita, Hofstra University, Long Island, N.Y.

Learn creative and innovative ways to use the tools of other disciplines to implement meaningful science experiences through poetry, mathematics, engineering, and art history connections.

SESSION 17

Differentiated Strategies and Tools for Instructional Science Coaches (Gen)

(Supervision/Administration) 201/202, JW Marriott

Hethyr C. Tregerman *(hander3@luc.edu),* Loyola University Chicago, Ill.

Wendy M. Jackson *(wjackso7@depaul.edu)* and **Carla Shortino** *(cshortin@depaul.edu),* DePaul University, Chicago, Ill.

Three science coaches share strategies and tools implemented successfully over several years in an effort to provide differentiated coaching at three stages of teacher development.

SESSION 18

NSTA Press Session: Teaching Evolution with Video and Activities (Bio)

(High School–College/Informal Education) 203, JW Marriott

Rodger W. Bybee, Executive Director Emeritus, BSCS, Golden, Colo.

John I. Feldman *(jfeldman@hummingbirdfilms.com),* Hummingbird Films, Spencertown, N.Y.

Join us as we demonstrate how to use video and activities to teach evolution in high school using examples from *Evo: Ten Questions Everyone Should Ask About Evolution* teacher's guide and DVD.

SESSION 19

National Board Certification and Renewal—What? Why? How? (Gen)

(General) 313, JW Marriott

Susan R. Shepard *(shepards@palmbeach.k12.fl.us)* and **Shari P. Rodgers,** Jupiter High School, Jupiter, Fla.

National Board Certification is worth the effort for you and your students! Learn about the challenges, how to avoid pitfalls, and get tips for success.

SESSION 20

NSF Follow-Up Session: The McMurdo Dry Valleys of Antarctica: Harshest Place on Earth or a Polar Oasis? (Env)

(Middle Level–College) JW Grand Ballroom 2, JW Marriott

Cristina Takacs-Vesbach, University of New Mexico, Albuquerque

The McMurdo Dry Valleys are a region of Antarctica that has been ice free for four million years. Low temperatures, high winds, and no vegetation earn this ecosystem the name the harshest place on Earth.

SESSION 21

Assessing Student Content Knowledge Through the Integration of Science, Art, and Children's Literature (Gen)

(Elementary–High School) JW Grand Ballroom 9, JW Marriott

Orvil L. White *(orvil.white@cortland.edu),* SUNY Cortland, N.Y.

Walk away with ideas and examples of assessing student content knowledge in Earth science. Students express their content knowledge by writing a children's story after a lesson on weathering and erosion using the 5-E learning cycle.

SESSION 22

Creating an Engaging Science Leadership Culture for K–12 and Postsecondary Students with Informal Science Education Programs (Gen)

(General) White River Ballroom F, JW Marriott

Michael Zeman *(mjz120@psu.edu),* Penn State, University Park, Pa.

Discover how to develop strong partnerships between K–12 educators and university faculty/students to deliver engaging and collaborative K–12 STEM-based programs. Learn how to create a science leadership culture through powerful student engagement experiences.

SESSION 23

Tomorrow's Homework, Today! (Gen)

(General) Marriott Ballroom 1, Marriott Downtown

James S. Kopchains *(j.kopchains@lycos.com),* Flushing High School, Flushing, N.Y.

Just as technological innovations have shaped new science lessons in the classroom, students' access to new technologies has created a different concept of homework. Join us as 10-year veterans of the Dial-a-Teacher program in New York City, a national homework helpline, share experiences about the changing aspect of homework in science students' lives.

SESSION 24

Interdisciplinary Approaches to Science Teaching for Enhancing Understanding (Gen)

(Elementary–High School) Marriott Blrm. 3, Marriott Downtown

Rachel M. Ruggirello *(ruggirello@wustl.edu)* and **Phyllis Balcerzak,** Washington University in St. Louis, Mo.

Join the discussion of common topics in life science and physical science and how an interdisciplinary approach can broaden understanding of commonly misunderstood concepts and processes.

SESSION 25

Getting Families Involved with Science In and Out of School (Gen)

(General) *Marriott Ballroom 7, Marriott Downtown*

Tina A. Harris *(taharris79@yahoo.com),* Indiana University, Bloomington

Take Home Labs…Science Backpacks…Family Science Nights—find out how to get families involved with doing science!

SESSION 26 (two presentations)

(General) *Marriott Ballroom 9, Marriott Downtown*

Peer Teaching: Making Science Learning Relevant (Gen)

Matt Sly *(msly@usd116.org)* and **Dennis Migut** *(dmigut@usd116.org),* Urbana High School, Urbana, Ill.

Explore the collaboration between high school and elementary teachers to increase science understanding through peer teaching and engaging students through relevant application.

Teaching Science in Rural Schools: Benefits, Challenges, and Factors Influencing Teacher Retention (Gen)

Kasey P.S. Goodpaster *(scott66@purdue.edu),* **Wilella Burgess** *(wburgess@purdue.edu),* **Gabriela C. Weaver** *(gweaver@purdue.edu),* and **Omolola A. Adedokun** *(oadedok@purdue.edu),* Purdue University, West Lafayette, Ind.

Sandra Laursen, University of Colorado, Boulder

Discuss factors related to attrition and retention of rural science teachers, and examine benefits and challenges teachers experience in these settings.

SESSION 27 (two presentations)
(General) *Cabinet, Westin*
Presider: Gerald L. Ketterling, Valley City State University, Fargo, N.Dak.

OceanLIVE! Web-based Telepresence to Bring Ocean Expeditions to You! (Env)
Tracy Hajduk *(tracy.hajduk@noaa.gov),* **Michiko J. Martin** *(michiko.martin@noaa.gov),* **Kate Thompson** *(kate.thompson@noaa.gov),* and **Claire Fackler,** NOAA Office of National Marine Sanctuaries, Silver Spring, Md.
Make the ocean come alive while teaching STEM lessons using a free web-based resource to bring live and archived ocean science expeditions to your classroom.

Explore the Greater Yellowstone Ecosystem via Technology (Env)
Gerald L. Ketterling, Valley City State University, Fargo, N.Dak.
Environmental issues are explored through a long-distance field experience at Yellowstone National Park. Student inquiries are communicated through the use of blogs on the issues of keystone species, predator/prey relationships, and climate change.

SESSION 28
Eco-Schools USA (Env)
(General) *Capitol II, Westin*
Jennifer R. Hammonds *(hammondsj@nwf.org),* National Wildlife Federation, Reston, Va.
Meet National Wildlife Federation staff and learn how to design and tailor an Eco-Schools program for your school or community. Of international acclaim, Eco-Schools provide educators with a framework to integrate sustainable principles throughout their school and transform students into environmental stewards and sustainability leaders.

SESSION 29 (two presentations)
(Middle Level–High School) *Caucus, Westin*
BioBlitz! Increase Student Awareness of Biodiversity (Env)
Carrie Sanidas *(csanidas@portage.k12.in.us),* Willowcreek Middle School, Portage, Ind.
A BioBlitz is a species inventory. Learn how to prepare for a BioBlitz field trip. Classroom activities, field experiences, stewardship ideas, and resources are shared.

Island Energy Inquiry Professional Development: Content Enrichment and Pedagogical Approaches to Teaching About Energy Sustainability (Env)
Joanna Philippoff *(jphilippoff@gmail.com),* University of Hawaii at Manoa, Honolulu
Join us as we describe and analyze a project that provided energy science professional development with emphasis on content foundations and teaching science as inquiry.

8:00–9:00 AM Workshops

"Ms. Larson, We Have to Think So Much in This Class!" (Bio)
(High School) *122, Convention Center*
Chuck Downing *(cdowning@tvusd.k12.ca.us),* Great Oak High School, Temecula, Calif.
Experience (Yes, actually do it!) a STEM lesson that merges inquiry, creativity, and innovation. Take home the plan for the lesson and lots of new ideas!

Collaborative Instruction for Self-contained Honors, AP, and Exceptional Needs Students (Gen)
(Middle Level–High School) *128, Convention Center*
Peter Fischer *(pfischer@paulding.k12.ga.us),* **Sherrie Chovanec** *(schovanec@paulding.k12.ga.us),* and **Rie Cowan** *(acowan@paulding.k12.ga.us),* Hiram High School, Hiram, Ga.
Receive hands-on conceptual activities that enhance inquiry learning for all levels of learners—from students with disabilities to gifted students. See how student labs in biology and physical science are integrated to prepare all students for standardized state assessments.

Get Students Engaged in Anatomy by Building Body Systems in Clay **(Bio)**
(Middle Level–College) *204, Convention Center*
Tammy Crain *(tcrain@beau.k12.la.us),* South Beauregard High School, Longville, La.
This hands-on workshop will demonstrate successful teaching tips to engage students. Building body systems in clay is fun and increases students' understanding of anatomy.

"Seeing" the Invisible: Exploring the Electromagnetic Spectrum **(Phys)**
(Middle Level–High School) *205, Convention Center*
Christine A. Royce *(caroyce@aol.com),* Shippensburg University, Shippensburg, Pa.
How do we "see" something that exists but is not visible? Participants will explore the properties of light waves—from radio to ultraviolet—in an effort to answer this question.

Get Charged Up! Investigations That Will Electrify Students into Action! **(Phys)**
(Elementary) *207, Convention Center*
Maegan LaBorde *(maegan.laborde@zacharyschools.org),* **Breigh Rainey Rhodes** *(breigh.rhodes@zacharyschools.org),* and **Bianca Deliberto** *(bianca.deliberto@zacharyschools.org),* Zachary Elementary School, Zachary, La.
Spark interest with this inquiry-based, hands-on science extravaganza. Experience "electrifying" activities featuring static electricity, circuits, insulators, and conductors! It's sure to be a stimulating experience!

Digging for Clues Under the Ground **(Bio)**
(Preschool–Elementary) *209, Convention Center*
Brenda B. MacKay, Cedarville University, Cedarville, Ohio
Discover what fun is under the ground. This session goes "down under" through integrated literature, poetry, writing, and science. Come travel "below" for a thrilling adventure.

Connecting Mathematics and Science Through Space Science Activities **(Gen)**
(Elementary) *231, Convention Center*
Deborah A. McAllister *(deborah-mcallister@utc.edu),* The University of Tennessee at Chattanooga
Standards-based activities drawn from space science content can connect mathematics and science topics for grades K–5.

Careers at Sea **(Gen)**
(Middle Level–High School) *234, Convention Center*
Sabreena L. Kasbati and **Jennifer A. Collins** *(jcollins@oceanleadership.org),* Deep Earth Academy, Consortium for Ocean Leadership, Washington, D.C.
Role-play careers aboard an ocean research vessel, the *JOIDES Resolution* (Joint Oceanographic Institutions for Deep Earth Sampling). Learn how these careers support science as you receive live video broadcast resources from experts.

Cholera, Malaria, Influenza, West Nile—After-School Investigations **(Bio)**
(Middle Level) *238, Convention Center*
Barbara Z. Tharp *(btharp@bcm.edu)* and **Nancy Moreno** *(nmoreno@bcm.edu),* Baylor College of Medicine, Houston, Tex.
Are you looking for a new problem-based way to get grades 5–7 students engaged in science after school? With funding from NIH, Baylor College of Medicine has designed a program to let students become "Disease Scene Investigators."

Experimental Design: Scaffolding the Fair Test **(Gen)**
(Elementary–Middle Level) *239, Convention Center*
Becky Litherland *(slitherland@parkwayschools.net),* Parkway School District, St. Louis, Mo.
See how to scaffold the experimental design process/fair test for grades 1–8. Also, learn how the four-question strategy and the variable wheel changes teacher-directed experiments to more student-centered experiences.

BioMath for All! Life Science Quantification Made Easy! **(Bio)**
(High School) *245, Convention Center*
Mark Krotec *(mckrotec@yahoo.com),* Central Catholic High School, Pittsburgh, Pa.
Enhance your biology curriculum with powerful, relevant math analysis strategies designed to greatly improve student experimental design, data analysis, and problem solving.

COSEE Session: The Carbon Cycle **(Earth)**
(High School/Informal Ed) *312, JW Marriott*
Katie Gardner *(kgardner@lsc.org)* and **Kate B. Florio** *(kflorio@lsc.org),* Liberty Science Center, Jersey City, N.J.
Connect concepts of carbon sinks, sources, fluxes, and reservoirs through this kinetic game. Look at natural processes in the context of biogeochemical cycles and climate change.

NSTA Press Session: Classroom Activities for *Force and Motion: Stop Faking It!* (Phys)
(Elementary–High School) JW Grand Ballroom 7, JW Marriott
Bill Robertson *(wrobert9@ix.netcom.com),* Bill Robertson Science, Inc., Woodland Park, Colo.
There's finally a set of classroom activities (grades 5–9) correlated with the *Force and Motion: Stop Faking It!* book. Join the series author for activities from the book and an explanation of how it's organized.

The Science of Chocolate: Digital Resources for Teaching About Chocolate (Bio)
(High School–College) JW Grand Ballroom 8, JW Marriott
Lynn M. Diener *(dienerl@mtmary.edu),* Mount Mary College, Milwaukee, Wis.
Explore the chemistry and biology of chocolate using primary literature and digital resources.

DuPont Presents—Natural Selection and Antibiotic-resistant Bacteria (Bio)
(High School/Supervision) Colorado, Marriott Downtown
Donna Parker *(dcall@zoomnet.net),* Dublin Coffman High School, Dublin, Ohio
Presider: Peggy Vavalla, DuPont, Wilmington, Del.
Explore the effects of antibiotics on a population of disease-causing bacteria during an infection. Data is collected and graphed representing populations of more- and less-resistant bacteria.

Become Next-Generation-Ready Using the 5Es (Gen)
(General) Indiana Ballroom F, Marriott Downtown
Sally Creel *(sally.creel@cobbk12.org),* Cobb County Schools, Marietta, Ga.
The new Next Generation Science Standards require more than rote memorization and fact-based learning. Come learn simple strategies to incorporate the 5Es—Engage, Explore, Explain, Elaborate, and Evaluate—into your classroom.

Nanoparticles: Engaging Students with Hands-On Nanotechnology Laboratory Activities (Gen)
(Middle Level–College) Marriott Blrm. 8, Marriott Downtown
Joe Muskin *(jmuskin@illinois.edu),* University of Illinois, Urbana
Barbara Hug *(bhug@illinois.edu),* University of Illinois at Urbana-Champaign, Champaign
David Bergandine, University Laboratory High School, Urbana, Ill.
Nanoparticles offer interesting opportunities to solve modern problems. Make nanoparticles and learn how to apply them to either a chemistry or biology classroom.

EARTH (Education and Research: Testing Hypotheses) Activities in the Classroom! (Env)
(Middle Level–High School) Capitol I, Westin
Barbara J. Simon-Waters *(barbarasimonwaters@gmail.com),* Morehead City, N.C.
Katie Lodes *(klodes@stjosephacademy.org),* St. Joseph's Academy, St. Louis, Mo.
Experience marine science, biology, and Earth science activities developed during the EARTH workshops sponsored by Monterey Bay Aquarium Research Institute. Activities have been classroom tested!

Making Waves: Seismic Waves Activities and Demonstrations (Earth)
(Middle Level–High School) Capitol III, Westin
Sheryl J. Braile *(sjbraile@gmail.com),* Happy Hollow Elementary School, West Lafayette, Ind.
Lawrence W. Braile *(braile@purdue.edu),* Purdue University, West Lafayette, Ind.
Engage in hands-on activities and learn about effective animations and software that demonstrate important seismic wave characteristics and propagation.

Houghton Mifflin Harcourt / Holt McDougal

What Works Workshops for 21st-Century Classrooms

Indiana Convention Center • Room 104

WORKSHOPS

Thursday, March 29

7:30AM–9:00AM — **Effective STEM Challenges for the Classroom**
Author Presenter: Michael DiSpezio

9:30AM–11:00AM — **That's Amazing! Explore the Bizarre, Cool, and Exciting World of Project-Based Biology**
Author Presenter: Michael Heithaus

11:30AM–1:00PM — **Misconception Mania: Exciting and Engaging Ways to Address Common Misunderstandings in K–8**
Author Presenter: Michael DiSpezio

1:30PM–3:00PM — **New Physics for New Students: Guiding Them as They See It for the First Time**
Consultant Presenter: Beth Swayze

Friday, March 30

10:00AM–11:30AM — **Connecting to Chemistry: Igniting Student Motivation with STEM Examples and Ideas**
Author Presenter: Michael DiSpezio

12:00PM–1:30PM — **Sparking Interest and Learning with Chemistry: A Part 1 Experience**
Author Presenters: Mickey and Jerry Sarquis

2:00PM–3:30PM — **Ecology Adventures: Motivating Students through Project-Based Learning**
Author Presenter: Michael Heithaus

4:00PM–5:30PM — **Sparking More Interest with Chemistry: A Part 2 Experience**
Author Presenters: Mickey and Jerry Sarquis

Saturday, March 31

8:00AM–9:30AM — **Sparking Interest and Learning with Chemistry: A Part 1 Experience**
Author Presenters: Mickey and Jerry Sarquis

10:00AM–11:30AM — **Extra, Read All About It! Taking Biology from the News to the Classroom**
Author Presenter: Stephen Nowicki

12:00PM–1:30PM — **Sparking More Interest with Chemistry: A Part 2 Experience**
Author Presenters: Mickey and Jerry Sarquis

Stephen Nowicki

Author of **Holt McDougal *Biology*** will be signing copies of the Teacher's Edition immediately after his workshop on **Saturday, March 31,** in **Booth #1467**

Visit us at Booth #1467.

Fire and Ice: NASA's MESSENGER and New Horizons Space Exploration Missions (Earth)
(Middle Level–High School) *Grand Ballroom 2, Westin*
Alexandra Matiella Novak *(alexandra.matiella.novak@jhuapl.edu),* Johns Hopkins University Applied Physics Laboratory, Laurel, Md.
Join us for an interactive workshop focusing on NASA's MESSENGER mission to Mercury as well as NASA's New Horizons mission to Pluto and beyond.

NESTA Session: Activities from Across the Earth System (Earth)
(Informal Education) *Grand Ballroom 5, Westin*
David F. Mastie *(mastie@umich.edu),* Retired Educator, Chelsea, Mich.
Roberta M. Johnson *(rmjohnsn@gmail.com),* National Earth Science Teachers Association, Boulder, Colo.
In this fast-paced workshop, educators and scientists share their repertoire of inquiry-based hands-on activities spanning the five "spheres" of Earth system science. Handouts!

8:00–9:30 AM Exhibitor Workshops

Making Science Accessible to English Language Learners (Gen)
(Grades 3–8) *101, Convention Center*
Sponsor: Benchmark Education Co.
Jennifer Boyle, Benchmark Education Co., Pelham, N.Y.
Comprising the fastest growing segment of our student population, ELLs have extra challenges compared to native speakers. This interactive hands-on session connects research to best practices, integrating key language, literacy, vocabulary strategies, and authentic assessment. These strategies can be implemented with any student needing support in mastering content and gaining confidence. Handouts!

Fuel Cell Technology in Your Classroom—Powered by h-tec (Gen)
(Grades 7–College) *102, Convention Center*
Sponsor: KidWind Project
Michael Arquin *(joe@kidwind.org),* KidWind Project, St. Paul, Minn.
Interested in exploring how fuel cell technology can excite your students? Tired of fuel cell equipment that isn't made for advanced laboratories? KidWind has partnered with h-tec to explore how fuel cell technology can change your classroom. Handouts!

A Picture Book Approach to Child Literacy, Language Learning, and the Sciences (Gen)
(Grades K–5) *103, Convention Center*
Sponsor: Sylvan Dell Publishing
Lee B. German, Sylvan Dell Publishing, Mount Pleasant, S.C.
Learn about a comprehensive professional development program that integrates picture books, high-format eBook technology, and online supplemental resources to improve literacy education in preK–elementary classrooms. Tightly coupled with nonfiction material from the back of each book and supplemental online activities, the books create their own teachable moments and opportunities for experiential learning.

Sparking Interest and Learning with Chemistry: A Part 1 Experience (Chem)
(Grades 9–12) *104, Convention Center*
Sponsor: Houghton Mifflin Harcourt
Mickey Sarquis, Terrific Science, Healdsburg, Calif.
Jerry Sarquis, Professor Emeritus, Miami University, Oxford, Ohio
Join Jerry and Mickey Sarquis, recognized leaders in chemistry education and authors of *Modern Chemistry,* for a session filled with hands-on activities and ongoing demos using inexpensive and readily available materials. Learn how to spark imagination and interest in chemistry with simple but powerful tricks and tips! *Note:* The Part 2 (page 63) experience will include a unique set of activities.

Team America Rocketry Challenge: Rocketry in the Classroom (Earth)
(Grades 7–12) *105, Convention Center*
Sponsor: Aerospace Industries Association
Anne Ward *(rocketcontest@aia-aerospace.org),* Aerospace Industries Association, Arlington, Va.
Melissa Lapps *(rocketcontest@aia-aerospace.org),* American Association of Physics Teachers, College Park, Md.
Ann Grimm *(rocketcontest@aia-aerospace.org),* Estes-Cox Corp., Penrose, Colo.
The Team America Rocketry Challenge (TARC) is the world's largest rocket contest. TARC challenges students to build a rocket that carries a raw egg payload. Now it's your turn! Join us to build an Estes rocket, receive lesson plans

on the physics of rocketry from AAPT, and learn how to launch your students into aerospace.

Adventure into the Digital Biology Classroom: Revolutionizing Science Education (Bio)
(General) *106, Convention Center*
Sponsor: Animalearn
Laura Ducceschi *(info@animalearn.org)* and **Nicole Green** *(info@animalearn.org),* Animalearn, Jenkintown, Pa.
Join Animalearn's The Science Bank on a tour of cutting-edge technology! Our free lending library offers more than 500 innovative science teaching tools, including the latest dissection software, realistic models, and simulations.

Finding Funds for Biotech - Grant Writing Workshop (Bio)
(Grades 7–College) *107, Convention Center*
Sponsor: Bio-Rad
Stan Hitomi *(biotechnology_explorer@bio-rad.com),* San Ramon Valley Unified School District, Danville, Calif.
Whether you are looking to start by introducing a few hands-on labs or by building an entire biotechnology program at your school, this workshop will prepare you to get started immediately to turn your dreams into a reality. By attending, you will get a number of grant writing tools, including samples of proposals, letters of support, budgets, and justifications to get you started. For a practical application of the new tools, participants are encouraged to submit proposals for a competitive grant from Bio-Rad for $2,000 in materials.

***Living By Chemistry:* What Shape Is That Smell? (Chem)**
(Grades 9–12) *108, Convention Center*
Sponsor: W.H. Freeman of Bedford, Freeman & Worth (BFW) Publishers
Jeffrey Dowling *(jeffrey.dowling.contractor@bfwpub.com),* HPHLP Representing Bedford, Freeman & Worth Publishing Group, Hamilton, N.J.
Angy Stacy, University of California, Berkeley
Teach rigorous chemistry with guided inquiry! Let's explore activities that help students understand molecular structure and other core chemistry concepts using the context of smell. Take home free sample lessons and materials from the *Living By Chemistry* curriculum.

Calling All Indiana Teachers! We Have a Discovery Education Science Techbook JUST for You! (Gen)
(Grades K–12) *110, Convention Center*
Sponsor: Discovery Education
Patti Duncan, Wallenpaupack Area School District, Hawley, Pa.
Discovery Education Science has aligned a wealth of resources to the Indiana State Science Indicators. This collection of lesson plans, media, virtual labs, interactive glossary terms, assessments, and hands-on activities is a must-see for all science teachers! Come see what the Indiana Science Techbook looks like and how it can be a valuable addition to your curriculum.

Physics with Vernier (Phys)
(Grades 9–College) *116, Convention Center*
Sponsor: Vernier Software & Technology
Matt Anthes-Washburn *(info@vernier.com)* and **David L. Vernier** *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
Experiments such as sound waves and motion of a cart on a ramp from our popular *Physics with Vernier* lab book will be performed. A variety of new physics accessories such as the Optics Expansion Kit will be available to try as well. Conduct these experiments using LabQuest and LabQuest Mini.

Introducing Vernier DataQuest™ Data Collection for TI-Nspire™ Technology (Gen)
(Grades 7–College) *117, Convention Center*
Sponsor: Vernier Software & Technology
Verle Walters *(info@vernier.com)* and **Mike Collins** *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
Come try our new DataQuest application for TI-Nspire technology. DataQuest brings full-featured data collection to Texas Instruments' next-generation calculator. DataQuest is an easy-to-use application with many features you have come to expect from Vernier, including multichannel data collection, expanded sensor support, and powerful data analysis features.

Iron Teacher—STEM Edition! (Bio)
(Grades 7–12) *130, Convention Center*
Sponsor: WARD'S Natural Science
Tim Montondo, VWR Education, Rochester, N.Y.
Take part in this fast-paced hands-on workshop that is also a contest to see who can engineer the best life science experiment that incorporates math, technology, and secret ingredients in 30 minutes or less! The teacher who wins takes home a prize.

Teaching the Chemistry That Students Need to Know (Chem)
(Grades 9–12) *131, Convention Center*
Sponsor: Kendall Hunt Publishing Co.
Kelly Morgan Deters *(kellymorganscience@gmail.com),* Kansas State University, Manhattan
Help students understand the role that chemistry plays in their daily lives with an engaging curriculum that features hands-on science activities set in real-world contexts. Learn how *Kendall Hunt Chemistry* presents science concepts within 12 chapter themes and uses the same need-to-know order used by practicing scientists.

Meet and Greet Your Co-Teacher Zeno, the Robot (Gen)
(Grades 9–12) *132, Convention Center*
Sponsor: Hanson RoboKind
Dan Speers *(danspeers@comcast.net),* Crowell Educational Publishing, Haverhill, Mass.
Robot instructors are coming! Zeno, the robot, teaches science, technology, engineering, and math…and basic programming in computer science. In this workshop, you will take charge of an actual working robot and learn how to direct it as well as how it delivers the next generation of information technology.

New Tools, New Insights, and New Ways of Understanding Science with *Miller & Levine Biology* (Bio)
(Grades 9–12) *133, Convention Center*
Sponsor: Pearson
Kenneth R. Miller, Brown University, Providence, R.I.
Joseph Levine, Author, Concord, Mass.
Students are changing—their abilities and interests are more diverse, their learning styles are more varied, and they are growing up "wired" into the internet and other new media. Join authors Ken Miller and Joe Levine as they provide teaching strategies on how to use *Miller & Levine Biology* to put the power of new science and technology directly into the hands of you and your students.

Forensics Made Easy—See What's New! (Bio)
(Grades 7–12) *135, Convention Center*
Sponsor: Swift Optical Instruments, Inc.
David Doty *(david@swiftoptical.com)* and **Cynthia Syverson-Mercer** *(cynthia@swiftoptical.com),* Swift Optical Instruments, Inc., San Antonio, Tex.
From the latest in equipment to the ease of software applications, Swift makes teaching forensics fun for your students and easy on your budget. Swift's new comparison microscope allows you to examine evidence side by side. Motic Trace software goes even further and lets you compare, annotate, and make definitive conclusions! Join us for a lively investigative demonstration…be part of our crime-solving team!

Water Education Writing Workshop (Env)
(Grades K–12) *137, Convention Center*
Sponsor: Project WET
Laurina I. Lyle *(laurina.lyle@projectwet.org),* Project WET Foundation, Bozeman, Mont.
Project WET (Water Education for Teachers) is hosting a development workshop for preK–12 preservice and inservice educators. Your experience and expertise are extremely valuable in shaping and advancing the progress of 21st-century cutting-edge water education using the latest methods in pedagogy. Please join us for this workshop; refreshments provided.

Environmental Science Activities—Inside and Outside (Env)
(Grades 7–12) *138, Convention Center*
Sponsor: Forestry Suppliers, Inc.
Debbie Raddin *(raddind@forestry-suppliers.com),* Forestry Suppliers, Inc., Jackson, Miss.
Emphasis will be placed on environmental science activities involving water, air, and soil testing. Conduct and discuss indoor and outdoor classroom activities with take-home samples. Learn about new data collection and analysis techniques available for the classroom. LaMotte products will be highlighted as well as other related equipment for specific studies.

AP® Physics: Momentum and Impulse (Phys)
(Grades 9–12) *140, Convention Center*
Sponsor: PASCO scientific
Presenter to be announced
In this standards-based, probeware lab activity from PASCO's new *Advanced Physics Teacher Guide,* you'll explore the physics of collisions, forces, and momentum. In this hands-on workshop, you'll learn how to meet AP lab requirements and build a deeper student understanding of the required content, all while using PASCO's powerful NEW Capstone application and 850 Universal Interface.

Rats! Inquiry-based Dissection with Carolina's Perfect Solution® Specimens (Bio)
(Grades 6–12) *144, Convention Center*
Sponsor: Carolina Biological Supply Co.
Andrew Uy, Carolina Biological Supply Co., Burlington, N.C.
Rats are a great way to explore mammalian anatomy because

of their mature organ systems. Experience Carolina's Perfect Solution rats as you explore external and internal anatomy through guided dissection. Tips on inquiry-based dissection will be discussed. Carolina's Perfect Solution rats are safe, nontoxic, and convenient.

Making Guided Inquiry Work in Five Steps with Carolina's Inquiries in Science® (Bio)
(Grades 9–12) *145, Convention Center*
Sponsor: Carolina Biological Supply Co.
Mary Alexander, Carolina Biological Supply Co., Burlington, N.C.
Want to crack the mystery of genetics for your students? Learn how to incorporate a 5E learning cycle into your biology curriculum and create a guided inquiry lab for your students. Experience how Carolina's Inquiries in Science Biology Series units can increase student achievement on difficult concepts. Free materials provided.

Explore Electricity Flow, Electromagnets, and Generating Electricity (Phys)
(Grades 5–8) *201, Convention Center*
Sponsor: Japan Artec, Inc.
Stephen Matthew Skeen, Japan Artec, Inc., Yao-Shi, Osaka
Sample experiments using Japan Artec products that allow you to observe electricity flow, view the poles of an electromagnet, generate electricity, and create an electrical motor. As each student builds a kit, he or she will gain a deeper understanding of electromagnetism. Take home free teaching materials.

Engaging Elementary Learners in STEM with LEGO® Education (Phys)
(Grades 1–5) *202, Convention Center*
Sponsor: LEGO Education
Presenter to be announced
Explore key STEM concepts using LEGO bricks! With LEGO Education, teachers create a stimulating hands-on learning experience, helping students engage their minds so they're ready for tomorrow's challenges. From simple machines to robotics, with LEGO Education YOU are the facilitator of an active learning environment. Experience firsthand LEGO Education resources that cover core subjects and meet key learning standards in science and math.

Fat Dogs and Coughing Horses: Delivery of a Ninth-Grade Curriculum, Part I (Bio)
(Grades 9–12) *Wabash Ballroom 2, Convention Center*
Sponsor: Purdue University
Jennifer Veatch *(jveatch@cville.k12.in.us),* Crawfordsville High School, Crawfordsville, Ind.
Joe Ruhl *(jruhl@lsc.k12.in.us),* Lafayette School Corp., Lafayette, Ind.
By applying examples from veterinary and human medicine involving the role of animals in keeping people healthy, explore a high school biology unit designed to teach standard concepts such as the scientific method, compound and dissecting microscope use, life cycles, cells, and biochemistry. This Science Education Partnership Award (SEPA) workshop is supported by the National Center for Research Resources, a part of the National Institutes of Health and Purdue University. See page 50 for Part II.

8:00–11:00 AM Short Courses

Young Investigators in Environmental Health Science: Challenging and Exciting Young Minds with Novel, Inquiry-based Environmental Activities (SC-13)
(Elementary) *Fisher Ballroom B, Omni*
Tickets Required: $19
Sara Swearingen Peterson *(sswearingen@smithvilleisd.org)*, Smithville (Tex.) Independent School District
Jason Peterson *(jpeterson@smithvilleisd.org)*, Smithville Elementary School, Smithville, Tex.
Heather Reddick *(hreddick@mdanderson.org)*, The University of Texas MD Anderson Cancer Center, Smithville
For description, see Volume 1, page 74.

Be a Winner! Get a Grant and Your Students Win, Too (SC-14)
(Elementary–High School) *Gates, Omni*
Tickets Required: $36
Kitchka Petrova, NBCT *(kpetrova7@dadeschools.net)*, Ponce de Leon Middle School, Coral Gables, Fla.
Patty McGinnis, NBCT *(pmcginnis@methacton.org)*, Arcola Intermediate School, Eagleville, Pa.
For description, see Volume 1, page 74.

8:00–11:30 AM Short Course

Thinking Green with Dr. Seuss (SC-15)
(Grades 4–12) *Fisher Ballroom A, Omni*
Tickets Required: $46
Leslie Suters *(lsuters@tntech.edu),* **Melissa Comer** *(mcomer@tntech.edu),* and **Sarah Keller** *(skeller@tntech.edu),* Tennessee Tech University, Oak Ridge
For description, see Volume 1, page 74.

8:00 AM–12 Noon Short Course

Explore Plate Tectonics and Earthquakes Through Web Tools and Apps (SC-16)
(Middle Level–High School) *McClellan, Omni*
Tickets Required: $22
Shelley Olds *(olds@unavco.org),* UNAVCO, Boulder, Colo.
John Taber *(taber@iris.edu)* and **Michael Hubenthal** *(hubenth@iris.edu),* IRIS Consortium, Washington, D.C.
Nancy West *(nancywwest@gmail.com),* Quarter Dome Consulting, Fort Collins, Colo.
For description, see Volume 1, page 75.

8:00 AM–5:00 PM Meeting

NSTA Student Chapter Showcase and Lounge
CSO5 (Hall E), Convention Center
This three-day showcase features interactive sessions presented by NSTA Student Chapter faculty advisors, student leaders, and members highlighting campus and community activities, hands-on demonstrations, discussion groups, and more. In between sessions, the room will serve as a lounge for preservice teachers, new teachers, or faculty advisors to meet, network, and share ideas.

8:15–9:15 AM Meeting

NSTA Past Presidents Advisory Board Meeting
JW Grand Ballroom 1, JW Marriott

8:30–9:00 AM Presentations

SESSION 1
High-Altitude Balloons: A Context for Inquiry in the University and Middle School Classroom (Gen)
(Middle Level/College) *Marriott Blrm. 2, Marriott Downtown*
Melissa A. Mitchell *(mmitchell@bsu.edu)* and **Kay I. Roebuck** *(kroebuck@bsu.edu),* Ball State University, Muncie, Ind.
Bianca N. McRae *(bnmcrae@bsu.edu),* Burris Laboratory School, Muncie, Ind.
Learn about a National Science Foundation program that uses the exploration of near space to teach essential STEM skills and processes.

SESSION 2
Scientific Literacy in the Natural Science Disciplines (Gen)
(College) *314, JW Marriott*
Deborah K. Flynn *(d.k.flynn@tcu.edu),* Texas Christian University, Fort Worth
What does scientific literacy look like in the college science classroom? Find out based on my dissertation research at Southwestern University.

8:30–9:30 AM Presentation

SESSION 1
Teacher Researcher Day Session: Poster Session for Teachers and Teacher Educators Inquiring into Science Learning and Teaching (Gen)
(General) *JW Grand Ballroom 5, JW Marriott*
Emily H. van Zee, Oregon State University, Corvallis
Deborah L. Roberts-Harris *(drobertsharris@gmail.com),* University of New Mexico, Albuquerque
Find out what questions teachers and teacher educators are asking and how they are exploring these questions in their own classrooms.

8:30–10:30 AM Meeting

Shell Judging Panel Meeting
(By Invitation Only) *Atlanta, Marriott Downtown*

9:00–10:00 AM Workshop

COSEE Session: Tiny but Toxic! Teaching About Harmful Algal Blooms (Env)

(Middle Level–High School/Informal Ed) *312, JW Marriott*

Pat Harcourt *(pharcour@usc.edu),* Wrigley Institute for Environmental Studies, University of Southern California, Los Angeles

Join me as the Centers for Ocean Sciences Education Excellence (COSEE) West share lesson plans and ideas for making this dramatic and timely topic local and academically relevant.

9:00–10:30 AM Exhibitor Workshop

FREE Classroom Resources from HHMI for Teaching Evolution (Bio)

(Grades 9–College) *109, Convention Center*

Sponsor: Howard Hughes Medical Institute

Satoshi Amagai and **Jennifer D. Bricken,** Howard Hughes Medical Institute, Chevy Chase, Md.

Discover classroom-ready lessons, hands-on activities, animations, and video clips to help you teach central and difficult biological concepts in evolution, such as selection, phylogenetic trees, drug resistance, and biodiversity, and the molecular genetics behind them. These free, engaging multimedia resources include inquiry-based investigations, and data collection, analysis, and computation.

9:00 AM–12 Noon NSTA ESP Symposium

NSTA's Exemplary Science Programs (ESP): Meeting the Reform Features Recommended in the National Science Education Standards (Gen)

(General) *JW Grand Ballroom 4, JW Marriott*

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

The ESP series identifies people and places where the reforms recommended have emerged, including 1) Exemplary Science in Grades PreK–4; 2) Exemplary Science in Grades 5–8; 3) Exemplary Science in Grades 9–12; 4) Exemplary Science: Best Practices in Professional Development; 5) Inquiry: The Key to Exemplary Science; 6) Exemplary Science in Informal Education Settings; and 7) Exemplary Science for Resolving Societal Challenges. The exemplars are discussed in ESP symposia at all NSTA conferences.

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

Coordinators: Robert E. Yager (robert-yager@uiowa.edu), *University of Iowa, Iowa City; Bonnie Brunkhorst, California State University, San Bernardino*

Student Inquiry and Research (from ESP #5)

Judith A. Scheppler *(quella@imsa.edu),* Illinois Mathematics and Science Academy, Aurora

Thinking Outside the Box (from ESP #1)

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

Inquiry Is Elementary (from ESP #5)

Patricia C. Paulson *(patricia-paulson@bethel.edu),* Bethel University, Arden Hills, Minn.

Linking Science, Technology, and Society (from ESP #7)

Barbara Hug *(bhug@illinois.edu),* University of Illinois at Urban-Champaign, Champaign

9:00 AM–12 Noon Exhibitor Workshop

Using the NSDL Science Literacy Maps (Gen)

(Grades 6–12) *203, Convention Center*

Sponsor: AAAS

Marlene Hilkowitz, Science Education Consultant, Glenside, Pa.

Join us for this workshop introducing users to learning progressions and the Science Literacy Maps, a concept-browsing interface for locating K–12 teaching resources in the National Science Digital Library (NSDL).

9:00 AM–5:00 PM Exhibits

Exhibit Hall F, Convention Center

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

9:00 AM–5:00 PM Meeting

NSTA International Lounge

107, JW Marriott

Please stop by the NSTA International Lounge to relax or meet colleagues while you're at the conference. The lounge is open Thursday through Saturday, 9:00 AM–5:00 PM.

9:30–10:00 AM Presentation

SESSION 1

The 6th E (Express): A Tested Modification of the 5E Instructional Model Aimed at Targeting the Needs of ALL Learners (Gen)

(General) *Marriott Ballroom 2, Marriott Downtown*

Emilio Duran *(eduran@bgsu.edu)* and **Jodi J. Haney** *(jhaney3@mac.com),* Bowling Green State University, Bowling Green, Ohio

Attention will be paid to the modification of the 5E (Engage, Explore, Explain, Elaborate, and Evaluate) instructional model to address the needs of ALL learners.

9:30–10:30 AM Presentations

SESSION 1

Engineer Design Challenge: Spacecraft Structures (Gen)

(Middle Level–High School/Informal) *111/112, Conv. Center*

Kristy Hill *(kristy.hill@nasa.gov),* NASA Marshall Space Flight Center, Huntsville, Ala.

Come learn about a student challenge that involves building a model thrust structure (the portion of the structure that attaches the engine to the rest of the spacecraft) that is as light as possible, yet strong enough to withstand the load of a "launch to orbit" three times. As a culmination, students compile their results onto a poster and present it to their class.

SESSION 2

Get Technology Down to a Science (Gen)

(General) *120, Convention Center*

Merri K. Herndon *(mherndon@sdale.org),* Helen Tyson Middle School, Springdale, Ark.

Jo Anne Waldrip, Springdale (Ark.) Public Schools

Walk away with classroom-tested techniques that infuse English language learner strategies and technology into inquiry-based science units. Door prizes and classroom-ready activities provided.

SESSION 3

Differentiating Content, Process, and Product via Strategies to Promote Understanding of Science Among Students with Special Needs (Gen)

(Elementary–High School) *121, Convention Center*

Gregory Borman *(gborman@ccny.cuny.edu),* The City College of New York, N.Y.

Derek Ramdass *(dramdas@schools.nyc.gov),* New York City Dept. of Education, Brooklyn, N.Y.

Lionel Callender *(lcallen4@schools.nyc.gov),* New York City Dept. of Education, Floral Park, N.Y.

Presider: Compton Mahase, Fieldston High School, Bronx, N.Y.

Incorporating nine elements of differentiated instruction for content, process, and product leads to deeper understanding of science concepts and process for students with disabilities.

SESSION 4

Catch a Wave! (Phys)

(Middle Level–High School) *125, Convention Center*

Elaine Gwinn *(jegwinn@hotmail.com),* Shenandoah High School, Middletown, Ind.

Engage and explore the world of waves, sound, and light—demos and activities will be shown that use inquiry methods that can energize your classroom.

SESSION 5

The 50 Best Physics Demos to Do Before You Die (Phys)

(Informal Education) *126, Convention Center*

Peter Hopkinson *(phopkinson@shaw.ca),* Vancouver Community College, Vancouver, B.C., Canada

Well, maybe not quite 50, but we'll get to as many as we can, and they're certainly the best!

SESSION 6

***"I Actually Feel Like a Scientist!"* Student Perceptions of a Research-based Chemistry Experience (Chem)**

(High School) *127, Convention Center*

Kim S. Kingery *(kkingery@purdue.edu),* **Gabriela C. Weaver** *(gweaver@purdue.edu),* and **Matthew Pilarz** *(mpilarz@purdue.edu),* Purdue University, West Lafayette, Ind.

Learn about high school students' research-based laboratory experience and how their discourse and self-confidence in the lab progressed.

SESSION 7

Adaptations and Improbable Foundations: Evolution Misconceptions Uncovered and Assessed (Bio)

(Elementary–Middle Level) *204, Convention Center*

Jaimie L. Miller-Friedmann *(jlmiller@cfa.harvard.edu) and* **Philip M. Sadler** *(psadler@cfa.harvard.edu),* Harvard-Smithsonian Center for Astrophysics, Cambridge, Mass.

Students hold alternative conceptions in every subject, including evolution. What do students truly believe? Which concepts in evolution are the most controversial? Learn about our newly developed item inventory in elementary and middle school life science.

SESSION 8

Teaching an Integrated Unit on the Cell (Bio)

(Elementary–High School) *209, Convention Center*

David Purvis *(david.purvis@marist.edu),* Marist College, Poughkeepsie, N.Y.

Learn how to design interesting classes for a unit on cells, and how to create a meaningful learning environment where students complete integrated activities.

SESSION 9

Innovative Strategies for Engaging Students in Scientific Inquiry with Web 2.0 Technologies and Social Collaboration (Earth)

(Middle Level) *233, Convention Center*

Randall Thomas *(rthomas@globe.gov)* and **Julie Malmberg** *(malmberg@globe.gov),* The GLOBE Program, Boulder, Colo.

Review findings from a program focused on the integration of Web 2.0 technologies with scientific inquiry about climate and collaboration among schools.

SESSION 10

Children Can Be Chemists! (Chem)

(Elementary) *236, Convention Center*

Amy K. Lockhart *(amy.lockhart@uni.edu),* University of Northern Iowa's R&D School, Cedar Falls

What can elementary kids learn about the world of chemistry? A lot! Everything from mystery powders to gel spheres will be discussed.

SESSION 11

Heads or Tails? Develop 21st-Century Skills Using Inquiry and *Planaria* (Bio)

(General) *238, Convention Center*

Nancy L. Elwess *(nancyelwess@plattsburgh.edu)* and **Sandra M. Latourelle** *(latours@plattsburgh.edu),* SUNY Plattsburgh, N.Y.

Weave together technology and a tried-and-true model system to encourage development of 21st-century skills for life focusing on communication, collaboration, critical thinking, and creative problem solving.

SESSION 12

How to Get the Most from NAEP Science Test Results (Gen)

(Middle Level–High School) *240, Convention Center*

Hector Ibarra *(hibarraia@gmail.com),* NAGB Committee Member, Iowa City, Iowa

The National Assessment of Educational Progress (NAEP), our Nation's Report Card, is a hot topic. Join me as I share information about the recently released *Hands-On Performance Tasks* scores, the *Interactive Computer Tasks* being developed, the *NAEP Science Frameworks,* and more. A snapshot of test results from states surrounding Indiana will be presented. Take home a comprehensive NAEP folder that includes discussion topics.

SESSION 13

Engaging Inquiry Through Educational Technology and Low-Tech Activities (Gen)

(Elementary–Middle Level) *242, Convention Center*

Rebecca M. Krall *(rebecca.krall@uky.edu),* University of Kentucky, Lexington

Learn engaging ways to use educational technologies and low-tech tools to support inquiry in your elementary or middle school classroom!

SESSION 14

Using Technology to Support Peer Revision in Science Writing (Gen)

(Middle Level–High School) *243, Convention Center*

Amy L. Moore *(almoore@henrico.k12.va.us),* Deep Run High School, Richmond, Va.

Sara D. Moore *(sdm1146@gmail.com),* ETA/Cuisenaire, Vernon Hills, Ill.

William P. Bintz *(wpbintz@gmail.com),* Kent State University, Kent, Ohio

Receive an overview of a research-based instructional strategy that uses technology to support peer revision and improve student writing in science by high school students.

SESSION 15

Mystery of the Crooked Cell: A Study of Clinical Trials Through Sickle Cell Anemia (Bio)

(High School/Informal Ed) *244, Convention Center*

Donald DeRosa *(donder@bu.edu),* Boston University, Boston, Mass.

Carla Romney *(romney@bu.edu),* Boston University School of Medicine, Boston, Mass.

An extension of CityLab's popular *Mystery of the Crooked Cell,* this investigation explores the theory and practice of clinical trials.

SESSION 16

ASTC Session: Engineered Teaching and Learning Environments for STEM-related Educational Programs (Gen)

(General) *103, JW Marriott*

Elsie Ovrahim *(elsie.ovrahim@msichicago.org)* and **Leslie Sadowski-Fugitt** *(leslie.sadowski-fugitt@msichicago.org),* Museum of Science and Industry, Chicago, Ill.

Let us introduce you to a responsive model for learning how to weave relational and analytical learning styles with strategic pedagogical practices in any science classroom or teacher preparation program.

SESSION 17

A Districtwide Strategy for Building Students' Scientific Literacy (Gen)

(Elementary/Supervision) *104, JW Marriott*

Krista Calvert *(krcalve@kckps.org),* Kansas City (Kans.) Public Schools

Geri Cunningham, Whittier Elementary School, Kansas City, Kans.

Presider: Krista Calvert

Learn how a large urban district implements rigorous instruction, accountability checks, and ongoing support to ensure K–5 students master science content and inquiry standards.

SESSION 18

Before and After Retirement: Practicalities and Possibilities (Gen)

(General) *108, JW Marriott*

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

Mary R. Strother, Retired Educator, Glen Allen, Va.

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

SESSION 19 (two presentations)

(College) *201/202, JW Marriott*

Presider: Marcy H. Towns, Purdue University, West Lafayette, Ind.

Engaging Undergraduate Students to Develop Green Organic Chemistry Projects (Chem)

Cheryl Wistrom *(cherylw@saintjoe.edu),* Saint Joseph's College, Rensselaer, Ind.

Hear about challenges faced and rewards earned during five years of instructing undergraduate organic chemistry students as they carried out green chemistry projects.

Laboratory Goals in Undergraduate Chemistry (Chem)

Marcy H. Towns *(mtowns@purdue.edu),* Purdue University, West Lafayette, Ind.

Stacey Lowery Bretz *(bretzsl@muohio.edu),* Miami University, Oxford, Ohio

Learn about the diversity of faculty goals for undergraduate chemistry laboratory coursework based on interviews and faculty surveys from various institutions.

SESSION 20

Strengthening Collaborations Among Presidential Awardees (Gen)

(Elementary–High School) *313, JW Marriott*

Kenneth L. Huff *(khuff@williamsvillek12.org),* Williamsville (N.Y.) Central School District

Charlene Dindo *(cdindo@bcbe.org),* Fairhope Elementary School, Fairhope, Ala.

Discover a new method of mentoring nominees for the Presidential Award for Excellence in Mathematics and Science Teaching (PAEMST).

SESSION 21

NSF Follow-Up Session: Science Is Cool! Using Polar Science Resources in Your Classroom (Env)

(Informal Education) *JW Grand Ballroom 2, JW Marriott*

Susan B. Kelly, Montana State University, Bozeman

Experienced polar science educators will share classroom-tested materials that engage all learners in inquiry science. Take home polar science resources and activities ready to use in your classroom next week!

SESSION 22

Beyond Introductory Circuits: Electronics (Phys)

(High School–College) *JW Grand Ballroom 9, JW Marriott*

Aaron Osowiecki *(aosowiecki@gmail.com),* Boston Latin School, Boston, Mass.

Learn how student investigations combined with online simulations help students understand basic electronic devices such as AC to DC converters and amplifiers.

SESSION 23

Differentiating K–6 Science Instruction to Enable All Students to Inquire, Explore, Participate, and Achieve Success (Gen)

(General) *JW Grand Ballroom 10, JW Marriott*

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

Receive an overview of the components of differentiation in the K–6 science classroom and ways to differentiate effectively to maximize student participation and learning. Handouts.

SESSION 24

The Internet Science and Technology Fair/STEM Connect (Gen)

(Elementary–High School) Indiana Blrm. A/B, Marriott Downtown

Robert M. Everett *(robert.everett@ucf.edu)* and **Lisa Brooks** *(lisa.brooks@ucf.edu),* University of Central Florida, Orlando

Let's discuss and share information about the Internet Science and Technology Fair (ISTF) and how it relates to STEM projects.

SESSION 25

Enhancing Science Vocabulary (Gen)

(Elementary–Middle Level) Marriott Blrm. 3, Marriott Downtown

Steve Bane *(scitime@gmail.com),* Chandler, Ariz.

"Enhancing Science Vocabulary" is back for its third year with more ideas designed to help K–8 educators improve student understanding of key scientific terms and concepts.

SESSION 26

Fusion Science Theater: Enhancing Science Education with Creativity, Investigation, and Participation (Gen)

(General) Marriott Ballroom 7, Marriott Downtown

Holly Walter Kerby *(hkerby@matcmadison.edu),* Madison Area Technical College, Madison, Wis.

Fusion Science Theater (FST) uses techniques from theater to develop shows that are investigative, interactive, multimodel, and verifiably educational.

SESSION 27

Developing Scientific Reasoning Abilities in Middle School Students (Gen)

(Elementary–High School) Michigan/Texas, Marriott Downtown

Kathleen M. Koenig *(kathy.koenig@uc.edu),* University of Cincinnati, Ohio

Sherry Kembre *(skembre@stjameswo.org),* St. James Elementary School, Cincinnati, Ohio

Join us for a discussion on the types of activities implemented in multiple middle school classrooms and their subsequent impact on students' abilities to engage in scientific reasoning.

SESSION 28

Watershed Dynamics: Curriculum Design Tools to Teach the Water Cycle Using Web GIS (Env)

(Middle Level–College) Cabinet, Westin

Margaret Waldron *(m-waldron@northwestern.edu),* Northwestern University, Evanston, Ill.

Learn how to use FieldScope web-based GIS (Geographic Information Systems) and curriculum design tools to teach data analysis and human impact on the environment.

SESSION 29

Science Inquiry: Partnerships Among National Parks and Universities (Env)

(Informal Education) Caucus, Westin

Yvette F. Greenspan *(ygreensp@mdc.edu),* Miami Dade College, Miami, Fla.

Allyson Gantt *(allyson_gantt@nps.gov),* Everglades National Park, Homestead, Fla.

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.

The Parks As Resources for Knowledge (PARK) Teachers Program cultivates opportunities to bring inquiry science through STEM to all learners by combining place-based expertise with pedagogical knowledge for preservice and inservice teachers.

SESSION 30

NOAA Teacher at Sea: Shark Week! (Gen)

(Elementary–High School) Chamber, Westin

Beth A. Spear *(spear@westosha.k12.wi.us),* Central High School, Salem, Wis.

Learn about the application process, pre-cruise and post-cruise responsibilities, and what it's like to catch and release more than 300 sharks and other fish species.

SESSION 31

Bringing University Research Projects and Field Work into the High School Science Class (Env)

(High School) *Congress I/II, Westin*

Garnett T. Coy *(garnett.coy@gmail.com),* Madison County Schools, Frenchburg, Ky.

Mark Rush *(mark.rush@garrard.kyschools.us),* Garrard County High School, Lancaster, Ky.

Receive an overview of a 10-week teacher research experience studying surface mining and its effect on the environment. We will highlight the activities developed and implemented at three rural Kentucky schools.

SESSION 32

Students Use Distributed Computing to Search for Extraterrestrial Intelligence (Earth)

(General) *Grand Ballroom 3, Westin*

Markham B. Schack *(m.schack@morehead-st.edu)* and **Capp Yess,** Morehead State University, Morehead, Ky.

The SETI@home project uses the internet to process radio telescope data to search for extraterrestrial intelligence. This multimedia demonstration shows how to involve your students.

9:30–10:30 AM Workshops

The Little Things That Run the World: Soil Ecology in the Classroom (Env)

(Middle Level–High School/Informal) *122, Convention Center*

David L. Brock *(brockda@rpcs.org)* and **Marion Penning,** Roland Park Country School, Baltimore, Md.

Come discover the realm of the amoeba! Learn how to engage your students in field studies exploring the ecology of the microscopic world.

Extreme Makeover—Laboratory Edition! (Gen)

(Informal Education) *124, Convention Center*

Deborah L. Hanuscin and NSTA Student Chapter, University of Missouri, Columbia

Join us as we make over familiar activities to focus on inquiry and stimulate students' curiosity!

A Different Look at an Old Model: Modeling the Spectrum (Phys)

(Middle Level–High School) *205, Convention Center*

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

Using materials from the Chandra mission, we will examine two different views of the electromagnetic spectrum model as well as pre- and post-assessment activities in a unit.

Digging Dinos! (Gen)

(Elementary) *207, Convention Center*

Becky Wolfe *(beckyw@childrensmuseum.org),* The Children's Museum of Indianapolis, Ind.

Children dig dinosaurs. Explore fossils and dinosaurs with hands-on activities developed by The Children's Museum of Indianapolis. Discover how you can integrate this topic into your science classroom.

Teaching the Spread of Disease via Simulations (Bio)

(Middle Level) *208, Convention Center*

Mary K. Fassbender *(mary.fassbender@franklin.k12.wi.us),* Forest Park Middle School, Franklin, Wis.

Sharon A.L. Hushek *(hushekclan@yahoo.com),* Ben Franklin Elementary School, Franklin, Wis.

Experience how diseases spread and the difficulty in identifying the initial carrier through simulations that can be easily done in the classroom.

CESI Session: "Leaf" It to Me: Leaf Adaptations (Bio)

(Elementary) *210, Convention Center*

Cheryl W. Sundberg *(sundbergrc@bellsouth.net),* Retired Educator, Millbrook, Ala.

Presider: Sherry Nichols, The University of Alabama, Tuscaloosa

Compare leaf structures in a variety of habitats.

Activities Relating Science, Math, and Literacy in PreK Classrooms (Gen)

(Preschool–Elementary) *211, Convention Center*

John Payne *(payne_jw@mercer.edu),* Mercer University, Lithia Springs, Ga.

Receive copies of and perform sample hands-on activities involving science, math, and literacy for preK students.

Science Rocks and Rules: A Family Science Night How-To **(Gen)**
(Elementary) *231, Convention Center*
Monica A. Brouwer *(brouwer.monica@oakwoodschools.org),* Edwin D. Smith Elementary School, Oakwood, Ohio
Kimberly Walther *(walther.kimberly@oakwoodschools.org),* Harman Elementary School, Oakwood, Ohio
This workshop gives a behind-the-scenes guide to creating and hosting a Family Science Night. Take home a how-to handbook of ideas.

Space Science for the Primary Grades **(Earth)**
(Preschool–Elementary) *232, Convention Center*
Regina M. Biros, Kellogg School, Chicago, Ill.
Presider: Carol Katzberger, Retired Educator, Chicago, Ill.
Primary students are amazed with the solar system. Discover how to unite literature, art, and science for a great introduction to space science.

Hands-On Science: Connecting Informal Science Inquiry to Successful, Crafty, and Creative Projects **(Env)**
(Elementary–Middle Level) *234, Convention Center*
Elizabeth H. Burris *(director@hosprograms.org)* and **Deborah Franklin** *(careydeb@verizon.net),* Hands On Science, A MCCPTA-EPI Program, Silver Spring, Md.
Elementary/middle level projects introduce children to core concepts in concrete ways that they will remember and use.

Elastic Power: Wind Up Your Engines and Explore **(Phys)**
(Elementary–Middle Level) *235, Convention Center*
Norm Barstow *(barstow@hartford.edu),* Hartford, Conn.
Use an elastic-powered wooden car to explore the energy concepts of force and motion. Continued exploration focuses on mass, friction, inertia, momentum, and force.

Kitchen Chemistry **(Chem)**
(Middle Level–High School) *237, Convention Center*
Julie Yu *(jyu@exploratorium.edu),* Exploratorium, San Francisco, Calif.
Explore basic concepts in chemistry using common household materials. These hands-on activities are simple and safe enough to do in your own kitchen.

Learn About the Work of Scientists with a River Ecology Teaching Case Study **(Bio)**
(Middle Level–High School) *245, Convention Center*
Hudson Roditi *(hroditi@amnh.org)* and **Jim Short** *(jshort@amnh.org),* American Museum of Natural History, New York, N.Y.
Learn about the impact of zebra mussels on a river ecosystem through a teaching case study that shows scientists in the field gathering data and interpreting the results.

NSELA Session: Project-based Instruction: Grappling with Discovery **(Gen)**
(High School–College) *203, JW Marriott*
David Wojnowski *(david.wojnowski@unt.edu),* **Kristin Sherman** *(kristin.sherman@unt.edu),* **Cindy Woods** *(cindy.woods@unt.edu),* and **Teresa Walls** *(teresa.walls@unt.edu),* University of North Texas, Denton
Presider: Cindy Woods
Teach North Texas explores the perceptions of preservice teachers as they implement project-based instruction in a public school focused on discovery learning at the helm.

NSTA Press Session: Stop Faking It! Finally Understand Chemistry Basics So You Can Teach It **(Chem)**
(Elementary–High School) *JW Grand Ballroom 7, JW Marriott*
Bill Robertson *(wrobert9@ix.netcom.com),* Bill Robertson Science, Inc., Woodland Park, Colo.
Why do we believe atoms look the way they do? What's with those fuzzy looking orbitals for electrons? The author of the *Stop Faking It!* books entertains you with activities and concepts from the two chemistry books in the series. Lame jokes a definite possibility.

Diagnosing Diabetes **(Bio)**
(High School–College) *JW Grand Ballroom 8, JW Marriott*
Dina G. Markowitz *(dina_markowitz@urmc.rochester.edu)* and **Susan Holt** *(sholtbmn@aol.com),* University of Rochester, N.Y.
Follow the case of a young woman with diabetes. Conduct a simulated glucose tolerance test to determine if she has Type 1 or Type 2 diabetes. Information provided on lab kit assembly and related activities.

DuPont Presents—Biofuels: The By-Products of Combustion (Chem)
(High School) Colorado, Marriott Downtown
Michael Clark, Greenwood School District, Millerstown, Pa.
Presider: Peggy Vavalla, DuPont, Wilmington, Del.
Examine various aspects of the issue of whether or not the production and use of ethanol fuels should be promoted. Compare the potentially polluting by-products formed during the combustions of two types of fuel.

Can You REALLY Integrate STEM and Inquiry into 5E Lessons? (Gen)
(General) Indiana Ballroom F, Marriott Downtown
Karen Jo Matsler *(kmatsler@uta.edu)* and **Marsha Scott,** The University of Texas at Arlington
It may not be easy, but it is effective. We will model and share exemplar lessons designed by UTeach students at The University of Texas at Arlington that are used in K–8 classrooms.

Data Collection and Analysis for Field Experimentation (Gen)
(General) Marriott Ballroom 8, Marriott Downtown
Louise R. Chapman *(lchapman@volusia.k12.fl.us),* Volusia County Schools District Science Office, Deland, Fla.
David A. Young *(dayoung7@gmail.com),* Fayetteville High School, Fayetteville, Ark.
Discover how to collect data and analyze scientific data in the field or outside on your school site. Get hints on how to protect and use varied data collection techniques at field sites, including the use of technology and how to store and carry materials in the rain and in field situations.

Contextualizing Climate Change Within a Climate System (Env)
(Middle Level–High School) Capitol I, Westin
Daniel P. Shepardson *(dshep@purdue.edu),* Purdue University, West Lafayette, Ind.
Join me for an overview of the teacher professional development program and tool kit for contextualizing climate change within a climate system.

Your Ecological Footprint: Encouraging Students' Steps on the Pathway to a Sustainable Planet (Gen)
(General) Capitol II, Westin
Laurel L. Kohl *(kohll@easternct.edu),* Eastern Connecticut State University, Willimantic
How much of our world resources do you (and your students) use? This lesson from *www.ctenergyeducation.com* brings global issues to a personal level and encourages student action.

Teaching Basic Mineralogy and Map Skills While Searching for a Diamond Deposit (Earth)
(Middle Level–College) Capitol III, Westin
Steve R. Mattox *(mattoxs@gvsu.edu)* and **Jessica N. Ketelaar** *(whitejes@mail.gvsu.edu),* Grand Valley State University, Allendale, Mich.
Identify common minerals associated with diamonds to model how geologists locate new deposits. Activity includes team work, map skills, deductive reasoning, and economics.

NASA and Superman: The Electromagnetic Spectrum and the Invisible Universe (Earth)
(Middle Level–High School) Grand Ballroom 2, Westin
Janet L. Moore *(janetmoore@gmail.com),* Sonoma State University/Illinois State University, Rohnert Park, Calif.
"See" the universe in a whole new light. Use hands-on activities to investigate objects in space and to understand Superman's X-ray vision. Free NASA materials!

NESTA Session: Strategies for Teaching About Charged Topics in the Earth Science Classroom (Earth)
(Middle Level–College) Grand Ballroom 5, Westin
Roberta M. Johnson *(rmjohnsn@gmail.com),* National Earth Science Teachers Association, Boulder, Colo.
Missy Holzer *(mholzer@monmouth.com),* Chatham High School, Chatham, N.J.
Michael J. Passow *(michael@epsd.org),* Dwight Morrow High School, Englewood, N.J.
Join leading Earth science educators to learn successful strategies for teaching about "charged" topics such as evolution and climate change. What works? What doesn't?

9:30–11:00 AM Workshop

Teacher Researcher Day Session: Exploring Teacher Inquiry from the Dual Perspectives of New Teacher Researchers and Professional Development Leaders (Gen)

(General) *JW Grand Ballroom 5, JW Marriott*

Carole P. Mitchener *(cmitchen@uic.edu),* University of Illinois at Chicago

Wendy M. Jackson *(wjackso7@depaul.edu),* DePaul University, Chicago, Ill.

Misty J. Richmond, Agustin Lara Academy, Chicago, Ill.

Hethyr C. Tregerman *(hander3@luc.edu),* Loyola University Chicago, Ill.

Join us as a team offers advice for new teacher researchers on doing action research in classrooms and for professional development leaders on implementing action research in districts.

10:00–11:00 AM Workshop

COSEE Session: Sea Level Trends (Earth)

(High School–College) *312, JW Marriott*

Lisa A. Lawrence *(ayers@vims.edu),* Virginia Institute of Marine Science, Gloucester Point

Join me for a classroom activity that explores climate change and sea level rise. Access ocean-observing data to investigate changes in sea level from locations around the United States.

10:00–11:00 AM Exhibitor Workshops

Bio-Rad Genes in a Bottle™ Kit (Bio)

(Grades 6–College) *107, Convention Center*

Sponsor: Bio-Rad

Damon Tighe *(biotechnology_explorer@bio-rad.com),* Bio-Rad, Hercules, 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!

Using LEGO® Bricks to Introduce Simple Machines (Phys)

(Grades 1–3) *202, Convention Center*

Sponsor: LEGO Education

Presenter to be announced

Experience firsthand how you can develop your first-, second-, and third-graders' understanding of science, engineering, and mathematics concepts using the new Simple Machines Set from LEGO Education. Explore gears by building a merry-go-round out of LEGO bricks and completing the corresponding classroom activity from the Simple Machines Activity Pack.

10:00–11:30 AM Exhibitor Workshops

What's in the Air? (Gen)

(Grades 5–12) *101, Convention Center*

Sponsor: GASTEC Corp.

Stephen Thompson, University of South Carolina, Columbia

Joan C. Grimm, GASTEC Corp., Portland, Ore.

Steve Luecke, Nextteq LLC, Tampa, Fla.

Learn about a simple device that can be used to demonstrate "difficult to teach" processes. Join us to perform inquiry-based activities focused on carbon/oxygen cycling, plant processes indoor air quality, cigarette smoke, and car exhaust. Participants receive a Teacher's Guide and an opportunity to test the device with their students.

Solar-powered Boats, Fountains, and Suitcases! (Phys)

(Grades 6–College) *102, Convention Center*

Sponsor: KidWind Project

Michael Arquin *(joe@kidwind.org),* KidWind Project, St. Paul, Minn.

Interested in moving past solar cars in the classroom? This workshop will explore the science behind solar-powered boats, fountains, and suitcases. Suitcases, you say? Join us to see what we're talking about. This hands-on course will explore electrical concepts and the power of the Sun! Take home a simple solar kit!

National Earth Science Teachers Association Events at 2012 Indianapolis NSTA Conference

All NESTA sessions are in the Westin Indianapolis, Grand Ballroom 5, unless otherwise indicated

Friday, March 30

- 9:30 – 10:30 am **NESTA Geology Share-a-Thon**
- 11:00 am – noon **NESTA Atmospheres, Oceans, and Climate Change Share-a-Thon**
- 12:30 – 1:30 pm **NESTA Earth System Science Share-a-Thon**
- 2:00 – 3:00 pm **American Geophysical Union Lecture! "***FrankenClimate: The Perils of Engineering Our Way Out of Global Warming***"**, by Prof. Gabriel Filippelli, Indiana Convention Center, Sagamore Ballroom 3
- 2:00 – 3:00 pm **Drama in Near Earth Space – The Sun, Space Weather, and Earth's Magnetic Field As We Approach Solar Maximum!**, Westin Grand Ballroom 3
- 3:30 – 4:30 pm **Earth and Space Science Education Today in K-12: Status and Trends at the State and National Levels**
- 6:30 – 8:00 pm **Friends of Earth Science Reception,** Westin Grand Ballroom 1

Saturday, March 31

- 8:00 – 9:00 am **Activities Across the Earth System**
- 9:30 – 10:30 am **Strategies for Teaching Charged Topics in the Earth Science Classroom**
- 11:30 – 1:00 pm **NESTA Earth and Space Science Educator Luncheon**, "*Dust in the Wind – The Geological Record of Ancient Atmospheric Circulation*" by Prof. Steven Hovan, Westin State Room, tickets available through NESTA only at www.nestanet.org, $40/person in advance. A few tickets may be available on 3/31 at $45/person on-site.
- 2:00 – 3:00 pm **NESTA Astronomy, Space, and Planetary Science Share-a-Thon**
- 2:00 – 3:00 pm **Our Changing Planet**, Westin Grand Ballroom 3
- 3:30 – 5:00 pm **NESTA Rock and Mineral Raffle**
- 5:30 – 7:00 pm **NESTA Annual Membership Meeting**

NESTA gratefully acknowledges co-sponsorship of our events by the following organizations:

Exploring Computational Thinking (Gen)
(Grades 6–12) *103, Convention Center*
Sponsor: Google
Phil Wagner, Google, Mountain View, Calif.
Computational Thinking is an interdisciplinary higher-order thinking skill set that engages students in seeing patterns with data and creating powerful algorithms to give insight into our world. Come check out Google's standards-aligned Exploring Computational Thinking lessons and resources.

Extra, Extra! Read All About It! Taking Biology from the News to the Classroom (Bio)
(Grades 9–12) *104, Convention Center*
Sponsor: Houghton Mifflin Harcourt
Stephen Nowicki, Duke University, Durham, N.C.
Join *Holt McDougal Biology* author Steve Nowicki in an interactive session as he presents a variety of strategies for bringing the real world into your classroom. This session will focus on using a full range of media resources to connect current events, recent scientific discoveries, and fun quirks of nature with your biology classroom and the everyday lives on your students.

Education. Inspiration. Acceleration (Phys)
(Grades 3–12) *105, Convention Center*
Sponsor: Ten80 Education
Beverly Simmons *(bsimmons@ten80foundation.org)* and **Jeffery Thompson** *(info@ten80education.com),* Ten80 Education, Charlotte, N.C.
Athletes practice before hitting the big leagues. Future STEM professionals practice with radio-controlled cars on a 1:10 scale racetrack. Accelerate your STEM program with Project Based Learning (PBL) and the Ten80 Student Racing Challenge: NASCAR STEM Initiative. Get an overview of the program and an introduction to STEM racing fundamentals.

Applications in Biotechnology (Bio)
(Grades 9–College) *106, Convention Center*
Sponsor: Energy Concepts, Inc.
Jeanne Moldenhauer, Excellent Pharma Consulting, Mundelein, Ill.
Thomas Chinski, Vernon Hills High School, Vernon Hills, Ill.
Join us for an overview of a biotechnology laboratory program and a discussion of funding opportunities and areas of specialization in the biotechnology fields. Experiments from the program will be conducted, and text and lab manuals will be available for examination. Participants will have the opportunity to receive a desk copy of the text.

The Developing Brain: What Science Teaches Us About Life Experience (Bio)
(Grades 6–College) *108, Convention Center*
Sponsor: Society for Neuroscience
Judy Cameron, University of Pittsburgh, Pa.
Brains are built over time through an ongoing process that starts before birth and continues into the third decade of life. This session combines a hands-on game and discussion—taught by a leading neuroscientist—to show how life experiences influence brain development and function.

Developing STEM Process Skills with the Discovery Education Science Techbook (Gen)
(Grades K–12) *110, Convention Center*
Sponsor: Discovery Education
Patti Duncan, Wallenpaupack Area School District, Hawley, Pa.
One of the most important aspects of a quality STEM curriculum is the opportunity for students to develop crucial process skills. Skills such as these are not taught directly but must be developed by experience. Learn how the Discovery Education Science Techbook brings these experiences to the forefront.

Chemistry with Vernier (Chem)
(Grades 9–College) *116, Convention Center*
Sponsor: Vernier Software & Technology
Jack Randall *(info@vernier.com)* and **David Carter** *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
Experiments such as acid-base titration and Boyle's law from our popular *Chemistry with Vernier* and *Advanced Chemistry with Vernier* lab books will be performed in this hands-on workshop. Conduct these experiments using LabQuest and our LabQuest Mini. See our Mini GC Gas Chromatograph and SpectroVis Plus spectrophotometer in action!

Earth Science with Vernier (Earth)
(Grades 7–12) *117, Convention Center*
Sponsor: Vernier Software & Technology
Robyn Johnson *(info@vernier.com)* and **Mike Collins** *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
Experiments such as exploring magnetism, acid rain, and comparing UV protection of sunglasses from our popular *Earth Science with Vernier* lab book will be performed in this hands-on workshop. You will be able to try these experiments using LabQuest.

Chemistry In-the-Bag Inquiry (Chem)
(Grades 6–12) *130, Convention Center*
Sponsor: Science Kit
Paul Schneeberger, VWR Education, Rochester, N.Y.
Learn how to easily incorporate fun and exciting inquiry activities into your classrooms using ScholAR's In-the-Bag Inquiry Activity series. These easy-to-perform demonstrations are designed to engage students and then incorporate guided inquiry exercises so they can further explore and understand the concept.

Technology Impacts Science Learning: A Research Project (Chem)
(Grades K–12) *131, Convention Center*
Sponsor: SMART Technologies
Ian Fogerty *(ian.fogerty@nbed.nb.ca),* Riverview High School, Riverview. N.B., Canada
Teaching science requires multiple perspectives, interesting connections, and spirited debate. Researchers at Riverview High School compared the performance of small groups completing learning activities on SMART Board interactive whiteboards to groups completing the same activities on laptops. They found that using an interactive whiteboard increased student performance on post-tests.

Meet and Greet Your Co-Teacher Zeno, the Robot (Gen)
(Grades 9–12) *132, Convention Center*
Sponsor: Hanson RoboKind
Dan Speers *(danspeers@comcast.net),* Crowell Educational Publishing, Haverhill, Mass.
Robot instructors are coming! Zeno, the robot, teaches science, technology, engineering, and math…and basic programming in computer science. In this workshop, you will take charge of an actual working robot and learn how to direct it as well as how it delivers the next generation of information technology.

Teaching English Language Learners in the Science Classroom: Collaboration, Co-teaching, and Coaching (Gen)
(Grades 3–8) *133, Convention Center*
Sponsor: Pearson
Patricia Page-Aube, Memorial Middle School, Fitchburg, Mass.
Science for English language learners can be challenging. Learn ways to improve student outcomes through collaboration between science teachers and ESL teachers. Get tools to start your own initiatives.

New Ways to Prepare Your Students Using 21st-Century STEM Initiatives—GO DIGITAL! (Bio)
(Grades 8–12) *135, Convention Center*
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 and Swift Digital microscopes and cameras into your STEM curriculum. Get students involved digitally—learn how to integrate digital technology into your current teaching with any or no budget!

NSF/NBC Short Videos You Can Use in Your Classroom (Gen)
(Grades 7–12) *136, Convention Center*
Sponsor: National Science Foundation
Zeke Kossover, Einstein Fellow, National Science Foundation, Arlington, Va.
Mark Miano *(mark.miano@nbcuni.com),* NBC News/NBC Learn, Washington, D.C.
Understanding how the science content students learn in classrooms applies to their everyday lives is challenging. NSF and NBC Learn, the education arm of NBC News, have partnered to offer groundbreaking short video collections that demonstrate how the principles of physics, math, engineering, and chemistry apply to everyday life.

Forensic Science: A High School Integrated Science Solution (Gen)
(Grades 9–12) *137, Convention Center*
Sponsor: Cengage Learning
Robin LeFevre *(robin.lefevre@cengage.com)* and **Mike Schenk** *(mike.schenk@cengage.com),* Cengage Learning, Mason, Ohio
Join us to learn about Cengage Learning's complete high school forensic science program, which includes more than 120 hands-on activities and new virtual labs! Get tips for starting a forensic science program at your school, resources on how forensic science addresses the STEM education movement, and strategies for incorporating literacy and community service into your curriculum.

Key Issues: Bringing Environmental Issues to the Classroom (Env)

(Grades 5–12) *138, Convention Center*

Sponsor: The Keystone Center

Anne Love *(alove@keystone.org),* The Keystone Center, Keystone, Colo.

This national teacher training program is designed to provide new ways of thinking about environmental issues and potential solutions. Explore different teaching techniques that guide students through non-biased environmental issues investigations. Learn how to become a 2012 Key Issues participant and attend through sponsorships.

SPARKvue®: A 21st-Century Inquiry-based Science Learning Environment (Gen)

(Grades K–12) *140, Convention Center*

Sponsor: PASCO scientific

Presenter to be announced

Explore PASCO's award-winning application, SPARKvue, and discover hands-on learning that integrates interactive visualization, data collection, and analysis in a meaningful and engaging way. SPARKvue is media rich and touchscreen capable, seamlessly adapting to your classroom technology, whether you use a Mac, PC, tablet, iPad, or interactive whiteboard. With SPARKvue, you can collect real-time sensor data, make predictions right on a graph and see the results, capture a snapshot of the work at any time with the journaling feature, and create and edit student assessment prompts.

Drive Student Inquiry with Carolina's Advanced Environmental Science Labs (Env)

(Grades 9–12) *144, Convention Center*

Sponsor: Carolina Biological Supply Co.

Andrew Uy, Carolina Biological Supply Co., Burlington, N.C.

What do water quality, soil properties, and the Coriolis effect have in common? All three are explored in Carolina's exciting inquiry-based lab series for AP Environmental Science. Get hands-on experience with activities designed to inspire students to learn new concepts and apply them in their local environment. Free materials provided.

Strawberry DNA and Molecular Models (Bio)

(Grades 8–12) *145, Convention Center*

Sponsor: Carolina Biological Supply Co.

Angela White, Carolina Biological Supply Co., Burlington, N.C.

Introduce students to the fascinating world of DNA through age-appropriate hands-on activities designed to make biology fun. Taken from a kit series developed in cooperation with the DNA Learning Center and Cold Spring Harbor Laboratory, these activities use DNA models and real DNA from strawberries to present genetic studies.

Introducing a Car-based Energy Conversion Experiment Kit (Phys)

(Grades 5–8) *201, Convention Center*

Sponsor: Japan Artec, Inc.

Stephen Matthew Skeen, Japan Artec, Inc., Yao-Shi, Osaka

Join us as we introduce our car-based energy conversion experiment kit. Students using the kit will acquire an appreciation for scientific learning. Convert electricity generated by a hand-crank generator into light, sound, and motion… and explore energy storage with a capacitor. Take home free teaching materials.

Promote Inquiry Using Chemistry Demonstrations (Chem)

(Grades 9–12) *Wabash Ballroom 1, Convention Center*

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 with exciting, engaging demonstrations! Join us as we present classic demonstrations and describe a series of inquiry-based activities. We will model the inquiry process, sharing a strategy that is used in the Flinn ChemTopic™ Labs series to integrate inquiry into every core curriculum topic. Take home a copy of *Oxidation and Reduction,* volume 16 in the series.

Fat Dogs and Coughing Horses: Delivery of a Ninth-Grade Curriculum, Part II (Bio)

(Grades 9–12) *Wabash Ballroom 2, Convention Center*

Sponsor: Purdue University

Jennifer Veatch *(jveatch@cville.k12.in.us),* Crawfordsville High School, Crawfordsville, Ind.

Joe Ruhl *(jruhl@lsc.k12.in.us),* Lafayette School Corp., Lafayette, Ind.

By applying examples from veterinary and human medicine involving the role of animals in keeping people healthy, explore a high school biology unit designed to teach standard concepts such as the scientific method, compound and dissecting microscope use, life cycles, cells, and biochemistry. This Science Education Partnership Award (SEPA) workshop is supported by the National Center for Research Resources, a part of the National Institutes of Health and Purdue University. See page 35 for Part I.

10:30 AM–12 Noon Shell Science Seminar

Symmetries in Fundamental Physics (Phys)

(High School–College) Sagamore Blrm. 4, Convention Center

Chen-Yu Liu, Assistant Professor of Physics, Center for Exploration of Energy and Matter, Indiana University, Bloomington

Symmetry is an essential element in classical art. Its role as the foundation of modern physics, however, is less popularly known. For example, symmetry in space, i.e., the invariance of the mathematical description of a physical system under translation to different points in space, leads to the conservation of linear momentum. Symmetry in time, i.e., the invariance of a physical system under translation to different instances of time, gives rise to the conservation of total energy. Conservation laws are especially useful for solving physics problems, as one does not need to track the full details of all variables. We do not yet know why, but all evidence points to the conclusion that nature chooses to follow particular laws with high degrees of symmetry (and presumably of higher aesthetic value). Join Chen-Yu as she discusses discrete symmetries: parity, charge conjugation, and time reversal, and shows what modern experimental tests of these symmetries tell us about physics, the universe, and us.

Other than using high-energy particle colliders to directly create new particles, Dr. Chen-Yu Liu's research focuses on searching for the effects from the footprints of exotic particles in low-temperature, low-energy systems. These searches look for features of violations in parity (mirror) symmetry, charge conjugation symmetry, and/or time-reversal symmetry. As assistant professor in the Physics Department at Indiana University, Chen-Yu is part of a group developing the next generation of ultra-cold neutron (UCN) sources using magnetic scattering in low-temperature solid deuterium and solid oxygen with the objective of building a university-based UCN source to be coupled with the low-energy neutron source (LENS), which is in current operation at Indiana University Center for Exploration of Energy and Matter. She completed her Postdoctoral Fellowship at Los Alamos National Laboratory and joined the IU Physics Department in 2005. She holds a PhD in physics from Princeton University.

NSTA is grateful to Shell for sponsoring this session.

10:30 AM–12 Noon Shell Science Seminar

Bridging Fields and Harnessing Diversity for the Sake of Innovation: Tackling Unmet Needs in the Life Sciences (Bio)

(High School–College) Sagamore Blrm. 5, Convention Center

Joseph M. DeSimone *(desimone@unc.edu),* Chancellor's Eminent Professor of Chemistry, University of North Carolina at Chapel Hill, and William R. Kenan, Jr. Distinguished Professor of Chemical Engineering, North Carolina State University, Raleigh

One need just look at all the challenges we face in energy conversion and storage, clean water, and health care for inspiration. Faculty members who are also entrepreneurs bring a depth of understanding and experience to the classroom that has an unparalleled effect in inspiring and educating the next generation of students. Using a pharmaco-engineering systems approach, we are making promising discoveries in the development of drug delivery systems.

With 120 issued patents in his name and more than 120 patents pending, Joseph M. DeSimone was awarded the 2008 Lemelson-MIT Prize for Invention and Innovation. Apart from his university professorships, DeSimone recently launched Liquidia Technologies, a biotech company that recently brought its first product, a seasonal influenza vaccine based on PRINT (Particle Replication in Non-wetting Templates) particles, into its first clinical trial. Based out of Research Triangle Park, North Carolina, Liquidia has raised more than $60 million in venture financing, including the first-ever equity investment by the Bill and Melinda Gates Foundation in a for-profit biotech company.

In 2002, Dr. DeSimone, along with Dr. Richard Stack (Duke University) and Dr. Robert Langer (MIT), co-founded Bioabsorbable Vascular Solutions (BVS) to commercialize a fully bioabsorbable, drug-eluting stent. The stent achieved CE Mark approval in Europe in 2011 and is being further evaluated in a series of international clinical trials led by Abbott for the treatment of coronary artery disease. He holds a PhD in chemistry from Virginia Tech.

NSTA is grateful to Shell for sponsoring this session.

11:00–11:30 AM Presentations

SESSION 1

A School/Museum Partnership in Support of Classroom and Informal Education (Gen)

(Informal Education) *111/112, Convention Center*

Jeffrey R. Regester *(jregester@greensboroday.org),* Greensboro Day School, Greensboro, N.C.

Students build exhibits for a local science center, learning the science topic and the technology needed for the exhibit itself. Benefits and pitfalls are discussed.

SESSION 2

Teach About Plants Like Linnaeus Did! (Bio)

(General) *238, Convention Center*

James Wandersee, Louisiana State University, Baton Rouge

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

Fresh from Sweden! Learn six enticing plant science mini-stories you can tell your students about the famous biologist Linnaeus.

SESSION 3

COSEE Session: Linking Our Ocean and Climate Through Innovative Learning Connections (Env)

(Middle Level–High School) *312, JW Marriott*

Liesl Hotaling, University of Rhode Island, Narragansett

Interact directly with scientists from the Centers for Ocean Sciences Education Excellence to discover how your methods and findings support the "big picture" of climate change research. See how science and technology can frame the impact of climate change on coasts, ecosystems, and human activities. Lessons geared toward grades 6–12.

SESSION 4

Music in Motion: Profile of a New Content Course for Preservice Teachers (Phys)

(High School–College/Informal) *JW Grand Blrm. 1, JW Marriott*

Ann Hammersly *(ahammersly@susd.org),* Chaparral High School, Scottsdale, Ariz.

Charles B. Weeks *(cbweeks@asu.edu),* Arizona State University, Tempe

The Music in Motion course is a physics course that emphasizes the science of music and musical instruments. The class is laboratory based, with a culminating project in which students design and construct a working instrument and then play it in a class recital.

SESSION 5

Teacher Researcher Day Session: Learning from Using Student Talk Strategies (Gen)

(Elementary) *JW Grand Ballroom 5/Group 2, JW Marriott*

Lauren M. Shea *(lshea@uci.edu)* and **Therese B. Shanahan** *(tshanaha@uci.edu),* University of California, Irvine

Karen Knecht, Greenville Fundamental Elementary School, Santa Ana, Calif.

A science professional development program stressed the importance of providing opportunities for students to interact and produce language. Hear how teachers learned and changed their practices.

SESSION 6

Inquiry Through Field Investigations (Env)

(General) *Cabinet, Westin*

Marc A. LeFebre *(marcl@councilforee.org),* Council for Environmental Education, Houston, Tex.

Scientific inquiry is key to understanding critical environmental issues. Field investigations serve as the starting point for inquiry about the natural environment.

SESSION 7

Mars Education Student Data Teams (MESDT) (Earth)

(High School–College/Informal) *Grand Ballroom 1, Westin*

Dawn Turney *(dawn.turney@jhuapl.edu),* The Johns Hopkins University Applied Physics Laboratory, Laurel, Md.

Learn more about MESDT, created by Arizona State University's Mars Education Program. Find out how your high school or undergraduate students can work alongside scientists, contributing to the science of analyzing Martian data through the innovative use of technology. MESDT has influenced participants to pursue STEM fields.

11:00 AM–12 Noon Paul F-Brandwein Lecture

Ingenuity: A Work in Progress (Gen)

(General) *Sagamore Ballroom 3, Convention Center*

David Macaulay, Best-selling Author and Illustrator: Norwich, VT)

Presider: Jack Padalino, Paul F-Brandwein Institute, Unionville, N.Y.

Introduction of Speaker: Alan Sandler, The Architectural Foundation of San Francisco, Calif.

Join author David Macaulay as he discusses his current project revolving around questions such as what were the needs and opportunities of a particular time in history and how did people address and respond to them? What questions did they ask? How did they select and then define the specific problems they would solve? How does one thing lead to another? With an emphasis on process over product, he'll illustrate by example how we are capable of almost anything when we use our heads.

David Macaulay is an award-winning, best-selling author and illustrator of dozens of books. With often whimsical humor, he provides explanations of the how and why in ways that are accessible and entertaining. David is perhaps best known for his international best-seller The Way Things Work, *which was expanded and updated in 1998 and renamed* The New Way Things Work. *He is an alumnus and faculty member at the Rhode Island School of Design and lives in Vermont.*

NSTA is grateful to Paul F-Brandwein Institute, Inc., for sponsoring this session.

11:00 AM–12 Noon Presentations

SESSION 1

Integrating the NSTA Learning Center into Preservice Education (Gen)

(General) *120, Convention Center*

Pamela Christol *(christol@nsuok.edu),* Northeastern State University, Broken Arrow, Okla.

Kate A. Baird *(kabaird@iupuc.edu),* Indiana University–Purdue University Columbus

Join us to learn how two professors from different universities integrate the valuable resources from the NSTA Learning Center into their science education courses.

SESSION 2

NSTA Avenue Session: The Shell Science Teaching Award—Learn More, Be Successful! Win $10,000! (Gen)

(Elementary–High School) *124, Convention Center*

Deborah Cornelison, Byng Junior High School, Ada, Okla.

Join Shell awardees, finalists, and members of the NSTA/Shell judging panel to learn what it takes to apply for and be selected for this prestigious and enriching $10,000 national award from the Shell Oil Company.

SESSION 3

DUGIs: Formative Assessments to Assist Students (Phys)

(High School) *125, Convention Center*

Stacy A. McCormack *(smccormack@phm.k12.in.us),* Penn High School, Mishawaka, Ind.

Come learn about DUGIs (Do U Get It?), formative assessments that are done before summative assessments. They greatly improve student scores by showing them what they need to study.

SESSION 4

Photons + Cuprous Oxide = Electricity (Chem)

(High School) *127, Convention Center*

Mary Annette Rose *(arose@bsu.edu)* and **Jason W. Ribblett** *(jwribblett@bsu.edu),* Ball State University, Muncie, Ind.

Let's simultaneously build inquiry and technological design abilities. Learn about an experiment in which students design, fabricate, and test a photovoltaic cell.

SESSION 5

Sparking Students' Interest in Electricity! (Phys)

(Middle Level) *206, Convention Center*

Patrick L. Brown, DuBray Middle School, St. Peters, Mo.

These "tried-and-true" activities challenge students' ideas as they learn about series/parallel circuits and electrical conductors, including liquids such as electrolytes.

SESSION 6

Alternatives to Dissection in the Digital Age (Bio)

(Middle Level–High School) *208, Convention Center*

Jennifer L. Maeng, Randy L. Bell *(randybell@virginia.edu),* and **Brooke A. Whitworth** *(baw3tj@virginia.edu),* University of Virginia, Charlottesville

Learn more about using simulations and digital media effectively as alternatives or supplements to animal dissection in the biology classroom.

SESSION 7

Do Birds Like Rap Music? Students Answer Their Original Questions (Bio)

(General) *211, Convention Center*

Jennifer M. Fee *(jms327@cornell.edu),* Cornell Lab of Ornithology, Ithaca, N.Y.

Students engaged in Cornell Lab's citizen science projects ask and answer their own questions about birds and can submit their resulting reports to the *Classroom BirdScope* national magazine. We'll give you practical advice and resources that can support original research on your school yard!

SESSION 8

Hey! We Have iPads! Now What? (Gen)

(Elementary) *212, Convention Center*

Elizabeth S. Cullin *(esc11@scasd.org)* and **Jennifer L. Cody** *(jlc36@scasd.org),* Park Forest Elementary School, State College, Pa.

Carla Zembal-Saul *(czem@psu.edu),* **Alicia M. McDyre** *(axd252@psu.edu),* and **Mark D. Merritt,** Penn State, University Park, Pa.

Judi Kur *(jjk11@scasd.org),* State College (Pa.) Area School District

Kimber Hershberger, Radio Park Elementary School, State College, Pa.

Jessica L. Cowan *(jlc31@scasd.org),* Gray's Woods Elementary School, Port Matilda, Pa.

Join us for a grades K–5 teacher quest to use iPads meaningfully to support science teaching and learning. We will share many ways that iPads have been used in our school district to support our K–5 students in processes of scientific inquiry.

SESSION 9

Focus On the Future: Drive Student Learning via Local Area Energy and Environmental Issues (Env)

(Middle Level) *234, Convention Center*

Sarah L. Ramsey-Walters *(sarahra@uwyo.edu),* University of Wyoming, Laramie

Today's students will inherit challenges requiring advanced energy and environmental literacy. Using local area societal issues, we can prepare our students for global challenges.

SESSION 10

Chemistry, Probeware, and GIS Places—From Elements/Solutions to Acids/Bases (Chem)

(Middle Level–College) *236, Convention Center*

Roger T. Palmer *(roger.gisetc@gmail.com),* Bishop Dunne Catholic School, Dallas, Tex.

Probeware reveals the invisible world of compounds interacting around your neighborhood. Mapping these measurements builds student understanding from elements to gas laws, solutions to reactions!

SESSION 11

Material Matters (Chem)

(Middle Level–High School) *237, Convention Center*

Todd Bolenbaugh *(tbolenbaugh@tolles.k12.oh.us)* and **Caryn Jackson** *(cjackson@tolles.k12.oh.us),* Tolles Career & Technical Center, Plain City, Ohio

Materials—metals, ceramics, polymers, and composites—play an integral role in everyday life. Materials science investigates cutting-edge processes and technologies to build relevant project-based curricula for science and STEM-related programs.

SESSION 12

A Pedagogic Paradigm for Teaching Science Research Using Free Online Resources (Gen)

(High School) *240, Convention Center*

Winfield J. Brown *(winfield.brown@pinecrest.edu),* The Pine Crest School, Lantana, Fla.

Walk away with a best practices paradigm for teaching the design and performance of scientific research experiments based on national high school competitions. Best of all, online resources cost next to nothing.

SESSION 13

Purposefully Making Your Students "Bug Out"! (Gen)

(Elementary–Middle Level) *242, Convention Center*

Melvin D. Smith II *(scismith@gmail.com),* Patterson Park Public Charter School, Baltimore, Md.

Students in grades 2 and 6 worked together to learn more about the cycle, habitat, and usefulness of a natural pesticide—the ladybug.

SESSION 14

Science and Football—What's the Connection? (Gen)

(Middle Level) *243, Convention Center*

Beverly Simmons-Johnson *(simmjohn@bellsouth.net)* and **Shawntwain Lester,** Fulton County Schools, Fairburn, Ga.

Come learn how to teach the metric system using Sunday football stats. Using sports helps students demonstrate an understanding of the concepts, processes, and real-life applications of measurements.

SESSION 15

Global Health Summit: Race Against Resistance (Bio)

(High School) *244, Convention Center*

Beth Boesche-Taylor *(btaylor@scsd2.k12.in.us)* and **Ashlee Hafer** *(ahafer@scsd2.k12.in.us),* Scottsburg New Tech High School, Scottsburg, Ind.

The summit is an innovative, effective, and realistic way for students to learn about evolution in the context of global planning to tackle microbial resistance.

SESSION 16

ASTC Session: STEM Education—Partnerships, Collaboration, and Programming (Gen)

(General) *103, JW Marriott*

John G. Radzilowicz *(radzilowiczj@carnegiesciencecenter.org),* Carnegie Science Center, Pittsburgh, Pa.

Let's explore a unique model implemented at Carnegie Science Center in Pittsburgh for expanding and enhancing classroom STEM education through informal science education experiences created, developed, and supported through a broad collaboration of community stakeholders.

SESSION 17 (two presentations)

(Elementary/Supervision) *104, JW Marriott*

Are Students with Disabilities Meeting Science Standards? (Gen)

Clarissa Rosas *(clarissa_rosas@mail.msj.edu),* College of Mount St. Joseph, Cincinnati, Ohio

Review findings from a study that investigated the science achievement of students with disabilities and the perceived preparedness of inservice teachers to provide science instruction to students with disabilities.

General and Special Education Collaboration to Promote Science Literacy (Gen)

Nicole M. Stuart *(nmeeks1@uic.edu),* University of Illinois at Chicago

Review findings from an integrated science literacy program that was designed to support the education of diverse learners in an inclusive classroom.

SESSION 18

Improve Scientific Literacy and Foster the Development of EEKs (Environmentally Ethical Kids) with EDMODO (Gen)

(High School–College) *108, JW Marriott*

Kathleen D. Chesmel *(chesmelk@newegypt.us),* New Egypt High School, New Egypt, N.J.

Learn how EDMODO, a free digital forum, can be used by students to develop literacy skills and apply their scientific knowledge to current environmental issues.

SESSION 19

NSTA Press Session: Team-Teaching Science—You Can Do It! (Gen)

(Supervision/Administration) *201/202, JW Marriott*

Ed Linz *(coachlinz@cox.net),* Retired Science Teacher and Author, Springfield, Va.

Mary Jane Heater, West Springfield High School, Springfield, Va.

An experienced team of co-teachers discusses the challenges and rewards of team teaching K–12 science and presents a game plan for success.

SESSION 20

The State of Science Teacher Education: Updates and Opportunities for Political Advocacy with NSTA and ASTE (Gen)

(General) *313, JW Marriott*

Joseph W. Shane *(jwshan@ship.edu),* Shippensburg University, Shippensburg, Pa.

Jon E. Pedersen *(jep@unl.edu),* University of Nebraska–Lincoln

Jodi Peterson *(jpeterson@nsta.org),* Assistant Executive Director, Legislative & Public Affairs, NSTA, Arlington, Va.

Join us for a summary of the current status of federal education policies affecting science teacher education and discuss advocacy efforts of NSTA and the Association for Science Teacher Education (ASTE).

SESSION 21

To Pretest or Not to Pretest…A Look at Getting at Student Misconceptions, Prior Knowledge, and Ability Levels (Earth)

(High School–College) *314, JW Marriott*

Jill Bucher *(jbucher@lincolncollege.edu),* Lincoln College, Normal, Ill.

Laura M. Barden-Gabbei *(lm-barden@wiu.edu),* Western Illinois University, Macomb

Pretests are essential in identifying student misconceptions, prior knowledge, and ability levels—and having a sense of these is necessary for instructional development aligned with Universal Design and Response to Intervention initiatives. Paper tests as well as the new technology application, Socrative, will be demonstrated.

SESSION 22

NSF Follow-Up Session: What Lies Beneath? ANDRILL Investigations Under the Ross Ice Shelf (Env)

(Informal Education) *JW Grand Ballroom 2, JW Marriott*

Frank R. Rack *(frack2@unl.edu),* University of Nebraska–Lincoln

Understanding the past history of Antarctica involves studies of sediment and rock cores from the continental margin. The continental margin, with its floating ice shelves and sea ice cover, represents a challenging environment for both scientific and logistical operations.

SESSION 23

Successful K–12 STEM Education: Identifying Effective Approaches in Science, Technology, Engineering, and Mathematics (Gen)

(General) *JW Grand Ballroom 3, JW Marriott*

Jerry D. Valadez *(jdvscience@yahoo.com),* California State University, Fresno

Martin Storksdieck *(mstorksdieck@nas.edu),* The National Academies, Washington, D.C.

Providing all students with access to high-quality education in STEM is important to their individual futures and the nation's economic and political health.

SESSION 24

Teacher Researcher Day Session: Woodrow Wilson Fellows—How Teacher Inquiry Shapes Understandings (Bio)

(General) *JW Grand Ballroom 5/Group 1, JW Marriott*

Tom J. McConnell *(tjmcconnell@bsu.edu),* **Shannon R. Wenning** *(swenning@warrick.k12.in.us),* and **Consuelo Snow** *(csnow@bishopluers.org),* Ball State University, Muncie, Ind.

Maureen K. Pappas, Ball State University/Fountain Square Academy, Indianapolis, Ind.

Presider: Tom J. McConnell

Woodrow Wilson Fellows will share research projects and discuss the impact of teacher inquiry in shaping their teaching practice. They conducted teacher inquiry during a yearlong clinical experience at the Woodrow Wilson Indiana Teaching Fellowship.

SESSION 25

Teacher Researcher Day Session: Action Research as a Reflective Tool to Enhance the Learning of Students with Special Needs (Gen)

(General) *JW Grand Ballroom 5/Group 4, JW Marriott*

Myrna Hernández, Maria Ortiz, and **Marta Fortis** *(fortismarta@gmail.com),* University of Puerto Rico, San Juan

Sandra Beltrán *(sanbeltranmor@gmail.com),* Francisco Gaztambide Vega, Bayamon, P.R.

Lourdes E. Rivera González *(lourdesriveragonzalez@yahoo.com),* School Juan D. Stubbe, Cidra, P.R.

Javier Gonzalez Rondo *(jagoro322@gmail.com),* Lysander Barrero Terry, Villabela, P.R.

Carmen M. Ruiz Méndez, Central de Artes Visuales, Santurce, P.R.

Jadira Aponte Ramírez *(jadira_aponte@yahoo.com),* Alberto Meléndez Torres High School, Orocovis, P.R.

Minnuette Rodriguez *(minnuette@hotmail.com),* Julian Blanco School, Santurce, P.R.

Presider: Marta Fortis

Join us as master science teachers discuss their use of action research to analyze their practices and impact on the learning of students with special needs.

SESSION 26

Brain Research and Its Implications for Teaching and Learning Science (Gen)

(General) *JW Grand Ballroom 10, JW Marriott*

Deborah D. Sachs *(dsachs@uindy.edu),* University of Indianapolis, Ind.

Explore how the brain's structure and function impact the teaching and learning of science. Leave with practical, immediately applicable, brain-compatible strategies for teaching science.

SESSION 27

Blogs, Wikis, or What? (Gen)

(General) *Indiana Ballroom A/B, Marriott Downtown*

Carolyn J. Lowe *(clowe@nmu.edu),* Northern Michigan University, Marquette

Blogs, wikis, tweets, and social networks are useful educational tools. Examine how and when each is best used to facilitate inquiry.

SESSION 28

PreK Techno Scientists (Gen)

(General) *Marriott Ballroom 1, Marriott Downtown*

Maria A. Alanis and **Joy A. Moore** *(joymoore@austinisd.org),* Austin (Tex.) Independent School District

See how preK digital natives and teachers use technology (digital cameras, digital microscopes, and Web 2.0 tools) to capture, enhance, and revisit science learning.

SESSION 29 (two presentations)

(General) *Marriott Ballroom 2, Marriott Downtown*

iPad Inquiry for the Inclusive Classroom (Gen)

Bridget T. Miller *(bmiller@purdue.edu)* and **Steven C. Smith** *(mrsmith@purdue.edu),* Purdue University, West Lafayette, Ind.

iPads are an innovative way to differentiate instruction and meet various classroom needs. Through technology, teachers can scaffold and support students in their inquiry investigations.

Creating and Fostering an Online Community of Practice Through *STEMEdhub.org* (Gen)

Ann M. Bessenbacher *(ambessenbacher@purdue.edu),* **Wilella Burgess** *(wburgess@purdue.edu),* and **Gabriela C. Weaver** *(gweaver@purdue.edu),* Purdue University, West Lafayette, Ind.

Join us for a presentation of *STEMEdhub.org,* an online community of practice. *STEMEdhub.org* is a dynamic website where educational activities and scientific research meet.

SESSION 30

The Dynamic Intersection of Science, Technology, Literacy, and the Common Core Standards (Gen)

(General) *Marriott Ballroom 3, Marriott Downtown*

Colleen T. Sheehy *(sheehyc@uindy.edu),* University of Indianapolis, Ind.

Karina R. Clemmons *(krclemmons@ualr.edu),* University of Arkansas at Little Rock

Incorporate science content and 21st-century learning with the common core standards! Engage your students at the dynamic intersection of young adult literature, technology, and science!

SESSION 31

Creating Connections: Historical Approaches, Scientific Debate, and Technological Advancement (Gen)

(General) *Marriott Ballroom 7, Marriott Downtown*

Mary Beth McCoy *(mccoy@opsb.net),* Ouachita Junior High School, Monroe, La.

LA-SiGMA stands for the Louisiana Alliance for Simulation-Guided Materials Applications and is an innovative Research Experience for Teachers (RET) professional development course at Louisiana Tech University. Join us as LA-SiGMA participants discuss the advancement and future possibilities of technology to attract students to STEM careers.

SESSION 32 (two presentations)

(General) *Marriott Ballroom 10, Marriott Downtown*

Engaging Parents in Science Instruction: The Parent LIFT Academy (Gen)

Amy House *(ahouse@pasadenaisd.org),* Rick Schneider Middle School, Houston, Tex.

Jason Aleman *(ja41@txstate.edu),* Texas State University, San Marcos

Learn about promising practices, strategies, and resources from a parental involvement initiative in Pasadena, Texas, that is geared toward engaging families of ELL students in science.

Family Science Nights and Field Trips: Building a Culture of Science (Gen)

Jay R. Holmes, American Museum of Natural History, New York, N.Y.

Dora Kravitz *(dora_kravitz@yahoo.com),* Isaac Newton Middle School for Math & Science, Manhattan, N.Y.

Family Science Nights and field trips build a culture of science as teachers, students, families, and the whole school community learn science together.

SESSION 33

Activating Children's Interest and Curious Minds: How to Ignite Science Learning and Inquiry (Gen)

(General) *Michigan/Texas, Marriott Downtown*

Vanessa B. Lujan *(vlujan@berkeley.edu),* Lawrence Hall of Science, University of California, Berkeley

Explore research-based findings on how in-school and out-of-school learning experiences can activate children in ways that ignite deep engagement for future science learning.

SESSION 34

History of Winter (HOW) (Env)

(Informal Education) *Capitol II, Westin*

Jeanne L. Moore *(jlm297@pitt.edu),* University of Pittsburgh at Greensburg, Pa.

Judd R. Pittman *(jpittman@hbgsd.k12.pa.us),* Ben Franklin Math Science Academy, Harrisburg, Pa.

Join us to learn about the weeklong NASA-sponsored HOW workshop, which allows teachers, professors, and informal education partners to work alongside scientists collecting and analyzing data in Lake Placid, New York.

SESSION 35 (two presentations)

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

Saving Our Shores and Seas (SOS2) (Env)

Megan F. O'Neill *(moneill@bcbe.org),* Fairhope High School, Fairhope, Ala.

SOS2 is a hands-on, student-driven project with many opportunities for inquiry research. Learn how students raise fish and plants in the classroom for local habitat restoration and monitor success through PIT tags and survey equipment.

EcoCasting: Using Computer Models of Invaded Aquatic Ecosystems to Teach Scientific Research (Env)

Margaret Waldron *(m-waldron@northwestern.edu),* Northwestern University, Evanston, Ill.

Scientists at Northwestern University are investigating unusual bioaccumulation patterns in invaded food webs of the Great Lakes. The EcoCasting project has developed a computer model–based curriculum for high school environmental science classes to investigate the data to understand what is causing the anomalies.

SESSION 36

Nuclear Power and Radiation—Back in the Spotlight Again (Gen)

(General) *Chamber, Westin*

Wayne Snyder *(wayne.snyder@cgu.edu),* Claremont Graduate University, Claremont, Calif.

Jeff DeGlopper *(jeffrey.deglopper@gmail.com),* Milwaukee Academy of Science, Milwaukee, Wis.

Presider: Mehri Fadavi, Jackson State University, Jackson, Miss.

Let's review the basic science of radiation types, nuclear reactions, fission, and nuclear power. Activities include building (nonworking) nuclear power plant models.

SESSION 37

Eco-Schools USA Climate Change Connections (Earth)

(Middle Level–High School) *Congress I/II, Westin*

Jennifer R. Hammonds *(hammondsj@nwf.org),* National Wildlife Federation, Reston, Va.

Brian A. Campbell *(brian.a.campbell@nasa.gov),* NASA Wallops Flight Facility, Wallops Island, Va.

Explore Eco-Schools USA and new climate change modules developed by the National Wildlife Federation and NASA that help educators integrate climate science literacy, technology, and student action.

SESSION 38

AMSE Session: Using STEM for Medical Career Exploration (Gen)

(High School) *Council, Westin*

Robert L. Ferguson *(r.l.ferguson1@csuohio.edu),* Cleveland State University, Cleveland, Ohio

Learn about inquiry-based science concept lessons developed for a Health Careers Summer Institute for urban high school students.

SESSION 39

Science Visualized: The Art of Science (Earth)

(General) *Grand Ballroom 3, Westin*

Randall H. Landsberg *(randy@oddjob.uchicago.edu),* University of Chicago, Ill.

Pictures and images allow all types of learners to approach and explore modern science. Experience learning with depictions of cosmological data and remote observatories.

11:00 AM–12 Noon Workshops

Making Terrific Science Games (Gen)

(Elementary–High School) *121, Convention Center*

Rodelio A. Abuan *(rabuan@conroeisd.net),* Conroe High School, Conroe, Tex.

Learn how to make your own curriculum-aligned games and integrate them into classroom activities. These games aim to stimulate critical thinking and improve students' skills in classifying, comparing, and contrasting science concepts.

Activities That Integrate Concepts in Chemistry and Physics and Engage Students (Gen)

(High School) *122, Convention Center*

Matthew L. Miller *(matt.miller@sdstate.edu)* and **Larry M. Browning** *(larry.browning@sdstate.edu),* South Dakota State University, Brookings

Experience hands-on activities that relate the physical science content standard of interactions of energy and matter in both chemistry and physics.

Marine Plastic Pollution: Examining Issues and Solutions in a Middle School Classroom (Env)

(Middle Level/Informal Education) *123, Convention Center*

Mary E. Whaley *(mwhaley@mbayaq.org),* Monterey Bay Aquarium, Monterey, Calif.

Enrich your middle school classroom with hands-on, standards-based activities focusing on issues and solutions surrounding plastic pollution. Activities will highlight physical and chemical properties of plastics, including density and buoyancy.

Microgravity in the Classroom and at NASA (Phys)

(General) *126, Convention Center*

Diane L. McElwain *(diane.l.mcelwain@nasa.gov),* NASA Glenn Research Center, Cleveland, Ohio

Demonstrate microgravity in your classroom, relate it to orbit, understand weightlessness, and let your students create an experiment for a NASA drop tower.

Whodunit? A Problem-based Unit in Forensic Science (Gen)
(High School) *128, Convention Center*
Martha M. Day *(martha.day@wku.edu),* Western Kentucky University, Bowling Green
Joey Stinson *(joey_stinson@comcast.net),* Russellville High School, Russellville, Ky.
Experience a problem-based unit on forensic science using the Legacy Cycle of challenge-based instruction. Participants will develop forensic investigation skills for a mock trial.

Butterfly Bonanza (Bio)
(General) *204, Convention Center*
Nancy R. Sale *(nancysale@dadeschools.net),* Lillie C. Evans Elementary School, Miami, Fla.
Presider: Karen Gant, Carol City Elementary School, Miami Gardens, Fla.
Butterfly Bonanza provides a road map to success for implementing a native butterfly habitat. Take home a starter kit and DVD. Door prizes!

Coulomb's Law Through Electrostatic Interactions: What's Your Sign? (Phys)
(Elementary–High School) *207, Convention Center*
Milijana Suskavcevic *(milijana@rice.edu),* Rice University, Houston, Tex.
Engage in a set of guided inquiry activities that allow you to examine electrostatic interactions between charged objects as well as examine Coulomb's law qualitatively and quantitatively.

Groundhog's Garden Grew, and Yours Can, Too! (Bio)
(Preschool–Elementary) *209, Convention Center*
CANCELED
Kristin T. Rearden *(krearden@utk.edu),* University of Tennessee, Knoxville
Start a classroom gardening project and reap the benefits in science, math, literacy, and life! Standards-based lessons and resources will be provided.

CESI Session: Think Like an Engineer, a Chemist, an Astronaut, or a Marine Scientist (Gen)
(Elementary–Middle Level) *210, Convention Center*
Barbara Z. Tharp *(btharp@bcm.edu),* **Michael Vu** *(mv12@bcm.edu),* and **Dee Mock,** Baylor College of Medicine, Houston, Tex.
What do you want to be when you grow up? For many students, science is the gatekeeper, but it does not have to be. Keep students interested in science by involving them in projects focused on a number of science careers using real examples from science across a variety of disciplines.

Kayleen and David Explore Sound: Acoustical Engineering (Gen)
(Elementary) *231, Convention Center*
Timothy P. Carey *(tcarey@dps.k12.oh.us),* Valerie Elementary School, Dayton, Ohio
This integrated STEM unit teaches young students about the properties and production of sound. Students design and create ear protection against unsafe noise levels.

Bring Literacy and Science Together: "B.L.A.S.T" © for Success at School and Home (Gen)
(Elementary) *232, Convention Center*
Reneé G. O'Leary *(vavallme@comcast.net),* Holy Angels School, Newark, Del.
Peggy Vavalla, DuPont, Wilmington, Del.
Discover simple, multisensory, hands-on elementary (grades 2–5) explorations using fairy tales as catalysts with language arts follow-up. Take home sample plans and materials.

Play in a Stream Table with a Geophysicist and a Classroom Teacher (Earth)
(Elementary–Middle Level) *233, Convention Center*
Reeda Hart *(hartr@nku.edu)* and **Thomas Brackman** *(brackmant1@nku.edu),* Northern Kentucky University, Highland Heights
Presider: Dale Elifrits *(elifrtisc@nku.edu),* Northern Kentucky University, Highland Heights
Experience the rock cycle, the water cycle, transportation and deposition, weathering, and erosion while playing in a stream table! Free CD of lesson plans.

Everything Is Connected: Hands-On Human Ecology (Env)
(Elementary) *235, Convention Center*
Carol Bliese *(cbliese@popconnect.org),* Population Connection, Washington, D.C.
Help students understand their role in the delicate balance of people, natural resources, and environmental quality with memorable, interdisciplinary games, simulations, and problem-solving challenges.

Building a Sense of Wonder in Science (Gen)
(Elementary–Middle Level) *241, Convention Center*
Kevin J.B. Anderson *(mrkja@yahoo.com),* University of Wisconsin–Madison
Explore what excites you about science and discuss how to

connect with students' own "sense of wonder" about the world around them.

Science and Physical Education Join Forces (Bio)
(Middle Level–High School) 245, Convention Center
Thomas Mullane and **Joseph Martone,** The James Baldwin School, New York, N.Y.
Science meets PE! Learn about a case study that promotes students' skills and understanding in scientific methods through a physical education lens.

Inquiry-based Science Teacher Education for Inner City Classrooms (Gen)
(General) JW Grand Ballroom 8, JW Marriott
Rebecca E. Dyasi *(bdyasi@aol.com),* Long Island University, Brooklyn, N.Y.
Hubert M. Dyasi *(hdyasi@aol.com),* Professor Emeritus, City College of City University of New York, N.Y.
Learn how teachers' and students' inquiry-based science questions can be used to develop teachers' pedagogical science content knowledge and students' understanding of science and effective self-assessment strategies.

Professional Development: Capturing the Trends, Practices, and Research to Strengthen Science Teaching and Learning (Gen)
(General) JW Grand Ballroom 9, JW Marriott
LaMoine L. Motz *(llmotz@comcast.net),* 1988–1989 NSTA President, and Science Education and Facilities Specialist, White Lake, Mich.
Jack Rhoton *(rhotonj@mail.etsu.edu),* East Tennessee State University, Johnson City
Emma L. Walton *(elwalton@aol.com),* 1999–2000 NSTA President, and Science Consultant, Anchorage, Alaska
Presider: LaMoine L. Motz.
Join our group of science education leaders as we share current research, teaching and learning models, projects, and collaborative initiatives toward improving science teaching and learning through professional development and leadership. Handouts!

Tomb Raiders: Mummy's the Word (Gen)
(General) Indiana Ballroom F, Marriott Downtown
Danye Pelichet *(danye.pelichet@zacharyschools.org)* and **Demetria S. Scott,** Zachary Elementary School, Zachary, La.
Embark upon an interactive adventure inside the Great Pyramids. Explore geometric and geological secrets through hands-on, inquiry-based activities sure to excite and challenge students.

HASTI Share-a-Thon (Gen)
(Elementary–High School) Marriott Blrm. 5, Marriott Downtown
Duane S. Nickell *(duane_nickell@yahoo.com),* Hoosier Association of Science Teachers, Inc., Indianapolis, Ind.
Presider: Ginger Shirley, Our Lady of Providence Junior-Senior High School, Clarksville, Ind.
Join members of the Hoosier Association of Science Teachers, Inc. (HASTI) as they share teaching ideas across all grade levels and disciplines.

Moving from Misconceptions to Conceptual Change (Gen)
(Elementary–High School) Marriott Blrm. 8, Marriott Downtown
William C. Metz *(wmetzgolf@aol.com),* Science Education Consultant, Fort Washington, Pa.
Julia T. Gooding *(chemteacher007@aim.com),* Hopewell High School, Aliquippa, Pa.
Let's investigate how student misconceptions might occur and what strategies teachers might employ to help students move toward conceptual change.

Seven Billion and Counting—Lessons for Our Planet's Future (Env)
(Middle Level–High School) Capitol I, Westin
Pamela Wasserman *(pam@popconnect.org),* Population Connection, Washington, D.C.
Engage in innovative activities to explore connections among human population growth, resource consumption, and the changing face of our planet. Free CD-ROM of activities.

Clouds in the Classroom (Earth)
(Elementary–High School) Capitol III, Westin
Deanna TeBockhorst *(deanna@atmos.colostate.edu),* Colorado State University, Fort Collins
Susan W. Moore *(susan.w.moore@nasa.gov),* SSAI/NASA Langley Research Center, Hampton, Va.
Todd Ellis *(ellistd@oneonta.edu),* SUNY Oneonta, N.Y.
How are clouds formed? What are satellites observing? Engage in activities focused on clouds, climate, and weather using math and literature.

Explore the Expanding Universe (Earth)
(General) Grand Ballroom 2, Westin
Presenter to be announced
Take home hands-on STEM activities to help understand the "Red Shift" and the expanding universe. Receive an introduction to a public domain planetarium program and related NASA education resources.

11:00 AM–12:30 PM Exhibitor Workshop

Enhance Your Teaching of the New AP® Biology Curriculum Framework with Free Resources from HHMI (Bio)

(Grades 9–College) *109, Convention Center*

Sponsor: Howard Hughes Medical Institute

Ann Brokaw *(abrokaw44@gmail.com),* Rocky River High School, Rocky River, Ohio

Receive classroom resources, virtual labs, and website information for using free Howard Hughes Medical Institute resources to enhance your classroom instruction of AP Biology. The vast HHMI resources are in a teacher guide organized by and focused on the four Big Ideas, including the Enduring Understandings of the newly released AP Biology Curriculum Framework.

11:30 AM–12 Noon Presentation

SESSION 1

Teacher Researcher Day Session: Empowering Students to Excel in Science Through Technology (Gen)

(General) *JW Grand Ballroom 5/Group 3, JW Marriott*

Janell N. Catlin *(janellcatlin@gmail.com),* Teachers College, Columbia University, New York, N.Y.

Meg Hood *(meghood55@yahoo.com),* New York City (N.Y.) Dept. of Education

Take home new ways to engage students in improving their learning in science through discussion and self-assessment.

11:30 AM–12:30 PM Exhibitor Workshop

Enhancing the Elementary Classroom Through Robotics (Phys)

(Grades 2–4) *202, Convention Center*

Sponsor: LEGO Education

Presenter to be announced

Learn how your students can explore science and math concepts through robotics by building moving models out of LEGO® bricks and programming the models using software developed specifically for elementary students. Discover key science concepts by completing an actual classroom activity from the LEGO Education WeDo™ Robotics Set and Activity Pack.

11:30 AM–1:00 PM NESTA Earth and Space Science Educators Luncheon

Dust in the Wind: The Geological Record of Ancient Atmospheric Circulation

(By Ticket Through NESTA) *State, Westin*

Steven A. Hovan *(hovan@iup.edu),* Indiana University of Pennsylvania, Indiana, Pa.

The atmospheric wind pattern is closely tied to global climate changes of Earth's past. As global climates warm and cool, winds respond by changing strength and zonal patterns migrate accordingly. But how exactly do we capture the geological record of ancient winds? Hovan's research involves tracking the strength and location of ancient atmospheric circulation using dust carried to the oceans by the winds. Dust blows from the continents and is carried to the oceans where it eventually settles as part of the debris we call seafloor sediments. Once isolated, different characteristics of the dust material can be used to track ancient winds and their response to sudden or long-term climate events.

Join your Earth and space science educators for a sit-down lunch with a scientist lecture on the frontiers of research! Tickets are available at *www.nestanet.org/cms/content/store/event*.

12 Noon–12:30 PM Presentation

SESSION 1

Teacher Researcher Day Session: The Science Inquiry Group Network (Gen)

(General) *JW Grand Ballroom 5, JW Marriott*

Emily H. van Zee, Oregon State University, Corvallis

Deborah L. Roberts-Harris *(drobertsharris@gmail.com),* University of New Mexico, Albuquerque

Join our conversation about ways to inquire into science learning and teaching.

12 Noon–1:30 PM NSTA/SCST College Luncheon

Measuring Biological Expertise and Cultivating Expertise in Biology Teaching: Card Sorting, Superheroes, and Science Faculty with an Education Specialty (M-9)

(Tickets Required: $55) *203, JW Marriott*

Kimberly D. Tanner *(kdtanner@sfsu.edu),* Associate Professor of Biology, and Director, SEPAL: The Science Education Partnership and Assessment Laboratory, San Francisco State University, San Francisco, Calif.

University biology education is aimed at producing graduates who possess biology expertise. However, little is known about the extent to which biology majors develop biological expertise during their undergraduate years. Using theoretical frameworks and methodologies from cognitive psychology, Kimberly Tanner's laboratory—the Science Education Partnership and Assessment Laboratory (SEPAL)—is developing novel measures to assess the development of biological expertise. As a science faculty member with an education specialty, Kimberly Tanner discusses how she developed her SEPAL laboratory into a mechanism for integrating biology education research and discipline-specific pedagogical training for college science students, staff, and faculty.

Named the 2011–2012 winner of the Outstanding Undergraduate Science Teacher Award by the Society for College Science Teachers, Dr. Kimberly D. Tanner translates her research findings into teaching strategies that make science more accessible for everyone. She is an associate professor of biology with a research focus in biology education and director of the Science Education Partnership and Assessment Laboratory (SEPAL), her research group within the Department of Biology at San Francisco State University.

Trained as a neuroscientist, she received her PhD from the University of California, and was awarded a National Science Foundation Postdoctoral Fellowship in Science, Mathematics, Engineering and Technology Education (PFSMETE).

Tickets, if still available, must be purchased at the Ticket Sales Counter in the NSTA Registration Area before 3:00 PM on Friday.

12 Noon–1:30 PM Exhibitor Workshops

Wind-energized Classroom **(Phys)**

(Grades 5–College) *102, Convention Center*

Sponsor: KidWind Project

Joseph Rand *(joe@kidwind.org),* KidWind Project, St. Paul, Minn.

Join KidWind as we explore classroom wind turbine activities. Play with simple devices you can build for less than $5 up to advanced turbines that explore generators, gearboxes, and airfoils. Learn about curricula, student design challenges, and web tools to make your classroom come alive with wind-powered science.

YouTube for Schools **(Gen)**

(General) *103, Convention Center*

Sponsor: Google

Phil Wagner, Google, Mountain View, Calif.

YouTube for Schools provides schools access to hundreds of thousands of free educational videos as well as the option to add their own. Check out how your school can sign up for this program as well as ways teachers can use it to supplement and support their lessons.

Sparking More Interest with Chemistry: A Part 2 Experience **(Chem)**

(Grades 9–12) *104, Convention Center*

Sponsor: Houghton Mifflin Harcourt

Mickey Sarquis, Terrific Science, Healdsburg, Calif.

Jerry Sarquis, Professor Emeritus, Miami University, Oxford, Ohio

Roll up your sleeves and prepare to become engaged in chemistry activities, demos, challenges, and tips to help spark your students' interest and facilitate their understanding of chemistry. This Part 2 experience provides a different set of topics from those done in the Part 1 Experience (see page 32), but continues the emphasis on using inexpensive, readily available materials. The session is presented by *Modern Chemistry* authors, Mickey and Jerry Sarquis, award-winning educators and recognized leaders in chemistry education initiatives.

Reading, Writing, and SCIENCE! The Literacy Connection and Discovery Education Science Techbook **(Gen)**

(Grades K–12) *110, Convention Center*

Sponsor: Discovery Education

Trinette Green, Discovery Education, Silver Spring, Md.

Promoting literacy in the classroom is no longer JUST the job of the reading teacher. The importance of developing the literate learner falls on all educators. Discovery Education Science Techbook has a plethora of resources and strategies for developing key literacy skills and scientific literacy in every student.

Biology with Vernier **(Bio)**

(Grades 8–College) *116, Convention Center*

Sponsor: Vernier Software & Technology

Mike Collins *(info@vernier.com)* and **David Carter** *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.

Experiments such as transpiration, cell respiration, and EKG from our popular *Biology with Vernier* and *Advanced Biology with Vernier* lab books will be performed in this hands-on workshop. You will be able to try these experiments using LabQuest and our LabQuest Mini. Our new *Investigating Biology through Inquir***y** lab book will also be on display.

What's New for the Vernier LabQuest? **(Gen)**

(Grades 7–College) *117, Convention Center*

Sponsor: Vernier Software & Technology

Matt Anthes-Washburn *(info@vernier.com)* and **Verle Walters** *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.

Join us for a look at the latest innovations in data collection using Vernier LabQuest technology. In this workshop, we will demonstrate a "Collect Once; Analyze Anywhere" approach to lab work that supports hands-on collaborative learning with individualized accountability.

New and Improved *Biotechnology: Science for the New Millennium* **(Bio)**

(Grades 10–College) *130, Convention Center*

Sponsor: Sargent-Welch

Ellyn A. Daugherty, San Mateo High School, San Mateo, Calif.

Learn how to use the features of the new and improved *Biotechnology: Science for the New Millennium* curriculum with a revised and updated textbook, lab manual, instructor's guides, websites, and lab supplies and new lab kits.

Keeping a Balance: Homeostasis and Negative Feedback **(Bio)**

(Grades 6–12) *131, Convention Center*

Sponsor: Science Take-Out

Susan Holt *(contact@sciencetakeout.com),* Science Take-Out, Pittsford, N.Y.

This hands-on Science Take-Out activity introduces students to concepts involved in homeostasis and negative feedback. Perform a simple hands-on laboratory activity to investigate how Cupples (a simulated organism) maintain homeostasis. Use a graphic organizer to illustrate other feedback control mechanisms, including regulation of body temperature and blood glucose metabolism.

Planet Diary: Using Current Events to Engage Your Students in Science **(Gen)**

(Grades K–12) *133, Convention Center*

Sponsor: Pearson

Jack Hankin, Planet Diary Author and Creator, Pacifica, Calif.

Join Jack Hankin, author and creator of Pearson's acclaimed Planet Diary *(www.planetdiary.com),* and see how easy it is to integrate science current events into your upper elementary, middle school, or high school curriculum with this website, which features in-depth student activities and reports on key environmental issues.

New Ways to Prepare Your Students Using 21st-Century STEM Initiatives—GO DIGITAL! **(Bio)**

(Grades 8–12) *135, Convention Center*

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 and Swift Digital microscopes and cameras into your STEM curriculum. Get students involved digitally—learn how to integrate digital technology into your current teaching with any or no budget!

Bonding with Carolina™ Chemistry **(Chem)**

(Grades 9–12) *144, Convention Center*

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Discover Carolina kits, apps, videos, and demonstration activities that can engage students and help them learn the fundamentals of the periodic table, polyatomic ions, and

chemical bonding. Participation is required in this hands-on guided inquiry workshop to learn how Carolina resources can help make you successful in your chemistry classroom.

Introduction to Wisconsin Fast Plants® (Bio)
(Grades K–12) *145, Convention Center*
Sponsor: Carolina Biological Supply Co.
Laurie Nixon, Carolina Biological Supply Co., Burlington, N.C.
Students can actively take part in science with new hands-on activities using Wisconsin Fast Plants. These minuscule and quick-growing plants are ideal classroom tools for exploring environmental effects, variation, life cycle, and nutrient cycling. Participants work with hands-on activities such as planting seeds. Free materials!

New Guided Inquiry Labs for Advanced Placement® Biology from Flinn Scientific (Bio)
(Grades 10–12) *Wabash Ballroom 1, Convention Center*
Sponsor: Flinn Scientific, Inc.
Irene Cesa and **Maureen Hunt,** Flinn Scientific, Inc., Batavia, Ill.
Four big ideas, more great labs! The revised AP Biology curriculum integrates scientific inquiry and reasoning through a series of student-directed, inquiry-based laboratory investigations. Join Flinn Scientific as we model the inquiry process and demonstrate activities from our new guided inquiry labs for AP Biology. We will share proven strategies for improving students' ability to generate meaningful questions, design experiments, and analyze scientific evidence. Handouts provided for all activities include alignment with the new AP Biology curriculum framework.

What the Hands Do, the Brain Does: Notebook Foldables® for Lasting Understanding (Gen)
(Grades K–12) *Wabash Ballroom 2, Convention Center*
Sponsor: Dinah-Might Adventures, LP
Nancy F. Wisker *(dma@dinah.com),* Dinah Zike Academy, Comfort, Tex.
Take your students' science notebooks to a new dimension with Foldables. These 3-D interactive graphic organizers transform notebooks into individualized brain-smart tools. Use basic classroom materials and leave with a memorable learning and assessment tool that can revolutionize the way you teach and the way your students learn.

12 Noon–2:00 PM Aerospace Educators Luncheon

To Boldly Go: The Experience, Majesty, and Future of Space (M-10)
(Tickets Required: $55) *Grand Ballroom 4, Westin*

Mary Ellen Weber, Astronaut and Founder of STELLAR Keynotes & Consulting, Dallas, Tex.

"So what's it really like?" Astronaut Mary Ellen Weber will share her personal experiences to bring the spectacular expedition of space travel to life with anecdotes and footage from her missions. Join us as she gives her perspective on events and tragedies in our U.S. space program, on commercial vehicle development, and on the end of the Shuttle era—and how this will impact our future as a space-faring civilization.

Mary Ellen Weber was a NASA astronaut for 10 years, a veteran of two space shuttle flights, and one of the youngest to ever go to space. She flew in 1995 aboard Discovery *to launch a communications satellite and again in 2000 aboard* Atlantis *to construct the International Space Station. She is the recipient of the NASA Exceptional Service Medal.*

More recently, Dr. Weber was vice president for government affairs for nine years at The University of Texas Southwestern Medical Center, where she focused on strategic communications and analytical strategies, successfully increasing annual appropriations from $100 million to $170 million.

She is currently with STELLAR Keynotes & Consulting, bringing her unique insights to provide consulting services in communications, in legislative strategy, and in strategies for high-stakes operations. She is a member of the NASA Advisory Council Committee on Technology and Innovation. She received a PhD in physical chemistry from the University of California Berkeley.

The speaker is sponsored by Northrop Grumman Foundation.

Tickets, if still available, must be purchased at the Ticket Sales Counter in the NSTA Registration Area before 3:00 PM on Friday.

12 Noon–2:00 PM Meeting

Presidents of AMSE Meeting
(By Invitation Only) *Governor's Suite, Westin*
Please visit *www.amsek16.org* for further information.

12:15–1:15 PM COSEE Luncheon

The Oceans and Human Health—From Australia to Antarctica: The Benefits and Detriments of Marine Microbes and Their Linkages to Our Daily Lives

(By Invitation Only) *309/310, JW Marriott*

Sonya Dyhrman, Woods Hole Oceanographic Institution, Woods Hole, Mass.

The Oceans and Human Health—From Australia to Antarctica: The Benefits and Detriments of Marine Microbes and Their Linkages to Our Daily Lives

Much of the U.S. population lives along the coast and many of us are acutely aware of the importance of the ocean for food, transportation, recreation, and more. Often called the "unseen majority," billions of marine microbes are working behind the scenes to keep the ocean functioning the way it does. The effects of these microbes are both beneficial and, in some cases, detrimental to the oceans and human health. With examples from her research around the globe, Dr. Dyhrman will discuss the benefits and detriments of marine microbes and their linkages to our daily lives.

Visit *www.cosee.net* for more information about this event.

12:30–1:30 PM Presentations

SESSION 1

Secondary Science and Literacy—Making the Connection **(Gen)**

(Middle Level–High School) *111/112, Convention Center*

Deborah D. Sachs *(dsachs@uindy.edu),* **Sue Blackwell** *(blackwells@uindy.edu),* **Jennifer Buchman** *(buchmanj@uindy.edu),* **Kimberly Cummings, Casey Varner** *(varnerc@uindy@edu),* **Robert Foote, Mariana Snyder** *(msnyder681@gmail.com),* **Michael R. Fowler,** and **Veronica Helm** *(helmv@uindy.edu),* University of Indianapolis, Ind.

Join the University of Indianapolis Woodrow Wilson Fellows and faculty as they share various literacy-based teaching strategies for promoting academic language literacy in science classrooms.

SESSION 2

Notebooking for Meaning **(Gen)**

(General) *121, Convention Center*

Karen L. Ziminski *(kziminski@boston.k12.ma.us),* Boston (Mass.) Public Schools

Erin A. Hashimoto-Martell *(ehashimoto@boston.k12.ma.us),* Nathan Hale Elementary School, Boston, Mass.

Increase students' engagement and love of learning with a variety of notebooking techniques. Your students will take pride in their notebooks and increase the level of their work.

SESSION 3

Celebrating African-American Scientists and Inventors Through Hands-On Science **(Gen)**

(Informal Education) *122, Convention Center*

Tyraine Ragsdale *(grandhank@grandhank.com),* Grand Hank Productions, Inc., Philadelphia, Pa.

Engage in hands-on science demonstrations that have historical perspectives on African-American scientists and inventors. Learn how to integrate into your curricula the important role African-Americans played in the advancement of science.

SESSION 4

Galápagos NEST **(Env)**

(Middle Level–High School) *123, Convention Center*

Megan F. O'Neill *(moneill@bcbe.org),* Fairhope High School, Fairhope, Ala.

Nurturing the environment with sustainable teaching! Learn about Toyota International Teaching Programs and how to incorporate activities created by teachers about the Galápagos Islands experience.

SESSION 5

Inquiry-based Learning with Modern Optoelectronics Devices (Phys)

(High School) *124, Convention Center*

Stuart Farmer *(stuart.farmer@yahoo.co.uk),* Robert Gordon's College, Aberdeen, Scotland

Join me as Scottish educators share lessons learned and teaching materials from an inquiry-based curriculum using solar cells, LEDs, optical fibers, and liquid crystal displays. Activities were designed to enthuse students aged 12–14 about physical science.

SESSION 6

How Do Airplanes Really Fly? (Phys)

(Middle Level–High School) *125, Convention Center*

Stuart M. Gluck *(stu@jhu.edu),* Johns Hopkins University, Baltimore, Md.

The common explanation of how airplane wings generate lift is actually a pernicious myth. In this session, we'll explore how airplanes really fly.

SESSION 7

Enhance Your Science Lessons with YouTube (Phys)

(Middle Level–College) *126, Convention Center*

Mark Harris *(maharris@dsdmail.net),* Layton High School, Layton, Utah

David C. Wehunt *(wehunt@hotmail.com),* Soddy Daisy High School, Soddy Daisy, Tenn.

Discover how a pair of teachers used YouTube to enhance distance learning while on an oceanography expedition in the North Atlantic.

SESSION 8

Stoichiometry: A Multi-tiered Approach (Chem)

(High School) *127, Convention Center*

Harvey Gendreau and **Bette A. Bridges** *(babridges@comcast.net),* Laboratory Safety Institute, Natick, Mass.

Stoichiometry can be a stumbling block to learning chemistry. High school students vary in their ability to conceptualize this basic construct. Join us as we present some of our ideas on teaching stoichiometry to various types of learners.

SESSION 9

Teaching Science in the 21st Century: Demos That Promote Inquiry, Understanding, and Fun (Phys)

(General) *207, Convention Center*

Clark Hadley *(clarkhadley@gmail.com),* Martinsville East Middle School, Martinsville, Ind.

Presider: Mike Johnson, Martinsville East Middle School, Martinsville, Ind.

Grab your students' attention with a variety of high-interest demonstrations that make science fun.

SESSION 10 (two presentations)

(Middle Level/Informal Education) *208, Convention Center*

How Zoos and Aquariums Can Increase Student Investigation Skills and Achievement in Science (Bio)

Robyn Charlton *(rcharlton@wcs.org)* **Amanda Wagy** *(awagy@wcs.org),* and **Andrea Beauchamp,** Wildlife Conservation Society, Bronx, N.Y.

Increase student achievement with investigations and inquiry in informal settings and enhance your toolbox! Take home ready-to-use instruction and learning resources that invigorate your zoo, aquarium, or museum field trips through meaningful, inquiry-based science investigations.

Connecting Argument, Ethics, the Human Body, and Science Writing in the Middle School Classroom (Bio)

Emily Dodd *(emilygdodd@gmail.com),* MS 223: The Laboratory School of Finance and Technology, Bronx, N.Y.

John A. Craven III *(jcraven@fordham.edu),* Fordham University, New York, N.Y.

A middle school science teacher uses a controversial museum exhibit as a catalyst for improving students' written and verbal argumentative skills as well as their understanding of ethics, cultural perspectives, and human biology.

SESSION 11

ePubbed Zines via iPad = eNgagement (Gen)

(Elementary) *212, Convention Center*

Jennifer L. Cody *(jlc36@scasd.org)* and **Elizabeth S. Cullin** *(esc11@scasd.org),* Park Forest Elementary School, State College, Pa.

Presider: Carla Zembal-Saul *(czem@psu.edu),* Penn State, University Park, Pa.

Increase engagement, enthusiasm, and eagerness using iPad technology. Learn how fifth-grade students engaged in authentic scientific inquiry and writing about their school yard while integrating iPad technology, science, and literacy instruction.

SESSION 12

STEM College Students as Role Models in Family Science, Math, and Engineering Programs (Gen)

(Elementary–Middle Level) *239, Convention Center*

Joan Schumaker Chadde *(jchadde@mtu.edu),* Michigan Technological University, Houghton

Jack Samuelson *(jsamuelson@wi.rr.com),* S&S Consulting, Wauwatosa, Wis.

STEM college students can inspire and engage elementary and middle school students. Learn how to connect with universities and provide fun, hands-on, age-appropriate activities for aspiring young scientists and engineers. Sample activities provided.

SESSION 13 (two presentations)

(Middle Level–High School) *240, Convention Center*

Engagement Techniques for the Urban Science Classroom (Gen)

Katherine Gleeson, Brookside Frontier Math and Science School, Kansas City, Mo.

As more and more students in urban communities are struggling, the need for highly engaging classrooms increase. These engagement techniques are designed for true success in the science classroom, and lead toward 100% participation. Learn to inspire students by bringing science to life.

Science Educational Classroom Games (Gen)

Chad Evans *(chadevans@rgs.edu.sg),* Raffles Girls' School (Secondary), Singapore

Walk away with examples of educational games that can be easily made and used in the classroom. Learn about their design and review findings related to classroom use.

SESSION 14 (two presentations)

(Preschool–Middle Level) *242, Convention Center*

George Washington Was a Scientist?!? (Gen)

Kristin T. Rearden *(krearden@utk.edu)* and **Amy D. Broemmel** *(broemmel@utk.edu),* University of Tennessee, Knoxville

Explore the links among science, history, and literacy as we share trade books and research ideas based on the lives of well-known and obscure scientists.

Scientist Biographies Show Assets of STEM (Gen)

Abha Singh *(paramabha@gmail.com),* Western Illinois University, Macomb

Invigorate your lessons with scientist biographies to help students understand inquiry and get them to think about the assets of STEM. Walk away with examples of how scientists encountered new challenges, and how they addressed these challenges by producing new advancements in science.

SESSION 15

Teach Photosynthesis via Models (Bio)

(High School) *244, Convention Center*

Patricia J. Deibert *(deibertp@msoe.edu),* Milwaukee School of Engineering, Milwaukee, Wis.

Discover how to use and access models to teach light reactions of photosynthesis in your classroom.

SESSION 16

ASTC Session: Professional Development at Informal Science Settings: Recommendations for Educators (Gen)

(General) *103, JW Marriott*

Gary Holliday, The University of Akron, Ohio

Judith S. Lederman *(ledermanj@iit.edu)* and **Norman G. Lederman** *(ledermann@iit.edu),* Illinois Institute of Technology, Chicago

Join us as we share findings and recommendations from a two-year study of professional development for elementary and middle school teachers at a large science and technology center.

SESSION 17

You Deserve a Break Today—Tackling Classroom Management Issues to End Your Day Energized, Secure, and Confident! (Gen)

(Supervision/Administration) *104, JW Marriott*

Lea Ann Solberg *(lealeag@att.net),* John Young Middle School, Mishawaka, Ind.

Learn how to reduce student problem behaviors by 90% with research-based strategies that you can use on your very next day of school.

SESSION 18

Science Education—Perspectives from Teacher Candidates (Gen)

(General) *313, JW Marriott*

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

Undergraduate teacher candidates share passions for science education at the elementary level. Refreshing enthusiasm and dialogue, and a renewed commitment to science education will be shared.

SESSION 19

Organic Macromolecules That Fuel Living Systems (Gen)

(High School–College) *314, JW Marriott*

Donna K. Keller *(dokscience@gmail.com),* North Judson-San Pierre High School, North Judson, Ind.

This is a great way to review the monomers and polymers of organic molecules that fuel all living systems. Students cannot help but remember the monomer units once they have attended a session at P. CHON's kitchen, where a famous chef creates delicious food from monomer units.

SESSION 20

NSF Follow-Up Session: Icy Life on Earth and Beyond? (Bio)

(Informal Education) *JW Grand Ballroom 2, JW Marriott*

Jill Mikucki, The University of Tennessee, Knoxville

Our universe is a cold place, and our search for extraterrestrial life will likely lead us to icy habitats. To better understand what to look for and how to look for it, we must study icy systems here on Earth.

SESSION 21

Organic Solar Cells: Bringing Research to the Classroom (Chem)

(High School–College) *JW Grand Ballroom 3, JW Marriott*

Shaun N. Taylor *(sntaylor@u.washington.edu),* University of Washington, Seattle

Introduce methods of research on organic photovoltaics to the chemistry or physics classroom.

SESSION 22 (two presentations)

(Elem.–High School/Informal) *JW Grand 5/Group 1, JW Marriott*

Presider: Peggy Taylor, Montana State University, Bozeman

Teacher Researcher Day Session: The 5 Es and Student Confidence and Achievement (Gen)

Sue Hokkanen, Montana State University, Bozeman

Discover how the 5E Learning Cycle teaching model impacts student confidence, achievement, and interest in middle school science.

Teacher Researcher Day Session: Voles: A Teacher Doing Scientific Field Research (Gen)

Joel Burgener, Montana State University, Bozeman

Learn about field research involving how the vole population responded to mammal predation in wet meadow habitats. Connection to the classroom from teacher/researcher perspectives will be addressed.

SESSION 23

Teacher Researcher Day Session: Formative Assessment Through Whole-Class Discussion: Recommendations for Effective Practice (Gen)

(Middle Level–College) *JW Grand Blrm. 5/Group 2, JW Marriott*

Melissa L. Shirley *(melissa.shirley@louisville.edu),* University of Louisville, Ky.

Explore how teachers can obtain better evidence of student understanding of scientific concepts through the skilled use of whole-class discussion strategies.

SESSION 24

Teacher Researcher Day Session: WISE Climate Change Curriculum and Greenhouse Effect Simulation for Your Classroom (Earth)

(Middle Level) *JW Grand Ballroom 5/Group 3, JW Marriott*

Edward Cohen *(ecohen@pway.org),* Quibbletown Middle School, Piscataway, N.J.

Find out how to implement into your classroom the no-cost NSF-funded WISE (Web-based Inquiry Science Environment) climate change curriculum and greenhouse effect simulation that is based on action research. The WISE curriculum was created using mixed methods research and implications, including an extreme testing assessment.

SESSION 25

Teacher Researcher Day Session: Integrating Farm to School Projects into Elementary and Middle Grades Education (Gen)

(General) *JW Grand Ballroom 5/Group 4, JW Marriott*

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

Sarah Malcolm *(malcolm.s.e@gmail.com),* North Ridge Elementary School, Raleigh, N.C.

Find out how teachers and teacher educators learn together through collaborative research. Farm to School includes school gardens, farm field trips, nutrition education, and local food in school cafeterias. We'll share our related research studies and results.

SESSION 26

NSTA Press Session: Promoting Learning Through Formative Assessment (Gen)

(General) *JW Grand Ballroom 7, JW Marriott*

Page Keeley *(pkeeley@mmsa.org),* 2008–2009 NSTA President, and Maine Mathematics and Science Alliance, Augusta

Gather a repertoire of robust strategies for promoting learning through formative assessment.

SESSION 27

Teaching Problem-solving Strategies in the Elementary Classroom: Helping Students See the Interconnectedness of STEM (Gen)

(General) *White River Ballroom F, JW Marriott*

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

Identify and discuss essential problem-solving strategies and process skills. Learn how to develop these process skills across curricula as well as discover a wide range of engineering applications for these skills. Handouts!

SESSION 28

Publishing Student Work with Free Web 2.0 Technologies (Gen)

(General) *Indiana Ballroom A/B, Marriott Downtown*

Eric D. LeMoine *(eric_lemoine@beavton.k12.or.us),* Kinnaman Elementary School, Aloha, Ore.

Web 2.0 tools offer enhanced opportunities for students to share their science knowledge with the world. Publish your students' work into the 21st century!

SESSION 29

Probes and Models Across the Curriculum (Gen)

(Elementary–High School) *Marriott Blrm. 1, Marriott Downtown*

Carolyn Staudt *(carolyn@concord.org),* The Concord Consortium, Concord, Mass.

Implement more than 200 free, tested, and standards-based student activities that use highly interactive computer models and probes. Learn about associated online assessments and professional development.

SESSION 30

Designing Professional Development for Scientific Inquiry (Gen)

(General) *Marriott Ballroom 2, Marriott Downtown*

Christopher Teufel *(c2fel@temple.edu),* **Uma Natarajan** *(umanat@temple.edu),* and **Mandy Kirchgessner** *(tuc70552@temple.edu),* and Temple University, Philadelphia, Pa.

Tackle the challenge of teaching through scientific inquiry. Join us for an analysis of a promising and ongoing PD series and walk away with lessons and strategies.

SESSION 31

Enhancing Scientific Literacy Through Humor in the Classroom (Gen)

(General) *Marriott Ballroom 3, Marriott Downtown*

Susan Clay *(suzie.clay@aol.com),* Science Consultant, Parma, Ohio

Diana M. Hunn *(dhunn1@udayton.edu),* University of Dayton, Ohio

Comic strips and humor activities can help reinforce science concepts vocabulary understanding. . .and can motivate learners. We will share techniques, resources, and examples for K–12.

SESSION 32

Beyond the Basics: Tips, Tricks, and Strategies for Effective School Science Nights (Gen)

(General) *Marriott Ballroom 7, Marriott Downtown*

Catherine E. Vrentas *(cevrentas@gmail.com),* U.S. Dept. of Agriculture, Ames, Iowa

Hilary Gerstein *(hgerstein@wisc.edu)* and **Thomas Zinnen** *(zinnen@biotech.wisc.edu),* University of Wisconsin–Madison

Learn about promising practices to enhance Family/School Science Nights, including ways to strengthen the inquiry component of activity stations and to engage ELL students and their families.

SESSION 33

Transforming Classroom Interactions for Meaningful Science Learning Experiences (Gen)

(General) *Marriott Ballroom 8, Marriott Downtown*

Jeff C. Marshall *(marsha9@clemson.edu)* and **Robbie L. Higdon** *(rhigdon@clemson.edu),* Clemson University, Clemson, S.C.

Discover strategies for classroom interactions that actively engage students in inquiry-based learning environments. Methods for questioning, facilitating discussions, and using formative assessments will be modeled.

SESSION 34 (two presentations)
(General) *Marriott Ballroom 9, Marriott Downtown*

Mentoring Preservice Teachers: A Connected Vision for Professional Learning (Gen)

Kathleen M. Lesniak *(lesniak@fredonia.edu),* SUNY Fredonia, N.Y.

Milissa Albano, Southwestern Central High School, Jamestown, N.Y.

How can a mentoring partnership between campus and clinical faculty during student teaching lead to professional growth for inservice, preservice, and campus educators? Come find out.

Expand Your Professional Learning Communities with Web 2.0 (Gen)

Jerrid W. Kruse *(jerridkruse@gmail.com),* Drake University, Des Moines, Iowa

Web 2.0 has powerful capabilities to expand your professional reach. Come discuss how to get started or harness your already existing network.

SESSION 35

What Every Citizen Should Know: Environmental Literacy (Env)

(Informal Education) *Cabinet, Westin*

Bora Simmons *(borasimmons@gmail.com),* National Project for Excellence in Environmental Education, University of Oregon, Eugene

Don A. Duggan-Haas *(dugganhaas@gmail.com),* Museum of the Earth, Ithaca, N.Y.

Using the K–12 Guidelines for Excellence environmental literacy framework, explore climate, ocean, and energy literacy principles. Discover essential elements important for guiding your environmental programs.

SESSION 36

Games for Sustainability: Develop and Assess Sustainability Thinking via Simulations of Ecological Limits (Env)

(General) *Caucus, Westin*

Thomas J. Fennewald *(tom.fennewald@gmail.com)* and **Ellen Jameson** *(ejameson@umail.iu.edu),* Indiana University, Bloomington

Presider: Thomas J. Fennewald.

Learn about digital and tabletop games that can be used to assess and promote sustainability and systems thinking.

SESSION 37

Biodiversity Activities, Labs, and Demos (Env)

(High School) *Congress I/II, Westin*

Daniall R. Poulsen, Portage Northern High School, Portage, Mich.

What is biodiversity? How do humans and the environment benefit from it? What are the threats? What is being done to protect and conserve biodiversity? All of these questions will be addressed through activities, labs, and demos. Come to share and get new ideas!

SESSION 38

AMSE Session: "I Want to Differentiate, but I Don't Know How!" (Bio)

CANCELED

(High School) *Council, Westin*

Chandra J. Donal *(chandra.donal@aliefisd.net),* Edward Taylor High School, Houston, Tex.

Enhance your science teaching via differentiation! Differentiation in the science classroom provides choice in the learning process and allows students to master concepts according to their learning styles.

12:30–1:30 PM Workshops

Teaching Sustainability Issues Through an Evolutionary Lens (Bio)

(High School) *204, Convention Center*

John Howarth *(john_howarth@berkeley.edu)* and **Maia Willcox** *(mwillcox@berkeley.edu),* Lawrence Hall of Science, University of California, Berkeley

Take part in engaging activities to investigate concepts of macroevolution and phylogeny in the context of issues of sustainability and biodiversity conservation.

May the Force Be...Everywhere! (Phys)

(Middle Level–High School) *205, Convention Center*

Sarah C. Draper *(sarah.draper@ttu.edu),* Texas Tech University, Lubbock

Go beyond typical examples of cars, rockets, and roller coasters in a student-centered setting to teach physics content and assess student understanding.

BrainU: Bringing Inquiry to the Classroom (Bio)
(Elementary–High School) *209, Convention Center*
CANCELED
Michael Jensen, Waconia High School, Waconia, Minn.
BrainU focuses on implementation of in-depth, inquiry-based curriculum materials and teacher-training programs that promote understanding and application of neuroscience and the biology of drug abuse into the secondary science curriculum in Minnesota. Join us as BrainU presenters demonstrate Altered Reality and Virtual Neurons activities followed by a group discussion analyzing inquiry implementation in the classroom.

Inspired by Nature's Spectrum: Observation and Questioning in Art and Science Inquiry (Gen)
(Preschool–Elementary) *211, Convention Center*
Glenda M. McCarty, Culver-Stockton College, Canton, Mo.
Jennifer M.G. Hope *(jmghope@gmail.com),* University of Missouri–St. Louis
Focusing on the colors found in nature, we will sharpen the process skills of observation and questioning in this science and art inquiry.

"iPadding" Your Elementary Science Lessons(Gen)
(Elementary) *231, Convention Center*
John W. Payne *(payne_jw@mercer.edu)* and **Jabari Cain** *(cain_jp@mercer.edu),* Mercer University, Lithia Springs, Ga.
We have developed a number of science lessons for the elementary classroom using iPad technology. Activities will be demonstrated and complete instructions shared.

Linking Home and School with P.A.S.S. (Portable Affordable Simple Science) (Gen)
(Preschool–Elementary) *232, Convention Center*
Reneé G. O'Leary *(vavallme@comcast.net),* Holy Angels School, Newark, Del.
Peggy Vavalla *(vavallme@comcast.net),* DuPont, Wilmington, Del.
Discover simple, multisensory, hands-on early childhood and elementary explorations (preK)—in zippered plastic bags—with take-home and multidisciplinary follow-up. Walk away with sample lesson plans, bags, and more.

Build a Model of a U.S. Climate Reference Network Station (Earth)
(Middle Level/Informal Education) *233, Convention Center*
LuAnn Dahlman *(luann.dahlman@noaa.gov),* NOAA, Silver Spring, Md.
Use simple materials to construct a full-size model of a U.S. Climate Reference Network station, then learn to access and interpret data from one of the stations in the region.

Ohio Department of Natural Resources Windows on Waste (Env)
(Elementary–Middle Level) *234, Convention Center*
Marti Kolb *(marti.kolb@dnr.state.oh.us),* Ohio Dept. of Natural Resources, Columbus
Joanne Mudra *(jcmudra@gmail.com),* Environmental Education Council of Ohio, Lucas
Windows on Waste (WOW) features lessons about recycling and environmental issues. Hands-on activities include recycling codes, natural resources, conservation, and more. Take home samples, a WOW CD, and lessons/resource materials.

Middle School Chemistry: Big Ideas About the Very Small (Chem)
(Middle Level) *237, Convention Center*
James H. Kessler *(jhkessler@acs.org),* American Chemical Society, Washington, D.C.
Engage in hands-on activities and watch molecular animations to learn about a great new free middle school chemistry resource.

Finding Time to Teach Science in Elementary Classrooms (Gen)
(Elementary) *238, Convention Center*
Robert Rivers *(riversr@purduecal.edu),* Purdue University Calumet, Hammond, Ind.
Dana Knapp *(dknapp@elkhart.k12.in.us),* Elkhart Community Schools/ETHOS, Inc., Elkhart, Ind.
Robert Teitsma, Woodland Elementary School, Elkhart, Ind.
Malina Kleepbua, Osolo Elementary School, Elkhart, Ind.
Douglas Hunnings *(dhunnings@elkhart.k12.in.us)* and **Carol Mohrman,** Riverview Elementary School, Elkhart, Ind.
Beckie Clawson, Pinewood Elementary School, Elkhart, Ind.
As part of a Math Science Partnership, a group of teacher researchers designed and created action research projects. Join us as several Elkhart teacher researchers discuss their research projects and report how science integration has helped them find time for science. Walk away with strategies, tools, resources, and assessments.

"Cucumber Farmers" Do Hands-On Science (Bio)
(Middle Level–High School) *245, Convention Center*
Steven L. Tomey *(stomey@lindberghschools.us),* Lindbergh High School, St. Louis, Mo.
See a great biology assessment unit that is perfect to start the school year. This module is interdisciplinary and performance based with immediate student ownership.

Do We Have a Site for You! (Gen)
(Elementary–Middle Level) *Indiana Blrm. F, Marriott Downtown*
Barbara Z. Tharp *(btharp@bcm.edu),* **Michael Vu** *(mv12@bcm.edu),* and **Dee Mock,** Baylor College of Medicine, Houston, Tex.
K8science.org is a free teacher/scientist–developed website that affords one-stop shopping for the K–8 teacher. Are you looking for grade-level-appropriate, inquiry-based lessons on life, Earth, or physical science? Do you need content background? Are you interested in integrating reading, language arts, and math?

Using the National Facilities Standards to Plan and Design Your School Science Classroom/Laboratory (Gen)
(General) *204/205, JW Marriott*
LaMoine L. Motz *(llmotz@comcast.net),* 1988–1989 NSTA President, and Science Education and Facilities Specialist, White Lake, Mich.
Juliana Texley *(jtexley@att.net),* Palm Beach State College, Boca Raton, Fla.
James T. Biehle *(biehlej@sbcglobal.net),* Inside/Out Architecture, Inc., Kirkwood, Mo.
Presider: LaMoine L. Motz.
Join the NSTA Team on Planning and Designing School Science Facilities for this interactive hands-on session. Learn how the latest research on effective teaching and safe practices provides you with a guide to what makes effective, flexible, modular, and safe teaching spaces for science, and how YOUR INPUT can influence the planning and designing of effective facilities.

Lost in Translation: Exploring Protein Synthesis with Interactive Physical Models (Bio)
(High School–College) *JW Grand Ballroom 8, JW Marriott*
Tim Herman *(herman@msoe.edu)* and **Shannon Colton** *(colton@msoe.edu),* Milwaukee School of Engineering, Center for BioMolecular Modeling, Milwaukee, Wis.
Discover the translation process from mRNA to protein, using hands-on innovative physical models of the insulin gene and protein.

Since the Spill: Two Years After the Deepwater Horizon Oil Disaster (Env)
(Informal Education) *Capitol I, Westin*
Hazel W. Wilson, Dauphin Island Sea Laboratory, Dauphin Island, Ala.
What have we learned from this disaster? Since the oil spill, many state and federal agencies have developed resources to track the disaster and its impacts. Walk away with hands-on classroom activities, strategies, tools, and many resources in support of environmental awareness from the Deepwater Horizon Oil Disaster.

Engaging Students with STEM Through Global Issues (Gen)
(General) *Capitol II, Westin*
Dave Wilton *(dave@facingthefuture.org),* Facing the Future, Seattle, Wash.
Make STEM connections to contemporary global issues like climate change, sustainable design, and population growth. Engage in hands-on lessons that use real-world data to integrate math and science. Take home a free curriculum!

Using Your Probes in the Earth Science/Environmental Science Classroom (Earth)
(Middle Level–High School) *Capitol III, Westin*
Shelly Anne Witham *(shellywitham@yahoo.com),* High Tech High School, North Bergen, N.J.
Steven C. Smith *(mrsmith@purdue.edu),* Purdue University, West Lafayette, Ind.
Dust off the probes you were excited to get! We will go through various areas and methods that aid students' understanding by using probeware.

Incorporating Inquiry-based Astronomy Activities into a High School Earth Science Course (Earth)
(Middle Level–College) *Grand Ballroom 2, Westin*
Rebecca S. Lindell, Tilliadal Consulting, Lafayette, Ind.
Explore new inquiry-based activities designed to teach the astronomy standards within a high school Earth science course.

12:30–2:30 PM Presentation

SESSION 1

NSELA/ASTE Session: Transitioning to the New NSTA Preservice Standards (Gen)

(General) *201/202, JW Marriott*

Elizabeth Allan *(eallan@uco.edu),* University of Central Oklahoma, Edmond

Jon E. Pedersen *(jep@unl.edu),* University of Nebraska–Lincoln

William Veal *(vealw@cofc.edu),* College of Charleston, S.C.

Attention will be paid to a review of the revised NSTA Preservice Standards and required assessments. Programs will transition to the new standards in Spring 2012.

1:00–4:30 PM Short Course

To Be or Not to Be? Solar-powered Cars, Is That Our Future? (SC-17)

(High School) *Fisher Ballroom B, Omni*

Tickets Required: $69

Ted Richardson *(trichardson@tps.org),* Toledo Technology Academy and The University of Toledo, Ohio

Ken Newbury *(kenneth.newbury@utoledo.edu),* The University of Toledo, Ohio

Elizabeth Buckholtz *(elizabethbuckholtz@gmail.com),* Toledo Board of Education, Toledo, Ohio

Presider: Janet L. Struble *(janet.struble@utoledo.edu),* The University of Toledo, Ohio

For description, see Volume 1, page 75.

1:00–5:00 PM Short Course

Developing Learner-centered STEM Experiences in the Life Sciences (SC-18)

(Middle Level–High School) *Gates, Omni*

Tickets Required: $37

Neil Knobloch, Natalie Carroll *(ncarroll@purdue.edu),* **Kathryn Orvis** *(orvis@purdue.edu),* **Colleen Brady** *(bradyc@purdue.edu),* and **Levon Esters** *(lesters@purdue.edu),* Purdue University, West Lafayette, Ind.

For description, see Volume 1, page 75.

1:30–2:00 PM Presentation

SESSION 1

COSEE Session: Combining Inquiry and Community Through Scientist/Educator Partnerships (Env)

(Informal Education) *312, JW Marriott*

Marilyn J. Sigman *(msigman@alaska.edu),* University of Alaska Fairbanks, Anchorage

Laurie Morrow *(lauriem@alaskasealife.org),* Alaska SeaLife Center, Seward

COSEE Alaska's scientist/educator professional development workshops and ocean science fairs create collaborations that provide STEM education relevant to Alaska Native and rural students and communities.

1:30–3:00 PM Exhibitor Workshop

Build and Explore the Future of Space with LEGO® Education (Phys)

(Grades 5–8) *202, Convention Center*

Sponsor: LEGO Education

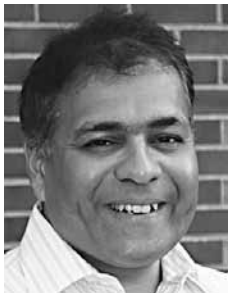
Presenter to be announced

Investigate the use of simple machines and forces in microgravity using LEGO Education models and the scientific method. Participants will follow the LEGO 4C process: Connect, Construct, Contemplate, and Continue. After being told a story, participants will be asked to solve a problem. They will use a LEGO Education Hammer model to conduct experiments, record data, compare results with data from the ISS via video, and answer questions. To complete the session, a design challenge will be issued.

1:30–3:00 PM Shell Science Seminar

Climate Literacy and Global Change: Seeking Simplicity in Complexity (Env)

(General) *Sagamore Ballroom 4, Convention Center*



Dev Niyogi *(climate@purdue.edu),* Associate Professor and Indiana State Climatologist, Dept. of Earth and Atmospheric Sciences, Purdue University, West Lafayette, Ind.

Using his background teaching an undergraduate course on Weather and Climate for nonmeteorology majors and as a member of different geoscience and informal education project teams, Dr. Niyogi will share his experiences working with education researchers, middle school teachers, extension educators, and climate researchers on the topic of climate literacy and global change. He'll discuss the need to develop guidelines to better foster student understanding of complex climate and environmental issues.

Dr. Dev Niyogi's research seeks to understand the impact of land-use and land-cover changes from agricultural intensification and urbanization on regional weather and climate; and identify ways to improve the representation of the land-surface processes within regional models. He joined Purdue in 2005 and has led and reinvigorated the State Climate Office as a premier data resource of weather and climate information particularly for topics pertaining to Indiana and the Midwest. In 2009 and again in 2011, Dr. Niyogi received Purdue's 'Excellence in Research/Seeds for Success' recognition, as well as the National Science Foundation's Career Award in 2009.

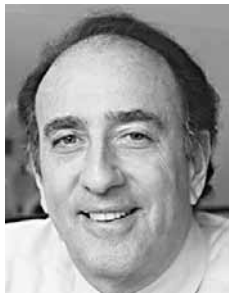
His research has been cited in the popular press such as Yahoo!, MSNBC, Wired, CNN, and NASA press releases. Dr. Niyogi is a review editor for Climate Research, *and associate editor for* Water Resources Research *and the* AMS Journal of Applied Climatology and Meteorology. *He holds a PhD in atmospheric sciences from North Carolina State University.*

NSTA is grateful to Shell for sponsoring this session.

1:30–3:00 PM Shell Science Seminar

HIV/AIDS: 30 Years of Progress and Future Challenges (Bio)

(High School–College) *Sagamore Blrm. 5, Convention Center*



Jay A. Levy, Professor of Medicine, University of California, San Francisco

Presider: Carolyn Hayes, Chairperson, NSTA Indianapolis National Conference, and Director, Student Assessment, Indiana University School of Medicine, Indianapolis

First recognized more than 30 years ago, AIDS is the worst epidemic to hit humankind. The causative agent, the human immunodeficiency virus (HIV), is a complex organism that destroys the immune system and also affects the function of many body tissues. Control of HIV infection rests with both the natural (innate) and adaptive immune systems. People who have survived without any symptoms for more than 30 years give encouragement for the development of effective anti-HIV therapies and approaches to prevention, particularly with a vaccine. Join Dr. Levy as he discusses current achievements toward finding a long-term solution to HIV/AIDS and future directions of research.

Jay A. Levy, M.D., is an AIDS and cancer researcher and an educator at the University of California, School of Medicine at San Francisco (UCSF). He is presently professor in the Department of Medicine and Research Associate in the Cancer Research Institute and director of the Laboratory for Tumor and AIDS Virus Research at UCSF.

During the past nearly 30 years, Dr. Levy and his staff have dedicated their efforts to research on AIDS. In 1983, he independently discovered the AIDS virus, HIV, that he originally called the AIDS-associated retrovirus (ARV). He also pioneered heat-treatment studies that demonstrated how to heat-inactivate HIV in clotting factor preparations. This approach, for which he received the Murray Thelin Award from the National Hemophilia Foundation, has protected many hemophiliacs from HIV infection. His group was also the first to demonstrate the ability of CD8+ lymphocytes in healthy infected people to control HIV replication by a noncytotoxic mechanism. It is mediated by a secreted, yet to be identified, CD8+ cell antiviral factor (CAF). This discovery presents a new insight into how the host immune system can control viral infection without killing the infected cell. Dr. Levy is currently conducting studies to identify the structure of CAF in approaches for immune-based therapies and to develop an AIDS vaccine.

NSTA is grateful to Shell for sponsoring this session.

2:00–2:30 PM Presentations

SESSION 1

Science Concept Visualization Project: Nonreactive Techniques to Assess Science, Literacy, and Technology Skills via Movie-Making (Gen)

(General) *313, JW Marriott*

David Michael Majerich *(david.majerich@cc.gatech.edu),* Georgia Institute of Technology, Atlanta

Judith Stull *(stullj@temple.edu),* Temple University, Philadelphia, Pa.

Kathleen Fadigan *(kxf24@psu.edu),* Penn State Abington, Pa.

Receive an overview of the Science Concept Visualization Project, a unique way of capturing students' and teachers' understandings of science in a three- to five-minute movie. Drawing from the growing body of literature on digital storytelling, a variety of formats can be integrated in K–16 classrooms.

SESSION 2

Teacher Researcher Day Session: Science in the Adult Ed Classroom (Gen)

(High School–College) *JW Grand Blrm. 5/Group 1, JW Marriott*

Carrie Jo Dagg *(daggc@iecc.edu),* Frontier Community College, Fairfield, Ill.

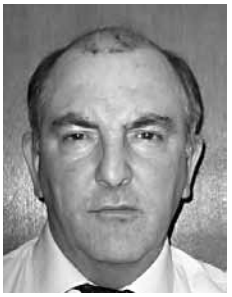
Presider: Peggy Taylor, Montana State University, Bozeman

Let's examine findings from an action research–based project investigating student science knowledge and instructor responsibility related to performance on the Official GED Science Practice Exam based on the implementation of student multiple intelligences and learning styles.

2:00–3:00 PM NSTA/ASE Honors Exchange Lecture

It's Not Fair! Or Is It? Supporting Elementary School Teachers of Science (Gen)

(General) *Sagamore Ballroom 6, Convention Center*



Steve Marshall *(stevethedoc@hotmail.com),* Primary Science Advisor, London Borough of Barnet, U.K.

Presider: Annette Smith, CEO, The Association for Science Education, Hatfield, Herts, U.K.

This year much like in the U.S., England will see further developments toward a new national science curriculum. As these consultations take place, it seems timely to reflect upon some of the support that is available to teachers and schools. Join Steve Marshall, primary science advisor in London, as he shares strategies and resources currently available in the U.K., including publications and approaches for science inquiry, techniques for assessment for learning, whole-school development initiatives such as the Primary Science Quality Mark™, and nationally provided materials such as "In the Zone" school kits linking science to the 2012 Olympic and Paralympic games.

Steve Marshall is actively involved in the Primary Science Quality Mark, an innovative award program aimed at improving the quality of science teaching and learning in U.K. primary schools. He began his career as a teacher working with K–6. With more than 30 years of experience in teaching and advising in the area of primary science, Steve focuses very heavily on ensuring that children see that science is fun, and that they start to develop their ability to inquire in a logical manner. In addition, he regularly contributes to local and national professional development sessions, often with novel and innovative approaches and ideas.

NSTA is grateful to The Association for Science Education for sponsoring this session.

2:00–3:00 PM Presentations

SESSION 1

The Best of 2012: Outstanding Science Trade Books for K–12 **(Gen)**

(General) *111/112, Convention Center*

CANCELED

Nancy McDonough, NSTA/CBC Outstanding Science Trade Books, Old Tappan, N.J.

Join the NSTA selection committee to hear about this year's very best books and learn how to use of them for your classroom.

SESSION 2

Research to the Classroom **(Gen)**

(Middle Level–High School) *124, Convention Center*

Marie Westfall, Oak Ridge Associated Universities, Oak Ridge, Tenn.

Implement relevant student research projects into your classroom, ranging from very simple to extremely sophisticated. Session includes successful models from Siemens Teachers as Researchers Fellows.

SESSION 3

Corrosion Is Everywhere: Use It to Make Chemistry Relevant and Fun **(Chem)**

(High School) *127, Convention Center*

Debbie Goodwin *(nywin@hotmail.com),* Chillicothe High School, Chillicothe, Mo.

Andrew G. Nydam *(andrewnydam@hotmail.com),* Olympia High School, Olympia, Wash.

Find out how to use corrosion to teach practical applications of chemistry concepts. Make reactivity, oxidation/reduction, solution chemistry, and corrosion prevention contextual and exciting using inquiry-based labs. Handouts!

SESSION 4

Science Trade Books and the Nature of Science **(Gen)**

(General) *128, Convention Center*

Carrie Launius *(jlaunius@hazelwoodschools.org),* Hazelwood School District, Florrisant, Mo.

Presider: Laura Pearce *(laura_1249@yahoo.com),* University of Missouri–St. Louis

Wondering how to use books in your classroom? Learn how to group books in other ways than content to enhance lifelong STEM learning.

SESSION 5

***ARKive.org*: Creating Virtual Learning Experiences Within Conservation Education** **(Bio)**

(General) *204, Convention Center*

Liana Vitali *(liana.vitali@wildscreenusa.org),* ARKive (Wildscreen USA), Washington, D.C.

Let me introduce you to *ARKive.org's* 80,000 plus films and photos of endangered species, which are free to educators. We'll explore lessons and activities that create virtual learning experiences in the classroom.

SESSION 6

Lunar Thinking and NASA's Problem-based Instructional Units **(Phys)**

(Middle Level) *206, Convention Center*

Diane L. McElwain *(diane.l.mcelwain@nasa.gov),* NASA Glenn Research Center, Cleveland, Ohio

Transform your classroom into a learning environment where students can investigate the challenges found within NASA's future lunar outpost.

SESSION 7

Breaking It Down! Making Energy Transformations in Life Science Easy and Fun! **(Bio)**

(Elementary–Middle Level) *208, Convention Center*

Kerrie McDaniel *(kerrie.mcdaniel@wku.edu)* and Noyce Scholars, Western Kentucky University, Bowling Green

Applying new teaching standards to confusing topics in the classroom such as energy transformations can be difficult. Learn how to use hands-on activities to break down energy transformation in living things (photosynthesis and cellular respiration).

SESSION 8

Elementary Teachers—Take the 30-Day Nature of Science Challenge **(Gen)**

(Elementary) *211, Convention Center*

Cassie Quigley *(cassieq@clemson.edu),* Clemson University, Clemson, S.C.

Valarie Akerson *(vakerson@indiana.edu)* and **Gayle Buck** *(gabuck@indiana.edu),* Indiana University, Bloomington

In response to the need to help young children understand Nature of Science (NOS) aspects, we designed a 30-day unit for first graders that begins with a decontextualized section introducing NOS aspects to students. This unit then continues the NOS focus with a contextualized plant unit aligned to the national standards.

SESSION 9

Wonders of Water: A K–2 Project-based Unit on Water (Gen)

(Elementary) *212, Convention Center*

Vanashri Nargund-Joshi *(vnargund@indiana.edu),* Indiana University, Bloomington

Through this project-based unit, young students develop a conceptual understanding of the role of water in life, its importance, water safety, and they also develop different process skills.

SESSION 10

Dialogues for the Chemistry Classroom (Chem)

(Middle Level–College) *236, Convention Center*

Nancy Smith *(nsmith@waterforduhs.k12.wi.us),* Waterford Union High School, Waterford, Wis.

Dialogues is an innovative strategy in which pairs of students read and act out two-person conversations based on chemistry and chemistry issues.

SESSION 11

Making Metric Memorable (Gen)

(Elementary–Middle Level) *239, Convention Center*

Steve Bane *(scitime@gmail.com),* Chandler, Ariz.

Learn innovative ways to introduce and maintain student understanding of the metric system through storytelling, creative game play, and fun hands-on science investigations.

SESSION 12

Let Your Forensics Students Have Their Day in Court! (Gen)

(Middle Level–High School) *240, Convention Center*

Michael J.V. Lazaroff *(mjvlazaroff@gmail.com),* Staples High School, Westport, Conn.

Learn how to finish your forensics course with a two-week-long final crime scene and investigation, followed by a criminal trial during the final exam!

SESSION 13

Indiana Science Initiative: Inquiry/Notebook Teaching Style (Gen)

(Elementary–Middle Level) *242, Convention Center*

Jane E. Hunn *(hunnj@tvsc.k12.in.us),* Tippecanoe Valley Middle School, Akron, Ind.

Sue Keene *(skeene@msddecatur.k12.in.us),* West Newton Elementary School, West Newton, Ind.

Jeff Hegnauer, Cherry Tree Elementary School, Carmel, Ind.

John Wasinski *(john.wasinski@gmail.com),* West Central School Corp., Francesville, Ind.

Kathryn Ellis *(keellis@avon-schools.org),* Avon Schools (Ind.) Corp.

Elizabeth Schemm *(schemm.liz@sgcs.k12.in.us),* Churubusco Elementary School, Churubusco, Ind.

In the school year 2010–2011, a thousand Indiana teachers piloted an inquiry program with notebooking. Hear about students' gains in science and math as well as literacy.

SESSION 14

ASTC Session: Partnering to Bridge the Gap Between Formal and Informal Learning Institutions (Gen)

(Elementary/Informal Ed) *103, JW Marriott*

Anne Marie Fayen *(afayen@fieldmuseum.org),* The Field Museum, Chicago, Ill.

Christine Churchirillo, Peggy Notebaert Nature Museum, Chicago, Ill.

Elizabeth Ketchum, Lincoln Park Zoo, Chicago, Ill.

Let's discuss implementing and modifying Chicago's Early Elementary Science Partnership (E2SP), a school-based partnership with museums and zoos that works to improve science instruction.

SESSION 15

Curing the Culture of Disrespect: Strategies for More Effective Science Teaching (Gen)

(Supervision/Administration) *104, JW Marriott*

Presenter to be announced

Correcting low-level misbehaviors is the #1 time waster in the classroom. Learn research-based strategies for eliminating these behaviors and creating academic excellence.

SESSION 16

Involve Me and I Will Understand: The Science Sketchbook Approach (Gen)

(College) *314, JW Marriott*

Alexandre F. da Silva *(adasilva@ccsj.edu),* Calumet College of St. Joseph, Whiting, Ind.

Find out how a redesign of my institution's nonmajors science course has yielded significant benefits. Student attainment has increased by as much as 20% from previous semesters.

SESSION 17

NSF Follow-Up Session: The Arctic: Global Climate's Canary in a Coal Mine (Env)

(Informal Education) *JW Grand Ballroom 2, JW Marriott*

Walter N. Meier *(walt@nsidc.org),* National Snow and Ice Data Center, Boulder, Colo.

The Arctic environment is rapidly changing as temperatures increase. The decline of the sea ice cover, particularly during summer, is already having significant impacts on Arctic climate, ecosystems, and human society.

SESSION 18

How to Engage Science Educators in the Public Review of Next Generation Science Standards (Gen)

(General) *JW Grand Ballroom 3, JW Marriott*

Francis Q. Eberle *(feberle@nsta.org),* NSTA Executive Director, Arlington, Va.

Harold Pratt *(hapratt@comcast.net),* NSTA Parliamentarian, 2001–2002 NSTA President, and Educational Consultants, Inc., Littleton, Colo.

The Next Generation Science Standards (NGSS) are now in development. According to Achieve, the public will have a chance to view and comment on two public drafts, with the first expected sometime this Spring. What should educators consider when reading and reviewing a draft standards document? What are the best materials to read ahead of time to prepare you for this task? How might you connect with and organize groups of educators to encourage thoughtful and informative discussions about the draft? Join us in this informal session as we explore these questions and more about the role of educators in the NGSS public review process and how science teachers can get involved.

SESSION 19

Teacher Researcher Day Session: Collaboration Between Science and Education Faculty to Enhance Preservice Science Teachers' Inquiry Teaching Skills (Gen)

(General) *JW Grand Ballroom 5/Group 2, JW Marriott*

Julie Angle *(julie.angle@okstate.edu)* and **Donald French** *(dfrench@okstate.edu),* Oklahoma State University, Stillwater

Come learn how we use inquiry-based, college-level introductory biology laboratories as a low-threat training ground for preservice teachers enrolled in a science methods course.

SESSION 20 (two presentations)

(General) *JW Grand Ballroom 5/Group 3, JW Marriott*

Teacher Researcher Day Session: Developing Expertise with Technology Through a Master's in Science Program (Gen)

Emily H. van Zee, Oregon State University, Corvallis

Rae Alexander Fearing *(rfearing@delnorte.k12.ca.us),* Del Norte County Unified School District, Crescent City, Calif.

How can one help colleagues learn to use technology? Join me as participants exchange insights and findings from professional development experiences they designed and offered in their schools.

Teacher Researcher Day Session: New Teachers' Visions of Science Teaching and Learning (Gen)

Deborah L. Roberts-Harris *(drobertsharris@gmail.com),* University of New Mexico, Albuquerque

New teachers face many challenges in implementing inquiry, but research shows that if they can "envision" inquiry teaching they are more likely to implement it.

SESSION 21

NSTA Press Session: Developing Formative Assessment Probes (Gen)

(General) *JW Grand Ballroom 7, JW Marriott*

Page Keeley *(pkeeley@mmsa.org),* 2008–2009 NSTA President, and Maine Mathematics and Science Alliance, Augusta

Learn how the Curriculum Topic Study (CTS) process is used to develop assessment probes that link key ideas in the standards to commonly held misconceptions.

SESSION 22

Scaffolding to Better Science Process Skills (Gen)

(General) *JW Grand Ballroom 10, JW Marriott*

Carolyn J. Lowe *(clowe@nmu.edu),* Northern Michigan University, Marquette

Scientists say the scientific method is not really how they do science. Walk away with a scaffolded approach to authentic inquiry.

SESSION 23

Year to Year: Build a Continuous Collective of Student Research with Mobile Devices/Online Resources (Gen)

(General) *Marriott Ballroom 1, Marriott Downtown*

Vincent G. Basile *(vinnie.g.basile@gmail.com),* University of Colorado, Boulder

Using technology already in their pockets and open-source software, students add to a classroom's research collective—creating and publishing a longitudinal scientific narrative.

SESSION 24

STEM Educator Award Share-a-Thon: Elementary and Middle Level (Gen)

(Elementary–Middle Level) *Marriott Ballroom 5, Marriott Downtown*

Amanda Upton *(awards@nsta.org),* Manager, Nominations and Teacher Awards Program, NSTA, Arlington, Va.

Come learn about the elementary- and middle-level STEM educator programs and take away innovative ideas.

SESSION 25

Urban Myths: Generating Excitement for Project Based Learning (PBL) and Science Fair Competitions (Gen)

(General) *Marriott Ballroom 7, Marriott Downtown*

Sharon Schleigh *(schleighs@ecu.edu),* East Carolina University, Greenville, N.C.

Dustin Keeton *(keetond.cme@pitt.k12.nc.us),* C.M. Eppes Middle School, Greenville, N.C.

Find out how to make science exciting and relevant, and learn how to implement PBL that addresses science standards.

SESSION 26

High School Biology: A Baker's Dozen Hands-On Activities on the Principles of Diffusion and Osmosis (Bio)

(High School) *Marriott Ballroom 9, Marriott Downtown*

Gregory W. McCurdy *(gmccurdy@salemschools.com)* and **Stuart Tower** *(stower@salemschools.com),* Salem High School, Salem, Ind.

Walk away with at least 13 hands-on laboratory activities to help you introduce, instruct, and assess students on the concepts of diffusion and osmosis.

SESSION 27 (two presentations)

(General) *Marriott Ballroom 10, Marriott Downtown*

Presider: Randy Parker, Louisiana Tech University, Ruston

Project Based Learning in Your School—How and Why to Make It Work (Gen)

Jason R. Falconio *(jrfalconio@gmail.com),* Freire Charter School, Philadelphia, Pa.

Find out how Project Based Learning (PBL) began a turnaround of an urban science program and how it can work for your students.

New Tech @ Ruston High School: Improving Achievement Through Project Based Learning in Science and Technology (Gen)

Randy Parker *(doctorp@latech.edu)* and **Julie A. Holmes** *(jholmes@latech.edu),* Louisiana Tech University, Ruston

Cathi Cox-Boniol *(ccox@lincolnschools.org),* Ruston High School, Ruston, La.

Join us as teachers, students, and researchers share results from science and technology Project Based Learning experiences as part of their new tech high school program.

SESSION 28 (two presentations)

(General) *Cabinet, Westin*

Math and Science Save the Football Field! (Env)

John R. Sode, Marshfield (Mo.) R-1 Schools

Learn how innovative science inquiry lessons can lead to the reconstruction of native wetlands, outdoor classrooms, and the preservation of athletic fields.

Promote 21st-Century Skills with a Prairie Restoration Unit (Env)

Stephen M. Marlette, Southern Illinois University, Edwardsville

Lauren E. Deppe, Fort Zumwalt North High School, O'Fallon, Mo.

Find out how high school biology students used Google Earth maps and line transect data to make recommendations related to prairie restoration plans for their school yard.

SESSION 29

Oceans of Professional Development Opportunities Through NOAA (Gen)

(General) *Chamber, Westin*

Lindsay M. Knippenberg *(lindsay.knippenberg@noaa.gov),* Einstein Fellow, NOAA, Washington, D.C.

Are you looking for professional development opportunities for STEM, oceans, climate, or weather? NOAA has several opportunities varying from a weekend to an entire year.

SESSION 30

Inspiring Climate Education Excellence: On-Demand Professional Development for Secondary Science Teachers (Earth)

(Middle Level–High School) *Congress I/II, Westin*

Susan M. Buhr *(susan.buhr@colorado.edu),* **Emily Kellagher,** and **Susan E. Lynds,** University of Colorado at Boulder

Laura Moin, University Corporation for Atmospheric Research, Boulder, Colo.

Presider: Susan M. Buhr

ICEE self-directed online modules help teachers learn key climate concepts and teaching strategies. Discover an online community, multimedia support materials, and an ICEE staff committed to supporting teacher learning.

SESSION 31

AMSE Session: Achieving Academic Excellence, One Case at a Time (Bio)

(High School) *Council, Westin*

Chelia R. McCoo Dogan *(chelia.mccoo@aliefisd.net),* Elsik High School, Houston, Tex.

Gain an understanding of the relevance of case studies as a powerful tool to enhance scientific instruction.

SESSION 32

Constructing an Electronic Sunspot Viewer to Observe, Record, and Analyze Real-Time Sunspot Activity (Earth)

(Elementary–High School) *Grand Ballroom 1, Westin*

Mark R. Malone *(mmalone@uccs.edu),* University of Colorado, Colorado Springs

Bryan DeBates *(bryan@spacefoundation.org),* The Space Foundation, Colorado Springs, Colo.

Using simple hardware store materials coupled with an inexpensive video camera to view and record sunspots on a laptop computer, you can show your students how to observe and analyze video images.

2:00–3:00 PM Workshops

Designing the City **(Env)**
(Elementary–Middle Level) *123, Convention Center*
Dustin Axe *(dustin.axe@msichicago.org)* and **Leslie Sadowski-Fugitt** *(leslie.sadowski-fugitt@msichicago.org),* Museum of Science and Industry, Chicago, Ill.
Explore urban design concepts like sustainable building, renewable energy, and urban gardening while participating in hands-on and science journal activities.

Rapid Data Collection and Analysis Using Technology **(Phys)**
(Middle Level–High School) *125, Convention Center*
Robert W. Reniewicki *(rreniewicki@susd.org),* Arcadia High School, Phoenix, Ariz.
Get hands-on experience using probes and the TI-Nspire™ handheld to rapidly collect data and analyze data in real time for the physics classroom.

Professional Learning: The Essential Element for Effective Inquiry-based Instruction **(Phys)**
(General) *207, Convention Center*
Robert H. Poel *(bob.poel@wmich.edu),* Professor Emeritus, Western Michigan University, Kalamazoo
Effective learning strategies require eliciting prior knowledge and helping students make sense of direct observations and other data. This, in turn, requires new instructional strategies and teaching skills. Join me for an offering of specific inquiry-oriented activities for use in professional development workshops that address these issues.

Plants in the Classroom **(Bio)**
(Elementary–High School) *209, Convention Center*
Nancy Bridge *(nancy.bridge@ocps.net),* Olympia High School, Orlando, Fla.
How do plants grow? Plant seeds of success and teach biological concepts through the hands-on activity of growing plants in your classroom. Standards- and inquiry-based Nutrients for Life elementary curriculum will be provided, and each participant will make a mini garden monster to take back to his or her classroom.

Simple Machines Made Easy **(Phys)**
(Elementary–Middle Level) *210, Convention Center*
April Chancellor *(april.chancellor@msichicago.org),* **Julie Horner** *(julie.horner@msichicago.org),* and **Kevin Conley** *(kevin.conley@msichicago.org),* Museum of Science and Industry, Chicago, Ill.
Learn how to teach simple machines using everyday classroom objects and materials. Free lesson plans and prizes.

Nature-ally Good Teaching in Early Childhood Education **(Env)**
(Preschool) *235, Convention Center*
Beth A. Clark-Thomas, Malone University, Canton, Ohio
Nature deficit can be evidenced in students' behaviors and preparedness for learning. Explore innovative ways to integrate inquiry-based experiences in early childhood settings with emphasis on natural world experiences.

"Eggs"cellent STEM Lessons! **(Gen)**
(Elementary–Middle Level) *241, Convention Center*
Robert C. Stremme, Twin Spring Farm School, Ambler, Pa.
Eggs provide us with multiple STEM lessons. Discover how students work with simple comparisons, complex measuring, multiple science experiments, and engineer a final egg drop.

Science Facilities 101: Safe and Sustainable Facilities **(Gen)**
(General) *204/205, JW Marriott*
LaMoine L. Motz *(llmotz@comcast.net),* 1988–1989 NSTA President, and Science Education and Facilities Specialist, White Lake, Mich.
Juliana Texley *(jtexley@att.net),* Palm Beach State College, Boca Raton, Fla.
James T. Biehle *(biehlej@sbcglobal.net),* Inside/Out Architecture, Inc., Kirkwood, Mo.
Presider: LaMoine L. Motz.
So you want new facilities. Does your curriculum define your science teaching facility? Hear from the experts on planning and designing safe, sustainable, and flexible facilities for inquiry/project-based science. Join the authors of *NSTA Guide to Planning School Science Facilities* (2nd Ed.) and learn the "basics" of science facility planning, designing, and budgeting.

NSTA Press Session: Read All About It! Teaching Through Trade Books—Authors Share Their New Book (Gen)
(Elementary) *JW Grand Ballroom 1, JW Marriott*
Christine A. Royce *(caroyce@aol.com),* Shippensburg University, Shippensburg, Pa.
Emily R. Morgan *(emily@pictureperfectscience.com),* Picture-Perfect Science, West Chester, Ohio
Karen Ansberry *(karen@pictureperfectscience.com),* Mason (Ohio) City Schools
Join the authors of *Science and Children's* "Teaching Through Trade Books" column as they share some of their favorite trade book–inspired science lessons featured in their new book.

DNA Barcoding in Your Classroom (Bio)
(High School–College) *JW Grand Ballroom 8, JW Marriott*
Jason Williams *(williams@cshl.edu),* Cold Spring Harbor Laboratory, Cold Spring Harbor, N.Y.
Engage students in their own learning by identifying plants, animals, and food sources through their unique DNA barcodes.

Innovative Learning: Connecting STEM with Service-Learning Through Purdue University's EPICS High Program (Gen)
(General) *White River Ballroom F, JW Marriott*
Pamela L. Dexter *(pdexter@purdue.edu)* and **William Oakes** *(oakes@purdue.edu),* Purdue University, West Lafayette, Ind.
EPICS stands for Engineering Projects in Community Service-Learning. Strategize on how to connect STEM learning with innovative, design-based student projects that benefit their local nonprofit community organizations.

Chefs Don't Use Cookbooks; Why Should Students? (Gen)
(Elementary–High School) *Indiana Blrm. F, Marriott Downtown*
William C. Metz *(wmetzgolf@aol.com),* Science Education Consultant, Fort Washington, Pa.
Julia T. Gooding *(chemteacher007@aim.com),* Hopewell High School, Aliquippa, Pa.
Walk away with a number of uncomplicated teacher strategies designed to shift the focus of perfunctory cookbook labs toward more student-designed inquiry.

C-S-I Creative Science Investigations (Gen)
(General) *Marriott Ballroom 8, Marriott Downtown*
Debra J. Venable, Wilson Public School, Henryetta, Okla.
Explore the hands-on work of creative science investigation. Participants will get down and dirty with experiments and a mysterious substance while attempting to solve crimes and mysteries.

Focus On Forests: Project Learning Tree's New Secondary Curriculum (Env)
(Informal Education) *Capitol I, Westin*
Jaclyn Stallard *(jstallard@forestfoundation.org)* and **Al Stenstrup** *(astenstrup@forestfondation.org),* Project Learning Tree, Washington, D.C.
Donna Rogler *(plt@dnr.in.gov),* Indiana Dept. of Natural Resources, Indianapolis
Learn how secondary students can explore major issues facing forests today: climate change, invasive species, fire, land ownership, management, and more. Take home Project Learning Tree's new *Exploring Environmental Issues: Focus on Forests* activity guide and resource materials.

Students as Agents of Change: Investigating Environmental Issues (Gen)
(Elementary–High School) *Capitol II, Westin*
Joyce B. Tugel *(jtugel@mmsa.org),* Maine Mathematics and Science Alliance, Augusta
Marty Mlyniec *(mmlyniec@lisbonschool.org)* and **Stephen E. Brown** *(sbrown@lisbonschool.org),* Lisbon Central School, Lisbon, Conn.
Learn how teachers and students use the "KIDS as Planners" service learning model to identify and research green school issues, explore solutions, and implement change.

Teach Geology and Evolutionary Concepts with Fossil Evidence (Earth)
(Elementary–High School) *Capitol III, Westin*
Barbara A. Crawford *(barbarac@uga.edu),* The University of Georgia, Athens
Daniel K. Capps *(daniel.capps@maine.edu),* University of Maine, Orono
Teach your students to think like scientists as they learn about geology and evolutionary concepts in an authentic investigation of fossil evidence. We will examine Devonian fossils to make inferences about the environment of the past. Handouts and free fossils!

NASA: Galileo Educator Network—Advancing Science Literacy Through Astronomy and Teacher Professional Development (Earth)
(Supervision/Administration) *Grand Ballroom 2, Westin*
Greg Schultz *(gschultz@astrosociety.org)* and **Brian Kruse,** Astronomical Society of the Pacific, San Francisco, Calif.
Learn about the new Galileo Educator Network and how you can get involved integrating astronomy, science inquiry, and the effective use of NASA resources in the classroom.

NESTA Session: Our Changing Planet (Earth)
(Informal Education) *Grand Ballroom 3, Westin*
Roberta M. Johnson *(rmjohnsn@gmail.com),* National Earth Science Teachers Association, Boulder, Colo.
Missy Holzer *(mholzer@monmouth.com),* Chatham High School, Chatham, N.J.
Get introduced to a baker's dozen of free online activities and videos about changes in the Earth system, including three activities the group will do together!

NESTA Session: National Earth Science Teachers Association Astronomy, Space, and Planetary Science Share-a-Thon (Earth)
(Elementary–High School) *Grand Ballroom 5, Westin*
Michelle Harris *(michelle.harris@apsva.us),* Wakefield High School, Arlington, Va.
Ardis Herrold, National Earth Science Teachers Association, Plymouth, Mich.
Heather Brubach *(hbrubach@adlerplanetarium.org),* Adler Planetarium, Chicago, Ill.
Coral Clark, NASA SOFIA, Moffett Field, Calif.
Lynne H. Hehr *(lhehr@uark.edu),* University of Arkansas, Fayetteville
Brian Kruse *(bkruse@astrosociety.org),* Astronomical Society of the Pacific, San Francisco, Calif.
Tom Lough *(mlough@murraystate.edu),* Murray State University, Murray, Ky.
Randy Russell, University Corporation for Atmospheric Research, Boulder, Colo.
Robert T. Sparks *(rsparks@noao.edu)* and **Constance E. Walker** *(cwalker@noao.edu),* National Optical Astronomy Observatory, Tucson, Ariz.
Erin Wood *(erin.wood@lasp.colorado.edu),* Laboratory for Atmospheric and Space Physics, University of Colorado, Boulder
Join more than 20 NESTA members and other education specialists as they share their favorite classroom activities. Lots of free handouts!

2:00–3:30 PM Exhibitor Workshops

WindWise Science Curriculum (Phys)
(Grades 6–College) *102, Convention Center*
Sponsor: KidWind Project
Joseph Rand *(joe@kidwind.org),* KidWind Project, St. Paul, Minn.
Interested in bringing wind energy to your physics, biology, environmental, and Earth science classes? This workshop will be a hands-on exploration of the second edition of the WindWise curriculum. Handouts!

Exploring Computational Thinking (Gen)
(Grades 6–12) *103, Convention Center*
Sponsor: Google
Phil Wagner, Google, Mountain View, Calif.
Computational Thinking is an interdisciplinary higher-order thinking skill set that engages students in seeing patterns with data and creating powerful algorithms to give insight into our world. Come check out Google's standards-aligned Exploring Computational Thinking lessons and resources.

Engaging Classrooms on Animal Research (Bio)
(Grades 6–College) *108, Convention Center*
Sponsor: Society for Neuroscience
Elizabeth Burnett, Wake Forest University, Winston-Salem, N.C.
Biomedical science relies on the humane use of animals to understand disease and to develop treatments and therapies, but this sensitive aspect of scientific research is rarely discussed in classrooms. Join us for an interactive discussion on how to engage students in learning about the viewpoints and benefits of animal research.

Video Analysis with Vernier (Gen)
(Grades 7–College) *116, Convention Center*
Sponsor: Vernier Software & Technology
Verle Walters *(info@vernier.com)* and **Matt Anthes-Washburn** *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
Interested in creating and analyzing your own videos in your science classroom? Come learn how you can use Video Physics for iOS and Vernier Logger *Pro* to enhance your data-collection experiments using video. Topics will include video-synchronized data collection, video data analysis, and still digital photo analysis.

Inquiry-based Chemistry with Vernier (Chem)
(Grades 9–College) *117, Convention Center*
Sponsor: Vernier Software & Technology
Elaine Nam *(info@vernier.com)* and **Mike Collins** *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
In this hands-on workshop, you will become the student as you conduct an inquiry-based experiment from our lab book, *Investigating Chemistry through Inquiry.*

Under a Microscope: Prepare Students for the 21st Century Using STEM Initiatives (Bio)
(Grades 7–12) *130, Convention Center*
Sponsor: Science Kit
David Doty, Swift Optical Instruments, Inc., San Antonio, Tex.
Prepare your students for success in tomorrow's fast-paced science careers with digital science tools that transform science lessons into STEM lessons. In this workshop, you'll learn easy ways to use digital microscopes as part of an integrated STEM curriculum to explore biology using the latest technology with real-world lab applications.

Enzymes and Lactose Intolerance (Bio)
(Grades 6–12) *131, Convention Center*
Sponsor: Science Take-Out
Susan Holt *(contact@sciencetakeout.com),* Science Take-Out, Pittsford, N.Y.
This hands-on Science Take-Out kit investigates how enzymes help people with lactose intolerance. Model the action of the enzyme lactase and conduct tests to determine whether the enzyme supplement LACTAID® digests lactose. Then, design and conduct an experiment to determine if acid interferes with the enzyme in LACTAID.

Science Under Siege? Teaching Evolution in a Climate of Controversy (Bio)
(Grades 9–12) *133, Convention Center*
Sponsor: Pearson
Kenneth R. Miller, Brown University, Providence, R.I.
Eighty-five years after the Scopes trial, evolution remains a controversial topic. 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 participants can deal with it successfully. We will review some of the commonly held misconceptions about the process as well as answers to some of the widely used arguments against evolution. Take home resources to respond to challenges commonly faced in the classroom and community when teaching evolution.

SQUID INK-UIRY: Inquiry-based Invertebrate Anatomy Through Squid Dissection (Bio)
(Grades 9–12) *144, Convention Center*
Sponsor: Carolina Biological Supply Co.
Mary Alexander, Carolina Biological Supply Co., Burlington, N.C.
Use squid to teach animal diversity and address the standards for life science. Learn morphology and anatomy of the squid through hands-on guided dissection of the organ systems. Large specimens provide a clear view of invertebrate anatomy to observe the relationship between form and function in the squid.

Forensics for the Biology Laboratory (Bio)
(Grades 9–12) *145, Convention Center*
Sponsor: Carolina Biological Supply Co.
Angela White, Carolina Biological Supply Co., Burlington, N.C.
Take a new approach with traditional biology labs—use forensics! Perform sample activities from the innovative *Forensics for the Biology Laboratory* manual and associated kits. These inquiry-based, cooperative learning activities offer real-world applications as students collect forensic evidence and perform experiments to yield results for the courtroom.

How Dirty Is Your Windshield: Foldable® Formative Assessment (Gen)
(Grades K–12) *Wabash Ballroom 2, Convention Center*
Sponsor: Dinah-Might Adventures, LP
Nancy F. Wisker *(dma@dinah.com),* Dinah Zike Academy, Comfort, Tex.
Tired of the same old assessments? Cut, fold, and more as you discover how 3-D graphic organizers known as Foldables® can be used as alternative and authentic assessments. Use basic classroom materials and leave with practical ideas ready to use immediately.

2:00–4:00 PM Presentation

SESSION 1

Building Scientific Minds with the NSTA Alliance of Affiliates (Gen)

(Supervision/Administration) *209, JW Marriott*

Cherry C. Brewton *(cbrewton@georgiasouthern.edu),* AMSE Past President, and Georgia Southern University, Statesboro

Margaret Glass *(mglass@astc.org),* ASTC Affiliate Representative, Association of Science-Technology Centers, Washington, D.C.

John W. Tillotson *(jwtillot@syr.edu),* ASTE President-Elect, and Syracuse University, Syracuse, N.Y.

Kay Atchison Warfield, CESI President, and Alabama State Dept. of Education, Montgomery

Troy Sadler *(tsadler@coe.ufl.edu),* NARST Affiliate Representative, and University of Florida, Gainesville

Rajeev K. Swami, NMLSTA President, and Central State University, Wilberforce, Ohio

Brenda Wojnowski *(bwojnowski@gmail.com),* NSELA Affiliate Representative, and Wojnowski and Associates, Dallas, Tex.

Brian R. Shmaefsky *(brian.r.shmaefsky@lonestar.edu),* SCST President, and Lone Star College–Kingwood

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

Organized by NTSA's Alliance of Affiliates, this session presents examples of engineering curricula currently used in K–12 education across the U.S. and concludes with a panel discussion.

2:00–4:00 PM Workshop

Using *Vision and Change* and Other *21st-Century Skills* to Enhance Your Teaching (Gen)

(General) *JW Grand Ballroom 4, JW Marriott*

Thomas Lord *(trlord@iup.edu),* Indiana University of Pennsylvania, Indiana, Pa.

Kerry L. Cheesman *(kcheesma@capital.edu),* Capital University, Columbus, Ohio

Teddie Phillipson-Mower *(t0phil01@louisville.edu),* University of Louisville, Ky.

Members of the NSTA College Science Teaching Committee will focus on what works/what doesn't and how to improve as a science instructor following the AAAS *Vision and Change* document and the *21st-Century Skills Framework* frame to enhance inquiry in their courses. Participants will engage in a variety of hands-on/minds-on biology activities, discussions, group work, sharing, and technology-based searching and sharing.

2:00–5:00 PM Short Course

Science for ELL: Sheltered Content Instruction for Inquiry Science (SCI²S) (SC-19)

(Grades K–8) *Fisher Ballroom A, Omni*

Tickets Required: $43

David T. Crowther *(crowther@unr.edu)* and **Elisa Storke** *(elisa@unr.edu),* University of Nevada, Reno

For description, see Volume 1, page 75.

2:30–3:30 PM Workshop

COSEE Session: Spice Up Your Curriculum with a Little "Fresh and Salt" (Gen)

(Informal Education) *312, JW Marriott*

Terri E. Hallesy *(thallesy@illinois.edu)* and **Robin Goettel** *(goettel@illinois.edu),* University of Illinois, Urbana

As stewards of our planet, students must understand Great Lakes and marine aquatic environments. Receive/experience the new "Fresh and Salt" curriculum, which is aligned with state standards.

3:30–4:00 PM Presentation

SESSION 1

STEM-focused Games to Facilitate Inquiry (Gen)

(Middle Level–High School) *240, Convention Center*

Sonny E. Kirkley *(sonny@wisdomtools.com),* **Jamie R. Kirkley** *(jamie@wisdomtools.com),* and **Adrienne Evans Fernandez** *(adrienne@wisdomtools.com),* WisdomTools, Bloomington, Ind.

Review the use of serious games to facilitate science inquiry through the use of complex challenges in STEM.

3:30–4:30 PM Robert Karplus Lecture

How Science Is Learned **(Gen)**
(General) *Sagamore Ballroom 6, Convention Center*

Bill G. Aldridge *(bga208@gmail.com),* 1980–1995 NSTA Executive Director, Jacksonville, Fla.

Presider: Bridget Miller, Purdue University, West Lafayette, Ind.

Join Bill Aldridge as he focuses on how science is learned, as shown through evidence and the experiences of Robert Karplus, Arnold Arons, Mary Budd Rowe, Marjorie Gardner, and other outstanding leaders in science education from the 1960s through the 1990s. These giants of science and science education were both scientists and educators, and it was that mix that made them so successful. Hear how these ideas translate into how science is learned and its implications. For science cannot be taught; it can only be learned!

Former NSTA executive director, Bill G. Aldridge is the author of numerous textbooks, monographs, and published papers. With an undergraduate physics major, MS in Physics, and PhD course work completed for physics, in addition to a graduate degree in Educational Evaluation from the University of Kansas and a graduate degree in Science Education from Harvard University, Bill taught physics and mathematics at the high school level for six years and taught physics at the college level for 17 years. In 1995, NASA awarded Bill its Distinguished Public Service Medal, the highest honor NASA awards to a non-NASA person.

3:30–4:30 PM Featured Presentation

Technology and Humanity **(Gen)**
(General) *Sagamore Ballroom 3, Convention Center*

Jason Snell, Vice President and Editorial Director, *Macworld,* Mill Valley, Calif.

Presider: Jodi Allen, Glen Acres Elementary School, Lafayette, Ind.

Science and the humanities are often segregated, but they're actually integral to one another. Why does attending a Space Shuttle launch bring to mind the architecture of Antoni Gaudí? Why does the world's most successful technology company insist that it exists "at the intersection of technology and the liberal arts?"

Jason Snell is recognized as one of the most respected authorities on Apple and related technologies. He is vice president and editorial director of Macworld *and for more than 15 years has covered all the major Apple stories and product releases—iPhone, iPad, MacBook, MacBook Air, and many others. He also currently hosts* The Incomparable Podcast, *which focuses on entertainment in "geek culture" genres such as science fiction. In 1994, Jason graduated with a masters in journalism from University of California at Berkeley.*

3:30–4:30 PM Presentations

SESSION 1

Controversy in Science **(Gen)**
(High School) *111/112, Convention Center*
Mary Shane *(shanem@interact.ccsd.net)* and **Gina Vallari,** Advanced Technologies Academy, Las Vegas, Nev.
Explore ways to establish a safe forum for the discussion of controversial science topics. Walk away with topics and pedagogical strategies.

SESSION 2

Here Come the Robots! **(Phys)**
(Middle Level–High School/Informal) *125, Convention Center*
Nancy McIntyre *(ciotach51@aol.com),* Chaminade College Preparatory, West Hills, Calif.
Getting students to become lifelong learners is easy once the robots come out. Students love to learn what they need to know to make the robots work.

SESSION 3

Polymers 1A: They're Everywhere—in the Kitchen, Classroom, Cars, and Clothing! (Chem)

(Informal Education) *126, Convention Center*

Lynn W. Higgins *(lynhiggins@sbcglobal.net),* Polymer Ambassadors, St. Louis, Mo.

On a lively tour of a "superstore," we'll find examples of polymer science, history, and engineering. All are linked to web pages, with demonstrations and activities.

SESSION 4

Middle School Students and the Particle Nature of Matter: A Conceptual Approach (Chem)

(Middle Level) *127, Convention Center*

Jeffrey Scott Townsend *(scott.townsend@eku.edu),* Eastern Kentucky University, Richmond

Rodney Jason Fair *(rodney.fair@clark.kyschools.us),* Clark Middle School, Winchester, Ky.

Austin M. Hitt *(amhitt@coastal.edu),* Coastal Carolina University, Conway, S.C.

Help your middle school students better understand the particle nature of matter by using models to connect the macroscopic/observable to the submicroscopic. Simple activities, assessments, and handouts provided!

SESSION 5

Science and Language Arts: A Powerful Pair (Gen)

(Elementary) *212, Convention Center*

Deborah L. Hanson *(hanson@hanover.edu),* Hanover College, Hanover, Ind.

Invigorate your classroom with science and language arts. Elementary teachers will present various tips and techniques to successfully integrate language arts and science instruction.

SESSION 6

Free Climate Change DVD in Spanish! (Gen)

(Informal Education) *232, Convention Center*

Carol Landis, The Ohio State University, Columbus

A climate change DVD was translated to Spanish in 2010. The DVD is useful for Spanish-speaking students in grades 7–12 and for teachers of Spanish.

SESSION 7

Abstract Concepts for Concrete Minds: Techniques and Lessons to Engage Diverse Learners (Gen)

(Middle Level–High School) *234, Convention Center*

Tracy M. Bratzke *(bratzke.tracy@d46.org)* and **Nicole L. McRee** *(mcree.nicole@d46.org),* Grayslake Middle School, Grayslake, Ill.

Teaching inquiry-based science in large, diverse classrooms is a challenge. We have created a variety of engaging units, lessons, and models that can be integrated into your current curriculum immediately or modified to fit the needs of your students.

SESSION 8

Scientific Writing and Journalism as Vehicles for Developing Understanding of Abstract Chemical Principles (Chem)

(Middle Level–College) *236, Convention Center*

Joseph W. Shane *(jwshan@ship.edu),* Shippensburg University of Pennsylvania, Shippensburg

Jonathan Nowicki *(jonathan_nowicki@nobl.k12.in.us),* Noblesville High School, Noblesville, Ind.

Two types of writing—in-class essays and scientific journalism—will be presented as mechanisms for having students' understand abstract chemical principles. Assessment guidelines also provided.

SESSION 9

Science Literacy and the Common Core State Standards (Gen)

(Elementary–Middle Level) *242, Convention Center*

Larry W. Zimmerman, Teacher Created Materials, Alpharetta, Ga.

The Common Core State Standards require students to comprehend increasingly challenging informational texts in science. Learn practical literacy strategies for immediate implementation in your classroom.

SESSION 10

Merging Scientific Inquiry, Technology, and the Standards (Gen)

(Middle Level) *243, Convention Center*

Shannon Hudson *(shudson@cville.k12.in.us),* Crawfordsville, Ind.

Gayle Buck *(gabuck@indiana.edu),* Indiana University, Bloomington

John Harsh *(locutusharsh@yahoo.com),* Deep River Outdoor Educational Center, Lake Station, Ind.

Join a panel discussion of rural and urban teachers who will

outline successes and challenges implementing technology, linking inquiry to the standards.

SESSION 11

NMLSTA Session: Becoming a National Board Certified Teacher (NBCT) (Gen)

(General) *244, Convention Center*

Patty McGinnis, NBCT, Arcola Intermediate School, Eagleville, Pa.

Kitchka P. Petrova, NBCT *(kpetrova7@dadeschools.net),* Ponce de Leon Middle School, Coral Gables, Fla.

Are you interested in learning how to become a NBCT? Two NBCTs will present an overview of the process and answer questions.

SESSION 12

…and the Two Shall Become One (Env)

(High School/Supervision) *104, JW Marriott*

Bonnie Wible *(bwible@yorktown.k12.in.us),* Yorktown High School, Yorktown, Ind.

Have you seen at-risk students come to class early? Have you seen at-risk students excited about assignments and learning? Have you seen at-risk students take ownership in world concerns? Because of the English/Environmental Science Dyad, we have. Fifty at-risk students meet with two teachers for two consecutive class blocks. Join us for strategies and lessons learned.

SESSION 13

Making the Most of Your Joint NSTA/Society for College Science Teachers Membership (Gen)

(College) *108, JW Marriott*

Paul J. Dolan *(p-dolan@neiu.edu),* Northeastern Illinois University, Chicago

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

SCST is dedicated to the study and advancement of college science teaching. Learn how to make the most of a joint SCST/NSTA membership.

SESSION 14

Building Better Elementary Teachers in Science (Bio)

(Elementary/College) *201/202, JW Marriott*

Nancy Steffel, Mary A. Gobbett *(mgobbett@uindy.edu),* and **Beverly A. Reitsma,** University of Indianapolis, Ind.

Sue Keene *(skeene@msddecatur.k12.in.us),* West Newton Elementary School, West Newton, Ind.

Learn about our biology/literacy program for preservice teachers that builds science content knowledge along with developing a positive attitude about teaching science in elementary schools.

SESSION 15

Rubrics: Engaging Students in Constructing Assessments (Gen)

(General) *313, JW Marriott*

Lauren D. Rentfro *(rentfrla@lewisu.edu),* Lewis University, Romeoville, Ill.

Rubrics can be labor intensive for the teacher and confusing to students. This procedure involves students in developing rubrics through analysis of examples and discussion.

SESSION 16

NSF Follow-Up Session: Thriving in the Polar Seas (Bio)

(Middle Level–High School/Inf.) *JW Grand Blrm. 2, JW Marriott*

Christina Cheng, University of Illinois at Urbana-Champaign, Urbana

Natural selection for an ability to avoid freezing is so strong that many fish species have independently evolved novel "antifreeze" proteins that protect them from freezing. Come learn the ways marine bony fish survive and even thrive in freezing icy seawater.

SESSION 17

FlexBooks: Incorporating Interactive Elements in Your Textbook (Bio)

(Middle Level–High School/Supv.) *JW Grand Blrm. 3, JW Marriott*

Brooke Turner, CK–12 Foundation, Palo Alto, Calif.

Learn about the power of incorporating interactive hands-on elements directly in your free customizable textbook.

SESSION 18

Teacher Researcher Day Session: Classroom Learning Environments and Action Research (CLEAR) (Gen)

(General) *JW Grand Ballroom 5/Group 1, JW Marriott*

Catherine S. Martin-Dunlop *(catherine.martin@morgan.edu),* Morgan State University, Baltimore, Md.

Learn how to adapt valid and reliable learning environment surveys for use in your classroom. Informed decisions regarding instructional improvements can then be made.

SESSION 19

Teacher Researcher Day Session: Science for All: Inquiry Strategies for Scientifically Literate Citizens (Gen)

(General) *JW Grand Ballroom 5/Group 2, JW Marriott*

Jeremy A. Ervin *(jeremy.ervin@stockton.edu),* Richard Stockton College of New Jersey, Pomona

Review findings on action research for successfully implementing inquiry strategies in a general education college course to enable nonscience majors to be scientifically literate citizens.

SESSION 20

NSTA Press Session: Top Ten Challenges of Learning Science (Gen)

(Middle Level–College/Supv.) *JW Grand Blrm. 7, JW Marriott*

Thomas P. O'Brien *(tobrien@binghamton.edu),* Binghamton University, Binghamton, N.Y.

Explore "brain-powered" Minds-On Science Teaching (MOST) with demonstrations and cartoons that critically examine the "unnatural nature and uncommon sense" of science and related pedagogical challenges.

SESSION 21

Backwards and Forwards: Differentiated Science Lessons (Gen)

(General) *JW Grand Ballroom 10, JW Marriott*

Mary Lightbody *(lightbody.1@osu.edu),* The Ohio State University, Newark

Effective use of differentiated instruction can help you meet the needs of your students. Come learn some strategies that research shows promote increased understanding.

SESSION 22

Space: Taking STEM Education to New Heights (Gen)

(General) *White River Ballroom F, JW Marriott*

Steve Heck *(steveheck1@fuse.net),* Mulberry Elementary School, Milford, Ohio

Chantelle Rose *(rosec@bright.net),* Graham High School, St. Paris, Ohio

What happens after the space shuttle retires? Come meet the *Pathfinder* Teacher Astronaut Trainees and learn how your class can take STEM learning to new heights.

SESSION 23

Bridging the Digital Divide with Virtual Inquiry (Gen)

(General) *Marriott Ballroom 1, Marriott Downtown*

Robert E. Landsman, ANOVA Science Education Corp., Honolulu, Hawaii

See how teachers use digital technology to bridge classrooms across thousands of miles to create a single virtual laboratory for student collaboration in scientific inquiry.

SESSION 24

Transfer Across Science Domains Through Simulations and Complex Systems Topics (Gen)

(Elementary–High School) Marriott Blrm. 2, Marriott Downtown

Sarah A. Manlove *(smanlove@indiana.edu),* Indiana University, Bloomington

Join us as we present research and instructional implications related to student use of computer simulations and complex science topics that help students transfer their knowledge and ideas across science domains.

SESSION 25

Storybook Science…or Teaching Science Processes Through Children's Literature (Gen)

(Elementary–High School) Marriott Blrm. 3, Marriott Downtown

William E. Reitz *(wreitz@neo.rr.com),* Retired Educator, Stow, Ohio

Explore how the wonder in children's books can model science processes, create investigations, reveal how we learn, and even provide assessment in K–12 classrooms.

SESSION 26

Family Science: Logistics, Parent Involvement, and Science Engagement (Gen)

(General) Marriott Ballroom 7, Marriott Downtown

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

Family Science is an engaging way to educate parents, increase community involvement, and bring people together. Activities demonstrated. Handouts!

SESSION 27

Christopher Columbus and the Taino to Captain Kidd and the Golden Age of Piracy: Indiana University Research in the Dominican Republic (Gen)

(General) Marriott Ballroom 10, Marriott Downtown

Charles Beeker *(cbeeker@indiana.edu),* Indiana University, Bloomington

Lynn Uhls *(luhls@rbbsc.k12.in.us),* Edgewood Intermediate School, Bloomington, Ind.

Join us for an overview on public schoolteachers collaborating with Indiana University to bring hands-on experiences into both U.S. and Dominican Republic classrooms.

SESSION 28

Dancing in the Minefields (Gen)

(General) Michigan/Texas, Marriott Downtown

Christine Gregory *(mgregory@ilvirtual.org),* Illinois Virtual School, Maroa

Kate Fritts *(kfritts@millikin.edu),* Millikin University, Decatur, Ill.

Mindy Waters *(watersmi@sjo.k12.il.us),* St. Joseph-Ogden High School, St. Joseph, Ill.

Look beyond the laboratory for creative and innovative ways to use free data for student inquiry. Predict earthquakes or the arrival of the first spring wave of song birds. Use computational science to model questions that are beyond the scope of readily available materials and use real data in real time. By mining data and resources freely available on the web, you can enhance your options for asking the tough questions.

SESSION 29 (two presentations)

(Informal Education) Cabinet, Westin

Making the Global Local: State-specific Climate Curriculum Workshop Lessons by Teachers for Teachers (Env)

Deborah Morrison *(deborah.morrison@colorado.edu),* University of Colorado at Boulder

As an example of local climate change education, I'll share Colorado climate science inquiry lessons developed by teachers and our novel curriculum development process.

Citizen Science in the Classroom: Students Leading a Research Effort (Env)

Michael Dunn *(mdunn@smuhsd.org),* Burlingame High School, Burlingame, Calif.

Learn how to get your students involved in a citizen science project investigating the effects of climate change on pollinator distribution.

SESSION 30

Watersheds—Turning Professional Development into Project Based Learning (Env)

(Middle Level–High School) Caucus, Westin

Laura L. Kramer *(kramerl@xenos.org),* Calumet Christian School, Columbus, Ohio

Turn "What I did last summer" into yearlong learning. Involve government agencies, community-based groups, and local experts in Project Based Learning about watersheds.

Visit NSTA's SCIENCE BOOKSTORE

Take advantage of FREE Shipping!

STORE HOURS

Wednesday	5:00 PM–8:00 PM
Thursday*	7:00 AM–5:00 PM
Friday*	7:00 AM–5:00 PM
Saturday	7:00 AM–5:00 PM
Sunday	7:30 AM–12 Noon

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NSTA National Science Teachers Association

SESSION 31

ASTC Session: 2012 Transit of Venus (Earth)

(General) *Chamber, Westin*

Edna K. DeVore *(edevore@seti.org),* SETI Institute, Mountain View, Calif.

Troy Cline *(troy.d.cline@nasa.gov),* NASA Goddard Space Flight Center, Greenbelt, Md.

Observe the 2012 Transit of Venus with the NASA Sun-Earth Day Team and the Kepler Mission through a live webcast from Hawaii and on your phone.

SESSION 32

Data Collection, Visualization, and Weather Forecasting in the Earth Science Classroom (Earth)

(General) *Congress I/II, Westin*

Tim Martin *(timmartin@greensboroday.org),* Greensboro Day School, Greensboro, N.C.

Find out how to use CoCoRaHS, which stands for Community Collaborative Rain, Hail, and Snow Network, to engage your Earth science students. Have your students analyze a basic weather map, then with a CoCoRaHS model incorporate their own measurements into maps using Google Earth and My World GIS™.

SESSION 33

Planetary Mapping and GRIDVIEW Software (Earth)

(General) *Grand Ballroom 1, Westin*

Rosemary A. Millham *(millhamr@newpaltz.edu),* SUNY New Paltz, N.Y.

Learn how to compare and manipulate images of the Moon and Mars to study craters and other topography using IDL and GRIDVIEW software programs.

3:30–4:30 PM Workshops

Changing Cookbook Labs into Inquiry Labs in Six Easy Steps (Gen)

(General) *121, Convention Center*

Judy Barrere *(jbarrere@hfkschool.org),* Holy Family Parish School, Kirkland, Wash.

Georgia Everett *(geverett@tccs.k12.in.us),* Tri-Central Middle School, Sharpsville, Ind.

Mary Jennifer Olesa *(jolesh@hotmail.com),* East Washington Middle School, Pekin, Ind.

Marti Ann Mauntel *(mmauntel@nedubois.k12.in.us),* Dubois Middle School, Dubois, Ind.

Landra Knodel *(landra.e.knodel@k12.sd.us),* Irene-Wakonda Junior High School, Irene, S.Dak.

Cookbooks are only good in the kitchen, not in a science lab. A group of American Physiological Teacher Fellows will demonstrate how easy it can be to convert a teacher-directed lab into an innovative inquiry-based activity using a method called Six Star Science. After the demonstration, you will get to practice with a hands-on activity. Begin using this method right away in your classroom. Handouts!

Exploring Seafloor Spreading with Data from the Integrated Ocean Drilling Program (IODP) (Earth)

(Informal Education) *122, Convention Center*

Barbara J. Simon-Waters *(barbarasimonwaters@gmail.com),* Morehead City, N.C.

Experience *"The Race Is On ...with Seafloor Spreading"* activity, developed during the Deep Earth Academy workshop. Real-time science in the classroom!

Math, Science, Literacy, and Technology: Teaching Sustainability Across the Curriculum (Gen)

(Elementary) *123, Convention Center*

Michelle L. Klosterman *(klosteml@wfu.edu)* and **Kristin Redington Bennett** *(bennetkr@wfu.edu),* Wake Forest University, Winston-Salem, N.C.

Need a new year-long theme? Think sustainability! Sustainability is a powerful integrating theme that can be used in the elementary classroom to bridge concepts in math, science, literacy, technology, and social studies. Experience hands-on activities that are truly interdisciplinary and gain access to multiple units that use K–6 concepts to teach sustainability.

Engineering: Bringing Corporate America into the Classroom (Gen)
(High School) *128, Convention Center*
Kym B. Flowers, Indianapolis (Ind.) Public Schools
Learn how to introduce real-world applications of science into the classroom through engineering and by getting corporate America involved. Explore hands-on projects and take home resources and lesson plans.

Using Technology to Infect Your Biology Classroom with Math! (Bio)
(General) *204, Convention Center*
Jeff Lukens *(jeffrey.lukens@k12.sd.us),* Roosevelt High School, Sioux Falls, S.Dak.
Because of technology, integrating biology and mathematics has never been easier! Come learn how easy, important, and fun it is to collect and analyze data as a part of good, solid, responsible science education.

Physics Labs for Low Budgets (Phys)
(High School) *205, Convention Center*
Tina L. Olson *(tolson@brsd.ab.ca),* Camrose Composite High School, Camrose, Alta., Canada
Let me introduce you to inexpensive ($10–$30/class set) high school physics labs that can be adjusted for different levels of inquiry. Free materials included.

Launch into STEM with Model Rocketry (Phys)
(Elementary–Middle Level) *206, Convention Center*
Cynthia J. Henry *(cynthia.henry@wpafb.af.mil),* **Erin S. Craig** *(erin.craig@wpafb.af.mil),* and **Howard L. Walker** *(howard.walker@wpafb.af.mil),* National Museum of the U.S. Air Force, Wright-Patterson Air Force Base, Ohio
Presider: Judith A. Wehn *(judith.wehn@wpafb.af.mil),* National Museum of the U.S. Air Force, Wright-Patterson Air Force Base, Ohio
Build a model rocket while learning how rocketry can inspire and motivate students in this exciting multidisciplinary approach to STEM education.

Let It Roll! Cars and Ramps (Phys)
(General) *207, Convention Center*
Melissa S. Collins *(melissascollins@juno.com)* and **Rita R. Hayslett** *(hayslettritar@mcsk12.net),* John P. Freeman Optional School, Memphis, Tenn.
Want new ways to teach physical science by incorporating Newton's laws using cars and ramps? Leave with valuable handouts. Let it roll!

Reading Green: Integrating Science and Literacy Learning (Bio)
(Elementary–Middle Level) *208, Convention Center*
Hedi Baxter Lauffer *(hfbaxter@wisc.edu),* University of Wisconsin, Madison
Join me for this interactive session introducing a two-week-long unit for teaching elementary students about plants' needs and their life cycle by growing Fast Plants® and engaging in reading, writing, and mathematics.

Thinking, Planning, and Describing Through Diagramming in Early Childhood (Gen)
(Preschool–Elementary) *211, Convention Center*
Travis Sloane *(tsloane@schools.nyc.gov),* P.S. 267, Brooklyn, N.Y.
Alberto Camacho, P.S. 42, Claremont Community School, Bronx, N.Y.
Visual thinking is fundamental in science, and you can teach it without being an artist. Learn to engage children in creating diagrams they can use!

No Time for STEM? Think Again! (Gen)
(Elementary/Informal Ed) *231, Convention Center*
Katy Laguzza *(klaguzza@mos.org),* **Sharlene Yang** *(syang@mos.org),* and **Kristin Sargianis** *(ksargianis@mos.org),* Museum of Science, Boston, Mass.
Engage in an inquiry-based STEM activity designed for settings where time is short. Discuss effective design principles for inquiry-based STEM instruction.

The Little Spacecraft That Could: MESSENGER Orbits Mercury! (Earth)
(Middle Level) *233, Convention Center*
Lollie Garay, Redd School, Houston, Tex.
Nancy Tashima *(tashima@aloha.net),* Onizuka Space Center, Kailua-Kona, Hawaii
For the first time ever, a spacecraft is in orbit around the planet closest to the Sun—Mercury1 Investigate the latest science sent from MESSENGER.

Composting in the Classroom (Env)
(Elementary) *235, Convention Center*
Miriam Glaser *(mglaser@cesjds.org),* Charles E. Smith Jewish Day School, Rockville, Md.
Learn how to incorporate composting into your classroom! Make a simple worm compost bin, get lesson plan ideas, and learn all about vermicomposting.

Technology Makes STEM Instruction Easy (Chem)
(Middle Level–High School) 237, Convention Center
Gregory B. Dodd, George Washington High School, Charleston, W.Va.
Learn how the use of appropriate technology in the classroom can integrate science, math, and engineering concepts, making STEM instruction a snap.

Change It Up: The Rotating Faces of Science (Bio)
(General) 238, Convention Center
Susan R. Shepard *(susan.shepard@palmbeachschools.org)* and **Shari P. Rodgers,** Jupiter High School, Jupiter, Fla.
Experience an engaging array of short lab rotations to introduce, reinforce, or review key concepts for diverse learning styles.

Science + Writing = Learning (Gen)
(Elementary–Middle Level) 239, Convention Center
Julie A. Alexander *(jualexan@mchsi.com),* Smithton Middle School, Columbia, Mo.
Learn how to use science notebooks in your classroom. We'll look at notebook components, math integration, supporting data, and assessments.

Insight into Inquiry (Gen)
(Elementary–Middle Level) 241, Convention Center
Pamela Barry *(pam.barry@msichicago.org)* and **Elsie Ovrahim** *(elsie.ovrahim@msichicago.org),* Museum of Science and Industry, Chicago, Ill.
Be a student in an inquiry-based classroom! Join us as we share learning strategies, tools, and knowledge in supporting area science teachers.

Silencing Genomes (Bio)
(High School) 245, Convention Center
Bruce Nash *(nash@cshl.edu),* Cold Spring Harbor Laboratory, Cold Spring Harbor, N.Y.
Using RNA interference, students can "silence" virtually any gene at will in the nematode C. *elegans* and gain hands-on understanding of gene function in humans.

Science Facilities 102: The Architects Have Started Without Me—What Do I Do Now? (Gen)
(General) 204/205, JW Marriott
LaMoine L. Motz *(llmotz@comcast.net),* 1988–1989 NSTA President, and Science Education and Facilities Specialist, White Lake, Mich.
Juliana Texley *(jtexley@att.net),* Palm Beach State College, Boca Raton, Fla.
James T. Biehle *(biehlej@sbcglobal.net),* Inside/Out Architecture, Inc., Kirkwood, Mo.
Presider: LaMoine L. Motz
Is your district planning/designing new science facilities? Learn about budgeting, working with the architect, space requirements, technology, flexibility, safety, new types of spaces, and special adjacencies. In an advanced course (an extension of Science Facilities 101 session, page 82), the NSTA author team for *NSTA Guide to Planning School Science Facilities* (2nd Ed.) will present more detailed information and examples of functional, flexible science facilities for inquiry/project-based science. Resource packet available.

COSEE Session: Teaching Physical Science via Underwater Sound (Phys)
(Informal Education) 312, JW Marriott
Christopher Knowlton *(cknowlton@gso.uri.edu)* and **Holly Morin** *(hmorin@gso.uri.edu),* University of Rhode Island, Narragansett
Increase your ocean literacy with the Centers for Ocean Sciences Education Excellence. Get ideas for incorporating the natural world phenomenon of underwater sound into your classroom's physical science activities. Take home a free CD-ROM.

Nanocrystals: Creating Deeper Chemistry Understanding Through Nanotechnology and Inquiry (Chem)
(High School–College) JW Grand Ballroom 8, JW Marriott
Cara Hale-Hanes *(chemexplorer@aol.com),* Long Beach Polytechnic High School, Long Beach, Calif.
Engage in a hands-on laboratory created by The NanoSystems Institute at UCLA that addresses the concept of self-assembly. Hear how this lab was integrated into the curriculum as a support step for an inquiry laboratory that builds crystals. Direct parallels are drawn between the inquiry laboratory and challenges faced in current nanotechnology research with nanocrystals.

How "Green" Is Green Building? (Env)
(General) *Capitol I, Westin*
Donna Rogler *(drogler@dnr.in.gov),* Indiana Dept. of Natural Resources, Indianapolis
Al Stenstrup *(astenstrup@forestfoundation.org)* and **Jaclyn Stallard** *(jstallard@forestfoundation.org),* Project Learning Tree, Washington, D.C.
Learn about how "green" and sustainable the materials recommended for green building really are by exploring the life cycle analyses of a variety of building materials.

Modeling the Melting of Permafrost by Climate Change with Data from Thermochron iButtons® (Env)
(Informal Education) *Capitol II, Westin*
Stephanie M. Standriff *(standris@mail.gvsu.edu),* Grand Valley State University, Allendale, Mich.
Presider: Steve R. Mattox *(mattoxs@gvsu.edu),* Grand Valley State University, Allendale, Mich.
Thawing permafrost impacts infrastructure and disrupts water and carbon cycles. Build a permafrost model, take temperature measurements, and compare results to real data.

Investigate Real-World Earth Science Questions with STEM Concepts and Practices (Earth)
(Middle Level–High School) *Capitol III, Westin*
Margie Turrin *(mkt@ldeo.columbia.edu),* Lamont-Doherty Earth Observatory, Palisades, N.Y.
Explore hands-on STEM lesson plans designed to encourage critical thinking and actively engage middle school and high school students in addressing real Earth science problems.

NASA's Evidence for Dark Matter (Earth)
(High School–College) *Grand Ballroom 2, Westin*
Janet L. Moore *(janetmoore@gmail.com),* Sonoma State University/Illinois State University, Rohnert Park, Calif.
Explore dark matter through mathematical reasoning! Investigate evidence that it exists and learn what we know (and don't know) about it. Free NASA materials!

JetStream: An Online School for Weather (Earth)
(Informal Education) *Grand Ballroom 3, Westin*
Dennis R. Cain *(dennis.cain@noaa.gov),* National Weather Service, Fort Worth, Tex.
Join me for an overview of a National Weather Service online resource for learning the basic how's and why's of weather. JetStream includes lesson plans and activities for the classroom.

3:30–5:00 PM Workshop

NESTA Session: National Earth Science Teachers Association Rock and Mineral Raffle (Earth)
(General) *Grand Ballroom 5, Westin*
Kimberly Warschaw *(kimberly.warschaw@apsva.us),* Wakefield High School, Arlington, Va.
Roberta M. Johnson *(rmjohnsn@gmail.com),* National Earth Science Teachers Association, Boulder, Colo.
Ardis Herrold, National Earth Science Teachers Association, Plymouth, Mich.
NESTA offers more than 50 specimens to choose from for a chance to win display-quality specimens of rocks, minerals, fossils, and other Earth science–related materials.

3:30–5:00 PM Exhibitor Workshop

Robotics in the Classroom: Science, Engineering, and Math Come Alive! (Phys)
(Grades 5–8) *202, Convention Center*
Sponsor: LEGO Education
Presenter to be announced
Robotics is a proven and effective way to capture students' attention and keep them engaged in hands-on STEM learning. Complete an activity from the new LEGO® MINDSTORMS® and Renewable Energy Activity Pack and learn firsthand how LEGO Education MINDSTORMS can get students excited when they model real-life mechanisms and solve real-world challenges, all while building critical-thinking and creative problem-solving skills.

4:00–4:30 PM Presentation

SESSION 1
Teacher Researcher Day Session: Learning in Physics and Literacy Contexts (Phys)
(General) *JW Grand Ballroom 5/Group 3, JW Marriott*
Emily H. van Zee *(emily.vanzee@science.oregonstate.edu),* Oregon State University, Corvallis
What does it mean to integrate physics and literacy learning? I'll share handouts with example strategies and activities.

4:00–5:30 PM Exhibitor Workshops

Renewable Power, Vernier, and KidWind (Phys)
(Grades 6–College) *102, Convention Center*
Sponsor: KidWind Project
Michael Arquin *(joe@kidwind.org),* KidWind Project, St. Paul, Minn.
Interested in using Vernier data collection equipment to explore wind power, fuel cells, and solar thermal and photovoltaic technology? Join us for this KidWind hands-on workshop in partnership with Vernier in which you'll explore concepts like voltage, current, power, energy, and device efficiency using Vernier equipment and KidWind renewable energy gear.

Google Tools for Education (Gen)
(General) *103, Convention Center*
Sponsor: Google
D Feher *(geoeduoutreach@gmail.com),* Google, Mountain View, Calif.
The primary focus of every Google search is educational. With a suite of digital learning tools at your fingertips, Google products like GoogleEarth, YouTube, Docs, Google+, and others transform current learning environments to empower students. Hear from colleagues and experts on ways to infuse technology into your classroom today!

Best Dissection Practices (Bio)
(Grades 9–12) *130, Convention Center*
Sponsor: WARD'S Natural Science
Ashley Goff, VWR Education, Rochester, N.Y.
Learn how to get the most out of your dissection labs with hands-on practice and tips from other teachers and a biologist. You'll see the safest and best specimen options available and find ways to promote inquiry practices in the context of dissection, evolution, and comparative anatomy.

4:30–5:00 PM Presentation

SESSION 1
Teacher Researcher Day Session: Fostering Teacher Researcher Collaborations (Gen)
(General) *JW Grand Ballroom 5, JW Marriott*
Emily H. van Zee, Oregon State University, Corvallis
Deborah L. Roberts-Harris *(drobertsharris@gmail.com),* University of New Mexico, Albuquerque
What can teacher researchers do to foster their own and others' inquiries into science learning and teaching? Please join us in reflecting on ways to collaborate!

4:30–5:30 PM Workshop

COSEE Session: Teaching the Facts About Hurricanes and Climate Change (Gen)
(Informal Education) *312, JW Marriott*
Christopher Knowlton *(cknowlton@gso.uri.edu)* and **Holly Morin** *(hmorin@gso.uri.edu),* University of Rhode Island, Narragansett
Increase your climate and ocean literacy with the Centers for Ocean Sciences Education Excellence. Engage in activities related to hurricane science and climate change. New middle school and high school activities will be shared.

5:00–5:30 PM Presentations

SESSION 1
Understanding Deep Time: "Wait, You Mean Dinosaurs Lived Before the Ice Age?" (Earth)
(Middle Level) *121, Convention Center*
Natalie Keigher, Lisle Junior High School, Lisle, Ill.
Barbara A. Crawford *(barbarac@uga.edu),* The University of Georgia, Athens
Daniel K. Capps *(daniel.capps@maine.edu),* University of Maine, Orono
Engage in a learning activity designed to help your grade 7 Earth science students confront their own misconceptions about deep time. Scaffolding students in understanding deep time involves engaging them in examining and evaluating their prior conceptions.

SESSION 2
Gain but No Pain: Simple and Effective Lab Book Strategies! (Phys)
(High School) *125, Convention Center*
Sara Cahill *(scahill@d125.org)* and **Nancy Gold** *(ngold@d125.org),* Adlai E. Stevenson High School, Lincolnshire, Ill.
Discover strategies that provide all of the benefits of lab notebooks without having the burden of lugging them around to grade!

SESSION 3
Design and Build Successful STEM Projects for High School Science Teams (Phys)
(High School) *126, Convention Center*
Bhavna D. Rawal, Northbrook High School, Houston, Tex.
Help student teams execute STEM projects. Learn strategies to motivate students to come up with an innovative idea and to foster collaboration for a successful effort. We will present several projects—Dropping in a Microgravity Environment (DIME) project, Zero-G flight project, and Lemelson–MIT invention projects—as well as step-by-step information on how to design projects and how to collaborate with other teachers to work on a project.

SESSION 4
Enhance Student Interest in Health Science with a Curriculum Module on Biomedical Research (Bio)
(Middle Level–High School) *208, Convention Center*
Soo Yeon Shin *(shin10@purdue.edu),* **Omolola A. Adedokun** *(oadedok@purdue.edu),* **Loran Carleton Parker** *(carleton@purdue.edu),* and **Sandra F. Amass** *(amasss@purdue.edu),* Purdue University, West Lafayette, Ind.
Presider: Soo Yeon Shin
Come review findings from a pilot assessment of a curriculum module that uses biomedical research and ethical issues in science to enhance student interest in health science.

SESSION 5
Meteorologist of the Day (Earth)
(Middle Level) *233, Convention Center*
Jeffrey A. Branchaud, Pleasanton Middle School, Pleasanton, Calif.
Enlist students in your classroom to become meteorologists of the day. These students will gather local weather data and present the information to the class.

SESSION 6

Learning Through the Chemistry of Food: Planning, Implementation, and Outcomes of an Inquiry- and Problem-based Module (Chem)

(Middle Level–High School) *237, Convention Center*

Sairina Tsui *(sairina.tsui@gmail.com),* Leadership Public School–College Park, Oakland, Calif.

Walk away with an innovative way of designing and sustaining a project-based course module on food chemistry.

SESSION 7

Teaching to the Test? YES (If It's the Right Test) (Gen)

(High School–College) *108, JW Marriott*

Jay Phelan *(jay@ucla.edu),* University of California, Los Angeles

When learning goals are clearly defined and assessments are aligned with them, "teaching to the test" is an effective way to improve learning.

SESSION 8

Interactive Nuclear Magnetic Resonance (NMR): Fundamentals to Application (Phys)

(High School–College) *314, JW Marriott*

Joshua Bridger *(bridgerj@doversherborn.org),* Harvard University, Cambridge, Mass.

Join me for a demonstration of a series of graphical user interfaces that are designed for introductory physics courses and aimed at guiding students toward fundamental understanding of NMR and its application in developing new medical technologies.

5:00–6:00 PM Presentations

SESSION 1

Planning Effective Units: Helping Students Make Connections Between Individual Lessons (Gen)

(Middle Level–High School) *111/112, Convention Center*

Jesse L. Wilcox *(jwilcox.23@gmail.com),* Valley Southwoods Freshman High School, West Des Moines, Iowa

Joanne K. Olson *(jkolson@iastate.edu),* Iowa State University, Ames

Join a discussion on how to develop science units where the learning builds upon itself and progresses logically for students. Example units provided.

SESSION 2

Customizing Science Instruction with Educational Digital Libraries (Gen)

(General) *120, Convention Center*

Patricia A. Kincaid *(patricia_kincaid@dpsk12.org),* Denver (Colo.) Public Schools

Tamara Sumner *(sumner@colorado.edu),* University of Colorado, Boulder

Jeffrey J. Miller *(jeffrey_miller@dpsk12.org),* Denver School of the Arts, Denver, Colo.

This National Science Foundation–supported project enables science educators to customize their instruction with interactive digital library resources, and it supports teachers with the integration of these resources into curriculum planning.

SESSION 3

Bringing the Tropical Rain Forest to the Urban Classroom (Gen)

(Elementary–Middle Level) *123, Convention Center*

Sarah Oszuscik *(sarahbgo@gmail.com)* and **Dana Thome** *(thomedk@milwaukee.k12.wi.us),* La Escuela Fratney, Milwaukee, Wis.

Urban educators share five teaching modules and their experiences collaborating with leading ecologists at the Smithsonian Tropical Research Institute in Panama as part of NSF's Research Experiences for Teachers.

SESSION 4

Laboratory Reports in Standards-based Instruction (Chem)

(High School) *127, Convention Center*

Michael A. Imbruglio *(m_imbruglio@yahoo.com),* Kentlake High School, Kent, Wash.

Explore the inquiry standards and how they can be implicitly integrated into the lab report format. Student chemistry lab reports will be used as examples with evaluations based on standards-based grading.

SESSION 5

Teaching Animal Behavior Without Thinking Like a Human (Bio)

(Middle Level–College) *204, Convention Center*

Lisa A. Olsson *(lisa.olsson@gmail.com),* Bay Ridge Preparatory School, Brooklyn, N.Y.

Animals don't see us as one of them, so why do we see them as one of us? Rid your classroom of anthropomorphization!

SESSION 6

Integrating Formative Assessment into the High School Chemistry Class to Enhance Teaching and Learning (Chem)

(High School) *236, Convention Center*

Xinying Yin *(yinx@indiana.edu),* Indiana University, Bloomington

Mary J. Fuson *(mfuson@mccsc.edu),* Bloomington High School North, Bloomington, Ind.

Walk away with various formative assessment strategies for inquiry-based high school chemistry instruction. Discuss how formative assessments influence both teaching and learning.

SESSION 7

Exploring Birds and Buds: A Walk in the Park! (Bio)

(General) *238, Convention Center*

Jennifer M. Fee *(jms327@cornell.edu),* Cornell Lab of Ornithology, Ithaca, N.Y.

Sandra Henderson, National Ecological Observatory Network, Boulder, Colo.

Motivate your students by taking them outside to learn science through simple observations of the birds and plants in your community. Hands-on activities and handouts provided.

SESSION 8

Increase Student Participation in the Science Fair (Gen)

(Middle Level) *239, Convention Center*

Rhea L. Miles *(milesr@ecu.edu),* East Carolina University, Greenville, N.C.

Come learn about an enrichment program in eastern North Carolina that involves 22 African-American middle school students. It's designed to increase participation in STEM-related activities by underrepresented and underserved populations.

SESSION 9

Increasing Adolescent Literacy in the Science Classroom (Gen)

(High School) *240, Convention Center*

Cresta M. Hancock *(chancock@muncie.k12.in.us),* **Dustan A. Smith,** and **Emily Steinnagel** *(esteinnagel@muncie.k12.in.us),* Muncie Southside High School, Muncie, Ind.

Facilitate your students in mastering science content. Receive ready-to-use science vocabulary and before, during, and after reading strategies that can be embedded into tomorrow's lesson plan to improve literacy skills.

SESSION 10

Scaffolding to Open Inquiry (Gen)

(Middle Level–High School/Informal) *243, Convention Center*

Matt VanKouwenberg, Science Leadership Academy, Philadelphia, Pa.

Come hear about an inquiry-driven project-based school where students work toward open inquiry while still learning core understandings.

SESSION 11

More Than Vocabulary—Teaching Biology as Science (Bio)

(High School) *244, Convention Center*

Marion M. Reeves *(marion-reeves@comcast.net),* University of Georgia, Athens

Teaching biology conceptually allows students to connect the terminology to their learning. Come consider some examples of building biological understanding through the use of student data.

SESSION 12

Integrating Probes in the Interactive Notebook (Bio)

(Middle Level–High School) *245, Convention Center*

Jennifer MacColl, Chaparral High School, Scottsdale, Ariz.

Integrating probes in the Interactive Notebook allow students to take risks, stimulate thinking, and experience cognitive dissonance. Probing questions allow teachers to recognize students' prior knowledge and misconceptions, and make valuable instructional decisions.

SESSION 13

Leadership for Integrated Middle School Science (LIMSS) (Gen)

(Middle Level/Supervision) *103, JW Marriott*

Robert Potter *(potter@cas.usf.edu)* and **Sandi Schlichting** *(schlichting@csl.usf.edu),* University of South Florida, Tampa

Join us for lessons learned from a program aimed at developing teacher leaders to implement effective inquiry-based science instruction and assist their colleagues in implementing effective instruction.

SESSION 14

Approaching Environmental Education in Cooperative Ways: Building Partnerships and Curricula (Env)

(High School–College/Supervision) *104, JW Marriott*

Will Parish, Gateway High School, San Francisco, Calif.

Join a discussion on building educational partnerships, bridging curriculum standards, current research supporting environmental education, and successful statewide efforts such as California's Environmental Education Initiative.

SESSION 15

Genes—Express Yourself (Bio)

(High School–College) *201/202, JW Marriott*

Garrett Hall *(hallgt@gmail.com),* Southeast Polk High School, Pleasant Hill, Iowa

Ehren L. Whigham *(ehren.whigham@gmail.com),* Iowa State University, Ames

Lance A. Maffin *(lance_maffin@bondurant.k12.ia.us),* Bondurant High School, Bondurant, Iowa

Learn about a curriculum module using Oregon Wolfe Barley to demonstrate gene expression and co-segregation of genotypes and phenotypes.

SESSION 16

Exploring the Chemical Education Digital Library (Chem)

(High School–College) *JW Grand Ballroom 3, JW Marriott*

Lynn M. Diener *(dienerl@mtmary.edu),* Mount Mary College, Milwaukee, Wis.

Invigorate your lessons with free digital resources available from the Chemical Education Digital Library.

SESSION 17

The Other 17 Hours: How Students Encounter Science Outside of School (Gen)

(General) *JW Grand Ballroom 10, JW Marriott*

Ben Hunt *(bhunt@sheddaquarium.org),* John G. Shedd Aquarium, Chicago, Ill.

People learn science online, on television, in museums, and almost anywhere else. How do teachers work within the broadening context in which students learn science?

SESSION 18

The Case for Embedding STEM Role Models in Curricula (Gen)

(Elementary–High School) *White River Blrm. F, JW Marriott*

Al Hovey, Waukesha, Wis.

William Flora, East Tennessee State University, Johnson City

Matthew Brumbelow, Insurance Institute for Highway Safety, Ruckersville, Va.

Eleanor Smalley, The JASON Project, Ashburn, Va.

Presider: Eleanor Smalley

Integrating compelling scientists and exciting, cutting-edge research into standards-based hands-on curricula provides educators with a platform to increase student engagement and proficiency in STEM.

SESSION 19

Kindergarten Science and Literacy (Gen)

(General) *Indiana Ballroom F, Marriott Downtown*

Andrea Zdinak Andretta *(aandretta5@optonline.net),* Jefferson Science Magnet Elementary School, Norwalk, Conn.

Zackery Zdinak *(wildlife@lifedraw.com),* Life Drawing & Education, Flagstaff, Ariz.

Kindergarten science is accessible through literacy. Find ways to access students' learning through literacy, including books, poems, illustrations, and writing.

SESSION 20 (two presentations)
(General) *Marriott Ballroom 1, Marriott Downtown*

Digital Resources in the Science Classroom: TPACK in Action (Gen)

Lara K. Smetana *(lksmetana@gmail.com),* Loyola University, Chicago, Ill.

Randy L. Bell *(randybell@virginia.edu)* and **Jennifer L. Maeng,** University of Virginia, Charlottesville

T-what? Come learn about Technological Pedagogical Content Knowledge (TPACK) and how it is exemplified in the use of digital resources in elementary science instruction.

Facilitating Inquiry Through Technology Databanks *vs.* Authentic Data Collection (Gen)

Sharon Schleigh *(schleighs@ecu.edu),* East Carolina University, Greenville, N.C.

Find out how inquiry "looks" when science explorations are based on databanks rather than authentic data collection. Resources and global partnership opportunities via technology provided.

SESSION 21

Teaching Science with Geospatial Technology: Projects by Preservice Teachers (Gen)

(General) *Marriott Ballroom 2, Marriott Downtown*

Josephine Shireen Desouza, Jonathan Fisher *(jafisher@bsu.edu),* **Elizabeth Gould** *(ebngould@gmail.com),* **Katy Preidt, Jamie Riebersal** *(jlriebersal@bsu.edu),* **Josh Shuster,** and and **David Townsend** *(dwtownsend@bsu.edu),* Ball State University, Muncie, Ind.

Presider: Josephine Shireen Desouza

Join us for this presentation of middle school and high school GIS projects by preservice teachers.

SESSION 22

Creating a Community of Self-directed Learners (Gen)

(General) *Marriott Ballroom 3, Marriott Downtown*

Larry Geni *(larrygeni@gmail.com),* Evanston, Ill.

Explore a new educational paradigm based on student ownership of the learning process and a deep sense of community in the classroom.

SESSION 23

NODC Ocean Data Help Answer How the Oceans Is Saving Our Hides and Other Climate Q's (Env)

(Informal Education) *Cabinet, Westin*

Kenneth S. Casey *(kenneth.casey@noaa.gov),* NOAA National Oceanographic Data Center, Silver Spring, Md.

Discover the ocean climate data available to you and your students through the NOAA National Oceanographic Data Center.

SESSION 24 (two presentations)
(Middle Level–College) *Caucus, Westin*

Presider: Cliff Cockerham, Academy of Public Service, Whites Creek High School, Whites Creek, Tenn.

If You Knew ATEEC Like I Know ATEEC… (Env)

Karen C. Merritt *(karmerritt@aol.com),* North Caddo Magnet High School, Vivian, La.

The Advanced Technology Environmental and Energy Center (ATEEC) in Iowa sponsors a fellows institute each summer to study cutting-edge environmental technology issues and engage in special projects designed to enhance the quality of environmental technology education. Discover free ATEEC resources, including learning modules, lab activities, and instructional materials.

Pathways in Alternative Energy and Sustainability Studies Increase Engagement of At-Risk Urban Youth (Env)

Cliff Cockerham *(clifford.cockerham@mnps.org),* **Keith Tobias** *(tobias@worksite-services.com),* and **Randall Tidwell** *(randall.tidwell@mnps.org),* Academy of Public Service, Whites Creek High School, Whites Creek, Tenn.

Our model is replicable and we live to share! Build sustainability studies that engage at-risk minority students while leaping forward in both college preparedness and career readiness for the new energy economy.

SESSION 25

Daytime Astronomy with Robotic Telescopes (Earth)

(Middle Level–College) *Grand Ballroom 1, Westin*

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

Learn how to gain free access to robotic telescopes for your students to take their own astronomical images. Free NASA teacher's guide.

5:00–6:00 PM Workshops

Experimental Polymer Chemistry (Chem)
(Middle Level–High School) 122, Convention Center
Brian P. Wright, Olympia High School, Olympia, Wash.
Use standard quantitative techniques to explore and measure the properties of classroom-made basic polymers.

Ready-to-Go Problems and Activities for Group Problem Solving in Biology, Chemistry, and Math (Gen)
(High School) 128, Convention Center
Gretchen Adams *(gadams4@illinois.edu),* **Tracey E. Hickox** *(hickox@illinois.edu),* and **Jennifer R. McNeilly** *(jrmcneil@illinois.edu),* University of Illinois at Urbana–Champaign, Urbana
Walk away with a packet of proven activities for engaging students in problem solving and improving conceptual understanding. Great session for AP teachers!

Projects That Make Physics Relevant, Phun, and Exciting (Phys)
(High School) 205, Convention Center
Borislaw Bilash *(bbilash@pascack.k12.nj.us),* Pascack Valley High School, Hillsdale, N.J.
Elise F. Burns *(eburns@pascack.k12.nj.us),* Pascack Hills High School, Montvale, N.J.
Receive an overview of how projects are used to enhance a physics program by providing a focus for a unit of study. End-of-unit projects, design projects, and the project-based learning inquiry approach will be discussed.

Real-Life/Real-Time Science with Literature and Sensor Technology (Phys)
(Elementary–Middle Level) 206, Convention Center
Suzanne M. Nesmith *(suzanne_nesmith@baylor.edu),* Baylor University, Waco, Tex.
Experience physical science activities linking children's literature with data collection technology.

Integrated Learning Through Force and Motion Experiments (Phys)
(General) 207, Convention Center
Karl Topper *(karltopper@gmail.com),* Dillon Valley Elementary School, Dillon, Colo.
Gain content knowledge of Newton's laws through modeled experimentation that integrates literacy and mathematics following the scientific method.

Evidence-based Strategies for Teaching Nature of Science to Young Children (Gen)
(Preschool–Elementary) 211, Convention Center
Valarie L. Akerson *(vakerson@indiana.edu)* and **Vanashri Nargund-Joshi** *(vnargund@indiana.edu),* Indiana University, Bloomington
Explore an iterative model and several teaching strategies for teaching the nature of science (NOS) to young children. Take home an NOS poster, children's literature book list, and a graphic of the iterative NOS instruction model.

Bridge the Gap—Lab to Test (Gen)
(Elementary) 231, Convention Center
Sandra White *(snannyw@aol.com),* Independent Education Consultant, Lubbock, Tex.
Your students understand the concepts in the lab but don't test well. Inspire active learning with creative vocabulary games that make science vocabulary come to life.

Climate Change for Elementary Students: Empowering the Next Generation of Climate Scientists! (Env)
(Preschool–Middle Level) 234, Convention Center
Michaela M. Labriole *(mlabriole@nysci.org),* New York Hall of Science, Queens
Review the basic science behind climate change, learn inquiry-based activities for the elementary classroom, and explore multiple strategies to empower students.

Engineering Everywhere: Bridging Formal and Informal STEM Education (Gen)
(Preschool–Middle Level) 241, Convention Center
Sharlene Yang *(syang@mos.org),* **Kristin Sargianis** *(ksargianis@mos.org),* **Lydia Beall** *(lbealle@mos.org),* and **Tricia DeGuilio** *(pdeguilio@mos.org),* Museum of Science, Boston, Mass.
Experience engineering activities for both formal classroom and museum environments. Discuss how exposure to engineering in different contexts can engage students in STEM learning.

NSTA Press Session: Using Predict, Observe, and Explain Activities in Your Classroom (Gen)
(Middle Level–High School) JW Grand Ballroom 7, JW Marriott
G. Michael Bowen *(gmbowen@yahoo.com),* Mount Saint Vincent University, Halifax, N.S., Canada
Using example activities from NSTA's *Predict, Observe, Explain,* I'll demonstrate how to effectively engage your students in POE activities that develop their conceptual understanding. Resources will be provided.

NIEHS Environmental Health Resources for Educators (Env)
(Informal Education) Capitol I, Westin
Bono Sen, The National Institute of Environmental Health Sciences, Research Triangle Park, N.C.
The National Institute of Environmental Health Sciences provides free environmental health science educational resources for educators and students. Learn about the EHP Science Education program and free education resources.

Whose Fault Is It? (Earth)
(General) Grand Ballroom 3, Westin
Eric P. Muller *(emuller@exploratorium.edu),* Exploratorium, San Francisco, Calif.
Engage in a hands-on seismology game for locating earthquake foci. Hold hands to figure out who started earthquake waves (P-waves and S-waves).

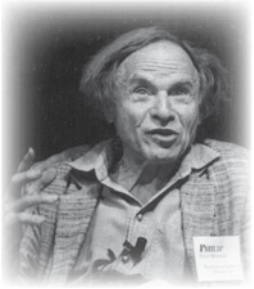
5:30–6:00 PM Presentation

SESSION 1
COSEE Session: Bringing Ocean Scientists and Their Data into Your Classroom (Earth)
(Middle Level–High School) 312, JW Marriott
Christen M. Herren *(christy.herren@gmail.com)* and **Phoebe Jekielek** *(phoebe.jekielek@maine.edu),* University of Maine, Walpole
The Centers for Ocean Sciences Education Excellence (COSEE) Ocean Systems will present scientist-inspired activities and resources for teaching inquiry-based activities about scientific processes and data sets related to timely ocean sciences research topics.

5:30–7:00 PM Meeting

National Earth Science Teachers Association Annual Membership Meeting
Grand Ballroom 5, Westin
Join NESTA leadership to find out about NESTA's activities over the past year and plans for the next. Share ideas and get involved! Visit *www.nestanet.org/cms/content/conferences/nsta/nsta2012.html* for more information.

A Video Showcase of Legendary Icons, Inspiring Teachers, Memorable Performances, and Stimulating, Engaging Courses: Part 3



6:00 PM–12 Midnight • Indiana Ballroom A/B, Marriott Downtown

Mitchell E. Batoff *(mbatoff@aol.com),* Professor Emeritus, New Jersey City University, Jersey City
Gordon D. Clark, Retired Educator, Manalapan, N.J.
Presider: Gordon D. Clark

This is a continuation of the programs on Thursday and Friday evenings. The screenings will be interspersed with commentary, discussion, and some live demonstrations. There will be humor, wonder, and perplexity mixed in with lots of information on a wide range of topics. Pick up ideas and content that will broaden your knowledge and that you can use in your teaching.

The audience will help select from an extensive and enticing menu of course excerpts including:

Stephen Jay Gould of Harvard University, *Full House*, in conversation with Charlie Rose; **Bonnie Bassler** of Princeton University, *Cell-to-Cell Communication in Bacteria*; **John Renton** of West Virginia University, *Damage from Earthquakes*; **Harold E. Edgerton** of Massachusetts Institute of Technology, *Stopping Time*; **Steven Strogatz** of Cornell University, *Chaos and the Double Pendulum*; **Philip Morrison** of Massachusetts Institute of Technology, *Evidence for Atoms*; **Anthony A. Goodman, M.D.,** of Montana State University, *How We Fail and How We Heal*; **Julius Sumner Miller**, *The Physics of Toys*; **Michael Starbird** of The University of Texas at Austin, *Change and Motion*; **Carl Sagan** of Cornell University, *The Shores of the Cosmic Ocean*; **Neil deGrasse Tyson** of Princeton University and the Hayden Planetarium, *My Favorite Universe*; **Ben Carson, M.D.,** Johns Hopkins University Hospital, on his remarkable life and career; **Mary Budd Rowe** of Stanford University, *How to Persuade a Child to Wash His/Her Hands;* **David Helfand** of Columbia University, *The Vast Reaches of Time and Space*; **Hubert N. Alyea** of Princeton University, *Lucky Accidents, Great Discoveries, and the Prepared Mind*; **Don Herbert** (Mr. Wizard) and the millions of children whose lives he touched; **Bassam Shakhashiri** of the University of Wisconsin, lecture-demonstrations aimed at sparking an interest in science among children and adolescents; **Monica Neagoy** of Georgetown University, *Exponential Functions* with a class of high school students; **Verne Rockcastle** of Cornell University, *Quantitative Activities in Elementary School Science*; **Steven Goldman** of Lehigh University, *Great Scientific Ideas That Changed the World*; **Francis Colavita** of the University of Pittsburgh, *Sensation, Perception, and Behavior*; **Lee Marek** formerly of Naperville (Ill.) North High School and **Bob Lewis** of Downers Grove (Ill.) High School, select demonstrations from their popular chemistry courses; **Robert Hazen** of George Mason University and the Carnegie Institution of Washington, *The Grand Question of Life's Origin*; **Paul Hewitt**'s physics demonstrations in Vancouver; zany, zany **Daryl Taylor** of Greenwich (Conn.) High School; **Robert Sapolsky** of Stanford University, *How Two Neurons Communicate—The Synapse/Stress in Your Body*; **Walter Lewin** of Massachusetts Institute of Technology, his famous physics course; **David Sadava** of Claremont McKenna, Pitzer, and Scripps Colleges, *Understanding Genetics: DNA, Genes, and Their Real-World Applications*; **William Dunham** of Muhlenberg College, *Great Thinkers, Great Theorems;* the enduring legacy of **Roger Tory Peterson**; and **Steven Novella, M.D.,** of Yale School of Medicine, *Medical Myths, Lies, and Half-Truths.*

Dozens of door prizes directly related to this session will be raffled off throughout the entire evening right up to 12 Midnight. Receive a useful handout. Come and go, stay as long as you wish. Bring your dinner.

7:00–8:15 PM President's Reception

(Tickets Required: $60) **M-11** *Marriott 5, Marriott Downtown*

Join us for this reception and enjoy heavy hors d'oeuvres, desserts, and iced tea; cash bar; light dinner music; and reserved seating at the Evening Featured Presentation by Eric Jolly.

The menu includes Crab Louie salad in artichoke bottom, allumette vegetables wrapped in filet mignon, rock shrimp and roast corn in phyllo cups, mini tart filled with Asian pears and gorgonzola, a pasta station, miniature Chicken Cordon Bleu, mini Beef Wellington, crab cakes, assorted quiche, and assorted French pastries.

Evening/cocktail attire suggested.

Please note that the President's Mixer with DJ and cash bar will follow the Evening Featured Presentation from 9:45 PM to 12 Midnight in Marriott Ballroom 5.

Tickets, if still available, must be purchased at the Ticket Sales Counter in the NSTA Registration Area before 3:00 PM on Friday.

8:30–9:30 PM Evening Featured Presentation

Defining Partnerships for Student Success (Gen)

(General) *Marriott Ballroom 6, Marriott Downtown*

Eric J. Jolly, President, Science Museum of Minnesota, St. Paul

Presider: Patricia Simmons, NSTA President, and North Carolina State University, Raleigh

Dr. Jolly will examine themes of cultures, science, and storytelling to illustrate how formal and informal education can better work together to advance a student's engagement, achievement, and interest in STEM learning.

Dr. Eric J. Jolly is president of the Science Museum of Minnesota. He is known for his personal passion for STEM education and for working to identify solutions that address our country's achievement gap. Dr. Jolly is widely recognized for his contributions to mathematics and science education, frequently working with such groups as the American Association for the Advancement of Science and the National Science Teachers Association. His work with youth, families, and communities includes diverse organizations such as YouthALIVE!, The Innovation Center, American Youth Policy Forum, and the AAAS Healthy Families 2010 project. He serves on numerous national and local advisory boards and has published many scholarly articles.

9:45 PM–12 Midnight Mixer

President's Mixer

Marriott Ballroom 5, Marriott Downtown

DJ and cash bar.

—*Courtesy of the Indianapolis Convention &Visitors Association*; visitIndy.com

The Indianapolis Motor Speedway is the world's largest spectator sporting facility, with more than 250,000 permanent seats. If the seat boards from the grandstands at IMS were laid end-to-end, they would stretch 99.5 miles.

7:00–9:00 AM Breakfast

NSTA Life Members' Buffet Breakfast (M-12)
(Tickets Required: $45) *White River Blrm. C, JW Marriott*
Join your fellow NSTA Life Members for a breakfast filled with memories as well as meaning. Catch up with old friends, make new ones, trade war stories, and discuss ways to share your talents and vitality with the science education community. Activities and door prizes, too!

Tickets, if still available, must be purchased at the Ticket Sales Counter in the NSTA Registration Area before 3:00 PM on Saturday.

8:00–9:00 AM Presentations

SESSION 1
Who Is That Lady, and What Does She Want? (Gen)
(General) *101, Convention Center*
Jennifer V. Berk *(jennifer.berk@metroparkstoledo.com)* and **Karen L. Mitchell** *(karen.mitchell@metroparkstoledo.com),* Metropolitan Park District of the Toledo Area, Toledo, Ohio
Learn how to use games, songs, and visuals to quickly focus your students' attention in new situations, environments, and subject matter. Take home a CD.

SESSION 2
Internet-based Interactive Courses in Earth and Environmental Sciences (Earth)
(Middle Level–High School) *104, Convention Center*
Dennis L. Skelton, Indiana State University, Terre Haute
Come learn about two web-based interactive courses developed for grades 7–14 science programs that examine temporal and spectral interactions among Earth surface features using remotely sensed imagery.

SESSION 3
ART/Science (Earth)
(General) *106, Convention Center*
Randall H. Landsberg *(randy@oddjob.uchicago.edu),* University of Chicago, Ill.
From zines to art installations, this collaboration between the School of the Art Institute and the University of Chicago offers unique STEM learning opportunities.

SESSION 4 (two presentations)
(General) *108, Convention Center*
STEM Education Training Through Topics in Sustainability (Gen)
Chad King *(kingc@ohiodominican.edu),* **Ron Zielke** *(zielker@ohiodominican.edu),* and **Marlissa Stauffer** *(stauffem@ohiodominican.edu),* Ohio Dominican University, Columbus
Learn about immersion training experiences we developed for teachers that address pedagogical issues of Project Based Learning and interdisciplinary teaching with a focus on sustainability.

From STEM Careers to Teaching—An Innovative Teaching Fellowship Program (Gen)
Ellen Schiller, Grand Valley State University, Grand Rapids, Mich.
Jann Joseph, Eastern Michigan University, Ypsilanti
Receive an overview of the W.K. Kellogg Foundation's Woodrow Wilson Teaching Fellowship program at Grand Valley State University, an innovative, clinically based teacher education program for STEM majors.

SESSION 5
Leveraging Web 2.0 to Teach Science (Gen)
(General) *109, Convention Center*
Steve Canipe, National Consortium for Specialized Secondary Schools for Mathematics, Science and Technology, Boone, N.C.
Deciding which 2.0 tools to use with students from the wealth of resources can be daunting. Best practices will be described and explored.

SESSION 6

Think Twitter Is for the Birds? Engage Students via Web 2.0 Technologies (Gen)

(Middle Level–College) *110, Convention Center*

Jerrid W. Kruse *(jerridkruse@gmail.com),* Drake University, Des Moines, Iowa

Learn how to use web technologies to promote digital citizenship and science learning. Come learn applications of Google apps, Twitter, concept maps, blogs, YouTube, and more!

SESSION 7

Multifaceted Approaches to Energy Education (Env)

(General) *113, Convention Center*

Jeffrey Scott Townsend *(scott.townsend@eku.edu),* **Melinda S. Wilder** *(melinda.wilder@eku.edu),* and **Billy Bennett** *(william.bennett@eku.edu),* Eastern Kentucky University, Richmond

Charge up your teaching! Come learn about a grant-funded comprehensive energy education project for both inservice and preservice teachers. Multiple energy education resources will be shared.

SESSION 8

Promoting Scientific Discourse with Digital Tools (Gen)

(General) *120, Convention Center*

Jessica Fries-Gaither *(fries-gaither.1@osu.edu),* The Ohio State University, Columbus

Communication—reading, writing, and discussion—is an integral part of science. Let's examine how free digital tools promote scientific discourse.

SESSION 9

Developing Skills to Unveil "Nature's Operating Instructions" for 21st-Century Environmental Problem Solving (Gen)

(General) *123, Convention Center*

Teddie Phillipson-Mower *(teddie.mower@gmail.com),* University of Louisville, Ky.

Emily Conn, F.L. Olmsted Academy South, Louisville, Ky.

Receive examples of the current movement to restore our connection with nature—"our biological elders"—to learn from its billions of years of adaptive success. Explore eliminating waste, restoring natural capital, and advancing resource efficiency. Handouts available electronically.

SESSION 10

Lessons from *Energizing Physics* (Phys)

(High School) *125, Convention Center*

Aaron Osowiecki *(aosowiecki@gmail.com),* Boston Latin School, Boston, Mass.

Come hear what we learned from the NSF-supported pilot of *Energizing Physics*, an energy-based introductory physics course with embedded formative assessments.

SESSION 11

Tesla Tales (Phys)

(Middle Level–College) *126, Convention Center*

Carlos R. Villa *(villa@magnet.fsu.edu),* National High Magnetic Field Laboratory, Tallahassee, Fla.

Take a journey through the history of electromagnetic discovery. Learn how to recreate the experiments of some of history's greatest scientists in your classroom.

SESSION 12

Everyday Assessment with Writing (Chem)

(High School) *127, Convention Center*

Patti Schaefer *(schaefer1213@yahoo.com),* Mineral Point High School, Mineral Point, Wis.

When students write down their ideas, their knowledge and understanding become more transparent. Walk away with writing tasks that uncover your students' thinking.

SESSION 13

Scaffolding Critical Thinking with Inductive Lessons (Gen)

(Middle Level–High School) *201, Convention Center*

Barbara A. Reid *(breid@andrews.edu),* Andrews University, Berrien Springs, Mich.

Walk away with four inductive lessons that offer secondary teachers the opportunity to guide critical-thinking skills in life science and physical science.

SESSION 14

Polar Bear Denning: A Cross-curricular Simulation Activity Integrating Science, Mathematics, Language Arts, and Social Studies (Gen)

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

April N. Cheuvront *(aprilcheuvront@averyschools.net),* Avery Middle School, Newland, N.C.

Glen E. Liston *(liston@cira.colostate.edu),* Colorado State University, Fort Collins

Join us for an interactive SMART Board lesson to predict changes in polar bear denning locations in response to Arctic climate change.

SESSION 15

Powerful and FREE Simulations for Biology Teaching (Bio)

(General) *204, Convention Center*

Chad Dorsey *(cdorsey@concord.org),* The Concord Consortium, Concord, Mass.

Come discover how free NSF-funded molecular, genetics, and evolution simulations and curricula from The Concord Consortium can add a new dimension to your biology teaching. Take home a free software CD and resources. Don't forget to bring your laptop.

SESSION 16

Enhancing Science Lessons Through the Use of Technology (Gen)

(Elementary) *212, Convention Center*

Timothy Brown *(brown.tim@wgmail.org),* Bristol Elementary School, Webster Groves, Mo.

Patrick L. Brown, DuBray Middle School, St. Peters, Mo.

Incorporate more technology into your elementary science classroom via web-based blogs, webquests, and interactive PowerPoints to help students develop and refine scientific ideas.

SESSION 17

"Is This a Forgery?" Real-World Connections and STEM Education (Gen)

(Informal Education) *234, Convention Center*

Elizabeth Niehaus *(niehaus_p@msn.com),* Niehaus and Associates Inc., South Lyon, Mich.

Kathleen Heikinnen, Lincoln Middle School, Warren, Mich.

Presider: Paul Niehaus *(niehaus_p@msn.com),* Washtenaw Community College, Ann Arbor, Mich.

When trying to engage students in inquiry and the core contents of science and math, a real-world connection can serve as an innovative format.

SESSION 18

The Reflective Assessment Technique: 15 Minutes to Improved Instruction (Gen)

(Elementary–Middle Level) *236, Convention Center*

Kathy Long *(klong@berkeley.edu),* Lawrence Hall of Science, University of California, Berkeley

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 effectiveness in a national study.

SESSION 19

Inquiry for ALL: Developing a Successful Schoolwide Science Fair Program (Gen)

(High School) *238, Convention Center*

Kristen L. Cacciatore *(kcacciatore@boston.k12.ma.us),* East Boston High School, East Boston, Mass.

Come learn how teachers at a large urban high school lead a schoolwide science fair program that engages hundreds of students at all levels of academic proficiency in authentic scientific inquiry.

SESSION 20

Black Tie Meets Blue Jeans: Formal/Informal Educator Collaboration in Curriculum Design (Bio)

(Middle Level–High School/Informal) *243, Convention Center*

David M. Heiser *(david.heiser@yale.edu)* and **Beth Hines** *(beth.hines@yale.edu),* Yale Peabody Museum of Natural History, New Haven, Conn.

Chris Willems *(chris.willems@new-haven.k12.ct.us),* Wilbur Cross High School, Branford, Conn.

Presider: David M. Heiser

The possibilities are limitless when classroom teachers and museum educators join forces to develop inquiry-based curricula anchored by actual events and real specimens and objects.

SESSION 21

NSTA Press Session: ***Watershed Investigations: 12 Labs for High School Science*** **(Env)**

(High School) *White River Ballroom B, JW Marriott*

Jennifer L. Soukhome, Zeeland West High School, Zeeland, Mich.

Join me for a discussion of tips for conducting field work and open-ended inquiry-based experiments as well as a highlight of the labs in the book, *Watershed Investigations.*

8:00–9:00 AM Workshops

Romancing the Stone **(Earth)**
(Middle Level–High School) *103, Convention Center*
Parker O. Pennington IV *(p.o.pennington@gmail.com),* Retired Educator, Ann Arbor, Mich.
Presider: David F. Mastie, Retired Educator, Chelsea, Mich.
Examine mineral packets to find patterns within the rock families, simplifying geology content to key concepts. Take-home activities, specimen samples, and handouts provided.

Hanny and the Mystery of the Voorwerp: Citizen Science in YOUR Classroom! **(Earth)**
(Middle Level–High School) *105, Convention Center*
Kathy J. Costello *(kacoste@siue.edu)* and **E.J. Reilly** *(ejreilly@charter.net),* Southern Illinois University Edwardsville
Engage your students in inquiry in the classroom using real data from space satellites. Hands-on activities and citizen science projects are the focus.

Integrating Inquiry-based Math and Science for Preservice Middle School Teachers **(Gen)**
(General) *107, Convention Center*
Paul J. Dolan *(p-dolan@neiu.edu),* **Wendy Thomas-Williams** *(w-thomas1@neiu.edu),* **Cathie Anderson** *(c-anderson9@neiu.edu),* and **Joyce M. Mangelsdorf,** Northeastern Illinois University, Chicago
Presider: Paul J. Dolan
In 2001, Northeastern Illinois University instituted Middle School Teacher Quality Enhancement (MSTQE), an integrated math/science program for preparing pre-service middle school math and science teachers. Engage in activities from the linked math/science courses in the program, such as environmental patterns and scientific use of exponential curves.

Local Connections in Environmental Studies: The Science of Research in the Outdoor Classroom **(Gen)**
(General) *122, Convention Center*
Rosemary A. Millham *(millhamr@newpaltz.edu),* SUNY New Paltz, N.Y.
Learn how your middle school students can conduct meaningful research using glass eel population data collected by the New York State Department of Environmental Conservation. Take part in one of the activities and brainstorm on how you can collaborate with research institutions in your area.

Physics of Musical Sound **(Phys)**
(Middle Level–High School) *205, Convention Center*
Tapati Sen, Arizona State University, Tempe
Make learning concepts such as wavelength, frequency, and amplitude fun and interesting for students by using musical instruments.

Soaking in Inquiry! Inquiry-based Osmosis Labs for the Biology Classroom **(Bio)**
(Elementary–High School) *209, Convention Center*
Tom J. McConnell *(tjmcconnell@bsu.edu),* Ball State University, Muncie, Ind.
Test out these fun and easy-to-understand inquiry activities that let students explore the concept of osmosis! Inquiry-based handouts will be available.

The Trouble I've Seen! **(Gen)**
(Preschool–Elementary) *211, Convention Center*
Jody Hilton, Janice Porter, and **Shawndel Stewart,** P.S. 005 Dr. Ronald McNair, Brooklyn, N.Y.
Troubleshooting uses critical thinking to overcome frustration. Learn to develop and teach troubleshooting strategies to students in kindergarten and up through hands-on design activities!

STAR_Net: Connecting Rural Communities, Libraries, and STEM Professionals Through Hands-On Science **(Earth)**
(General) *232, Convention Center*
Karen A. Peterson *(kpeterson@edlabgroup.org),* National Girls Collaborative Project, Lynnwood, Wash.
Paul Dusenbery *(dusenbery@spacescience.org),* Space Science Institute, Boulder, Colo.
Learn about STAR_Net (the STAR stands for Science, Technology, Activities, and Resources). Engage in activities using strategies and resources from STAR_Net, a collaboration between the Space Science Institute, the National Girls Collaborative Project, and the American Library Association.

Authentic Research in the Inquiry Classroom **(Earth)**
(Middle Level) *233, Convention Center*
Debra L. Quintero, St. Lucie West K–8 School, Port St. Lucie, Fla.
Two teachers who participated in research through the University of Rhode Island Graduate School of Oceanography will share a series of lessons based on their experiences working with marine researchers in the North Atlantic.

Properties, Polymers, and Metals, Oh My! (Chem)
(Middle Level) *237, Convention Center*
Susan E. Robertson, Orchard Middle School, Solon, Ohio
Learn how to incorporate materials science into your middle school chemistry unit by participating in inquiry that you can easily facilitate in your classroom.

WISEngineering: Engaging Students in STEM Through Engineering Design (Gen)
(Middle Level–High School) *240, Convention Center*
Jennifer L. Chiu *(jlchiu@virginia.edu)* and **Crystal J. DeJaegher** *(cjy2em@virginia.edu)*, University of Virginia, Charlottesville
Come learn about WISEngineering, a technology-based curriculum delivery, assessment, and feedback system to support engineering projects that introduce STEM concepts in motivating and accessible ways.

High-flying Fun: Linking Aerospace and Literature at the Elementary Level (Gen)
(Elementary–Middle Level) *241, Convention Center*
Judith A. Wehn *(judith.wehn@wpafb.af.mil),* National Museum of the U.S. Air Force, Wright-Patterson Air Force Base, Ohio
Diana M. Hunn *(dhunn1@udayton.edu),* University of Dayton, Ohio
From the Wright brothers to the Berlin candy bomber, the stories of aviation come alive through our hands-on adventures linking aerospace science and children's literature.

8:00–9:30 AM Presentation

SESSION 1

The Future of Bioethics (Bio)
(General) *208, Convention Center*
Eric M. Meslin *(emeslin@iupui.edu),* Indiana University Center for Bioethics, Indianapolis
Donna K. Keller *(dok@njsp.k12.in.us),* North Judson–San Pierre High School, North Judson, Ind.
Terry Maksymowych *(tmaksymowych@ndapa.org),* Academy of Notre Dame de Namur, Villanova, Pa.
Do you feel lost or not prepared to teach bioethics? Come learn about an interactive way to get your students involved in a discussion of bioethics. Learn about the many pressing ethical issues in the field of biology and other sciences. Engage your students with ethical questions that arise in the relationships among life sciences, biotechnology, medicine, politics, law, and philosophy.

8:30–9:00 AM Presentation

SESSION 1

The Columbus Zoo Unlocks the Secrets of STEM Education (Env)
(Elementary) *235, Convention Center*
Stacey Glatz *(stacey.glatz@columbuszoo.org)* and **Becky Nellis** *(becky.nellis@columbuszoo.org),* Columbus Zoo and Aquarium, Powell, Ohio
Discover how the Columbus Zoo brings STEM education to life! Learn techniques for creating exciting lessons to engage your students.

9:30–10:00 AM Presentations

SESSION 1

Addressing Core Standards Through Project-based Instruction: Keys to Success (Gen)
(High School/Supervision) *121, Convention Center*
Gail Dickinson *(dickinson@txstate.edu),* Texas State University, San Marcos
Walk away with strategies to implement project-based instruction in your science classroom. Increase your students' achievement with projects that address science and mathematics standards while maintaining an environment of inquiry.

SESSION 2

SciJourn: Literacy Through Journalism Writing (Chem)
(High School) *128, Convention Center*
Jennifer Bolla, Hazelwood East High School, St. Louis, Mo.
SciJourn: Scientific Literacy Through Science Journalism is an NSF-funded project designed to teach high school students the basics about science reporting. Hear a teacher's perspective on how students writing journalism articles through the SciJourn program improved science literacy skills and increased interest in the science classroom.

9:30–10:30 AM Presentations

SESSION 1

Playing with Your Food: Issues Related to Modeling Science Concepts with Food (Gen)

(General) *101, Convention Center*

Melissa L. Shirley *(melissa.shirley@louisville.edu),* University of Louisville, Ky.

Many teachers use food to help their students grasp complicated scientific concepts. What is the impact on students of using food as a modeling tool?

SESSION 2

Network Science: Use Snoop Dogg to Teach the Scientific Method (Gen)

(High School–College) *102, Convention Center*

Meagan Morscher *(m.morscher@gmail.com),* Northwestern University, Evanston, Ill.

Network science is a growing field of study that embraces ideas from computer science, sociology, and mathematics. This presentation has two objectives—introduce participants to network science and provide a motivating lesson for high school students using a data set on hip-hop collaborations.

SESSION 3

EarthScope: A Hubble Space Telescope for Earth's Interior That's in Your Neighborhood! (Earth)

(Middle Level–High School) *106, Convention Center*

Michael Hamburger *(hamburg@indiana.edu),* Indiana University, Bloomington

John Taber *(taber@iris.edu),* IRIS Consortium, Washington, D.C.

Learn how your students can use data from a state-of-the-art continental-scale seismograph array to visualize seismic waves, and explore Earth structure and earthquake hazards.

SESSION 4

Quantitative Reasoning Across Curricula (Gen)

(Middle Level–College) *107, Convention Center*

Gordon L. Wells *(gordon.wells@ovu.edu),* Ohio Valley University, Vienna, W.Va.

Students must develop quantitative reasoning skills to be competitive in today's world. Join me for a discussion of what is quantitative reasoning and receive examples across curricula.

SESSION 5

The Reasons We Choose Science Careers: Motivational Factors in Choosing a Science Career (Gen)

(General) *108, Convention Center*

Victoria J. Fawcett-Adams *(vfawcett08@su.edu),* Shenandoah University, Winchester, Va.

Receive an overview of a study exploring motivations involved in the selection of science careers. Trends examined include discouraged students, who motivates, and does gender or other biases exist.

SESSION 6

We Wiki, Do You? (Gen)

(General) *109, Convention Center*

James Calaway *(jcalaway@lawtonps.org),* Lawton (Okla.) Public Schools

James Gibbs, Eisenhower High School, Lawton, Okla.

Presider: Gerald Krockover, Purdue University, West Lafayette, Ind.

Learn how to use wiki sites and build digital instructional videos in the field while doing research projects as well as tips for finding technology grant money.

SESSION 7

Glaciers: Traveling Time Capsules (Env)

(Middle Level–High School) *113, Convention Center*

Sylvia J. Tufts, Retired Educator, Flossmoor, Ill.

Gain insights as to how the study of glaciers' locations, movement, and composition can provide an excellent opportunity to observe and analyze the effects of global climate conditions and changes over time.

SESSION 8

Challenge: Create and Present an Interactive Science Course Online (Gen)

(General) *120, Convention Center*

Marilyn V. Rands *(mrands@ltu.edu),* Lawrence Technological University, Southfield, Mich.

Sandra L. Yarema, Wayne State University, Detroit, Mich.

Our discussion will center on issues encountered when designing interactive, inquiry-based science courses for an asynchronous, online format. Areas include objectives, activities relating to theory and practice, and embedded authentic assessments.

SESSION 9

Forensic Toxicology: An Interdisciplinary Approach to Enhance Understandings in Biology and Chemistry (Bio)

(High School) *122, Convention Center*

Alexis A. Bizzaro *(alexis.bizzaro@gmail.com),* Franklin Towne Charter High School, Philadelphia, Pa.

Diane Welsch *(dwelsch@ridleysd.org),* Ridley High School, Folsom, Pa.

Kristen L. Harris *(kharris@philasd.org),* Charles Carroll High School, Philadelphia, Pa.

This interdisciplinary professional development will present a variety of lessons and activities that can enable teachers to provide students with unique opportunities to explore toxicology.

SESSION 10

The Clean Energy Discovery Program (Phys)

(Middle Level–High School/Informal) *125, Convention Center*

Joseph Rand *(joe@kidwind.org),* KidWind Project, St. Paul, Minn.

Discover a series of lessons and hands-on activities designed to give students a comprehensive understanding of energy efficiency and renewable energy.

SESSION 11

Science Fiction Fantastics (Chem)

(High School) *127, Convention Center*

Mindy Bedrossian *(minjane@aol.com),* Strongsville High School, Strongsville, Ohio

Fire up your students' imaginations as they explore the link between fiction and science.

SESSION 12

Collaboration Propels Science Inquiry in Middle Schools (Gen)

(Middle Level–High School) *201, Convention Center*

Jan Robertson *(jrobertson@acoe.org),* **Robert F. Curtis** *(rcurtis@acoe.org),* and **Ai Vu** *(avu@acoe.org),* Alameda County Office of Education, Hayward, Calif.

Michele A. Korb *(michele.korb@csueastbay.edu),* California State University–East Bay, Hayward

Sandra Yellenberg *(sandra_yellenberg@sccoe.org),* Santa Clara County Office of Education, San Jose, Calif.

Presider: Robert F. Curtis

Meet the Integrated Middle School Science partners as they share their experiences creating teacher-led learning communities, inquiry-based lessons, and exemplary lesson study cases. Find out how inquiry and STEM project-based learning can create engaging learning opportunities for middle school students.

SESSION 13

Bringing Global Climate Change Education to Alabama Classrooms (Gen)

(High School/Informal) *203, Convention Center*

Marllin L. Simon, Roger Birkhead *(birkhrd@auburn.edu),* and **Paul D. Norgarrd** *(norgapd@auburn.edu),* Auburn University, Auburn University, Ala.

Learn about the Global Climate Change Education Program, which has discipline-specific climate change learning modules for biology, chemistry, and physics classes.

SESSION 14

Model Organisms in the Inquiry-based Classroom (Bio)

(Elementary–High School) *209, Convention Center*

Randy Schregardus *(randy.schregardus@vai.org)* and **Robby Cramer** *(robby.cramer@vai.org),* Van Andel Education Institute, Grand Rapids, Mich.

Discover how living model organisms, particularly the "water flea" *Daphnia,* can be used to learn about biological concepts in an inquiry-based classroom.

SESSION 15

Inquiry in the Elementary Classroom: Projects, Presentations, and Conferences (Gen)

(Elementary) *212, Convention Center*

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

Would you like your students to understand the way in which real scientists interpret experimental results and present their data to the scientific community?

SESSION 16

The Makings of a Lab Rat: The Transformation of One Educator's Research Experiences into Meaningful Science Curricula (Chem)

(High School) *237, Convention Center*

Phillip C. Cook *(cookp@culver.org),* Culver Academies, Culver, Ind.

Join me for a presentation illustrating the process of how an educator's research experiences have resulted in the creation of STEM-infused, inquiry-based units in chemistry and physics.

SESSION 17

Sights and Smells of the Chicken Body Farm: Integrating Inquiry in Forensic Science (Gen)

(High School) 238, Convention Center

Tiffany E. Farmer *(tiffany.e.farmer@vanderbilt.edu)* and **Tonja Dandy De Vault** *(tonja.devault@vanderbilt.edu),* Vanderbilt University, Nashville, Tenn.

Brian Harrell, Stratford High School, Nashville, Tenn.

Presider: Tiffany E. Farmer

Forensic science is an interdisciplinary topic incorporating physics, geometry, biology, and chemistry. Emphasis will be placed on integrating inquiry and research into the high school classroom.

SESSION 18

Technovation Challenge: Introducing Underserved High School Girls to Computer Science and Entrepreneurship (Gen)

(High School/Informal) 240, Convention Center

AnnaLise Hoopes *(annalise@iridescentlearning.org),* Iridescent, Berkeley, Calif.

Join me as I share lessons from a nationwide technology program in which high school girls develop mobile phone applications and present to a panel of venture capitalists.

SESSION 19

Grab Bag of Bio! (Bio)

(High School) 244, Convention Center

Kristen L. Kohli *(kkohli@buhsd.org),* Estrella Foothills High School, Goodyear, Ariz.

Explore a variety of biology activities, ideas, and resources created or collected over the past 11 years in this reprise of last year's standing-room-only session.

SESSION 20

NSTA Press Session: Forensics in Chemistry: The Murder of Kirsten K. (Chem)

(High School) White River Ballroom B, JW Marriott

Sara McCubbins *(samccub@ilstu.edu),* Illinois State University, Normal

Invigorate your lessons with a series of performance-based assessments connected to the same forensics case. By the end of the year, students use their evidence to solve the crime.

9:30–10:30 AM Workshops

Teaching Climate Change Through Project-based Science (Earth)

(Middle Level–High School) 103, Convention Center

Patrick Lawrence *(patrick.lawrence@utoledo.edu),* The University of Toledo, Ohio

Melody Tsapranis *(tsapranism@gmail.com),* Toledo (Ohio) Public Schools

Presider: Mikell Lynne Hedley, The University of Toledo, Ohio

Come examine possible climate change science learning tools, criteria for their selection, and classroom applications as well as learn how to integrate geospatial technologies. This is part of the Leadership for Educators: Academy for Driving Economic Revitalization in Science (LEADERS) program at The University of Toledo.

Going to the Moon with 21st-Century Skills (Earth)

(Middle Level–High School/Informal) 105, Convention Center

Sharon Reiter *(sharon.reiter@dmns.org)* and **Sandra Kohl,** Denver Museum of Nature & Science, Denver, Colo.

Immerse your students in STEM education through current lunar exploration. Join Denver Museum of Nature & Science staff and bring active science into your classroom. This distance learning journey includes teacher professional development, students interacting directly with scientists, and the most recent spacecraft looking for water on the Moon.

Drinking Water: Convincing Children That It Matters (Env)

(Middle Level–College) 110, Convention Center

Margaret A. Busker-Postlethwait *(mbusker@akron.k12.oh.us),* Akron Buchtel High School, Akron, Ohio

Learn about an entire unit where students investigate their drinking water. They measure the chlorine levels in order to determine the amount of Disinfection By-products (DBPs) and they compare surface water to groundwater.

Hands-On Ecology (Bio)

(Middle Level) 123, Convention Center

Vanessa Klein *(vklein1@kent.edu)* and **Lisa A. Donnelly** *(ldonnell@kent.edu),* Kent State University, Kent, Ohio

Experience hands-on middle school ecology activities addressing ecological footprints, population behavior in salmon, butterfly life cycles, and carrying capacity.

Incorporating a Live Medical Simulation into a High School Anatomy and Physiology Curriculum: Results and Highlights (Bio)
(High School) *204, Convention Center*
Debra C. Burkey Piecka *(dpiecka@cet.edu)* and **Manetta Calinger** *(mcalinger@cet.edu),* Wheeling Jesuit University, Wheeling, W.Va.
Discover how live videoconferencing simulations provide high school students with opportunities to diagnose and treat patients and increase awareness of biomedical careers and clinical trials.

NASA: Inquiry with Microgravity (Phys)
(Elementary–High School) *205, Convention Center*
Matthew J. Keil *(matthew.j.keil@nasa.gov),* NASA Johnson Space Center, Houston, Tex.
Experience a hands-on inquiry-based activity focusing on Newton's laws and the effects of microgravity. Learn about microgravity resources and opportunities for teachers and students.

What Can YOU Build... (Phys)
(Elementary–Middle Level) *206, Convention Center*
Theresa A. Rabogliatti *(trabogliatti@hotmail.com),* Our Lady of Grace, Coraopolis, Pa.
Use your creativity and engineering skills to meet several building challenges. Construct structures using notecards and tape. All challenges will have criteria to meet.

Cloudy with the Chance of Meatballs: Literacy and Weather Connection for Primary Grades (Gen)
(Preschool–Elementary) *211, Convention Center*
Amy J. Smith *(smitha@frankfort.k12.in.us),* Blue Ridge Primary School, Frankfort, Ind.
Steven C. Smith *(mrsmith@purdue.edu),* Purdue University, West Lafayette, Ind.
Kristen Poindexter *(kpoindexter@msdwt.k12.in.us),* Spring Mill Elementary School, Indianapolis, Ind.
Use fun stories to excite students in learning about the weather. Take home weather lessons, stories, demos, and hands-on activities!

NASA's *Our Solar System Through the Eyes of Scientists* (Earth)
(Elementary) *232, Convention Center*
Rachel Zimmerman-Brachman *(rachel.zimmerman-brachman@jpl.nasa.gov),* NASA/Jet Propulsion Laboratory, Pasadena, Calif.
Explore NASA's new inquiry-based science and language arts curriculum with biographies, science notebooks, hands-on activities, and demonstrations. Learn about ice, volcanoes, moons, and more.

Sound: Energy and Waves (Phys)
(Elementary–High School) *235, Convention Center*
Michael H. Suckley *(dr.suckley@sciencescene.com),* Macomb Community College, Warren, Mich.
Sound has been defined as mechanical vibrations transmitted through the air or other medium that are interpreted as sound. Join us for classic demonstrations related to sound that illustrate the fundamental characteristics of energy and loudness, pitch and frequency, and resonance. These characteristics will be applied to the modulation of sound and light to explain the transmission of signals in fiber optics.

Core Standards and Writing Scientific Explanations Based on Claims, Evidence, and Reasoning (Gen)
(Middle Level–High School) *236, Convention Center*
Jim Short *(jshort@amnh.org)* and **Hudson Roditi** *(hroditi@amnh.org),* American Museum of Natural History, New York, N.Y.
Dora Kravitz *(dora_kravitz@yahoo.com),* Isaac Newton Middle School for Math & Science, Manhattan, N.Y.
Core standards in science and English language arts describe the practice of writing scientific, evidence-based explanations or "arguments." Come learn how New York City middle school teachers are scaffolding this process for students.

Modeling a Scaffolded, Guided Inquiry Lesson for Elementary Children (Gen)
(Elementary) *241, Convention Center*
John R. Staver and **Signe Kastberg,** Purdue University, West Lafayette, Ind.
Join us as we demonstrate standards-based instruction that emphasizes scaffolded, guided inquiry and problem-solving instruction in science and mathematics for young learners in grades 3–6.

Ultimate Squid Dissection (Bio)
(Informal Education) *243, Convention Center*
Paul Detwiler *(pdetwiler@sunstroke.sdsu.edu),* San Diego Mesa College, San Diego, Calif.
In this turbocharged session, participants dissect squid using an easy-to-follow guide, watch an instructional video demonstrating techniques, identify structures, and receive post-lab review and web activities.

11:00–11:30 AM Presentations

SESSION 1

Ohio's STEM Ability Alliance (OSAA) (Gen)

(High School–College) *102, Convention Center*

Christopher Andersen and **Sarah Priest,** The Ohio State University, Columbus

Clark Shingledecker and **Brittany Boyne,** Wright State University, Dayton, Ohio

Focused on increasing the quality and quantity of students with disabilities who earn postsecondary degrees in science, technology, engineering, and math, OSAA is an alliance of Ohio institutions, including Wright State University, Ohio State University, Columbus State Community College, and Sinclair Community College. OSAA also partners with regional public schools, STEM industries, and government partners.

SESSION 2

Children's Career Aspirations—Where Are the Scientists? (Gen)

(General) *108, Convention Center*

Donna M. Plummer *(donna.plummer@centre.edu),* Centre College, Danville, Ky.

Let's review a study of elementary students' career aspirations. Influenced by family and media, students interviewed were found to aspire to highly regarded professions with few proposing scientific careers.

SESSION 3

The Sky Is the Limit with Digital Primary Sources (Chem)

(High School) *128, Convention Center*

Stacey A. Balbach *(stacey.balbach@cubacity.k12.wi.us),* Cuba City (Wis.) School District

Increase your students' science literacy with digital primary sources such as American Memory. These sources are rigorous and relevant to students. Primary sources like this can be used to increase students' analytical, evaluation, and synthesis skills while teaching the history and nature of science.

11:00 AM–12 Noon Presentations

SESSION 1

Designing Design Challenges: Getting the Details Right (Gen)

(General) *101, Convention Center*

Daniel Z. Meyer *(meyerd@iit.edu),* Illinois Institute of Technology, Chicago

Receive an introduction to the key elements of design challenges and brainstorm activities in varied content areas.

SESSION 2

Shaking Up Old Earthquake Unit Plans (Earth)

(Informal Education) *104, Convention Center*

Walter E. Gray *(grayw@indiana.edu),* Indiana University, Bloomington

Get the latest information related to intraplate earthquakes in central United States and identify new resources that can be used by teachers to advance student learning.

SESSION 3

Pulsar Search Collaboratory (Earth)

(Middle Level–High School) *106, Convention Center*

Jennifer C. Malphrus, Rowan County Senior High School, Morehead, Ky.

Would you like for one of your middle or high schools students to discover a pulsar? Find out how here!

SESSION 4

Mentoring in Inquiry (Gen)

(General) *107, Convention Center*

Sharan R. Crim *(scrim@atlanta.k12.ga.us),* Atlanta (Ga.) Public Schools

Learn about the mentoring practice of beginning STEM educators (less than a year to two years experience) in facilitating science through inquiry to innovatively engage students.

SESSION 5

Virtual Field Trips Bring the World of Science to Online Students (Gen)

(General) *109, Convention Center*

Roger L. Gluckin *(rgluckin@ohva.org),* Ohio Virtual Academy, Maumee

Ohio Virtual Academy℠ uses webcast technology to bring the real world of science to students across Ohio. Learn about their combination of hands-on and virtual labs.

SESSION 6

Bringing Nanotechnology to K–12 Classrooms: The NANOweek Project (Gen)

(Elementary–High School) *110, Convention Center*

Toni E. Sharon Brandt, LaSalle Intermediate Academy, South Bend, Ind.

Thomas Loughran *(thomas.loughran@gmail.com)* and **Valerie Goss** *(vgoss@nd.edu),* University of Notre Dame, Ind.

Lynda Rose *(lrose@phm.k12.in.us),* Penn High School, Mishawaka, Ind.

Presider: Thomas Loughran

Learn how a partnership between teachers and Notre Dame University graduate fellows made nanotechnology accessible and meaningful to K–12 students through inquiry-based activities.

SESSION 7

Infusing Technology into a Cross-curricular Ecosystem Survey (Env)

(High School–College) *113, Convention Center*

Glen G. Schulte *(glenschulte64@gmail.com),* Zoo Academy, Hughes High School, Cincinnati, Ohio

By combining their classes in technology, math, English, and biology, students get a multifaceted, hands-on science experience.

SESSION 8

The Role of Argumentation in Inquiry: Doing What Real Scientists Really Do (Gen)

(General) *121, Convention Center*

Douglas Llewellyn *(dllewell@rochester.rr.com),* St. John Fisher College, Rochester, N.Y.

Join me as I highlight how teachers can foster students to make claims and to justify such claims with supportive evidence—enabling students to understand the nature of scientific investigations, develop science reasoning skills, and better appreciate the authentic work of scientists.

SESSION 9

Virtual Labs: Virtual Results *vs.* Actual Results? (Phys)

(Middle Level–High School) *125, Convention Center*

James Kedvesh *(jkedvesh@dupage88.net),* Illinois Institute of Technology, Villa Park

Receive a great introduction and overview of virtual laboratory investigations that can be used for inquiry-based labs, differentiation, and enhanced instruction.

SESSION 10

Visualizing Motion: GPS, GIS, Probes, and Physics (Phys)

(Middle Level–College) *126, Convention Center*

Roger T. Palmer *(roger.gisetc@gmail.com),* Bishop Dunne Catholic School, Dallas, Tex.

GPS allows students to see real-motion problems every day. The morning ride to school on a local map can cover topics across your kinematics units.

SESSION 11

Service and Science: Citizen Science That Engages Teens in Environmental Conservation (Env)

(Middle Level–High School/Informal) *203, Convention Center*

Nathan I. Taxel *(ntaxel@cmnh.org),* Cleveland Museum of Natural History, Cleveland, Ohio

By using a service learning model to implement citizen science projects, teens become stakeholders in the environment and foster a lifelong conservation ethic.

SESSION 12

Birds of a Feather Do Science Together (Bio)

(Elementary–High School) *209, Convention Center*

Karen J. Glum *(karen.glum@7hills.org)* and **Jennifer A. Licata** *(jennifer.licata@7hills.org),* The Seven Hills School, Cincinnati, Ohio

Jill M. Russell *(jill_russell@mail.msj.edu),* College of Mount St. Joseph, Cincinnati, Ohio

Presider: Jill M. Russell

Come learn about Birds of a Feather, a model for collaboration among students, scientists, university professors, and teachers that promotes inquiry-based science in the classroom.

SESSION 13

Using Technology to Teach Elementary Science (Gen)

(Elementary) *211, Convention Center*

Jennifer Bruno *(jennifer.bruno@trussvillecityschools.com),* **Sabrina Johnson** *(sabrina.johnson@trussvillecityschools.com),* **Melanie Glover** *(melanie.glover@trussvillecityschools.com),* and **Lisa Rish** *(lisa.rish@trussvillecityschools.com),* Paine Primary School, Trussville, Ala.

Discover how to use popular websites to enhance science instruction for your elementary students.

SESSION 14

Words Can Be Drab: Engage Your Students with Vocab! (Gen)

(Elementary) *212, Convention Center*

Aimee Ayers *(aayers@lubbockisd.org),* Texas Tech University/Lubbock Independent School District

Christina Eisenhut, Texas Tech University, Lubbock

Engage students in powerful strategies incorporating vocabulary to stimulate student understanding of science concepts. Receive ideas to enhance student understanding and provide critical connections for quality assessment.

SESSION 15

Design-based Biotechnology: Integrative STEM Education (Gen)

(Informal Education) *232, Convention Center*

John G. Wells *(jgwells@vt.edu),* Virginia Tech, Blacksburg

Attention will be paid to design-based biotechnology strategies using open-ended problem scenarios for designing and constructing biotechnological systems. Join me as I share integrative science, technology, and engineering instructional methods.

SESSION 16 (two presentations)

(Elementary–Middle Level) *234, Convention Center*

Transforming Science Journaling Through Inquiry to Meet the Next Generation of Science Standards (Env)

Meredith Park Rogers *(mparkrog@indiana.edu)* and **Heidi L. Wiebke** *(hwiebke@indiana.edu),* Indiana University, Bloomington

This session is for teachers interested in transforming science journals so they model science as a process of continuous revision and refinement of ideas.

Notebooks (Gen)

Patricia A. Gram, Hudson Middle School, Hudson, Ohio

Learn how to use notebooks to assess student learning.

SESSION 17

It's About Discovery: An Innovative Curriculum with a Focus on Energy Sustainability (Gen)

(High School) *238, Convention Center*

Dean Cristol *(cristol.2@osu.edu)* and **Brittany Collier-Gibson** *(collier-gibson.1@osu.edu),* The Ohio State University, Lima

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

Christopher Andersen, The Ohio State University, Columbus

Explore Energy! Learn about using hydrogen fuel cells, peer interaction across states, and other "It's About Discovery" activities that address complex energy issues.

SESSION 18

Online and Plugged In (Gen)

(Middle Level–High School) *240, Convention Center*

Pamela Simmons-Brooks *(pam_brooks@lovejoyisd.net),* Sloan Creek Middle School, Fairview, Tex.

Jennifer D. Beimer *(jennifer_beimer@lovejoyisd.net),* Lovejoy Independent School District, Allen, Tex.

Do you want to connect with today's technologically advanced and entertainment-saturated students? Come find out how to integrate engaging digital resources such as Voki, Animoto, Glogster, GoAnimate, Facebook, Brainflips, Timetoast, Google Earth, and Scrapblog as well as create a multimedia-rich virtual classroom with online instruction and student interaction, including digital submissions of student assignments.

SESSION 19

How to Manage a (Biotech) Lab Classroom (Bio)
(High School) *244, Convention Center*
Ellyn A. Daugherty, San Mateo High School, San Mateo, Calif.
Join me for a discussion about key issues in managing a lab classroom, including lab layout, materials storage, waste disposal, material inventories, time management, and professional growth.

SESSION 20

NSTA Press Session: Implementing Research Projects as Part of the STEM Curriculum (Gen)
(High School) *White River Ballroom B, JW Marriott*
Darci J. Harland, Illinois State University, Normal
Come get implementation ideas for organizing students with deadlines, providing encouraging and challenging feedback, and teaching the literacy aspects of a science-focused research project.

11:00 AM–12 Noon Workshops

Earthquakes in the Central United States (Earth)
(Middle Level–High School) *103, Convention Center*
Lawrence W. Braile, Purdue University, West Lafayette, Ind.
Michael Hubenthal *(hubenth@iris.edu),* IRIS Consortium, Washington, D.C.
Investigate earthquakes and seismicity of the central United States area using the free Seismic/Eruption software and USGS Central U.S. earthquake maps and satellite images.

Student Misconceptions in Astronomy: How Do We Address Them? (Earth)
(Middle Level–College) *105, Convention Center*
James T. McDonald *(jim.mcdonald@cmich.edu),* Central Michigan University, Mount Pleasant
Learn about student misconceptions regarding the solar system, galaxies, and the universe. Take home a DVD, activity ideas, and handouts.

Carbon Capture and Storage (Chem)
(High School) *127, Convention Center*
Caryn Turrel *(cturrel@need.org),* The NEED Project, Greenwood, Ind.
Introduce students to a potential technique of mitigating climate change by capturing carbon dioxide at power plants and storing it in deep geologic formations.

LIGO Science Education Center: Teaching Science in STEM (Phys)
(Middle Level–High School) *205, Convention Center*
Kathy Holt *(kholt@ligo-la.caltech.edu),* LIGO Science Education Center, Livingston, La.
LIGO stands for Laser Interferometer Gravitational Wave Observatory. Explore and create activities using everyday materials that help students understand concepts such as sound, light, and forces.

Thermal Insulators (Phys)
(Elementary–Middle Level) *206, Convention Center*
Winnie Billiel *(winnoa.billiel@beavercreek.k12.oh.us),* Fairbrook Elementary School, Beavercreek, Ohio
Ann Drake *(bvjradrake@mdeca.org),* Brookville Intermediate School, Brookville, Ohio
Explore thermal insulators through a design challenge by testing insulative properties of common materials. Curriculum is written and presented by the Dayton Regional STEM Center.

Sleuthing Through the Rock Cycle (Earth)
(Middle Level) *233, Convention Center*
Karen A. Saul *(ksaul2001@cox.net),* Nicholas A. Ferri Middle School, Johnston, R.I.
Discover unique ways to teach rock identification, rock classification, and the rock cycle using an inquiry-based and technology-enhanced investigation. *Note:* Activities available to the first 30 participants.

The Dead T-Shirt Contest! **(Gen)**
(Middle Level–High School) *236, Convention Center*
Michael J.V. Lazaroff *(mjvlazaroff@gmail.com),* Staples High School, Westport, Conn.
Determine the cause, mechanism, and manner of death in an activity in which students act as both victims and forensic pathologists!

ABCs with DEs: Addressing Basic Concepts with Discrepant Events **(Gen)**
(Preschool–Middle Level) *241, Convention Center*
Carolyn Mohr and **Ann Kennedy,** Southern Illinois University–Carbondale, Grayslake
How are jumping flames, rollback cans, and think tubes connected? They are discrepant events used to engage students in meaningful content learning. Come play science!

11:30 AM–12 Noon Presentation

SESSION 1
Disease du Jour: A New Twist on Science Notebooks **(Bio)**
(High School) *208, Convention Center*
Jody L. Vogelzang *(jovord@verizon.net),* Grand Valley State University, Allendale, Mich.
Make bacterial, viral, genetic, and fungal diseases come alive by using science notebooks as mini-research papers that extend classroom learning and excite students.

Saturday, March 31

NSTA Past Presidents Breakfast
By Invitation Only
JW Grand Ballroom 1, JW Marriott ..... 7:00–8:15 AM

AMSE/NSTA Minority Caucus George Washington Carver Breakfast
By Invitation Only
Grand Ballroom 1, Westin ..... 7:30–9:30 AM

NSTA Recommends Reviewer/Publisher Coffee
By Invitation Only
206, JW Marriott .....8:00–9:00 AM

NSTA Student Chapter Showcase and Lounge
CSO5 (Hall E), Convention Center.....8:00 AM–5:00 PM

NSTA Past Presidents Advisory Board Meeting
JW Grand Ballroom 1, JW Marriott .....8:15–9:15 AM

Shell Judging Panel Meeting
By Invitation Only
Atlanta, Marriott Downtown .....8:30–10:30 AM

NSTA International Lounge
107, JW Marriott .....9:00 AM–5:00 PM

National Earth Science Teachers Association Earth and Space Science Educators Luncheon
By Ticket Through NESTA
State, Westin ..... 11:30 AM–1:00 PM

NSTA/SCST College Luncheon (M-9)
(Tickets Required: $55)
203, JW Marriott .....12 Noon–1:30 PM

Aerospace Educators Luncheon (M-10)
(Tickets Required: $55)
Grand Ballroom 4, Westin ..... 12 Noon–2:00 PM

Presidents of AMSE Meeting
By Invitation Only
Governor's Suite, Westin ..... 12 Noon–2:00 PM

COSEE Luncheon
By Invitation Only
309/310, JW Marriott ..... 12:15–1:15 PM

National Earth Science Teachers Association Annual Membership Meeting
Grand Ballroom 5, Westin .....5:30–7:00 PM

President's Reception (M-11)
(Tickets Required: $60)
Marriott Ballroom 5, Marriott Downtown.... 7:00–8:15 PM

President's Mixer
Marriott Blrm. 5, Marriott Downtown... 9:45 PM–12 Midnight

Sunday, April 1

Life Members' Buffet Breakfast (M-12)
(Tickets Required: $45)
White River Blrm. C, JW Marriott .....7:00–9:00 AM

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AAAS (Booth Nos. 1973 and 1975)

Saturday, March 31	9:00 AM–12 Noon	203, Convention Center	Using the NSDL Science Literacy Maps (p. 38)

Aerospace Industries Association (Booth No. 2437)

Saturday, March 31	8:00–9:30 AM	105, Convention Center	Team America Rocketry Challenge: Rocketry in the Classroom (p. 32)

Animalearn (Booth No. 2339)

Saturday, March 31	8:00–9:30 AM	106, Convention Center	Adventure into the Digital Biology Classroom: Revolutionizing Science Education (p. 33)

Benchmark Education Co. (Booth No. 2056)

Saturday, March 31	8:00–9:30 AM	101, Convention Center	Making Science Accessible to English Language Learners (p. 32)

Bio-Rad (Booth No. 841)

Saturday, March 31	8:00–9:30 AM	107, Convention Center	Finding Funds for Biotech - Grant Writing Workshop (p. 33)
Saturday, March 31	10:00–11:00 AM	107, Convention Center	Bio-Rad Genes in a Bottle™ Kit (p. 46)

Carolina Biological Supply Co. (Booth No. 100)

Saturday, March 31	8:00–9:30 AM	144, Convention Center	Rats! Inquiry-based Dissection with Carolina's Perfect Solution® Specimens (p. 34)
Saturday, March 31	8:00–9:30 AM	145, Convention Center	Making Guided Inquiry Work in Five Steps with Carolina's Inquiries in Science® (p. 35)
Saturday, March 31	10:00–11:30 AM	145, Convention Center	Strawberry DNA and Molecular Models (p. 50)
Saturday, March 31	10:00–11:30 AM	144, Convention Center	Drive Student Inquiry with Carolina's Advanced Environmental Science Labs (p. 50)
Saturday, March 31	12 Noon–1:30 PM	144, Convention Center	Bonding with Carolina™ Chemistry (p. 64)
Saturday, March 31	12 Noon–1:30 PM	145, Convention Center	Introduction to Wisconsin Fast Plants® (p. 65)
Saturday, March 31	2:00–3:30 PM	144, Convention Center	SQUID INK-UIRY: Inquiry-based Invertebrate Anatomy Through Squid Dissection (p. 85)
Saturday, March 31	2:00–3:30 PM	145, Convention Center	Forensics for the Biology Laboratory (p. 85)

Cengage Learning (Booth No. 1327)

Saturday, March 31	10:00–11:30 AM	137, Convention Center	Forensic Science: A High School Integrated Science Solution (p. 49)

Dinah-Might Adventures, LP (Booth No. 1159)

Saturday, March 31	12 Noon–1:30 PM	Wabash blrm. 2, Conv. Center	What the Hands Do, the Brain Does: Notebook Foldables® for Lasting Understanding (p. 65)
Saturday, March 31	2:00–3:30 PM	Wabash blrm. 2, Conv. Center	How Dirty Is Your Windshield: Foldable® Formative Assessment (p. 85)

Discovery Education (Booth No. 1567)

Saturday, March 31	8:00–9:30 AM	110, Convention Center	Calling All Indiana Teachers! We Have a Discovery Education Science Techbook JUST for You! (p. 33)
Saturday, March 31	10:00–11:30 AM	110, Convention Center	Developing STEM Process Skills with the Discovery Education Science Techbook (p. 48)
Saturday, March 31	12 Noon–1:30 PM	110, Convention Center	Reading, Writing, and SCIENCE! The Literacy Connection and Discovery Education Science Techbook (p. 64)

Energy Concepts, Inc. (Booth No. 1575)

Saturday, March 31	10:00–11:30 AM	106, Convention Center	Applications in Biotechnology (p. 48)

Flinn Scientific, Inc. (Booth No. 1167)

Saturday, March 31	10:00–11:30 AM	Wabash blrm. 1, Conv. Center	Promote Inquiry Using Chemistry Demonstrations (p. 50)
Saturday, March 31	12 Noon–1:30 PM	Wabash blrm. 1, Conv. Center	New Guided Inquiry Labs for Advanced Placement® Biology from Flinn Scientific (p. 65)

Forestry Suppliers, Inc. (Booth No. 1637)

Saturday, March 31	8:00–9:30 AM	138, Convention Center	Environmental Science Activities—Inside and Outside (p. 34)

GASTEC Corp. (Booth No. 1266)

Saturday, March 31	10:00–11:30 AM	101, Convention Center	What's in the Air? (p. 46)

Google (Booth No. 1533)

Saturday, March 31	10:00–11:30 AM	103, Convention Center	Exploring Computational Thinking (p. 48)
Saturday, March 31	12 Noon–1:30 PM	103, Convention Center	YouTube for Schools (p. 63)
Saturday, March 31	2:00–3:30 PM	103, Convention Center	Exploring Computational Thinking (p. 84)
Saturday, March 31	4:00–5:30 PM	103, Convention Center	Google Tools for Education (p. 98)

Hanson RoboKind (Booth No. 2461)

Saturday, March 31	8:00–9:30 AM	132, Convention Center	Meet and Greet Your Co-Teacher Zeno, the Robot (p. 34)
Saturday, March 31	10:00–11:30 AM	132, Convention Center	Meet and Greet Your Co-Teacher Zeno, the Robot (p. 49)

Houghton Mifflin Harcourt (Booth No. 1467)

Saturday, March 31	8:00–9:30 AM	104, Convention Center	Sparking Interest and Learning with Chemistry: A Part 1 Experience (p. 32)
Saturday, March 31	10:00–11:30 AM	104, Convention Center	Extra, Extra! Read All About It! Taking Biology from the News to the Classroom (p. 48)
Saturday, March 31	12 Noon–1:30 PM	104, Convention Center	Sparking More Interest with Chemistry: A Part 2 Experience (p. 63)

Howard Hughes Medical Institute (Booth No. 1259)

Saturday, March 31	9:00–10:30 AM	109, Convention Center	Free Classroom Resources from HHMI for Teaching Evolution (p. 37)
Saturday, March 31	11:00 AM–12:30 PM	109, Convention Center	Enhance Your Teaching of the New AP® Biology Curriculum Framework with Free Resources from HHMI (p. 62)

Japan Artec, Inc. (Booth No. 1955)

Saturday, March 31	8:00–9:30 AM	201, Convention Center	Explore Electricity Flow, Electromagnets, and Generating Electricity (p. 35)
Saturday, March 31	10:00–11:30 AM	201, Convention Center	Introducing a Car-based Energy Conversion Experiment Kit (p. 50)

Kendall Hunt Publishing Co. (Booth No. 1447)

Saturday, March 31	8:00–9:30 AM	131, Convention Center	Teaching the Chemistry That Students Need to Know (p. 34)

The Keystone Science School (Booth No. 1635)

Saturday, March 31	10:00–11:30 AM	138, Convention Center	Key Issues: Bringing Environmental Issues to the Classroom (p. 50)

KidWind Project (Booth No. 1475)

Saturday, March 31	8:00–9:30 AM	102, Convention Center	Fuel Cell Technology in Your Classroom—Powered by h-tec (p. 32)
Saturday, March 31	10:00–11:30 AM	102, Convention Center	Solar-powered Boats, Fountains, and Suitcases! (p. 46)
Saturday, March 31	12 Noon–1:30 PM	102, Convention Center	Wind-energized Classroom (p. 63)
Saturday, March 31	2:00–3:30 PM	102, Convention Center	WindWise Science Curriculum (p. 84)
Saturday, March 31	4:00–5:30 PM	102, Convention Center	Renewable Power, Vernier, and KidWind (p. 98)

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LEGO Education (Booth No. 1357)

Saturday, March 31	8:00–9:30 AM	202, Convention Center	Engaging Elementary Learners in STEM with LEGO® Education (p. 35)
Saturday, March 31	10:00–11:00 AM	202, Convention Center	Using LEGO® Bricks to Introduce Simple Machines (p. 46)
Saturday, March 31	11:30 AM–12:30 PM	202, Convention Center	Enhancing the Elementary Classroom Through Robotics (p. 62)
Saturday, March 31	1:30–3:00 PM	202, Convention Center	Build and Explore the Future of Space with LEGO® Education (p. 74)
Saturday, March 31	3:30–5:00 PM	202, Convention Center	Robotics in the Classroom: Science, Engineering, and Math Come Alive! (p. 98)

National Science Foundation (Booth No. 2238)

Saturday, March 31	10:00–11:30 AM	136, Convention Center	NSF/NBC Short Videos You Can Use in Your Classroom (p. 49)

PASCO scientific (Booth Nos. 736 and 739)

Saturday, March 31	8:00–9:30 AM	140, Convention Center	AP® Physics: Momentum and Impulse (p. 34)
Saturday, March 31	10:00–11:30 AM	140, Convention Center	SPARKvue® – A 21st Century Inquiry-Based Science Learning Environment (p. 50)

Pearson (Booth No. 553)

Saturday, March 31	8:00–9:30 AM	133, Convention Center	New Tools, New Insights, and New Ways of Understanding Science with *Miller & Levine Biology* (p. 34)
Saturday, March 31	10:00–11:30 AM	133, Convention Center	Teaching English Language Learners in the Science Classroom: Collaboration, Co-teaching, and Coaching (p. 49)
Saturday, March 31	12 Noon–1:30 PM	133, Convention Center	Planet Diary: Using Current Events to Engage Your Students in Science (p. 64)
Saturday, March 31	2:00–3:30 PM	133, Convention Center	Science Under Siege? Teaching Evolution in a Climate of Controversy (p. 85)

Project WET Foundation (Booth No. 1733)

Saturday, March 31	8:00–9:30 AM	137, Convention Center	Water Education Writing Workshop (p. 34)

Purdue University (Booth Nos. 1757 and 1857)

Saturday, March 31	8:00–9:30 AM	Wabash Blrm. 2, Conv. Center	Fat Dogs and Coughing Horses: Delivery of a Ninth-Grade Curriculum, Part I (p. 35)
Saturday, March 31	10:00–11:30 AM	Wabash Blrm. 2, Conv. Center	Fat Dogs and Coughing Horses: Delivery of a Ninth-Grade Curriculum, Part II (p. 50)

Sargent-Welch (Booth No. 1333)

Saturday, March 31	12 Noon–1:30 PM	130, Convention Center	New and Improved *Biotechnology: Science for the New Millennium* (p. 64)

Science Kit & Boreal Laboratories (Booth No. 1237)

Saturday, March 31	10:00–11:30 AM	130, Convention Center	Chemistry In-the-Bag Inquiry (p. 49)
Saturday, March 31	2:00–3:30 PM	130, Convention Center	Under a Microscope: Prepare Students for the 21st Century Using STEM Initiatives (p. 85)

Science Take-Out (Booth No. 1872)

Saturday, March 31	12 Noon–1:30 PM	131, Convention Center	Keeping a Balance: Homeostasis and Negative Feedback (p. 64)
Saturday, March 31	2:00–3:30 PM	131, Convention Center	Enzymes and Lactose Intolerance (p. 85)

SeaWorld Parks and Entertainment (Booth No. 2034)

Saturday, March 31	10:00–11:30 AM	134, Convention Center	From Rescue to Rehab to Release—How Busch Gardens and SeaWorld Care for Injured Wildlife *(See program changes)*

SMART Technologies (Booth No. 2456)

Saturday, March 31	10:00–11:30 AM	131, Convention Center	Technology Impacts Science Learning: A Research Project (p. 49)

Society for Neuroscience (Booth No. 1558)

Saturday, March 31	10:00–11:30 AM	108, Convention Center	The Developing Brain: What Science Teaches Us About Life Experience (p. 48)
Saturday, March 31	2:00–3:30 PM	108, Convention Center	Engaging Classrooms on Animal Research (p. 84)

Swift Optical Instruments, Inc. (Booth No. 1641)

Saturday, March 31	8:00–9:30 AM	135, Convention Center	Forensics Made Easy—See What's New! (p. 34)
Saturday, March 31	10:00–11:30 AM	135, Convention Center	New Ways to Prepare Your Students Using 21st-Century STEM Initiatives—GO DIGITAL! (p. 49)
Saturday, March 31	12 Noon–1:30 PM	135, Convention Center	New Ways to Prepare Your Students Using 21st-Century STEM Initiatives—GO DIGITAL! (p. 64)

Sylvan Dell Publishing (Booth No. 1773)

Saturday, March 31	8:00–9:30 AM	103, Convention Center	A Picture Book Approach to Child Literacy, Language Learning, and the Sciences (p. 32)

Ten80 Education (Booth No. 1539)

Saturday, March 31	10:00–11:30 AM	105, Convention Center	Education—Inspiration—Acceleration (p. 48)

Vernier Software & Technology (Booth No. 436)

Saturday, March 31	8:00–9:30 AM	116, Convention Center	Physics with Vernier (p. 33)
Saturday, March 31	8:00–9:30 AM	117, Convention Center	Introducing Vernier DataQuest Data Collection for TI-Nspire™ Technology (p. 33)
Saturday, March 31	10:00–11:30 AM	117, Convention Center	Earth Science with Vernier (p. 48)
Saturday, March 31	10:00–11:30 AM	116, Convention Center	Chemistry with Vernier (p. 48)
Saturday, March 31	12 Noon–1:30 PM	117, Convention Center	What's New for the Vernier LabQuest? (p. 64)
Saturday, March 31	12 Noon–1:30 PM	116, Convention Center	Biology with Vernier (p. 64)
Saturday, March 31	2:00–3:30 PM	117, Convention Center	Inquiry-Based Chemistry with Vernier (p. 85)
Saturday, March 31	2:00–3:30 PM	116, Convention Center	Video Analysis with Vernier (p. 84)

W.H. Freeman of Bedford, Freeman & Worth (BFW) Publishers (Booth No. 1356)

Saturday, March 31	8:00–9:30 AM	108, Convention Center	Living By Chemistry: What Shape Is That Smell? (p. 33)

WARD'S Natural Science (Booth No. 1436)

Saturday, March 31	8:00–9:30 AM	130, Convention Center	Iron Teacher—STEM Edition! (p. 33)
Saturday, March 31	4:00–5:30 PM	130, Convention Center	Best Dissection Practices (p. 98)

Schedule at a Glance

G = General M = Middle School S = Supervision/Administration T = Teacher Preparation
P = Preschool H = High School I = Informal Education
C = College R = Research E = Elementary

Biology/Life Science: Saturday

8:00–9:00 AM	H	245, Conv. Center	BioMath for All! Life Science Quantification Made Easy! (p. 29)
8:00–9:00 AM	M–H	208, Conv. Center	Low-Tech Biotech (p. 20)
8:00–9:00 AM		209, Conv. Center	Digging for Clues Under the Ground (p. 29)
8:00–9:00 AM	H–C	JW Grand 8, JW Marriott	The Science of Chocolate: Digital Resources for Teaching About Chocolate (p. 30)
8:00–9:00 AM	E–M	235, Conv. Center	Elementary Students as Renewable Energy Consultants: Changing the World One Greenhouse at a Time (p. 24)
8:00–9:00 AM	M–C	204, Conv. Center	Get Students Engaged in Anatomy by Building Body Systems in Clay (p. 29)
8:00–9:00 AM	G	238, Conv. Center	Cholera, Malaria, Influenza, West Nile—After-School Investigations (p. 29)
8:00–9:00 AM	H	122, Conv. Center	"Ms. Larson, We Have to Think So Much in This Class!" (p. 28)
8:00–9:00 AM	H/S	Colorado, Marriott	DuPont Presents—Natural Selection and Antibiotic-resistant Bacteria (p. 30)
8:00–9:00 AM	H–C/I	203, JW Marriott	NSTA Press Session: Teaching Evolution with Video and Activities (p. 26)
8:00–9:30 AM	9–12	133, Conv. Center	New Tools, New Insights, and New Ways of Understanding Science with *Miller & Levine Biology* (p. 34)
8:00–9:30 AM	7–12	130, Conv. Center	Iron Teacher—STEM Edition! (p. 33)
8:00–9:30 AM	7–C	107, Conv. Center	Finding Funds for Biotech - Grant Writing Workshop (p. 33)
8:00–9:30 AM	6–12	144, Conv. Center	Rats! Inquiry-based Dissection with Carolina's Perfect Solution® Specimens (p. 34)
8:00–9:30 AM	9–12	145, Conv. Center	Making Guided Inquiry Work in Five Steps with Carolina's Inquiries in Science® (p. 35)
8:00–9:30 AM	9–12	Wabash 2, Conv. Center	Fat Dogs and Coughing Horses: Delivery of a Ninth-Grade Curriculum, Part I (p. 35)
8:00–9:30 AM	7–12	135, Conv. Center	Forensics Made Easy—See What's New! (p. 34)
8:00–9:30 AM	G	106, Conv. Center	Adventure into the Digital Biology Classroom: Revolutionizing Science Education (p. 33)
9:00–10:30 AM	9–C	109, Conv. Center	Free Classroom Resources from HHMI for Teaching Evolution (p. 37)
9:30–10:30 AM	E–H	209, Conv. Center	Teaching an Integrated Unit on the Cell (p. 39)
9:30–10:30 AM	M–H	245, Conv. Center	Learn About the Work of Scientists with a River Ecology Teaching Case Study (p. 44)
9:30–10:30 AM	E	210, Conv. Center	CESI Session: "Leaf" It to Me: Leaf Adaptations (p. 43)
9:30–10:30 AM	G	204, Conv. Center	Adaptations and Improbable Foundations: Evolution Misconceptions Uncovered and Assessed (p. 39)
9:30–10:30 AM	G	238, Conv. Center	Heads or Tails? Develop 21st-Century Skills Using Inquiry and Planaria (p. 40)
9:30–10:30 AM	H/I	244, Conv. Center	Mystery of the Crooked Cell: A Study of Clinical Trials Through Sickle Cell Anemia (p. 40)
9:30–10:30 AM	M	208, Conv. Center	Teaching the Spread of Disease via Simulations (p. 43)
9:30–10:30 AM	H–C	JW Grand 8, JW Marriott	Diagnosing Diabetes (p. 44)
10:00–11:00 AM	6–C	107, Conv. Center	Bio-Rad Genes in a Bottle™ Kit (p. 46)
10:00–11:30 AM	8–12	145, Conv. Center	Strawberry DNA and Molecular Models (p. 50)
10:00–11:30 AM	9–12	Wabash 2, Conv. Center	Fat Dogs and Coughing Horses: Delivery of a Ninth-Grade Curriculum, Part II (p. 50)
10:00–11:30 AM	6–C	108, Conv. Center	The Developing Brain: What Science Teaches Us About Life Experience (p. 48)
10:00–11:30 AM	9–12	104, Conv. Center	Extra, Extra! Read All About It! Taking Biology from the News to the Classroom (p. 48)
10:00–11:30 AM	8–12	135, Conv. Center	New Ways to Prepare Your Students Using 21st-Century STEM Initiatives—GO DIGITAL! (p. 49)
10:00–11:30 AM	9–C	106, Conv. Center	Applications in Biotechnology (p. 48)
10:00–11:30 AM	K–12	134, Conv. Center	From Rescue to Rehab to Release—How Busch Gardens and SeaWorld Care for Injured Wildlife (*See program changes*)

10:30 AM–12 Noon	H–C	Sagamore blrm. 5, Conv. Center	Bridging Fields and Harnessing Diversity for the Sake of Innovation: Tackling Unmet Needs in the Life Sciences (p. 51)
11:00–11:30 AM	G	238, Conv. Center	Teach About Plants Like Linnaeus Did! (p. 52)
11:00 AM–12 Noon	G	211, Conv. Center	Do Birds Like Rap Music? Students Answer Their Original Questions (p. 54)
11:00 AM–12 Noon	H	244, Conv. Center	Global Health Summit: Race Against Resistance (p. 55)
11:00 AM–12 Noon	M–H	208, Conv. Center	Alternatives to Dissection in the Digital Age (p. 54)
11:00 AM–12 Noon	M–H	245, Conv. Center	Science and Physical Education Join Forces (p. 61)
11:00 AM–12 Noon	G	204, Conv. Center	Butterfly Bonanza (p. 60)
11:00 AM–12 Noon	G	JW Grand 5/1, JW Marriott	Teacher Researcher Day Session: Woodrow Wilson Fellows—How Teacher Inquiry Shapes Understandings (p. 56)
11:00 AM–12:30 PM	9–C	109, Conv. Center	Enhance Your Teaching of the New AP® Biology Curriculum Framework with Free Resources from HHMI (p. 62)
12 Noon–1:30 PM	6–12	131, Conv. Center	Keeping a Balance: Homeostasis and Negative Feedback (p. 64)
12 Noon–1:30 PM	8–C	116, Conv. Center	Biology with Vernier (p. 64)
12 Noon–1:30 PM	10–12	Wabash 1, Conv. Center	New Guided Inquiry Labs for Advanced Placement® Biology from Flinn Scientific (p. 65)
12 Noon–1:30 PM	K–12	145, Conv. Center	Introduction to Wisconsin Fast Plants® (p. 65)
12 Noon–1:30 PM	8–12	135, Conv. Center	New Ways to Prepare Your Students Using 21st-Century STEM Initiatives—GO DIGITAL! (p. 64)
12 Noon–1:30 PM	10–C	130, Conv. Center	New and Improved *Biotechnology: Science for the New Millennium* (p. 64)
12:30–1:30 PM	H	Council, Westin	AMSE Session: "I Want to Differentiate, but I Don't Know How!" (p. 71)
12:30–1:30 PM	I	JW Grand 2, JW Marriott	NSF Follow-Up Session: Icy Life on Earth and Beyond? (p. 69)
12:30–1:30 PM	M/I	208, Conv. Center	How Zoos and Aquariums Can Increase Student Investigation Skills and Achievement in Science (p. 67)
12:30–1:30 PM	H–C	JW Grand 8, JW Marriott	Lost in Translation: Exploring Protein Synthesis with Interactive Physical Models (p. 73)
12:30–1:30 PM	M–H	245, Conv. Center	"Cucumber Farmers" Do Hands-On Science (p. 73)
12:30–1:30 PM	H	204, Conv. Center	Teaching Sustainability Issues Through an Evolutionary Lens (p. 71)
12:30–1:30 PM	H	244, Conv. Center	Teach Photosynthesis via Models (p. 68)
12:30–1:30 PM	M	208, Conv. Center	Connecting Argument, Ethics, the Human Body, and Science Writing in the Middle School Classroom (p. 67)
1:30–3:00 PM	H–C	Sagamore blrm. 5, Conv. Center	HIV/AIDS: 30 Years of Progress and Future Challenges (p. 75)
2:00–3:00 PM	H	Marriott Blrm. 9, Marriott	High School Biology: A Baker's Dozen Hands-On Activities on the Principles of Diffusion and Osmosis (p. 80)
2:00–3:00 PM	H	Council, Westin	AMSE Session: Achieving Academic Excellence, One Case at a Time (p. 81)
2:00–3:00 PM	E–M	208, Conv. Center	Breaking It Down! Making Energy Transformations in Life Science Easy and Fun! (p. 77)
2:00–3:00 PM	H–C	JW Grand 8, JW Marriott	DNA Barcoding in Your Classroom (p. 83)
2:00–3:00 PM	E–H	209, Conv. Center	Plants in the Classroom (p. 82)
2:00–3:00 PM	G	204, Conv. Center	*ARKive.org*: Creating Virtual Learning Experiences Within Conservation Education (p. 77)
2:00–3:30 PM	6–12	131, Conv. Center	Enzymes and Lactose Intolerance (p. 85)
2:00–3:30 PM	6–C	108, Conv. Center	Engaging Classrooms on Animal Research (p. 84)
2:00–3:30 PM	9–12	133, Conv. Center	Science Under Siege? Teaching Evolution in a Climate of Controversy (p. 85)
2:00–3:30 PM	9–12	145, Conv. Center	Forensics for the Biology Laboratory (p. 85)
2:00–3:30 PM	9–12	144, Conv. Center	SQUID INK-UIRY: Inquiry-based Invertebrate Anatomy Through Squid Dissection (p. 85)
2:00–3:30 PM	7–12	130, Conv. Center	Under a Microscope: Prepare Students for the 21st Century Using STEM Initiatives (p. 85)
3:30–4:30 PM	M–H/I	JW Grand 2, JW Marriott	NSF Follow-Up Session: Thriving in the Polar Seas (p. 90)
3:30–4:30 PM	M–H/S	JW Grand 3, JW Marriott	FlexBooks: Incorporating Interactive Elements in Your Textbook (p. 90)
3:30–4:30 PM	H	245, Conv. Center	Silencing Genomes (p. 96)
3:30–4:30 PM	G	204, Conv. Center	Using Technology to Infect Your Biology Classroom with Math! (p. 95)
3:30–4:30 PM	E–C	201/202, JW Marriott	Building Better Elementary Teachers in Science (p. 90)
3:30–4:30 PM	E–M	208, Conv. Center	Reading Green: Integrating Science and Literacy Learning (p. 95)

3:30–4:30 PM	G	238, Conv. Center	Change It Up: The Rotating Faces of Science (p. 96)
4:00–5:30 PM	9–12	130, Conv. Center	Best Dissection Practices (p. 98)
5:00–5:30 PM	M–H	208, Conv. Center	Enhance Student Interest in Health Science with a Curriculum Module on Biomedical Research (p. 99)
5:00–6:00 PM	G	238, Conv. Center	Exploring Birds and Buds: A Walk in the Park! (p. 101)
5:00–6:00 PM	H	244, Conv. Center	More than Vocabulary: Teaching Biology as Science (p. 101)
5:00–6:00 PM	M–C	204, Conv. Center	Teaching Animal Behavior Without Thinking Like a Human (p. 101)
5:00–6:00 PM	M–H	245, Conv. Center	Integrating Probes in the Interactive Notebook (p. 101)
5:00–6:00 PM	H–C	201/202, JW Marriott	Genes: Express Yourself (p. 102)

Biology/Life Science: Sunday

8:00–9:00 AM	M–H/I	243, Conv. Center	Black Tie Meets Blue Jeans: Formal/Informal Educator Collaboration in Curriculum Design (p. 111)
8:00–9:00 AM	E–H	209, Conv. Center	Soaking in Inquiry! Inquiry-based Osmosis Labs for the Biology Classroom (p. 112)
8:00–9:00 AM	G	204, Conv. Center	Powerful and FREE Simulations for Biology Teaching (p. 111)
8:00–9:30 AM	G	208, Conv. Center	The Future of Bioethics (p. 113)
9:30–10:30 AM	G	204, Conv. Center	Incorporating a Live Medical Simulation into a High School Anatomy and Physiology Curriculum: Results and Highlights (p. 117)
9:30–10:30 AM	I	243, Conv. Center	Ultimate Squid Dissection (p. 117)
9:30–10:30 AM	E–H	209, Conv. Center	Model Organisms in the Inquiry-based Classroom (p. 115)
9:30–10:30 AM	H	122, Conv. Center	Forensic Toxicology: An Interdisciplinary Approach to Enhance Understandings in Biology and Chemistry (p. 115)
9:30–10:30 AM	M	123, Conv. Center	Hands-On Ecology (p. 116)
9:30–10:30 AM	H	244, Conv. Center	Grab Bag of Bio! (p. 116)
11:00 AM–12 Noon	H	244, Conv. Center	How to Manage a (Biotech) Lab Classroom (p. 121)
11:00 AM–12 Noon	E–H	209, Conv. Center	Birds of a Feather Do Science Together (p. 120)
11:30 AM–12 Noon	H	208, Conv. Center	Disease du Jour: A New Twist on Science Notebooks (p. 122)

Chemistry/Physical Science: Saturday

8:00–9:00 AM	M–C	236, Conv. Center	Performance Based Assessments for Chemistry and Physics (p. 24)
8:00–9:00 AM	H	127, Conv. Center	From Generation to Generation (p. 22)
8:00–9:00 AM	M–H	237, Conv. Center	Creating Chemical Animations: A New Assessment Tool (p. 24)
8:00–9:30 AM	9–12	131, Conv. Center	Teaching the Chemistry That Students Need to Know (p. 34)
8:00–9:30 AM	9–12	104, Conv. Center	Sparking Interest and Learning with Chemistry: A Part 1 Experience (p. 32)
8:00–9:30 AM	9–12	108, Conv. Center	*Living By Chemistry*: What Shape Is That Smell? (p. 33)
9:30–10:30 AM	C	201/202, JW Marriott	Laboratory Goals in Undergraduate Chemistry (p. 41)
9:30–10:30 AM	C	201/202, JW Marriott	Engaging Undergraduate Students to Develop Green Organic Chemistry Projects (p. 41)
9:30–10:30 AM	E	236, Conv. Center	Children Can Be Chemists! (p. 40)
9:30–10:30 AM	H	Colorado, Marriott	DuPont Presents—Biofuels: The By-Products of Combustion (p. 45)
9:30–10:30 AM	M–H	237, Conv. Center	Kitchen Chemistry (p. 44)
9:30–10:30 AM	H	127, Conv. Center	*"I Actually Feel Like a Scientist!"* Student Perceptions of a Research-based Chemistry Experience (p. 39)
9:30–10:30 AM	E–H	JW Grand 7, JW Marriott	NSTA Press Session: Stop Faking It! Finally Understand Chemistry Basics So You Can Teach It (p. 44)
10:00–11:30 AM	9–C	116, Conv. Center	Chemistry with Vernier (p. 48)
10:00–11:30 AM	9–12	Wabash 1, Conv. Center	Promote Inquiry Using Chemistry Demonstrations (p. 50)
10:00–11:30 AM	6–12	130, Conv. Center	Chemistry In-the-Bag Inquiry (p. 49)
10:00–11:30 AM	K–12	131, Conv. Center	Technology Impacts Science Learning: A Research Project (p. 49)
11:00 AM–12 Noon	M–H	237, Conv. Center	Material Matters (p. 54)

11:00 AM–12 Noon	M–C	236, Conv. Center	Chemistry, Probeware, and GIS Places—From Elements/Solutions to Acids/Bases (p. 54)
11:00 AM–12 Noon	H	127, Conv. Center	Photons + Cuprous Oxide = Electricity (p. 53)
12 Noon–1:30 PM	9–12	104, Conv. Center	Sparking More Interest with Chemistry: A Part 2 Experience (p. 63)
12 Noon–1:30 PM	9–12	144, Conv. Center	Bonding with Carolina™ Chemistry (p. 64)
12:30–1:30 PM	M	237, Conv. Center	Middle School Chemistry: Big Ideas About the Very Small (p. 72)
12:30–1:30 PM	H–C	JW Grand 3, JW Marriott	Organic Solar Cells: Bringing Research to the Classroom (p. 69)
12:30–1:30 PM	H	127, Conv. Center	Stoichiometry: A Multi-tiered Approach (p. 67)
2:00–3:00 PM	M–C	236, Conv. Center	Dialogues for the Chemistry Classroom (p. 78)
2:00–3:00 PM	H	127, Conv. Center	Corrosion Is Everywhere: Use It to Make Chemistry Relevant and Fun (p. 77)
2:00–3:30 PM	9–C	117, Conv. Center	Inquiry-Based Chemistry with Vernier (p. 85)
3:30–4:30 PM	I	126, Conv. Center	Polymers 1A: They're Everywhere—in the Kitchen, Classroom, Cars, and Clothing! (p. 88)
3:30–4:30 PM	H–C	JW Grand 8, JW Marriott	Nanocrystals: Creating Deeper Chemistry Understanding Through Nanotechnology and Inquiry (p. 96)
3:30–4:30 PM	M	127, Conv. Center	Middle School Students and the Particle Nature of Matter: A Conceptual Approach (p. 88)
3:30–4:30 PM	M–H	237, Conv. Center	Technology Makes STEM Instruction Easy (p. 96)
3:30–4:30 PM	M–C	236, Conv. Center	Scientific Writing and Journalism as Vehicles for Developing Understanding of Abstract Chemical Principles (p. 88)
5:00–5:30 PM	M–H	237, Conv. Center	Learning Through the Chemistry of Food: Planning, Implementation, and Outcomes of an Inquiry- and Problem-based Module (p. 100)
5:00–6:00 PM	H	236, Conv. Center	Integrating Formative Assessment into the High School Chemistry Class to Enhance Teaching and Learning (p. 101)
5:00–6:00 PM	M–H	122, Conv. Center	Experimental Polymer Chemistry (p. 104)
5:00–6:00 PM	H	127, Conv. Center	Laboratory Reports in Standards-based Instruction (p. 100)
5:00–6:00 PM	H–C	JW Grand 3, JW Marriott	Exploring the Chemical Education Digital Library (p. 102)

Chemistry/Physical Science: Sunday

8:00–9:00 AM	M	237, Conv. Center	Properties, Polymers, and Metals, Oh My! (p. 113)
8:00–9:00 AM	H	127, Conv. Center	Everyday Assessment with Writing (p. 110)
9:30–10:00 AM	H	128, Conv. Center	SciJourn: Literacy Through Journalism Writing (p. 113)
9:30–10:30 AM	H	127, Conv. Center	Science Fiction Fantastics (p. 115)
9:30–10:30 AM	H	White River B, JW Marriott	NSTA Press Session: Forensics in Chemistry: The Murder of Kirsten K. (p. 116)
9:30–10:30 AM	H	237, Conv. Center	The Makings of a Lab Rat: The Transformation of One Educator's Research Experiences into Meaningful Science Curricula (p. 115)
11:00–11:30 AM	H	128, Conv. Center	The Sky Is the Limit with Digital Primary Sources (p. 118)
11:00 AM–12 Noon	H	127, Conv. Center	Carbon Capture and Storage (p. 121)

Earth/Space Science: Saturday

8:00–9:00 AM	I	Grand Ballroom 5, Westin	NESTA Session: Activities from Across the Earth System (p. 32)
8:00–9:00 AM	M–H	Capitol III, Westin	Making Waves: Seismic Waves Activities and Demonstrations (p. 30)
8:00–9:00 AM	M–H	Grand Ballroom 2, Westin	Fire and Ice: NASA's MESSENGER and New Horizons Space Exploration Missions (p. 32)
8:00–9:00 AM	H/I	312, JW Marriott	COSEE Session: The Carbon Cycle (p. 29)
8:00–9:30 AM	7–12	105, Conv. Center	Team America Rocketry Challenge: Rocketry in the Classroom (p. 32)
9:30–10:30 AM	M–C	Capitol III, Westin	Teaching Basic Mineralogy and Map Skills While Searching for a Diamond Deposit (p. 45)
9:30–10:30 AM	M–H	Grand Ballroom 2, Westin	NASA and Superman: The Electromagnetic Spectrum and the Invisible Universe (p. 45)
9:30–10:30 AM	G	Grand Ballroom 3, Westin	Students Use Distributed Computing to Search for Extraterrestrial Intelligence (p. 43)

9:30–10:30 AM	M	233, Conv. Center	Innovative Strategies for Engaging Students in Scientific Inquiry with Web 2.0 Technologies and Social Collaboration (p. 40)
9:30–10:30 AM	P–E	232, Conv. Center	Space Science for the Primary Grades (p. 44)
9:30–10:30 AM	M–C	Grand Ballroom 5, Westin	NESTA Session: Strategies for Teaching About Charged Topics in the Earth Science Classroom (p. 45)
10:00–11:00 AM	H–C	312, JW Marriott	COSEE Session: Sea Level Trends (p. 46)
10:00–11:30 AM	7–12	117, Conv. Center	Earth Science with Vernier (p. 48)
11:00–11:30 AM	H–C/I	Grand Ballroom 1, Westin	Mars Education Student Data Teams (MESDT) (p. 52)
11:00 AM–12 Noon	E–M	233, Conv. Center	Play in a Stream Table with a Geophysicist and a Classroom Teacher (p. 60)
11:00 AM–12 Noon	M–H	Congress I/II, Westin	Eco-Schools USA Climate Change Connections (p. 59)
11:00 AM–12 Noon	G	Grand Ballroom 3, Westin	Science Visualized: The Art of Science (p. 59)
11:00 AM–12 Noon	E–H	Capitol III, Westin	Clouds in the Classroom (p. 61)
11:00 AM–12 Noon	G	Grand Ballroom 2, Westin	Explore the Expanding Universe (p. 61)
11:00 AM–12 Noon	H–C	314, JW Marriott	To Pretest or Not to Pretest…A Look at Getting at Student Misconceptions, Prior Knowledge, and Ability Levels (p. 56)
12:30–1:30 PM	M–C	Grand Ballroom 2, Westin	Incorporating Inquiry-based Astronomy Activities into a High School Earth Science Course (p. 73)
12:30–1:30 PM	M–H	Capitol III, Westin	Using Your Probes in the Earth Science/Environmental Science Classroom (p. 73)
12:30–1:30 PM	M/I	233, Conv. Center	Build a Model of a U.S. Climate Reference Network Station (p. 72)
12:30–1:30 PM	M	JW Grand 5/3, JW Marriott	Teacher Researcher Day Session: WISE Climate Change Curriculum and Greenhouse Effect Simulation for Your Classroom (p. 69)
2:00–3:00 PM	E–H	Capitol III, Westin	Teach Geology and Evolutionary Concepts with Fossil Evidence (p. 83)
2:00–3:00 PM	E–H	Grand Ballroom 1, Westin	Constructing an Electronic Sunspot Viewer to Observe, Record, and Analyze Real-Time Sunspot Activity (p. 81)
2:00–3:00 PM	E–H	Grand Ballroom 5, Westin	NESTA Session: National Earth Science Teachers Association Astronomy, Space, and Planetary Science Share-a-Thon (p. 84)
2:00–3:00 PM	M–H	Congress I/II, Westin	Inspiring Climate Education Excellence: On-Demand Professional Development for Secondary Science Teachers (p. 81)
2:00–3:00 PM	I	Grand Ballroom 3, Westin	NESTA Session: Our Changing Planet (p. 84)
2:00–3:00 PM	S	Grand Ballroom 2, Westin	NASA: Galileo Educator Network—Advancing Science Literacy Through Astronomy and Teacher Professional Development (p. 84)
3:30–4:00 PM	I	240, Conv. Center	STEM-focused Games to Facilitate Inquiry (p. 86)
3:30–4:30 PM	G	Chamber, Westin	ASTC Session: 2012 Transit of Venus (p. 94)
3:30–4:30 PM	I	122, Conv. Center	Exploring Seafloor Spreading with Data from the Integrated Ocean Drilling Program (IODP) (p. 94)
3:30–4:30 PM	M	233, Conv. Center	The Little Spacecraft That Could: MESSENGER Orbits Mercury! (p. 95)
3:30–4:30 PM	H–C	Grand Ballroom 2, Westin	NASA's Evidence for Dark Matter (p. 97)
3:30–4:30 PM	I	Grand Ballroom 3, Westin	JetStream: An Online School for Weather (p. 98)
3:30–4:30 PM	G	Congress I/II, Westin	Data Collection, Visualization, and Weather Forecasting in the Earth Science Classroom (p. 94)
3:30–4:30 PM	M–H	Capitol III, Westin	Investigate Real-World Earth Science Questions with STEM Concepts and Practices (p. 97)
3:30–4:30 PM	G	Grand Ballroom 1, Westin	Planetary Mapping and GRIDVIEW Software (p. 94)
3:30–5:00 PM	G	Grand Ballroom 5, Westin	NESTA Session: National Earth Science Teachers Association Rock and Mineral Raffle (p. 98)
5:00–5:30 PM	M	233, Conv. Center	Meteorologist of the Day (p. 99)
5:00–5:30 PM	E–H	121, Conv. Center	Understanding Deep Time: "Wait, You Mean Dinosaurs Lived Before the Ice Age?" (p. 99)
5:00–6:00 PM	M–C	Grand Ballroom 1, Westin	Daytime Astronomy with Robotic Telescopes (p. 103)
5:00–6:00 PM	G	Grand Ballroom 3, Westin	Whose Fault Is It? (p. 105)
5:30–6:00 PM	M–H	312, JW Marriott	COSEE Session: Bringing Ocean Scientists and Their Data into Your Classroom (p. 105)

Earth/Space Science: Sunday

8:00–9:00 AM	G	106, Conv. Center	ART/Science (p. 109)
8:00–9:00 AM	G	232, Conv. Center	STAR_Net: Connecting Rural Communities, Libraries, and STEM Professionals Through Hands-On Science (p. 112)
8:00–9:00 AM	M–H	104, Conv. Center	Internet-based Interactive Courses in Earth and Environmental Sciences (p. 109)
8:00–9:00 AM	M–H	105, Conv. Center	Hanny and the Mystery of the Voorwerp: Citizen Science in YOUR Classroom! (p. 112)
8:00–9:00 AM	M	233, Conv. Center	Authentic Research in the Inquiry Classroom (p. 112)
8:00–9:00 AM	M–H	103, Conv. Center	Romancing the Stone (p. 112)
9:30–10:30 AM	E	232, Conv. Center	NASA's *Our Solar System Through the Eyes of Scientists* (p. 117)
9:30–10:30 AM	M–H	103, Conv. Center	Teaching Climate Change through Project-based Science (p. 116)
9:30–10:30 AM	M–H	106, Conv. Center	EarthScope: A Hubble Space Telescope for Earth's Interior That's in Your Neighborhood! (p. 114)
9:30–10:30 AM	M–H/I	105, Conv. Center	Going to the Moon with 21st-Century Skills (p. 116)
11:00 AM–12 Noon	I	104, Conv. Center	Shaking Up Old Earthquake Unit Plans (p. 118)
11:00 AM–12 Noon	M–H	103, Conv. Center	Earthquakes in the Central United States (p. 121)
11:00 AM–12 Noon	M	233, Conv. Center	Sleuthing Through the Rock Cycle (p. 121)
11:00 AM–12 Noon	M–C	105, Conv. Center	Student Misconceptions in Astronomy: How Do We Address Them? (p. 121)
11:00 AM–12 Noon	M–H	106, Conv. Center	Pulsar Search Collaboratory (p. 118)

Environmental Science: Saturday

8:00–9:00 AM	M–H	Caucus, Westin	BioBlitz! Increase Student Awareness of Biodiversity (p. 28)
8:00–9:00 AM	M–H	Capitol I, Westin	EARTH (Education and Research: Testing Hypotheses) Activities in the Classroom! (p. 30)
8:00–9:00 AM	G	Capitol II, Westin	Eco-Schools USA (p. 28)
8:00–9:00 AM	I	Cabinet, Westin	OceanLIVE! Web-based Telepresence to Bring Ocean Expeditions to You! (p. 28)
8:00–9:00 AM	M–H	Caucus, Westin	Island Energy Inquiry Professional Development: Content Enrichment and Pedagogical Approaches to Teaching About Energy Sustainability (p. 28)
8:00–9:00 AM	G	Cabinet, Westin	Explore the Greater Yellowstone Ecosystem via Technology (p. 28)
8:00–9:00 AM	M–C	JW Grand 2, JW Marriott	NSF Follow-Up Session: The McMurdo Dry Valleys of Antarctica: Harshest Place on Earth or a Polar Oasis? (p. 26)
8:00–9:30 AM	K–12	137, Conv. Center	Water Education Writing Workshop (p. 34)
8:00–9:30 AM	7–12	138, Conv. Center	Environmental Science Activities—Inside and Outside (p. 34)
9:00–10:00 AM	M–H/I	312, JW Marriott	COSEE Session: Tiny but Toxic! Teaching About Harmful Algal Blooms (p. 37)
9:30–10:30 AM	I	Caucus, Westin	Science Inquiry: Partnerships Among National Parks and Universities (p. 42)
9:30–10:30 AM	H	Congress I/II, Westin	Bringing University Research Projects and Field Work into the High School Science Class (p. 43)
9:30–10:30 AM	M–C	Cabinet, Westin	Watershed Dynamics: Curriculum Design Tools to Teach the Water Cycle Using Web GIS (p. 42)
9:30–10:30 AM	M–H	Capitol I, Westin	Contextualizing Climate Change Within a Climate System (p. 45)
9:30–10:30 AM	M–H/I	122, Conv. Center	The Little Things That Run the World: Soil Ecology in the Classroom (p. 43)
9:30–10:30 AM	I	JW Grand 2, JW Marriott	NSF Follow-Up Session: Science Is Cool! Using Polar Science Resources in Your Classroom (p. 41)
9:30–10:30 AM	E–M	234, Conv. Center	Hands-On Science: Connecting Informal Science Inquiry to Successful, Crafty, and Creative Projects (p. 44)
10:00–11:30 AM	5	138, Conv. Center	Key Issues: Bringing Environmental Issues to the Classroom (p. 50)
10:00–11:30 AM	9–12	144, Conv. Center	Drive Student Inquiry with Carolina's Advanced Environmental Science Labs (p. 50)
11:00–11:30 AM	G	Cabinet, Westin	Inquiry Through Field Investigations (p. 52)

11:00–11:30 AM	M–H	312, JW Marriott	COSEE Session: Linking Our Ocean and Climate Through Innovative Learning Connections (p. 52)
11:00 AM–12 Noon	H	Caucus, Westin	Saving Our Shores and Seas (SOS2) (p. 58)
11:00 AM–12 Noon	M/I	123, Conv. Center	Marine Plastic Pollution: Examining Issues and Solutions in a Middle School Classroom (p. 59)
11:00 AM–12 Noon	M	234, Conv. Center	Focus On the Future: Drive Student Learning via Local Area Energy and Environmental Issues (p. 54)
11:00 AM–12 Noon	M–H	Caucus, Westin	EcoCasting: Using Computer Models of Invaded Aquatic Ecosystems to Teach Scientific Research (p. 58)
11:00 AM–12 Noon	I	Capitol II, Westin	History of Winter (HOW) (p. 58)
11:00 AM–12 Noon	M–H	Capitol I, Westin	Seven Billion and Counting—Lessons for Our Planet's Future (p. 61)
11:00 AM–12 Noon	E	235, Conv. Center	Everything Is Connected: Hands-On Human Ecology (p. 60)
11:00 AM–12 Noon	I	JW Grand 2, JW Marriott	NSF Follow-Up Session: What Lies Beneath? ANDRILL Investigations Under the Ross Ice Shelf (p. 56)
12:30–1:30 PM	I	Capitol I, Westin	Since the Spill: Two Years After the Deepwater Horizon Oil Disaster (p. 73)
12:30–1:30 PM	E–M	234, Conv. Center	Ohio Department of Natural Resources Windows on Waste (p. 72)
12:30–1:30 PM	H	Congress I/II, Westin	Biodiversity Activities, Labs, and Demos (p. 71)
12:30–1:30 PM	G	Caucus, Westin	Games for Sustainability: Develop and Assess Sustainability Thinking via Simulations of Ecological Limits (p. 71)
12:30–1:30 PM	I	Cabinet, Westin	What Every Citizen Should Know: Environmental Literacy (p. 71)
12:30–1:30 PM	M–H	123, Conv. Center	Galápagos NEST (p. 66)
1:30–2:00 PM	I	312, JW Marriott	COSEE Session: Combining Inquiry and Community Through Scientist/Educator Partnerships (p. 74)
1:30–3:00 PM	G	Sagamore blrm. 4, Conv. Center	Climate Literacy and Global Change: Seeking Simplicity in Complexity (p. 75)
2:00–3:00 PM	G	Cabinet, Westin	Math and Science Save the Football Field! (p. 80)
2:00–3:00 PM	I	Capitol I, Westin	Focus On Forests: Project Learning Tree's New Secondary Curriculum (p. 83)
2:00–3:00 PM	P	235, Conv. Center	Nature-ally Good Teaching in Early Childhood Education (p. 82)
2:00–3:00 PM	G	Cabinet, Westin	Promote 21st-Century Skills with a Prairie Restoration Unit (p. 80)
2:00–3:00 PM	I	JW Grand 2, JW Marriott	NSF Follow-Up Session: The Arctic: Global Climate's Canary in a Coal Mine (p. 79)
2:00–3:00 PM	E–M	123, Conv. Center	Designing the City (p. 82)
3:30–4:30 PM	M–H	Caucus, Westin	Watersheds—Turning Professional Development into Project Based Learning (p. 92)
3:30–4:30 PM	I	Cabinet, Westin	Citizen Science in the Classroom: Students Leading a Research Effort (p. 92)
3:30–4:30 PM	H/S	104, JW Marriott	…and the Two Shall Become One (p. 89)
3:30–4:30 PM	G	Capitol I, Westin	How "Green" Is Green Building? (p. 97)
3:30–4:30 PM	I	Cabinet, Westin	Making the Global Local: State-specific Climate Curriculum Workshop Lessons by Teachers for Teachers (p. 92)
3:30–4:30 PM	E	235, Conv. Center	Composting in the Classroom (p. 95)
3:30–4:30 PM	I	Capitol II, Westin	Modeling the Melting of Permafrost by Climate Change with Data from Thermochron iButtons® (p. 97)
5:00–6:00 PM	I	Cabinet, Westin	NODC Ocean Data Help Answer How the Oceans Is Saving Our Hides and Other Climate Q's (p. 103)
5:00–6:00 PM	P–M	234, Conv. Center	Climate Change for Elementary Students: Empowering the Next Generation of Climate Scientists! (p. 104)
5:00–6:00 PM	I	Capitol I, Westin	NIEHS Environmental Health Resources for Educators (p. 105)
5:00–6:00 PM	H	Caucus, Westin	Pathways in Alternative Energy and Sustainability Studies Increase Engagement of At-Risk Urban Youth (p. 103)
5:00–6:00 PM	HU	104, JW Marriott	Approaching Environmental Education in Cooperative Ways: Building Partnerships and Curricula (p. 102)
5:00–6:00 PM	M–C	Caucus, Westin	If You Knew ATEEC Like I Know ATEEC… (p. 103)

Environmental Science: Sunday

8:00–9:00 AM	G	113, Conv. Center	Multifaceted Approaches to Energy Education (p. 110)
8:00–9:00 AM	H	White River B, JW Marriott	NSTA Press Session: *Watershed Investigations: 12 Labs for High School Science* (p. 111)
8:30–9:00 AM	E	235, Conv. Center	The Columbus Zoo Unlocks the Secrets of STEM Education (p. 113)
9:30–10:30 AM	M–H	113, Conv. Center	Glaciers: Traveling Time Capsules (p. 114)
9:30–10:30 AM	M–C	110, Conv. Center	Drinking Water: Convincing Children That It Matters (p. 116)
11:00 AM–12 Noon	H–C	113, Conv. Center	Infusing Technology into a Cross-curricular Ecosystem Survey (p. 119)
11:00 AM–12 Noon	E–M	234, Conv. Center	Transforming Science Journaling Through Inquiry to Meet the Next Generation of Science Standards (p. 120)
11:00 AM–12 Noon	M–H/I	203, Conv. Center	Service and Science: Citizen Science That Engages Teens in Environmental Conservation (p. 119)

Integrated/General: Saturday

8:00–8:30 AM	M	243, Conv. Center	Science, Math, and Technology "on the Same Wavelength" (p. 20)
8:00–9:00 AM	M–H	240, Conv. Center	Simulating Science in the Physical and Earth Science Classroom (p. 24)
8:00–9:00 AM	G	Indiana Ballroom F, Marriott	Become Next-Generation-Ready Using the 5Es (p. 30)
8:00–9:00 AM	P	210, Conv. Center	Let's Go Outside: Developing Inquiry Among Early Learners (p. 22)
8:00–9:00 AM	E–H	Marriott Blrm. 3, Marriott	Interdisciplinary Approaches to Science Teaching for Enhancing Understanding (p. 26)
8:00–9:00 AM	E	231, Conv. Center	Connecting Mathematics and Science Through Space Science Activities (p. 29)
8:00–9:00 AM	M–H	111/112, Conv. Center	Improve Writing in Science with the Read Around Strategy (p. 21)
8:00–9:00 AM	M–C	Marriott Blrm. 8, Marriott	Nanoparticles: Engaging Students with Hands-On Nanotechnology Laboratory Activities (p. 30)
8:00–9:00 AM	G	120, Conv. Center	Teaching Science for Understanding in a Digital World (p. 21)
8:00–9:00 AM	E–M	239, Conv. Center	Experimental Design: Scaffolding the Fair Test (p. 29)
8:00–9:00 AM	E–H	JW Grand 9, JW Marriott	Assessing Student Content Knowledge Through the Integration of Science, Art, and Children's Literature (p. 26)
8:00–9:00 AM	G	Marriott Blrm. 9, Marriott	Teaching Science in Rural Schools: Benefits, Challenges, and Factors Influencing Teacher Retention (p. 27)
8:00–9:00 AM	G	Marriott Blrm. 1, Marriott	Tomorrow's Homework, Today! (p. 26)
8:00–9:00 AM	G	313, JW Marriott	National Board Certification and Renewal—What? Why? How? (p. 26)
8:00–9:00 AM	I	232, Conv. Center	Science Olympiad and Academic Major Choice: The Power of Student/Teacher Relationships (p. 22)
8:00–9:00 AM	G	Marriott Blrm. 7, Marriott	Getting Families Involved with Science In and Out of School (p. 27)
8:00–9:00 AM	E	212, Conv. Center	Elementary Engineering for Schools (p. 22)
8:00–9:00 AM	S	201/202, JW Marriott	Differentiated Strategies and Tools for Instructional Science Coaches (p. 26)
8:00–9:00 AM	E–M	242, Conv. Center	Virtual Field Experiences: Bringing the Field into the Classroom (p. 24)
8:00–9:00 AM	G	232, Conv. Center	Creativity, Communication, Collaboration, and Critical Thinking: Building the Four Cs by Building Robots (p. 22)
8:00–9:00 AM	G	White River F, JW Marriott	Creating an Engaging Science Leadership Culture for K-12 and Post Secondary Students with Informal Science Education Programs (p. 26)
8:00–9:00 AM	G	Marriott Blrm. 9, Marriott	Peer Teaching: Making Science Learning Relevant (p. 27)
8:00–9:00 AM	M/I	242, Conv. Center	Scientists Help Others: Student Experiences with an Electronic Field Trip (p. 24)
8:00–9:00 AM	M–H	128, Conv. Center	Collaborative Instruction for Self-contained Honors, AP, and Exceptional Needs Students (p. 28)
8:00–9:00 AM	M–H	234, Conv. Center	Careers at Sea (p. 29)
8:00–9:00 AM	E–M	108, JW Marriott	ASTE Session: Science Stories Across Disciplines: Making Connections in Elementary and Middle School Science (p. 25)

8:00–9:00 AM	S	121, Conv. Center	Drilling Through the Core: School Leadership in Transitioning to Common Core Standards (p. 22)
8:00–9:00 AM	I	103, JW Marriott	ASTC Session: Evaluating Informal Science Education: Tales from the Evaluative Trenches (p. 25)
8:00–9:30 AM	3–8	101, Conv. Center	Making Science Accessible to English Language Learners (p. 32)
8:00–9:30 AM	K–5	103, Conv. Center	A Picture Book Approach to Child Literacy, Language Learning, and the Sciences (p. 32)
8:00–9:30 AM	7–C	117, Conv. Center	Introducing Vernier DataQuest Data Collection for TI-Nspire™ Technology (p. 33)
8:00–9:30 AM	K–12	110, Conv. Center	Calling All Indiana Teachers! We Have a Discovery Education Science Techbook JUST for You! (p. 33)
8:00–9:30 AM	9–12	132, Conv. Center	Meet and Greet Your Co-Teacher Zeno, the Robot (p. 34)
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5:00–6:00 PM	M	239, Conv. Center	Increase Student Participation in the Science Fair (p. 101)
5:00–6:00 PM	MS	103, JW Marriott	Leadership for Integrated Middle School Science (LIMSS) (p. 102)
5:00–6:00 PM	M–H/I	243, Conv. Center	Scaffolding to Open Inquiry (p. 101)
5:00–6:00 PM	M–H	111/112, Conv. Center	Planning Effective Units: Helping Students Make Connections Between Individual Lessons (p. 100)
5:00–6:00 PM	G	Marriott Blrm. 1, Marriott	Digital Resources in the Science Classroom: TPACK in Action (p. 103)
5:00–6:00 PM	G	Marriott Blrm. 1, Marriott	Facilitating Inquiry Through Technology Databanks *vs.* Authentic Data Collection (p. 103)
5:00–6:00 PM	H	128, Conv. Center	Ready-to-Go Problems and Activities for Group Problem Solving in Biology, Chemistry, and Math (p. 104)
5:00–6:00 PM	G	JW Grand 10, JW Marriott	The Other 17 Hours: How Students Encounter Science Outside of School (p. 102)
5:00–6:00 PM	E	231, Conv. Center	Bridge the Gap—Lab to Test (p. 104)
5:00–6:00 PM	E–M	123, Conv. Center	Bringing the Tropical Rain Forest to the Urban Classroom (p. 100)
5:00–6:00 PM	PM	241, Conv. Center	Engineering Everywhere: Bridging Formal and Informal STEM Education (p. 104)
5:00–6:00 PM	M–H	JW Grand 7, JW Marriott	NSTA Press Session: Using Predict, Observe, and Explain Activities in Your Classroom (p. 105)
5:00–6:00 PM	H	240, Conv. Center	Increasing Adolescent Literacy in the Science Classroom (p. 101)
5:00–6:00 PM	P–E	211, Conv. Center	Evidence-based Strategies for Teaching Nature of Science to Young Children (p. 104)
5:00–6:00 PM	G	120, Conv. Center	Customizing Science Instruction with Educational Digital Libraries (p. 100)
5:00–6:00 PM	G	Indiana Ballroom F, Marriott	Kindergarten Science and Literacy (p. 102)
5:00–6:00 PM	G	Marriott Blrm. 2, Marriott	Teaching Science with Geospatial Technology: Projects by Preservice Teachers (p. 103)
5:00–6:00 PM	G	Marriott Blrm. 3, Marriott	Creating a Community of Self-directed Learners (p. 103)
5:00–6:00 PM	E–H	White River F, JW Marriott	The Case for Embedding STEM Role Models in Curricula (p. 102)
6:00 PM–12 Mid	G	Indiana Ballroom A/B, Marriott	A Video Showcase of Legendary Icons, Inspiring Teachers, Memorable Performances, and Stimulating Engaging Courses, Part III (p. 106)
8:30–9:30 PM	G	Marriott Blrm. 6, Marriott	Defining Partnerships for Student Success (p. 107)

Integrated/General: Sunday

8:00–9:00 AM	G	123, Conv. Center	Developing Skills to Unveil "Nature's Operating Instructions" for 21st-Century Environmental Problem Solving (p. 110)
8:00–9:00 AM	G	108, Conv. Center	From STEM Careers to Teaching: An Innovative Teaching Fellowship Program (p. 109)
8:00–9:00 AM	M–H	203, Conv. Center	Polar Bear Denning: A Cross-curricular Simulation Activity Integrating Science, Mathematics, Language Arts, and Social Studies (p. 110)
8:00–9:00 AM	G	109, Conv. Center	Leveraging Web 2.0 to Teach Science (p. 109)

8:00–9:00 AM	E–M	236, Conv. Center	The Reflective Assessment Technique: 15 Minutes to Improved Instruction (p. 111)
8:00–9:00 AM	G	101, Conv. Center	Who Is That Lady, and What Does She Want? (p. 109)
8:00–9:00 AM	G	120, Conv. Center	Promoting Scientific Discourse with Digital Tools (p. 110)
8:00–9:00 AM	M–H	201, Conv. Center	Scaffolding Critical Thinking with Inductive Lessons (p. 110)
8:00–9:00 AM	G	122, Conv. Center	Local Connections in Environmental Studies: The Science of Research in the Outdoor Classroom (p. 112)
8:00–9:00 AM	M–H	240, Conv. Center	WISEngineering: Engaging Students in STEM Through Engineering Design (p. 113)
8:00–9:00 AM	P–E	211, Conv. Center	The Trouble I've Seen! (p. 112)
8:00–9:00 AM	G	107, Conv. Center	Integrating Inquiry-based Math and Science for Preservice Middle School Teachers (p. 112)
8:00–9:00 AM	M–C	108, Conv. Center	STEM Education Training Through Topics in Sustainability (p. 109)
8:00–9:00 AM	H	238, Conv. Center	Inquiry for ALL: Developing a Successful Schoolwide Science Fair Program (p. 111)
8:00–9:00 AM	E–M	241, Conv. Center	High-flying Fun: Linking Aerospace and Literature at the Elementary Level (p. 113)
8:00–9:00 AM	M–C	110, Conv. Center	Think Twitter Is for the Birds? Engage Students via Web 2.0 Technologies (p. 110)
8:00–9:00 AM	I	234, Conv. Center	"Is This a Forgery?" Real-World Connections and STEM Education (p. 111)
8:00–9:00 AM	E	212, Conv. Center	Enhancing Science Lessons Through the Use of Technology (p. 111)
9:30–10:00 AM	H/S	121, Conv. Center	Addressing Core Standards Through Project-based Instruction: Keys to Success (p. 113)
9:30–10:30 AM	G	109, Conv. Center	We Wiki, Do You? (p. 114)
9:30–10:30 AM	E	212, Conv. Center	Inquiry in the Elementary Classroom: Projects, Presentations, and Conferences (p. 115)
9:30–10:30 AM	E–M	241, Conv. Center	Modeling a Scaffolded, Guided Inquiry Lesson for Elementary Children (p. 117)
9:30–10:30 AM	M–C	107, Conv. Center	Quantitative Reasoning Across Curricula (p. 114)
9:30–10:30 AM	G	120, Conv. Center	Challenge: Create and Present an Interactive Science Course Online (p. 114)
9:30–10:30 AM	H–C	102, Conv. Center	Network Science: Use Snoop Dogg to Teach the Scientific Method (p. 114)
9:30–10:30 AM	M–H	201, Conv. Center	Collaboration Propels Science Inquiry in Middle Schools (p. 115)
9:30–10:30 AM	M–H	236, Conv. Center	Core Standards and Writing Scientific Explanations Based on Claims, Evidence, and Reasoning (p. 117)
9:30–10:30 AM		240, Conv. Center	Technovation Challenge: Introducing Underserved High School Girls to Computer Science and Entrepreneurship (p. 116)
9:30–10:30 AM	P–E	211, Conv. Center	Cloudy with the Chance of Meatballs: Literacy and Weather Connection for Primary Grades (p. 117)
9:30–10:30 AM		203, Conv. Center	Bringing Global Climate Change Education to Alabama Classrooms (p. 115)
9:30–10:30 AM	H	238, Conv. Center	Sights and Smells of the Chicken Body Farm: Integrating Inquiry in Forensic Science (p. 116)
9:30–10:30 AM	G	101, Conv. Center	Playing with Your Food: Issues Related to Modeling Science Concepts with Food (p. 114)
9:30–10:30 AM	G	108, Conv. Center	The Reasons We Choose Science Careers: Motivational Factors in Choosing a Science Career (p. 114)
11:00–11:30 AM	H–C	102, Conv. Center	Ohio's STEM Ability Alliance (p. 118)
11:00–11:30 AM	G	108, Conv. Center	Children's Career Aspirations—Where Are the Scientists? (p. 118)
11:00 AM–12 Noon	E–H	110, Conv. Center	Bringing Nanotechnology to K–12 Classrooms: The NANOweek Project (p. 119)
11:00 AM–12 Noon	M–H	236, Conv. Center	The Dead T-Shirt Contest! (p. 122)
11:00 AM–12 Noon	G	121, Conv. Center	The Role of Argumentation in Inquiry: Doing What Real Scientists Really Do (p. 119)
11:00 AM–12 Noon	E	211, Conv. Center	Using Technology to Teach Elementary Science (p. 120)
11:00 AM–12 Noon	G	109, Conv. Center	Virtual Field Trips Bring the World of Science to Online Students (p. 119)

11:00 AM–12 Noon	H	238, Conv. Center	It's About Discovery: An Innovative Curriculum with a Focus on Energy Sustainability (p. 120)
11:00 AM–12 Noon	G	107, Conv. Center	Mentoring in Inquiry (p. 118)
11:00 AM–12 Noon	M	234, Conv. Center	Notebooks (p. 120)
11:00 AM–12 Noon	G	101, Conv. Center	Designing Design Challenges: Getting the Details Right (p. 118)
11:00 AM–12 Noon	E	212, Conv. Center	Words Can Be Drab: Engage Your Students with Vocab! (p. 120)
11:00 AM–12 Noon	I	232, Conv. Center	Design-based Biotechnology: Integrative STEM Education (p. 120)
11:00 AM–12 Noon	P–M	241, Conv. Center	ABCs with DEs: Addressing Basic Concepts with Discrepant Events (p. 122)
11:00 AM–12 Noon	M–H	240, Conv. Center	Online and Plugged In (p. 120)
11:00 AM–12 Noon	H	White River B, JW Marriott	NSTA Press Session: Implementing Research Projects as Part of the STEM Curriculum (p. 121)

Physics/Physical Science: Saturday

8:00–9:00 AM	E–H	JW Grand 7, JW Marriott	NSTA Press Session: Classroom Activities for *Force and Motion: Stop Faking It!* (p. 30)
8:00–9:00 AM	H	125, Conv. Center	An Experiential Learning on Sound (p. 22)
8:00–9:00 AM	M–H	205, Conv. Center	"Seeing" the Invisible: Exploring the Electromagnetic Spectrum (p. 29)
8:00–9:00 AM	E	207, Conv. Center	Get Charged Up! Investigations That Will Electrify Students into Action! (p. 29)
8:00–9:00 AM	M–C	126, Conv. Center	Learning Physics Through Experiments: Significance of Students' Interpretation of Error (p. 22)
8:00–9:30 AM	9–C	116, Conv. Center	Physics with Vernier (p. 33)
8:00–9:30 AM	9–12	140, Conv. Center	AP® Physics: Momentum & Impulse (p. 34)
8:00–9:30 AM	5–8	201, Conv. Center	Explore Electricity Flow, Electromagnets, and Generating Electricity (p. 35)
8:00–9:30 AM	1–5	202, Conv. Center	Engaging Elementary Learners in STEM with LEGO® Education (p. 35)
9:30–10:30 AM	I	126, Conv. Center	The 50 Best Physics Demos to Do Before You Die (p. 39)
9:30–10:30 AM	M–H	205, Conv. Center	A Different Look at an Old Model: Modeling the Spectrum (p. 43)
9:30–10:30 AM	H–C	JW Grand 9, JW Marriott	Beyond Introductory Circuits: Electronics (p. 41)
9:30–10:30 AM	E–M	235, Conv. Center	Elastic Power: Wind Up Your Engines and Explore (p. 44)
9:30–10:30 AM	M–H	125, Conv. Center	Catch a Wave! (p. 39)
10:00–11:00 AM	1–3	202, Conv. Center	Using LEGO® Bricks to Introduce Simple Machines (p. 46)
10:00–11:30 AM	6–C	102, Conv. Center	Solar-powered Boats, Fountains, and Suitcases! (p. 46)
10:00–11:30 AM	5–8	201, Conv. Center	Introducing a Car-based Energy Conversion Experiment Kit (p. 50)
10:00–11:30 AM	3–12	105, Conv. Center	Education—Inspiration—Acceleration (p. 48)
10:30 AM–12 Noon	H–C	Sagamore blrm. 4, Conv. Center	Symmetries in Fundamental Physics (p. 51)
11:00–11:30 AM	H–C/I	JW Grand 1, JW Marriott	Music in Motion: Profile of a New Content Course for Preservice Teachers (p. 52)
11:00 AM–12 Noon	G	126, Conv. Center	Microgravity in the Classroom and at NASA (p. 59)
11:00 AM–12 Noon	M	206, Conv. Center	Sparking Students' Interest in Electricity! (p. 54)
11:00 AM–12 Noon	E–H	207, Conv. Center	Coulomb's Law Through Electrostatic Interactions: What's Your Sign? (p. 60)
11:00 AM–12 Noon	H	125, Conv. Center	DUGIs: Formative Assessments to Assist Students (p. 53)
11:30 AM–12:30 PM	2–4	202, Conv. Center	Enhancing the Elementary Classroom Through Robotics (p. 62)
12 Noon–1:30 PM	5–C	102, Conv. Center	Wind-energized Classroom (p. 63)
12:30–1:30 PM	M–H	125, Conv. Center	How Do Airplanes Really Fly? (p. 67)
12:30–1:30 PM	M–H	205, Conv. Center	May the Force Be…Everywhere! (p. 71)
12:30–1:30 PM	G	207, Conv. Center	Teaching Science in the 21st Century: Demos That Promote Inquiry, Understanding, and Fun (p. 67)
12:30–1:30 PM	H	124, Conv. Center	Inquiry-based Learning with Modern Optoelectronics Devices (p. 67)
12:30–1:30 PM	M–C	126, Conv. Center	Enhance Your Science Lessons with YouTube (p. 67)
1:30–3:00 PM	5–8	202, Conv. Center	Build and Explore the Future of Space with LEGO® Education (p. 74)
2:00–3:00 PM	G	207, Conv. Center	Professional Learning: The Essential Element for Effective Inquiry-based Instruction (p. 82)
2:00–3:00 PM	M–H	125, Conv. Center	Rapid Data Collection and Analysis Using Technology (p. 82)

2:00–3:00 PM	M	206, Conv. Center	Lunar Thinking and NASA's Problem-based Instructional Units (p. 77)
2:00–3:00 PM	E–M	210, Conv. Center	Simple Machines Made Easy (p. 82)
2:00–3:30 PM	6–C	102, Conv. Center	WindWise Science Curriculum (p. 84)
3:30–4:30 PM	G	207, Conv. Center	Let It Roll! Cars and Ramps (p. 95)
3:30–4:30 PM	E–M	206, Conv. Center	Launch into STEM with Model Rocketry (p. 95)
3:30–4:30 PM	I	312, JW Marriott	COSEE Session: Teaching Physical Science via Underwater Sound (p. 96)
3:30–4:30 PM	M–H/I	125, Conv. Center	Here Come the Robots! (p. 87)
3:30–4:30 PM	H	205, Conv. Center	Physics Labs for Low Budgets (p. 95)
3:30–5:00 PM	5–8	202, Conv. Center	Robotics in the Classroom: Science, Engineering, and Math Come Alive! (p. 98)
4:00–4:30 PM	G	JW Grand 5/3, JW Marriott	Teacher Researcher Day Session: Learning in Physics and Literacy Contexts (p. 98)
4:00–5:30 PM	6–C	102, Conv. Center	Renewable Power, Vernier, and KidWind (p. 98)
5:00–5:30 PM	H	125, Conv. Center	Gain but No Pain: Simple and Effective Lab Book Strategies! (p. 99)
5:00–5:30 PM	H–C	314, JW Marriott	Interactive Nuclear Magnetic Resonance (NMR): Fundamentals to Application (p. 100)
5:00–5:30 PM	H	126, Conv. Center	Design and Build Successful STEM Projects for High School Science Teams (p. 99)
5:00–6:00 PM	G	207, Conv. Center	Integrated Learning Through Force and Motion Experiments (p. 104)
5:00–6:00 PM	E–M	206, Conv. Center	Real-Life/Real-Time Science with Literature and Sensor Technology (p. 104)
5:00–6:00 PM	H	205, Conv. Center	Projects That Make Physics Relevant, Phun, and Exciting (p. 104)

Physics/Physical Science: Sunday

8:00–9:00 AM	M–H	205, Conv. Center	Physics of Musical Sound (p. 112)
8:00–9:00 AM	H	125, Conv. Center	Lessons from *Energizing Physics* (p. 110)
8:00–9:00 AM	M–C	126, Conv. Center	Tesla Tales (p. 110)
9:30–10:30 AM	E–H	207, Conv. Center	Sound: Energy and Waves (p. 117)
9:30–10:30 AM	E–M	206, Conv. Center	What Can YOU Build… (p. 117)
9:30–10:30 AM	M–H/I	125, Conv. Center	The Clean Energy Discovery Program (p. 115)
9:30–10:30 AM	E–H	205, Conv. Center	NASA: Inquiry with Microgravity (p. 117)
11:00 AM–12 Noon	E–M	206, Conv. Center	Thermal Insulators (p. 121)
11:00 AM–12 Noon	M–C	126, Conv. Center	Visualizing Motion: GPS, GIS, Probes, and Physics (p. 119)
11:00 AM–12 Noon	M–H	125, Conv. Center	Virtual Labs: Virtual Results *vs.* Actual Results? (p. 119)
11:00 AM–12 Noon	M–H	205, Conv. Center	LIGO Science Education Center: Teaching Science in STEM (p. 121)

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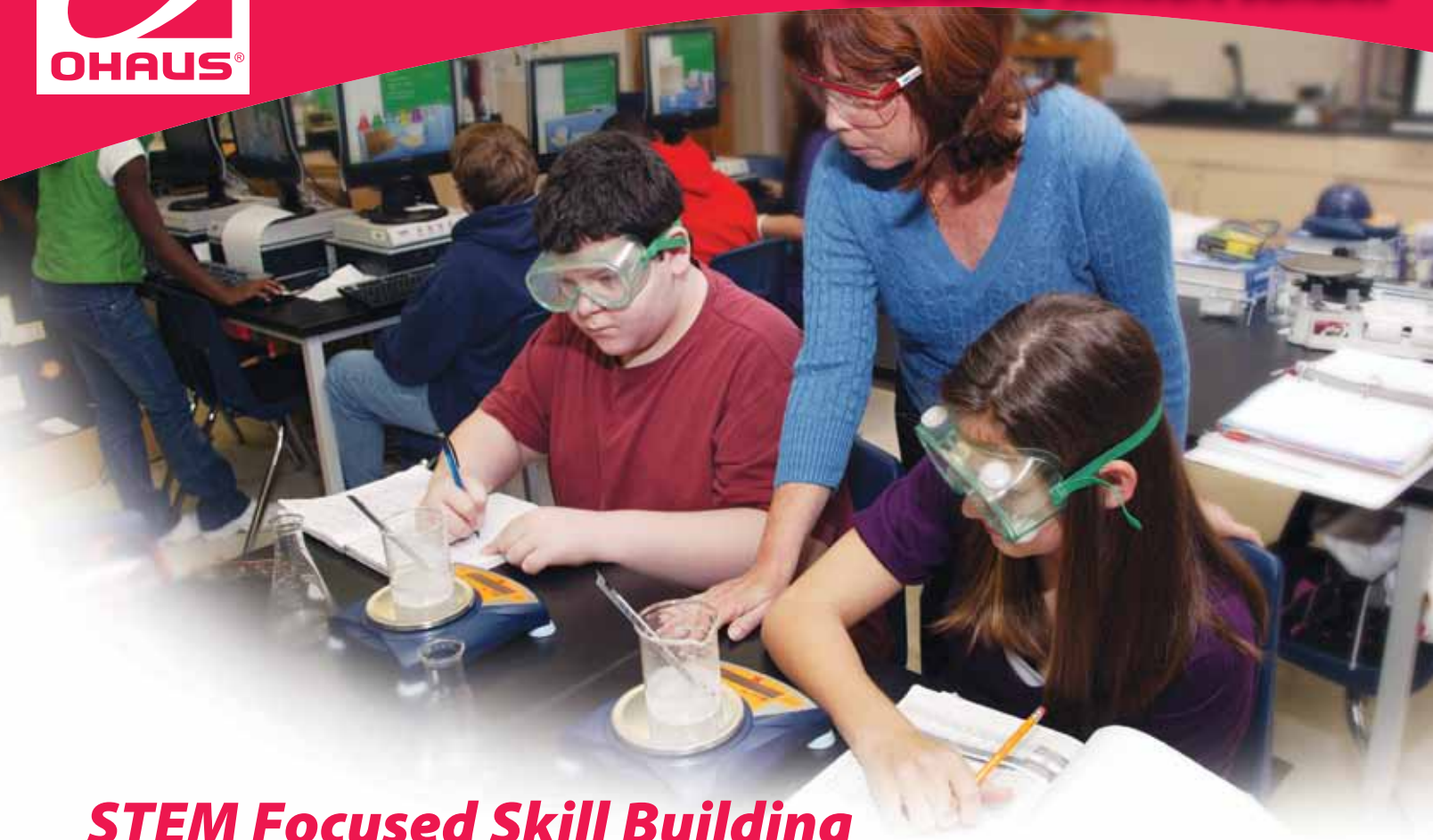

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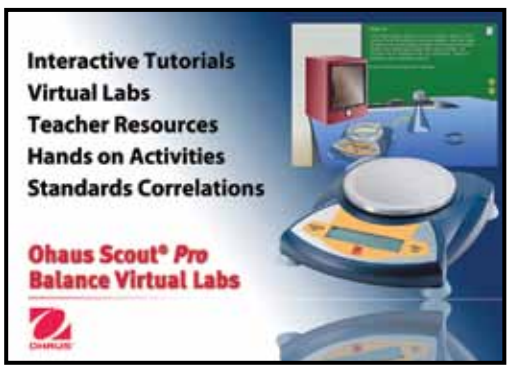

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