NSTA 2012 National Conference on Science Education

INDIANAPOLIS

2

Fri., March 30

At the Crossroads for Science Education

NSTA
National Science Teachers Association

Wherever your students learn science, they can use TI-Nspire™ technology.

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*See contest rules at the TI booth.

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Join **PASCO** for one of our **FREE hands-on workshops** and see how **SPARKscience**™ can help you create a 21st century, **inquiry-based science learning environment** for your school or classroom. PASCO offers workshops for everyone including **elementary**, **middle school** (featuring **Sally Ride Science**™) and **high school** science, including **AP®.**

Friday, March 30 - Room 140

8:00-9:30 - Equip Your iPad® for Science
10:00-11:30 - Investigating Mitochondrial Genetics
12:00-1:30 - Middle School Physical Science: Learning Newton's Laws of Motion Through Hands-on, Probeware-based Activities
2:00-3:30 - Enhancing Microscope Labs with Image Analysis & Data Collection
4:00-5:30 - Middle School Earth Science: Investigating Alternative Energy Sources Through Hands-on, Probeware-Based Activties

Friday, March 30 - Room 141

8:00-9:30 - Chemistry: Solution Concentration and Kinetics with a Colorimeter
10:00-11:30 - AP® Environmental Science: Modeling an Ecosystem
12:00-1:30 - Physics & Physical Science: Investigating Motion
2:00-3:30 - AP® Chemistry: Turn Past AP Test Questions into Guided-Inquiry Labs
4:00-5:30 - Earth Science Investigation: Modeling Ocean Circulation

Friday, March 30 - Room Sagamore 6

5:00-6:30 PM Just Physics Evening Event

Saturday, March 31 - Room 140

8:00-9:30 - AP® Physics: Momentum & Impulse
10:00-11:30 - SPARKvue® – A 21st Century Inquiry-Based Science Learning Environment

10th Annual evening of
"Just Physics"

Come for the food, fun, Physics, and Free T-shirt!

Friday, March 30
5:00 - 6:30 pm
Room Sagamore 6

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Booth#736

PASCO

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.

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*
www.nsta.org

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

—*Photo courtesy of Purdue University.*

Looking at the world through "bug eyes" proves attractive to young visitors to the Purdue Traveling Exhibit, What's Bugging Belva?, *at the Indiana State Fair.*

Friday, March 30

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Mission Statement

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

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

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

Friday, March 30

8:00–9:00 AM
Students' Science Notebooks: Implementing Writing Standards with Hands-On Science

8:30–11:30 AM
Short Course: Common Core Science Literacy Standards: Keeping Inquiry in the Science Classroom (By Ticket: SC-8)

9:30–10:00 AM
Formative Queries for the Biology Classroom

11:00 AM–12 Noon
The Great Diseases: A Collaborative Approach to Real-World Science in the Classroom

12:30–1:30 PM
Have Your Students Looking Forward to Opening Their Textbooks

1:30–5:30 PM
Short Course: Aligning Science Assessment Items to Content Standards (By Ticket: SC-11)

2:00–3:00 PM
Low-Tech but High-Effect Inquiry-based Science Lab Activities

3:30–4:30 PM
The SAT Subject Test in Biology—Not Just for College Admissions

5:00–6:00 PM
Engaging Science Instruction for Special Needs Students

Merging Inquiry, Creativity, and Innovation Through STEM

Friday, March 30

8:00–9:00 AM
Science on the Cheap: Teaching Science Activities Without Spending a Ton of Money

9:30–10:30 AM
Are You Remotely Interested?

12:30–1:30 PM
Cell Phones Uncovered

1:00–4:30 PM
Short Course: Building Physical Science Demonstration Models (By Ticket: SC-9)

2:00–3:00 PM
Fun with Flight

3:30–4:30 PM
How Pure Science Becomes Applied Science: Using STS to Understand the STEM Initiative

5:00–6:00 PM
Whodunit? (Forensic Science for Middle School Students)

Pathways to a Sustainable Planet

Friday, March 30

8:00–9:00 AM
Climate Models: Everything You Ever Wanted to Know, Ask, and Teach

9:30–10:30 AM
Featured Presentation: Cloud and Precipitation in a Future Climate: Why Isn't There an App for This Yet? (Speaker: Sonia Lasher-Trapp)

Lake St. Clair—Use or Abuse?

11:00 AM–12 Noon
Connecting Students to the Above- and Below-Ground Connection

12:30–1:30 PM
Water in the Valley: Watershed Monitoring for Children

The ULTIMATE Project Based Learning (PBL): Changing the World!

1:00–5:00 PM
Short Course: Using *WALL-E*, an Animated Film, as an Effective Classroom Educational Resource (By Ticket: SC-10)

2:00–3:00 PM
Can Venice Be Saved?

5:00–5:30 PM
Exploring the Boundaries of Earth Systems Education

Traveling New Instructional Roads Through Technology

Friday, March 30

8:00–9:30 AM
iPads and Mobile Apps in Science

8:00 AM–12 Noon
Short Course: Bringing Nanotechnology to the Classroom
(By Ticket: SC-6)

11:00 AM–12 Noon
The World of Google in Science

12:30–2:00 PM
Google Me This: How to Make Collaboration Work in a Wiki World

2:00–5:00 PM
Short Course: Using Technology to Develop a "Naturalistic" Approach in the Teaching of Science Concepts and Inquiry
(By Ticket: SC-12)

3:30–4:30 PM
Science 2.0: Putting Web 2.0 into the Science Classroom

5:00–6:00 PM
Online Just-in-Time Professional Development

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

Informal Science Day

Friday, March 30, 7:00 AM–5:00 PM
JW Grand Ballroom 5, JW Marriott

Packed with exciting informal science presentations and activities, Informal Science Day is intended to build awareness of the abundance of existing high-quality informal science education methods, resources, and opportunities available to enhance science teaching and learning. It is designed to offer a "town square" at which both informal and formal science educators can meet and interact to share best practices in informal science, learn about exciting collaborations happening among informal and formal science organizations, network with colleagues, and dialogue around ideas and innovations. Informal organizations represented include zoos, museums, media, after-school programs, university outreach, and others that provide and/or support out-of-school science education.

7:00–8:00 AM	Science in the Community Breakfast (Tickets Required: M-3) *Teaching Science Principles with "Artifactual" Stories and Engagement! A Unique Informal Science Educational Approach* Paula Gangopadhyay, The Henry Ford, Dearborn, Mich.
9:30–10:30 AM	Breakout Sessions
11:00 AM–12 Noon	Breakout Sessions
12:30–1:30 PM	Informal Science Day Brown Bag Lunch *Building Bridges Between In-School and Out-of-School STEM Learning* Dennis Schatz (moderator), Pacific Science Center, anda Ntional Science Foundation, Arlington, Va. David Hanych and Monya Ruffin, National Science Foundation, Arlington, Va.
2:00–5:00 PM	Informal Science Education Share-a-Thon

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.

Friday, March 30

8:00–9:00 AM

Daltonian Atoms in Five Discrepantly E(z) Steps: The (w)Hole Truth?

9:30–10:30 AM

SAFER Science: Laboratory Hazards You Must Deal With!

11:00 AM–12 Noon

Providing Feedback to Scaffold Student-directed Collaborations in Whole-Class Inquiry

Explain Your Thinking

12:30–1:30 PM

The Gourmet Lab

Picture-Perfect Science Lessons: Using Children's Books to Guide Inquiry, K–4

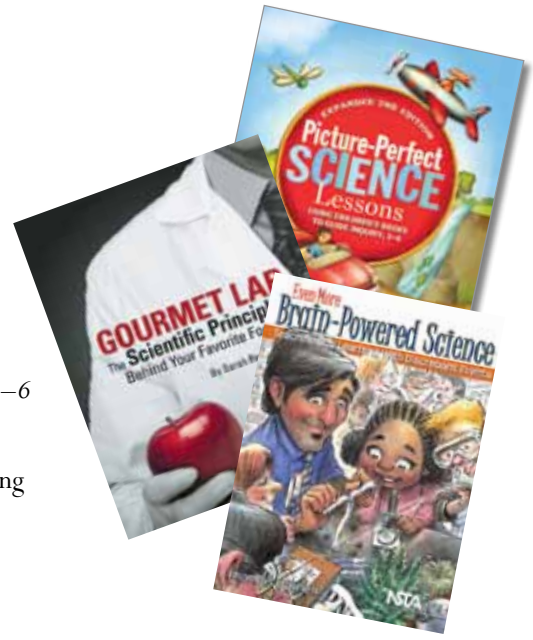
2:00–3:00 PM

Rise and Shine: A Practical Guide for the Beginning Science Teacher

Picture-Perfect Science Lessons, Using Children's Books to Guide Inquiry, Grades 3–6

3:30–5:00 PM

Linking NSTA Press Books—Connecting Content, Inquiry, Picture Books, and Formative Assessment



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.

CAROLINA®
www.carolina.com

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.

Save Time.

Sidestep Problems.

You'll get the benefit of personal experience as to what works—and what to avoid as you move forward.
Learn more now, and mark your calendar for all the workshops you want to attend at:
www.CarolinaCurriculum.com/Leadership

Carolina Curriculum LEADERSHIP SERIES

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SAT

SAT Subject Tests™ = Opportunity

SAT Subject Tests™ are just around the corner!

The SAT Subject Tests™ in Biology, Chemistry and Physics can help your students stand out on their college applications.

Come to booth #2450 to find out what's on the tests and how colleges use them. Plus, you can sign up to get your FREE copy of the *Teachers Guide to the SAT Subject Tests in Science*.

www.SATSubjectTests.org/teachers

Visit Booth #2450!

MATH | HISTORY | SCIENCE | LITERATURE | LANGUAGES

CollegeBoard

 12b-5117

7:00–8:00 AM Science in the Community Breakfast (Informal Science Day)

Teaching Science Principles with "Artifactual" Stories and Engagement! A Unique Informal Science Educational Approach (M-3)

(Tickets Required: $15) *JW Grand Ballroom 5, JW Marriott*

Paula Gangopadhyay *(paulag@thehenryford.org),* Chief Learning Officer, The Henry Ford, Dearborn, Mich.

Founded in 1929 by automotive pioneer Henry Ford, The Henry Ford boasts compelling artifacts related to iconic science and technology in its collection and exhibits. Using its massive American racing collection and in conjunction with the upcoming "Racing in America" exhibit, The Henry Ford has recently developed some paradigm-shifting online physics/science classroom resources called "Educator Digikits" and "ExhibitBuilder" for middle level and high school grades that can change the way science teachers teach and students learn. These resources offer an experiential learning experience in STEM education while supporting national standards and 21st-century skills. Join Paula Gangopadhyay, Chief Learning Officer at The Henry Ford, as she shares how her experience on the National Hot Rod Association (NHRA) Dragster racetrack triggered the development of these educational materials and how these resources can rev up student learning.

Paula Gangopadhyay is the Chief Learning Officer for The Henry Ford, which includes the Henry Ford Museum, Greenfield Village, Benson Ford Research Center, Ford Rouge Factory Tour, IMAX, and the Henry Ford Academy. She brings more than 17 years of experience in school reform and museum education sectors with education, policy, and business leaders to her position.

Paula is responsible for the leadership, strategic direction, and design and development of education at The Henry Ford, including student, educator, youth, family, and leadership programs, products, and experiences. She led the visioning of a new and dynamic education strategic plan at The Henry Ford, including conceptualization and development of many paradigm-shifting educational products.

The speaker is sponsored in part by DuPont.

Tickets, if still available, must be purchased at the Ticket Sales Counter in the NSTA Registration Area before 3:00 PM on Thursday.

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 143, 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

7:00–8:30 AM High School Breakfast

The Role and Uses of *A Framework for K–12 Science Education* in Teaching High School Science (M-4)
(Tickets Required: $40) *Santa Fe, Marriott Downtown*

Helen Quinn *(helen.quinn@stanford.edu),* Professor Emerita, Stanford University, Palo Alto, Calif.

In July, the National Research Council (NRC) released *A Framework for K–12 Science Education,* a conceptual framework that identifies the science all K–12 students should know. Considered a first step in the development of the Next Generation Science Standards, this framework is a useful tool available now for teaching science. Join Dr. Helen Quinn, a key architect in designing the framework, as she discusses how high school science teachers can begin to implement it in their classes, as well as the role the framework will play in the Next Generation Science Standards.

Helen Quinn is professor emerita of physics at Stanford Linear Accelerator Center where she chaired the department of Particle Physics and Astrophysics. Dr. Quinn is an internationally recognized theoretical physicist who holds both the Dirac Medal (from Italy) and the Klein Medal (from Sweden) for her contributions to the field. She was president of the American Physical Society through 2005, as well as an elected member of the American Academy of Arts and Sciences, the National Academy of Sciences, and the American Philosophical Society.

In addition to her scholarship in physics, Dr. Quinn has long been involved in science education and in the continuing education of science teachers. She was an active contributor to the California State Science Standards development process, and she is chair of The National Academies' Board on Science Education (BOSE). She served as a member of the BOSE study that resulted in the report "Taking Science to School" and was a key contributor in the development of A New Framework for K–12 Science Education, *which has national implications for the Next Generation Science Standards..*

Tickets, if still available, must be purchased at the Ticket Sales Counter in the NSTA Registration Area before 3:00 PM on Thursday.

7:00–9:00 AM Meeting

NMLSTA Board Meeting (Part I)
(By Invitation Only) *Atlanta, Marriott Downtown*

7:00–9:00 AM Breakfasts

APAST Breakfast
(By Invitation Only) *Indiana Blrm. C/D, Marriott Downtown*

AMSE Alice J. Moses Breakfast
(By Invitation Only) *Grand Ballroom 1, Westin*
Please visit *www.amsek16.org* for further information.

7:00–10:00 AM Meeting

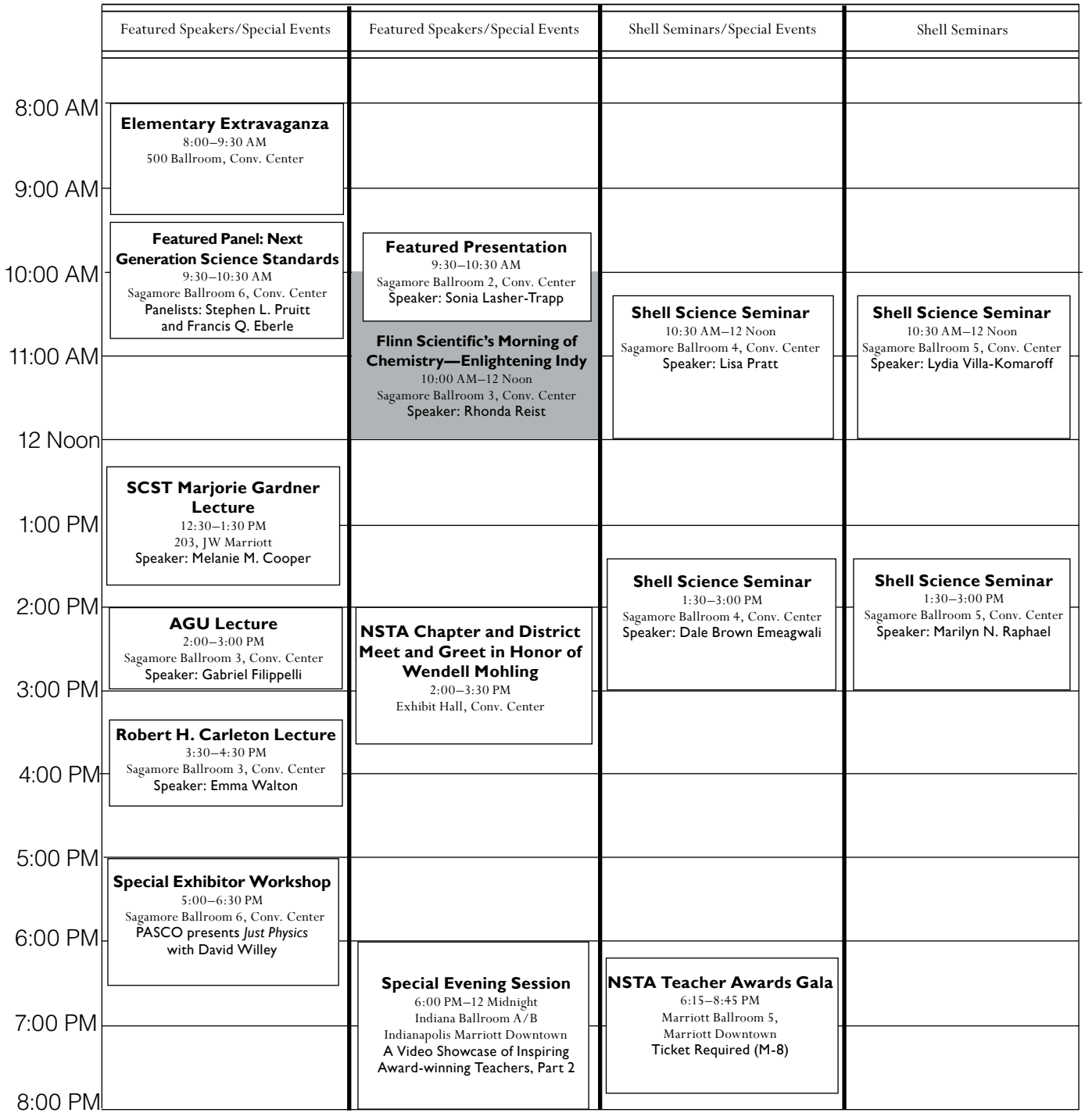
ASMC Networking Forum
Indiana Ballroom A/B, Marriott Downtown
Join your Next Step friends for breakfast and engaging dialogue. Bring best practices and experiences to share… and take away inspiration, ideas, and encouragement! $20 at the door; RSVP to *emily@handsonsciencepartnership.com.* Visit *www.nextstepsinscience.org* for more information.

8:00–8:30 AM Presentations

SESSION 1
Using Interview Exams as an Evaluation Tool (Gen)
(High School–College) *208, JW Marriott*
Mark D. Prochaska *(procham@culver.org),* Culver Academies, Culver, Ind.
Interview exams provide a flexible method for evaluating students' understanding of concepts. They allow instructors to diagnose misconceptions and effectively revise their teaching methods.

SESSION 2
Climate, Environment, and Global Literacies for the 21st Century (Gen)
(General) *Chamber, Westin*
Teddie Phillipson-Mower *(t0phil01@louisville.edu),* University of Louisville, Ky.
Join me for an interactive session highlighting our Climate Change Education White Paper that argues for pedagogies that make global issues relevant in the local classroom.

Friday, March 30



8:00–8:45 AM Exhibitor Workshop

NASA's Museum in a Box How-To for Elementary Teachers (Gen)

(Grades K–4) *142, Convention Center*

Sponsor: NASA

April A. Lanotte, Einstein Fellow, NASA Headquarters, Washington, D.C.

NASA Aeronautics' "Museum in a Box" curriculum teaches physical science concepts using aeronautics as the central theme. Come participate in one of the activities from start to finish, learning skills and hints for a successful and fun science activity for your classroom. Lesson plans and curriculum materials included.

8:00–9:00 AM Presentations

SESSION 1

Improve Learning Using Writing: Go Beyond Note-taking and Basic Lab Reports (Gen)

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

Kimberly A. Groshong *(gforcegazette@yahoo.com),* St. Peter's High School, Mansfield, Ohio

Using creative and innovative writing strategies challenges students' understanding, unites science and other subjects, makes science interesting, and encourages students to connect to the material.

SESSION 2

STEM in the Science Classroom (Gen)

(Middle Level–High School) *113, Convention Center*

David A. Young *(dayoung7@gmail.com),* Fayetteville High School, Fayetteville, Ark.

Science will be joining Technology, Engineering, and Mathematics on equal footing as we move to learning communities based on STEM. Come learn about four STEM investigations.

SESSION 3 (two presentations)

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

Teaching Engineering Design: A Scenario-based Design Project Approach (Phys)

Vincent J. Bonina, Johns Hopkins University Center for Talented Youth, Baltimore, Md.

Learn how to develop and teach scenario-based engineering design projects with bridges and boats using real-world scenarios simulated in the classroom.

Physics, Technology, and Toys—What a Combination (Phys)

Daniel J. Nieman *(dnieman@ursulineacademy.org),* Ursuline Academy, Cincinnati, Ohio

Learn how to integrate technology with many common toys to illustrate physics principles.

SESSION 4

Come Float with Me! (Phys)

(General) *126, Convention Center*

Nathaniel C. Haeck *(nch5204@fc.dekalb.k12.ga.us),* Fernbank Science Center, Atlanta, Ga.

Roger Haeck and **Dan Wray,** Lakeview Middle School, Warsaw, Ind.

Ever been weightless? We have! Come hear how an experience with NASA's "Weightless Wonder" aircraft and science can expand your classroom.

SESSION 5

Problem-Based Learning (PBL) Forensics Unit (Chem)

(High School) *127, Convention Center*

Linda Dearth-Monroe *(lmonroe@warren.k12.in.us),* **Kylee List** *(klist@warren.k12.in.us),* **Trent Bodine** *(tbodine@warren.k12.in.us),* **Sherri Nelson** *(snelson@warren.k12.in.us),* and **Georgia Watson** *(gwatson@warren.k12.in.us),* Warren Central High School, Indianapolis, Ind.

PBL is focused experiential learning organized around the investigation and resolution of messy real-world problems. Designed by high school chemistry teachers, this forensics unit tests samples from a crime scene and has students identify and present their findings in "court." Students are engaged and pulled into the problem by making it relevant. . .and they have personal investment in the experimental outcome.

SESSION 6

NASA: Teaching from Space (Phys)

(Elementary–High School) *207, Convention Center*

Cynthia McArthur *(cynthia.l.mcarthur@nasa.gov),* NASA Johnson Space Center, Houston, Tex.

Identify unique education flight project opportunities and resources for teachers and students. Learn how you can develop experiments for drop towers, reduced gravity aircraft, weather balloons, and even the International Space Station. Get involved! Get inspired!

SESSION 7 (two presentations)

(Elementary–Middle Level) *233, Convention Center*

***MoonWorld*: Lunar Geology Field Work in a Virtual World (Earth)**

Debbie Denise Reese *(debbie@cet.edu),* Wheeling Jesuit University, Wheeling, W.Va.

Learn how teams of four players ages 9 and up apply lunar geology principles to conduct virtual field work on the Moon's surface.

Bring the International Space Station into the Classroom: Enhancing Education via Collaboration (Earth)

Stephan Turnipseed, LEGO Education, Pittsburg, Kans.

Learn how a public/private effort is enhancing STEM education by providing "out of this world" hands-on/minds-on learning—taking kids to outer space without leaving their desks.

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SESSION 8

The Use of Writing Frameworks in the Inquiry Science Classroom (Gen)

(Elementary–Middle Level) *240, Convention Center*

Danae' E. Wirth *(dwirth@elkhart.k12.in.us),* Elkhart Community Schools/ETHOS, Inc., Elkhart, Ind.

Susan E. Disch, ETHOS, Inc., Elkhart, Ind.

Join us for a discussion of writing frameworks used to guide communication and deepen understanding in the inquiry-based science classroom. Skeletal frameworks to scaffold writing tasks provided.

SESSION 9

Assessing Gains Made During Middle School Life Science Professional Development (Bio)

(General) *243, Convention Center*

Gerhard Sonnert *(gsonnert@cfa.harvard.edu),* **Philip M. Sadler** *(psadler@cfa.harvard.edu),* and **Eliza N. Garfield** *(egarfield@cfa.harvard.edu),* Harvard-Smithsonian Center for Astrophysics, Cambridge, Mass.

Join us as we present results of a national study that assesses the gains made by teachers participating in professional development courses in middle school life science.

SESSION 10

Using Improv Comedy to Stimulate Learning (Bio)

(High School) *244, Convention Center*

Dan P. Downs *(naddna@gmail.com),* Winter Park High School, Winter Park, Fla.

Learn how to use improv comedy techniques to stimulate student learning and memory while having fun at the same time.

SESSION 11

NSELA Session: Tools for Science Leaders (Gen)

(General) *201, JW Marriott*

Susan Koba *(skoba@cox.net),* NSELA President, Omaha, Neb.

Janey Kaufmann *(janeykaufmann@msn.com),* NSELA Retiring President, Scottsdale, Ariz.

Elizabeth Allan *(eallan@uco.edu),* University of Central Oklahoma, Edmond

Cari F. Herrmann Abell *(cabell@aaas.org),* AAAS, Washington, D.C.

Douglas Llewellyn *(dllewellyn@sjfc.edu),* St. John Fisher College, Rochester, N.Y.

The various tools and strategies shared with science leaders in this session support them in their work to enhance teaching and learning in their context.

SESSION 12 (three presentations)

(College) *203, JW Marriott*

SCST Session: Nanotechnology Workshop: An Interdisciplinary Teaching Tool, Part I (Gen)

Deb Newberry *(deb.newberry@dctc.edu),* Dakota Country Technical College, Rosemount, Minn.

Brian R. Shmaefsky *(brian.r.shmaefsky@lonestar.edu),* SCST President, and Lone Star College–Kingwood, Tex.

Learn how nanotechnology can be used across the college science curricula in different disciplines.

SCST Session: Nanotechnology Workshop: An Interdisciplinary Teaching Tool, Part II (Gen)

Deb Newberry *(deb.newberry@dctc.edu),* Dakota Country Technical College, Rosemount, Minn.

Brian R. Shmaefsky *(brian.r.shmaefsky@lonestar.edu),* SCST President, and Lone Star College–Kingwood, Tex.

Learn how nanotechnology can be used across the college science curricula in different disciplines.

SCST Session: Nanotechnology Workshop: An Interdisciplinary Teaching Tool, Part III (Gen)

Deb Newberry *(deb.newberry@dctc.edu),* Dakota Country Technical College, Rosemount, Minn.

Brian R. Shmaefsky *(brian.r.shmaefsky@lonestar.edu),* SCST President, and Lone Star College–Kingwood, Tex.

Learn how nanotechnology can be used across the college science curricula in different disciplines.

SESSION 13

Better Assessment Through Four Essential Questions (Gen)

(General) *204/205, JW Marriott*

Arthur Eisenkraft *(arthur.eisenkraft@umb.edu),* 2000–2001 NSTA President, and University of Massachusetts Boston

Emphasizing four essential questions can bring our assessments more in line with what we value rather than what is easiest to test. When considering a science topic, how can we help our students answer: What does it mean? How do we know? Why do we believe? Why should I care?

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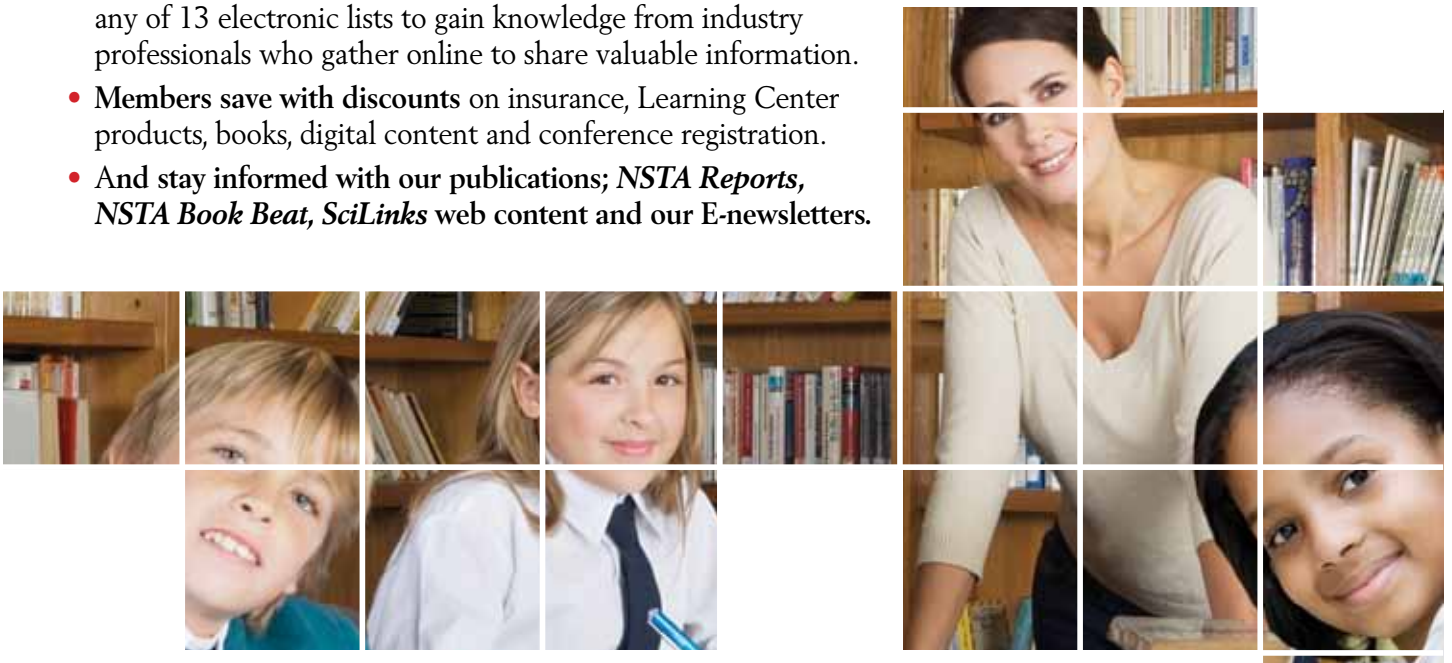

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SESSION 14

NARST Session: An Investigation of Different Models of Integrating Engineering into Science Classrooms (Gen)

(Elementary–High School) *206, JW Marriott*

Gillian H. Roehrig *(roehr013@umn.edu),* **Tamara Moore** *(tamara@umn.edu),* **Kristina Tank** *(kmtank@umn.edu),* **Hui-Hui Wang** *(wangx773@umn.edu),* and **Selcen Guzey** *(kendi003@umn.edu),* University of Minnesota, St. Paul

Presider: Tamara Moore

Join us as we explore the current trend, at both national and state levels, to integrate engineering standards into K–12 science standards.

SESSION 15

What Do Engineers Really Do? How Can I Make It Work in My Classroom? (Gen)

(General) *302/303, JW Marriott*

Ann P. McMahon *(annpmcmahon@gmail.com),* Ann P. McMahon, LLC, St. Louis, Mo.

Patrick C. Gibbons *(pcg@wustl.edu),* Washington University in St. Louis, Mo.

Implementing engineering in the K–12 classroom requires processes and practices different from science teaching processes. Experience how to translate engineering processes into classroom best practices.

SESSION 16

Grant Writing: How to Get What You Need (Gen)

(General) *314, JW Marriott*

JoEllen Schuleman *(missschuleman@yahoo.com),* P.S. 134M Henrietta Szold, New York, N.Y.

Budget cuts, lack of supplies, and the bad economy are just a few of the reasons teachers are trying to do more with less. Learn how grant writing might help you get what you need.

SESSION 17

SYM-1 Follow-Up Session: Using Real Data to Teach Ocean Acidification and Coral Bleaching (Bio)

(Middle Level–High School) *JW Grand Ballroom 2, JW Marriott*

Paulo Maurin *(paulo.maurin@noaa.gov),* NOAA, Silver Spring, Md.

Walk away with an overview of NOAA's Data-in-the-Classroom NODE Module in Ocean Acidification. This module provides a set of scalable lesson plans using real data along with interactive multimedia.

SESSION 18

Assessing Outcomes of Investigations in Ecology and Animal Behavior (Bio)

(High School–College) *JW Grand Ballroom 4, JW Marriott*

Colleen M. McLinn *(mclinn@cornell.edu),* Cornell University, Ithaca, N.Y.

Nancy M. Trautmann *(nmt2@cornell.edu),* Cornell Lab of Ornithology, Ithaca, N.Y.

Explore a provided rubric and other options for assessing inquiry outcomes, and join us as we share our experiences assessing classroom research using online ecology and animal behavior data.

SESSION 19

Informal Science Day Session: Citizen Science and Science Literacy: Evaluating the Connection (Gen)

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

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

Many citizen science projects state they will increase science literacy, although measuring this can be elusive in volunteer, free-choice settings. Join me as I share research.

SESSION 20

Informal Science Day Session: Integrating Student-led Inquiry into Science Courses (Gen)

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

Alix Cotumaccio and **Christina Pease** *(cpease@amnh.org),* American Museum of Natural History, New York, N.Y.

Student-led inquiry activities provide valuable learning experiences for both the audience and presenter. Join us as we present examples and discuss the educational value of this strategy.

SESSION 21

Informal Science Day Session: Calendar in the Sky: Engaging Latinos in NASA Science and Maya Astronomy (Earth)

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

Laura Huerta Migus, Association of Science-Technology Centers, Washington, D.C.

Bryan J. Mendez *(bmendez@berkeley.edu),* University of California, Berkeley

Discover resources and professional development opportunities that connect NASA science with Maya culture as a way to engage Latinos in informal learning.

SESSION 22

NSTA Press Session: Daltonian Atoms in Five Discrepantly E(z) Steps: The (w)Hole Truth? (Gen)

(Middle Level–College) *JW Grand Ballroom 7, JW Marriott*

Thomas P. O'Brien *(tobrien@binghamton.edu),* Binghamton University, Binghamton, N.Y.

Experience the power of a "brain-powered science" sequence of discrepant events to Engage * Explore * Explain * Elaborate * Evaluate seemingly outrageous scientific ideas.

SESSION 23

Defeating Misconceptions in Physics (Phys)

(High School–College) *White River Ballroom H, JW Marriott*

Douglas Johnson *(djohnson44@ameritech.net),* West High School, Madison, Wis.

Don't just argue against misconceptions. Learn some tools that students can use to convince themselves that the common misconceptions they firmly believe are really wrong.

SESSION 24

Podcasting in the Science Classroom (Gen)

(General) *Indiana Ballroom G, Marriott Downtown*

Robert T. Jefferson, Jr. *(mrrtj@yahoo.com),* Tantasqua Regional Senior High School, Fiskdale, Mass.

Add a Wow! factor to your classroom with podcasting. Learn how to use podcasting to create a learning environment that strongly encourages and facilitates student learning.

SESSION 25

Technology Tools in the Younger Years (Gen)

(General) *Marriott Ballroom 1, Marriott Downtown*

Jennifer M. Mysona, Miami University, Middletown, Ohio

Receive a demonstration of multiple technology tools that can be integrated into any classroom with ideas for incorporation focusing on early childhood and middle childhood education. Walk away with "getting started" directions.

SESSION 26

The STELLAR Project: Science Inquiry for ELLs (Gen)

(General) *Marriott Ballroom 3, Marriott Downtown*

Jason Aleman *(ja41@txstate.edu),* **Jesse Gainer** *(jg51@txstate.edu),* and **Sarah W. Nelson** *(swnelson@txstate.edu),* Texas State University, San Marcos

STELLAR stands for Science and Technology for English Language Learners Achieving Results. Join us for an interactive session highlighting promising practices, strategies, and resources from a professional development initiative to improve science achievement for English language learners.

SESSION 27

Teaching and Learning by Guided Inquiry: What Do Teachers Say? (Gen)

(General) *Marriott Ballroom 7, Marriott Downtown*

Joseph J. Bellina, Jr., The Northern Indiana Science, Mathematics and Engineering Collaborative (NISMEC), South Bend

Karen A. Morris *(karen.morris.3@nd.edu),* University of Notre Dame, Ind.

Review findings from attitude surveys by inservice teachers who are using kit-based guided inquiry instructional materials and by preservice teachers who are learning science with guided inquiry.

SESSION 28

Meeting the Diverse Needs of Young Parents and Students in Alternative School Settings (Gen)

(General) *Marriott Ballroom 10, Marriott Downtown*

Diane D. Walker *(ddwalker@nmhu.edu),* New Mexico Highlands University, Rio Rancho

Young parents and other students in alternative school settings need a science education that meets their diverse needs and provides them with opportunities for practicing sustainability.

SESSION 29

Motivation Matters: Designing Science Learning Environments to Ignite, Excite, and Engage Students (Gen)

(General) *Michigan/Texas, Marriott Downtown*

Jodi J. Haney *(jhaney3@mac.com),* Bowling Green State University, Bowling Green, Ohio

Discover the newly developed and tested C7 Model to assist you in designing a motivating science learning environment to ignite, excite, and engage students!

SESSION 30

Study Effects of Environmental Agents on Human Health via Zebra Fish, Earthworms, and Fathead Minnows (Env)

(Middle Level–College) *Capitol II, Westin*

David Petering *(petering@csd.uwm.edu),* **Craig Berg** *(caberg@uwm.edu),* **Henry Tomasiewicz** *(henryt@uwm.edu),* **Dan Weber,** and **Renee Hesselbach** *(hesselba@uwm.edu),* University of Wisconsin–Milwaukee

Walk away with three classroom modules for studying the toxic effects of environmental agents on embryological and behavioral health of zebra fish, earthworms, and fathead minnows.

SESSION 31

Teaching the Seasons with NOAA and NASA Data (Earth)

(General) *Capitol III, Westin*

Ted Willard *(twillard@nsta.org),* Program Director, COMPASS, NSTA, Arlington, Va.

Come see web tools developed by Project 2061 that let middle school students analyze data from NOAA and NASA to learn about weather and climate.

SESSION 32 (two presentations)

(Middle Level–High School/Informal Ed.) *Caucus, Westin*

Support Scientific Inquiry with Authentic Field Investigations (Env)

Christine Kola, Mathematics, Science Research, and Technology High School, Bronx, N.Y.

Judith Hutton *(jhutton@nybg.org),* New York Botanical Garden, Bronx

Discover how urban students use the scientific method and the natural setting of their environment to design and complete long-term field science investigations.

Investigating the Invaders and Other Inquiries for the Outdoor Classroom (Env)

Ella F. Bowling *(ella.bowling@mason.kyschools.us),* Mason County Middle School, Maysville, Ky.

Come learn about inquiry-based learning that can be done in almost any setting so long as you have access to the outdoors.

SESSION 33

AMS Professional Development: A Geoscience Foundation for K–12 Educators (Earth)

(General) *Congress I/II, Westin*

James A. Brey, American Meteorological Society, Washington, D.C.

Want to learn more about the geosciences? Be more confident in the classroom? Now's your chance! Check out the American Meteorological Society's professional development courses.

SESSION 34

Construct Representations to Understand the Moon (Earth)

(Middle Level–High School) *Grand Ballroom 2, Westin*

Mark J. Volkmann *(volkmannmj@missouri.edu),* University of Missouri, Columbia

Matthew J. Volkmann *(mvolkmann252005@hotmail.com),* University of Iowa, Iowa City

Construct new representations and learn how to sequence those representations to scaffold learning about the phases of the Moon.

8:00–9:00 AM Workshops

Students' Science Notebooks: Implementing Writing Standards with Hands-On Science (Gen)
(Elementary–Middle Level) *121, Convention Center*
Cynthia A. Bucher *(cbucher@elkhart.k12.in.us)* and **Dana B. Knapp** *(dknapp@elkhart.k12.in.us),* Elkhart Community Schools/ETHOS, Inc., Elkhart, Ind.
Malina Kleepbua *(mkleepbua@elkhart.k12.in.us),* Osolo Elementary School, Elkhart, Ind.
Douglas Hunnings *(dhunnings@elkhart.k12.in.us),* Riverview Elementary School, Elkhart, Ind.
Join us as we share ways we have used successful writing strategies in teaching science. We'll also present multiple student writing samples and strategies.

Science on the Cheap: Teaching Science Activities Without Spending a Ton of Money (Gen)
(Preschool–Elementary) *122, Convention Center*
Kristen Poindexter *(kpoindexter@msdwt.k12.in.us),* Spring Mill Elementary School, Indianapolis, Ind.
Steven C. Smith *(mrsmith@purdue.edu),* Purdue University, West Lafayette, Ind.
Amy J. Smith *(smitha@frankfort.k12.in.us),* Blue Ridge Primary School, Frankfort, Ind.
Join us and perform various inquiry activities that can be done on a tight budget!

Climate Models: Everything You Ever Wanted to Know, Ask, and Teach (Earth)
(General) *123, Convention Center*
Teresa A. Eastburn *(eastburn@ucar.edu),* NCAR/UCAR, Boulder, Colo.
Randy Russell and **Becca Hatheway** *(hatheway@ucar.edu),* University Corporation for Atmospheric Research, Boulder, Colo.
What is a climate model? Do they all agree on warming global temperatures and rising sea levels? Join staff from the National Center for Atmospheric Research (NCAR) for a fun and informative session packed with hands-on activities, easy-to-master game simulations, and exceptional content that addresses everything you ever wanted to know about past, present, and future climate models.

NSTA Avenue Session: Models in the Classroom: Making Meaning Come Alive for Students Through the Use of Models (Gen)
(Elementary–High School) *124, Convention Center*
Leisa M. Clark, Director, e-Learning Production, NSTA, Arlington, Va.
Linda K. Peterson *(lkpeterson@fcps.edu),* Fairfax County Public Schools, Fairfax, Va.
Inquiry-based learning through the use of models helps students develop a deeper understanding of science content and the role of models in their own learning.

The Time for Inquiry Is Now! (Gen)
(Middle Level–High School) *128, Convention Center*
Gregory B. Dodd, Kanawha County Schools, Charleston, W.Va.
Join me for a hands-on inquiry activity using probes to discover the properties of ingredients in some common beverages.

Connecting Gene Expression and Sustainability (Bio)
(High School) *204, Convention Center*
Maia Willcox *(mwillcox@berkeley.edu)* and **Barbara Nagle** *(bnagle@berkeley.edu),* Lawrence Hall of Science, University of California, Berkeley
Learn how to use standards-based hands-on activities to teach gene expression and how it relates to the use of genetically modified organisms to address sustainability issues.

Shock Your Students (Phys)
(High School) *205, Convention Center*
Brian P. Wright, Olympia High School, Olympia, Wash.
What can you do with bubble gum, a flashlight, and wire? Break out of prison! Join me for this experiential, inquiry-based lesson pertaining to electromagnetism.

The Study of Rare Diseases: A New Approach to Teaching Scientific Inquiry in Middle School (Bio)
(Middle Level) *208, Convention Center*
Bruce Fuchs, National Institutes of Health, Bethesda, Md.
Experience inquiry-based activities that use the study of rare diseases to engage middle school students in heredity and scientific inquiry.

Changes in Earth and Sky: Weather Adages for a Sustainable Planet **(Env)**
(Elementary–Middle Level) *234, Convention Center*
Tina J. Cartwright *(tina.cartwright@marshall.edu),* Marshall University, Huntington, W.Va.
Katie McDilda *(kmcdilda@wvstate.edu),* West Virginia State University, Institute
Red skies at night, teacher's delight; Red skies in morning, teachers take warning! Through investigation of proverbs, climate ideas related to sustainability will be explored.

Tie Science and Technology Together: Print Plastic 3-D Objects **(Chem)**
(Middle Level–College) *236, Convention Center*
Joe Muskin *(jmuskin@illinois.edu),* University of Illinois, Urbana
Invigorate your classroom with an activity your students will never forget. Learn how to use a photoactive polymer to easily create a device to "print" 3-D plastic objects in your classroom.

Inquiry! Now We're Really Cookin' **(Bio)**
(Middle Level–High School) *237, Convention Center*
Selina L. Bartels *(sbartels@hawk.iit.edu),* **Judith S. Lederman** *(ledermanj@iit.edu),* and **Norman G. Lederman** *(ledermann@iit.edu),* Illinois Institute of Technology, Chicago
Daniel King *(dking@pcsedu.org),* Perspectives/IIT Math & Science Academy, Chicago, Ill.
Learn how to kick up "cookbook" life science labs to open-ended inquiry. Walk away with rubrics, lab guides, culminating projects, timelines, and other ideas.

Charging Up Your Curriculum! Solar, Wind, and Biofuels: Possible Solutions to Our Energy Crisis (Gen)

(Elementary–Middle Level) *238, Convention Center*

Susan Bastian *(toledonative@gmail.com),* St. Joseph School, Sylvania, Ohio

Theresa Parades *(tparedes01@yahoo.com),* The University of Toledo/LEADERS/Woodward High School, Toledo, Ohio

Jamie Youssef *(mamie325@gmail.com),* Harvard Elementary School, Toledo, Ohio

Presider: Janet L. Struble *(janet.struble@utoledo.edu),* The University of Toledo, Ohio

Learn about a teacher-created, classroom-tested curriculum developed by teacher leaders in the Leadership for Educators: Academy for Driving Economic Revitalization in Science (LEADERS) program at The University of Toledo. Engage in project-based science focused on solar, wind, and biofuel energies.

MoonKAM (Moon Knowledge Acquired by Middle School Students): Exploring Lunar Images (Earth)

(Middle Level) *239, Convention Center*

Leesa Hubbard *(leesa@sallyridescience.com),* Sally Ride Science, Lebanon, Tenn.

Julie Miller *(jmillerirc@olatheschools.com),* Olathe (Kans.) Public Schools

Learn about the exciting Gravity Recovery and Interior Laboratory, or GRAIL, mission to our Moon, how students can take pictures with MoonKAM cameras, and what imagery of the lunar surface can teach us about the Moon's history, composition, and role in our solar system. Try some hands-on lunar science activities. Participants are encouraged to bring their laptop or iPad to this session.

Teaching Middle School Students Data Analysis (Gen)

(Middle Level) *241, Convention Center*

Jack Shoaf *(shoafjl@hotmail.com),* Indianapolis (Ind.) Public Schools

Learn skills, techniques, and lesson ideas that promote students' understanding of data and the different ways to depict and break down information.

Building an Electrophoresis Chamber (Bio)

(Middle Level–High School) *245, Convention Center*

Emily K. Getty *(egetty@ivytech.edu),* Ivy Tech Community College, Kokomo, Ind.

Marla W. Jones *(scieddr@gmail.com),* Science Education Consultant, Kokomo, Ind.

Learn the principles of electrophoresis, how to run your own gels, and receive instructions on building your own chamber out of inexpensive and readily available materials. Chambers will be awarded as door prizes.

Coaching: Knowledge That Works for Science Education Leadership— Strategies for Checking for Understanding (Gen)

(General) *101, JW Marriott*

Tom Peters *(tpeters@clemson.edu),* South Carolina's Coalition for Mathematics & Science, Clemson, S.C.

Dorothy Earle *(dearle@greenville.k12.sc.us),* S²TEM Centers SC, Greenville, S.C.

Betty W. Hadden *(haddenb@upstatesc.org),* S²TEM Centers SC, Simpsonville, S.C.

Explore strategies that research suggests can dramatically increase student learning and discover how coaching supports the use of formative assessment.

ASTE Session: Five Keys to Facilitating Classroom Discourse That Improves Student Achievement (Gen)

(General) *202, JW Marriott*

Jeff C. Marshall *(marsha9@clemson.edu),* Clemson University, Clemson, S.C.

Learn to create rich, rigorous classroom discourse that facilitates improved student achievement. Key research findings will be coupled with practical usage strategies for inquiry instruction.

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PDI **BSCS Pathway Session: The Science of Climate Change and Your Biology Class (Gen)**
(General) 305/306, JW Marriott
Betty Stennett *(bstennett@bscs.org),* BSCS, Colorado Springs, Colo.
Discover an innovative online module for students to explore the carbon cycle and the science of Earth's climate.

Informal Science Day Session: Dark Skies Rangers: Immersive Learning Experiences in Energy Conservation While Preserving Dark Skies (Env)
(General) JW Grand Ballroom 5/Group 4, JW Marriott
Constance E. Walker *(cwalker@noao.edu),* **Stephen M. Pompea** *(spompea@noao.edu),* and **Robert T. Sparks** *(rsparks@noao.edu),* National Optical Astronomy Observatory, Tucson, Ariz.
Learn measures to conserve energy while preserving dark skies through standards-based, immersive activities illustrating proper lighting, effects on wildlife, measuring night sky brightness, and more.

PDI **BEST Pathway Session: The Science of Energy (Gen)**
(Elementary–High School) White River Blrm. B, JW Marriott
Caryn Turrel *(cturrel@need.org),* The NEED Project, Manassas, Va.
Confidently teach important science concepts with center-based hands-on activities that investigate forms of energy (motion, sound, thermal, radiant, electrical, and chemical) and the energy transformations between them.

PDI **PSTEM Pathway Session: Cognitive Science Learning Principles in Action: Earth Science Content as the Context for the Enhancements (Earth)**
(General) White River Ballroom C, JW Marriott
Bates Mandel, The 21st Century Partnership for STEM Education, Conshohocken, Pa.
Come experience our best activities drawn from our three-day content workshops for teachers that are designed to deepen understanding of Earth science.

DuPont Presents—The Science of Food Safety (Gen)
(General) Colorado, Marriott Downtown
Michael Clark, Greenwood School District, Millerstown, Pa.
Presider: Peggy Vavalla, DuPont, Wilmington, Del.
Explore food safety issues such as food-borne illness, salmonella poisoning, and chemical additives/packaging to prevent microbial growth, slow oxidation of fresh fruit, and nutrient content.

Sock It to Me: Hydrophilic and Hydrophobic Materials (Gen)
(Elementary–High School) Marriott Blrm. 9, Marriott Downtown
Ed Escudero *(escudero_e@summitcds.org),* Summit Country Day School, Cincinnati, Ohio
Ultimax® socks, a specialty brand of athletic socks, advertise the presence of hydrophilic and hydrophobic fibers. Use the socks as an entry point to a polymer unit.

Facilitating Early Childhood Education with Project Learning Tree (Env)
(General) Capitol I, Westin
Jaclyn Stallard and **Al Stenstrup** *(astenstrup@forestfoundation.org),* Project Learning Tree, Washington, D.C.
Donna Rogler *(plt@dnr.in.gov),* Indiana Div. of Forestry, Indianapolis
Learn about and experience effective hands-on activities to introduce science concepts to young children using Project Learning Tree's new early childhood curriculum. Take home PLT's *Environmental Experiences for Early Childhood* activity guide and accompanying music CD.

Sliding and Colliding: Proving the Theory (Earth)
(Middle Level–High School) Grand Ballroom 3, Westin
Brandon M. Gallenstein *(brandon.gallenstein@ttu.edu),* Texas Tech University, Lubbock
Derive the modern theory of plate tectonics through a series of activities using manipulatives and applying historical data as evidence.

What's Up? Classroom Activities from the Association of Astronomy Educators, Session I: Sun, Earth, and Planets (Earth)
(General) Grand Ballroom 4, Westin
Martha Wawro *(martha.wawro@nasa.gov)* and **Wendy M. Van Norden** *(wendy.m.vannorden@nasa.gov),* NASA Goddard Space Flight Center, Greenbelt, Md.
Jake Noel-Storr *(jake@cis.rit.edu),* Rochester Institute of Technology, Rochester, N.Y.
Presider: Jake Noel-Storr
Led by master astronomy teachers from the Association of Astronomy Educators (AAE), join us for classroom-ready hands-on astronomy activities that really work.

8:00–9:00 AM Exhibitor Workshops

Engineering the Future: A Practical Approach to STEM for High School Students (Gen)
(Grades 9–12) *132, Convention Center*
Sponsor: It's About Time
Lee Pulis, Museum of Science, Boston, Mass.
STEM is not a buzzword, it's a real need, and Engineering the Future is a real answer. See how the Museum of Science, Boston has packaged a project-based solution that makes implementing STEM as easy as 1, 2, 3, 4. Learn how Engineering the Future's four practical projects make real-world connections, giving students an opportunity to see how science, technology, engineering, and mathematics are part of their everyday world.

Indiana Python and the Temple of Density (Chem)
(Grades 9–12) *135, Convention Center*
Sponsor: Texas Instruments
Ray Lesniewski *(chemguy65@yahoo.com),* Jones College Prep, Chicago, Ill.
What do Indiana Jones, *Monty Python,* soda pop, and U.S. pennies have in common? They're all used to teach density! Using hands-on activities developed for the TI-Nspire™, videos, and simple demonstrations, learn how density concepts can be taught in a constructivist manner.

8:00–9:15 AM Exhibitor Workshops

Chemistry Demonstrations That Will Really Get a Reaction! (Chem)

(Grades 6–12) *134, Convention Center*

Sponsor: Fisher Science Education

Alex Molinich, Aldon Corp., Avon, N.Y.

There is nothing like seeing the "magic" of chemistry first-hand. Spice up your chemistry curriculum by incorporating these eye-popping, hair-raising chemical demonstrations into your classroom. Presented by Aldon's Innovating Science development experts, these demos are sure to grab your students' attention, enhance their learning experience, and best of all, they are fun for you, too! Come find your inner "magician"!

A New Spin on a Classic Mass Measurement Tool (Gen)

(Grades 4–9) *136, Convention Center*

Sponsor: Ohaus Corp.

Lou Loftin, Northwest Regional Professional Development Program, Reno, Nev.

You might not be able to teach an old dog new tricks, but you can learn new ways to teach with an old classroom tool. The OHAUS Triple Beam has helped teach mass measurement for years. Come discover new activities and learn how this classic balance can now be a part of your STEM solution in the classroom.

Inquiring Minds Provide Spark for Science Lessons (Gen)

(Grades 2–8) *138, Convention Center*

Sponsor: Delta Education/School Specialty Science

Johanna Strange, Consultant, Richmond, Ky.

Tom Graika, Consultant, Lemont, Ill.

Inquiry is at the heart of science teaching. Using topics from magnetism and electricity, learn how inquiry strategies can provide a variety of learning opportunities for students. Participants will be involved in guided, challenge, and open inquiries…and they'll receive a resource packet to take home.

8:00–9:30 AM Presentation

SESSION 1

iPads and Mobile Apps in Science (Gen)

(General) *120, Convention Center*

Ben Smith *(ben@edtechinnovators.com)* and **Jared Mader** *(jared@edtechinnovators.com),* Red Lion (Pa.) Area School District

We will show you the best apps and how to work with students using the device. Bring your mobile device!

8:00–9:30 AM Elementary Extravaganza

(Preschool–Middle Level) *500 Ballroom, Convention Center*

Organizer: **Linda Froschauer** *(fro2@mac.com),* 2006–2007 NSTA President, and Field Editor, *Science and Children,* Westport, Conn.

This Extravaganza is not to be missed! Join elementary groups of professionals for an exceptional opportunity. Gather resources for use in your classroom immediately. Engaging hands-on activities, strategies to excite and encourage your students, a preview of the best trade books available, information about award opportunities, contacts with elementary science organizations, sharing with colleagues, door prizes, and much more will be available to participants. Walk away with a head full of ideas and arms filled with materials.

Participating organizations include the Association of Presidential Awardees in Science Teaching, the Council for Elementary Science International, the NSTA Committee on Preschool–Elementary Science Teaching, *Science and Children* authors and reviewers, and the Society of Elementary Presidential Awardees.

This event is sponsored in part by Delta Education~CPO Science~Frey Scientific and National Geographic Learning.

8:00–9:30 AM Workshop

PDI **McREL Pathway Session: What Works in Science Classrooms: Constructing Understanding via Visual Tools (Gen)**

(General) *White River Ballroom G, JW Marriott*

Anne Tweed *(atweed@mcrel.org),* 2004–2005 NSTA President, and McREL, Denver, Colo.

Cynthia Long *(clong@mcrel.org),* McREL, Denver, Colo.

One significant strategy to help students make sense of science concepts is to use nonlinguistic representations. Research indicates that development of visual representations enhances student understanding of content. Join us to learn more about graphic organizers, models, thinking maps, pictures, and other strategies that help students understand content.

8:00–9:30 AM Exhibitor Workshops

STEM Activities: Flying Model Aircraft in Your Classroom! (Phys)

(Grades 6–8) *101, Convention Center*

Sponsor: Academy of Model Aeronautics

Gordon Schimmel *(wrightflight@gmail.com),* Academy of Model Aeronautics, Muncie, Ind.

AeroLab workshops feature simple foam and balsa airplanes—platforms for lessons in applied middle school physics. Using a "flying wind tunnel" for preengineering and inquiry-based investigations, students manipulate variables to design airplanes and document success. Activities you can use on Monday!

By invitation only, join your fellow NSTA Life Members for a breakfast filled with memories as well as meaning. Catch up with old friends, make new ones, trade war stories, and discuss ways to share your talents and vitality with the science education community.

NSTA Life Members' Buffet Breakfast

Sunday, April 1

7:00–9:00 AM

JW Marriott Indianapolis, White River Ballroom C/D

Tickets are required (M-12; $45 on-site) and, if still available, must be purchased at the NSTA Registration Area by 3:00 PM on **Saturday, March 31**.

Participation is limited to NSTA life members only.

Water, Power, and Science (Phys)
(Grades 6–College) *102, Convention Center*
Sponsor: KidWind Project
Michael Arquin *(joe@kidwind.org),* KidWind Project, St. Paul, Minn.
Join KidWind as we explore a hydro-powered classroom. Using simple kits that cost less than $10 to build on up to advanced systems that can power your iPod, we will explore the science behind a water-powered future. Lots of great physics and environmental science to be explored!

Mapping and Analyzing Science Data (Gen)
(Grades 5–College/Informal) *103, Convention Center*
Sponsor: Esri
Joseph Kerski *(jkerski@esri.com),* **Tom Baker** *(tbaker@esri.com),* and **Charlie Fitzpatrick,** Esri, Redlands, Calif.
Foster deeper investigation of the spatial patterns inherent in Earth, biological, environmental, and other science data with powerful and easy-to-use online Geographic Information Systems (GIS) tools. Running in a web browser, ArcGIS Online allows for multimedia-based presentations and analysis from earthquakes to water chemistry and more.

Slough and Pop—Come Get Cleansed with Chemistry! (Chem)
(Grades 5–12) *104, Convention Center*
Sponsor: Ken-A-Vision Manufacturing Co., Inc.
Twanelle Walker Majors *(twanellemajors@yahoo.com),* Warren County High School, McMinnville, Tenn.
Come experience hands-on stations making different skin care products for you to create in your classroom. Make your very own pore cleansing masks, hand cream, cuticle creams, aftershave treatments, mineral blush, cuticle/hair comparison, and more. Explore and view your skin cells with digital technology before and after your treatment!

Color, Spectrophotometry, and Teaching the Structure of the Atom (Chem)
(Grades 9–12) *105, Convention Center*
Sponsor: LAB-AIDS, Inc.
Tom Hsu, Author, Andover, Mass.
How do we teach topics such as electron configurations—that were graduate school material a generation ago—so that high school students can learn and understand them? Walk away with some effective ways to teach the structure of the atom. Using a user-friendly spectrophotometer, explore how light interacts with dyes. Then use unique spectrum cards to show how atoms, color, and spectra are related, making a conceptual bridge between a core chemical technology—making dyes—and the fundamental structure of the atom.

Students—Power Up! (Chem)
(Grades 6–9) *106, Convention Center*
Sponsor: LAB-AIDS, Inc.
Bill Cline, LAB-AIDS, Inc., Ronkonkoma, N.Y.
Although we live a battery-powered lifestyle, most of us (middle school and high school students included) have no idea how batteries actually work. In this hands-on workshop, engage in an activity from *Issues and Physical Science* from LAB-AIDS. Make a wet cell battery, explore the effect of using different metal electrodes on battery output, and consider ways to reduce the number of discarded batteries in the waste stream.

Bio-Rad—Explore Inquiry and Ecology with Biofuel Enzymes (AP Big Idea 4) (Bio)
(Grades 6–College) *108, Convention Center*
Sponsor: Bio-Rad
Damon Tighe *(biotechnology_explorer@bio-rad.com),* Bio-Rad, Hercules, Calif.
Need energy? Reveal the power of enzyme kinetics by illustrating the theory through a real-world application of biofuels—using cellobiase, a key enzyme in the production of cellulosic ethanol (a highly researched biofuel). The core reaction serves as the jumping-off point for introducing experimental variables such as temperature, pH, substrate, and enzyme concentration. The capstone activity is for student-directed experiments using naturally occurring enzymes found in mushrooms. Expand the lab to ecological and evolutionary studies with mushrooms and fungi in different ecological niches.

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
Participants will receive classroom resources, virtual labs, and website information for utilizing free Howard Hughes Medical Institute resources to enhance their 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.

I Just Want to Sublimate: Phasing Digital Media into Your Science Classroom (Gen)
(Grades K–12) *110, Convention Center*
Sponsor: Discovery Education
Mike Bryant, Discovery Education, Silver Spring, Md.
Students today engage with content differently than any previous generation. Districts across the country are selecting the Discovery Education Services to bring science to life in their classrooms. Examine the future of instructional materials, including the Discovery Education Science Supplemental and Techbook and see the instructional benefits and examples of current success in the science classroom.

Advanced Physics with Vernier (Phys)
(Grades 9–College) *116, Convention Center*
Sponsor: Vernier Software & Technology
Matt Anthes-Washburn *(info@vernier.com)* and **David Braunschweig** *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
Get hands-on experience with our new curriculum for college, AP, and IB physics courses! Go beyond verification labs by using inquiry techniques to emphasize the exploration of phenomena and make sense of observations. Use advanced data collection and analysis to explore quantitative relationships between variables.

Human Physiology with Vernier (Bio)
(Grades 9–College) *117, Convention Center*
Sponsor: Vernier Software & Technology
Mike Collins *(info@vernier.com)* and **John Melville** *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
Experiments exploring grip strength, EKG, heart rate, and others from our *Human Physiology with Vernier* lab book will be conducted in this hands-on workshop. You will be able to try these experiments using LabQuest and LabQuest Mini interfaces and our award winning Logger *Pro* software.

STEM-ify Your Science Lessons! (Gen)
(Grades 7–12) *130, Convention Center*
Sponsor: Science Kit
Andrew Fulton, VWR Education, West Henrietta, N.Y.
Encourage critical thinking and integrate STEM concepts in your science labs with the guided inquiry experiments in this hands-on workshop. We'll use Really Easy Data (RED) probeware to show how easy it is to add practical technology applications to every lesson. Learn and share ideas for life, environmental, and physical science.

Taking a Human Approach to Biology Education (Bio)
(Grades 9–12) *131, Convention Center*
Sponsor: Kendall Hunt Publishing Co.
Brooke Bourdelat-Parks, BSCS, Colorado Springs, Colo.
Learn about the new *BSCS Biology: A Human Approach*, 4th ed., a fully interactive, activity-driven digital biology curriculum by a renowned author team. It uses human examples to present fundamental biology concepts and engages students through meaningful investigations that present biology in a way that unifies life and is relevant to students' lives.

Developing Focused Environmental Classroom Campaigns for Quality Service Learning (Env)
(Grades 3–12) *133, Convention Center*
Sponsor: Pearson
Erin Viera-Orr and **Heather Greenwell,** Jane Goodall's Roots & Shoots, Arlington, Va.
Learn how to increase the quality of environmental classroom service learning through the development of a focused campaign project. Walk away with sample campaign outlines, guidelines for forming a yearlong project timeline, and ways to link your class campaign to academic standards.

Genetics: Crazy Traits and Adaptation Survivor (Phys)
(Grades 5–12) *139, Convention Center*
Sponsor: CPO Science/School Specialty Science
Scott W. Eddleman, CPO Science/School Specialty Science, Nashua, N.H.
When students study genetics they learn new vocabulary such as traits, alleles, and genotypes. How can you predict the traits of offspring when you know the genetic makeup of the parents? These ideas come alive as you create crazy creatures with a unique kit, and study the resulting population.

Equip Your iPad for Science (Gen)
(Grades K–12) *140, Convention Center*
Sponsor: PASCO scientific
Presenter to be announced
Get a preview of SPARKvue® HD, PASCO's newly announced sensor-based science application for the iPad. SPARKvue HD is an integrated learning environment, offering a full suite of display and analytical tools, reflection prompts, journaling, and more—plus full support of PASCO's growing collection of SPARKlabs®. Get hands-on experience collecting data on the iPad using PASCO's AirLink 2 Bluetooth interface and PASPORT sensors. Bring your own iPad or use ours!

Chemistry: Solution Concentration and Kinetics with a Colorimeter (Chem)

(Grades 9–12) *141, Convention Center*

Sponsor: PASCO scientific

Presenter to be announced

In this hands-on workshop, participants will use a colorimeter as a novel way to measure and monitor solution concentration. After the initial investigation, the colorimeter will be used to explore reaction rates and kinetics. Your experience will include using one of PASCO's standards-based SPARKlabs™ to improve student understanding of these key chemistry concepts.

The Science and Writing Connection: Increasing Achievement of Diverse Learners in Both Domains (Gen)

(Grades K–6) *143, Convention Center*

Sponsor: Carolina Biological Supply Co.

Betsy Rupp Fulwiler, Ana Crossman, and **Kirsten Nesholm,** Seattle (Wash.) Public Schools

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. The approach develops students' scientific thinking and understanding, and expository writing skills. The combination of hands-on investigations and scaffolding helps increase all students' achievement in both domains.

Exploring Feline Anatomy with Carolina's Perfect Solution® Cats (Bio)

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

Sponsor: Carolina Biological Supply Co.

Patti Kopkall, Carolina Biological Supply Co., Burlington, N.C.

Perform a guided dissection featuring Carolina's Perfect Solution cats and get the "inside story" on the highest quality preserved specimens available. Learn skinning techniques, review vertebrate anatomy, discover the structures shared by cats and humans, and develop a greater appreciation for the complexity of life. Features Carolina's Perfect Solution preserved cats.

Butterflies in Your Classroom (Bio)

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

Sponsor: Carolina Biological Supply Co.

Tim Woody, Carolina Biological Supply Co., Burlington, N.C.

Bring excitement into your classroom with the Painted Lady butterfly (*Vanessa cardui*), a small insect easily raised and cultured year-round. Session includes guidance on care of the butterfly in every life stage and on meeting National Science Education Standards for characteristics, life cycles, and reproduction. Free live sample and activities.

Introducing a Lesson Plan on the Optical Refraction Using a Light Source and a Lens (Phys)

(Grades 5–8) *201, Convention Center*

Sponsor: Japan Artec, Inc.

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

Learn about optical refraction using a light source and a lens. Sample our moderately priced light source equipment and optical system. Students will enjoy having hands-on learning experiences with this affordable equipment. Make your own microscope and take it home along with free teaching materials and lesson plans.

Engaging Elementary Learners in STEM with LEGO® Education (Phys)

(Grades 1–5) *202, Convention Center*

Sponsor: LEGO Education

Presenter to be announced

Explore key science 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…thus increasing their understanding of key STEM concepts. From simple machines to robotics, with LEGO Education YOU are the facilitator of an active learning environment. In this session you will experience firsthand the different resources available from LEGO Education that cover core subjects and meet key learning standards in science and math.

Hydrates—It Must Be Something in the Water! (Chem)

(Grades 7–12) *203, Convention Center*

Sponsor: Adam Equipment Inc.

Penney Sconzo, The Westminster Schools, Atlanta, Ga.

Some ionic compounds combine with water molecules without creating a chemical bond. How can that be? During this fascinating workshop, Penney Sconzo guides participants through a hands-on approach using mass measurement and heat to remove water that's physically attached. It's a workshop you won't want to miss!

Fantastic Physical Science Demonstrations from Flinn Scientific (Chem)
(Grades 6–12) *Wabash Ballroom 1, Convention Center*
Sponsor: Flinn Scientific, Inc.
Janet Hoekenga, Flinn Scientific, Inc., Batavia, Ill.
Amaze your students with quick demonstrations that teach common physical science topics, including sound, color dynamics, energy, pressure, density, rotation, and scientific inquiry. More than a dozen effective demonstrations will be performed.

The Private Eye®—Hands-On Inquiry for an Interdisciplinary Mind: Science, Writing, and Art (Gen)
(General) *Wabash Ballroom 2, Convention Center*
Sponsor: Educational Innovations, Inc.
Kerry Ruef and **David Melody,** The Private Eye Project, Lyle, Wash.
Dandelions! Crickets! Eyeballs! Use a jeweler's loupe, everyday objects, simple questions, and thinking by analogy to go REALLY close-up—and develop the essential skills of scientist, writer, and artist in all your students. Explore this acclaimed program for creativity and critical thinking across subjects, K–16 through life. Free loupes, specimens, and lessons!

8:00–10:00 AM Presentation

SESSION 1

PDI **ITEEA Pathway Session: STEM Resources for Grade 4 (Gen)**
(Elementary) *White River Ballroom A, JW Marriott*
Barry N. Burke *(bburke@iteea.org),* International Technology and Engineering Educators Association, Gaithersburg, Md.
Joey H. Rider-Bertrand, Lancaster-Lebanon IU13, Ardmore, Pa.
Explore standards-based, integrated STEM resources appropriate for grade 4 that transcend all disciplines and use contexts and themes from the Grand Challenges for Engineering.

8:00–10:00 AM Workshop

PDI **WestEd Pathway Session: Assessment-centered Teaching: A Reflective Practice (Gen)**
(General) *102, JW Marriott*
Kathy DiRanna and **Jo Topps** *(jtopps@wested.org),* WestEd, Santa Ana, Calif.
Go beyond the grade book! Learn a portfolio process that includes designing a unit assessment plan, analyzing student work for patterns, and modifying instruction based on student work.

8:00–10:00 AM Exhibitor Workshops

Out of This World! Planetary Science for Middle School (Earth)
(Grades 5–8) *137, Convention Center*
Sponsor: Delta Education/School Specialty Science–FOSS
Jessica Penchos, Alan D. Gould, and **Larry Malone,** Lawrence Hall of Science, University of California, Berkeley
How have we come to understand the solar system? How many other planetary systems are there, and how can we find and explore them? Students investigate these questions and more in the revised FOSS Planetary Science Course. This second edition introduction will highlight new features, strategies, content, and materials.

FDA Food Science Workshop for Grades 6–8 (Bio)
(Grades 6–8) *JW Grand Ballroom 3, JW Marriott*
Sponsor: FDA Center for Food Safety and Applied Nutrition
Mimi Cooper *(mimicooper@verizon.net),* FDA Consultant, Green Cove Springs, Fla.
Elena Stowell *(elena.stowell@kent.k12.wa.us),* Kentwood High School, Covington, Wash.
Come learn about FDA's free food safety curriculum and related materials you can use in your classroom. Participate in hands-on activities about food science and nutrition that you can take back to your students. Learn from experienced teachers who have worked extensively with FDA's Center for Food Safety and Applied Nutrition.

8:00–11:00 AM Workshop

PDI **SPS Pathway Session: Integrating Science and Literacy: A Journey, Not a Destination (Gen)**
(General) *White River Ballroom D, JW Marriott*
Carrie Launius *(jlaunius@hazelwoodschools.org),* Hazelwood School District, Florrisant, Mo.
Emily Brady, Manager, NSTA Recommends, NSTA, Arlington, Va.
Loree Griffin Burns *(lgb@loreeburns.com),* Author, West Boylston, Mass.
Kristin T. Rearden *(krearden@utk.edu),* University of Tennessee, Knoxville
Wendy Saul *(ewendysaul@gmail.com),* University of Missouri–St. Louis
April Pulley Sayre, Author, South Bend, Ind.
Alexandra Siy *(alex@alexandrasiy.com),* Author, Boulder, Colo.
Juliana Texley *(jtexley@att.net),* Palm Beach State College, Boca Raton, Fla.
Peggy Thomas *(pegtwrite@aol.com),* Author, Middleport, N.Y.
Pamela S. Turner *(pstrst@pacbell.net),* Author, Oakland, Calif.
Diana Wiig *(dwiig@uwyo.edu),* University of Wyoming, Laramie
Sallie Wolf *(salwolf@comcast.net),* Author, Oak Bluffs, Ill.
Presider: Eric Hadley, Ferguson-Florissant School District, Florissant, Mo.
Interact with noted authors, science educators, and NSTA program managers as they share strategies for integrating science and literacy using high-quality science trade books.

8:00 AM–12 Noon Short Course

Bringing Nanotechnology to the Classroom (SC-6)
(Middle Level–College/Informal Ed.) *Fisher Ballroom A, Omni*
Tickets Required: $41
Morton M. Sternheim *(mort@umassk12.net)* and **Rob Snyder** *(snyder@umassk12.net),* STEM Education Institute, University of Massachusetts Amherst
For description, see Volume 1, page 72.

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, and faculty advisors to meet, network, and share ideas.

8:15 AM–12:30 PM Short Course

Conducting Authentic Research on Smoking Behavior Using a Scientific Database (SC-7)
(High School–College) *Off-site*
CANCELED
Tickets Required: $60
Maureen Munn *(mmunn@uw.edu),* University of Washington, Seattle
For description, see Volume 1, page 72.

8:30–9:00 AM Presentation

SESSION 1
(High School–College) *JW Grand Ballroom 8, JW Marriott*
Dimensional Analysis for Guiding Learning in Introductory Chemistry (Chem)
David J. Styers-Barnett *(styersbarnett@uindy.edu),* University of Indianapolis, Ind.
Find out how a concept map linking basic chemical calculational processes assists students' learning success in the critical early weeks of introductory chemistry.

8:30–10:30 AM Meeting

NSTA Aerospace Programs Advisory Board Meeting
307, JW Marriott

8:30–11:30 AM Short Course

A+ **Common Core Science Literacy Standards: Keeping Inquiry in the Science Classroom (SC-8)**
(Grades 6–12) *Illinois, Omni*
SOLD OUT
Tickets Required: $35
Nancy Jackson, NCS Pearson, Westford, Mass.
Robert Cutting and **Frances-Joan Cutting,** NCS Pearson, Pass Christian, Miss.
Robert Vandel *(rvandel.pearson@gmail.com),* Woodstock, Ga.
For description, see Volume 1, page 72.

9:00–9:45 AM Exhibitor Workshop

NASA's Endeavor Science Teaching Certificate Project: Focus on Preservice and Elementary Inservice Education (Gen)

(Grades K–5) *142, Convention Center*

Sponsor: NASA

Glen Schuster, U.S. Satellite Laboratory, Inc., Rye, N.Y.

Learn firsthand how to apply for a NASA Endeavor Fellowship Award and Certificate in STEM Education from Teachers College, Columbia University. Join us for an overview as we share results and experiences in the elementary classroom from NASA Endeavor Fellows/Graduates. Hear about the Teacher Educator and Preservice Project. The goal of this best-practice, online, (and live) professional development program is to improve pedagogical content knowledge and practice and apply it. Put your work toward meeting the portfolio requirements for National Board Certification.

9:00–10:00 AM Welcome to My Classroom Showcase

This showcase will highlight classroom settings from around the world. Participants will be provided with an insider's view of classroom instruction in different countries and cultures.

Dramatizing Scientific Ideas to Change Teacher Practices and Understandings in 10 Elementary Schools, Staffordshire, U.K.

(Elementary) *104, JW Marriott*

Deb J. McGregor, University of Wolverhampton, Walsall, U.K.

9:00–11:30 AM Exhibitor Workshop

Bio-Rad: Explore Molecular Evolution Using Protein Electrophoresis (AP Big Idea 1) (Bio)

(Grades 8–College) *107, Convention Center*

Sponsor: Bio-Rad

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

In this hands-on workshop, you will generate protein profiles from distant and closely related species of fish using protein gel electrophoresis. Test the hypothesis that protein profiles are indicators of evolutionary relatedness and construct cladograms from your own gel results. Learn about proteomics and explore the central mantra of biology: DNA>RNA>Protein>Trait.

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 Presentations

SESSION 1

Formative Queries for the Biology Classroom (Bio)

(High School) *121, Convention Center*

Rachel A. Beattie *(rbcreative8@gmail.com),* Lincoln-Way East High School, Frankfort, Ill.

Take home standards-based valid and reliable formative assessments designed to confront student preconceptions about biology concepts at the high school level.

SESSION 2

Construct Maps: An Examination of Middle School Student Learning of Chemical Reactions (Chem)

(General) *236, Convention Center*

Nirit Glazer *(nirit.glazer@gmail.com),* University of Michigan, Ann Arbor

Can construct maps help us understand student learning of a big idea such as chemical reactions? Find out how you can use construct maps to guide your assessment as well as inform lesson plans and establish relevant connections among sub-ideas related to complex material.

SESSION 3

SCST Session: Teaching Phylogenetic Thinking via Physical and Digital Museum Specimens (Bio)

(High School–College) *203, JW Marriott*

Colleen M. McLinn *(mclinn@cornell.edu),* Cornell University, Ithaca, N.Y.

Heather Lerner *(hlerner@gmail.com),* Earlham College, Richmond, Ind.

Engage students in developing hypotheses about evolutionary relationships through the hands-on examination of museum specimens as well as online analysis of bird images, videos, and sounds.

SESSION 4

Discover Discovery Boxes (Gen)

(Elementary/College) *JW Grand Ballroom 4, JW Marriott*

Sherri A. Cianca *(sherricianca@hotmail.com),* Niagara University, Lewiston, N.Y.

Involve students in research and inquiry-based experimentation. Learn to create topic-specific discovery boxes to challenge students to discover and deepen their understanding of science.

SESSION 5

(Middle–High School/Supv.) *White River Blrm. H, JW Marriott*

Science Teachers' Health and Safety Workshop (Chem)

Mary L. Loesing *(mloesing@ccsdli.org),* Connetquot Central School District, Bohemia, N.Y.

Theresa A. Curry *(theresa_curry@manhasset.k12.ny.us),* Manhasset High School, Manhasset, N.Y.

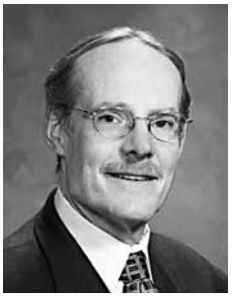
Equip yourself with the requirements of a chemical hygiene plan, which includes the need for evaluation, training, storage, and disposal of chemicals. Take home a sample plan that can be adapted to your school district.

9:30–10:30 AM Featured Panel

Next Generation Science Standards **(Gen)**

(General) *Sagamore Ballroom 6, Convention Center*

Stephen L. Pruitt



Francis Q. Eberle

Panelists:

Stephen L. Pruitt *(spruitt@achieve.org),* Vice President for Content, Research, and Development, Achieve, Inc., Washington, D.C.

Francis Q. Eberle *(feberle@nsta.org),* NSTA Executive Director, Arlington, Va.

Presider: Patricia Simmons, NSTA President, and North Carolina State University, Raleigh

Work is progressing to develop the Next Generation Science Standards. This informational session will provide an update on the development of these standards, including process and timeline for release of drafts and final documents, how science educators can be involved, and implications for science teaching.

With private funding from the Carnegie Corporation, the National Research Council (NRC) and Achieve, with support from NSTA and the American Association for the Advancement of Science (AAAS), have embarked on a two-step cooperative process to develop the Next Generation Science Standards. The first step was to develop a conceptual framework that is grounded in current research on science and science learning and identifies the science all K–12 students should know. In July, NRC released *A Framework for K–12 Science Education,* which now serves as the foundation for new K–12 science education standards. The next step will be the development of the standards. That state-led process is being managed by Achieve and will involve scientists, science teachers, policy makers, industry, and other interested parties. The standards are expected to be completed in late 2012.

Stephen Pruitt *was named vice president for Content, Research, and Development for Achieve, Inc., in November 2010. He joined Achieve as director of science in July 2010. In addition to his new role, he will continue to lead the development of the Next Generation Science Standards. Stephen began his career as a high school chemistry teacher in Georgia, where he taught for 12 years. In 2003, he joined the Georgia Department of Education as program manager for science. He served in that role for four years before becoming director of academic standards, where he oversaw the continued implementation of the Georgia Performance Standards in all content areas. In 2008, he became the associate superintendent of Assessment and Accountability, responsible for directing all state assessments and overseeing the No Child Left Behind accountability process.*

Francis Q. Eberle *is the executive director of the National Science Teachers Association, the world's largest professional organization representing science educators of all grade levels. Before joining the association's staff in September 2008, Dr. Eberle served as executive director of the Maine Mathematics and Science Alliance (MMSA), a 501(c)(3) nonprofit organization dedicated to improving mathematics and science education in that state. During his time there, he worked to develop state curriculum frameworks and provide professional development and resources to schools and teachers throughout Maine.*

9:30–10:30 AM Featured Presentation

Cloud and Precipitation in a Future Climate: Why Isn't There an App for This Yet? (Env)

(General) *Sagamore Ballroom 2, Convention Center*

Sonia Lasher-Trapp, Associate Professor, Dept. of Earth and Atmospheric Sciences, Purdue University, West Lafayette, Ind.

Presider: Steven C. Smith, Purdue University, West Lafayette, Ind.

As the climate changes, society needs to know how clouds and precipitation will change: Will cloudy skies be the norm? Will there be more or less precipitation, and will it result from fewer extreme events, or more frequent weaker events? Will there be more hailstorms? The answers don't come easily. The complexity of the problem regarding clouds and precipitation will be discussed, and also used to demonstrate the increasing need to educate our students in scientific uncertainty, as well as the changing nature of scientific knowledge. Understanding science, and all of its limitations, will assist current and future generations in making more informed decisions for global sustainability.

You can say that Dr. Sonia Lasher-Trapp has her head in the clouds. She loves to go out into the field and collect data around and within the clouds, and then try to use models to explain what she sees in the observations, and to predict the behavior of clouds and precipitation in the future. She is an associate professor in the Department of Earth and Atmospheric Sciences at Purdue University. At Purdue, she formed the Cloud Microphysics Research Group that studies the details of precipitation processes in warm and mixed-phase cumulus clouds of various types, using both large observational data sets acquired with radar and aircraft during field programs, and hierarchies of high-resolution numerical models. She received her PhD in meteorology from the University of Oklahoma in 1998.

9:30–10:30 AM Presentations

SESSION 1

Bundling Formative Assessment Probes with Clickers (Gen)

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

David E. Vernot *(vernot_d@fairfieldcityschools.com),* Fairfield Freshman School, Fairfield, Ohio

See how formative assessment concept probes can be adapted, bundled, and then administered using student-response systems ("clickers") to collect data and stimulate discussion.

SESSION 2

NSTA Avenue Session: Siemens We Can Change the World Challenge: Using Project Based Learning (PBL) to Boost Achievement…and Help Change the World (Env)

(General) *124, Convention Center*

Lance Rougeux *(lance_rougeux@discovery.com),* Discovery Education, Silver Spring, Md.

Project-based learning enables students to explore and develop solutions to real-world problems and challenges. Empower your students to learn about science and conservation while making a difference in their schools, communities, and around the world through the Siemens We Can Change the World Challenge *(www.wecanchange.com),* the premier national K–12 sustainability competition. You'll leave with a wide variety of free digital resources and gifts that can help you and your class make an impact.

SESSION 3

Household Physics (Phys)

(General) *126, Convention Center*

Daryl Taylor *(daryl@darylscience.com),* Greenwich High School, Greenwich, Conn.

Drive home those strange physics concepts using toys, tools, food, and even games. NASA freebies for all!

SESSION 4

Homeostasis as a Unifying Theme (Bio)

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

Tammie N. Campbell *(tacampbell@ken.herzing.edu),* Herzing University, Kenosha, Wis.

Using homeostasis and all living bodies' desire to maintain homeostasis as a unifying theme, return to your classroom with lessons, assessments, and a renewed vigor!

SESSION 5

Targeted Connections: Jumping into Science with a Parachute (Phys)

(Elementary–Middle Level) *206, Convention Center*

Patricia Lucido *(plucido4405@att.net),* Lee's Summit, Mo.

Cheryl Malm *(cgmalm@nwmissouri.edu),* Northwest Missouri State University, Maryville

It is a complex challenge to accurately deliver parachute-assisted food and water cargo drops from an airplane so it lands securely on the ground. Inquiry activities explore falling objects and lead to researching the design and delivery of parachute-assisted cargo drops to relief areas.

SESSION 6

"Grow Our Own" Vegetables and Scientists (Gen)

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

Chris Embry Mohr *(chrisembry.mohr@olympia.org)* and **Jarrod Rackauskas** *(jarrod.rackauskas@olympia.org),* Olympia High School, Stanford, Ill.

Andrew Wise *(andrew.wise@olympia.org),* Olympia Community Unit School District 16, Stanford, Ill.

Presider: Pete Cleary, Olympia Community Unit School District 16, Stanford, Ill.

Investigating hydroponic systems to "grow our own" vegetables in the school greenhouse nurtures students' appreciation for their food and develops a passion for STEM.

SESSION 7

CESI Session: Helping Children Imagine and Invent (Gen)

(Elementary–Middle Level/Informal) *211, Convention Center*

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

Hans Persson *(hanper@hanper.se),* University of Stockholm, Sweden

Develop the crucial skills of creativity and innovation in your science students. Hans Persson and Alan McCormack team up to show how story lines, *Imagineering* episodes, hands-on inventiveness experiences, and other innovative methods can motivate your students.

SESSION 8

"My Worm Likes the Dark Because It Ran from the Flashlight!"—Young Scientists Make Claims Based on Evidence (Gen)

(Elementary) *231, Convention Center*

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

Kimber Hershberger *(khm12@scasd.org),* Radio Park Elementary School, State College, Pa.

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

Presider: Carla Zembal-Saul *(czem@psu.edu),* Penn State, University Park, Pa.

Move students to minds-on investigations using discourse and notebooks. Videos demonstrate scaffolded explanation building culminating in "science-conferences" using claims and evidence to make thinking public.

SESSION 9

Get SIMulated! (Gen)

(Informal Education) *232, Convention Center*

Diane L. Kasparie, Quincy Notre Dame High School, Quincy, Ill.

Online science simulations are research-proven, student-centered, relevant tools that empower great teaching and active learning! These tools are engaging and motivating, and aligned to state/national standards.

SESSION 10

STEM Research-based Lab Lessons (Gen)

(Middle Level–High School) *234, Convention Center*

Issam H. Abi-El-Mona *(abi-el-mona@rowan.edu),* Rowan University, Glassboro, N.J.

Find out about a tested innovative model to generate elements of STEM inquiry in the science classroom targeting middle and high school levels.

SESSION 11

Using FLIPS to Solve Formula-based Problems in Science (Chem)

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

Malcolm S. Cheney *(cheneymac@comcast.net),* Retired Educator, Windsor, Conn.

FLIPS is a mnemonic in which each letter stands for the five steps for solving a formula-based problem typically found in physical and chemical science classes.

SESSION 12

Get That Textbook Out of My Classroom! (Gen)

(Elementary–Middle Level) *239, Convention Center*

Sarah Reeves Young *(youngs@einsteinfellows.org),* Einstein Fellow, National Science Foundation, Arlington, Va.

Move away from textbooks and into a library. Use recent young adult literature to teach physical science principles.

SESSION 13

Making Biology Matter Through a Blended Classroom (Bio)

(High School) *240, Convention Center*

Kimberly Spangenberg *(kspangenberg@govhs.org),* Virtual High School Global Consortium, Maynard, Mass.

Engage students in biology in nontraditional ways using open educational resources to explore content, extend inquiry, improve awareness of biotechnology, and investigate associated careers.

SESSION 14

A Place for Inquiry (Gen)

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

Brian McDowell *(brian.mcdowell@mason.kyschools.us)* and **Grant Felice** *(grant.felice@mason.kyschools.us),* Mason County Middle School, Maysville, Ky.

Join us as we share outdoor inquiries created for our nature trail. Inquiries include a fossil dig site, dinosaur track way, bird blind, butterfly garden, and many more.

SESSION 15

How to Teach to the Test Without "Teaching to the Test" (Gen)

(Middle Level) *243, Convention Center*

Noelle C. Quigley *(nquigley4166@columbus.k12.oh.us),* Southmoor Middle School, Columbus, Ohio

Using available technology, data, and hands-on learning, students learn the standards as shown on high-stakes assessments.

SESSION 16

Teach Hands-On Science with the Super Power of Rap Music (Gen)

(Informal Education) *244, Convention Center*

Tyraine Ragsdale *(grandhank@grandhank.com),* Grand Hank Productions, Inc., Philadelphia, Pa.

This high-energy program is designed to assist participants in helping students get a handle on the fundamentals of science through the use of hip-hop music. This multimedia approach incorporates multiple intelligence and inquiry-based teaching and learning strategies that connect science theory to hands-on applications.

SESSION 17

NSELA Session: Preservice Teachers and Science Leadership: Collaborating in Support of New Teachers to Impact Student Learning (Gen)

(General) *201, JW Marriott*

Susan Koba *(skoba@cox.net),* NSELA President, Omaha, Neb.

Janey Kaufmann *(janeykaufmann@msn.com),* NSELA Retiring President, Scottsdale, Ariz.

Elizabeth Allan *(eallan@uco.edu),* University of Central Oklahoma, Edmond

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

William Veal *(vealw@cofc.edu),* College of Charleston, S.C.

This session examines what new teachers are supposed to know and do, and what can be done to improve their skills and their students' performance.

SESSION 18

NARST Session: Promoting Detailed and Accurate Observations in Elementary Science Classrooms (Gen)

(Elementary) *206, JW Marriott*

Eileen G. Merritt *(egm8e@virginia.edu),* University of Virginia, Charlottesville

Receive an introduction on meaningful criteria to use when assessing students' written observations, and have opportunities to look at strong grade 2 journal observations from a problem-based plant unit in a rural district.

SESSION 19

Write for an NSTA Journal **(Gen)**

(General) *208, JW Marriott*

Ken Roberts *(kroberts@nsta.org),* Assistant Executive Director, Journals, NSTA, Arlington, Va.

Learn how to successfully prepare and submit an article for publication in an NSTA journal.

SESSION 20

CSSS Session: STEM Initiatives in Race to the Top States **(Gen)**

(General) *209, JW Marriott*

Anita Bernhardt *(anita.bernhardt@maine.gov),* Maine Dept. of Education, Augusta

Linda K. Jordan, Tennessee Dept. of Education, Nashville

Jacob Foster *(jfoster@doe.mass.edu),* Massachusetts Dept. of Elementary & Secondary Education, Malden

Juan-Carlos Aguilar *(jaguilar@doe.k12.ga.us),* Georgia Dept. of Education, Atlanta

A panel of science leadership from Race to the Top funding recipients share information about their initiatives.

SESSION 21

Get REAL **(Gen)**

(Elementary–High School) *302/303, JW Marriott*

Susan J. Kovalik, Center for Effective Learning, Federal Way, Wash.

Uncover the STEM processes used in creating this conference center and see the natural embedding of standards as we understand construction.

SESSION 22

Building a Scientifically Minded Community: Infuse Informal Environments with STEM Awareness **(Gen)**

(General) *309/310, JW Marriott*

Bianca N. McRae *(bnmcrae@bsu.edu),* Ball State University, Muncie, Ind.

The *Burris Bulley Buddies* program is a classroom-based, service learning project designed to provide middle school students with the opportunity to nurture STEM-related interests in younger children from underserved neighborhoods.

SESSION 23

Mentoring STEM Middle School Teachers: A Model for International Faculty **(Gen)**

(General) *314, JW Marriott*

David Boger *(bogerd@ncat.edu)* and **Elizabeth J. Davis,** North Carolina A&T State University, Greensboro

Learn about a model process that enhances middle school STEM teachers' content knowledge and university faculty mentors' pedagogical content knowledge, thus creating innovative teaching and learning.

SESSION 24

SYM-1 Follow-Up Session: Bring Climate Issues Closer to Home: U.S. Forest Service Climate Change Education Resources **(Bio)**

(General) *JW Grand Ballroom 2, JW Marriott*

Vicki Arthur *(varthur@fs.fed.us),* U.S. Forest Service, Washington, D.C.

From measuring carbon sequestered by school yard trees to analyzing computer models of regional climate impacts on birds and trees, explore the question, "What does climate change mean to me?"

SESSION 25

Informal Science Day Session: Connecting Informal and Formal Learning Environments: Supporting Preservice Teachers Through University Partnerships **(Gen)**

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

Kathryn Gnau *(katiegnau@gmail.com),* Chicago, Ill.

Elizabeth Coleman, Loyola University Chicago, Ill.

Join us as we focus on the partnership between Loyola University Chicago and Lincoln Park Zoo and describe their collaboration to support preservice teachers.

SESSION 26

Informal Science Day Session: Supporting Science Learning in the After-School Environment: A Case Study **(Earth)**

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

Heather Brubach and **Heidi Schmitt,** Adler Planetarium, Chicago, Ill.

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

Join us as we share our experiences with a unique after-school program that provides Chicago public school students with a setting for in-depth space science exploration using NASA resources.

SESSION 27

NSTA Press Session: SAFER Science: Laboratory Hazards You Must Deal With! (Gen)

(General) *JW Grand Ballroom 7, JW Marriott*

Ken R. Roy *(royk@glastonburyus.org),* Glastonbury (Conn.) Public Schools

Explore how to make your lab SAFER by dealing with obvious and not so obvious hazards.

SESSION 28

The Missing Link in Stoichiometry: Dimension (Chem)

(High School–College) *JW Grand Ballroom 8, JW Marriott*

Wai S. Chan *(waisum.chan@yahoo.com),* William P. Clements High School, Sugar Land, Tex.

Equipping students with the ability to think in terms of dimension will ultimately resolve the struggle in learning stoichiometry.

SESSION 29

PDI **BEST Pathway Session: Energy in K–12 Biology (Bio)**

(Elementary–High School) *White River Blrm. B, JW Marriott*

Robert Stevenson *(robert.stevenson@umb.edu),* University of Massachusetts Boston

Join us as we aim to identify energy concepts taught in K–12 curricula and discuss how to connect energy concepts within biology and across other science disciplines.

SESSION 30

Science 2.0: Integrating Technology in the Science Classroom (Gen)

(Middle Level–College) *Marriott Blrm. 1, Marriott Downtown*

DJ West *(djwest78@gmail.com),* Schoolcraft College, Livonia, Mich.

Discover a variety of strategies to engage middle level and high school students through practical uses of technology.

SESSION 31

Effective Inquiry-based Professional Development Leads to Successful Inquiry-based Student Learning (Gen)

(General) *Marriott Ballroom 2, Marriott Downtown*

Irene H. Kamimura, Hawaii Dept. of Education, Honolulu

Robert E. Landsman, ANOVA Science Education Corp., Honolulu, Hawaii

Hear about a scientist who joins a community of collaborative teacher/learners to experience successful authentic scientific inquiry resulting in K–12 student achievement of standards.

SESSION 32 (two presentations)

(Elementary/College) *Marriott Blrm. 3, Marriott Downtown*

Evolving Elementary Science Teaching: Inclusion of Students with Special Needs (Gen)

Michael T. Svec *(michael.svec@furman.edu),* Furman University, Greenville, S.C.

Join an interactive discussion on the evaluation and revision of an elementary science methods course toward integrating more inclusive teaching strategies.

Formative Assessments Supporting Inquiry (Gen)

Michael T. Svec *(michael.svec@furman.edu),* Furman University, Greenville, S.C.

Patricia A. Hewitt *(phewitt@utm.edu),* The University of Tennessee at Martin

Formative assessments such as observation checklists support teachers making data-driven instructional decisions. Join us as we share examples supporting inquiry in the elementary classroom.

SESSION 33

Providing a Valuable Purpose for Learning (Gen)

(General) *Marriott Ballroom 7, Marriott Downtown*

Nicole L. McRee *(mcree.nicole@d46.org)* and **Tracy M. Bratzke** *(bratzke.tracy@d46.org),* Grayslake Middle School, Grayslake, Ill.

Take home lessons and activities to create inquiry-driven environments in which students are engaged and interested in learning science as a community of learners working to solve a problem.

SESSION 34

Rhode Island Technology Enhanced Science (RITES) Project (Gen)

(Middle Level–College) *Marriott Blrm. 10, Marriott Downtown*

Steve Foehr, University of Rhode Island, Kingston

Karen A. Saul *(ksaul2001@cox.net),* Nicholas A. Ferri Middle School, Johnston, R.I.

Come learn about RITES, an NSF-funded Math/Science Partnership designed to improve secondary science learning statewide through innovative, online courseware and targeted professional development.

SESSION 35

The Magic of Science: Using Discrepant Events in the Science Classroom! (Gen)

(General) *Michigan/Texas, Marriott Downtown*

Buzz Putnam *(dputna@wboro.org),* Whitesboro High School, Marcy, N.Y.

This fast-paced presentation highlights thought-provoking, paradoxical, discrepant science-based demonstrations that capture students' attention. Buzz is back!

SESSION 36

Our Coasts—Living Laboratories: NOAA National Estuarine Research Reserve Educational Partnerships and Projects (Gen)

(General) *Cabinet, Westin*

Bree Murphy *(bree.murphy@noaa.gov),* NOAA National Estuarine Research Reserve System, Silver Spring, Md.

Get water quality data into your classroom with NOAA National Estuarine Research Reserve Educational Partnerships and Projects. Climate change is having an impact on the water quality conditions of our coasts. Learn how to access NOAA water quality data and engage your students in analyzing the impacts on organisms living in our nation's estuaries.

SESSION 37

Everglades National Park: The Last Stand (Env)

(General) *Capitol II, Westin*

Shamsher-Patrick S. Lamba *(218564@dadeschools.net),* Miami Edison Middle School, Miami, Fla.

Come see a short homemade video of the Everglades National Park and learn the effects of invasive/exotic species on indigenous plants and wildlife.

SESSION 38

Transforming Minds in a Transitioning Community: Flipping Greenway from Criminal Activity to Educational Intent (Env)

(General) *Capitol III, Westin*

Catherine E. Matthews *(cmatthews@uncg.edu)* and **Lynn Sametz** *(l_sametz@uncg.edu),* The University of North Carolina at Greensboro

Learn how The University of North Carolina at Greensboro is partnering with three schools—physically connected by Bouldering Creek—to provide assistance aimed at transforming the Greenway to a rich site for science education.

SESSION 39

Paper Clip Pedagogy: Hands-On Environmental Science Activities—Easy and Cheap (Env)

(Middle Level–College) *Caucus, Westin*

Anne M. Coleman *(amc729@cabrini.edu)* and **Carrie B. Nielsen** *(cbn24@cabrini.edu),* Cabrini College, Radnor, Pa.

If you have paper clips, string, and tape, you're ready to get students actively involved in building a deeper understanding of fundamental concepts of environmental science.

SESSION 40

Teaching a Case Study in Earthquake Seismology (Earth)

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

Randal L.N. Mandock *(rmandock@cau.edu)* and **Willandra Whiting** *(willandrawhiting@aol.com),* Clark Atlanta University, Atlanta, Ga.

Learn how to teach a quantitative case study of an earthquake. Case studies in earthquake seismology are used to teach the fundamental analysis techniques needed for a deeper understanding of earthquake hazards.

SESSION 41

What's Up with Light? (Earth)

(Middle Level–High School) *Grand Ballroom 2, Westin*

Michiel N. Ford *(mford2001@gmail.com),* Kickapoo Nation School, Powhattan, Kans.

Join a discussion on the use of detectors to identify not only visible light, but the other wavelengths of the electromagnetic spectrum and how they are used in NASA research on deep space missions. Take home NASA materials.

9:30–10:30 AM Workshops

Are You Remotely Interested? (Phys)
(Elementary–Middle Level) *122, Convention Center*
Gary Benenson, City College of New York, N.Y.
Cherubim Cannon *(cherubimcannon@aol.com),* P.S. 005 Dr. Ronald McNair, Brooklyn, N.Y.
Learn to make and use inexpensive infrared remote controllers, which can be used to turn on lights and buzzers from several feet away!

Lake St. Clair—Use or Abuse? (Env)
(Elementary–High School) *123, Convention Center*
Chris Geerer *(christine.geerer@gpschools.org)* and **Alex Gulyas** *(alexandra.gulyas@gpschools.org),* Parcells Middle School, Grosse Pointe Woods, Mich.
Laura Mikesell, Grosse Pointe Public Schools, Grosse Pointe Woods, Mich.
Presider: Laura Mikesell
This highly interactive role-play engages the entire class in environmental and economic decision making as they are asked to choose to pollute or protect the lake.

Wind Power (Phys)
(Middle Level–High School) *125, Convention Center*
Jacklyn Bonneau *(bonneau@wpi.edu),* Massachusetts Academy of Math & Science, Worcester
Charge up your lessons on energy and power with a creative and authentic STEM-focused activity using wind power.

Let's Do Science! Increase Authentic Learning in Chemistry (Chem)
(High School) *127, Convention Center*
Kim S. Kingery *(kkingery@purdue.edu),* **Lisa Kirkham** *(lkirkham@purdue.edu),* and **Emily DiNoto** *(edinoto@purdue.edu),* Purdue University, West Lafayette, Ind.
Learn about Authentic Learning and Science Practice in Chemistry Education (ALSPICE) and brainstorm inquiry-based research activities for use in the classroom.

The Plastics Maze: How Did We Get In? How Do We Get Out? (Gen)
(Middle Level–High School) *128, Convention Center*
Victoria Brady *(tbrady@exploratorium.edu),* Exploratorium, San Francisco, Calif.
Plastics are useful, but they're making a mess! Explore the paths different plastics take, and some problems presented by plastic debris. What can we do?

Formative Assessment, Inquiry Activities, and Data Collection with the TI-Nspire™ CX Navigator™ (Phys)
(Middle Level–High School) *205, Convention Center*
Sean Bird *(covenantbird@gmail.com),* Covenant Christian High School, Indianapolis, Ind.
Explore the latest in wireless handheld technology that easily integrates sensors. Visit *htttp://education.ti.com/calculators/tisciencenspired* to get instant feedback, track responses for assessment, and distribute activities from NASA and Texas Instruments.

Creatively Crossing Science and Art Borders with Sailboat Vehicles (Phys)
(Elementary–High School) *207, Convention Center*
Julie Angle *(julie.angle@okstate.edu)* and **Gayla Foster** *(gayla.foster@okstate.edu),* Oklahoma State University, Stillwater
Wind and art on the sail translate into excitement in the classroom. Facilitate student understanding of art, force, and motion through construction of a sailboat vehicle.

Teaching About Corals with NOAA Resources (Bio)
(Elementary–High School) *209, Convention Center*
Lindsay M. Knippenberg *(lindsay.knippenberg@noaa.gov),* Einstein Fellow, NOAA, Washington, D.C.
Grab your students' attention by incorporating coral reefs into your existing curriculum. Several NOAA resources will be highlighted, including demos, labs, activities, and multimedia.

CESI Session: Creating the Dynamic Triangle of Science, Literacy, and Technology in the Elementary Classroom (Gen)
(Elementary) *210, Convention Center*
Jeanelle B. Day *(dayj@easternct.edu)* and **Susannah Richards** *(richardss@easternct.edu),* Eastern Connecticut State University, Willimantic
Explore strategies that use NSTA/CBC Outstanding Science Trade Books, Robert F. Sibert Medal and Honor books, Web2.0 tools, videos, and literacy instructional routines to invite and ignite young scientists.

Edible Earth Movements and the Nevada Earth Space Science Initiative (Earth)
(Elementary–Middle Level) 233, Convention Center
David T. Crowther *(crowther@unr.edu),* University of Nevada, Reno
Lou Loftin *(lloftin@washoeschools.net),* Northwest Regional Professional Development Program, Reno, Nev.
Explore two edible Earth science activities (rocks and minerals and plate tectonics) and hear about a successful STEM project in Northern Nevada.

Learning for a Sustainable Future (Env)
(Elementary/Informal Ed) 235, Convention Center
Jennifer B. Cirillo *(jcirillo@shelburnefarms.org),* Shelburne Farms' Sustainable Schools Project, Shelburne, Vt.
Colleen Cowell *(ccowell@bsdvt.org),* Champlain Elementary School, Burlington, Vt.
How can science help us understand the world, be better stewards of the planet, and create a healthy and just future for all? Learn about successful strategies for integrating the concepts of sustainability into your K–5 science curriculum.

How Might Life Evolve on Other Planets? (Gen)
(Elementary) 238, Convention Center
Pamela K. Harman, SETI Institute, Mountain View, Calif.
Explore the evolution of life on Earth and search for clues to the possible evolution of life on an unknown planet beyond our solar system. This session is geared toward grades 5–6.

Inquiry: Finding Your Way from Activity to Experiment (Gen)
(Elementary–Middle Level) 241, Convention Center
Brian Hand *(brian-hand@uiowa.edu),* University of Iowa, Iowa City
Shifting to an inquiry classroom can be intimidating. Explore converting traditional activities to tests students can use to explore their questions using the Science Writing Heuristic (SWH) approach.

Innovative Biotechnology Labs: Northwestern University Biology Investigations in Oncofertility(Bio)
(High School) 245, Convention Center
Nadia Reynolds and **Kristen Perkins** *(kristen-perkins@northwestern.edu),* Northwestern University, Evanston, Ill.
Find out how high school science teachers are accessing an innovative, biotechnology-driven science lab curriculum that is based on current cutting-edge research at Northwestern University.

Getting to the Core of a Global Health Problem: An Authentic Problem-Based Learning (PBL) Experience (Gen)
(Middle Level–High School/Supv.) 204/205, JW Marriott
Karen Lindebrekke *(karen.lindebrekke@ibioinstitute.org)* and **Ann Reed** *(ann.reed@ibioinstitute.org),* iBIO Institute, Chicago, Ill.
Renee Anderson *(randerson@imsa.edu),* Illinois Mathematics and Science Academy, Aurora
Mary Anne Quivey *(mquivey@monroe.k12.il.us),* Monroe/Randolph Regional Office of Education, Waterloo, Ill.
Presider: Renee Anderson
Industry/education partnerships provide real-world PBL experiences that address the common core standards and develop learners' interest, confidence, and competence in investigating and solving STEM-centered problems.

PDI **BSCS Pathway Session: Virtual Lab Gaming for Student Understanding of Genetics (Bio)**
(General) 305/306, JW Marriott
April Gardner *(agardner@bscs.org),* BSCS, Colorado Springs, Colo.
Explore and contribute to a project developing a game environment that will introduce and develop student understanding of the rapidly changing science of genetics.

Informal Science Day Session: Amphibian Crisis and You (Bio)
(General) JW Grand Ballroom 5/Group 2, JW Marriott
Emily Brown *(educate@omahazoo.com),* Omaha's Henry Doorly Zoo, Omaha, Neb.
Discover how you and your students can protect amphibians from extinction! This hands-on workshop will provide information on the issue, as well as lessons and materials for informal and formal educational settings.

Informal Science Day Session: Quick and Easy STEM Starters (Phys)
(General) JW Grand Ballroom 5/Group 3, JW Marriott
Sarah Carter *(scarter@tpt.org),* Twin Cities Public Television, St. Paul, Minn.
Julie R. Shannan *(julie@girlstart.org),* Girlstart, Austin, Tex.
Join Girlstart and the PBS Kids series *SciGirls* as they showcase an array of STEM icebreakers that can be done in 10 minutes or less!

Adenine Synthesis in a Model Prebiotic Reaction (Chem)

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

Lakshmi N. Anumukonda *(anumukonda@fultonschools.org),* Riverwood International Charter School, Sandy Springs, Ga.

Walk away with an experiment in prebiotic chemistry that is accessible at the high school level with very little investment in supplies and equipment.

PDI **PSTEM Pathway Session: Cognitive Science Learning Principles in Action: Life Science Content as the Context for the Enhancements (Bio)**

(General) White River Ballroom C, JW Marriott

Bates Mandel, The 21st Century Partnership for STEM Education, Conshohocken, Pa.

Come experience our best activities drawn from our three-day content workshops for teachers that are designed to deepen understanding of life science.

Stem Cells (Bio)

(High School–College) White River Ballroom F, JW Marriott

Dina G. Markowitz *(dina_markowitz@urmc.rochester.edu)* and **Susan Holt** *(sholtbmn@aol.com),* University of Rochester, N.Y.

Stem cells may be used to treat many diseases. Use simulated stem cells and growth factors to compare cell differentiation in embryonic and adult stem cells. Information provided on lab kit assembly and related activities.

DuPont Presents—Soil Erosion and Fertilizer Testing in Runoff (Env)

(General) Colorado, Marriott Downtown

Donna Parker *(dcall@zoomnet.net),* Dublin Coffman High School, Dublin, Ohio

Presider: Peggy Vavalla, DuPont, Wilmington, Del.

Erosion and deposition are among major challenges in maintaining a productive, sustainable environment. Investigate what happens when excess rainwater flows over a field that has been recently fertilized.

Connective Technology Resources for Your Emerging Scientists (Gen)

(General) Indiana Ballroom F, Marriott Downtown

Pamela Fraser-Abder *(pa1@nyu.edu),* New York University, N.Y.

Explore connective technology and review web resources and instructional strategies that you can adapt and integrate into your elementary science curriculum.

Engage and Inspire with Science Olympiad (Gen)

(Elementary–High School) Indiana Blrm. G, Marriott Downtown

Kelly Price *(price_kel@yahoo.com)* and **Jessica Jetton** *(jjetton@forsyth.k12.ga.us),* Forsyth County Schools, Cumming, Ga.

Get students moving and thinking from day one of your science class. Science Olympiad can be used for instruction as well as competition with active STEM experiences.

Polymer Ambassadors' Make and Take: Fun Activities for Every Classroom (Chem)

(General) Marriott Ballroom 5, Marriott Downtown

Lynn W. Higgins *(lynhiggins@sbcglobal.net),* Polymer Ambassadors, St. Louis, Mo.

Sample the best of our hands-on activities during this drop-in workshop. Activities might include super-absorbing polymers, slimes, shrinking plastics, polydensity tubes, recycling of plastics, thermodynamics of balloons, latex painting, and many more. Walk away with materials and detailed handouts for each activity.

Incorporating Science Vocabulary—Moving from Vintage to Vroom! (Gen)

(Elementary–High School) Marriott Blrm. 8, Marriott Downtown

Joanna T. Dickert *(jdickert@cencam.org),* Central Cambria School District, Ebensburg, Pa.

Take away six hands-on activities adaptable to your classroom. These activities are designed to ramp up vocabulary instruction and make it significant AND electrifying for students.

Teaching Socio-scientific Issues in Secondary Schools: An Example of "Mudslides" (Gen)
(General) Marriott Ballroom 9, Marriott Downtown
Yaozhen Pan *(panyaozhen@hotmail.com),* Illinois Institute of Technology, Chicago
Presider: Norman G. Lederman *(ledermann@iit.edu),* Illinois Institute of Technology, Chicago
Learn how to develop argumentations for teaching socio-scientific issues and students' progression in learning science.

Photovoice: Engage Students in Place-based Socio-scientific Inquiry (Env)
(General) Capitol I, Westin
Kristin L. Cook *(kshockey@indiana.edu)* and **Gayle Buck,** Indiana University, Bloomington
Cassie Quigley *(cassieq@clemson.edu),* Clemson University, Clemson, S.C.
By developing a community photography show, students showcase their pictures of environmental conditions to generate dialogue with experts and policy makers who may be in a position to mobilize change with regard to local environmental management.

Hands-On Evidence for Climate Change from Ocean Core Sediments (Earth)
(General) Grand Ballroom 3, Westin
Edward C. Cohen *(ecohen@pway.org),* Quibbletown Middle School, Piscataway, N.J.
Jennifer A. Collins *(jcollins@oceanleadership.org),* Deep Earth Academy, Consortium for Ocean Leadership, Washington, D.C.
Learn how to use free deep-sea sediment samples as an authentic inquiry task for evidence to support claims of climate change from the drillship *JOIDES Resolution*. JOIDES stands for Joint Oceanographic Institutions for Deep Earth Sampling.

What's Up? Classroom Activities from the Association of Astronomy Educators, Session II: Beyond the Solar System (Earth)
(General) Grand Ballroom 4, Westin
Martha Wawro *(martha.wawro@nasa.gov)* and **Wendy M. Van Norden** *(wendy.m.vannorden@nasa.gov),* NASA Goddard Space Flight Center, Greenbelt, Md.
Jake Noel-Storr *(jake@cis.rit.edu),* Rochester Institute of Technology, Rochester, N.Y.
Presider: Jake Noel-Storr
Led by master astronomy teachers from the Association of Astronomy Educators (AAE), join us for classroom-ready hands-on astronomy activities that really work.

NESTA Session: National Earth Science Teachers Association Geology Share-a-Thon (Earth)
(Elementary–High School) Grand Ballroom 5, Westin
Michelle Harris *(michelle.harris@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.
Lynn S. Blaney *(lblaney@1st.net)* and **Robert J. Myers** *(bob_myers@strategies.org),* Institute for Global Environmental Strategies, Arlington, Va.
Susan Chapman *(schapman@sciencesocieties.org),* Soil Science Society of America, Madison, Wis.
Coral Clark, NASA SOFIA, Mountain View, Calif.
Jennifer A. Collins *(jcollins@oceanleadership.org),* Consortium for Ocean Leadership, Washington, D.C.
Mark Francek *(mark.francek@cmich.edu),* Central Michigan University, Mount Pleasant
Mike Gallagher *(mike.gallagher@oakland.k12.mi.us),* Oakland Independent School District, Waterford, Mich.
Paige Graff *(paige.v.graff@nasa.gov),* Jacobs/ESCG/NASA Johnson Space Center, Houston, Tex.
Lynne H. Hehr *(lhehr@uark.edu),* University of Arkansas, Fayetteville
Timothy McCollum *(tmccollum@eiu.edu)* and **Brian Poelker** *(bpoelker@eiu.edu),* Eastern Illinois University, Charleston
Eric Muller *(emuller@exploratorium.edu),* Exploratorium, San Francisco, Calif.
Carole J. Reesink *(cjreesink@muscanet.com),* Bemidji State University, Bemidji, Minn.
Jim Sirch *(james.sirch@yale.edu),* Yale Peabody Museum of Natural History, New Haven, Conn.
Alyson Wasko *(awasko@montclair.k12.nj.us),* Montclair High School, Montclair, N.J.
Holly L. Yoder *(hyoder@elkhart.k12.in.us),* Pierre Moran Middle School, Elkhart, Ind.
Join more than 20 NESTA members and other education specialists as they share their favorite classroom activities. Lots of free handouts!

9:30–10:30 AM Exhibitor Workshops

Project-Based Inquiry Science: PBIS™ Takes the Confusion Out of Implementing STEM in Middle School (Gen)

(Grades 6–8) *132, Convention Center*

Sponsor: It's About Time

Mary Starr, University of Michigan, Ann Arbor

Are you confused about the "E" in STEM? In this workshop, discover what it really represents—the use of the Engineering Design Cycle (EDC). Learn the benefits of the EDC in PBIS for your middle school students. Learn why a project-driven course makes a difference in performance for all students. Get introduced to the use of data logging technology to enhance your students' classroom experiences.

Data Collection and Analysis for Physics Using the TI-Nspire™ CX (Phys)

(Grades 9–12) *135, Convention Center*

Sponsor: Texas Instruments

Rob W. Reniewicki *(rreniewicki@susd.org),* Arcadia High School, Phoenix, Ariz.

Learn how to engage your students by using TI-Nspire technology to rapidly collect and analyze data. This technology allows for flexibility in collecting data and initial mathematical analysis. Experiments can be repeated until acceptable results are obtained. Special attention will be given to the integration of science and mathematics.

9:30–11:00 AM Meeting

GLBT Group Meeting

Denver, Marriott Downtown

The Gay, Lesbian, Bisexual, and Transgender group provides a safe place for discussing issues. Plans for dinner out during the conference will be announced. More information? Contact *bflywriter@comcast.net.*

9:30–11:00 AM Workshop

Middle Level Share-a-Thon (Phys)

(General) *Marriott Ballroom 6, Marriott Downtown*

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

Patty McGinnis, NBCT *(pmcginnis@methacton.org),* Arcola Intermediate School, Eagleville, Pa.

Join us for an interactive session where STEM educators will share their activities merging inquiry, creativity, and innovation through STEM.

10:00–10:30 AM Presentation

SESSION 1

Promote Earth System Science and Sustainability Through COAL! (Gen)

(General) *Chamber, Westin*

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

James Wandersee, Louisiana State University, Baton Rouge

The "Coal Cycle" addresses the carbon cycle, Earth system science, and planet sustainability through activities that engage students. Interdisciplinary lesson plans and lignite samples provided!

10:00–10:45 AM Exhibitor Workshops

NASA's Instructional Programs for Inquiry-based Science Classrooms (Gen)

(Grades K–8) *142, Convention Center*

Sponsor: NASA

Diane L. McElwain, NASA Glenn Research Center, Cleveland, Ohio

NASA's educational specialists will demonstrate NASA's instructional programs, including Problem-Based Instructional Units for Physical Science (PBIU) and NASA's BEST Students (NBS). By combining an inquiry-based instructional design, NASA's online educational resources, the Problem-Based Learning model, and the engineering design process, participants can transform their classrooms into a learning environment where students can investigate the challenges of living and working on the Moon. Engage in a discussion and demonstration of NASA's instructional programs and receive NASA educational resources.

A Change of Season (Earth)

(Grades 5–8) *Booth #2153, Exhibit Hall, Convention Center*

Sponsor: Science First/STARLAB

Nathaniel Bell *(starlab@starlab.com)* and **Helmut Albrecht** *(starlab@starlab.com),* Science First/STARLAB, Yulee, Fla.

Join us to learn about Earth's orbit, sunrise, and sunset at different times of the year, the position of the Sun during different seasons as well as Earth's axis and its effect on sunlight. Horizon, zenith, and meridian are also explained during this workshop.

10:00–11:00 AM Exhibitor Workshop

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. Participants will explore gears by building a merry-go-round out of LEGO bricks and completing the corresponding classroom activity from the Simple Machines Activity Pack.

10:00–11:15 AM Exhibitor Workshop

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

(Grades 1–6) *138, Convention Center*

Sponsor: Delta Education/School Specialty Science

Johanna Strange, Consultant, Richmond, Ky.

Tom Graika, Consultant, Lemont, Ill.

We'll show you various strategies and Delta products that you can use to integrate reading and language arts into your science programs. Discover how your students can experience the enjoyment of learning science with Delta Science Modules and make the literacy connection. Take home a workshop packet and related Delta materials.

10:00–11:30 AM Workshop

PDI **McREL Pathway Session: What Works in Science Classrooms: Addressing Student Misconceptions (Preconceptions) (Gen)**

(General) *White River Ballroom G, JW Marriott*

Anne Tweed *(atweed@mcrel.org),* 2004–2005 NSTA President, and McREL, Denver, Colo.

Cynthia Long *(clong@mcrel.org),* McREL, Denver, Colo.

Students can provide the right word, definition, or formula… yet still hold misconceptions. If "correct" answers can result in insufficient evidence of understanding, then how can teachers reveal and address student misconceptions to determine if students really understand science concepts? Learn more about an instructional process that you can use to address misconceptions. Handouts!

10:00–11:30 AM Exhibitor Workshops

Doomsday 2012: A Starry Night Perspective (Earth)

(General) *101, Convention Center*

Sponsor: Simulation Curriculum Corp.

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

Have you and your students been curious about the astronomy behind the Doomsday predictions for December 21, 2012? Join us as we explore the planetary alignment, the relationship between our solar system and the center of the Milky Way, and other speculations. See how the Starry Night curriculum not only provides a complete solution to your astronomy needs, but also can be used to help understand current, future, and past astronomical phenomena.

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.

Environmental Science: Use Recent Case Studies to Teach Core Content (Env)
(Grades 9–College) *103, Convention Center*
Sponsor: BIOZONE International
Richard Allan, BIOZONE International, Hamilton, New Zealand
BIOZONE's new environmental science workbook and matching PowerPoints provide a concept-based approach to a dynamic and challenging subject. Using the Gulf of Mexico oil spill and Fukushima nuclear disaster as examples, see how case studies can provide a real-world framework for understanding core content and developing inquiry-based skills. Free samples!

Connecting to Chemistry: Igniting Student Motivation with STEM Examples and Ideas (Chem)
(Grades 9–12) *104, Convention Center*
Sponsor: Houghton Mifflin Harcourt
Michael A. DiSpezio, Science Writer and Educational Consultant, North Falmouth, Mass.
Join Michael as he presents an entertaining and enlightening minds-on/hands-on overview of inspiring examples that can integrate STEM into your current chemistry curriculum. Learn ways to teach gas solubility based upon the bends and the building of the Brooklyn Bridge! Who is Synthia and is she proof positive that biochemists can create artificial life-forms? Will fuel cells propel us into the future? Learn about these and other engaging STEM examples that can hook students on the STEM/Chem connection!

CAN I Have a Soda? (Chem)
(Grades 6–9) *105, Convention Center*
Sponsor: LAB-AIDS, Inc.
Vicki Jackson, LAB-AIDS, Inc., Ronkonkoma, N.Y.
How do designing and manufacturing a drink container relate to the periodic table? This real-life issue is explored as students research material properties, choose a material for a soft drink container, and then justify their choice with evidence. Activities are selected from the *Chemistry of Materials* SEPUP unit from LAB-AIDS that participants can take home. This unit reflects how SEPUP embeds the Next Generation engineering practices and uses real issues to powerfully deliver content learning.

Fuel for the Next Generation? (Env)
(Grades 6–12) *106, Convention Center*
Sponsor: LAB-AIDS, Inc.
Barbara Nagle, Lawrence Hall of Science, University of California, Berkeley
How do you teach core chemistry topics while using a timely and relevant context for learning them? Come experience the newest SEPUP curriculum module from LAB-AIDS on hydrogen fuel cells while applying chemistry topics such as chemical reactions, conservation of matter, stoichiometry, and rates of reaction. This module stresses the relationship of essential science and engineering practices as participants investigate the fuel cell redox reaction and use a computer simulation to understand applications of this alternative energy source.

Are Humans Still Evolving? Genetic Evidence of Human Evolution (Bio)
(Grades 9–College) *109, Convention Center*
Sponsor: Howard Hughes Medical Institute
Keri Shingleton *(kshingleton@hollandhall.org),* Holland Hall, Tulsa, Okla.
A common misconception about evolution is that human populations are not under the influence of natural selection. Learn about three well-understood examples of human variation, and the evidence for natural selection in each case. These stories of human adaptation include lactose intolerance/lactase persistence, sickle cell anemia, and ability to taste bitter substances. Participants will receive free classroom-ready resources from HHMI to facilitate their teaching of the genetic evidence for evolution in humans. These resources are easily adapted for various levels of high school curricula, ranging from introductory biology courses through honors, AP®, and IB Biology.

Effective Evaluation with Discovery Education Science Techbook (Gen)
(Grades K–12) *110, Convention Center*
Sponsor: Discovery Education
Brad Fountain, Discovery Education, Silver Spring, Md.
Discovery Education's Science Techbook is ideal for both formative and summative evaluations. Learn how to use the Science Techbook to create assessments based on standards, concepts, or units. Finally, we will explore the data that can be utilized to enhance your instruction and differentiate for your students to enhance their understanding of topics.

Biology with Vernier (Bio)
(Grades 8–College) *116, Convention Center*
Sponsor: Vernier Software & Technology
Mike Collins *(info@vernier.com)* and **Matt Anthes-Washburn** *(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 Inquiry* lab book will also be on display.

Advanced Chemistry with Vernier (Chem)
(Grades 9–College) *117, Convention Center*
Sponsor: Vernier Software & Technology
Elaine Nam *(info@vernier.com)* and **Melissa Hill** *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
This hands-on workshop will feature our new Polarimeter, Mini GC gas chromatograph, SpectroVis Plus spectrophotometer, and Melt Station melting temperature sensor. We will feature several new experiments that are suitable for advanced chemistry courses at the advanced high school level as well as college-level chemistry and organic chemistry programs.

Using Cheese Making to Teach Scientific Methodology (Bio)
(Grades 9–12) *130, Convention Center*
Sponsor: Sargent-Welch
Ellyn A. Daugherty, San Mateo High School, San Mateo, Calif.
You gouda go to this cutting-edge workshop! Join us and make cheese using four different types of curdling agents. The presenter will model how she uses the activity on the first day of school to engage students and focus them on scientific methodologies, including experimental design, data collection and quantification, and conclusion writing.

Promote Inquiry and Critical Thinking with Forensic Science (Bio)
(Grades 9–12) *131, Convention Center*
Sponsor: Kendall Hunt Publishing Co.
Michele Richards, Manchester High School, Midlothian, Va.
The evidence shows that students become more interested and engaged in science when they can approach it in a hands-on way. Discover how *Forensic Science for High School* not only captures their interest but allows students to practice science in collaborative and interactive ways that make learning relevant and fun.

Destructive Forces of Nature: Earthquakes (Earth)
(Grades K–8) *133, Convention Center*
Sponsor: Pearson
Michael Wysession, Washington University in St. Louis, Mo.
Earthquakes are fascinating phenomena—dramatic and exciting. Many fear them because they are deadly and unpredictable. Scientists are drawn to them because of the important role they play in discovering how our planet works. Join us as Michael Wysession, a Pearson author and world-renowned seismologist, gives an exciting account of what we know about earthquakes and answers any questions you may have.

Chemistry and the Atom: Fun with Atom Building Games! (Phys)
(Grades 5–12) *139, Convention Center*
Sponsor: CPO Science/School Specialty Science
Scott W. Eddleman, CPO Science/School Specialty Science, Nashua, N.H.
Our understanding of matter is so abstract that students have a hard time making sense of these fascinating concepts. Join us and experience innovative games and activities that give students with different learning styles opportunities to explore and grasp atomic structure and the periodic table.

Investigating Mitochondrial Genetics (Bio)
(Grades 9–12) *140, Convention Center*
Sponsor: PASCO scientific
Presenter to be announced
When you participate in this hands-on activity from PASCO's *Advanced Biology Teacher Guide*, you'll investigate the connections between mitochondrial DNA, the electron transport chain, and human health and disease. This activity fuses modern molecular biology technology from Edvotek and PASCO with traditional pedigree analysis to provide a high-level experimental biology experience in the classroom.

AP® Environmental Science: Modeling an Ecosystem (Env)
(Grades 9–12) *141, Convention Center*
Sponsor: PASCO scientific
Presenter to be announced
In this hands-on workshop, participants will design an experiment that explores the interrelationships of abiotic and biotic factors in a terrestrial ecosystem. Working from PASCO's new *Advanced Environmental Science Teacher Guide*, you will see how this standards-based SPARKscience™ activity can enhance your teaching practice and improve student understanding, while exploring one of the toughest AP environmental science investigations.

A Natural Fit: The Integration of Science and the Common Core (Gen)
(Grades K–8) *143, Convention Center*
Sponsor: Carolina Biological Supply Co.
Anne Grall Reichel, Lake Forest College, Lake Forest, Ill.
Explore the possibilities for integrating inquiry-based science with reading and writing. Leave with strategies you can use in your classroom next week to meet the challenging demands of Common Core Standards. Experience the potential of using learning continua in kid-friendly language to communicate expectations and inform the assessment process.

Picking Apart the Owl Pellet's Potential (Bio)
(Grades K–8) *144, Convention Center*
Sponsor: Carolina Biological Supply Co.
Andrew Uy, Carolina Biological Supply Co., Burlington, N.C.
Owl pellets are an easy and versatile product you can use to teach topics such as food chains, bone structure, ecology, and more. Come have fun in this hands-on workshop as we dissect owl pellets, explore Carolina's new Owl Pellet App, and share ways to incorporate this engaging product into your lessons.

Genetics with *Drosophila* (Bio)
(Grades 9–12) *145, Convention Center*
Sponsor: Carolina Biological Supply Co.
Angela White, Carolina Biological Supply Co., Burlington, N.C.
This workshop covers the basics of working with *Drosophila* through hands-on activities. Gain experience in anesthetizing fruit flies, identifying male and female flies, recognizing commonly used mutants and comparing them to wild-type flies, setting up new cultures of flies, and making crosses using Carolina's Easy Fly™ *Drosophila*.

Increase Student Success with the Anatomy in Clay® Learning System (Bio)
(Grades 7–College) *201, Convention Center*
Sponsor: Anatomy in Clay® Learning System
Leslie Peterson *(lesliep@anatomyinclay.com)*, Science Educator, Fort Collins, Colo.
The Anatomy in Clay Learning System is an innovative and successful system for teaching and learning anatomy. Join us for this hands-on workshop where you can experience the power of building with clay. Build on a Maniken® model and witness how this system promotes student collaboration, problem-solving skills, and motivation.

Getting the Most Out of Molecular-Level Visualization and Simulation Tools (Chem)
(Grades 7–College) *203, Convention Center*
Sponsor: Wavefunction, Inc.
Paul D. Price *(sales@wavefun.com),* Trinity Valley School, Fort Worth, Tex.
Making connections between macroscopic and molecular phenomena is at the core of learning chemistry. Bring your laptop (Windows or Mac OS X) to this hands-on workshop and learn how to build, simulate, and analyze molecular samples of matter with the powerful 2012 release of *Odyssey High School Chemistry.*

Flinn Favorite Biology Lab Activities and Games (Bio)
(Grades 7–12) *Wabash Ballroom 1, Convention Center*
Sponsor: Flinn Scientific, Inc.
Maureen Hunt, Flinn Scientific, Inc., Batavia, Ill.
Students learn better and faster when they are actively involved in hands-on activities that are fun to try and that create learning opportunities along the way. We'll share some inquiry-based labs, interactive demonstrations, and collaborative games you can use to motivate your students. We'll focus on core topics like cell biology, genetics, ecology, and more—you're sure to find a Flinn favorite that works for you! Handouts!

You're NOT Gonna Believe What We Did in Science Class Today! (Gen)
(Grades 4–9) *Wabash Ballroom 2, Convention Center*
Sponsor: Educational Innovations, Inc.
Margaret Flack, Educational Innovations, Inc., Bethel, Conn.
Mom and Dad will hear all about these discrepant events at the dinner table…and you'll be teaching the National Science Education Standards at the same time!

10:00 AM–12 Noon Meeting

AMSE Membership Meeting
(By Invitation Only) *House, Westin*
Please visit *www.amsek16.org* for further information.

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:

10:00 AM–12 Noon Exhibitor Workshop

Flinn Scientific's Morning of Chemistry—Enlightening Indy! (Chem)

(Grades 6–12) *Sagamore 3, Convention Center*

Sponsor: Flinn Scientific, Inc.

Rhonda Reist, Olathe North High School, Olathe, Kans.

Come to Flinn Scientific's free Morning of Chemistry! As they say in Indianapolis…Start Your Engines! Wake up your brain with 16 demonstrations guaranteed to accelerate your students' interest in chemistry—with the help of laughter, music, and fiery sparks! Join Rhonda Reist as she lights up the stage with some of her most effective demos, including "Red Hot Catalyst" and "Sparkling Periodicity." Based on Rhonda's equipment list alone, you're in for some memorable fun…swim flippers, tennis balls, marshmallows, and a pressure cooker! Whether you teach middle school physical science or AP Chemistry, you'll pick up proven demo ideas and effective teaching strategies sure to entertain and enlighten your students. Bring your science-teaching friends to this free must-see event! Handouts!

10:00 AM–3:00 PM Meeting

Association of Science Materials Centers Board Meeting

(By Invitation Only) *Utah, Marriott Downtown*

10:15–11:15 AM Welcome to My Classroom Showcase

This showcase will highlight classroom settings from around the world. Participants will be provided with an insider's view of classroom instruction in different countries and cultures.

GLOBE in Classrooms Around the World

(General) *103, JW Marriott*

Teresa J. Kennedy and **Nandini McClurg,** UCAR GLOBE Satellite Office, Tyler, Tex.

Hadi Ali Bahari, Ministry of Education in Saudi Arabia, Riyadh

Desh Bandhu, India

Bill Batycky and **Carol Batycky,** GLOBE Canada, Calgary, Alta.

Parichat Puangmanee, Thailand

The Dynamics of Open-Inquiry Investigations in an International Middle School Science Class

(Middle Level) *104, JW Marriott*

Stephen F. Carozza and **James Happer,** Shanghai American School

10:30–11:45 AM Exhibitor Workshop

Viniculture, Enology, and the Role of Science in Wine Making (Bio)

(Grades 9–12) *134, Convention Center*

Sponsor: Fisher Science Education

Robert Marshall *(marshallr@carnegiesciencecenter.org),* Carnegie Science Center, Pittsburgh, Pa.

From the vineyard to the table, modern winemakers employ a multitude of scientific techniques to help them control every stage of the wine-making process. Learn how contemporary winemakers use biology, chemistry, and physical science to help them face the challenges of producing the highest quality wines, while still maintaining the integrity of their art. Gain hands-on experience with real-world equipment used by enologists. Activity guides will be provided.

10:30 AM–12 Noon Shell Science Seminar

Seeking Signs of Life on Mars (Earth)
(General) *Sagamore Ballroom 4, Convention Center*

Lisa Pratt *(prattl@indiana.edu),* Provost Professor and Chair, Dept. of Geological Sciences, Indiana University, Bloomington

Presider: Cheryl Mason, San Diego State University, San Diego, Calif.

Complex organic molecules are common in meteorites, comets, and interplanetary dust particles, providing building blocks for an origin of life anywhere that liquid water is present. Ancient Mars was suitable for the transition from prebiotic to biological activity given widespread evidence of lakes and river channels around 4 to 3.5 billion years ago. The U.S. and European space agencies are working together on planning for a 2018 Rover mission with the capability to drill cores, cache samples, and, ultimately, bring Martian sedimentary rocks back to Earth for study in highly instrumented laboratories.

A focus of Lisa Pratt's research has been on subsurface microbial life and its implications for life on Mars and the origin of life. Lisa has collected samples of water, rock, and natural gas in active gold mines at depths up to 2.5 miles below the surface in South Africa and in the Canadian Arctic. Apart from her position as Provost's professor and chair of Geological Sciences at Indiana University, she is a member of the Mars Panel for the 2011 Planetary Science Decadal Survey.

Lisa recently chaired a NASA science advisory group that proposed a 2018 Rover equipped to drill and encapsulate rock cores as the first step in a sample return campaign. She has been active on national committees of the Geological Society of America, the Geochemical Society, and the Society for Sedimentary Geology and is a former member of the editorial boards of Geology, GSA Bulletin, *and* Geobiology.

NSTA is grateful to Shell for sponsoring this session.

10:30 AM–12 Noon Shell Science Seminar

Stem Cells and Cell Therapies (Bio)
(General) *Sagamore Ballroom 5, Convention Center*

Lydia Villa-Komaroff *(lvk@cytonomest.com),* Chief Scientific Officer, Cytonome/ST, LLC, Boston, Mass.

Presider: Dean Ballotti, Purdue University, West Lafayette, Ind.

Dr. Lydia Villa-Komaroff has spent more than 20 years as a research scientist studying genes, cell development, and growth mutations. An underlying interest in her work has been the question of how a single-celled organism becomes a complex creature. Join her as she discusses stem cells—adult, embryonic, and induced—and describes current clinical trials that are underway.

Dr. Lydia Villa-Komaroff is an internationally recognized molecular biologist. She was a key member of the team, directed by Dr. Walter Gilbert, that first demonstrated that bacterial cells could produce insulin. She is also deeply committed to the recruitment and retention of minorities in science and a founding member of SACNAS, the Society for the Advancement of Chicanos and Native Americans in Science and has served as a board member and vice president. She is currently chief scientific officer for Cytonome/ST. She received her PhD in cell biology from MIT.

NSTA is grateful to Shell for sponsoring this session.

10:30 AM–12 Noon Exhibitor Workshop

Bio-Rad: Inquiry Activities for pGLO™ Transformation (AP Big Idea 3) (Bio)
(Grades 7–College) *108, Convention Center*
Sponsor: Bio-Rad
Leigh Brown *(biotechnology_explorer@bio-rad.com),* Bio-Rad, Hercules, Calif.
The pGLO lab with its inducible gene expression and robust results provides a great system for student inquiry. Join us to learn how to expand the lab for student-directed experiments that develop critical-thinking skills. Participants receive a free UV pen light and lab prep DVD!

10:30 AM–12:30 PM Exhibitor Workshops

Using Science Notebooks to Impact Student Learning with FOSS (Gen)
(Grades K–8) *137, Convention Center*
Sponsor: Delta Education/School Specialty Science–FOSS
Virginia Reid, Consultant, Olympia, Wash.
Ellen Mintz, Charleston County Schools, Charleston, S.C.
Brian Campbell, Lawrence Hall of Science, University of California, Berkeley
Learn how we implement science notebooks in K–8 FOSS classrooms. Through active investigations from the new editions, you'll discover how science notebooks impact student achievement by providing a tool for developing conceptual understanding, exposing evidence of learning, and guiding instruction. Take home sample materials.

FDA Food Science Workshop (High School) (Bio)
(Grades 9–12) *JW Grand Ballroom 3, JW Marriott*
Sponsor: FDA Center for Food Safety and Applied Nutrition
Laurie A. Hayes *(lhayes@cart.org)*, Center for Advanced Research and Technology, Clovis, Calif.
Susan E. Hartley *(semumford-hartley@aps.k12.co.us)*, Hinkley High School, Aurora, Colo.
Come learn about FDA's free food safety curriculum and related materials you can use in your classroom. Participate in hands-on activities about food science and nutrition that you can take back to your students. Learn from experienced teachers who have worked extensively with FDA's Center for Food Safety and Applied Nutrition.

11:00–11:30 AM Presentations

SESSION 1
Urban Science Fieldwork (Bio)
(Elementary) *243, Convention Center*
Luis J. Arroyo, Taylor Elementary School, Mattapan, Mass.
Learn about an innovative science fieldwork program for urban K–5 students at an elementary school in Boston.

SESSION 2
NSELA Session: Preservice Elementary Teachers' Performance and Reflection on Formative Assessment Probes (Gen)
(General) *201, JW Marriott*
Christine A. Royce *(caroyce@aol.com),* NSTA Director, Professional Development, and Shippensburg University, Shippensburg, Pa.
Let's examine preservice students' performances on Formative Assessment Probes in different areas as well as their reflections as to where they believe they "learned" the material.

SESSION 3
The Difference Between Students Understanding Gravity and Getting the Correct Answer (Phys)
(High School–College) *White River Ballroom H, JW Marriott*
James P. Concannon *(jim.concannon@westminster-mo.edu),* Westminster College, Fulton, Mo.
Students can "plug" numbers into a formula without truly understanding the concept. In this session, I will explain how I get my students to conceptualize gravity before introducing numbers or formulas.

11:00–11:45 AM Exhibitor Workshop

Using NASA Climate Data in the Science Classroom (Earth)
(General) *142, Convention Center*
Sponsor: NASA
Andi Geyer, NASA Langley Research Center, Hampton, Va.
Captivate students of all levels using problems based on current events and NASA missions. Learn how to get real NASA satellite climate data for students to make their own graphs and draw their own conclusions. Find out how to do this and more using NASA websites, including Innovations in Climate Education, NASA's Space Math, NASA Eyes on the Earth 3D, and My NASA Data.

11:00 AM–12 Noon Presentations

SESSION 1

Inside the World of Real Science: Scientists Talk About Their Careers (Gen)

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

Julie J. O'Brien *(juliejobrien@gmail.com),* Eli Lilly and Co., Indianapolis, Ind.

A diverse panel of practicing scientists talks about their careers and provides examples of how science concepts taught in K–12 relate to their day-to-day work. Handouts!

SESSION 2

Sticky Notes and Student Identification of Variables (Gen)

(Middle Level–High School) *113, Convention Center*

Malcolm S. Cheney *(cheneymac@comcast.net),* Retired Educator, Windsor, Conn.

Using colored sticky notes to distinguish between independent and dependent variables, grades 5–12 students of all reading levels learn to structure a controlled scientific investigation, create a graph, and write a complete report.

SESSION 3

The World of Google in Science (Gen)

(General) *120, Convention Center*

Ben Smith *(ben@edtechinnovators.com)* and **Jared Mader** *(jared@edtechinnovators.com),* Red Lion (Pa.) Area School District

Google is more than just a search engine. Join us as we explore the tools associated with Google and how to make best use of them.

SESSION 4

The Great Diseases: A Collaborative Approach to Real-World Science in the Classroom (Bio)

(High School) *121, Convention Center*

Aimee M. Gauthier, Boston Latin School, Boston, Mass.

Berri Jacque *(berri.jacque@tufts.edu),* Tufts Medical School, Boston, Mass.

Gene Roundtree *(eroundtree@gmail.com),* Madison Park Technical Vocational High School, Roxbury, Mass.

Presider: Aimee M. Gauthier

Come learn about a novel Biology II curriculum that emphasizes critical thinking, problem solving, and literacy while focusing on the Great Diseases that impact global health.

SESSION 5

NSTA Avenue Session: The NSTA Learning Center: Free Professional Development Resources and Opportunities for Educators (Gen)

(General) *124, Convention Center*

Al S. Byers *(abyers@nsta.org),* Assistant Executive Director, e-Learning and Government Partnerships, NSTA, Arlington, Va.

Flavio Mendez *(fmendez@nsta.org),* Senior Director, NSTA Learning Center, NSTA, Arlington, Va.

Lost when it comes to finding online professional development resources to enhance your content knowledge and skills? With more than 6,000 resources (25% of which are free) and quality professional development opportunities to assist educators with core subject content, the NSTA Learning Center has the answers! Walk away with free resources. Refreshments!

SESSION 6

Developing Thinking Skills Through Fuzzy Problems (Phys)

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

Harvey Stansell *(stansell_h@fairfield-city.k12.oh.us)* and **Trisha Roberts,** Fairfield Freshman School, Fairfield, Ohio

Explore methods to develop students' thinking skills by building museum exhibits, promoting colonies in space, and making Facebook pages for dead scientists.

SESSION 7

Differentiating Product and/or Process: A Framework to Set Goals and Assess (Chem)

(High School) *127, Convention Center*

Andrew Wild *(andrewjwild@yahoo.com),* Impact Academy, Hayward, Calif.

Gain the tools to set up all of your students to reach a learning goal and then assess with respect to it. Use the Understanding by Design framework of "Know, Understand, Do" (KUD) and standards to establish learning goals, design varied ways for students to meet these outcomes, and assess students with respect to them.

SESSION 8

Science on Saturday (Bio)

(Elementary—Middle Level/Informal) 208, Convention Center

Carole J. Johnson *(carole.johnson@vai.org),* Van Andel Institute, Grand Rapids, Mich.

Find out about a fun and exciting inquiry-based science experience developed for both students and adults. Receive materials for implementing a program in your community.

SESSION 9

CESI Session: Where to Go and What to Do at the Crossroads Between Trade Books, Emerging Web Technologies, and STEM Learning (Gen)

(Elementary) 210, Convention Center

Jeff A. Thomas *(jathomas@usi.edu)* and **Joyce Gulley** *(jagulley@usi.edu),* University of Southern Indiana, Evansville

Explore ways to bring award-winning children's science trade books into the modern classroom.

SESSION 10

CESI Session: Science on Board (Gen)

(Elementary—Middle Level) 211, Convention Center

Hans Persson *(hanper@hanper.se),* University of Stockholm, Sweden

Amy Lindau *(amyli@bredband.net),* Norra Ängbyskolor, Bromma, Sweden

Roger Carter *(rocar_s@edu.sollentuna.se),* Rösjö School, Stockholm, Sweden

Nina Ullsten Granlund *(nina.ullsten@gmail.com)* and **Sören Ström** *(sost@skola.sala.se),* Ängshagen School, Sala, Sweden

Anne Vestlund, Carlssons Skola, Stockholm, Sweden

Sara-Maria Stenskepp *(sara-maria.stenskepp@vibyskolan.se),* Vibyskolan, Sollentuna, Sweden

Emma Dobson *(dobson.emma@gmail.com),* Svenska Skolan Mallorca, Palma de Mallorca, Spain

Walk away with inspiring examples on how you can use the interactive whiteboard to raise students' and teachers' interest in science and keep that interest alive.

SESSION 11

Linking Inquiry and Content Through Children's Literature (Gen)

(Preschool—Elementary) 212, Convention Center

Christine M. Gibler *(cgibler@bssd.net)* and **Kimberly K. Stilwell,** Blue Springs (Mo.) School District

Science lessons come alive with children's literature and the 5Es—engage, explore, explain, elaborate, and evaluate. Make the most of your day with so many standards and so little time.

SESSION 12 (two presentations)

(Elementary) 231, Convention Center

This Is Inquiry…Right? Five Essential Features to Modify a Lesson (Gen)

Laura A. Zangori *(laura-zangori@uiowa.edu),* **Mandy Biggers** *(mandy-biggers@uiowa.edu),* and **Cory T. Forbes** *(cory-forbes@uiowa.edu),* University of Iowa, Iowa City

Get practical strategies for modifying existing lessons to create a science-as-inquiry experience in an elementary classroom.

Learn About Archaeology with Inquiry (Gen)

Paula Magee *(pamagee@iupui.edu),* Indiana University–Purdue University Indianapolis

Elementary preservice teachers will share lessons geared toward grades 4 and 5 that aim to foster understanding about archaeology.

SESSION 13

Landforms in Your Backyard (Earth)

(Elementary) 232, Convention Center

Stephen L. Houser, Jr. *(shouserjr@carolina.rr.com),* Providence Spring Elementary School, Charlotte, N.C.

Orienteering skills serve as the basis for a variety of experiential learning lessons for grades 4–6 focused on Earth and physical science topics.

SESSION 14

Understanding the Impact of an Environmental Inquiry Project on Student Behavior: Reducing Lunchroom Waste (Env)

(Elementary/Informal Ed) 235, Convention Center

Linda H. Plevyak *(linda.plevyak@uc.edu),* University of Cincinnati, Ohio

Join me for a discussion on Problem Based Learning highlighting an elementary environmental science inquiry project. During the project, students predicted outcomes, collected and analyzed data, synthesized information, and evaluated findings. Handouts!

SESSION 15

Great iPad Apps for the Science Classroom (Gen)

(Elementary—Middle Level) 242, Convention Center

Tony J. Tepedino *(ttepedino@allendalecolumbia.org)* and **Beth S. Guzzetta** *(bguzzetta@allendalecolumbia.org),* Allendale Columbia School, Rochester, N.Y.

Learn about many educational science apps available for iPad use in schools, plus create and use ePubs, eTexts, and Google docs in your class.

SESSION 16

The Science and Math Engagement Initiative (Bio)
(High School/Informal Ed) 244, Convention Center
Jean M. Westrick, Chicago (Ill.) Public Schools
Implemented in more than 30 schools as part of a summer program to prepare incoming freshmen for high school, the Science and Math Engagement Initiative is a dynamic, thematic program that supports and encourages student achievement and engagement in math and science through equitable teaching instruction, inquiry-based and integrated curriculum, and informal learning opportunities.

SESSION 17

NSTA Press Session: Providing Feedback to Scaffold Student-directed Collaborations in Whole-Class Inquiry (Gen)
(General) 203, JW Marriott
Dennis W. Smithenry *(smithenryd@elmhurst.edu),* Elmhurst College, Elmhurst, Ill.
Joan A. Gallagher-Bolos *(jgallagher-bolos@glenbrook.k12.il.us),* Glenbrook North High School, Northbrook, Ill.
Through video examples, learn how to provide periodic feedback that enables students to get better at directing their collaborative efforts during whole-class inquiries.

SESSION 18

Would You Like to be a Reviewer for an NSTA Journal? (Gen)
(General) 208, JW Marriott
Ken Roberts *(kroberts@nsta.org),* Assistant Executive Director, Journals, NSTA, Arlington, Va.
Learn what it takes to join an NSTA Manuscript Review Panel and discuss the process with the journal editors.

SESSION 19

CSSS Session: Scientific Practices (Gen)
(Supervision/Administration) 209, JW Marriott
Peter J. McLaren *(peter.mclaren@ride.ri.gov),* CSSS President, and Rhode Island Dept. of Elementary and Secondary Education, Providence
Brett D. Moulding *(mouldingb@ogdensd.org),* Utah Partnership for Effective Science Teaching and Learning, Ogden
To make science learning meaningful, a balance is necessary between science content and the use of scientific practices. Emphasis will be placed on the use of organizing documents to help clarify the role of science practices and their appropriate use in state standards and classroom instruction as well as ways to inform instruction by assessing students' abilities to use the practices.

SESSION 20

Action Research for Changing Practice: Process, Hurdles, and Outcomes (Gen)
(Elementary–Middle Level/Supervision) 302/303, JW Marriott
Martina Nieswandt *(mnieswan@educ.umass.edu),* University of Massachusetts Amherst
Daniel Z. Meyer *(meyerd@iit.edu),* Illinois Institute of Technology, Chicago
Kori Milroy *(korimilroy@gmail.com),* Skinner West Classical, Fine Arts, and Technology School, Chicago, Ill.
Marianne Madson *(mariannemadson@yahoo.com),* Helge Haugan Elementary School, Chicago, Ill.
Join us as we share and discuss the process, experiences, and results from conducting action research in elementary and middle grades science classrooms.

SESSION 21

Merging Inquiry, Creativity, and Innovation Through STEM (Gen)
(General) 309/310, JW Marriott
Celestine H. Pea, National Science Foundation, Arlington, Va.
Alma S. Miller *(milleralma@aol.com),* Langdon Education Campus, Washington, D.C.
Michael J. Kaspar *(mkaspar@nea.org),* Center for Great Public Schools, Washington, D.C.
Join us as for an up-to-date discussion about STEM as we showcase actual schools and districts that are engaging students in interdisciplinary STEM project activities. These projects include data-driven, research-based practices that embed technology to increase students' interest in STEM. View short video clips and photos that highlight student engagement.

SESSION 22

Research Worth Reading: NSTA Affiliates–selected Research for 2011 (Gen)
(General) 314, JW Marriott
Kathryn Scantlebury, NSTA Director, Research in Science Education, and University of Delaware, Newark
Each year, the NSTA Research Committee works with NSTA affiliates to identify research that teachers should read. Join me for a sharing of the identified research for 2011.

SESSION 23

SYM-1 Follow-Up Session: Climate Change: A Human Health Perspective (Gen)
(General) JW Grand Ballroom 2, JW Marriott
Bono Sen, The National Institute of Environmental Health Sciences, Research Triangle Park, N.C.
Discover free standards-based resources to teach about climate change and its human health impacts.

SESSION 24

Why Should We Be Friends? Endosymbiotic Theory and the Science of Cooperation (Bio)

(High School–College) JW Grand Ballroom 4, JW Marriott

Daniel A. Dubay *(ddubay@mi.rr.com),* Novi (Mich.) Community School District

Make any life science topic personally relevant to students by using the new science of cooperation, including fundamental aspects of all friendships.

SESSION 25

Informal Science Day Session: NASA Informal Education Opportunities (Earth)

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

Marie Gleason-Tada *(gleasontadam@einsteinfellows.org),* Einstein Fellow, NASA Headquarters, Washington, D.C.

Julia Muffler *(julia.k.mufler@nasa.gov)* and **Wendi Laurence** *(wendi.b.laurence@nasa.gov),* Penn State, State College, Pa.

Learn more about NASA's informal education opportunities, which support the nation's diverse informal education communities seeking to partner with NASA's education centers and visitor centers.

SESSION 26

NSTA Press Session: Explain Your Thinking (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 about strategies to help students explain their thinking in response to the *Uncovering Student Ideas* assessment probes.

SESSION 27

"Marvel"ous Cartoon Assessment: Comics That Teach! (Gen)

(General) JW Grand Ballroom 9, JW Marriott

Mark T. Schlaudt, Central Michigan University, East Lansing

Mary H. Brown *(brownm@lcc.edu),* Lansing Community College, Lansing, Mich.

Looking for a creative way to formatively assess your students' conceptual change? Not only can concept cartoons improve students' critical thinking, they're an easy assessment tool.

SESSION 28

PDI

BEST Pathway Session: Energy in K–12 Physics (Phys)

(Elementary–High School) White River Blrm. B, JW Marriott

Arthur Eisenkraft *(arthur.eisenkraft@umb.edu),* 2000–2001 NSTA President, and University of Massachusetts Boston

Join us as we aim to identify energy concepts taught in K–12 curricula and discuss how to connect energy concepts within physics and across other science disciplines.

SESSION 29

Investigation Before Explanation: Helping Preservice Teachers Learn to Use Inquiry (Gen)

(General) Marriott Ballroom 2, Marriott Downtown

Gail H. Marshall *(gmarshal@westga.edu)* and **Judy R. Cox** *(jcox@westga.edu),* University of West Georgia, Carrollton

Review findings on a workshop model along with pre/post data and work samples that demonstrate how involving preservice teachers in inquiry investigations effectively helps them learn to teach inquiry-based science.

SESSION 30

STEM Educator Award Share-a-Thon: High School (Phys)

(High School) Marriott Ballroom 5, Marriott Downtown

Amanda Upton, Manager, Nominations and Teacher Awards Program, NSTA, Arlington, Va.

Come learn about high school–level STEM educator programs and take away innovative ideas.

SESSION 31

Supporting Informal Educators in Leading Inquiry-based Science Activities Out of School (Gen)

(General) Marriott Ballroom 7, Marriott Downtown

John Erickson and **Kevin Beals,** Lawrence Hall of Science, University of California, Berkeley

Join us as we recognize the strengths and challenges of the out-of-school workforce and offer innovative strategies to support informal educators leading inquiry-based science activities.

SESSION 32

Observing for Evidence of Learning (Gen)

(General) Marriott Ballroom 10, Marriott Downtown

Bob Sotak *(bsotak@mac.com),* Everett (Wash.) Public Schools

Caroline Kiehle *(ckiehle@systemsbiology.org),* Institute for Systems Biology, Seattle, Wash.

Experience the process and learn about the teaching/learn-

ing outcomes from a highly successful model of school-based teacher collaboration, "*Observing for Evidence of Learning*."

SESSION 33
Science for All Students: Culturally Relevant Science Teaching (Gen)
(General) *Michigan/Texas, Marriott Downtown*
Amy Cox-Petersen *(acox@fullerton.edu)* and **Terri Patchen,** California State University, Fullerton
Through creative approaches to inquiry, discover unique STEM activities specially designed to effectively support science learning on the part of culturally and linguistically diverse learners.

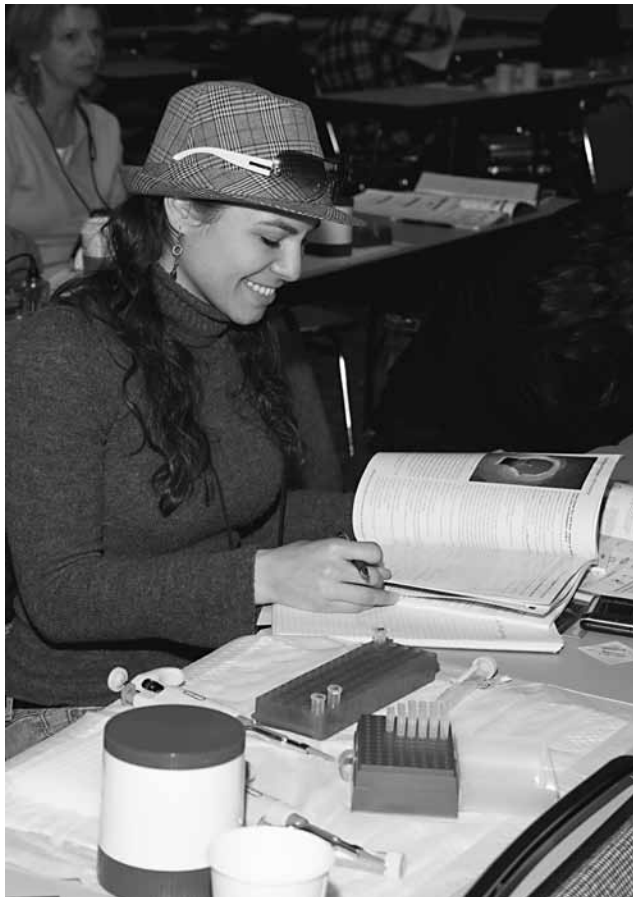
SESSION 34
Teach STEM? NASA Explorer Schools Can Help! (Gen)
(General) *Cabinet, Westin*
Rob LaSalvia, NASA Glenn Research Center, Cleveland, Ohio
Presider: Jodie Rozzell, Director, NASA Explorer Schools, NSTA, Arlington, Va.
NASA Explorer Schools (NES) has searched thousands of materials on the NASA website to provide a comprehensive set of free STEM concepts teaching materials for grades 4–12.

SESSION 35
EmPOWERing Students: Fight Climate Change by Harnessing the Forces of Nature for Renewable Energy (Env)
(General) *Capitol II, Westin*
Michael J. Caduto *(michaelcaduto@p-e-a-c-e.net),* P.E.A.C.E.®, Norwich, Vt.
Join me for an entertaining workshop about fighting climate change—transforming nature's forces into renewable energy. We'll explore natural and physical sciences, stewardship, and electricity from Sun, wind, and a bicycle generator.

SESSION 36 (two presentations)
(High School–College/Informal) *Capitol III, Westin*
Upper Mississippi River High School Symposium (Env)
Elaine M. AbuSharbain *(eabusha@siue.edu),* Southern Illinois University, Edwardsville
Christine Favilla *(christine.favilla@sierraclub.org),* Sierra Club, Alton, Ill.
Learn about a local symposium for high school students from different communities. Students learn to work together, solve problems, and seek out resources as well as utilize and recognize agency experts.

Get Green for Blue: Water Quality Investigations (Env)
Pamela G. Christol *(christol@nsuok.edu),* **Martha Parrott** *(parrott@nsuok.edu),* and **Kathi McDowell** *(mcdowelk@nsuok.edu),* Northeastern State University, Broken Arrow, Okla.
Find out how water quality investigations at summer academies were used to turn high school students into research scientists.

SESSION 37
Outdoor–Indoor Connections to Beguile Your Students into a Love of Nature (Gen)
(General) *Chamber, Westin*
Peggy Ashbrook *(scienceissimple@yahoo.com),* Preschool Science Teacher, Alexandria, Va.
Learn how to link indoor and outdoor science activities to develop science inquiry, increasing young children's appreciation of—and comfort level with—the natural world.



SESSION 38 (two presentations)
(General) *Congress I/II, Westin*

Creatively Merging the Earth Sciences Back into the High School Science Classroom (Earth)
Toni Ivey *(toni.ivey@okstate.edu),* Oklahoma State University, Stillwater
Secondary science teachers share their experiences from a 10-day geology workshop, and how they learned to incorporate the Earth sciences into their courses.

K–12 Climate Literacy Investigations with STEM Tools (Earth)
Robert J. Myers *(bob_myers@strategies.org),* Institute for Global Environmental Strategies, Arlington, Va.
Lynn S. Blaney *(lblaney@1st.net),* Peak to Peak Enterprises, Broomfield, Colo.
Learn about a K–12 program addressing climate literacy that uses NASA and NOAA data sets for problem solving. Leave with lessons ready to use Monday.

SESSION 39
Build a Cosmic Ray Detector (Earth)
(Middle Level–High School) *Grand Ballroom 2, Westin*
April A. Lanotte *(perglator@yahoo.com),* Space Foundation, Colorado Springs, Colo.
Learn about cosmic rays that enter our atmosphere and how to easily and inexpensively build a cosmic ray detector for your classroom. Lesson plans included!

11:00 AM–12 Noon Workshops

Connecting Students to the Above- and Below-Ground Connection (Env)
(Elementary–High School) *123, Convention Center*
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.
Learn how to create karst and nonkarst geology models. Using a cave model, discuss how caves form and how karst influences watersheds. Take home a CD with Mammoth Cave National Park resources showing the animals found within a cave environment.

LEGO® Education WeDo™ for Field-based Science Instruction (Phys)
(General) *126, Convention Center*
Kate A. Baird *(kabaird@iupuc.edu),* NSTA Director, District X, and ndiana University–Purdue University Columbus
Aija Pocock *(apocock@iupuc.edu),* **Allsion A. Howland** *(ahowland@iupuc.edu),* **Carina Cole,** and **Caroline Arbuckle** *(caarbuck@umail.iu.edu),* Indiana University–Purdue University Columbus
With LEGO Education WeDo as the instructional platform in preservice teachers' field experiences, elementary student-centered inquiry meaningfully blends science instruction with deliberate support for content-specific language. See how our efforts at building a Professional Learning Community led to a task design maximizing content-specific language for English language learners as well as special education students.

Hot Topics: Renewable Energy as an Authentic Issue for Interdisciplinary Project-based Science (Gen)
(Middle Level–High School) *128, Convention Center*
Rachel M. Ruggirello *(ruggirello@wustl.edu),* Washington University in St. Louis, Mo.
Scott McClintock *(s.mcclintock@mrhsd.k12.mo.us),* Maplewood Richmond Heights Middle School, Maplewood, Mo.
Join us for an overview of hands-on lessons and materials that promote Project Based Learning through the authentic issues of energy and sustainability.

Human Skin Pigmentation and UV Intensity (Bio)
(High School) *204, Convention Center*
Kathleen A. O'Sullivan, San Francisco State University, San Francisco, Calif.
This human evolution activity explores the distribution of patterns of human pigmentation and its causal relationship with the environment and natural selection. Lesson plan and background resources provided.

"Invisible" Physics (Phys)
(High School) *205, Convention Center*
Eric W. Schwartz *(eric.schwartz@ttu.edu),* Texas Tech University, Lubbock
Help students build understanding of abstract concepts in physics through activities that clarify topics that are notoriously difficult both to teach and to learn.

Spark Kids' Creativity with Hands-On Invention Activities from Time to Invent (Phys)
(Elementary–Middle Level/Informal) 206, Convention Center
Gail Thomas Strong *(gstrong@wfyi.org),* WFYI, Indianapolis, Ind.
Find out how kids ages 10 to 12 tackle exciting, FREE invention challenges implemented in classroom or informal settings led by educators or STEM professionals.

PHENOMenology: Stepping Through the Scientific Method (Phys)
(Elementary–High School) 207, Convention Center
Louis E. Abramson *(leabramson@gmail.com)* and **Randall H. Landsberg** *(randy@oddjob.uchicago.edu),* University of Chicago, Ill.
Act out the scientific process as both investigator and phenomenon in this interactive lab that explores the concepts of observation, inference, correlation, and causation.

What's Dirt Got to Do with It? (Bio)
(Middle Level–High School) 209, Convention Center
Nancy Bridge *(nancy.bridge@ocps.net),* Olympia High School, Orlando, Fla.
Come learn some ways to put plants into your life science curriculum. We'll explore properties of soil, soil/plant interactions, plant life cycles, and plant nutrition. Every participant will receive the Nutrients for Life curriculum.

EarthKAM: Taking Pictures of Earth from Space (Earth)
(Middle Level) 233, Convention Center
Leesa Hubbard *(leesa@sallyridescience.com),* Sally Ride Science, Lebanon, Tenn.
Karen Flammer *(kflammer@ucsd.edu),* University of California, San Diego, La Jolla
Your students can take pictures of Earth from space with NASA and EarthKAM (Earth Knowledge Acquired by Middle School Students)! Learn how to get your students involved, while participating in engaging hands-on activities.

Here's the D.E.A.L.! Time to Drop Everything and Lab! (Gen)
(Middle Level–High School) 234, Convention Center
Amethyst E. Phillips *(amethystphillips@yahoo.com),* Homewood-Flossmoor High School, Flossmoor, Ill.
Selina L. Bartels *(sbartels@iit.edu),* Illinois Institute of Technology, Chicago
Learn to prepare students for the ACT science exam and PSAE using multivariable, standards-aligned labs similar to those on the ACT and content-review mini-lessons. Get them now!

Inquiry in Action (Chem)
(Elementary) 236, Convention Center
Adam M. Boyd *(a_boyd@acs.org),* American Chemical Society, Washington, D.C.
Explore characteristic physical properties of four similar-looking household liquids. Then as a final challenge, identify four unknowns. Explanations of observations and a handout of all activities will be provided.

Applying Physical Science Modeling for the Middle School Learner (Chem)
(Middle Level–High School) 237, Convention Center
Katherine Heimansohn, Emma Donnan Middle School, Indianapolis, Ind.
Demonstrate how modeling is different from traditional instruction by incorporating a hands-on strategy with results analyzed through class discussion and diagramming.

Expanding Young Children's Experiences with Inquiry (Gen)
(Elementary) 238, Convention Center
Judith S. Lederman *(ledermanj@iit.edu),* Illinois Institute of Technology, Chicago
Gary Holliday, The University of Akron, Ohio
Explore the possibilities of engaging children in authentic inquiry using community resources and sites.

Zydeco: Supporting Nomadic Inquiry (Gen)
(Elementary–Middle Level/Informal) 239, Convention Center
Joseph Krajcik *(krajcik@msu.edu),* Michigan State University, East Lansing
Ibrahim Delen *(idel@umich.edu)* and **Shannon Schmoll** *(schmoll@umich.edu),* University of Michigan, Ann Arbor
Joy A. Reynolds *(joy.reynolds@detroitk12.org),* Detroit Public Schools/University of Michigan, Detroit
Hear how Zydeco was used in a natural history museum and a science center. The Zydeco system is a set of curricular supports and technology tools to help students integrate project-based inquiry across contexts. Handheld tools help plan an investigation in class, collect and annotate evidence during a field trip, and sort and analyze the evidence to make scientific explanations back in the classroom.

NMLSTA Session: Explore and Experiment: Puzzling Polymer Properties (Phys)
(Middle Level) *240, Convention Center*
Amy Weiskittel *(amy.weiskittel@lyondellbasell.com),* Equistar Chemicals, LP, Cincinnati, Ohio
Rebecca (Becky) Knipp, Retired Educator, West Harrison, Ind.
Why can't all plastics be recycled? Do all plastics repel water? Find the answer to these questions and more as you "explore and experiment" in this hands-on workshop designed to investigate puzzling polymer properties.

Merging Problem-Based Learning (PBL) Within STEM (Gen)
(Elementary–Middle Level) *241, Convention Center*
Karen E. Johnson *(karen.johnson@adams12.org)* and **Jeannine M. Tennant** *(jeannine.m.tennant@adams12.org),* STEM Magnet Lab School, Northglenn, Colo.
Explore PBL approaches that focus on content standards and raise engagement levels among students and teachers within a STEM setting.

Enzyme Assays for High School Labs (Bio)
(High School) *245, Convention Center*
Suzanne M. Cunningham *(scunning@purdue.edu)* and **Sherry S. Fulk-Bringman,** Purdue University, West Lafayette, Ind.
High school students visualize and quantitate enzyme activity using corn seed, starch-agar gels, and an indicator. Puzzles and LEGOs® assist students to better understand enzyme function.

PDI **WestEd Pathway Session: Target Interventions Matter: Improving Student Graphing (Gen)**
(General) *102, JW Marriott*
Kathy DiRanna, K–12 Alliance/WestEd, Santa Ana, Calif.
Learn a process for analyzing student work and determining instructional strategies for student success. Receive rubrics and protocols to improve student understanding of graphical representations.

ASTE Session: The Importance of Teaching and Learning Nature of Science in the Early Childhood Years (Gen)
(Preschool–Elementary) *202, JW Marriott*
Valarie L. Akerson *(vakerson@indiana.edu),* **Gayle Buck** *(gabuck@indiana.edu),* and **Vanashri Nargund-Joshi,** *(vnargund@indiana.edu),* Indiana University, Bloomington
Ingrid Weiland, University of Louisville, Ky.
Engage in and explore research-based strategies that have been found to improve early childhood students' conceptions of Nature of Science (NOS).

Two for One: Understanding Science Through Literacy Skills (Gen)
(Supervision/Administration) *204/205, JW Marriott*
Mark A. Forget *(mforget@maxteaching.com),* University of Findlay, Ohio
Presider: Janice Nixon *(jnixon@sdale.org),* Springdale (Ark.) Public Schools
This interactive hands-on session models classroom activities demonstrated to engage students of all ability levels in higher-order thinking through reading, writing, and cooperative learning.

PDI **BSCS Pathway Session: Understanding the Science of Type 2 Diabetes (Bio)**
(Elementary–High School) *305/306, JW Marriott*
Anne Westbrook *(awestbrook@bscs.org)* and **Connie Huidsten** *(chuidsten@bscs.org),* BSCS, Colorado Springs, Colo.
Learn about the science of type 2 diabetes and experience activities that can help students understand and apply the science they learn in the classroom to decisions they make in life.

Understanding the Revised AP Chemistry Course: Increasing Student Depth of Understanding Through Science Practices (Chem)
(High School–College) *JW Grand Ballroom 10, JW Marriott*
Serena F. Magrogan *(smagrogan@collegeboard.org),* The College Board, Duluth, Ga.
Engage in collaborative opportunities to transform teacher-directed strategies into student-directed opportunities to apply the science practices in AP Chemistry.

Informal Science Day Session: It's All in the Family: Hosting Family Science and Engineering Events (Gen)

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

David Heil and **Mia Jackson** *(mjackson@davidheil.com),* Foundation for Family Science & Engineering, Portland, Ore.

Joan Schumaker Chadde *(jchadde@mtu.edu),* Michigan Technological University, Houghton

Discover the thrill of hands-on science and engineering activities designed to engage the whole family and learn how to host an event in your community. Handouts and prizes!

Informal Science Day Session: Taking Care of Our Environment for Future Generations (Env)

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

Marilyn Fitzsimmons *(fitzsimmonsm@carnegiesciencecenter.org),* Carnegie Science Center, Pittsburgh, Pa.

Help your K–8 students understand what they can do today to help protect the environment for tomorrow with fun, inexpensive hands-on activities. Handouts!

Informal Science Day Session: Integrating Authentic Earth and Space Science Data Sets into High School Physics and Astronomy Courses (Earth)

(Middle–High/Informal) *JW Grand Blrm. 5/Group 4, JW Marriott*

Brian Levine *(blevine@amnh.org),* American Museum of Natural History, New York, N.Y.

We will discuss the benefits and techniques of integrating authentic data into courses in Earth and space science using several lessons created for after-school classes that are part of an intensive two-year NASA-funded, high school–mentored research program at the American Museum of Natural History. Participants will leave with copies of the lessons, including data sets and sample activity sheets.

Stimulate Inquiry with Biofuels—From Feedstock to Tailpipe (Bio)

(High School–College) *White River Ballroom F, JW Marriott*

Claudia Bode *(bode@ku.edu)* University of Kansas, Lawrence

Lisa Blair *(lisa.blair@greenbush.org),* Southeast Kansas Education Service Center–Greenbus, Girard

Teachers from a summer program created activities that relate biofuels research to science concepts. These resources promote inquiry and connect science to the real world.

DuPont Presents—The Science of Packaging (Gen)

(General) *Colorado, Marriott Downtown*

Tim Dalby *(tdalby@wilmingtonfriends.org),* Wilmington Friends School, Wilmington, Del.

Presider: Peggy Vavalla, DuPont, Wilmington, Del.

Receive a brief history of polymers and how they have improved our standard of living through packaging.

Project Based Learning in a Technology-rich Environment (Gen)

(General) *Indiana Ballroom F, Marriott Downtown*

Diane M. Clancy *(clancyd@bcsc.k12.in.us)* and **Chad Phillips** *(phillipsc@bcsc.k12.in.us),* Bartholomew Consolidated School Corp., Columbus, Ind.

Learn how Project Based Learning (PBL) is implemented, and take part in creating projects that integrate science and other content areas with real-life applications.

Design-based Learning in the Classroom (Gen)

(Elementary–High School) *Indiana Blrm. G, Marriott Downtown*

Karen Saur *(ksaur@nysci.org),* **Dorothy Bennett** *(dbennett@nysci.org),* and **Grace Andrews** *(gandrews@nysci.org),* New York Hall of Science, Queens

Learn how design-based and STEM learning can reshape classroom teaching and learning and how to transform it into strong science fair projects.

Literacy: The Core of a Science Inquiry Lesson (Gen)

(General) *Marriott Ballroom 8, Marriott Downtown*

Michele Detwiler *(michele.detwiler@sdhc.k12.fl.us),* Turkey Creek Middle School, Plant City, Fla.

Receive a description and model of a 5E lesson that uses the Common Core Standards for Literacy as the backbone. Join us as we compare principles of literacy with inquiry and outline the strategies used to develop instructional presentations that are rich in 21st-century skills. Engage in a sample lesson as the strategies are explained.

Human Health and Global Environmental Change (Env)

(High School) *Capitol I, Westin*

Kate Hester *(kate_hester@hms.harvard.edu),* Harvard Medical School, Boston, Mass.

Try out lessons about the human health connection to environmental issues such as climate change, biodiversity, and energy. These lessons have been adapted for secondary classrooms from the Harvard Medical School course: *Human Health and Global Environmental Change*.

Examining Intraplate Earthquakes: New Madrid Seismic Zone (Earth)
(Middle Level–College) *Grand Ballroom 1, Westin*
Lloyd H. Barrow *(barrowl@missouri.edu)* and **Dane L. Shaffer,** University of Missouri, Columbia
Presider: Sarah A. Haynes, West Washington Junior/Senior High School, Campbellsburg, Ind.
Attention will be paid to concepts about earthquakes, plate tectonics, and intraplate earthquakes. Join us as we model an inquiry approach.

The Lunar Lighthouse: The First Proposed Interactive Space Mission (Earth)
(General) *Grand Ballroom 3, Westin*
Robert E. Strong *(robert@smartcenter.org)* and **Elizabeth A. Strong** *(libby@smartcenter.org),* SMART-Center, Wheeling, W.Va.
Explore the concept of the Lunar Lighthouse, the first proposed space mission that will connect the people of Earth with the Moon. Handouts and discussions.

NESTA Session: National Earth Science Teachers Association Atmosphere, Weather, and Climate Share-a-Thon (Earth)
(Elementary–High School) *Grand Ballroom 5, Westin*
Michelle Harris *(michelle.harris@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.
Dana Backman and **Coral Clark,** NASA SOFIA, Moffett Field, Calif.
Lynn S. Blaney *(lblaney@1st.net),* Institute for Global Environmental Strategies, Arlington, Va.
Annette Brickley, Challenger Center for Space Science Education, Mattapoisett, Mass.
Ginger Butcher *(ginger.butcher-1@nasa.gov),* NASA/Sigma Space, Beltsville, Md.
Jennifer A. Collins *(jcollins@oceanleadership.org),* Deep Earth Academy, Consortium for Ocean Leadership, Washington, D.C.
Taylor Dufford, Cherry Creek High School, Greenwood Village, Colo.
Todd Ellis *(todd.ellis@oneonta.edu),* SUNY Oneonta, N.Y.
Jessica Fries-Gaither *(fries-gaither.1@osu.edu),* The Ohio State University, Columbus
Robin Goettel *(goettel@illinois.edu),* University of Illinois, Urbana
Paige Graff *(paige.v.graff@nasa.gov),* Jacobs/ESCG/NASA Johnson Space Center, Houston, Tex.
Becca Hatheway *(hatheway@ucar.edu),* University Corporation for Atmospheric Research, Boulder, Colo.
Nathan Hobbs, Boulder High School, Boulder, Colo.
Liesl Hotaling, University of Rhode Island, Narragansett
Teresa J. Kennedy and **Nandini McClurg,** UCAR GLOBE Satellite Office, Tyler, Tex.
Tamara Shapiro Ledley *(tamara_ledley@terc.edu),* TERC, Cambridge, Mass.
Timothy McCollum *(tmccollum@eiu.edu),* Eastern Illinois University, Charleston
Margaret Mooney *(margaret.mooney@ssec.wisc.edu),* University of Wisconsin, Madison
Susan W. Moore *(susan.w.moore@nasa.gov),* SSAI/NASA Langley Research Center, Hampton, Va.
Kira Nugnes *(knugnes@ametsoc.org),* American Meteorological Society, Washington, D.C.
Jean Pennycook *(jean.pennycook@gmail.com), Penguin Science.com,* Fresno, Calif.
Carole J. Reesink *(cjreesink@muscanet.com),* Bemidji State University, Bemidji, Minn.
Bora Simmons *(borasimmons@gmail.com),* National Project for Excellence in Environmental Education, Eugene, Ore.
Margie Turrin *(mkt@ldeo.columbia.edu),* Lamont-Doherty Earth Observatory, Columbia University, Palisades, N.Y.
Amy Work, IAGT at Cayuga Community College, Inc., Auburn, N.Y.
Join more than 20 NESTA members and other education specialists as they share their favorite classroom activities. Lots of free handouts!

11:00 AM–12 Noon Exhibitor Workshops

EarthComm: AGI Takes an Earth Systems Approach to Introduce STEM Through a Simple EDC (Earth)
(Grades 8–12) *132, Convention Center*
Sponsor: It's About Time
Gary Curts, Dublin (Ohio) Public Schools
Learn the benefits of the Engineering Design Cycle (EDC) for teaching and learning Earth science. See how the American Geological Institute developed a project-driven course that makes a difference in performance for all levels of students, from the start of the semester to the completion. You will also be introduced to the use of data-logging technology to enhance the classroom experience.

"Sensor"ship in the Science and Math Classroom (Gen)
(Grades 6–12) *135, Convention Center*
Sponsor: Texas Instruments
Jeff Lukens *(jeffrey.lukens@k12.sd.us),* Roosevelt High School, Sioux Falls, S.Dak.
Okay, what do you think kids like better—collecting their own data or playing with "canned" data? No-brainer, right? Using data collection probes is a perfect way to integrate science and mathematics! Come experience the perfectly pleasurable plethora of probing possibilities!

11:00 AM–1:00 PM Luncheon

Lifelines for Climate Change Education Luncheon
(By Invitation Only) *Florida, Marriott Downtown*
Visit *www.lawrencehallofscience.org/gss/lifelines* for more information.

11:30 AM–12 Noon Presentation

SESSION 1
Mercury Cycle and Lighting Decisions (Env)
(High School) *Caucus, Westin*
Mary Annette Rose *(arose@bsu.edu),* Ball State University, Muncie, Ind.
Assessing lighting technology helps students connect personal decisions to biogeochemical cycles. Students compare the light intensity, power consumption, mercury content, and other trade-offs of lamps.

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. Participants will discover key science concepts by completing an actual classroom activity from the LEGO Education WeDo™ Robotics Set and Activity Pack.

12 Noon–1:15 PM Exhibitor Workshop

Transform Your Science Lessons in Mass Measurement and Analysis (Gen)
(Grades 5–10) *136, Convention Center*
Sponsor: Ohaus Corp.
Lou Loftin, Northwest Regional Professional Development Program, Reno, Nev.
The best balance for education just got better! Find out how educational software combined with the OHAUS Scout Pro® transforms science lessons into a completely new approach to teaching mass measurement and analysis. Interactive simulations, virtual labs, and hands-on activities all support enhanced student learning while serving as a STEM solution in the classroom.

12 Noon–1:30 PM Exhibitor Workshops

The Layered Earth: Geology, Atmosphere, and Climate for the Modern Classroom (Earth)
(Grades 5–College) *101, Convention Center*
Sponsor: Simulation Curriculum Corp.
Herb Koller *(hkoller@simcur.com),* Simulation Curriculum Corp., Aurora, Ont., Canada
Manipulating models is an effective way to investigate scientific ideas, especially when dealing with things that are very slow, fast, large, or small. With The Layered Earth, you'll give your students a virtual model of Earth that can be measured, manipulated, and visualized, to build a deeper understanding of how the Earth system works. What powers the internal processes that produce volcanoes, earthquakes, and mountains? What is the rock cycle and how does it work? What is Earth's atmosphere made of? How can mountains affect rainfall patterns? What are some possible effects of global warming? Come experience this 3-D interactive curriculum.

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!

BIOZONE Biology Workbooks and Presentation Media (Grades 9–12) (Bio)
(Grades 9–College) *103, Convention Center*
Sponsor: BIOZONE International
Richard Allan, BIOZONE International, Hamilton, New Zealand
BIOZONE's acclaimed student workbooks with their cutting-edge content can assist students to achieve success. With clear learning objectives, concept-based design, and engaging graphics, these workbooks encourage critical thinking and active interactions. Take home a free book.

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 experience will include a unique set of activities (see page 120).

Mastering the Chemical Formula: An Exceptionally Effective Way to Teach Subscripts and Coefficients (Chem)
(Grades 9–12) *105, Convention Center*
Sponsor: LAB-AIDS, Inc.
Tom Hsu, Author, Andover, Mass.
What is the difference between subscripts and coefficients? What does "balancing" a chemical equation mean? Many students have trouble with these fundamental concepts in chemistry. If a student does not fully understand the chemical formula, then moles, reactions, and stoichiometry are hopelessly confusing. Join us for some elegant, intuitive, and well-differentiated lessons that allow students of all levels to master the chemical formula and thereby move confidently into a deeper understanding of chemistry.

I Think There's a Genetically Engineered Fly in My Genetically Modified Pea Soup! (Bio)
(Grades 9–12) *106, Convention Center*
Sponsor: LAB-AIDS, Inc.
Barbara Nagle, Lawrence Hall of Science, University of California, Berkeley
Students often have trouble conceptualizing how selective gene expression works. In this workshop, participants will use manipulatives to teach this concept and explain how it is connected to genetic engineering. Innovative activities are selected from the new *Science & Global Issues Biology* program from SEPUP and LAB-AIDS. Activities focus on ways to integrate selective gene expression as a relevant and engaging sustainability issue.

Changing Planet—Past, Present, and Future (Bio)
(Grades 9–College) *109, Convention Center*
Sponsor: Howard Hughes Medical Institute
Dennis Liu *(dliu@hhmi.org),* Howard Hughes Medical Institute, Chevy Chase, Md.
What do the K-T extinction, climate change, and plate tectonics have in common? They all have discovery stories that reveal the nature of science and can help students better understand the meaning of scientific inquiry and thinking. The nature of science, mass extinctions, and our changing

planet are areas where the fields of biology and Earth science naturally intersect and inform each other. Join HHMI staff in starting a dialogue between biology and Earth science teachers, focused on these important topics. Biology and Earth science teachers—come prepared for lively discussion and to weigh in on plans for future HHMI lecture series and educational films.

It's How They Learn: 21 Ways to Use Discovery Education (Gen)

(Grades K–12) *110, Convention Center*

Sponsor: Discovery Education

Trinette Green, Discovery Education, Silver Spring, Md.

Half of U.S. schools incorporate Discovery Education digital resources into instruction. Come see how engaging and interactive resources enhance science instruction.

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!

Advanced Biology and Biotechnology with Vernier (Bio)

(Grades 9–College) *117, Convention Center*

Sponsor: Vernier Software & Technology

Mike Collins *(info@vernier.com)* and **Robyn Johnson** *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.

In this hands-on workshop, you will learn how easy it is to integrate Vernier technology into your advanced high school biology or college biology course. Experiments from our *Advanced Biology with Vernier* lab book will be performed using SpectroVis Plus spectrophotometer + fluorometer and our Digital Bioimaging Systems.

Teaching STEM with Forensics (Gen)

(Grades 9–12) *130, Convention Center*

Sponsor: WARD'S Natural Science

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

Join us at the scene of the crime for a hands-on workshop that incorporates forensics with the elements of STEM. Participants will study evidence, plan and implement experimental investigations, formulate testable hypotheses, and use real-world technology and equipment of a forensic scientist. Investigations will include collecting, recording, and analyzing data.

STEM Activities: Environmental Science Using Microslides—Microbe Growth and ID System (Env)

(Grades 10–12) *131, Convention Center*

Sponsor: LaMotte Co.

Richard Killen and **Kenneth Rainis,** Precision Microslides, Cottonwood, Ariz.

Learn environmental monitoring STEM skills, including fecal coliform, a key factor in determining the Water Quality Index (WQI). Use Microslides™ to collect and incubate a sample, and a colony visual ID guide to determine an overall sample "Q-Value." Other WQI parameters are also reviewed. Participants receive a link to the FREE iPad App Microslides Identifying Microbe Colonies, Microslide samples, and a CD-ROM with teacher resource materials for water quality assessment.

***Marine Science: The Dynamic Ocean*—A New High School STEM Offering (Earth)**

(Grades 9–12) *133, Convention Center*

Sponsor: Pearson

Meghan Marrero, Mercy College, Dobbs Ferry, N.Y.

Glen Schuster, U.S. Satellite Laboratory, Inc., Rye, N.Y.

Meet the authors and learn how STEM pedagogical strategies help students understand integrated science content in the context of the ocean. Not only does this new course blend life, Earth, and physical science, it also presents Earth's greatest resource—our ocean. Discover it in the context of tracking marine animals and socio-scientific issues.

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

(Grades 5–12) *139, Convention Center*

Sponsor: CPO Science/School Specialty Science

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

Experience CPO's Optics with Light and Color kit complete with LED flashlights, a laser, lenses, a mirror, and more. Try color mixing, relate it to human vision, and examine different spectra. Shine a laser through a prism and see for yourself the phenomenon of total internal reflection. We make studying light exciting!

Middle School Physical Science: Learning Newton's Laws of Motion Through Hands-On, Probeware-based Activities (Phys)

(Grades 6–8) *140, Convention Center*

Sponsor: PASCO scientific

Presenter to be announced

Get hands-on experience with a state-of-the-art way to meet the physical science standards when you conduct an activity from the Sally Ride Science™ SPARKlab® series. These activities from Sally Ride Science and PASCO cover the content you already teach through integrated, probeware-based guided inquiry lessons. The hands-on activity and teacher resources will cover concepts related to Newton's Laws of Motion.

Physics and Physical Science: Investigating Motion (Phys)

(Grades 9–12) *141, Convention Center*

Sponsor: PASCO scientific

Presenter to be announced

Investigate the differences between speed and velocity in this hands-on, probeware-based workshop featuring PASCO carts and PAStrack. Your hands-on experience will include using one of PASCO's standards-based SPARKlabs® to improve student understanding of motion, which is a foundation topic in the study of physics and physical science. Additional activities will be demonstrated.

Mathematics + Literacy + the Common Core (Gen)

(Grades K–5) *143, Convention Center*

Sponsor: Carolina Biological Supply Co.

Jennifer Altieri, Carolina Curriculum Leadership Series, Burlington, N.C.

Educational leaders—learn how to foster elementary students' literacy growth and at the same time strengthen children's mathematical knowledge. This session will focus on suggestions and activities that address mathematics standards and English Language Arts (ELA) Common Core State Standards. Join Jennifer Altieri as she shares her expertise in literacy and education.

Carolina's Young Scientist's Dissection Series (Bio)

(Grades 5–8) *144, Convention Center*

Sponsor: Carolina Biological Supply Co.

Mary Alexander, Carolina Biological Supply Co., Burlington, N.C.

These dissection kits provide an introductory-level study of the earthworm, crayfish, grasshopper, starfish, perch, and frog. Using instructions provided, participants locate and identify external and internal features, and gain understanding of the animals as well as the relationship of structure to function. Kits address grades 5–8 life science national standards.

Exploring Gene Function in *C. elegans*: Mutations and RNA Interference (Bio)

(Grades 9–College) *145, Convention Center*

Sponsor: Carolina Biological Supply Co.

DNA Learning Center

The roundworm *C. elegans* lets students explore gene function. Discover the exciting things you can do in the classroom with this model organism. Learn how to grow the worms, explore mutant phenotypes, and easily turn off specific genes with RNA interference.

Whose DNA Was Left Behind? Thirty-Minute Forensics Experiments (Bio)

(Grades 8–College) *201, Convention Center*

Sponsor: Edvotek

Jack Chirikjian *(info@edvotek.com),* **Khuyen Mai** *(info@edvotek.com),* and **Lucia Dussan** *(info@edvotek.com),* Edvotek, Washington, D.C.

Your students can solve a crime! Using DNA fingerprint-

ing procedures, compare crime scene Ready-to-Load™ samples against suspect samples. Then use blood type–based screening to identify suspects who may have been present at the crime scene. Other non-DNA-based identification methods that are adaptable for classroom experiments will be featured.

Teaching AP Chemistry with Molecular-Level Visualization and Simulation Tools (Chem)

(Grades 8–College) *203, Convention Center*

Sponsor: Wavefunction, Inc.

Paul D. Price *(sales@wavefun.com),* Trinity Valley School, Fort Worth, Tex.

Indispensable in many college chemistry courses, molecular modeling is also an effective learning tool for the high school classroom. Bring your laptop (Windows or Mac OS X) to this hands-on workshop and learn how to support your teaching of AP Chemistry with the powerful 2012 release of *Odyssey College Chemistry.*

How to Design a Safe and Efficient Science Laboratory (Gen)

(Grades 6–College) *Wabash Ballroom 1, Convention Center*

Sponsor: Flinn Scientific, Inc.

Greg Chyson, Flinn Scientific, Inc., Batavia, Ill.

Get answers to all your laboratory design questions! We will share design priority tips and safety information gathered from years of experience helping science teachers plan their laboratory construction and remodeling projects. You'll learn what features to include in your laboratories and what common mistakes to avoid.

Get Charged Up with Educational Innovations! (Phys)

(Grades 5–9) *Wabash Ballroom 2, Convention Center*

Sponsor: Educational Innovations, Inc.

Ken Byrne, Educational Innovations, Inc., Bethel, Conn.

Engage in fun activities with static electricity. Make your own Franklin static motor and discover a plethora of activities to get your class charged up. Door prizes!

12 Noon–2:00 PM ASTE/NSELA Luncheon

STEM Education Under the Grow Light: What to Propagate and What to Prune? (M-5)

(Tickets Required: $55) *JW Grand Ballroom 1, JW Marriott*

Jeffrey Weld *(jeff.weld@uni.edu),* Executive Director, (Iowa) Governor's STEM Advisory Council; Director, Iowa Mathematics and Science Education Partnership; and Associate Professor, Dept. of Biology, University of Northern Iowa, Cedar Falls

State and national STEM initiatives are popping up like dandelions across a verdant Iowa lawn, their programs propagating in an "anything goes" atmosphere of scale-up while the STEM spotlight shines. Mature initiatives are pruning as well as propagating—making evidence-driven decisions about best practices in teacher professional development, learner inspiration, and recruitment quality. Join Jeffrey Weld as he shares Iowa programming examples.

Dr. Jeffrey Weld is actively engaged in reinvigorating science and math education in hundreds of communities across Iowa as executive director of the Iowa Governor's STEM Advisory Council and director of the Iowa Mathematics and Science Education Partnership. Jeff oversees statewide reform programming in science and math teacher recruitment, practitioner professional development, and learner inspiration.

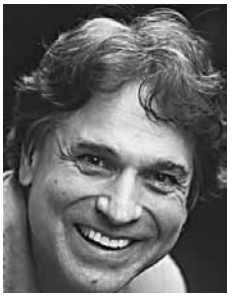
Dr. Weld is also associate professor in Biology at the University of Northern Iowa. In 2007, Jeff was named the USA's top college biology teacher by the National Association of Biology Teachers. Apart from his university involvement, he has also taught high school science in Texas, Missouri, and Iowa. He has authored numerous research articles relating to effective science teaching practices, along with the popular textbook The Game of Science Education *published in 2004. His service extends to board positions at several state and national STEM organizations, including the National Alliance for Partnerships in Equity and the STEM Equity Pipeline and as former president of the Iowa Science Teachers. He holds a PhD in science education from the University of Iowa.*

Tickets, if still available, must be purchased at the Ticket Sales Counter in the NSTA Registration Area before 3:00 PM on Thursday.

12 Noon–2:00 PM CESI/NSTA Elementary Science Luncheon

3-D Illusion Madness! The History, Science, and Everyday Application of Perceiving 3-D! (M-6) (Gen)

(Tickets Required: $55) *Indiana Blrm. E, Marriott Downtown*



Michael A. DiSpezio, Author and Science Educator, North Falmouth, Mass.

3-D movies, TVs, cell phones, and classrooms! What's the scoop and science underlying this eye-popping technology and how is it most effectively transported into the science classroom? In this fun, engaging, and hands-on/minds-on session, you'll experience 3-D magic as you learn how to take your own 3-D photographs using an ordinary digital camera. Appropriate for all grade levels, you'll learn tips, techniques, and inexpensive ways to add depth to your teaching—plus get a heads-up on what to expect in the 3-D consumer market.

Lauded for his dynamic, interactive presentations, Michael A. DiSpezio has hosted 60 broadcasts of The JASON Project, as well as hosting broadcasts for The Discovery Channel, PBS, MTV, and The Weather Channel to name a few. A former marine biologist, Michael has co-authored several dozen science textbooks that are used in K–12 classrooms and several dozen trade books on various topics in science that range from critical-thinking puzzles to HIV awareness.

After completing his graduate studies at the Marine Biological Laboratory at Woods Hole, he worked as a research assistant for Nobel laureate Albert Szent-Györgyi. With a master's degree in biology from Boston University, he extended his passion for education as a K–12 classroom teacher for nearly 10 years.

Tickets, if still available, must be purchased at the Ticket Sales Counter in the NSTA Registration Area before 3:00 PM on Thursday.

12 Noon–2:00 PM NSTA/NMLSTA Middle Level Luncheon

Finding Adventures in Science (M-7)

(Tickets Required: $55) *Indiana Blrm. A/B, Marriott Downtown*

Rick Crosslin *(rickc@childrens-museum.org),* School Liaison for Science Learning, The Children's Museum of Indianapolis, and Lead Science Educator, Metropolitan School District of Wayne Township, Indianapolis, Ind.

Rick Crosslin's enthusiasm for science is infectious. He encourages kids to tackle science head-on, saying it's more important to be a science questioner than a science answerer. As producer and star of a WFYI TV show *Indiana Expeditions,* he has traveled throughout the state of Indiana explaining and demonstrating various applications of science in the real world, usually on location. His own natural curiosity has led him all over the world, from exploring glaciers in Lake Michigan to South Dakota to dig for dinosaur fossils, and on to the Amazon rain forest. Join him as he shares some of his adventures and insights on how educators can view their schools, towns, cities, and states as macro petri dishes for science adventures of their own.

"Don't take my word for it. Try it yourself!" is Rick Crosslin's motto, writing as "Mr. C the Scienceman" for the publication Inquisitive Kids. *The list of awards recognizing Rick for his outstanding teaching includes a 2004 Indiana University School of Education Distinguished Alumni Award, the 1999 Hoosier Association of Science Teachers, Inc. (HASTI) Distinguished Service Award, and the 1997 Indiana Exemplary Teacher Network Award.*

With 35 years as an educator, Rick has taught grades three, four, and six in Indiana and in Cairo, Egypt, as well as graduate courses for Indiana University–Purdue University Indianapolis (IUPUI). He holds a master's degree in elementary education from Indiana University Bloomington. Currently the school liaison for science learning at The Children's Museum of Indianapolis and the science lead teacher for the Metropolitan School District of Wayne Township, Rick is known for his unique blend of humor, facts, and hands-on activities. He is also creator and host of Indiana Expeditions, *a multipart series produced by WFYI Public Television that shows how science impacts daily life. His service extends to being the director for the Diabetes Youth Foundation of Indiana.*

Tickets, if still available, must be purchased at the Ticket Sales Counter in the NSTA Registration Area before 3:00 PM on Thursday.

12:30–1:00 PM Presentations

SESSION 1

Improving Physics Lessons: Teach Conceptual History of Physics in the Classroom (Phys)

(High School) *125, Convention Center*

Charles Winrich *(cwinrich@bu.edu)* and **Peter Garik** *(garik@bu.edu),* Boston University, Boston, Mass.

Learn about the impact on physics teachers' pedagogy of professional development that emphasizes the history of physics and the use of models in science.

SESSION 2

Role-Playing to Increase Student Understanding of Abstract Biological Concepts (Bio)

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

Jennifer L. MacColl, Chaparral High School, Scottsdale, Ariz.

Integrating role-playing through creating videos can make abstract and challenging concepts visible and help students construct an awareness of their own understanding.

SESSION 3

It Is Not Easy Seeing Green! (Bio)

(Elementary) *209, Convention Center*

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

Students investigate color perception through an inventory walk that initiates a science talk around the question: How do you know something is green?

SESSION 4

Integrating Robotics into the Curriculum (Gen)

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

Urvi Shah, University of Ontario Institute of Technology, Toronto, Canada

Review findings from a study designed to gauge and determine the effect of an integrated robotics unit in a K–8 classroom.

SESSION 5

Institute for Accessible Science (IAS): Advancing Inclusion of Persons with Disabilities in Laboratory Science (Bio)

(High School–College) *201, JW Marriott*

Susan M. Mendrysa *(mendrysa@purdue.edu),* Institute for Accessible Science, Purdue University, West Lafayette, Ind.

Loran Carleton Parker *(carleton@purdue.edu),* Purdue University, West Lafayette, Ind.

Come hear about the efforts of the Institute for Accessible Science to support students with disabilities in pursuing careers in science.

12:30–1:30 PM SCST Marjorie Gardner Lecture

Chemistry, Life, the Universe, and Everything (Chem)

(College) *203, JW Marriott*

Melanie M. Cooper *(cmelani@clemson.edu),* Clemson University, Clemson, S.C.

Presider: Nancy L. Elwess *(nancy.elwess@plattsburgh.edu),* SUNY Plattsburgh, N.Y.

Let's discuss what research on science teaching and student learning can tell us about course and curriculum development.

12:30–1:30 PM Informal Science Day Brown Bag Lunch

Building Bridges Between In-School and Out-of-School STEM Learning

(Informal Education) *JW Grand Ballroom 5, JW Marriott*

Moderator: **Dennis Schatz** *(dschatz@nsf.gov),* Acting Lifelong Learning Cluster Coordinator, National Science Foundation, Arlington, Va., and Senior Vice President for Strategic Programs, Pacific Science Center, Seattle, Wash.

Presenters:

David Hanych, Program Director, National Science Foundation, Arlington, Va.

Monya Ruffin, Program Director, National Science Foundation, Arlington, Va.

STEM learning occurs everywhere—in school, at home, during after-school programs, in community-based programs, and while watching television or connecting to the web. Come see examples of programs and projects funded by the National Science Foundation that connect in-school and out-of-school settings and participate in a discussion regarding effective strategies that bridge in-school and out-of-school STEM learning. Ample time will be provided for questions and comments from the audience.

12:30–1:30 PM Presentations

SESSION 1

Organizational Strategies That Benefit You and Your Students (Gen)

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

Alicia Bitler *(alicia_campbell@mcpsmd.org),* Montgomery County Public Schools, Rockville, Md.

Maximize your instructional time with many organizational strategies that can be used the next teaching day.

SESSION 2

Have Your Students Looking Forward to Opening Their Textbooks (Chem)

(Middle Level–High School) *121, Convention Center*

John E. Clark *(jeclark@volusia.k12.fl.us),* Deltona High School, Deltona, Fla.

Come learn how you can link your science content to improved literacy while you facilitate students' discovery of key learning points within a chapter. This group-focused, inquiry-based "Conference Learning" activity will have your students reading their textbooks and looking forward to doing it! Also, other ideas to raise literacy will be shared.

SESSION 3 (two presentations)
(General) *123, Convention Center*

Water in the Valley: Watershed Monitoring for Children (Env)
Tom F. Fitzpatrick *(tfitzpatrick@rcps.info),* Roanoke (Va.) City Public Schools
Learn how to combat nature-deficit disorder and get your students into the field to collect, post, and evaluate water monitoring data and take action.

The ULTIMATE Project Based Learning (PBL): Changing the World! (Gen)
Michael Baer *(mbaer@southadams.k12.in.us),* South Adams High School, Berne, Ind.
A high school science class undertakes their biggest lab challenge ever—developing and installing village-sized water purifiers in Haiti.

SESSION 4

NSTA Avenue Session: Disney's Planet Challenge: Project Based Learning and Service Learning–based Lesson Development and Funding (Env)
(Elementary–Middle Level) *124, Convention Center*
Kristy Gilpin *(kristy.gilpin@zacharyschools.org)* and **Breigh Rainey Rhodes** *(breigh.rhodes@zacharyschools.org),* Zachary Elementary School, Zachary, La.
Fran Wachter *(fwachter@marionunit2.org),* Creal Springs School, Creal Springs, Ill.
Learn about Project Based Learning (PBL) opportunities from previous Disney's Planet Challenge participating teachers as they discuss their winning projects, provide tips for successfully engaging students, and offer advice on how to secure grants and funding for your own classroom projects. Presenters will share how they have raised significant dollars in classroom funding and give insight into their experience in creating engaging and successful PBL and environmental service lessons. Join the discussion and learn what you can do to help your classroom!

SESSION 5

The Magnet Lab: Magnets Is What We Do! (Phys)
(Preschool–Elementary) *207, Convention Center*
Carlos R. Villa *(villa@magnet.fsu.edu),* National High Magnetic Field Laboratory, Tallahassee, Fla.
If you see only one session on magnets and magnetism, get it from the pros right here. Aimed at elementary students, this session will cover magnetism completely. And did I mention the giveaways?

SESSION 6

Brain Acrobatics (Gen)
(Elementary) *212, Convention Center*
Barry R. Thompson *(bthompson@aug.edu),* Augusta State University, Augusta, Ga.
Learn to use body motion combined with music to facilitate the learning of science content.

SESSION 7

It's a Mad, Mad World of Science (Gen)
(Elementary) *231, Convention Center*
Melanie W. Glover *(melanie.glover@trussvillecityschools.com)* and **Betsy H. Schmitt** *(betsy.schmitt@trussvillecityschools.com),* Paine Primary School, Trussville, Ala.
We will highlight a collaboration between a primary school and a high school environmental science department in which high school students taught primary students about the importance of caring for and preserving the environment.

SESSION 8

Incorporating the History of Science to Address a Specific Nature of Science Learning Objective (Chem)
(General) *236, Convention Center*
Lloyd M. Mataka *(lloyd.m.mataka@wmich.edu),* Mallinson Institute for Science Education, Western Michigan University, Kalamazoo
Discover how you can use a historical episode to address a nature of science objective and other non-nature of science objectives.

SESSION 9

Assessing Understanding with Student-created 3-D Animations (Gen)
(Middle Level) *243, Convention Center*
Deborah A. Gaff *(gaff@rose-hulman.edu),* Rose-Hulman Institute of Technology PRISM Project, Terre Haute, Ind.
Learn how students use the Alice programming environment to create a 3-D virtual world modeling their understanding of science.

SESSION 10

Phenotypic Distribution of Polygenic Traits and Allele Frequency for Introductory Biology (Bio)

(High School) *244, Convention Center*

John C. Brady *(jbrady@brebeuf.org)* and **Travis Curry** *(tcurry@brebeuf.org),* Brebeuf Jesuit Preparatory School, Indianapolis, Ind.

Learn how to model concepts outside the four walls of the classroom. We will demonstrate how selection works upon phenotypes to change a population's allele frequencies and use invasive species to demonstrate phenotypic distribution of polygenic traits.

SESSION 11 (two presentations)

(High School–College) *103, JW Marriott*

Promoting Students' Argument Skills and Science Understanding Through the Nature of Light (Phys)

Jianlan Wang *(hurricane355wjl@gmail.com)* and **Gayle Buck** *(gabuck@indiana.edu),* Indiana University, Bloomington

This unit aims to improve students' argument skills and understanding of the nature of science in the context of the famous historical debate over the nature of light.

Enhancing Undergraduate Students' Beliefs of Scientific Inquiry and Scientists (Gen)

Gayle Buck *(gabuck@indiana.edu)* and **Xinying Yin** *(yinx@indiana.edu),* Indiana University, Bloomington

Join us as university educators share a self-study on reconceptualizing an undergraduate science course to enhance university students' conceptions of scientists and scientific inquiry.

SESSION 12

Become an Einstein Fellow! (Gen)

(General) *104, JW Marriott*

Kathryn G. Culbertson *(einsteinfellows@triangle-coalition.org),* Triangle Coalition for Science and Technology Education, Arlington, Va.

Get the details about an 11-month paid fellowship program open to K–12 classroom teachers in a STEM field who have been teaching for at least five years. You could become an Einstein Fellow!

SESSION 13

NARST Session: Teaching Science to English Language Learners: Teaching Strategies of an Inquiry-based Astronomy Curriculum That Work (Earth)

(General) *206, JW Marriott*

Martina Nieswandt *(mnieswan@educ.umass.edu),* University of Massachusetts, Amherst

Review findings from a study investigating teaching strategies that support successful implementation of an inquiry-based high school astronomy curriculum with English language learners in the Southwest United States.

SESSION 14

Resources and Research for Professional Development Providers (Gen)

(Supervision/Administration) *208, JW Marriott*

Christine A. Royce *(caroyce@aol.com),* NSTA Director, Professional Development, and Shippensburg University, Shippensburg, Pa.

Join the Professional Development Committee for a roundtable discussion as they provide short synopses of the current literature and research available in the PD area.

SESSION 15

Authentic Problems for Authentic Learning: Innovation in STEM Education (Gen)

(Middle Level–High School/Supv.) *209, JW Marriott*

Karen Lindebrekke *(karen.lindebrekke@ibioinstitute.org)* and **Ann Reed** *(ann.reed@ibioinstitute.org),* iBIO Institute, Chicago, Ill.

Kathy Konyar *(kathy.konyar@d214.org),* Wheeling High School, Wheeling, Ill.

Presider: Renee Anderson, Illinois Mathematics and Science Academy, Aurora

Industry-led education partnerships provide learners with opportunities to explore authentic problems, providing meaningful context for learning STEM concepts and developing 21st-century skills.

SESSION 16

Exploration of STEM Careers (Gen)

(General) *309/310, JW Marriott*

Kathy Agee *(ageek@gvsu.edu)* and **Margo Dill** *(dillm@gvsu.edu),* Grand Valley State University, Allendale, Mich.

Learn how Grand Valley State University encourages middle school students to enter the STEM pipeline through summer day camps focusing on engineering and the health professions.

SESSION 17

Effectively Teaching and Assessing the Nature of Science (Gen)

(General) *314, JW Marriott*

Michael P. Clough *(mclough@iastate.edu),* Iowa State University, Ames

Learn how to effectively teach and assess students' understanding of the nature of science throughout the school year. Easily accessible teacher resources will be provided.

SESSION 18

Lab Inquiry: It's as Easy as ABC (Activity Before Concept) (Gen)

(General) *JW Grand Ballroom 8, JW Marriott*

Arthur Eisenkraft *(arthur.eisenkraft@umb.edu),* 2000–2001 NSTA President, and University of Massachusetts Boston

Lab activities should precede concepts in order to improve lab practice and outcomes and provide a level playing field for learning.

SESSION 19

PDI **BEST Pathway Session: Energy in K–12 Chemistry (Chem)**

(Elementary–High School) *White River Blrm. B, JW Marriott*

Kristen L. Cacciatore, Boston High School, East Boston, Mass.

Join me as we aim to identify energy concepts taught in K–12 curricula and discuss how to connect energy concepts within chemistry and across other science disciplines.

SESSION 20

Maintaining Biodiversity Through Environmental Conservation Awareness Programs in School Sectors: A Case Study of Nigeria (Env)

(High School–College) *White River Ballroom H, JW Marriott*

Mayowa M.A. Abolaji, Guildhall College, London, U.K.

Walk away with new methods of imparting environmental knowledge to the average learner. The anchor on the road to a sustainable environment is a teacher's efficacy in disseminating environmental knowledge to students that impacts their attitudes and behavior toward the issue.

SESSION 21

Free Web Tools for the Classroom (Gen)

(General) *Marriott Ballroom 1, Marriott Downtown*

Barbara S. De Santis *(bsdesantis@yahoo.com),* Sayreville (N.J.) Public Schools

Investigate free web tools for your classroom. Applications are suitable for all grade levels. See student samples and obtain links and how-to handouts.

SESSION 22

"Nature of Science" in School Science: The Role of Critical Thinking (Gen)

(General) *Marriott Ballroom 10, Marriott Downtown*

Hagop A. Yacoubian *(hagop.yacoubian@ualberta.ca),* University of Alberta, Edmonton, Canada

Gain an introduction to a new framework of "Nature of Science" (NOS) for school science that orchestrates critical thinking and substantive NOS content.

SESSION 23

I Have to Set Up What?! Management Strategies for the High School Science Class (Gen)

(Middle Level–College) *Michigan/Texas, Marriott Downtown*

Chuck Downing *(cdowning@tvusd.k12.ca.us)* and **Rachel L. Larson** *(rlarson@tvusd.k12.ca.us),* Great Oak High School, Temecula, Calif.

Learn and share routines and procedures to effectively manage your classroom and laboratory experiences. Specific examples will be demonstrated. Don't miss this valuable session for new teachers.

SESSION 24

Investigating Estuaries with Online Monitoring Data: Activities from Estuaries 101 (Gen)

(General) *Cabinet, Westin*

Bree Murphy *(bree.murphy@noaa.gov),* NOAA National Estuarine Research Reserve System, Silver Spring, Md.

Learn about estuaries using real scientific data. Work through this classroom-ready Estuaries 101 curriculum for middle school and high school students created by NOAA's National Estuarine Research Reserve System.

SESSION 25

Bringing Students, Parents, Schools, and Communities Together Through a Green School Program (Env)

(General) *Capitol II, Westin*

Carol L. Jones *(caroljones8710@yahoo.com),* Lawrence Technological University, Southfield, Mich.

Eileen Byrnes *(byrnes@wcskids.net),* Grissom Middle School, Sterling Heights, Mich.

Cheryl Czarnik, Davis Junior High School, Sterling Heights, Mich.

Presider: Elizabeth Niehaus *(niehaus_p@msn.com),* Niehaus and Associates Inc., South Lyon, Mich.

Students across Michigan have immersed themselves in environmental activities that involve not only their families but their schools and communities. Learn how you can duplicate this program.

SESSION 26

Interdisciplinary Space Exploration Units with NASA and WWT (Earth)

(General) *Capitol III, Westin*

Mari Westerhausen *(mari@azlearns.com),* Edison Elementary School, Phoenix, Ariz.

Join your NASA Ambassador in exploring interdisciplinary space units that integrate STE(A)M (science, technology, engineering, arts/architecture, and math) concepts using NASA Heliophysics and Solar System resources and the Microsoft® WorldWide Telescope (WWT).

SESSION 27

Connecting the Dots on the Global Ocean (Env)

(General) *Caucus, Westin*

Lollie Garay, Redd School, Houston, Tex.

What do students in Texas, Alaska, and Georgia all have in common? Sharing the global ocean and partnering with researchers in a unique study.

SESSION 28

Global Climate Change and Integrated Science (Gen)

(Elementary–High School) *Chamber, Westin*

Christopher Dobson *(dobsonc@gvsu.edu)* and **Stephanie Haley,** Grand Valley State University, Allendale, Mich.

Use global climate change to "integrate" the physical, life, and Earth sciences; develop student inquiry; and address National Science Education Standards. Handouts!

SESSION 29

Modeling Microclimate in a Science Course (Earth)

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

Randal L.N. Mandock *(rmandock@cau.edu)* and **Willandra Whiting** *(willandrawhiting@aol.com),* Clark Atlanta University, Atlanta, Ga.

Introduce your students to climate modeling with an interactive energy balance module. Students model realistic scenarios of how solar energy is partitioned at Earth's surface.

SESSION 30

AMSE Session: Don't Ignore the Question: The Power of Inquiry to Promote Awareness (Gen)

(Preschool–Elementary) *Grand Ballroom 3, Westin*

Sharon J. Delesbore *(sjd.opportunity@yahoo.com),* Fort Bend Independent School District, Sugar Land, Tex.

Unable to interest young students in science? Make science simple through the promotion of inquiry. Elevate awareness of science concepts and careers in everyday living.

12:30–1:30 PM Workshops

Cell Phones Uncovered **(Phys)**
(Elementary–Middle Level) *122, Convention Center*
Mary Lightbody *(lightbody.1@osu.edu),* The Ohio State University, Newark
Do you know how your cell phone manages to vibrate to alert you to an incoming call? Come find out what's on the inside!

Kick-Start Scientific Inquiry with Thinking Starters **(Phys)**
(General) *126, Convention Center*
Paula Magee *(pamagee@iupui.edu),* Indiana University–Purdue University Indianapolis
Irene Salter *(isalter@csuchico.edu),* California State University at Chico
Learn how to use and identify "thinking starters" as a way to teach inquiry science.

Rigor *vs.* Rhetoric: Developing Critical-thinking Skills in Our Students **(Gen)**
(Middle Level–High School) *128, Convention Center*
Jenelle D. Hopkins *(jhopkins@interact.ccsd.net),* Centennial High School, Las Vegas, Nev.
Carol A. Engelmann *(caengelm@mtu.edu),* Michigan Technological University, Houghton
Learn some strategies for increasing students' skills in analyzing the debates surrounding scientific issues.

Stem Cells: Science and Ethics **(Bio)**
(Middle Level–College) *204, Convention Center*
Jeanne Chowning *(jchowning@nwabr.org),* Northwest Association for Biomedical Research, Seattle, Wash.
Explore the scientific and ethical implications of embryonic stem cell research using hands-on, engaging activities from our popular curriculum. Receive the unit free on CD.

Teaching Newton's Laws of Motion Using Wooden Coaster Cars **(Phys)**
(Middle Level) *205, Convention Center*
Mary K. Fassbender *(mary.fassbender@franklin.k12.wi.us),* Forest Park Middle School, Franklin, Wis.
Kasie Sattler *(klknadle@gmail.com),* Wrightstown Middle School, Wrightstown, Wis.
Participants will be actively involved in hands-on activities that can be used to teach Newton's three laws of motion.

An Integrated Curriculum with Apples at the Core **(Gen)**
(Preschool–Elementary) *211, Convention Center*
Judith Anderson *(janderson@friendsseminary.org)* and **Stephanie Feinman,** Friends Seminary, New York, N.Y.
Be a pioneer! Join Johnny Appleseed as we explore an integrated curriculum with apples at the core. Learn how to make dried apple head dolls. Handouts!

Geoscience ROCKS! Discover the Excitement of Geoscience Research in Antarctica **(Gen)**
(Informal Education) *232, Convention Center*
Betty Trummel *(boop82@aol.com),* Husmann Elementary School, Crystal Lake, Ill.
Explore geoscience activities and materials produced as a result of an exciting partnership between the scientists and educators of the ANDRILL (ANtarctic DRILLing) program.

NASA's "Reading, Writing, and Rings": Using Saturn to Teach Science and Language Arts **(Earth)**
(Elementary–Middle Level) *233, Convention Center*
Rachel Zimmerman-Brachman *(rachel.zimmerman-brachman@jpl.nasa.gov),* NASA/Jet Propulsion Laboratory, Pasadena, Calif.
Explore NASA's science and language arts curriculum that uses the Cassini mission to Saturn as inspiration for enhancing students' interest in reading, writing, and science.

Tricks of the Trade **(Gen)**
(Elementary–Middle Level) *234, Convention Center*
Sally Creel *(sally.creel@cobbk12.org),* Cobb County Schools, Marietta, Ga.
Explore research-based strategies necessary to enable students to become scientifically literate! Several fun, nontraditional formative assessment strategies will be shared. Take home a CD of strategies.

Educating Young Children About the Environment **(Env)**
(Preschool) *235, Convention Center*
Bora Simmons *(borasimmons@gmail.com),* University of Oregon, Eugene
Be ready to actively participate and walk away with recognized tools that can help you develop environment-based programs for young children. Take home Early Childhood Environmental Education Guidelines from the North American Association for Environmental Education.

Addressing Core Science Standards Through Nanoscale Science for Grades 6–8 **(Gen)**
(Middle Level) *239, Convention Center*
Joyce P. Allen *(joyce.palmer@mirc.gatech.edu)* and **Nancy Healy** *(nancy.healy@mirc.gatech.edu),* Georgia Institute of Technology, Atlanta
Explore teaching about small-scale objects with fun hands-on activities. Take home a CD full of activities.

Motion in the Sky: The Sun and Stars—From a Geocentric Model to a Heliocentric Model **(Phys)**
(Elementary–Middle Level) *240, Convention Center*
Ann P. McMahon *(annpmcmahon@gmail.com),* Ann P. McMahon, LLC, St. Louis, Mo.
Patrick C. Gibbons *(pcg@wustl.edu)* and **John F. Wiegers,** Washington University in St. Louis, Mo.
We will describe the motions of the Sun and stars and represent them in a geocentric model. We will then transform these descriptions to a heliocentric model.

NSTA Press Session: ***The Gourmet Lab*** **(Gen)**
(Elementary–Middle Level) *241, Convention Center*
Sarah Reeves Young *(youngs@einsteinfellows.org),* Einstein Fellow, National Science Foundation, Arlington, Va.
NSTA Press author Sarah Reeves Young will show how her text, *The Gourmet Lab: The Scientific Principles Behind Your Favorite Foods,* teaches students physical science through edible labs.

A Three-Week Biotech Unit for Any Biology Class **(Bio)**
(High School) *245, Convention Center*
Ellyn A. Daugherty, San Mateo High School, San Mateo, Calif.
Invigorate your classroom with this three-week unit on the science and business of biotech, including how biotechnology has impacted research, manufacturing, and diagnostics in today's society.

Coaching: Knowledge That Works for Science Education Leadership—Strategies for Creating a Positive Learning Environment **(Gen)**
(General) *101, JW Marriott*
Tom Peters *(tpeters@clemson.edu),* South Carolina's Coalition for Mathematics & Science, Clemson
Dorothy Earle *(dearle@greenville.k12.sc.us),* S²TEM Centers SC, Greenville, S.C.
Betty W. Hadden *(haddenb@upstatesc.org),* S²TEM Centers SC, Simpsonville, S.C.
Explore strategies for creating and supporting a positive learning environment in schools and classrooms.

How Can I Update My Current Hands-On Materials to Ensure They Support High-Quality STEM Inquiry? **(Gen)**
(General) *202, JW Marriott*
Robert O. Jesberg *(r.jesbergjr@comcast.net),* Independent Education Consultant, Chalfont, Pa.
You have great instructional materials at your school. Let's review how to make sure they include strategies, tools, and resources to implement inquiry through STEM.

"E.T. Phone Home" **(Phys)**
(High School–College) *204/205, JW Marriott*
Karen Jo Matsler *(kmatsler@uta.edu),* The University of Texas at Arlington
Elaine Gwinn *(jegwinn@hotmail.com),* Shenandoah High School, Middletown, Ind.
Modern technology has changed navigation. Experience a lesson designed to help students understand abstract concepts relating GPS and relativity. You can't "phone home" without it!

NSTA Press Session: ***Picture-Perfect Science Lessons: Using Children's Books to Guide Inquiry, K–4*** **(Gen)**
(Elementary) *JW Grand Ballroom 7, JW Marriott*
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 NSTA's *Picture-Perfect Science* books to learn how to integrate science and reading into the primary classroom.

Math 0, Chemistry Won (Chem)
(High School–College) JW Grand Ballroom 9, JW Marriott
Harvey Gendreau and **Bette A. Bridges** *(babridges@comcast.net),* Laboratory Safety Institute, Natick, Mass.
Little-used functions of graphing calculators can allow more students to master the concepts of chemistry rather than stumble on the math.

PDI **McREL Pathway Session: What Works in Science Classrooms: Student-designed Experiments (Gen)**
(General) White River Ballroom G, JW Marriott
Cynthia Long *(clong@mcrel.org),* McREL, Denver, Colo.
Can your students design their own experiments? Managing student-designed inquiries should be possible in any classroom. Learn about experimental design diagrams to help students plan for experiments that help them understand the science concepts. Practice using the experimental design diagram. Handouts!

DuPont Presents—Investigating Photovoltaic Cells (Gen)
(General) Colorado, Marriott Downtown
Micah Story *(micahstory@yahoo.com),* East Jackson Middle School, Commerce, Ga.
Presider: Peggy Vavalla, DuPont, Wilmington, Del.
Explore how to power a motor using photovoltaic cells and design experiments to investigate various factors that affect their ability to transform light energy into electricity.

The Low-Cost High-Tech Science Class (Gen)
(General) Indiana Ballroom F, Marriott Downtown
Tony J. Tepedino *(ttepedino@allendalecolumbia.org)* and **Beth S. Guzzetta** *(bguzzetta@allendalecolumbia.org),* Allendale Columbia School, Rochester, N.Y.
Learn about free and low-cost technology tools that engage students, including iPads, smartphones, cell phones, iPods, and other readily available technology. Bring your device and explore.

It Takes a Village to Raise a Scientist: Hosting a Family Science Night (Gen)
(General) Indiana Ballroom G, Marriott Downtown
Elana R. Jacobs *(elana.jacobs@msichicago.org),* **Marilyn Cosby** *(marilyn.cosby@msichicago.org),* and **Regina Cavazos** *(regina.cavazos@msichicago.org),* Museum of Science and Industry, Chicago, Ill.
Immerse in engineering hands-on activities and approaches to science that engage the entire family—from strollers to walkers. Lessons and resources included.

Notebooking Basics (Gen)
(General) Marriott Ballroom 8, Marriott Downtown
Beth A. Leffler *(bleffler@ccs.k12.in.us),* Carmel Clay Schools, Carmel, Ind.
Dawn Bick *(dbick@hhai.org),* Haten Hebrew Academy, Indianapolis, Ind.
Presider: Brenda Crauder, Franklin Community Schools, Greenwood, Ind.
Dive into the strategies of science notebook basics. Hands-on inquiry lessons will be used to model notebooking concepts that can be implemented in your K–8 classroom.

Bringing the Universe to Your Classroom! (Gen)
(Elementary–High School) Marriott Blrm. 9, Marriott Downtown
Jim Madsen *(james.madsen@uwrf.edu),* University of Wisconsin, River Falls
Eric C. Muhs *(ericmuhs@comcast.net),* Ballard High School, Seattle, Wash.
Steve Stevenoski *(steve.stevenoski@wrps.org),* Lincoln High School, Wisconsin Rapids, Wis.
Katherine Shirey *(katherineshirey@gmail.com),* Washington-Lee High School, Arlington, Va.
Explore cutting-edge astrophysics via accessible, hands-on activities! Classroom-tested examples bring together biology, chemistry, physics, climatology, and polar science using commonly available materials.

School Yard Plants as Indicators of Climate Change? Project BudBurst Can Show You How (Env)
(Middle Level–High School/Informal) Capitol I, Westin
Sandra Henderson, National Ecological Observatory Network, Boulder, Colo.
Get your students involved in a national climate change field campaign by making simple observations of plants in your community. Hands-on activities and handouts provided.

Climate Change: Global Connections and Sustainable Solutions (Env)
(Middle Level–High School) Grand Ballroom 1, Westin
Pamela Whiffen *(pwpwr@aol.com),* NASA Educator Ambassador/Carl Hayden High School, Phoenix, Ariz.
Experience hands-on lessons that demonstrate the interconnectedness between natural systems and human actions using carbon footprint, emissions trading, and energy policy. Free curriculum!

How Do We Know? Using the Electromagnetic Spectrum to Explore the Universe (Earth)
(Elementary–High School) *Grand Ballroom 2, Westin*
Linda L. Smith *(lsmith@paulsboro.k12.nj.us),* Loudenslager Elementary School, Paulsboro, N.J.
Use hands-on activities to teach students about light at different wavelengths. Entice students with NASA science. Inquiry-based lessons and NASA posters provided.

NESTA Session: National Earth Science Teachers Association Earth System Science Share-a-Thon (Earth)
(Elementary–High School) *Grand Ballroom 5, Westin*
Michelle Harris *(michelle.harris@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.
Keith Adams, Jason Lambert, Pamela McClure, Teresa Morris, and **Jared West,** NEES, West Lafayette, Ind.
Filla Baliwag *(baliwag@agiweb.org)* and **Geoff Camphire,** American Geosciences Institute, Alexandria, Va.
Lynn S. Blaney *(lblaney@1st.net)* and **Robert J. Myers** *(bob_myers@strategies.org),* Institute for Global Environmental Strategies, Arlington, Va.
Annette Brickley, Challenger Center for Space Science Education, Mattapoisett, Mass.
Jennifer A. Collins *(jcollins@oceanleadership.org),* Deep Earth Academy, Consortium for Ocean Leadership, Washington, D.C.
Angaleta Crenshaw and **Suzanne Foxworth** *(sfoxworth@ymail.com),* Texas Space Grant Consortium, Austin
Todd Ellis *(todd.ellis@oneonta.edu),* SUNY Oneonta, N.Y.
Paige Graff *(paige.v.graff@nasa.gov),* Jacobs/ESCG/NASA Johnson Space Center, Houston, Tex.
Lynne H. Hehr *(lhehr@uark.edu),* University of Arkansas, Fayetteville
Teresa J. Kennedy and **Nandini McClurg,** UCAR GLOBE Satellite Office, Tyler, Tex.
Timothy McCollum *(tmccollum@eiu.edu),* Eastern Illinois University, Charleston
Margaret Mooney *(margaret.mooney@ssec.wisc.edu),* University of Wisconsin, Madison
Randy Russell, University Corporation for Atmospheric Research, Boulder, Colo.
Margie Turrin *(mkt@ldeo.columbia.edu),* Lamont-Doherty Earth Observatory, Columbia University, Palisades, N.Y.
Join more than 20 NESTA members and other education specialists as they share their favorite classroom activities. Lots of free handouts!

12:30–1:30 PM Exhibitor Workshops

Implementing an Inquiry-based Science Curriculum with Limited Time and a Limited Budget (Gen)
(Grades 6–12) *132, Convention Center*
Sponsor: It's About Time
Gary Curts, Dublin (Ohio) Public Schools
Learn how It's About Time has developed a unique approach to its Active Physics, Active Chemistry, and EarthComm and made them more accessible for more schools. Even with a limited budget and time, enhance teaching with our specially designed videos that eliminate the need for equipment and setups. Also, if a student is out ill, he or she can view them online to catch up. With our audio podcasts, teachers can prep while driving to school. Teachers can also view our PD videos online.

NASA-Nspired Activities for Chemistry (Chem)
(Grades 9–12) *135, Convention Center*
Sponsor: Texas Instruments
Todd D. Morstein *(morsteint@sd5.k12.mt.edu),* Glacier High School, Kalispell, Mont.
Learn how students can do activities in the classroom that relate to how we keep astronauts alive. We will explore the process of electrolysis of water and new ways to look at the production of oxygen in the classroom.

Inquiry at a Distance (Gen)
(General) *142, Convention Center*
Sponsor: NASA
Caryn L. Long and **Gamaliel R. Cherry,** NASA Langley Research Center, Hampton, Va.
Learn about the doctoral study done at NASA's Digital Learning Network that proved inquiry teaching is the most effective method of presenting distance learning modules!

12:30–2:00 PM Presentation

SESSION 1

Google Me This: How to Make Collaboration Work in a Wiki World (Gen)

(General) *120, Convention Center*

Ben Smith *(ben@edtechinnovators.com)* and **Jared Mader** *(jared@edtechinnovators.com),* Red Lion (Pa.) Area School District

Google is more than just a search engine. Wikis are the warehouse for all of your digital work. Join us as we merge these technologies to create a collaborative workspace. Bring your laptop and participate in a collaborative data collection and watch the live updating possibilities.

12:30–2:00 PM Workshop

PDI **BSCS Pathway Session: Teaching Life Science so Students Learn (Bio)**

(Middle Level) *305/306, JW Marriott*

Betty Stennett *(bstennett@bscs.org),* BSCS, Colorado Springs, Colo.

Come experience the features and review the research base of a curriculum that dramatically improved grade 8 students' understanding of core science concepts and scientific inquiry. Participants will also have the opportunity to join the online community of curriculum users.

12:30–2:30 PM Presentation

SESSION 1

PDI **ITEEA Pathway Session: STEM Resources for Grade 5 (Gen)**

(Elementary) *White River Ballroom A, JW Marriott*

Barry N. Burke *(bburke@iteea.org),* International Technology and Engineering Educators Association, Gaithersburg, Md.

Joey H. Rider-Bertrand, Lancaster-Lebanon Intermediate Unit 13, Ardmore, Pa.

Explore standards-based, integrated STEM resources appropriate for grade 5 that transcend all disciplines and use contexts and themes from the Grand Challenges for Engineering.

12:30–2:30 PM Workshop

PDI **SPS Pathway Session: Taking Little Ones from Questions to Claims: K–3 Inquiry Using the SWH (Gen)**

(Preschool–Elementary) *White River Ballroom D, JW Marriott*

Lori Norton-Meier *(lori.nortonmeier@louisville.edu),* University of Louisville, Ky.

Brian Hand *(brian-hand@uiowa.edu),* University of Iowa, Iowa City

Harness the wonder of children to explore their world by linking science to literacy. The Science Writing Heuristic (SWH) approach brings reading, writing, and inquiry together for learning.

12:30–3:30 PM Workshop

PDI **WestEd Pathway Session: Designing Rubrics and Feedback (Gen)**

(General) *102, JW Marriott*

Karen Cerwin *(kcerwin@wested.org),* WestEd, Santa Ana, Calif.

Demystify student success! Learn a collaborative process that includes the development of rubrics for student work, planning instructional interventions, and providing feedback for students.

1:00–1:30 PM Presentation

SESSION 1

(High School) *127, Convention Center*

Inquiry-based Alternative Energy Chemistry Unit (Chem)

Joshua H. Pretzer *(pretzej@culver.org,)* **Phillip C. Cook** *(cookp@culver.org),* and **Christopher J. Carrillo** *(carrilc@culver.org),* Culver Academies, Culver, Ind.

Join us for a description of a newly designed chemistry unit focusing on alternative energy, including a foundational process for scaffolded unit design.

1:00–2:00 PM Exhibitor Workshops

Bio-Rad Genes in a Bottle™ Kit (Bio)
(Grades 6–College) *108, 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!

What's New in Astronomy News? (Phys)
(Grades 5–12) *134, Convention Center*
Sponsor: Fisher Science Education
Robert Marshall *(marshallr@carnegiesciencecenter.org),* Carnegie Science Center, Pittsburgh, Pa.
Meet with an expert program developer from the Henry Buhl, Jr. Planetarium and Observatory, a world leader in planetarium show development and production. Discuss the latest news and upcoming events in astronomy and space science. Then learn about new and creative ways to integrate technology and hands-on activities that will astonish and inspire your students.

1:00–2:15 PM Exhibitor Workshop

Are You a Problem (Solving) Teacher? Want to Become One? (Gen)
(Grades K–8) *138, Convention Center*
Sponsor: Delta Education/School Specialty Science
Johanna Strange, Consultant, Richmond, Ky.
Tom Graika, Consultant, Lemont, Ill.
With an emphasis on problem activities from Delta Science Modules, we'll show you how a problem-based approach to science lessons can provide opportunities for students to be engaged in activities that incorporate STEM.

1:00–3:30 PM Exhibitor Workshop

Bio-Rad: Forensic DNA Fingerprinting Kit (AP Big Idea 3) (Bio)
(Grades 7–College) *107, Convention Center*
Sponsor: Bio-Rad
Leigh Brown *(biotechnology_explorer@bio-rad.com),* Bio-Rad, Hercules, Calif.
The chromosomal basis of inheritance provides an understanding of how genes are transmitted from parent to offspring. Using restriction enzymes, students can create a DNA Fingerprint and explore pattern variations in a forensics scenario. Extend this kit with a plasmid mapping activity that utilizes more sophisticated mathematical practices such as plotting data using log scale. Apply technology to capture your gel digitally using Vernier Software & Technology's Logger *Pro* and White Digital Bioimaging System.

1:00–4:30 PM Short Course

Building Physical Science Demonstration Models (SC-9)

(Middle Level–High School) *McClellan, Omni*

Tickets Required: $45 SOLD OUT

Martha M. Day *(martha.day@wku.edu)* and **David C. Slonim** *(dcs1@live.com),* SKyTeach, Western Kentucky University, Bowling Green

Matthew Ignash *(matthew.ignash@jefferson.kyschools.us)* and **Courtney D. Jernigan** *(courtney.jernigan@jefferson.kyschools.us),* Southern High School/Jefferson County Public Schools, Louisville, Ky.

For description, see Volume 1, page 73.

1:00–5:00 PM Short Course

Using *WALL-E,* an Animated Film, as an Effective Classroom Educational Resource (SC-10)

(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, Tex.

For description, see Volume 1, page 73.

1:30–1:50 PM Exhibitor Workshop

SoI Panel **(Gen)**
(Grades 4–9) *142, Convention Center*
Sponsor: NASA
Wendi Laurence and **Julia Muffler,** NASA Summer of Innovation, State College, Pa.
Join us for a panel discussion and overview of NASA's Summer of Innovation (SoI) projects. SoI is a multiyear NASA effort to engage the nation's youth in NASA's broad mission and inspire them to pursue a STEM education and, ultimately, fortify the country's future STEM workforce. Through partnerships with educators and organizations, SoI aims to reach middle school students who are traditionally underserved in STEM by actively engaging them in NASA-developed curricular activities during the summer and extending into the school year.

1:30–3:00 PM Shell Science Seminar

Teaching Outside the Box: Using Art, Literature, and Entertainment to Enhance Instruction (Gen)
(General) *Sagamore Ballroom 4, Convention Center*

Dale Brown Emeagwali *(dale.emeagwali@morgan.edu),* Lecturer, Biology Dept., Morgan State University, Baltimore, Md.

Presider: Jane Hunn, Tippecanoe Valley Middle School, Akron, Ind.

Student interest in science can be increased when they are allowed to consume the content is various ways. Strategies that enable educators to convert that interest into motivation are paramount. The combination of a modified instructional delivery and interactive tasks improve student achievement.

Dr. Dale Brown Emeagwali's research encompasses microbiology, virology, molecular biology, and biochemistry. Her work in cancer research includes the discovery that antisense methodology can inhibit cancer-gene expression. She has also demonstrated that isozymes of kynurenine formamidase exist in Streptomyces parvulus, a bacterium. Apart from her current position at Morgan State University, she has conducted research at the National Institutes of Health, Uniformed Services University of the Health Sciences, the University of Michigan Medical Center, and the University of Minnesota. She holds a PhD in microbiology from Georgetown University School of Medicine.

NSTA is grateful to Shell for sponsoring this session.

1:30–3:00 PM Shell Science Seminar

The Modern Antarctic Climate: Variability and Change (Env)
(General) *Sagamore Ballroom 5, Convention Center*

Marilyn N. Raphael, Professor and Continuing Chair, Dept. of Geography, University of California, Los Angeles

Presider: Janet Sharp, Indianapolis (Ind.) Public Schools

Over the period of record, indications are that much of Antarctica is warming. Arguably, the Antarctic Peninsula is the region where the largest warming temperature trends are being experienced. A premier researcher and observer of these trends, join Dr. Raphael as she discusses changes in Antarctic climate and sea ice and the atmospheric circulation mechanisms that may contribute to them. The global consequences of these changes will be explored.

Marilyn N. Raphael is a professor of Geography at the University of California, Los Angeles, with research interests in global climate variability and change, atmospheric circulation dynamics, Antarctic sea ice/atmosphere interactions, Southern Hemisphere climate, and the Santa Ana winds of California. She is also co-author of the acclaimed book, The Encyclopedia of Weather and Climate Change: A Complete Visual Guide, *along with Juliane L. Fry, Hans-F Graf, Richard Grotjahn, Clive Saunders, and Richard Whitaker. She holds a PhD in geography from The Ohio State University.*

NSTA is grateful to Shell for sponsoring this session.

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.

1:30–5:30 PM Short Course

Aligning Science Assessment Items to Content Standards (SC-11)

(Grades K–12) *Illinois, Omni*

Tickets Required: $29 SOLD OUT

Ted Willard *(twillard@nsta.org),* Program Director, COMPASS, NSTA, Arlington, Va.

Cari F. Herrmann Abell *(cabell@aaas.org),* AAAS Project 2061, Washington, D.C.

For description, see Volume 1, page 73.

1:30–6:00 PM NSTA Symposium

Clues to the Cryosphere: Lessons from the Ice (SYM-3)

(Grades 7–12) *JW Grand Ballroom 2, JW Marriott*

Tickets Required: $54

Christine Foreman *(cforeman@montana.edu)* and **Susan B. Kelly** *(susan.kelly@montana.edu),* Montana State University, Bozeman

Michael Gooseff *(mgooseff@engr.psu.edu),* Penn State, University Park, Pa.

Louise Huffman *(lhuffman@andrill.org),* University of Nebraska–Lincoln

Walt Meier *(walt@nsidc.org),* National Snow and Ice Data Center (NSIDC), University of Colorado–Boulder

Linda M. Morris *(linda.m.morris@dartmouth.edu),* Dartmouth College, Hanover, N.H.

Jill Mikucki *(jmikucki@utk.edu),* The University of Tennessee, Knoxville

Ross D. Powell *(rpowell@niu.edu),* Northern Illinois University, DeKalb

For description, see Volume 1, page 68.

2:00–2:30 PM Presentations

SESSION 1

IUPUC Student Chapter—Launching Dreams (Gen)

(Elementary) *231, Convention Center*

Stephanie S. Coy, Indiana University–Purdue University Columbus

Presider: Kate A. Baird *(kabaird@iupuc.edu),* NSTA Director, District X, and Indiana University–Purdue University Columbus

Join us for an overview of an event organized by the NSTA student chapter of Indiana University–Purdue University Columbus (IUPUC) for local students and teachers. The event centered around aviation and science through art. Handouts!

SESSION 2

SCST Session: Please Tell Me What I Need to Know to Teach This Class (Gen)

(College) *103, JW Marriott*

Thomas Lord, NSTA Director, College Science Teaching, and Indiana University of Pennsylvania, Indiana, Pa.

With the ever increasing stress of unsatisfactory student evaluations, high class attrition, and unacceptable numbers of failing grades, many professors have not only lowered their expectations of student knowledge but are highlighting information students need to pass the upcoming test! Have we discarded our efforts to require students to think critically?

2:00–2:45 PM Exhibitor Workshops

Mars Close Up with NASA AESP (Gen)

(Grades K–12) *142, Convention Center*

Sponsor: NASA

Julia Muffler and **Wendi Laurence,** NASA Summer of Innovation, State College, Pa.

Susan M. Kohler, NASA Glenn Research Center, Cleveland, Ohio

Join us as we take a closer look at Mars. Through a series of hands-on activities, participants will study the surface of Mars in the same way photogeologists do, create models of various Mars geologic features, and design a rover to travel across the surface using the engineering design process. NASA AESP Education Specialists make connections to current, past, and future missions to Mars. What are the challenges of Mars exploration? How will we meet those challenges? Come be a part of the journey!

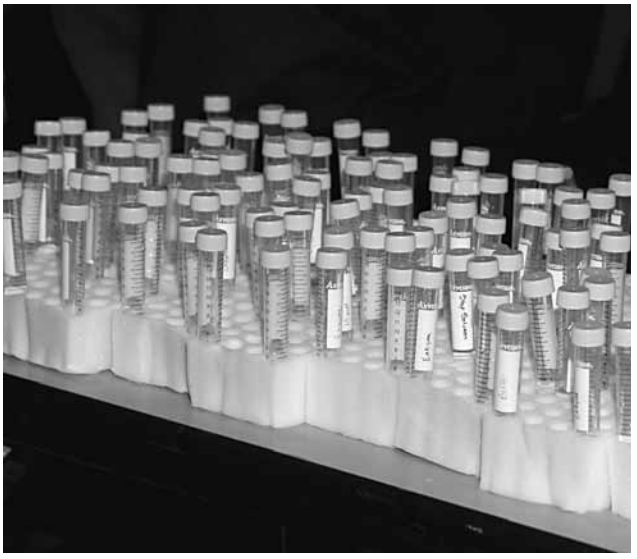
A Calendar in the Stars: Seasonal Constellations (Earth)

(Grades 9–12) *Booth #2153, Exhibit Hall, Convention Center*

Sponsor: Science First/STARLAB

Nathaniel Bell *(starlab@starlab.com)* and **Helmut Albrecht** *(starlab@starlab.com),* Science First/STARLAB, Yulee, Fla.

In this workshop we show how grades 9–12 students discover that the stars can be used like a calendar in the sky. The workshop takes us back in history to a time when brighter stars were used as guides and patterns of stars were imagined as pictures of great heroes, wild beasts, and beautiful princesses. It also introduces us to the observation that certain constellations can only be seen during certain months of the year, making them a calendar in the sky.



2:00–3:00 PM American Geophysical Union (AGU) Lecture

FrankenClimate: The Perils of Engineering Our Way Out of Global Warming (Env)

(General) *Sagamore Ballroom 3, Convention Center*

Gabriel Filippelli *(gfilippe@iupui.edu),* Professor of Earth Sciences, and Director, Center for Urban Health Indiana University–Purdue University Indianapolis

With the burning of fossil fuels resulting in a sharp increase in atmospheric carbon dioxide, a powerful heat-trapping gas, geo-engineers are looking at ways to suck carbon dioxide from the atmosphere as a means to combat global warming. One proposed method is based on the "natural" process of fertilizing the ocean surface with iron to enhance ocean algae blooms. Findings show that this method is not the natural way the surface ocean has acted in the past and is thus likely an unsustainable, and even dangerous, approach.

Gabriel Filippelli is a professor of Earth Sciences at Indiana University-Purdue University Indianapolis (IUPUI), where he is also the director of the Center for Urban Health and an adjunct professor of Public Health. He specializes in environmental geochemistry and climate change science, developing and interpreting geochemical records of climate and climate change extracted from oceans and lakes, and he has studied heavy metal distributions, geochemistry, and human health impacts in wetland, soil, and riparian environments. He has more than 80 publications, and has been active in editing several volumes on past climate change in the Southern Ocean around Antarctica and on geochemical processes in ocean sediments. He received a PhD in Earth sciences from University of California Santa Cruz.

Dr. Filippelli has been involved with scientific ocean drilling efforts for 20 years, beginning with serving as a scientist on board the Ocean Drilling Program vessel JOIDES Resolution *in an expedition around Antarctica, and later through other expeditions with students and colleagues. He has served on a series of advisory panels for the Ocean Drilling Program, ultimately as the chair of the Science Planning Committee for the Integrated Ocean Drilling Program, a $170M/year effort to explore the seafloor for evidence of past climate, the characterization of deep sea life, the formation processes of ocean basins, and the signals for seismic threats in the ocean realm..*

NSTA is grateful to American Geophysical Union for sponsoring this session.

2:00–3:00 PM Presentations

SESSION 1

Using Chromatographic Separation to Bring Biology and Chemistry Together! (Gen)

(High School) *111/112, Convention Center*

Richard A. Perry *(rperry@gws.k12.in.us)* and **Becky M. Kehler** *(bkehler@gws.k12.in.us),* Greenwood Community High School, Greenwood, Ind.

Join us as we share how we teach, reinforce, and expand the techniques involved in chromatography in four successive classes over four years.

SESSION 2

CSI on a Shoestring Budget (Gen)

(Middle Level–High School) *113, Convention Center*

Karen C. Merritt *(karmerritt@aol.com),* North Caddo Magnet High School, Vivian, La.

Forensic science can be a class with fun-filled labs without having to spend a lot of money. Discover low-cost activities that help students learn basic concepts in several science areas.

SESSION 3

NSTA Avenue Session: NSTA Teacher and Principal Awards and Recognitions (Gen)

(General) *124, Convention Center*

Hubert M. Dyasi, Professor Emeritus, City College of City University of New York, N.Y.

Peggy J. Carlisle *(pjcarl@aol.com),* Pecan Park Elementary School, Jackson, Miss.

Amanda Upton *(awards@nsta.org),* Manager, Nominations and Teacher Awards Program, NSTA, Arlington, Va.

NSTA recognizes and rewards exemplary teachers and principals with cash, trips, science materials, and more. Learn how to apply!

SESSION 4

Hooke's Law Orbital Motion: Springs, Masses, and Zero Gravity (Phys)

(General) *126, Convention Center*

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

Learn about opportunities for K–12 teachers to fly aboard NASA's microgravity aircraft. We'll discuss Hooke's Law orbital motion experiment, the application process, and the flight experience.

SESSION 5

YouToo Can YouTube (Gen)

(High School) *127, Convention Center*

Kathleen Dwyer, Maplewood Richmond Heights High School, Maplewood, Mo.

Find out how your students can create interactive videos where the viewer chooses the ending, using the YouTube annotations feature.

SESSION 6

Photocatalytic Water Purification (Chem)

(High School) *128, Convention Center*

Greg Adragna *(gadragna@cristoreyjesuit.org),* Cristo Rey Jesuit College Prep/Rice University, CBEN, Houston, Tex.

Find out about a process to purify drinking water using innovative nanotechnological materials and proven chemical/physical processes that could help to supply the world's clean water needs.

SESSION 7

Lesson Study: An Innovative Strategy for Science Teachers to Collaborate with Colleagues to Create Successful Learning Experiences (Phys)

(Elementary–Middle Level) *206, Convention Center*

Heidi L. Wiebke *(hwiebke@indiana.edu)* and **Meredith Park Rogers** *(mparkrog@indiana.edu),* Indiana University, Bloomington

Emphasis will be placed on collaborative reflection to refine your teaching practice to meet the new core standards and the needs of your students.

SESSION 8

The Soil Is Beautiful! (Bio)

(Elementary–Middle Level) *208, Convention Center*

Keisha M. Carroll, Gail H. Marshall *(gmarshal@westga.edu),* and **Judy R. Cox** *(jcox@westga.edu),* University of West Georgia, Carrollton

Discover opportunities to help your students explore the biology of earthworms as a means for developing inquisitive young scientists.

SESSION 9

Effective Self-Assessment Tools in the Elementary Classroom (Gen)

(Preschool–Elementary) *212, Convention Center*

Daniel E. Alcazar-Roman, Houston (Tex.) Independent School District

Learn to implement research-based feedback and self-assessment to promote student achievement, motivation, and self-efficacy.

SESSION 10

Promoting Authentic Learning with Problem-Based Learning Units (Earth)

(Elementary–Middle Level) *233, Convention Center*

Barney Peterson *(bpeterson@everettsd.org),* James Monroe Elementary School, Everett, Wash.

Gary Popiolkowski *(garypoprr33@gmail.com),* Chartiers-Houston Junior/Senior High School, Houston, Pa.

Learn to plan and develop Problem-Based Learning units that provide opportunities to use basic science understandings and research technology skills to solve real-world problems.

SESSION 11 (two presentations)

(Middle Level) *234, Convention Center*

Connecting Formal and Informal Learning Experiences (Env)

Timothy K. O'Mahony *(tko2@u.washington.edu),* University of Washington, Seattle

Join me to understand effects on student learning outcomes as a function of using different methods for connecting out-of-school experiential learning with formal school-based instruction.

Project-based Science—Bridging Formal and Informal Settings (Gen)

Mary Starr *(mastarr@umich.edu)* and **Allison Yee,** University of Michigan, Ann Arbor

Come hear about a university-based summer camp program that leverages resources to provide both formal and informal science learning.

SESSION 12

Teaching Science in the Context of Substance Abuse Through Free Online Web Adventures (Gen)

(Middle Level) *243, Convention Center*

Yvonne Klisch *(yvonne.klisch@rice.edu)* and **Lynn Lauterbach** *(lynnlauterbach@gmail.com),* Rice University, Houston, Tex.

Learn about free online games that provide simulations and visualizations to teach standards-based science, including body systems, neuroscience, and the biological effects of substance abuse.

SESSION 13

The Urban Science Classroom: Behind the Scenes of Project Based Learning (PBL) (Bio)

(Middle Level–High School) *244, Convention Center*

Jean S. Lee *(jslee@uindy.edu),* University of Indianapolis, Ind.

Kyong Marie Damron *(kyong.damron@evsc.k12.in.us),* North High School, Evansville, Ind.

Brian Libby *(libbyb@uindy.edu),* Emmerich Manual High School, Indianapolis, Ind.

Examine key components of PBL and explore how critical thinking, communication, and collaboration are embedded. Take home sample PBL units.

SESSION 14

Chemistry Applications That Support Life in Space! (Chem)

(High School/Supervision) *104, JW Marriott*

Natalee Lloyd *(natalee.d.lloyd@nasa.gov)* and **Monica Trevathan** *(monica.trevathan-1@nasa.gov),* NASA Johnson Space Center, Houston, Tex.

Inspire AP Chemistry students and give them practice with free response–styled questioning by using applications focused on the International Space Station's Life Support System.

SESSION 15

NSTA Press Session: *Rise and Shine: A Practical Guide for the Beginning Science Teacher* (Gen)

(Middle Level–High School/Supv.) *201, JW Marriott*

Linda Froschauer *(fro2@mac.com),* 2006–2007 NSTA President, and Field Editor, *Science and Children,* Westport, Conn.

Mary L. Bigelow *(tramaire@gmail.com),* Retired Educator, Middletown, Pa.

Are you entering the field or are you new to science teaching? Learn some strategies to help you be successful from the very first day.

SESSION 16 (two presentations)
(College/Supervision) *203, JW Marriott*

SCST Session: Interactive Video Conference Broadcasts *vs.* Face-to-Face Delivery (Bio)

Thayne L. Sweeten *(thayne.sweeten@usu.edu),* Utah State University, Brigham City

What do college students think about interactive video conference broadcasts and how do they respond differently to these broadcasts compared to face-to-face delivery? Join me as I present original student opinion data collected from students who experienced classroom instruction both by interactive video conference and face-to-face delivery during a semester.

SCST Session: Socio-scientific and Bioethical Issues (Gen)

Sandra M. Latourelle *(latours@plattsburgh.edu),* SUNY Plattsburgh, N.Y.

Let's examine teaching socio-scientific and bioethical issues online.

SESSION 17

NARST Session: From Teaching-to-Know to Learning-to-Think via Research-to-Practice (Env)

(Middle Level–College) *206, JW Marriott*

Uri Zoller *(uriz@research.haifa.ac.il),* University of Haifa-Oranim, Kiryat Tivon, Israel

Let's focus on developing STEM students' capabilities for critical evaluative system thinking and decision making for problem solving. We will discuss higher-order cognitive skills (HOCS) teaching and assessment strategies within different multicultural contexts. Find out how to shift from algorithmic teaching-to-know to HOCS-promoting learning-to-think.

SESSION 18

CSSS Session: The Next Generation of Science Leaders: What Does It Take to Prepare and Support Them? (Gen)

(General) *209, JW Marriott*

Deborah L. Tucker *(deborahlt@aol.com),* Science Education Consultant, Napa, Calif.

Gary Nakagiri *(gnakagiri@gmail.com),* Science Consultant, El Cerrito, Calif.

Discover essential leadership tools and resources intended to assist leaders in their efforts to implement the new vision of science education.

SESSION 19 (two presentations)
(High School–College) *302/303, JW Marriott*

Campus Sustainability and Project-based Teaching (Env)

Jennifer R. Fruend *(fruendj@umsl.edu),* University of Missouri–St. Louis

An urban ecology project-based course will be shared by exploring the overwhelming umbrella of campus sustainability and manageable student inquiry-based projects.

Inquiry-based Poster Project on Sustainability in a Large Nonmajors Environmental Science Course (Env)

Mikaela L. Schmitt-Harsh *(schmittm@indiana.edu)* and **Joseph A. Harsh** *(jharsh@indiana.edu),* Indiana University, Bloomington

Gain insight on the development, implementation, and effectiveness of an inquiry-based poster assignment in a general education college science class.

SESSION 20

Studying Science, Technology, and Society Issues with Geographic Information Systems (Gen)

(General) *309/310, JW Marriott*

Josephine Shireen Desouza, Ball State University, Muncie, Ind.

Join me as geographic areas with high incidences of obesity will be identified using GIS. Discussion centers on likely contributing factors and possible solutions to this problem.

SESSION 21

Bringing Coherence to Science Teaching and Learning Using "8 + 1" (Gen)

(General) *314, JW Marriott*

Fred R. Myers *(myersf@glastonburyus.org),* Glastonbury (Conn.) Public Schools

Intimidated by the overwhelming volume of science facts, content, and concepts? A project to improve the coherence of science teaching and learning has developed an effective approach to help teachers better understand the most fundamental science concepts. Particularly helpful to K–8 teachers, the "8 + 1 Fundamental Science Concepts" will be presented and modeled. Take away the succinct chart.

SESSION 22

The Chemistry Conversation Pit (Chem)

(High School–College) JW Grand Ballroom 4, JW Marriott

Edward A. Mottel *(edward.mottel@rose-hulman.edu),* Rose-Hulman Institute of Technology, Terre Haute, Ind.

William Bayley *(wbayley@purdue.edu),* Purdue University, West Lafayette, Ind.

Join us for this unstructured opportunity for high school and college chemistry teachers to meet. Anyone with an interest in chemistry and conversation is welcome to attend.

SESSION 23

PDI **BEST Pathway Session: Energy in K–12 Earth Science (Earth)**

(Supv./Admin.) White River Ballroom B, JW Marriott

Bob Chen *(bob.chen@umb.edu),* University of Massachusetts Boston

Haven Daniels, Boston (Mass.) Public Schools

Join us as we aim to identify energy concepts taught in K–12 curricula and discuss how to connect energy concepts within Earth science and across other science disciplines.

SESSION 24

Dialogues for the Physics Classroom (Phys)

(High School–College) White River Ballroom F, JW Marriott

Marian Schraufnagel, Mukwonago High School, Mukwonago, Wis.

Craig Berg *(caberg@uwm.edu),* University of Wisconsin–Milwaukee

Dialogues are an innovative teaching strategy—students read and act out a two-page, two-character conversation centered around a physics concept or issue.

SESSION 25 (two presentations)

(Elementary–Middle Level/Supv.) White River Blrm. H, JW Marriott

Science and Social Studies: Food and Agriculture (Gen)

Birgitta R. Meade *(meadbi01@luther.edu),* North Winneshiek Community School, Decorah, Iowa

Barbara Bohach *(bohaba01@luther.edu),* Luther College, Decorah, Iowa

Elementary teachers and college methods instructors collaborate to create a clinical experience in which student teacher teams deliver an interdisciplinary unit focusing on local food and agriculture.

Systemic Innovations: Integrating STEM Education and Workforce Development (Gen)

Nicole Riegel *(nriegel@growstem.org),* SySTEMic Innovations, Kansas City, Mo.

Patricia Lucido *(plucido4405@att.net),* Lee's Summit, Mo.

SySTEMic Innovations focuses on professional development that aids teachers' content knowledge and provides access to resources that ultimately prepare students to enter the STEM workforce.

SESSION 26

What's Your Media Literacy IQ? How to Use Web-based Videos and Other Internet Resources to Bring Science to Life in Your Classroom (Gen)

(Elementary–High School) Indiana Blrm. G, Marriott Downtown

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

Explore several easy-to-use "tricks of the trade" to help you locate, evaluate, modify, and successfully incorporate web-based science resources into your own instruction.

SESSION 27

Captivating Clickers (Gen)

(General) Marriott Ballroom 1, Marriott Downtown

Jennifer M. Mysona, Miami University, Middletown, Ohio

Engage students with your science lesson through an audience-response system, or "clickers." Discover multiple ways to effectively use "clickers" in your classroom.

SESSION 28

Process and Progress in Washington, D.C.: A Teacher's Perspective on Federal Education Initiatives (Gen)

(General) *Marriott Ballroom 10, Marriott Downtown*

Kathryn G. Culbertson *(einsteinfellows@triangle-coalition.org),* Triangle Coalition for Science and Technology Education, Arlington, Va.

Lindsay M. Knippenberg *(lindsay.knippenberg@noaa.gov),* Einstein Fellow, NOAA, Washington, D.C.

Tim Spuck *(tspuck@nsf.gov)* and **Kisha Davis-Caldwell** *(kdavisca@nsf.gov),* Einstein Fellows, National Science Foundation, Arlington, Va.

Dave Oberbillig, Einstein Fellow, U.S. Dept. of Energy, Washington, D.C.

Hear what the Einstein Fellows have been working on this year. Find out how you can lend your voice to the national STEM education conversation.

SESSION 29

Differentiated Science Inquiry (Gen)

(General) *Marriott Ballroom 2, Marriott Downtown*

Douglas Llewellyn *(dllewell@rochester.rr.com),* St. John Fisher College, Rochester, N.Y.

Discover ways to differentiate an inquiry investigation into levels based upon students' need for structure. By using choice as a motivator, students develop greater ownership of the investigation.

SESSION 30 (two presentations)

(General) *Marriott Ballroom 7, Marriott Downtown*

Scaffolded Vee Diagram: An Inquiry Environment for Cyberlearning (Gen)

Cindy L. Kern, Green Valley High School, Henderson, Nev.

Kent J. Crippen *(kcrippen@coe.ufl.edu),* University of Flordia, Gainesville

Leanna Archambault, Arizona State University, Tempe

Join us as we share examples of Scaffolded Vee Diagrams, which highlight the powerful learning scaffolds that support autonomous student work and collaborative argumentation within a cyberlearning environment.

The Multiple Dimensions of Scientific Inquiry in the PreK–12 School Setting (Gen)

Carol Ann Brennan *(carolb@hawaii.edu)* and **Francis M. Pottenger III** *(frankp@hawaii.edu),* University of Hawaii, Honolulu

Explore ways to transform your science class into an authentic research community by using multiple inquiry modes characteristic of research in the natural sciences.

SESSION 31

The Scientific Traveler (Gen)

(General) *Michigan/Texas, Marriott Downtown*

Duane S. Nickell *(duane_nickell@yahoo.com),* Hoosier Association of Science Teachers, Inc., Indianapolis, Ind.

Join me for a whirlwind tour of scientific sites across America, focusing on astronomy and physics.

SESSION 32 (two presentations)

(General) *Cabinet, Westin*

Presider: Susan M. Buhr, University of Colorado at Boulder

Energy, Environment, and Climate—In My Backyard! (Env)

Don A. Duggan-Haas *(dugganhaas@gmail.com),* Museum of the Earth, Ithaca, N.Y.

America's energy system is changing rapidly, bringing energy production closer to home for many. Any energy source has costs and benefits. How do we choose?

Teaching Climate and Energy: The CLEAN Collection of Peer-reviewed Climate and Energy Learning Resources (Env)

Anne U. Gold *(anne.u.gold@colorado.edu)* and **Susan M. Buhr** *(susan.buhr@colorado.edu),* University of Colorado at Boulder

Tamara Shapiro Ledley *(tamara_ledley@terc.edu),* TERC, Cambridge, Mass.

CLEAN stands for Climate Literacy and Energy Awareness Network. The CLEAN collection of climate and energy learning resources can help you teach with confidence. Visit *http://cleanet.org* for materials, teaching tips, and standards alignments.

SESSION 33

Biology Bob: Save the World (Env)

(Elementary–High School) *Capitol II, Westin*

Robert M. Everett *(robert.everett@ucf.edu),* University of Central Florida, Orlando

Join me as I sing several original environmental songs that can enhance student awareness about the world and lead to a sustainable planet.

SESSION 34

Getting Involved Locally (Env)

(High School) *Capitol III, Westin*

David Inskeep, Northwestern High School, Kokomo, Ind.
Sarah Brichford *(sarah.brichford@co.howard.in.us),* Howard County Stormwater District, Kokomo, Ind.

Enliven your classroom by bringing local relevance to your ecology lessons. Find out how you can create partnerships with community and government organizations.

SESSION 35

From Field Research to the Science Classroom: Integrating Sustainability (Env)

(General) *Caucus, Westin*

Kristen L. Cacciatore *(kcacciatore@boston.k12.ma.us),* East Boston High School, East Boston, Mass.

Learn about my travel to Costa Rica to conduct scientific research on sustainable agriculture and how I use these experiences to integrate sustainability into my chemistry and biology courses.

SESSION 36

What's Under the Shrubbery? Study Erosion, Landslides, Dinosaur Tracks, and More with LiDAR and Google Earth (Earth)

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

Shelley E. Olds *(olds@unavco.org),* UNAVCO, Boulder, Colo.
Christopher Crosby, San Diego Supercomputer Center, University of California, La Jolla
Nancy W. West *(nancywwest@gmail.com),* Quarter Dome Consulting, Fort Collins, Colo.

LiDAR stands for Light Detection And Ranging. Virtually strip away vegetation and explore a variety of landscapes unseen by the human eye using LiDAR and Google Earth to teach students about how the land changes.

2:00–3:00 PM Workshops

Low-Tech but High-Effect Inquiry-based Science Lab Activities (Gen)

(Middle Level–High School) *121, Convention Center*

Darin S. Munsell, Illinois Institute of Technology, Chicago
Cheryl L. Heitzman *(cheitzman@perspectivescs.org),* Perspectives Charter School, Chicago, Ill.

Discover great low-tech inquiry activities for K–12 classrooms. Get the hands-on experience, materials, and rubrics for a new level of classroom fun and learning.

Fun with Flight (Phys)

(Elementary–Middle Level) *122, Convention Center*

Howard L. Walker *(howard.walker@wpafb.af.mil),* **Erin S. Craig** *(erin.craig@wpafb.af.mil),* and **Cynthia J. Henry** *(cynthia.henry@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

Explore basic aerodynamic principles by building low-cost paper gliders. We will illustrate Newton's laws, the Bernoulli principle, and the Coandâ effect.

Can Venice Be Saved? (Env)

(Elementary–High School) *123, Convention Center*

Lovelle Ruggiero *(lovelleruggiero@me.com),* Science Consultant, New Rochelle, N.Y.

The Venetians have sustained the lagoon ecosystem for centuries and even introduced an invasive species of clam. Can sustainability reign even in the 21st century?

SmartGraphs for Learning: Free, Open-Source, Web-based Activities for Science Classes (Phys)

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

Carolyn Staudt *(carolyn@concord.org),* The Concord Consortium, Concord, Mass.

The Concord Consortium's SmartGraphs project develops free, open-source, web-based activities to improve student understanding of concepts shown in graphs in high school STEM classes. SmartGraphs activities are based on research that focuses on students' comprehension of graphs.

Hands-On Optics and Photonics Activities (Phys)

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

Pamela O. Gilchrist *(pamela_gilchrist@ncsu.edu),* North Carolina State University, Raleigh

Come explore inquiry activities suitable for middle school and high school students. Activities include fiber optics, solar energy, and light spectra.

Making Sense of Science: A Professional Development Curriculum for K–8 Learning Communities (Gen)

(General) *207, Convention Center*

Kirsten R. Daehler *(kdaehle@wested.org),* WestEd, Redwood City, Calif.

Kathy Huncosky, Madison (Wis.) Metropolitan School District

Experience a case-based approach to teacher learning. Explore strategies that help teachers discover how to learn science together, through a collaborative social process.

Extraction and Spooling of DNA (Bio)

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

Emily K. Getty *(egetty@ivytech.edu),* Ivy Tech Community College, Kokomo, Ind.

Marla W. Jones *(scieddr@gmail.com),* Science Education Consultant, Kokomo, Ind.

Using easily obtained materials, teachers from upper elementary to high school can guide students through DNA extraction and spooling techniques.

CESI Session: Inquiry, Creativity, and Learning Variation—That's How to Teach the Lunar Cycle! (Earth)

(Elementary–Middle Level) *210, Convention Center*

K.T. Willhite *(kwillhite@uwlax.edu),* University of Wisconsin, La Crosse

Through STEM content and literacy, participants will experience a broad variety of teaching, learning, and assessment strategies to enhance all learner outcomes.

CESI Session: Who Wants to Be an Engineer? (Chem)

(Elementary) *211, Convention Center*

Sue Dale Tunnicliffe, Institute of Education, University of London, U.K.

Join us as we discuss attitudes expressed by 10- and 11-year-olds in England about being an engineer and the role of design technology/engineering in the elementary curriculum and the links with science and math as well as language arts. Engage in some basic engineering activities.

Moon Geology and Martian Minerals, Oh My! (Earth)

(Middle Level) *232, Convention Center*

Alexandra Matiella Novak *(alexandra.matiella.novak@jhuapl.edu),* Johns Hopkins University Applied Physics Laboratory, Laurel, Md.

Learn how to use inquiry and creativity in your classroom to understand the Moon's geology and identify minerals on Mars.

Place-based Practices in School Yard Settings (Env)

(Elementary) *235, Convention Center*

Sarah J. Carrier, North Carolina State University, Raleigh

Situate your science in the local environment. Explore effective use of the school yard for integrated science learning.

Developing Foundational Concepts K–8 (Chem)

(Elementary–Middle Level) *237, Convention Center*

Martin Brock *(martin.brock@eku.edu),* Eastern Kentucky University, Richmond

Diane H. Johnson *(diane.johnson@uky.edu),* University of Kentucky, Lexington

We will bring emerging standards to life through linkage of learning progressions with specific activities in the foundational area of conservation of mass.

The Scientific Method in the Elementary Classroom (Gen)

(Elementary) *238, Convention Center*

Francis M. Vigeant *(fvigeant@knowatom.com),* KnowAtom, LLC, Salem, Mass.

Presider: Nicole Lanoue *(nlanoue@knowatom.com),* KnowAtom, LLC, Salem, Mass.

Design inquiry-based hands-on laboratory exercises that expose K–5 students to the scientific method while enhancing critical-thinking skills.

Everyday Engineering (Gen)

(Elementary–Middle Level) *239, Convention Center*

Richard H. Moyer *(rhmoyer@umich.edu)* and **Susan A. Everett** *(everetts@umd.umich.edu),* University of Michigan–Dearborn

Engage in sample activities from *Science Scope*'s bimonthly feature, "Everyday Engineering."

Forces and Things at Rest: Why Do Ships Made of Concrete Float? (Phys)

(Elementary–Middle Level) *240, Convention Center*

Ann P. McMahon *(annpmcmahon@gmail.com),* Ann P. McMahon, LLC, St. Louis, Mo.

Patrick C. Gibbons *(pcg@wustl.edu)* and **John F. Wiegers,** Washington University in St. Louis, Mo.

We will make observations and use the conceptual tools—such as force, mass, and volume—to explain why the concrete ships of World Wars I and II floated.

Claim, Evidence, and Reasoning (CER): Next Steps After Introducing the Framework (Gen)
(Elementary–Middle Level) 241, Convention Center
Katherine L. McNeill *(kmcneill@bc.edu),* Boston College, Chestnut Hill, Mass.
Joseph Krajcik *(krajcik@msu.edu),* Michigan State University, East Lansing
For teachers already focusing on this practice, we will discuss examples of strong and weak questions and student work for integrating CER throughout the curricula.

Inquiry with Cell Respiration (Bio)
(Middle Level–High School) 245, Convention Center
Mark D. Little *(mark.little@bvsd.org),* Broomfield High School, Broomfield, Colo.
Learn ways to make cell respiration labs more inquiry based by using sensor technology. This lab may be adapted to standard respirometers or other equipment.

STEMulating Learning (Gen)
(General) 202, JW Marriott
Vicki Metzgar *(vicki.metzgar@mnps.org),* Metro Nashville (Tenn.) Schools
ReGina A. Etter *(regina.etter@mnps.org),* Hattie Cotton Elementary School, Nashville, Tenn.
Kathryn Lee *(kathryn.lee@mnps.org)* and **Angie Ketchum** *(angela.ketchum@mnps.org),* Stratford High School, Nashville, Tenn.
Terry A. Carter *(terry.carter@mnps.org),* Bailey Middle School, Nashville, Tenn.
Join us as we model the process used for designing thematic units in an articulated STEM program for three urban, at-risk schools in Nashville.

Integrated Mathematics, Science, and Technology for Middle School (Gen)
(Middle Level/Supervision) 204/205, JW Marriott
William Hunter *(whunter@ilstu.edu),* **Brad Christensen** *(bachris@ilstu.edu),* and **Ryan Brown** *(rbrown@ilstu.edu),* Illinois State University, Normal
The IMaST curriculum is being adopted by STEM academies and middle schools seeking to engage students in hands-on integrated curricula. We'll show you how it can work for you.

NSTA Press Session: *Picture-Perfect Science Lessons, Using Children's Books to Guide Inquiry, Grades 3–6* (Gen)
(Elementary) JW Grand Ballroom 7, JW Marriott
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 NSTA's *Picture-Perfect Science* books to learn how to integrate science and reading into the upper elementary classroom.

DuPont Presents—Driving Science (Phys)
(General) Colorado, Marriott Downtown
Dot Moss *(dmoss@clemson.edu),* Clemson University, Clemson, S.C.
Presider: Peggy Vavalla, DuPont, Wilmington, Del.
Connect science content involving laws of motion to motor sports. We'll investigate standards related to Newton's laws of motion in the context of real-world applications to motor sports and examine design processes and teaching strategies that build connections across STEM disciplines.

***Flights of Innovation*: Using Inquiry to Broaden STEM Pathways Awareness (Gen)**
(General) Indiana Ballroom F, Marriott Downtown
Amanda C. Goertz *(amanda@futureofflight.org),* Future of Flight Foundation, Mukilteo, Wash.
An engaging informal education program, *Flights of Innovation* immerses students in interactive, real-world challenges to inspire interest in pursuing STEM careers.

Science Notebooks: A Tool for Organizing Science Literacy (Gen)
(General) Marriott Ballroom 8, Marriott Downtown
Sandy Ledwell *(sledwell@alsde.edu),* Alabama Dept. of Education, Montgomery
Learn some methods to incorporate notebooks in a hands-on science classroom to deepen students' understanding in science as well as to develop their reading and writing skills. Get tips for implementation and assessment.

Climate Change and the Carbon Cycle (Env)
(High School) Capitol I, Westin
William T. Green *(wtgreen68@mac.com),* Knabusch Mathematics & Science Center, Monroe, Mich.
We will connect climate change to our impact on the global carbon cycle using a CO_2 sensor.

Soils—More Than the Dirt Under Your Feet (Earth)
(Informal Education) *Grand Ballroom 1, Westin*
Missy Holzer *(mholzer@monmouth.com),* Chatham High School, Chatham, N.J.
Susan Chapman *(schapman@sciencesocieties.org),* Soil Science Society of America, Madison, Wis.
David Lindbo *(david_lindbo@ncsu.edu),* North Carolina State University, Raleigh
Sherry S. Fulk-Bringman *(sherryfb@purdue.edu),* Purdue University, West Lafayette, Ind.
Soil science is the best-kept secret to meeting Earth science, chemistry, and biology standards. In this active session, we will reveal this deep secret.

NASA's Project SPECTRA! (Earth)
(Middle Level–High School) *Grand Ballroom 2, Westin*
Erin L. Wood *(erin.wood@lasp.colorado.edu),* Laboratory for Atmospheric and Space Physics, Boulder, Colo.
Project Spectra!" is a NASA product for middle school and lower high school students that combines math, engineering, and light and the electromagnetic spectrum to explore the solar system.

NESTA Session: Drama in "Near Earth" Space: The Sun, Space Weather, and Earth's Magnetic Field as We Approach Solar Maximum! (Earth)
(Middle Level–College) *Grand Ballroom 3, Westin*
Roberta M. Johnson *(rmjohnsn@gmail.com),* National Earth Science Teachers Association, Boulder, Colo.
Join me as I share tested hands-on activities and resources about the Sun's dynamic atmosphere and magnetic field, Earth's magnetic field, and dramatic space weather events!

2:00–3:00 PM Exhibitor Workshops

The First Comprehensive Astronomy Textbook Written Specifically for High School Students (Also Well Suited for Community Colleges) (Gen)
(Grades 9–College) *132, Convention Center*
Sponsor: It's About Time
Gary Curts, Dublin (Ohio) Public Schools
Investigating Astronomy was developed by TERC education experts to fill in the gaps in astronomy taught in high school. Most astronomy books used in high school classes are text heavy and have been originally developed and written for college courses. Investigating Astronomy engages students with a dynamic, active learning approach and allows them to explore all the major topics in astronomy. Also get introduced to the Starry Night software that can enhance your students' classroom experience.

The Time for Inquiry Is Now! (Chem)
(Grades 7–12) *135, Convention Center*
Sponsor: Texas Instruments
Gregory B. Dodd *(gbdodd@gmail.com),* George Washington High School, Charleston, W.Va.
Research shows that students learn best when they discover. Engage in a hands-on inquiry science activity using probes to discover the properties of ingredients in common drinks. Learn how to implement inquiry into your science program.

2:00–3:30 PM Reception

NSTA Chapter and District Meet and Greet in Honor of Wendell Mohling
Exhibit Hall, Convention Center
Come meet colleagues from your region of the country and enjoy FREE snacks and beverages.

2:00–3:15 PM Exhibitor Workshop

Unleash Your Young Scientist! (Gen)
(Grades 2–6) *136, Convention Center*
Sponsor: Ohaus Corp.
Lou Loftin, Northwest Regional Professional Development Program, Reno, Nev.
Hands-on science and educational software combine to form a powerful STEM solution for the elementary classroom. Learn how we've taken the OHAUS Harvard Junior balance and combined it with Virtual Lab software to create an exciting array of lessons and activities that can keep students engaged and enthused.

2:00–3:30 PM Workshop

PDI **McREL Pathway Session: What Works in Science Classrooms: Scientific Discourse in the Classroom (Gen)**

(Supervision/Administration) *White River Blrm. G, JW Marriott*

Anne Tweed *(atweed@mcrel.org),* 2004–2005 NSTA President, and McREL, Denver, Colo.

Cynthia Long *(clong@mcrel.org),* McREL, Denver, Colo.

To learn science concepts, students need to talk about their ideas to clarify their thinking. Learn how to use inquiry questioning strategies to get students to discuss in class and make sense of their learning experiences. Participants will practice using question stems.

2:00–3:30 PM Exhibitor Workshops

***Living By Chemistry:* Create a Table (Chem)**

(Grades 9–12) *101, 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 introduce the periodic table and other core chemistry concepts through a historical context. Take home free sample lessons and materials from the *Living By Chemistry* curriculum.

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 on partnership with Vernier and explore concepts like voltage, current, power, energy, and device efficiency using Vernier equipment and KidWind renewable energy gear.

Motivate Your Students! Exciting Demonstrations Using Cool Tools for Force and Motion! (Phys)

(Grades 2–12) *103, Convention Center*

Sponsor: Arbor Scientific

Buzz Putnam, Whitesboro High School, Marcy, N.Y.

Join us for hands-on activities and thought-provoking demonstrations that illustrate the concepts of force and motion presented by award-winning physics teacher, Buzz Putnam. Enhance your science lessons and bring real-life examples into your classroom with learning tools and science-based toys. Handouts and door prizes provided!

Ecology Adventures: Motivating Students Through Project Based Learning (PBL) (Gen)

(Grades 3–8) *104, Convention Center*

Sponsor: Houghton Mifflin Harcourt

Michael Heithaus, Florida International University, North Miami

Do you want to get your students out in the field doing science but can't take a field trip? Join Houghton Mifflin Harcourt author Mike Heithaus to learn how to you can use exciting new video-based lessons to take your class on scientific adventures! Videos take your class along with real scientists studying sharks, sea turtles, dolphins, and more… and guide students through all the steps of the scientific method. Using high-paced video and exciting research, students are challenged to develop their own hypotheses, join research teams as they collect data, and then conduct their own data collection and analysis.

Breeding Critters **(Bio)**
(Grades 6–9) *105, Convention Center*
Sponsor: LAB-AIDS, Inc.
Vicki Jackson, LAB-AIDS, Inc., Ronkonkoma, N.Y.
Make the study of genetics more meaningful for students. Join us for an activity sequence from *Issues and Life Science* from LAB-AIDS that lays a framework for dominant/recessive as well as other patterns of inheritance. Pedigrees are introduced as another way to study the behavior of certain genes in humans. In the succeeding activities, you will use what you know to advise Joe about whether to be tested for Marfan's Syndrome.

O2 Understand Photosynthesis and Cellular Respiration! **(Bio)**
(Grades 9–12) *106, Convention Center*
Sponsor: LAB-AIDS, Inc.
Barbara Nagle, Lawrence Hall of Science, University of California, Berkeley
Students have major misconceptions about photosynthesis and cellular respiration, but this content is essential for understanding how matter and energy flows, both at the micro (cellular) and macro (ecosystem) levels. Using a computer simulation, a hands-on activity, and notebooking and discussion strategies, expose student thinking—all from SEPUP's new Science & Global Issues Biology program from LAB-AIDS.

HHMI's *The Making of the Fittest: The Birth and Death of Genes* in Your Classroom **(Bio)**
(Grades 9–College) *109, Convention Center*
Sponsor: Howard Hughes Medical Institute
Mary Page Colvard *(mcolvard@tds.net),* Deposit, N.Y.
View HHMI's new short film, *The Making of the Fittest: The Birth and Death of Genes*. Researchers describe how the genetic history of traits unique to the Antarctic icefish provides information about how new genes are formed and how old genes acquire new roles or become molecular fossils. Participants will receive free classroom-ready resources appropriate for all levels of biology, including middle school, high school, and undergraduate.

Layers of Learning with Google Earth: A Free Round-Trip Ticket to Anywhere in the World **(Gen)**
(Grades K–12) *110, Convention Center*
Sponsor: Discovery Education
Jannita Demian, Discovery Education, Silver Spring, Md.
Google Earth has many layers, literally! Come explore the layers within Google Earth and see how you can use them in your instruction. Take students on virtual field trips that provide powerful geographic visualization—ruler tools, embedded videos, overlays of images that make Earth's actual terrain a part of the learning experience, and more. We'll investigate up-to-date seismic activity, weather data, sea surface temperatures, and 3-D buildings…and learn how to add your own customized content.

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)* and 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.

Environmental Science with Vernier **(Env)**
(Grades 7–College) *117, Convention Center*
Sponsor: Vernier Software & Technology
Robyn Johnson *(info@vernier.com)* and **Mike Collins** *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
Learn how to use Vernier technology to study environmental science in the field or in your classroom. Water quality and other environmental topics from our *Investigating Environmental Science through Inquiry* lab book will be performed using LabQuest and a variety of sensors.

The Physics of Baseball **(Phys)**
(Grades 9–College) *130, Convention Center*
Sponsor: Sargent-Welch
Paul Robinson, Redwood City, Calif.
Learn exciting activities…all based on physics principles of America's pastime. Topics include the analysis of motion for both pitches and hits—effects of spin, curveballs, reaction time, bat speed rotational inertia, and the physics of home runs. Take home a DVD of useful and entertaining video clips.

STEM Activities: Environmental Science Using Microslides—Microbe Growth and ID System (Env)
(Grades 10–12) *131, Convention Center*
Sponsor: LaMotte Co.
Richard Killen and **Kenneth Rainis,** Precision Microslides, Cottonwood, Ariz.
Learn environmental monitoring STEM skills, including fecal coliform, a key factor in determining the Water Quality Index (WQI). Use Microslides™ to collect and incubate a sample, and a colony visual ID guide to determine an overall sample "Q-Value." Other WQI parameters are also reviewed. Participants receive a link to the FREE iPad App Microslides Identifying Microbe Colonies, Microslide samples, and a CD-ROM with teacher resource materials for water quality assessment.

Teaching About Climate Change in a Climate of Controversy: Presenting Science with Rigor and Relevance (Bio)
(Grades 9–12) *133, Convention Center*
Sponsor: Pearson
Joseph Levine, Author, Concord, Mass.
Climate science, which blends ecology and Earth science, is complex and highly politicized. Learn to teach the real solid science behind sound bite–driven headlines.

Sound, Waves, and Music (Phys)
(Grades 5–12) *139, Convention Center*
Sponsor: CPO Science/School Specialty Science
Erik Benton, CPO Science/School Specialty Science, Nashua, N.H.
Come create and control beautiful standing wave patterns resonating on a vibrating string with CPO's wave machine. Use a synthesizer to explore the wave properties of sound, and play music on a set of PVC palm pipes and learn how to make sets of your own. We'll show you how.

Biology: Enhancing Microscope Labs with Image Analysis and Data Collection (Bio)
(Grades 9–12) *140, Convention Center*
Sponsor: PASCO scientific
Presenter to be announced
In this hands-on workshop, participants will be able to collect sensor data and capture and analyze images, all in one seamless and intuitive environment. See how PASCO's SPARKvue® application and Ken-A-Vision® microscopes work together as a cost-effective and easy-to-use solution that combines digital tools and traditional microscopy skills to enhance student learning and achievement.

AP® Chemistry: Turn Past AP Test Questions into Guided Inquiry Labs (Chem)
(Grades 9–12) *141, Convention Center*
Sponsor: PASCO scientific
Presenter to be announced
Turn a traditional acid-base titration activity into a guided inquiry laboratory experiment. Using PASCO's SPARKvue® data acquisition and analysis software with journaling capabilities, you will learn how to create a guided inquiry lab based on previous Advanced Placement Chemistry Test content and questions. Discover firsthand how your students can meet AP lab requirements while gaining a deeper understanding of the required content.

Moving Toward Inquiry: Managing Change in Your District (Gen)
(Grades K–12) *143, Convention Center*
Sponsor: Carolina Biological Supply Co.
Mark Cheney and **Amber Farthing,** Carolina Biological Supply Co., Burlington, N.C.
The implementation of a sustainable inquiry-based science program does not happen by chance. The use of change research can be valuable in guiding the development and implementation of a district's plan. Come hear how two regions in Washington State have established and sustained inquiry-based science programs since 1999.

Comparative Vertebrate Anatomy with Carolina's Perfect Solution® Specimens (Bio)
(Grades 6–12) *144, Convention Center*
Sponsor: Carolina Biological Supply Co.
Patti Kopkall, Carolina Biological Supply Co., Burlington, N.C.
Explore animal diversity by comparing and contrasting anatomical adaptations of the pig, rat, perch, and frog. Use hands-on dissection to identify characteristics of these popular vertebrates. This is an excellent comparative dissection activity featuring our very best Carolina's Perfect Solution specimens. Free dissection supplies and great door prizes!

Carolina™ Investigations for AP* Biology Labs (Bio)
(Grades 9–12) *145, Convention Center*
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Enhance your students' experience in AP Biology with new investigations from Carolina. Based on the revised AP Biology curriculum, Carolina's new guided inquiry labs help

students develop essential knowledge of each Big Idea. This hands-on workshop gives you the opportunity to experience these new resources and share feedback with us.

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A World In Motion® Middle School STEM Workshop (Gen)
(Grades 6–8) *201, Convention Center*
Sponsor: SAE International's A World In Motion®
Christopher M. Ciuca *(awim@sae.org)* and **Julie MacIntyre** *(awim@sae.org),* SAE International, Warrendale, Pa.
This hands-on workshop will allow participants to experience SAE International's award-winning A World In Motion (AWIM) curriculum designed for grades 6–8. Participants will have a chance to build the popular Glider, as well as experience the Fuel Cell Vehicle, Gravity Cruiser, and Motorized Toy Car in a fun, interactive session.

Dive into Marine Ecology with National Geographic (Bio)
(Grades 9–12) *203, Convention Center*
Sponsor: National Geographic Society
Mary Ford *(mford@ngs.org),* **Julie Brown,** and **Samantha Zuhlke,** National Geographic Society, Washington, D.C.
National Geographic, along with classroom teachers from their National Teacher Leadership Academy, will demonstrate project-based activities about marine ecology, human impacts, and conservation. The activities feature National Geographic videos, photos, and maps. These resources are available for free online. Come learn how to use them and take home supplemental resources.

Teaching Advanced Placement Chemistry: Optimize Your Students' Laboratory Experiences (Chem)
(Grades 9–12) *Wabash Ballroom 1, Convention Center*
Sponsor: Flinn Scientific, Inc.
Scott Stahler, Flinn Scientific, Inc., Batavia, Ill.
What makes a good AP chemistry lab experiment? It's one that stimulates students to think about principles conceptually so that they can explain and predict the behavior of matter at any level, from the microscopic to the macroscopic. Perform an experiment from *Laboratory Experiments for Advanced Placement Chemistry*, available from Flinn Scientific, and view interactive demonstrations based on the *AP Chemistry Review.* Handouts!

3-2-1 Blast Off! (Gen)
(Grades 3–8) *Wabash Ballroom 2, Convention Center*
Sponsor: Educational Innovations, Inc.
Tami O'Connor, Educational Innovations, Inc., Bethel, Conn.
What student doesn't like a little burst of energy? Join Tami O'Connor of Educational Innovations in this exploration of things that go bump in the day! This hands-on workshop is designed for elementary or middle school teachers responsible for teaching energy or Newton's laws. Lesson ideas, giveaways, and door prizes!

2:00–4:00 PM Meeting

SEPA Board Meeting
(By Invitation Only) *Denver, Marriott Downtown*

2:00–4:00 PM Workshop

AMSE Session: Relevance and Rigor: Multiculturalism in Secondary Science and Engineering (Gen)
(High School) *House, Westin*
Mary M. Atwater *(atwater@uga.edu)* and **UrLeaka M. Woodard** *(uwoodard@gmail.com),* The University of Georgia, Athens
Designed for high school teachers, participants will conduct one biology (genetics), physical science (word derivations), and engineering (artificial limb) hands-on activity.

2:00–4:00 PM Exhibitor Workshop

FOSS Formative Assessment: Making Student Thinking Visible (Gen)
(Grades K–6) *137, Convention Center*
Sponsor: Delta Education/School Specialty Science–FOSS
Kathy Long and **Brian Campbell,** Lawrence Hall of Science, University of California, Berkeley
Formative assessment shows great promise for improving student achievement. FOSS easily makes student thinking visible, interprets the evidence of learning, and takes action to improve learning. Join FOSS developers for an introduction to the new assessment system created for the third edition, including new computer software (FOSSmap).

2:00–5:00 PM Short Course

Using Technology to Develop a "Naturalistic" Approach in the Teaching of Science Concepts and Inquiry (SC-12)

(General) *Fisher Ballroom A, Omni*

Tickets Required: $75

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

For description, see Volume 1, page 73.

2:00–5:00 PM Workshop

Informal Science Day Session: Informal Science Share-a-Thon (Gen)

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

Elizabeth Mulkerrin, NSTA Director, Informal Science, and Omaha's Henry Doorly Zoo, Omaha, Neb.

Elizabeth Burris *(eburris@hosprograms.org),* Hands On Science, A MCCPTA-EPI Program, Silver Spring, Md.

Sarah Carter and **Adine A. Thoreen** *(aathoreen@gmail.com),* Twin Cities Public Television, St. Paul, Minn.

Teresa A. Eastburn *(eastburn@ucar.edu),* NCAR/UCAR, Boulder, Colo.

Anne Lynn Gillian-Daniel *(agillian@wisc.edu),* University of Wisconsin–Madison

Janice Harvey *(jharvey@gemini.edu),* Gemini Observatory, Hilo, Hawaii

Kathy Holt *(kholt@ligo-la.caltech.edu),* LIGO Livingston Observatory, Livingston, La.

Mia Jackson, Foundation for Family Science & Engineering, Portland, Ore.

Tracey Meilander, Great Lakes Science Center, Cleveland, Ohio

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

Christine Wallace *(cwallace@catalysisllc.com),* Catalysis LLC, Portland, Ore.

Brianne Warthman *(brianne.warthman@columbuszoo.org),* Columbus Zoo and Aquarium, Powell, Ohio

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

Come to the lively Informal Science Share-a-Thon, where informal science educators showcase their programs and resources, and share ideas with the science education community.

2:30–4:30 PM Presentation

SESSION 1

NSELA/NSTA Standards Forum (Gen)

(General) *JW Grand Ballroom 8, JW Marriott*

Susan Koba *(skoba@cox.net),* NSELA President, Omaha, Neb.

Patricia Simmons, NSTA President, and North Carolina State University, Raleigh

Zipporah Miller, Associate Executive Director, Professional Programs and Conferences, NSTA, Arlington, Va.

Join NSTA and NSELA for a Next Generation Science Standards forum—where are we at and what does it mean for our schools and students?

3:00–3:45 PM Exhibitor Workshop

NASA Aquarius Brings New STEM Resources to Your Classroom (Earth)

(Grades 6–12) *142, Convention Center*

Sponsor: NASA

Phoebe Jekielek and **Christen M. Herren,** University of Maine, Walpole

June 2011 marked the launch of NASA's first space-based measurements of ocean salinity, an important observation for water cycle, ocean circulation, and climate studies. Aquarius detects changes in ocean salinity as small as a "pinch" of salt in a gallon of water and produces a new global map of salinity each week. Come learn about these resource-rich, interactive concept maps that deconstruct complex STEM content and are linked to educator-vetted activities, hands-on experiments, and authentic datasets.

3:00–4:15 PM Exhibitor Workshop

Engineering for the Future: Exploring Energy Concepts with K'Nex (Gen)

(Grades 3–8) *134, Convention Center*

Sponsor: Fisher Science Education

Robert Marshall *(marshallr@carnegiesciencecenter.org),* Carnegie Science Center, Pittsburgh, Pa.

In order to be successful in a STEM career, students need to master problem solving, demonstrate the ability to take risks, and make mistakes and learn from them. With the United States creating more than 100 million jobs requiring highly skilled workers, professionals such as engineers will be in high demand. Discover how to use hands-on learning as a way to encourage your students' natural creativity, giving them the tools they need to become innovators of the future.

3:00–4:30 PM Reception

GEMS Network Reception

Marriott Ballroom 5, Marriott Downtown

Mingle with Great Explorations in Math and Science (GEMS) educators from around the country. Learn from each other about the various GEMS activities taking place in classrooms and communities near you. Explore our newest curriculum. All are welcome! Visit *www.lhsgems.org* for additional information.

3:00–4:30 PM Workshop

PDI **BSCS Pathway Session: Videocase Lesson Analysis for Improved Teacher Practice (Gen)**

(General) *305/306, JW Marriott*

Connie Hvidsten *(chvidsten@bscs.org),* BSCS, Colorado Springs, Colo.

Explore teacher learning strategies and facilitated analysis of video clips in this engaging session that will challenge participants to analyze teaching videocases and apply the analysis to improve teaching practice.

3:00–4:30 PM Exhibitor Workshop

Bio-Rad: ELISA and Swine Flu (Bio)

(Grades 7–College) *108, Convention Center*

Sponsor: Bio-Rad

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

What do pigs and people have in common? Swine flu is thought to be a rearrangement of four known strains of influenza A virus—one normally infecting humans, one normally infecting birds, and two normally infecting pigs (swine). The new strain, H1N1, is transmitted from person to person. An ELISA assay is a powerful diagnostic tool that enables the rapid detection of disease-causing agents such as H1N1. Discover how this disease is transmitted using a hands-on ELISA experiment and also learn how vaccinations work.

3:00–5:00 PM Meeting

NSTA International Advisory Board Meeting

307, JW Marriott

3:30–4:00 PM Presentations

SESSION 1

Science Assessment Strategies That Demonstrate Learning for All Students (Gen)

(Preschool–Elementary) *212, Convention Center*

Shawn A. Brown CANCELED *sab@reinhardt.edu),* Reinhardt University, Waleska, Ga.

Join us for a discussion about using assessment to stimulate critical discussion of science content among teachers and students.

SESSION 2

Learning in Nature (Bio)

(General) *243, Convention Center*

Elaine Horne *(grovesr@ozemail.com.au),* Western Australia Dept. of Environment and Conservation, Mount Hawthorne

Reconnect your students with nature and foster sustainability understanding through science concepts and skills, experiential activities, reflection, and interaction in the natural environment.

3:30–4:30 PM Robert H. Carleton Lecture

Through My Eyes **(Gen)**

(General) *Sagamore Ballroom 3, Convention Center*

Emma Walton *(elwalton@aol.com),* 1999–2000 NSTA President, and Science Education Consultant, Anchorage, Alaska

Presider: Karen Henman, Brenau University, Gainesville, Ga.

For almost 50 years (47 to be exact), Dr. Emma Walton has been involved with her passion—science education. Looking back on her roles as a science teacher and a science supervisor, as well as other professional activities, she reflects on the changes to STEM education and her dreams for the future. She'll discuss the changes in today's students (have they really changed?) and whether technology is the answer.

Former NSTA president, Dr. Emma Walton has spent much of her career helping to improve the quality of science education for educators and students nationwide. Presently, Emma is a consultant for NASA's Aerospace Education Services Project and serves as an advisor to the Geophysical Institute NSF grant, ICE. She began her career as a high school biology teacher before moving to administrative positions. She has served as president of the National Science Education Leadership Association (formerly the National Science Supervisors Association), the Alaska Science Teachers Association (ASTA), and the Alaska Association for Supervision and Curriculum Development.

3:30–4:30 PM Meeting

GEICO/NSTA New Member Orientation

(By Invitation Only) *JW Grand Ballroom 1, JW Marriott*

Please join us for this exceptional opportunity to meet your colleagues, make new friends, and enjoy refreshments while hearing about how preservice and new teachers can save money on BOTH their NSTA membership dues as well as auto insurance! If you joined NSTA as a member after June 1, 2011, and/or received an e-mail invitation to this event from NSTA, then please join us! This event is graciously sponsored by GEICO.

3:30–4:30 PM Presentations

SESSION 1

Research Goes to School: Incorporating Advanced Research on the Conversion of Biomass to Biofuels into High School STEM Classrooms **(Gen)**

(High School) *111/112, Convention Center*

Lisa Kirkham *(lkirkham@purdue.edu),* Purdue University, West Lafayette, Ind.

Kathy Daniels, Mississinew High School, Gas City, Ind.

Georgia Everett *(geverett@tccs.k12.in.us),* Tri-Central Middle/High School, Sharpsville, Ind.

Find out how high school STEM teachers incorporated advanced research on the conversion of biomass to biofuels into their courses. Lesson plans and strategies included.

SESSION 2

I Know How to Use Technology…But How Do I Teach with It? **(Gen)**

(High School) *113, Convention Center*

Valerie A. Pierce *(pierce@rutgersprep.org),* Rutgers Preparatory School, Somerset, N.J.

Feel like the technology tail is wagging the pedagogical dog? Learn how common online activities improve traditional assignments and student learning in a more sustainable class.

SESSION 3

Science 2.0: Putting Web 2.0 into the Science Classroom **(Gen)**

(General) *120, Convention Center*

Ben Smith *(ben@edtechinnovators.com)* and **Jared Mader** *(jared@edtechinnovators.com),* Red Lion (Pa.) Area School District

Web 2.0 tools allow students to create products online, all while focusing on collaboration and creativity. Grouping and associating these products through "tagging" allows students to join a conversation with other students with similar interests and ideas. Come learn how to use the best free tools on the web.

SESSION 4

The SAT Subject Test in Biology—Not Just for College Admissions **(Bio)**

(High School) *121, Convention Center*

Israel Solon *(isolon@ets.org),* Educational Testing Service, Princeton, N.J.

David Hyink, Shorecrest Prep School, St. Petersburg, Fla.

Presider: David Hyink

Learn how the SAT Biology test is developed from the test

developers and development committee members, and how it can be used as a self-assessment for your course.

SESSION 5

How Pure Science Becomes Applied Science: Using STS to Understand the STEM Initiative (Gen)

(Middle Level) *122, Convention Center*

William J. Sumrall *(sumrall@olemiss.edu)* and **Kristen M. Sumrall** *(kmcurry@olemiss.edu),* The University of Mississippi, University, Miss.

Engage in activities regarding relationships between science, technology, and society. Emphasis will be placed on serendipitous discoveries and the inventive process, including use of nature to invent as well as mass production issues of quality control, safety, and cost. Handouts.

SESSION 6

High-Tech Sounds of Physics (Phys)

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

Bryan S. Warrick, eSTEM High School, Little Rock, Ark.

Harmonize with high-tech physics labs that connect the science eCommunity. Explore rarefactions, compressions, nodes, overtones, and more as you participate in labs constructed with SCRATCH and ALICE.

SESSION 7

Frisbee® Dog Physics (Phys)

(General) *126, Convention Center*

Jen Gilbert *(gilbertmediagroup@gmail.com),* DePaul University, Chicago, Ill.

Who doesn't like a flying dog? The Frisbee Dog Physics idea came about to make physics more accessible, specifically to special education students. Observing a "Frisbee" (disc) dog soaring through the air to catch a flying disc is a wonderful way to teach science. This session explores an inquiry-based approach addressing the misconception that gravity affects horizontal motion of an object. Video clips and still pictures featuring disc dogs in action are used to engage students and help them relate physics to their daily lives. The session will include a live presentation of the engage activity by a disc dog team featured in the video clips, so participants can experience the excitement firsthand.

SESSION 8

An Introductory Organic Chemistry Course for High School Students (Chem)

(High School) *127, Convention Center*

William C. Bowman *(wbowman@pkwy.k12.mo.us),* Parkway North High School, St. Louis, Mo.

Learn how to create an organic chemistry course that covers common organic reactions, multistep synthesis logic, real-world applications, and microscale experiments.

SESSION 9

ROKET and AILDI: Science from an American Indian Perspective (Phys)

(Elementary–High School) *207, Convention Center*

Bright Benson, Indian Oasis Elementary School, Sells, Ariz.

ROKET stands for Research in Optics for K–12 Educators and Teachers. In partnership with the University of Arizona and the American Indian Language Development Institute (AILDI), ROKET students enroll in one AILDI course. ROKET participants representing the Tohono O'odham and Lakota nations will share how they have incorporated inquiry-based science lessons that are sensitive to traditional culture and knowledge.

SESSION 10

Science + Literacy = Student Achievement (Bio)

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

Eileen Patrick, STEM Lab Magnet School, Northglenn, Colo.

Are your students struggling to understand nonfiction texts? Need ideas for comprehension, note-taking, and comparing/contrasting? Learn strategies to help your students be successful in all content areas.

SESSION 11

How Do You Know They Understand What You Taught? (Gen)

(Elementary) *231, Convention Center*

Christine L. Purkiss *(cpurkiss@angelo.edu),* Angelo State University, San Angelo, Tex.

Having good assessment is difficult. Learn how to use some useful strategies to effectively assess learning.

SESSION 12

Computer Games, Simulations, and Virtual Labs for STEM Education (Gen)

(Informal Education) *232, Convention Center*

Randy Russell *(rrussell@ucar.edu)* and **Becca Hatheway** *(hatheway@ucar.edu),* University Corporation for Atmospheric Research, Boulder, Colo.

Teresa A. Eastburn, NCAR/UCAR, Boulder, Colo.

Join us for a broad review of computer games, simulations, and virtual labs for STEM education from many different sources.

SESSION 13

Meteorites CSI: The Sky Has Fallen—Now What? (Gen)

(Middle Level–High School) *234, Convention Center*

Martin G. Horejsi, The University of Montana, Missoula

Meteorites cross all science disciplines with reckless abandon. Whether physics, chemistry, biology, or geology, meteorites are a fascinating vehicle to teach it all.

SESSION 14

NMLSTA Session: Grant Proposal Writing: Basics for Beginners (Gen)

(General) *240, Convention Center*

Diana M. Hunn *(dhunn1@udayton.edu),* University of Dayton, Ohio

Learn the basics of writing a good proposal and where to find money to support your creative ideas. Terminology, resources, and more!

SESSION 15

Teaching Young Innovators: Bringing Creativity to the Science Classroom (Gen)

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

David M. Baxter *(david.baxter@warren.kyschools.us)* and **Jennifer Smith** *(jennifer.smith@warren.kyschools.us),* GEMS Academy, Bowling Green, Ky.

Allison K. Bemiss *(allison.bemiss@grrec.ky.gov),* Green River Regional Educational Cooperative, Bowling Green, Ky.

Can we teach students to innovate? What does innovation look like? The Innovation Model is a heuristic tool that helps science students envision the creative process.

SESSION 16

Teaching Coral Bleaching with Real Satellite Data (Bio)

(Middle Level–High School) *244, Convention Center*

Paulo Maurin *(paulo.maurin@noaa.gov),* NOAA, Silver Spring, Md.

Join me for an introduction to corals and coral bleaching, using real satellite date from NOAA that links coral bleaching to climate change. Take home classroom-ready educational resources.

SESSION 17 (two presentations)

(High School–College) *103, JW Marriott*

The Creative Use of Case Stories to Enhance Interest and Critical Thinking (Gen)

Anthony C. Derriso *(acderriso@crimson.ua.edu),* The University of Alabama, Tuscaloosa

Case stories cover content, foster critical thinking, and are more interesting than lecture! See how students can learn in the context of a meaningful situation.

Visual Content for Preservice Student Support (Gen)

Hideo Tsuburya *(htsubura@twcpe.ac.jp),* Tokyo Women's College of Physical Education, Kunitati, Tokyo, Japan

Visual content helps students who are not good at science to learn the material. Learn about some visual content that assists students with planning and conducting experiments.

SESSION 18

Microgravity Effects on Human Physiology (Bio)

(High School/Supervision) *104, JW Marriott*

Natalee Lloyd *(natalee.d.lloyd@nasa.gov)* and **Monica Trevathan** *(monica.trevathan-1@nasa.gov),* NASA Johnson Space Center, Houston, Tex.

Learn how NASA research can help AP Biology students make connections to real-world science while getting needed practice on free response–styled questioning and grading.

SESSION 19

How I Turned a Great Science Lesson into a Presidential Award and $10,000 (Gen)

(General) *201, JW Marriott*

Nafeesa Owens *(paemst@nsf.gov),* National Science Foundation, Arlington, Va.

Kisha Davis-Caldwell *(kdavisca@nsf.gov),* Einstein Fellow, National Science Foundation, Arlington, Va.

Hear from Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) awardees. Join us as we share how we each took a quality science lesson and turned it into a meeting with the president of the United States, $10,000, and leadership opportunities.

SESSION 20

NARST Session: Research into Science Fairs: Understanding and Engaging the Issues (Gen)

(General) *206, JW Marriott*

G. Michael Bowen *(gmbowen@yahoo.com),* Mount Saint Vincent University, Halifax, N.S., Canada

J. Lawrence Bencze, University of Toronto, Ont., Canada

We have conducted research at senior science fairs for eight years. Join us as we summarize the findings.

SESSION 21

Out with the Old, In with the New: An Undergraduate Perspective on Technology Integration in the Classroom (Gen)

(College) *208, JW Marriott*

Stephen P. Glotzhober, University of Michigan, Ann Arbor

Receive an undergraduate's perspective on how technology should be integrated into the classroom to develop innovative and critical thinkers. Hear what changes in teaching are crucial for the development of the next generation of great scientists.

SESSION 22

A STEM Education and Research Center Connecting with Teachers and Students (Gen)

(General) *209, JW Marriott*

Jennifer Dames *(jdames@knights.ucf.edu)* and **Gwynn Crittenden,** University of Central Florida, Orlando

Nirmala Ramlakhan *(nramlakhan@wcfla.com),* Workforce Central Florida, Orlando

Meera Ravikumar, Oviedo, Fla.

Find out how a university connected with teachers and their students to engage them in STEM through internships, research, and rich learning experiences. Hear about schools that have successfully excited students from underrepresented groups in STEM. Gain practical ways to foster support from the STEM industry to promote STEM awareness among diverse student populations.

SESSION 23

Sustainability Through Literature and Action (Env)

(High School–College) *302/303, JW Marriott*

Glenda M. McCarty *(glendamccarty@gmail.com),* Culver-Stockton College, Canton, Mo.

Jennifer M.G. Hope *(jmghope@gmail.com),* University of Missouri–St. Louis

Explore classic and current literature, media resources, and projects to evaluate the social, economic, and environmental aspects of sustainability around your school.

SESSION 24

Connecting STEM Programs: Building Capacity to Increase Participation in STEM (Gen)

(General) *309/310, JW Marriott*

Karen Peterson and **Vicky Raya,** National Girls Collaborative Project, Lynnwood, Wash.

Create successful collaborative relationships to broaden the reach of your science program using the National Girls Collaborative Project's network and content resources.

SESSION 25

H.O.T. Formatives That Demonstrate Evidence of Student Learning (Gen)

(General) *314, JW Marriott*

Viv Wayne *(viv_wayne@mcpsmd.org),* Montgomery County Public Schools, Rockville, Md.

Walk away with a variety of Higher Order Thinking assessment strategies that improve student learning in STEM education for different learning styles and ability levels.

SESSION 26

Edible Creativity: Exploring Students' Scientific Creativity in Chemistry Through Foods Science (Chem)

(High School–College) *JW Grand Ballroom 4, JW Marriott*

Allison Antink Meyer *(aantink@iit.edu),* Illinois Institute of Technology, Chicago

Explore three activities applicable to a high school or introductory college chemistry or food science classroom. These activities engage students' scientific creativity and content understanding.

SESSION 27

PDI **BEST Pathway Session: Engaging Students Through Green Energy (Gen)**

(Elementary–High School) *White River Blrm. B, JW Marriott*

Bob Chen *(bob.chen@umb.edu),* University of Massachusetts Boston

Join me as I highlight green energy concepts in K–12 science and discuss how to connect them to your classroom curriculum and energy frameworks.

SESSION 28

PDI **SPS Pathway Session: Reading and Writing the News (Gen)**

(Middle Level–High School) White River Blrm. D, JW Marriott

Laura Pearce *(laura_1249@yahoo.com),* **Wendy Saul** *(ewendysaul@gmail.com),* and **Cathy Farrar** *(farrarcat@gmail.com),* University of Missouri–St. Louis

Our NSF-funded project has been exploring ways to enhance science literacy among high school students through a journalism model—writing/reading and print/electronic.

SESSION 29

Supporting Teacher Development Through Social Networking (Gen)

(College/Supervision) White River Ballroom H, JW Marriott

Nanette I. Dietrich and **Oliver Dreon** *(odreon@millersville.edu),* Millersville University of Pennsylvania, Millersville

Explore ways to use online learning communities and social networks to prepare and train new science teachers who are digital natives.

SESSION 30

Making Science Connections to the World Using Skype (Gen)

(General) Marriott Ballroom 1, Marriott Downtown

Kaci A. Heins *(ronsemo@hotmail.com),* Northland Preparatory Academy, Flagstaff, Ariz.

Learn how to use Skype technology to connect your classroom to scientists and science organizations across the country and the world.

SESSION 31

Expanding Inquiry-based Instructional Methods (Gen)

(General) Marriott Ballroom 2, Marriott Downtown

Peter English *(english@mail.utexas.edu),* The University of Texas at Austin

Receive an overview on the Hands-on-Science program at The University of Texas, Austin, which is expanding inquiry-based instructional methods to include all sciences while simultaneously scaling curriculum to classes of 50 students and more.

SESSION 32

Kindergarten Science Engagement Lessons for Inquiry (Gen)

(General) Marriott Ballroom 7, 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.

Kindergartners are easily engaged! Let's look at how the inquiry process is accessible for these young learners, beginning with planned engagement lessons.

SESSION 33

Exploring Scientific Methodology (Gen)

(General) Marriott Ballroom 10, Marriott Downtown

Laura Saxton *(lsaxton@jhu.edu)* and **Stuart M. Gluck** *(stu@jhu.edu),* Johns Hopkins University, Baltimore, Md.

"The scientific method" as typically presented is naive and formulaic. We'll explore K–12 lessons that allow students to investigate real scientific methodology through inquiry.

SESSION 34

Visual Tools for Accelerated and Inclusive Learning (Gen)

(General) Michigan/Texas, Marriott Downtown

Roger Essley *(ressley@aol.com),* Independent Researcher, Newmarket, N.H.

Jonathan B. Moss, Portsmouth High School, Portsmouth, N.H.

See how groundbreaking visual tools boost comprehension, focus discussion, and make content easier to grasp. Students' hands-on science visualizations accelerate learning and promote inclusion.

SESSION 35

No Teacher Left Inside: From the Field into the Classroom with the NOAA Teacher at Sea and PolarTREC Teacher Research Experience Programs (Gen)

(General) Cabinet, Westin

Sarah Crowley *(crowley@arcus.org),* Arctic Research Consortium of the U.S. (ARCUS), Fairbanks, Alaska

Discover the world of Teacher Research Experience (TRE) programs. Get involved with scientific communities, improve your professional development, and enhance your students' learning.

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

SESSION 36

NASA's INSPIRE: Stories of Success from the Students Themselves (Earth)

(Middle Level–High School) *Capitol III, Westin*

Bradford Davey *(brad@techforlearning.org),* Technology For Learning, North Kingstown, R.I.

What drives students to participate in online environments? What keeps them coming back? What do they gain? These questions guide our exploration of NASA's Interdisciplinary National Science Project Incorporating Research and Education Experience (INSPIRE).

SESSION 37 (two presentations)

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

Discovering the Science of the Environment: Integrating Technology and the Environment to Inspire Future Scientists (Env)

Brooke A. Furge and **Kara A. Salazar** *(salazark@iupui.edu),* Indiana University–Purdue University Indianapolis

Learn about Discovering the Science of the Environment (DSE) program at Indiana University–Purdue University Indianapolis, which features a mobile resource trailer that contains an interactive data collection and recording devices and a web interface to deliver free field-based science programming to local schools.

Google Earth, ImageJ, and GIS: Tools to Investigate and Communicate About Environmental Change (Env)

Susan Kelly, NASA Education, Bridgewater, Conn.

Learn about free and open-source software that can support your students' ability to measure environmental change. See samples of student investigations from content areas such as biology, environmental science, and Earth science.

SESSION 38

Get Out There and Save the World! (Gen)

(General) *Chamber, Westin*

Haven Daniels *(hdaniels@bostonpublicschool.org),* Boston (Mass.) Public Schools

Erin A. Hashimoto-Martell *(ehashimoto@boston.k12.ma.us),* Nathan Hale Elementary School, Boston, Mass.

Fiona Bennie *(fbennie@boston.k12.ma.us),* Horace Mann School for the Deaf & Hard of Hearing, Boston, Mass.

Michael J. Clinchot *(mclinchot2@boston.k12.ma.us),* Edwards Middle School, Boston, Mass.

Join us as we discuss an inquiry group's collaborative outdoor field experiences and assessment of students' growing environmental awareness. We'll also discuss the value of collaborative discourse in analyzing student field work.

SESSION 39

Visualizing the Unviewable: Simple Models to Activate Your Earthquake Instruction (Earth)

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

Michael Hubenthal *(hubenth@iris.edu)* and **John Taber** *(taber@iris.edu),* IRIS Consortium, Washington, D.C.

Explore a collection of simple, inexpensive physical models designed to aid in developing students' understanding of abstract earthquake-related concepts.

SESSION 40

NESTA Session: Earth and Space Science Education Today in K–12: Status and Trends at the State and National Levels (Earth)

(Supervision/Administration) *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.

Wendy E. Van Norden *(wvannorden@hw.com),* Harvard-Westlake School, North Hollywood, Calif.

Join us for a panel discussion that examines Earth and Space Science (ESS) education status, trends, and opportunities to advance ESS education at the state and national levels.

3:30–4:30 PM Workshops

So What Do You Bring to the Table? (Gen)
(Middle Level–High School) 128, Convention Center
Kevin B. Keehn *(keehnk@ccsd15.net),* Walter R. Sundling Junior High School, Palatine, Ill.
Not everyone in the class who participates in engineering activities will become an engineer. We will look at how all can benefit from collaboration.

NASA Brings You Newton's Laws of Motion (Phys)
(Middle Level–High School) 205, Convention Center
David P. Beier *(david.beier@barstowschool.org),* The Barstow School, Kansas City, Mo.
Come get your hands on these 25 engaging investigations of Newton's laws of motion developed by NASA E/PO. Free NASA resources!

How Strong Is Your Magnet? An Attractive Topic for Inquiry (Phys)
(Elementary–Middle Level) 206, Convention Center
Deborah L. Hanuscin *(hanuscind@missouri.edu)* and **Eun Ju Lee** *(el2c9@mail.mizzou.edu),* University of Missouri, Columbia
Come explore the diverse methods students have devised for comparing the strength of magnets and learn how to foster student-centered inquiry.

CESI Session: What Could the Matter Be? (Gen)
(Elementary–Middle Level) 210, Convention Center
Melissa C. Sleeper *(melissa.sleeper@indianriverschools.org),* Indian River School District, Vero Beach, Fla.
Learn some fun and creative ways to enhance your students' understanding of matter. Try hands-on activities and take home classroom-ready lessons and ideas. Door prizes!

CESI Session: Simple Toys Link the Physics of Sound and STEM (Phys)
(Elementary) 211, Convention Center
Julie Thomas *(julie.thomas@okstate.edu),* Oklahoma State University, Stillwater
Come share in this lively session where we explore the physics of sound—hangers, bangers, and buzzers. Take them home and amaze your students!

Combine, Ignite, Fuse: The Synergy of Language and Science (Earth)
(Elementary–Middle Level) 233, Convention Center
Eugenia R. Mora-Flores, University of Southern California, Los Angeles
Dolores Beltran *(ddbeltra@usc.edu),* USC Rossier School of Education, Los Angeles, Calif.
Experience inquiry-based science with a focus on the development of academic language, critical thinking, and creative expression.

Elementary (K–4) GLOBE (Env)
(Elementary) 235, Convention Center
Lynne H. Hehr *(lhehr@uark.edu)* and **John G. Hehr** *(jghehr@uark.edu),* University of Arkansas, Fayetteville
GLOBE stands for Global Learning and Observations to Benefit the Environment. Explore the Elementary GLOBE program with its 5 themed storybooks and 15 lessons. Experience the environmental science world (soils, Earth systems, water, clouds, and seasons) in this inquiry- and content-driven hands-on session. Lots of materials provided!

The Science of Archaeology at The Children's Museum of Indianapolis (Gen)
(Elementary–Middle Level) 241, Convention Center
Laura C. Ferries *(lauraf@childrensmuseum.org)* and **Mary Fortney** *(maryf@childrensmuseum.org),* The Children's Museum of Indianapolis, Ind.
Experience hands-on archaeological exercises and learn about new resources available with The Children's Museum of Indianapolis' exhibit, *National Geographic Treasures of the Earth*.

Learning Isn't a Game…Or Is It? Using Games to Engage Students (Bio)
(Middle Level–High School) 245, Convention Center
Hillary Z.G. Lauren *(hzglauren@life.illinois.edu),* **Barbara Hug** *(bhug@illinois.edu),* **Donna Korol** *(dkorol@illinois.edu),* and **Maggie Blattner,** University of Illinois at Urbana-Champaign, Champaign
Engage your students with games that promote active learning and inquiry in topics like epigenetics and natural and sexual selection. Free materials provided.

Pairing Science Inquiry Lessons with "Active Reading" Activities (Gen)
(General) Indiana Ballroom F, Marriott Downtown
Cody Sandifer *(csandifer@towson.edu),* Towson University, Towson, Md.
Sarah Unger *(sarah.unger@saupperwest.org),* Success Academy–Upper West, New York, N.Y.
Learn "active reading" methods that help students better understand the nonfiction science texts that are often used to reinforce inquiry learning.

Argumentation in Action (Gen)
(General) Marriott Ballroom 8, Marriott Downtown
Cristina Trecha *(ctrecha@rhfleet.org),* Reuben H. Fleet Science Center, San Diego, Calif.
Learn how to capture students on video in the act of creating scientific explanations. See examples from K–12 classrooms of San Diego Science Project teachers.

Ends of the Earth: Combine Research and Science Inquiry with Penguins and Polar Bears (Gen)
(Elementary–High School) Marriott Blrm. 9, Marriott Downtown
Jean Pennycook *(jean.pennycook@gmail.com),* Einstein Fellow, National Science Foundation, Arlington, Va.
Dena Rosenberger *(drosenberger@guhsd.net),* El Capitan High School, Lakeside, Calif.
Penguins and polar bears aren't the only ones; many organisms thrive in the harsh environment of the Polar regions. Explore lesson plans and resources that cross the curricular areas of biology, geology, and atmospheric and oceanographic sciences as well as history, art, literature, and geography… while using the poles as the central theme.

ASTE Session: Teaching Science in the Elementary and Middle School Classrooms with Case Studies (Env)
(Elementary–Middle Level) 202, JW Marriott
Cynthia Deaton *(cdeaton@clemson.edu),* Clemson University, Clemson, S.C.
Let's discuss how to develop and use case studies to teach environmental science to elementary and middle school students. Sample case studies provided.

Scaffolded Inquiry: The Platform for Exploring STEM Content (Gen)
(Supervision/Administration) 204/205, JW Marriott
Karen L. Ostlund *(klostlund@mail.utexas.edu),* NSTA President-Elect, and Retired Professor, The University of Texas at Austin
Find out how scaffolded inquiry (directed to guided to full) provides the platform for exploring STEM content.

Turn Kids Ages 6–14 "ON" to STEM with FREE Turn-Key Resources from WGBH Boston (Gen)
(General) White River Ballroom F, JW Marriott
Graham Veth, WGBH, Boston, Mass.
Try activities and learn strategies for leading science inquiry with FREE resources from WGBH-produced programs like *FETCH!*, *Design Squad Nation*, *NOVA*, and Teachers' Domain.

Drop the Lecture and Let the Students Pick Up the Learning in Environmental Science (Env)
(High School) Capitol I, Westin
Kristen R. Dotti *(kristen.dotti@catalystlearningcurricula.com),* Christ School, Arden, N.C.
Using a game of chance to simulate island biogeography, an "Olympic" committee to judge water quality, and a biogeochemical cycle group challenge, this session will add several new activities to your bag of tricks for teaching in-depth Advanced Placement Environmental Science (APES) topics in an engaging and memorable manner.

Oxygen Isotopes and Climate Change Education: An Inquiry-based Activity for Secondary School Students (Earth)
(Middle Level–College) Grand Ballroom 1, Westin
Kaitlyn M. Prindle *(prindlek@mail.gvsu.edu),* **Alexander Kenneth Nolan** *(nolanal@mail.gvsu.edu),* **Samantha Beverly Krystiniak** *(krystins@mail.gvsu.edu),* and **Christopher W. Vandergriff,** Grand Valley State University, Allendale, Mich.
The role of oxygen isotopes in climate change research is explored through building and manipulating models made from household materials and integrating mathematics concepts.

Go to the Moon with NASA: Introducing the Design Process (Earth)
(Elementary–High School) Grand Ballroom 2, Westin
Susan M. Kohler *(susan.m.kohler@nasa.gov),* NASA Glenn Research Center, Cleveland, Ohio
Aerospace Education Services of NASA will get you started with six activities introducing open-ended design challenges for your science classroom.

STOP BY TO STEM-I-FY!

Visit us at Booth #1237 for the latest STEM solutions:

Science: Bring biology to life with digital microscopes.

Technology: Learn how to use ReallyEasyData Collectors to turn any science experiment into a STEM experiment.

Engineering: Get a sneak peek at TeacherGeek, our newest line of inquiry-based building kits that put the 'E' in STEM.

Math: Graph, measure, and analyze data with interactive whiteboard technology.

Win a STEM Classroom Makeover!
Stop by booth #1237 to enter.

SK Science Kit® & Boreal® Laboratories

Stop by booth # 1237

3:30–4:30 PM Exhibitor Workshops

Incorporating STEM in a Chemistry and Physics Classroom Through a Simplified Engineering Design Cycle (EDC) (Gen)

(Grades 9–12) *132, Convention Center*

Sponsor: It's About Time

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

Learn the benefits of the Engineering Design Cycle for teaching and learning chemistry and physics. See how Dr. Arthur Eisenkraft designed a project-driven course that makes a difference in the performance of students at all levels, from the start of the semester to the completion. You will also be introduced to the use of data-logging technology to enhance the classroom experience.

Indiana Python and the Temple of Density (Chem)

(Grades 9–12) *135, Convention Center*

Sponsor: Texas Instruments

Ray Lesniewski *(chemguy65@yahoo.com),* Jones College Prep, Chicago, Ill.

What do Indiana Jones, *Monty Python,* soda pop, and U.S. pennies have in common? They're all used to teach density! Using hands-on activities developed for the TI-Nspire™, videos, and simple demonstrations, learn how density concepts can be taught in a constructivist manner.

3:30–5:00 PM Meeting

SCST Business Meeting

203, JW Marriott

3:30–5:00 PM Presentation

SESSION 1

NSTA Press Session: Linking NSTA Press Books—Connecting Content, Inquiry, Picture Books, and Formative Assessment (Gen)

(General) *JW Grand Ballroom 7, JW Marriott*

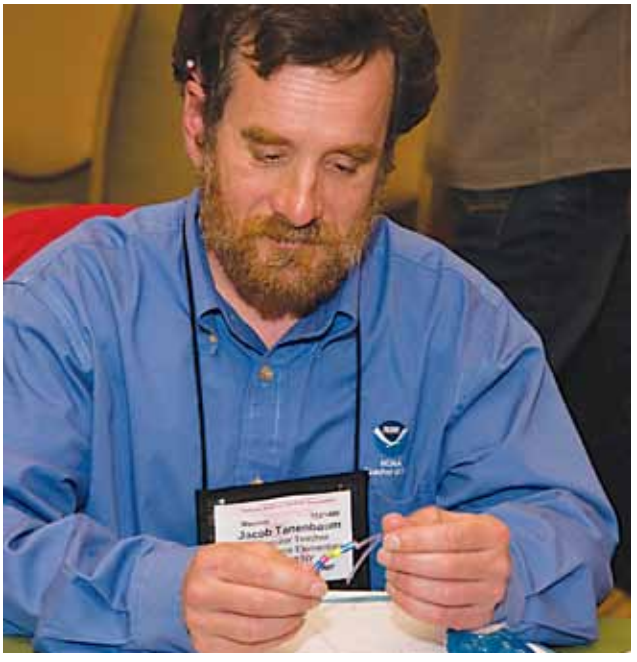
Page Keeley *(pkeeley@mmsa.org),* 2008–2009 NSTA President, and Maine Mathematics and Science Alliance, Augusta

Emily R. Morgan *(emily@pictureperfectscience.com),* Picture-Perfect Science, West Chester, Ohio

Bill Robertson *(wrobert9@ix.netcom.com),* Bill Robertson Science, Inc., Woodland Park, Colo.

Richard D. Konicek-Moran *(konmor@comcast.net),* Professor Emeritus, University of Massachusetts Amherst

The four authors of *Uncovering Student Ideas in Science, Stop Faking It, Every Day Science Mysteries*, and *Picture Perfect Science* will show how these four series can be used together to enhance teaching and learning.



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 science, technology, engineering, and math learning. Participants will 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 the critical-thinking and creative problem-solving skills that will serve them well for a lifetime.

4:00–4:45 PM Exhibitor Workshop

Virtual Lab and NASA Explorer Schools (Gen)
(Grades 4–12) *142, Convention Center*
Sponsor: NASA
Kristy L. Hill, Oklahoma State University, Huntsville, Ala.
The Virtual Microscope is a NASA-funded project that provides simulated scientific instrumentation for students and researchers worldwide. Currently it provides 90 specimens, including one-celled organisms, human tissue, computer chips, shuttle tiles, lunar dust, insects, and fungi. The Virtual Microscope, which is available for free download, supports functionality from electron, light, and scanning probe microscopes; datasets for these instruments; training materials to learn more about microscopy; and other related tools. The Virtual Microscope presents the user with a method for exploring these pre-captured image data as if they were using the real instrument in real time. Learn how you can become part of the NASA Explorer Schools program, a free online program that invests in STEM educators to inspire and engage the future scientists, engineers, and technicians that NASA needs to continue our journey.

4:00–5:30 PM Workshop

PDI **McREL Pathway Session: What Works in Science Classrooms: Helping Students Think Scientifically (Gen)**
(General) *White River Ballroom G, JW Marriott*
Christine S. Jones, University of Colorado, Boulder
Cynthia Long *(clong@mcrel.org),* McREL, Denver, Colo.
To understand the nature of science and a scientific way of knowing, students must to be able to think scientifically. This means not just completing a two-week unit about the nature of science, but being able to apply that learning every day in their science classrooms. Learn how to design your instruction to promote student scientific thinking that promotes understanding and pick up sample lesson materials.

4:00–5:30 PM Exhibitor Workshops

Investigating Magnetism with AIMS (Phys)
(Grades K–3) *101, Convention Center*
Sponsor: AIMS Education Foundation
Linda Fawcett, Retired Educator, Gladwin, Mich.
Magnets are fascinating to students and that interest must be developed in activities that address both science content and process skills. Investigate how magnetic force causes motion of attraction and/or repulsion and discover how to help students observe, organize, and articulate their thinking about magnetism.

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!

Teach Overseas! (Gen)
(General) *103, Convention Center*
Sponsor: International Schools Services
Laura Light, International Schools Services, Princeton, N.J.
More educators than ever before are needed to teach overseas. International Schools Services has successfully assisted more than 20,000 qualified teachers and administrators in their search for opportunities in the best schools overseas. While each school experience is unique, you'll teach your subject specialty in English, earn a competitive salary, and enjoy excellent benefits packages, high-quality facilities, small class sizes, and a progressive curriculum.

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 (page 72), 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.

Distillation: Simple and Fascinating Experiments in the Chemistry of Aromas and Smells (Chem)
(Grades 9–12) *105, Convention Center*
Sponsor: LAB-AIDS, Inc.
Tom Hsu, Author, Andover, Mass.
We distill water to purify it, or so we think. So why does the clear distillate from apple cider smell like apples? Join us and find out! Using a clever test-tube distillation apparatus, distill the essence of vanilla and the scent of mint… and we'll even show you how to make brandy from wine! Distillation is a crucial process in chemical engineering and technology, yet few students ever get to explore the process. This hands-on distillation workshop is not illegal, but it is excellent chemistry and extremely relevant to those of you who want to put a little STEM in your test tube!

Constructive Destruction (Earth)
(Grades 6–9) *106, Convention Center*
Sponsor: LAB-AIDS, Inc.
Lisa Kelp, LAB-AIDS, Inc., Ronkonkoma, N.Y.
When is the last time you engineered a coastal breakwater? Here's your chance! Engineer a coastal breakwater (from the *Issues and Earth Science* "Erosion and Deposition" unit from LAB-AIDS) and analyze the trade-offs of the design. Explore how the natural world is influenced by our engineered world, which in turn creates more societal issues that must be solved through science and engineering practices. Activities exemplify Next Generation Frameworks and show how SEPUP embeds the engineering practices and uses real issues to powerfully deliver content learning.

HHMI's *The Making of the Fittest: Natural Selection in Humans* in Your Classroom (Bio)
(Grades 9–College) *109, Convention Center*
Sponsor: Howard Hughes Medical Institute
Ann Brokaw *(abrokaw44@gmail.com),* Rocky River High School, Rocky River, Ohio
Mary Page Colvard *(mcolvard@tds.net),* Deposit, N.Y.
View HHMI's new short film, *The Making of the Fittest: Natural Selection in Humans*. Learn how Dr. Tony Allison discovered the link between sickle-cell disease and malaria. Relive the exciting journey that confirmed his hypothesis that the sickle-cell gene provides protection against malaria. Participants will receive free classroom-ready resources appropriate for all levels of biology.

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 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.

Diagnosing Diabetes (Bio)
(Grades 6–College) *131, Convention Center*
Sponsor: Science Take-Out
Susan Holt *(contact@sciencetakeout.com),* Science Take-Out, Pittsford, N.Y.
Follow the real-life case of a young woman with diabetes. Conduct a simulated glucose tolerance test to determine if the patient has Type 1 or Type 2 diabetes. This hands-on Science Take-Out kit introduces students to concepts involved in homeostasis and the regulation of insulin and glucose levels.

Next Generation Science Standards—What It Means for Earth Science (Gen)

(General) *133, Convention Center*

Sponsor: Pearson

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

Expected to be adopted by a majority of states, the new science standards have the potential to revolutionize how science is taught. Join us as we discuss the implications for teachers, schools, curriculum designers, and assessors with Michael Wysession, Pearson author and world-renown seismologist. Professor Wysession is part of NRC's Earth and Space Science Design Team, which is involved in creating the framework.

The Singapore Approach: Teaching and Learning Elementary Science (Gen)

(Grades 1–12) *136, Convention Center*

Sponsor: Marshall Cavendish International (Singapore) Pte., Ltd.

Ling Yuan *(lingirisyuan@gmail.com),* Catholic High Primary School, Singapore

Singapore—an "educational superstar," in the words of *The New York Times*—ranks at the top in Trends in International Mathematics and Science Study (TIMSS) as well as in the Programme for International Student Assessment (PISA). How does Singapore do it? Marshall Cavendish Education, the Asian educational publisher, will address Singapore's successful approach and the essential ingredients that have helped it achieve its stellar results.

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

(Grades 5–12) *139, Convention Center*

Sponsor: CPO Science/School Specialty Science

Scott W. Eddleman, CPO Science/School Specialty Science, Nashua, N.H.

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

Middle School Earth Science: Investigating Alternative Energy Sources Through Hands-On, Probeware-based Activities (Earth)

(Grades 6–8) *140, Convention Center*

Sponsor: PASCO scientific

Presenter to be announced

When you conduct an activity from the Sally Ride Science™ SPARKlab® series, you'll get hands-on experience with a state-of-the-art way to meet the Earth science standards. These activities from Sally Ride Science and PASCO cover the content you already teach through integrated, probeware-based guided inquiry lessons. The hands-on activity and teacher resources will cover concepts related to alternative energy and energy transformations.

Earth Science Investigation: Modeling Ocean Circulation (Earth)

(Grades 6–12) *141, Convention Center*

Sponsor: PASCO scientific

Presenter to be announced

One of the challenges of conducting experiments in Earth science is modeling large-scale events within the confines of the laboratory. With PASCO scientific's new Density Circulation Model you will see firsthand how density-driven circulation leads to natural layering and large-scale vertical ocean currents. In this hands-on workshop, you will experience how the SPARK Science Learning System™ can enhance your teaching practice and improve student understanding of core topics.

Introducing Inquiry into the Chemistry Lab: Colligative Properties (Chem)

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

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Learn how to incorporate a 5E—Engage, Explore, Explain, Elaborate, and Evaluate—learning cycle into your curriculum and create engaging inquiry labs that can improve student comprehension of difficult science concepts. Perform guided experiments on colligative properties with our unique Inquiries in Science® kits, which include interactive tools and digital resources. Free giveaways!

Hands-On Science with Classroom Critters (Bio)
(Grades K–12) *145, Convention Center*
Sponsor: Carolina Biological Supply Co.
Laurie Nixon, Carolina Biological Supply Co., Burlington, N.C.
Here's a sure-fire boost to your class—live organisms. Whether you use a hands-on curriculum (e.g., STC™, FOSS®) or develop your own lessons, animals broaden students' inquiry-based explorations and increase their interest in science. Participate in fun, simple hands-on activities with bess-bugs, pill bugs, termites, and more. Free materials provided!

RIDES for Higher Achievement in Math and Science (Gen)
(Grades K–8) *203, Convention Center*
Sponsor: American Association of State Highway Transportation Officials (AASHTO)
Linda Clifton *(lkclift@bellsouth.net)* and **Sheri Johnson,** American Association of State Highway Transportation Officials, Washington, D.C.
Connie F. Gusmus and **Holly M. Bailey,** Tupelo Middle School, Tupelo, Miss.
RIDES (Roadways Into Developing Elementary Students) is a hands-on math and science program designed to introduce students to careers in the fields of transportation and civil engineering while teaching required math and science standards. It is provided at no cost in most states to K–8 teachers by their Department of Transportation. Along with curricula aligned with STEM standards, teachers receive a large trunk of resource materials.

Notebook Foldables®—Let Them "Envelope" You (Gen)
(Grades K–12) *Wabash Ballroom 1, Convention Center*
Sponsor: Dinah-Might Adventures, LP
Dinah Zike *(dma@dinah.com),* Dinah-Might Adventures, LP, San Antonio, Tex.
In this fast-paced hands-on workshop, learn from the creator of Foldables and discover how to add dimensionality to student notebooks using Notebook Foldables. Walk away with practical ideas that are ready for use on Monday.

What the Heck Happened?! (Gen)
(Grades 3–11) *Wabash Ballroom 2, Convention Center*
Sponsor: Educational Innovations, Inc.
Ted Beyer, Educational Innovations, Inc., Bethel, Conn.
Discrepant events always seize students' attention, and at Educational Innovations we have some real jaw droppers. If you can make them say "Wow!"—the next thing they will ask is "Why?" Come join us as we explore some of our favorite student confusers. Door prizes and freebies!

5:00–5:30 PM Presentations

SESSION 1

Exploring the Boundaries of Earth Systems Education (Earth)
(General) *123, Convention Center*
Dwight Schuster, Indiana University, Indianapolis
Examine the potential boundaries of Earth systems education in relation to practices within the science education community and through the lens of current and future standards.

SESSION 2

The Benefits of 20 Years of Logic Puzzles in Chemistry (Chem)
(Middle Level–College) *236, Convention Center*
Paul Kelter *(pkelter@niu.edu),* Northern Illinois University, DeKalb
Carlos M. Castro-Acuña *(castroacuna02@yahoo.com)* and **Ramiro Eugenio Dominguez Danache** *(ramirodominguez@yahoo.com),* National Autonomous University of Mexico, Mexico City
We present background, examples, and qualitative and quantitative assessment data showing the benefits of assessment about "logic puzzles" with student, teacher, and international Olympiad contestants.

SESSION 3

Caltech Classroom Connection Program (Chem)
(Middle Level–High School) *237, Convention Center*
James R. Maloney *(maloney@caltech.edu),* California Institute of Technology, Pasadena
Encounter a model for partnering science teachers with scientists from an institute of higher education, and examples of collaboratively developed STEM lessons.

SESSION 4

Energy Flow to Living Things **(Bio)**

(High School) *244, Convention Center*

Darlene Cofiell, North High School, Appleton, Wis.

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

Explore the relationship between physical science and biology using hydrogen fuel cells. Trace carbon through photosynthesis and cellular respiration.

SESSION 5

The Teaching Greenhouse: Creating an Environment for Active Learning **(Bio)**

(High School–College) *302/303, JW Marriott*

Jennifer L. Poulton *(poulton@graceland.edu),* Graceland University, Lamoni, Iowa

Learn how to set up and manage a teaching greenhouse, where students can explore the plant kingdom through observation and scientific inquiry.

SESSION 6

Fostering Better Understanding of Phenotype and Genotype **(Bio)**

(High School–College) *JW Grand Ballroom 4, JW Marriott*

Aparna Sharma, Western Michigan University, Kalamazoo

How do we help our students better understand the relationship between phenotype and genotype? Learn about the implementation of a systemic teaching technique to improve student conceptual learning about how genotype codes for phenotype.

SESSION 7

Multimedia Journaling **(Gen)**

(General) *Marriott Ballroom 1, Marriott Downtown*

Duane Inman, Berry College, Mount Berry, Ga.

Learn how to use video journaling to document changes in biological and physical environments.

5:00–6:00 PM Presentations

SESSION 1

The ABCs of STEM (Gen)

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

William E. Reitz *(wreitz@neo.rr.com),* Retired Educator, Stow, Ohio

The "E" in STEM becomes "E-Z" by exploring engineering using simple cardboard structures that students can make. The ABCs are Automata, Bridges, and Coasters.

SESSION 2

Lungs Are in Cells? Guiding Students Through Misconceptions (Gen)

(Middle Level–High School) 113, Convention Center

Abbie N. Martin *(martina@wjcc.k12.va.us),* Jamestown High School, Williamsburg, Va.

Join me for a motivating presentation on understanding and guiding students through commonly held misconceptions. Leave with ideas to start assessing student understanding before you teach!

SESSION 3

Online Just-in-Time Professional Development (Gen)

(General) 120, Convention Center

Arthur Eisenkraft *(arthur.eisenkraft@umb.edu),* 2000–2001 NSTA President, and University of Massachusetts Boston

A new model of online professional development takes place during the school year as you teach your students. The model includes "prepare" for content background, "share" for building a learning community of teachers around specific content and lessons, and "compare" where teachers use student data to inform instruction.

SESSION 4

Engaging Science Instruction for Special Needs Students (Gen)

(Elementary–High School) 121, Convention Center

Nichole R. Thomas *(vvnthomas@mdeca.org),* Valley View Intermediate School, Germantown, Ohio

Michele P. Hodson *(vvmhodson@mdeca.org)* and **Amanda W. Phillips** *(vvaphillips@mdeca.org),* Valley View Junior High School, Farmersville, Ohio

Looking for innovative ways to engage special needs students in the science standards? Topics include inquiry, movement activities, accommodations, and differentiation. Handouts!

SESSION 5

ZAP! It's Electrifying! (Phys)

(Middle Level–High School) 125, Convention Center

Al W. Guenther, Retired Educator, Palos Verdes Estates, Calif.

Experience an hour of amazing, attention-grabbing electrical demonstrations designed to construct concepts and stimulate inquiry. Take home detailed handouts so you can do these with YOUR classes.

SESSION 6

Impacts of a PLC in Chemistry in an Urban School (Chem)

(High School) 127, Convention Center

Matthew L. Brodeur *(brodeur.ml@easthartford.org)* and **Nicole L. Pikul** *(shea.nl@easthartford.org),* East Hartford High School, East Hartford, Conn.

Find out how a Professional Learning Community (PLC) in chemistry increased participation in both chemistry and physics in an urban school. We used the PLC model to increase chemistry (and now physics!) participation—decreasing teacher isolation, increasing student motivation, and helping us more effectively assess and deliver instruction.

SESSION 7

Biodiversity: Immersion and Investigations (Bio)

(Middle Level–College) 204, Convention Center

Mark Manteuffel *(mmanteuffel@stlcc.edu),* St. Louis Community College and Washington University, St. Louis, Mo.

Presider: Lisa Palmese *(lisa@holbrooktravel.com),* Holbrook Travel, Gainesville, Fla.

I'll share how places with rich biodiversity can be experienced in the field and ways your students can explore them in your classroom.

SESSION 8

Using School Buildings as Teaching Tools for STEM Concepts (Phys)

(Middle Level) 206, Convention Center

Melani A. Loney *(meloney@vbschools.com)* and **J. Tim Cole** *(j.tim.cole@vbschools.com),* Virginia Beach (Va.) City Public Schools

Scott Finlinson *(sfinlinson@noresco.com),* NORESCO, Pittsburgh, Pa.

Come learn how to provide your middle school students with STEM experiences using components found in school buildings as STEM teaching tools.

SESSION 9

NASA Sun-Earth Day: The Transit of Venus (Phys)

(Informal Education) *207, Convention Center*

Troy Cline *(troy.d.cline@nasa.gov),* NASA Goddard Space Flight Center, Greenbelt, Md.

Join NASA's Sun-Earth Day as Venus will make its final trek across the face of the Sun until 2117. Forty-three million people saw it in 2004, did you?

SESSION 10

Forensic Anthropology: Teaching with Bones (Bio)

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

Alison B. Seymour *(seymoura@pvpusd.k12.ca.us),* Ridgecrest Intermediate School, Rancho Palos Verdes, Calif.

Dig into forensic anthropology with this series of lessons that incorporate science, math, and history with hands-on activities and a graveyard crime scene. Lesson handouts!

SESSION 11

Building Elementary Science Units to Meet Standards (Gen)

(Elementary) *212, Convention Center*

Joanne K. Olson *(jkolson@iastate.edu),* Iowa State University, Ames

We have standards, but now what? Explore ways to build units so that students learn central concepts, not just topics.

SESSION 12

Becoming Organism Experts (Gen)

(Elementary) *231, Convention Center*

Anna Maria Behuniak, Lowman Elementary School, Las Vegas, Nev.

Find out how a class of third-grade boys became organism experts while incorporating reading, writing, research, listening, speaking, and math. Handouts!

SESSION 13

Socratic Science Circles (Gen)

(Informal Education) *232, Convention Center*

Lara Arch *(larch1@rice.edu),* Rice University, Houston, Tex.

Dialogue is necessary in a classroom in which students construct their own understanding, and one of the most important aspects of making meaning is debriefing. Learn how to implement "Science Circles" at any level and how to assist your students in driving meaningful dialogue. Walk away with facilitation points and techniques that range from quick and easy tips to overarching pedagogical methods.

SESSION 14

Questioning Strategies for Science Knowledge/Academic Language Development (Earth)

(Elementary–Middle Level) *233, Convention Center*

Lisette Campos-Tovar, Reseda, Calif.

Explore the relationship between a teacher's questioning strategies and students' involvement in scientific argumentation and their use of academic language in a grade 3 science classroom.

SESSION 15 (two presentations)
(Preschool–Middle Level) *242, Convention Center*
Presider: Stephanie L. Townsend *(stephbfor@hotmail.com),* Wooddale High School, Memphis, Tenn.

Inquiring Minds Want to Know: Teach Science via Current Events (Gen)
Nicole M. Ford *(fordnicolem@mcsk12.net),* Wooddale High School, Memphis, Tenn.
Learn how to incorporate various literacy strategies and hands-on activities into your classroom to explore current events in science.

Using Literature to Promote the State Standards in the Elementary Science Classroom (Gen)
Marcia Y. Walker *(mwalker@trevecca.edu),* Trevecca Nazarene University, Nashville, Tenn.
For centuries, there has been a perceived connection between science and the arts, including literature. This connection is now being introduced to children as part of an effective curriculum that includes subject integration. Preschool, elementary, and middle school teachers will walk away with the necessary tools to integrate the usage of literature into their science curricula to promote the state standards. Handouts!

SESSION 16
Misconceptions? Preconceptions? Mixed Conceptions? (Gen)
(Middle Level) *243, Convention Center*
Susan E. Disch, ETHOS, Inc., Elkhart, Ind.
Students' prior knowledge influences their understanding of scientific concepts. Walk away with ways to deal with preconceived notions, nonscientific beliefs, and naive theories.

SESSION 17
Project-based Middle School Science Materials for Teacher Professional Development (Gen)
(College) *103, JW Marriott*
Mary Starr *(mastarr@umich.edu),* University of Michigan, Ann Arbor
Kim A. Van Scoy *(kvanscoy@ozarks.edu),* University of the Ozarks, Clarksville, Ark.
Discover the strengths and challenges of using project-based middle school science materials for teacher preparation and professional development.

SESSION 18
Steps to Becoming a STEM Middle School (Gen)
(Middle Level/Supervision) *201, JW Marriott*
John Howe *(jhowe@psdschools.org),* **Mary J. Klass** *(mklass@psdschools.org),* and **Tracey Winey** *(twiney@psdschools.org),* Preston Middle School, Fort Collins, Colo.
Presider: John Howe
In 2007, Preston Middle School recognized an opportunity to tap students' interest in science, technology, engineering, and math and took steps to build a STEM school.

SESSION 19
NARST Session: Student Learning Through the Science Writing Heuristic: Iowa Tests of Basic Skills, Cornell Critical Thinking Tests, and Classroom Implementation (Gen)
(Elementary) *206, JW Marriott*
Mack Shelley *(mshelley@iastate.edu),* **Christopher Gonwa-Reeves,** and **Joan Baenziger** *(jbaenzig@iastate.edu),* Iowa State University, Ames
Brian Hand *(brian-hand@uiowa.edu),* University of Iowa, Iowa City
Walk away with practical information related to a field trial of the science writing heuristic (SWH) approach for students in grades 3–5.

SESSION 20 (two presentations)
(College/Supervision) *209, JW Marriott*
Science Futures: Creating Teacher Leaders for Reform Efforts (Gen)
Kevin J. Niemi, University of Wisconsin–Madison
Eric S. Brunsell *(brunsele@uwosh.edu),* NSTA Director, District XII, and University of Wisconsin, Oshkosh
Science Futures is a leadership development program for science teachers. This program selects a mixed cohort and gives them necessary skills to lead reform efforts.

The Impact of a Professional Development Program to Enable Elementary Teachers to Implement Inquiry Science Instruction on Their Self-Efficacy Beliefs (Gen)
Eric "Rick" Worch *(eworch@bgsu.edu)* and **Emilio Duran** *(eduran@bgsu.edu),* Bowling Green State University, Bowling Green, Ohio
Receive highlights of components from a one-year professional development program for inservice elementary teachers that most positively impacted their self-efficacy for teaching science.

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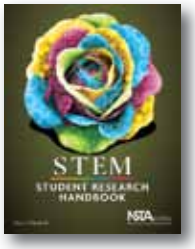

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Grades 9–12
Members: $19.16
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Grades 5–12
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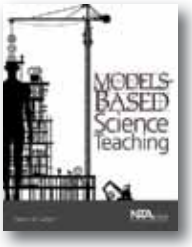

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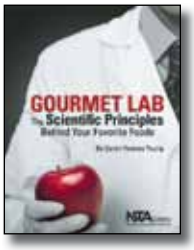

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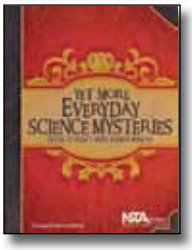

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Members: $19.96
Non-members: $24.95

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or buy online at ***www.nsta.org/store.***

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SESSION 21

Scientific Discourse to Promote STEM Literacy (Gen)

(Elementary–High School) *309/310, JW Marriott*

Rosalyn M. Collier *(rosalyn_m_collier@mcpsmd.org),* **Chris A. Youstra** *(chris-anne_g_youstra@mcpsmd.org),* **Daphne M. McKay** *(daphne_mckay@mcpsmd.org),* and **Amy K. Fletcher,** Montgomery County Public Schools, Rockville, Md.

What does participating productively in a STEM learning community look like from primary grades through high school? Come find out!

SESSION 22

Scientists and Science Educators: A Working Partnership in Developing Project-Based Science (PBS) Courses for Teachers (Gen)

(College) *314, JW Marriott*

Kevin Czajkowski, Mikell Lynne Hedley *(mikell.hedley@utoledo.edu),* **Janet L. Struble** *(janet.struble@utoledo.edu),* and **Patrick Lawrence** *(patrick.lawrence@utoledo.edu),* The University of Toledo, Ohio

The University of Toledo scientists and science educators in LEADERS joined together to develop a dynamic PBS curriculum focusing on alternative energies and climate change. Come see how this was achieved.

SESSION 23

Documenting the Impact of Professional Development in Inquiry-based Teaching Practices (Gen)

(General) *Marriott Ballroom 7, Marriott Downtown*

Susan E. Burger *(sburger@davidheil.com),* David Heil & Associates, Inc., Portland, Ore.

Review results from evaluation research documenting the impact of NSTA-sponsored professional development academies. Program activities and subsequent changes in teaching practices will be discussed.

SESSION 24

Cool and Crazy Demos for Your Science Class (Gen)

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

Ella F. Bowling *(ella.bowling@mason.kyschools.us),* Mason County Middle School, Maysville, Ky.

Come learn awesome science demonstrations that will WOW your students! From the giant air cannon to flaming gummy bears, you are sure to be entertained! Handouts.

SESSION 25

***Model My Watershed*: Modeling the Hydrology of Your Neighborhood (Env)**

(Informal Education) *Capitol II, Westin*

Nanette I. Dietrich, Millersville University of Pennsylvania, Millersville

Susan E. Gill *(sgill@stroudcenter.org),* Stroud Water Research Center, Avondale, Pa.

Model My Watershed is a free online website that uses GIS data and Google Earth to allow you to explore, investigate, and model your own backyard!

SESSION 26

Seeing the Light: Helping NASA Process Color Images of Astronomical Objects Captured by the WISE Space Telescope (Earth)

(Middle Level–High School) *Capitol III, Westin*

Susan Kelly, NASA Education, Bridgewater, Conn.

WISE stands for Wide-field Infrared Survey Explorer. The WISE telescope completed a map of Earth's celestial sphere. Your students can be the first to prepare spectacular images of astronomical discoveries for publication!

SESSION 27

Science and Conservation Through Community Partnerships: Foundational Ideas from the Advanced Inquiry Program (AIP) (Env)

(General) *Caucus, Westin*

Jamie Bercaw-Anzano *(bercawj@muohio.edu)* and **Kevin Matteson** *(matteskc@muohio.edu),* Miami University, Oxford, Ohio

Jose I. Pareja *(parejjo@earlham.edu),* Earlham College, Richmond, Ind.

AIP Partners

Join us as we share how community partnerships involving informal science institution, formal education institutions, community groups, schools, and individual teachers work synergistically to advance science education and conservation, while creating a growing alliance of conservation leaders who promote environmental action.

SESSION 28 (two presentations)
(General) *Chamber, Westin*

Learning About Climate Change in Death Valley with a Four-Part Blended Inquiry (Gen)
Kristoffer Carroll *(kcarroll@interact.ccsd.net),* Clark County School District, Las Vegas, Nev.
Kent J. Crippen *(kcrippen@coe.ufl.edu),* University of Florida, Gainesville
Cindy L. Kern, Green Valley High School, Henderson, Nev.
Join us as we describe a four-part inquiry for teaching about climate change in the context of Death Valley, California. This innovative curriculum blends cyberlearning with field work.

Flowers in Antarctica: Teaching Climate Change with the Scope-On-A-Rope (Gen)
Adrienne Steele *(alopez@lsu.edu),* Louisiana State University, Baton Rouge
Discover a new way to incorporate the Scope-On-A-Rope into a unit on climate change through the examination of pollen grains.

SESSION 29
Teaching Weather with STEM (Earth)
(Middle Level–High School) *Congress I/II, Westin*
Mark J. Powers *(mpowers@anwsu.org),* Vergennes High School, Vergennes, Vt.
Discover how teaching about the weather as a daily classroom strand is easily connected to STEM education.

5:00–6:00 PM Workshops

Whodunit? (Forensic Science for Middle School Students) (Chem)
(Middle Level) *122, Convention Center*
Jennifer E. Thornton *(jennifer.thornton@scott.kyschools.us),* Royal Spring Middle School, Georgetown, Ky.
Explore hands-on forensic science lab stations that coordinate with core content enriching inquiry skills involving observation, fingerprinting, paper chromatography, tire/shoe prints, density, hair/fibers, and blood spatter.

Effective, Engaging Methods for Writing in Science (Gen)
(Middle Level–High School) *128, Convention Center*
Karen L. Meyers *(meyersk@gvsu.edu)* and **Kathy Agee** *(ageek@gvsu.edu),* Grand Valley State University, Allendale, Mich.
Discover ways to incorporate writing into the secondary science classroom that are effective, engaging, and useful in formative and summative assessment.

Dive! Dive! Discovering Density Through a Virtual Submarine Simulation (Phys)
(Middle Level) *205, Convention Center*
Melissa Higgason *(higgason@purduecal.edu),* **Robert Rivers** *(riversr@purduecal.edu),* and **Cynthia Joy Etsler** *(etslerc@purduecal.edu),* Purdue University Calumet, Hammond, Ind.
Tracy Mis and **Mira Projovic** *(mprojovic@hammondacademy.org),* Hammond Academy of Science and Technology, Hammond, Ind.
Janet Hart *(janbuschur@yahoo.com),* Aurora Elementary School, Aurora, Ind.
Engage in a curriculum themed around a web-based submarine simulation to develop the concept of density in middle school students.

Observation, Inference, and the Nature of Science for Grades K–5 (Gen)
(Preschool–Elementary) *211, Convention Center*
Kathy Cabe Trundle *(trundle.1@osu.edu),* The Ohio State University, Columbus
Randy L. Bell *(randybell@virginia.edu),* ASTE President, and University of Virginia, Charlottesville
Engage in activities designed to teach inquiry and the nature of science through student-centered hands-on lessons. Receive a variety of resources to facilitate science instruction.

Flip for STEM Careers **(Gen)**
(Middle Level–High School) *234, Convention Center*
Margaret "Meg" Blanchard *(meg_blanchard@ncsu.edu)* and **Jennifer Albert** *(jennifer_albert@ncsu.edu),* North Carolina State University, Raleigh
Use flipcams to create STEM career videos in this interactive workshop. Take home a DVD of 100 STEM career video links and enter a flipcam raffle.

***Once Upon a Tide*: Connecting Ocean Health and Human Health** **(Env)**
(Elementary) *235, Convention Center*
Kate Hester *(kate_hester@hms.harvard.edu),* Harvard Medical School, Boston, Mass.
Once Upon a Tide, a fictional narrative film and companion lessons, reconnects its audience to the importance of the ocean for all life on Earth—including human life.

The Problem with Plastics **(Gen)**
(Middle Level) *239, Convention Center*
Andrea Swensrud *(scienceed@kqed.org),* KQED, San Francisco, Calif.
Sarah Carter *(scarter@tpt.org),* Twin Cities Public Television, St. Paul, Minn.
Explore plastics and the impact they have on our environment as well as alternatives for their use through engaging media and hands-on lessons.

Science and Mathematics Integration Through the Water Cycle, Chemistry, Geology, Ecosystems, and More **(Gen)**
(Elementary–Middle Level) *241, Convention Center*
Reeda Hart *(hartr@nku.edu)* and **Betty Stephens** *(stephensb@nku.edu),* Northern Kentucky University, Highland Heights
Presider: Dale Elifrits *(elifrtisc@nku.edu),* Northern Kentucky University, Highland Heights
Experience science while looking for the math in this exciting hands-on workshop! Free CD of lesson plans.

Evolution and Medicine: A New Approach to a Central Topic in High School Biology **(Bio)**
(High School) *245, Convention Center*
Bruce Fuchs, National Institutes of Health, Bethesda, Md.
Experience inquiry-based activities that use modern medical examples to engage students in the study of evolution and its relevance in their lives.

PDI **BEST Pathway Session: Supporting Students Learning Energy Throughout the Middle School Curriculum** **(Gen)**
(Middle Level) *White River Ballroom B, JW Marriott*
Joseph Krajcik *(krajcik@msu.edu),* Michigan State University, East Lansing
The K–12 Science Education Framework identifies energy as a core idea. Join me and walk away with ways to support middle school students' construction of this idea.

Integrating Inquiry Through Interdisciplinarity: Philosophy, Science, and Math **(Gen)**
(General) *Indiana Ballroom F, Marriott Downtown*
Robert M. Figueroa and **Cindy Woods** *(cindy.woods@unt.edu),* University of North Texas, Denton
Presider: Cindy Woods
Teach North Texas examines strategies, tools, and resources needed for math and science preservice teachers to implement integrated lesson plans incorporating philosophy, math, and science content.

It Is Possible! Science Fair as a Successful Teaching Strategy **(Gen)**
(Elementary–High School) *Marriott Blrm. 8, Marriott Downtown*
Selina L. Bartels *(sbartels@iit.edu),* Illinois Institute of Technology, Chicago.
Amethyst E. Phillips *(amethystphillips@yahoo.com),* Homewood-Flossmoor High School, Flossmoor, Ill.
Science fairs don't have to be disconnected add-ons! Discover strategies that demonstrate how to use science fairs to enrich and enhance inquiry-based science classrooms.

Reconstructing Earth's History **(Gen)**
(General) *Marriott Ballroom 9, Marriott Downtown*
John R. Sode, Marshfield (Mo.) R-1 Schools
Learn how to reconstruct Earth's geologic and biological history from ocean cores and create your own simulated core using household materials.

How to Teach Inquiry-based Science **(Env)**
(Middle Level–High School) *Capitol I, Westin*
Norman Leonard *(norman.leonard@sbcglobal.net)* and **Frank Drumwright** *(frdrumwr@pike.k12.in.us),* Pike High School, Indianapolis, Ind.
Presider: Norman Leonard
From experience, examples will be demonstrated showing step-by-step inquiry-based science. Discussion will also include how to modify existing labs and make them more inquiry based.

Engaging Students with Real-Time NASA Data **(Earth)**

(Middle Level–High School) *Grand Ballroom 2, Westin*

Katherine A. Soriano *(ksoriano@lsc.org)* and **Anthony Bisulca** *(abisulca@lsc.org),* Liberty Science Center, Jersey City, N.J.

Explore the myriad data collected by NASA through minds-on activities. Take away classroom-tested inquiry lessons and tools to create your own.

AMSE Session: The Station Approach: Scaffolded Inquiry and Brain-based Learning Activities **(Earth)**

(Informal Education) *House, Westin*

Cherry C. Brewton *(cbrewton@georgiasouthern.edu),* Georgia Southern University, Statesboro

Let's implement the Station Approach! Get the basics and then rotate through science stations that emphasize new standards, differentiated instruction, scaffolding inquiry through brain-based activities, and making scientific claims!

5:00–6:00 PM Exhibitor Workshop

NASA's Endeavor Science Teaching Certificate Project: Focus on Middle School and High School **(Gen)**

(Grades 6–12) *142, Convention Center*

Sponsor: NASA

Glen Schuster, U.S. Satellite Laboratory, Inc., Rye, N.Y.

Learn firsthand how to apply for a NASA Endeavor Fellowship Award and Certificate in STEM Education from Teachers College, Columbia University. Join us for an overview as we share results and experiences in middle school and high school classrooms from NASA Endeavor Fellows/Graduates. The goal of this best practice, online, (and live) professional development program is to improve pedagogical content knowledge and practice and apply it. Put your work toward meeting the portfolio requirements for National Board Certification.

5:00–6:30 PM Presentation

SESSION 1

The "FAMOUS" Indiana and Ohio Earth Science Teachers Association Rock Raffle **(Earth)**

(Elementary–High School) *Grand Ballroom 5, Westin*

Steven C. Smith *(mrsmith@purdue.edu),* Purdue University, West Lafayette, Ind.

Presider: Gary Potter *(gpotter@nhcs.k12.in.us),* North Harrison High School, Ramsey, Ind.

The Indiana and Ohio Earth Science Teachers Associations are sponsoring a combined Rock Raffle. Come bid on minerals, crystals, rocks, fossils, books, posters, videos, and DVDs for your classroom.

5:00–6:30 PM Exhibitor Workshop

Just Physics **(Gen)**

(Grades K–12) *Sagamore 6, Convention Center*

Sponsor: PASCO Scientific

David Willey, University of Pittsburgh at Johnstown

PASCO Presents the 10th Annual Evening of "Just Physics" featuring a live demonstration by David Willey, best known as The Mad Scientist for *The Tonight Show with Jay Leno.* Join us for an evening of FREE fun and food…and take home a free T-shirt.

5:00–7:00 PM Social

APAST General Meeting and Social

(By Invitation Only) *Indiana Ballroom G, Marriott Downtown*

5:30–7:00 PM Meeting

NMLSTA Board Meeting (Part 2)

(By Invitation Only) *Atlanta, Marriott Downtown*

5:30–7:00 PM Reception

NSTA Student Chapter and Student Members Reception

JW Grand Ballroom 1, JW Marriott

No ticket required; open to all preservice teachers and those who work with them. If your institution has an NSTA Student Chapter, then bring examples of your chapter's work, best practices, and stories to share with students at institutions that don't yet have an NSTA Student Chapter. If your school does not yet have an NSTA Student Chapter, then come to hear your future colleagues and learn about best practices and how to start and run a successful chapter at your school. Refreshments and hors d'oeuvres will be served as you network with your peers.

6:15–8:45 PM NSTA Teacher Awards Gala

(Tickets Required: $65) **M-8** *Marriott 5, Marriott Downtown*

Enjoy a fabulous evening celebrating with this year's teacher award recipients! ALL of the teacher awards will be presented in one grand evening. Join your colleagues in recognition of this year's winners at the NSTA Teacher Awards Gala. Evening attire is requested to honor our teacher award recipients. A limited number of tickets are available for this social event.

Tickets, if still available, must be purchased at the Ticket Sales Counter in the NSTA Registration Area before 3:00 PM on Thursday.

6:30–8:00 PM Reception

National Earth Science Teachers Association Friends of Earth and Space Science Reception

Grand Ballroom 1, Westin

Join us for a fun evening of conviviality with Earth and space science educators and friends, and to honor award winners! Visit *www.nestanet.org/cms/content/conferences/nsta* for more information.

7:30–9:00 PM Social

SCST Dessert Social and Poster Session

JW Grand Ballroom 7/8, JW Marriott

This event is open to college faculty and SCST members.

A Video Showcase of Legendary Icons, Inspiring Teachers, Memorable Performances, and Stimulating, Engaging Courses: Part 2

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 last night's session. 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 own teaching.

The audience will help select from an extensive and enticing menu of course excerpts:

The legendary **E.O. Wilson** of Harvard University, *Lord of the Ants* and much more; **Benjamin Schumacher** of Kenyon College, *The Quantum Enigma: Physics of the Microscopic World*; **Woodie Flowers** of Massachusetts Institute of Technology, on the famous course, *2.007*; **Richard Wolfson** of Middlebury College, *Physics in Your Body and in the Kitchen*; **Mark Whittle** of the University of Virginia, *Measuring Large Distances*, excerpt from Cosmology: The History and Nature of Our Universe; **John Renton** of West Virginia University, *Volcanic Activity*; **Roberta Anding** of the Baylor College of Medicine, *Nutrition Made Clear;* **Steve Spangler,** *Naked Eggs and Flying Potatoes;* **Kenneth R. Miller** of Brown University, *Evolution: Fossils, Genes, and Mousetraps;* **James Randi,** *The Million Dollar Prize;* **Patterson Hume** and **Donald Ivey** of the University of Toronto*, Frames of Reference*; **Annmarie Thomas** of the University of St. Thomas, *Squishy Circuits*; **Robert Hazen** of George Mason University and the Carnegie Institution of Washington, choice excerpts from his 60-lecture course, The Joy of Science; **Kay Toliver** of New York City's East Harlem Public School No. 72, *Estimation: Going to the Dogs*, with 10-year-old students; **Don Howard** of the University of Notre Dame, *Albert Einstein: Physicist, Philosopher, Humanitarian*; **Alex Filippenko** of University of California, Berkeley, choice excerpts from his 96-lecture course, Understanding the Universe: An Introduction to Astronomy; **Eric M. Rogers** of Princeton University, *Physics for the Inquiring Mind*; **Don Showalter** of the University of Wisconsin, demonstrations from *The World of Chemistry*; **Scott Stevens** of James Madison University, *Games People Play, The World of Game Theory* and its diverse application in business and science-technology problems; **Verne Rockcastle** of Cornell University, on conceptual development in teaching and learning science in elementary and middle school as well as professional development of teachers; **Sherwin B. Nuland, M.D.,** of the Yale School of Medicine, the fascinating story of Helen Taussig and the development of cardiac surgery; **Michael Starbird** of The University of Texas at Austin, *Meaning from Data: Quack Medicine, Good Hospitals, and Dieting*; **Bassam Z. Shakhashiri** of the University of Wisconsin, three of his famous lecture-demonstrations aimed at sparking an interest in science among children and adolescents; **Albert A. Bartlett** of the University of Colorado at Boulder, *Arithmetic, Population, and Energy*; **Patrick Grim** of the State University of New York at Stony Brook, *The Dream, the Brain, the Machine*; **Robert Fovell** of University of California, Los Angeles, *Meteorology: An Introduction to the Wonders of the Weather;* and **Clint Sprott** of the University of Wisconsin, *The Wonders of Physics.*

Dozens of relevant door prizes 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.

Friday, March 30

Science in the Community Breakfast (M-3)
(Tickets Required: $15)
JW Grand Ballroom 5, JW Marriott .....7:00–8:00 AM

High School Breakfast (M-4)
(Tickets Required: $40)
Santa Fe, Marriott Downtown.....7:00–8:30 AM

NMLSTA Board Meeting (Part I)
By Invitation Only
Atlanta, Marriott Downtown .....7:00–9:00 AM

APAST Breakfast
By Invitation Only
Indiana Blrm. C/D, Marriott Downtown ...7:00–9:00 AM

AMSE Alice J. Moses Breakfast
By Invitation Only
Grand Ballroom 1, Westin .....7:00–9:00 AM

ASMC Networking Forum
Indiana Blrm. A/B, Marriott Downtown....7:00–10:00 AM

NSTA Student Chapter Showcase and Lounge
CSO5 (Hall E), Convention Center.....8:00 AM–5:00 PM

NSTA Aerospace Programs Advisory Board Meeting
307, JW Marriott .....8:30–10:30 AM

NSTA International Lounge
107, JW Marriott .....9:00 AM–5:00 PM

GLBT Group Meeting
Denver, Marriott Downtown .....9:30–11:00 AM

AMSE Membership Meeting
By Invitation Only
House, Westin ..... 10:00 AM–12 Noon

Association of Science Materials Centers Board Meeting
By Invitation Only
Utah, Marriott Downtown ..... 10:00 AM–3:00 PM

Lifelines for Climate Change Education Luncheon
By Invitation Only
Florida, Marriott Downtown .....11:00 AM–1:00 PM

ASTE/NSELA Luncheon (M-5)
(Tickets Required: $55)
JW Grand Ballroom 1, JW Marriott .... 12 Noon–2:00 PM

CESI/NSTA Elementary Science Luncheon (M-6)
(Tickets Required: $55)
Indiana Blrm. E, Marriott Downtown..... 12 Noon–2:00 PM

NSTA/NMLSTA Middle Level Luncheon (M-7)
(Tickets Required: $55)
Indiana Blrm. A/B, Marriott Downtown .... 12 Noon–2:00 PM

Informal Science Day Brown Bag Lunch
JW Grand Blrm. 5, JW Marriott ..... 12:30–1:30 PM

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

SEPA Board Meeting
By Invitation Only
Denver, Marriott Downtown ..... 2:00–4:00 PM

GEMS Network Reception
Marriott Blrm. 5, Marriott Downtown..... 3:00–4:30 PM

NSTA International Advisory Board Meeting
307, JW Marriott ..... 3:00–5:00 PM

GEICO/NSTA New Member Orientation
By Invitation Only
JW Grand Ballroom 1, JW Marriott ..... 3:30–4:30 PM

SCST Business Meeting
203, JW Marriott ..... 3:30–5:00 PM

APAST General Meeting and Social
By Invitation Only
Indiana Ballroom G, Marriott Downtown..... 5:00–7:00 PM

NMLSTA Board Meeting (Part 2)
By Invitation Only
Atlanta, Marriott Downtown .....5:30–7:00 PM

NSTA Student Chapter and Student Members Reception
No Ticket Required; Open to All Preservice Teachers and Those Who Work with Them
JW Grand Ballroom 1, JW Marriott .....5:30–7:00 PM

NSTA Teacher Awards Gala (M-8)
(Tickets Required: $65)
Marriott Blrm. 5, Marriott Downtown..... 6:15–8:45 PM

National Earth Science Teachers Association Friends of Earth and Space Science Reception
Grand Ballroom 1, Westin ..... 6:30–8:00 PM

SCST Dessert Social and Poster Session
Open to College Faculty and SCST Members
JW Grand Ballroom 7/8, JW Marriott ..... 7:30–9:00 PM

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American Association of State Highway Transportation Officials (AASHTO) (Booth No. 1574)

Friday, March 30	4:00–5:30 PM	203, Convention Center	RIDES for Higher Achievement in Math and Science (p. 122)

Academy of Model Aeronautics (Booth No. 2173)

Friday, March 30	8:00–9:30 AM	101, Convention Center	STEM activities flying model aircraft in your classroom! (p. 33)

Adam Equipment Inc. (Booth No. 959)

Friday, March 30	8:00–9:30 AM	203, Convention Center	Hydrates: It Must be Something in the Water! (p. 36)

AIMS Education Foundation (Booth No. 1758)

Friday, March 30	4:00–5:30 PM	101, Convention Center	Investigating Magnetism with AIMS (p. 119)

Anatomy in Clay® Learning System (Booth No. 1027)

Friday, March 30	10:00–11:30 AM	201, Convention Center	Increase Student Success with the Anatomy in Clay® Learning System (p. 56)

Arbor Scientific (Booth No. 1347)

Friday, March 30	2:00–3:30 PM	103, Convention Center	Motivate Your Students! Exciting Demonstrations Using Cool Tools for Force and Motion! (p. 102)

Bio-Rad (Booth No. 841)

Friday, March 30	8:00–9:30 AM	108, Convention Center	Bio-Rad—Explore Inquiry and Ecology with Biofuel Enzymes (AP Big Idea 4) (p. 34)
Friday, March 30	9:00–11:30 AM	107, Convention Center	Bio-Rad: Explore Molecular Evolution using Protein Electrophoresis (AP Big Idea 1) (p. 40)
Friday, March 30	10:30 AM–12 Noon	108, Convention Center	Bio-Rad: Inquiry Activities for pGLO™ Transformation (AP Big Idea 3) (p. 59)
Friday, March 30	1:00–2:00 PM	108, Convention Center	Bio-Rad Genes in a Bottle™ Kit (p. 88)
Friday, March 30	1:00–3:30 PM	107, Convention Center	Bio-Rad: Forensic DNA Fingerprinting Kit (AP Big Idea 3) (p. 88)
Friday, March 30	3:00–4:30 PM	108, Convention Center	Bio-Rad: ELISA and Swine Flu (p. 107)

BIOZONE International (Booth No. 1452)

Friday, March 30	10:00–11:30 AM	103, Convention Center	Environmental Science: Use Recent Case Studies to Teach Core Content (p. 54)
Friday, March 30	12 Noon–1:30 PM	103, Convention Center	BIOZONE Biology Workbooks and Presentation Media (Grades 9–12) (p. 72)

Carolina Biological Supply Co. (Booth No. 100)

Friday, March 30	8:00–9:30 AM	144, Convention Center	Exploring Feline Anatomy with Carolina's Perfect Solution® Cats (p. 36)
Friday, March 30	8:00–9:30 AM	143, Convention Center	The Science and Writing Connection: Increasing Achievement of Diverse Learners in Both Domains (p. 36)
Friday, March 30	8:00–9:30 AM	145, Convention Center	Butterflies in Your Classroom (p. 36)
Friday, March 30	10:00–11:30 AM	143, Convention Center	A Natural Fit: The Integration of Science and the Common Core (p. 56)
Friday, March 30	10:00–11:30 AM	145, Convention Center	Genetics with *Drosophila* (p. 56)
Friday, March 30	10:00–11:30 AM	144, Convention Center	Picking Apart the Owl Pellet's Potential (p. 56)
Friday, March 30	12 Noon–1:30 PM	144, Convention Center	Carolina's Young Scientist's Dissection Series (p. 74)
Friday, March 30	12 Noon–1:30 PM	143, Convention Center	Mathematics + Literacy + the Common Core (p. 74)
Friday, March 30	12 Noon–1:30 PM	145, Convention Center	Exploring Gene Function in *C. elegans*: Mutations and RNA Interference (p. 74)
Friday, March 30	2:00–3:30 PM	143, Convention Center	Moving Toward Inquiry: Managing Change in Your District (p. 104)

Carolina Biological Supply Co., cont.

Friday, March 30	2:00–3:30 PM	144, Convention Center	Comparative Vertebrate Anatomy with Carolina's Perfect Solution® Specimens (p. 104)
Friday, March 30	2:00–3:30 PM	145, Convention Center	Carolina™ Investigations for AP* Biology Labs (p. 104)
Friday, March 30	4:00–5:30 PM	144, Convention Center	Introducing Inquiry into the Chemistry Lab: Colligative Properties (p. 121)
Friday, March 30	4:00–5:30 PM	145, Convention Center	Hands-On Science with Classroom Critters (p. 122)

CPO Science/School Specialty Science (Booth No. 1146)

Friday, March 30	8:00–9:30 AM	139, Convention Center	Genetics: Crazy Traits and Adaptation Survivor (p. 35)
Friday, March 30	10:00–11:30 AM	139, Convention Center	Chemistry and the Atom: Fun with Atom Building Games! (p. 55)
Friday, March 30	12 Noon–1:30 PM	139, Convention Center	Light and Optics: A Series of EnLIGHTening Experiments! (p. 73)
Friday, March 30	2:00–3:30 PM	139, Convention Center	Sound, Waves, and Music (p. 104)
Friday, March 30	4:00–5:30 PM	139, Convention Center	Chemistry and the Atom: Fun with Atom Building Games! (p. 121)

Delta Education/School Specialty Science (Booth No. 947)

Friday, March 30	8:00–9:15 AM	138, Convention Center	Inquiring Minds Provide Spark for Science Lessons (p. 32)
Friday, March 30	10:00–11:15 AM	138, Convention Center	Integrating Science and Literacy: Grades 1–6 (p. 53)
Friday, March 30	1:00–2:15 PM	138, Convention Center	Are You a Problem (Solving) Teacher? Want to Become One? (p. 88)

Delta Education/School Specialty Science–FOSS (Booth No. 947)

Friday, March 30	8:00–10:00 AM	137, Convention Center	Out of This World! Planetary Science for Middle School (p. 37)
Friday, March 30	10:30 AM–12:30 PM	137, Convention Center	Using Science Notebooks to Impact Student Learning with FOSS (p. 60)
Friday, March 30	2:00–4:00 PM	137, Convention Center	FOSS Formative Assessment: Making Student Thinking Visible (p. 105)

Dinah-Might Adventures, LP (Booth No. 1159)

Friday, March 30	4:00–5:30 PM	Wabash Blrm. 1, Conv. Center	Notebook Foldables®—Let Them "Envelope" You (p. 122)

Discovery Education (Booth No. 1567)

Friday, March 30	8:00–9:30 AM	110, Convention Center	I Just Want to Sublimate: Phasing Digital Media into Your Science Classroom (p. 35)
Friday, March 30	10:00–11:30 AM	110, Convention Center	Effective Evaluation with Discovery Education Science Techbook (p. 54)
Friday, March 30	12 Noon–1:30 PM	110, Convention Center	It's How They Learn: 21 Ways to Use Discovery Education (p. 73)
Friday, March 30	2:00–3:30 PM	110, Convention Center	Layers of Learning with Google Earth: A Free Round-Trip Ticket to Anywhere in the World (p. 103)
Friday, March 30	4:00–5:30 PM	110, Convention Center	Developing STEM Process Skills with the Discovery Education Science Techbook (p. 120)

Educational Innovations, Inc. (Booth No. 1767)

Friday, March 30	8:00–9:30 AM	Wabash Blrm. 2, Conv. Center	The Private Eye®—Hands-On Inquiry for an Interdisciplinary Mind: Science, Writing, and Art (p. 37)
Friday, March 30	10:00–11:30 AM	Wabash Blrm. 2, Conv. Center	You're NOT Gonna Believe What We Did in Science Class Today! (p. 56)
Friday, March 30	12 Noon–1:30 PM	Wabash Blrm. 2, Conv. Center	Get Charged Up with Educational Innovations! (p. 75)
Friday, March 30	2:00–3:30 PM	Wabash Blrm. 2, Conv. Center	3-2-1 Blast Off! (p. 105)
Friday, March 30	4:00–5:30 PM	Wabash Blrm. 2, Conv. Center	What the Heck Happened?! (p. 122)

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Edvotek (Booth No. 1750)

Friday, March 30	12 Noon–1:30 PM	201, Convention Center	Whose DNA Was Left Behind? Thirty-Minute Forensics Experiments (p. 74)

Esri (Booth No. 1737)

Friday, March 30	8:00–9:30 AM	103, Convention Center	Mapping and Analyzing Science Data (p. 34)

FDA Center for Food Safety and Applied Nutrition (Booth No. 1746)

Friday, March 30	8:00–10:00 AM	JW Grand Blrm. 3, JW Marriott	FDA Food Science Workshop for Grades 6–8 (p. 37)
Friday, March 30	10:30 AM–12:30 PM	JW Grand Blrm. 3, JW Marriott	FDA Food Science Workshop (High School) (p. 60)

Fisher Science Education (Booth No. 647)

Friday, March 30	8:00–9:15 AM	134, Convention Center	Chemistry Demonstrations That Will Really Get a Reaction! (p. 32)
Friday, March 30	10:30–11:45 AM	134, Convention Center	Viticulture, Enology, and the Role of Science in Wine Making (p. 58)
Friday, March 30	1:00–2:00 PM	134, Convention Center	What's New in Astronomy News? (p. 88)
Friday, March 30	3:00–4:15 PM	134, Convention Center	Engineering for the Future: Exploring Energy Concepts with K'Nex (p. 106)

Flinn Scientific, Inc. (Booth No. 1167)

Friday, March 30	8:00–9:30 AM	Wabash Blrm. 1, Conv. Center	Fantastic Physical Science Demonstrations from Flinn Scientific (p. 37)
Friday, March 30	10:00–11:30 AM	Wabash Blrm. 1, Conv. Center	Flinn Favorite Biology Lab Activities and Games (p. 56)
Friday, March 30	10:00 AM–12 Noon	Sagamore 3, Convention Center	Flinn Scientific's Morning of Chemistry—Enlightening Indy! (p. 58)
Friday, March 30	12 Noon–1:30 PM	Wabash Blrm. 1, Conv. Center	How to Design a Safe and Efficient Science Laboratory (p. 75)
Friday, March 30	2:00–3:30 PM	Wabash Blrm. 1, Conv. Center	Teaching Advanced Placement Chemistry: Optimize Your Students' Laboratory Experiences (p. 105)

Houghton Mifflin Harcourt (Booth No. 1467)

Friday, March 30	10:00–11:30 AM	104, Convention Center	Connecting to Chemistry: Igniting Student Motivation with STEM Examples and Ideas (p. 54)
Friday, March 30	12 Noon–1:30 PM	104, Convention Center	Sparking Interest and Learning with Chemistry: A Part 1 Experience (p. 72)
Friday, March 30	2:00–3:30 PM	104, Convention Center	Ecology Adventures: Motivating Students Through Project Based Learning (PBL) (p. 102)
Friday, March 30	4:00–5:30 PM	104, Convention Center	Sparking More Interest with Chemistry: A Part 2 Experience (p. 120)

Howard Hughes Medical Institute (Booth No. 1259)

Friday, March 30	8:00–9:30 AM	109, Convention Center	Enhance Your Teaching of the New AP® Biology Curriculum Framework with Free Resources from HHMI (p. 34)
Friday, March 30	10:00–11:30 AM	109, Convention Center	Are Humans Still Evolving? Genetic Evidence of Human Evolution (p. 54)
Friday, March 30	12 Noon–1:30 PM	109, Convention Center	Changing Planet: Past, Present, and Future (p. 72)
Friday, March 30	2:00–3:30 PM	109, Convention Center	HHMI's *The Making of the Fittest: The Birth and Death of Genes in Your Classroom* (p. 103)
Friday, March 30	4:00–5:30 PM	109, Convention Center	HHMI's *The Making of the Fittest: Natural Selection in Humans* in Your Classroom (p. 120)

International Schools Services (Booth No. 2448)

Friday, March 30	4:00–5:30 PM	103, Convention Center	Teach Overseas! (p. 119)

It's About Time (Booth No. 847)

Friday, March 30	8:00–9:00 AM	132, Convention Center	Engineering the Future: A Practical Approach to STEM for High School Students (p. 31)
Friday, March 30	9:30–10:30 AM	132, Convention Center	Project-Based Inquiry Science: PBIS™ Takes the Confusion Out of Implementing STEM in Middle School (p. 52)
Friday, March 30	11:00 AM–12:30 PM	132, Convention Center	EarthComm: The American Geological Institute (AGI) Takes an Earth Systems Approach to Introduce STEM Through a Simplified Engineering Design Cycle (EDC) (p. 71)
Friday, March 30	12:30–1:30 PM	132, Convention Center	Implementing an Inquiry-based Science Curriculum with Limited Time and a Limited Budget (p. 86)
Friday, March 30	2:00–3:00 PM	132, Convention Center	The First Comprehensive Astronomy Textbook Written Specifically for High School Students (Also Well Suited for Community Colleges) (p. 101)
Friday, March 30	3:30–4:30 PM	132, Convention Center	Incorporating STEM in a Chemistry and Physics Classroom Through a Simplified Engineering Design Cycle (EDC) (p. 118)

Japan Artec, Inc. (Booth No. 1955)

Friday, March 30	8:00–9:30 AM	201, Convention Center	Introducing a Lesson Plan on the Optical Refraction Using a Light Source and a Lens (p. 36)

Ken-A-Vision Manufacturing Co., Inc. (Booth No. 1267)

Friday, March 30	8:00–9:30 AM	104, Convention Center	Slough and Pop—Come Get Cleansed with Chemistry! (p. 34)

Kendall Hunt Publishing Co. (Booth No. 1447)

Friday, March 30	8:00–9:30 AM	131, Convention Center	Taking a Human Approach to Biology Education (p. 35)
Friday, March 30	10:00–11:30 AM	131, Convention Center	Promote Inquiry and Critical Thinking with Forensic Science (p. 55)

KidWind Project (Booth No. 1475)

Friday, March 30	8:00–9:30 AM	102, Convention Center	Water, Power, and Science (p. 34)
Friday, March 30	10:00–11:30 AM	102, Convention Center	Wind-energized Classroom (p. 53)
Friday, March 30	12 Noon–1:30 PM	102, Convention Center	WindWise Science Curriculum (p. 72)
Friday, March 30	2:00–3:30 PM	102, Convention Center	Renewable Power, Vernier, and KidWind (p. 102)
Friday, March 30	4:00–5:30 PM	102, Convention Center	Fuel Cell Technology in Your Classroom—Powered by h-tec (p. 119)

LAB-AIDS, Inc. (Booth Nos. 636 and 2167)

Friday, March 30	8:00–9:30 AM	105, Convention Center	Color, Spectrophotometry, and Teaching the Structure of the Atom (p. 34)
Friday, March 30	8:00–9:30 AM	106, Convention Center	Students—Power Up! (p. 34)
Friday, March 30	10:00–11:30 AM	106, Convention Center	Fuel for the Next Generation? (p. 54)
Friday, March 30	10:00–11:30 AM	105, Convention Center	CAN I Have a Soda? (p. 54)
Friday, March 30	12 Noon–1:30 PM	105, Convention Center	Mastering the Chemical Formula: An Exceptionally Effective Way to Teach Subscripts and Coefficients (p. 72)
Friday, March 30	12 Noon–1:30 PM	106, Convention Center	I Think There's a Genetically Engineered Fly in My Genetically Modified Pea Soup! (p. 72)
Friday, March 30	2:00–3:30 PM	106, Convention Center	O2 Understand Photosynthesis and Cellular Respiration! (p. 103)
Friday, March 30	2:00–3:30 PM	105, Convention Center	Breeding Critters (p. 103)
Friday, March 30	4:00–5:30 PM	106, Convention Center	Constructive Destruction (p. 120)
Friday, March 30	4:00–5:30 PM	105, Convention Center	Distillation: Simple and Fascinating Experiments in the Chemistry of Aromas and Smells (p. 120)

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LaMotte Co. (Booth No. 1032)

Friday, March 30	12 Noon–1:30 PM	131, Convention Center	STEM Activities: Environmental Science Using Microslides—Microbe Growth and ID System (p. 73)
Friday, March 30	2:00–3:30 PM	131, Convention Center	STEM Activities: Environmental Science Using Microslides—Microbe Growth and ID System (p. 104)

LEGO Education (Booth No. 1357)

Friday, March 30	8:00–9:30 AM	202, Convention Center	Engaging Elementary Learners in STEM with LEGO® Education (p. 36)
Friday, March 30	10:00–11:00 AM	202, Convention Center	Using LEGO® Bricks to Introduce Simple Machines (p. 53)
Friday, March 30	11:30 AM–12:30 PM	202, Convention Center	Enhancing the Elementary Classroom Through Robotics (p. 71)
Friday, March 30	1:30–3:00 PM	202, Convention Center	Build and Explore the Future of Space with LEGO® Education (p. 90)
Friday, March 30	3:30–5:00 PM	202, Convention Center	Robotics in the Classroom: Science, Engineering, and Math Come Alive! (p. 118)

Marshall Cavendish International (Singapore) Pte., Ltd. (Booth No. 971)

Friday, March 30	4:00–5:30 PM	136, Convention Center	The Singapore Approach: Teaching and Learning Elementary Science (p. 121)

NASA Office of Education (Booth No. 2159)

Friday, March 30	8:00–8:45 AM	142, Convention Center	NASA's Museum in a Box How-To for Elementary Teachers (p. 17)
Friday, March 30	9:00–9:45 AM	142, Convention Center	NASA's Endeavor Science Teaching Certificate Project: Focus on Preservice and Elementary Inservice Education (p. 39)
Friday, March 30	10:00–10:45 AM	142, Convention Center	NASA's Instructional Programs for Inquiry-based Science Classrooms (p. 52)
Friday, March 30	11:00–11:45 AM	142, Convention Center	Using NASA Climate Data in the Science Classroom (p. 60)
Friday, March 30	12:30–1:30 PM	142, Convention Center	Inquiry at a Distance (p. 86)
Friday, March 30	1:30–1:50 PM	142, Convention Center	SoI Panel (p. 90)
Friday, March 30	2:00–2:45 PM	142, Convention Center	Mars Close Up with NASA AESP (p. 92)
Friday, March 30	3:00–3:45 PM	142, Convention Center	NASA Aquarius Brings New STEM Resources to Your Classroom (p. 106)
Friday, March 30	4:00–4:45 PM	142, Convention Center	Virtual Lab and NASA Explorer Schools (p. 119)
Friday, March 30	5:00–6:00 PM	142, Convention Center	NASA's Endeavor Science Teaching Certificate Project: Focus on Middle School and High School (p. 131)

National Geographic Education (Booth No. 1247)

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Ohaus Corp. (Booth No. 547)

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PASCO scientific (Booth Nos. 736 and 739)

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Friday, March 30	8:00–9:30 AM	141, Convention Center	Chemistry: Solution Concentration and Kinetics with a Colorimeter (p. 36)
Friday, March 30	10:00–11:30 AM	141, Convention Center	AP® Environmental Science: Modeling an Ecosystem (p. 55)
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Friday, March 30	12 Noon–1:30 PM	140, Convention Center	Middle School Physical Science: Learning Newton's Laws of Motion Through Hands-On, Probeware-based Activities (p. 74)
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PASCO scientific, cont.

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Pearson (Booth No. 553)

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Friday, March 30	2:00–3:30 PM	133, Convention Center	Teaching About Climate Change in a Climate of Controversy: Presenting Science with Rigor and Relevance (p. 104)
Friday, March 30	4:00–5:30 PM	133, Convention Center	Next Generation Science Standards—What It Means for Earth Science (p. 121)

SAE International's A World In Motion® (Booth No. 1472)

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Sargent-Welch (Booth No. 1333)

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Science First®/STARLAB (Booth No. 2153)

Friday, March 30	10:00–10:45 AM	Booth #2153, Exhibit Hall	A Change of Season (p. 52)
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Science Kit & Boreal Laboratories (Booth No. 1237)

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Science Take-Out (Booth No. 1872)

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Simulation Curriculum Corp. (Booth No. 747)

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Texas Instruments (Booth No. 336)

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Biology/Life Science

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8:00–9:00 AM	G	White River C, JW Marriott	PSTEM Pathway Session: Cognitive Science Learning Principles in Action: Earth Science Content as the Context for the Enhancements (p. 30)
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8:00–9:00 AM	M–H	Grand Ballroom 2, Westin	Construct Representations to Understand the Moon (p. 25)
8:00–9:00 AM	G	Grand Ballroom 4, Westin	What's Up? Classroom Activities from the Association of Astronomy Educators, Session I: Sun, Earth, and Planets (p. 30)
8:00–9:00 AM	M–H	Grand Ballroom 3, Westin	Sliding and Colliding: Proving the Theory (p. 30)

8:00–9:00 AM	E–M	233, Conv. Center	Bring the International Space Station into the Classroom: Enhancing Education via Collaboration (p. 18)
8:00–9:00 AM	G	Congress I/II, Westin	AMS Professional Development: A Geoscience Foundation for K–12 Educators (p. 25)
8:00–9:00 AM	M	239, Conv. Center	MoonKAM (Moon Knowledge Acquired by Middle School Students)—Exploring Lunar Images (p. 28)
8:00–9:00 AM	G	123, Conv. Center	Climate Models: Everything You Ever Wanted to Know, Ask, and Teach (p. 26)
8:00–10:00 AM	58	137, Conv. Center	Out of This World! Planetary Science for Middle School (p. 37)
9:30–10:30 AM	G	JW Grand 5/4, JW Marriott	Informal Science Day Session: Supporting Science Learning in the After-School Environment: A Case Study (p. 45)
9:30–10:30 AM	H–C	Congress I/II, Westin	Teaching a Case Study in Earthquake Seismology (p. 47)
9:30–10:30 AM	M–H	Grand Ballroom 2, Westin	What's Up with Light? (p. 47)
9:30–10:30 AM	E–M	233, Conv. Center	Edible Earth Movements and the Nevada Earth Space Science Initiative (p. 49)
9:30–10:30 AM	E–H	Grand Ballroom 5, Westin	NESTA Session: National Earth Science Teachers Association Geology Share-a-Thon (p. 51)
9:30–10:30 AM	G	Grand Ballroom 3, Westin	Hands-On Evidence for Climate Change from Ocean Core Sediments (p. 51)
9:30–10:30 AM	G	Grand Ballroom 4, Westin	What's Up? Classroom Activities from the Association of Astronomy Educators, Session II: Beyond the Solar System (p. 51)
10:00–10:45 AM	58	Booth #2153, Exhibit Hall	A Change of Season (p. 52)
10:00–11:30 AM	G	101, Conv. Center	Doomsday 2012: A Starry Night Perspective (p. 53)
10:00–11:30 AM	K–8	133, Conv. Center	Destructive Forces of Nature: Earthquakes (p. 55)
10:30 AM–12 Noon	G	Sagamore blrm. 5, Conv. Center	Seeking Life on Mars (p. 59)
11:00–11:45 AM		142, Conv. Center	Using NASA Climate Data in the Science Classroom (p. 60)
11:00 AM–12 Noon	8–12	132, Conv. Center	EarthComm: The American Geological Institute (AGI) Takes an Earth Systems Approach to Introduce STEM Through a Simplified Engineering Design Cycle (EDC) (p. 71)
11:00 AM–12 Noon	G	JW Grand 5/3, JW Marriott	Informal Science Day Session: NASA Informal Education Opportunities (p. 64)
11:00 AM–12 Noon	M–H/I	JW Grand 5/4, JW Marriott	Informal Science Day Session: Integrating Authentic Earth and Space Science Data Sets into High School Physics and Astronomy Courses (p. 69)
11:00 AM–12 Noon	G	Grand Ballroom 3, Westin	The Lunar Lighthouse: The First Proposed Interactive Space Mission (p. 70)
11:00 AM–12 Noon	G	Congress I/II, Westin	K–12 Climate Literacy Investigations with STEM Tools (p. 66)
11:00 AM–12 Noon	M–H	Congress I/II, Westin	Creatively Merging the Earth Sciences Back into the High School Science Classroom (p. 66)
11:00 AM–12 Noon	M–H	Grand Ballroom 2, Westin	Build a Cosmic Ray Detector (p. 66)
11:00 AM–12 Noon	E–H	Grand Ballroom 5, Westin	NESTA Session: National Earth Science Teachers Association Atmosphere, Weather, and Climate Share-a-Thon (p. 70)
11:00 AM–12 Noon	M	233, Conv. Center	EarthKAM: Taking Pictures of Earth from Space (p. 67)
11:00 AM–12 Noon	E	232, Conv. Center	Landforms in Your Backyard (p. 62)
11:00 AM–12 Noon	M–C	Grand Ballroom 1, Westin	Examining Intraplate Earthquakes: New Madrid Seismic Zone (p. 70)
12 Noon–1:30 PM	9–12	133, Conv. Center	*Marine Science: The Dynamic Ocean*—A New High School STEM Offering (p. 73)
12 Noon–1:30 PM	5C	101, Conv. Center	*The Layered Earth*: Geology, Atmosphere, and Climate for the Modern Classroom (p. 72)
12:30–1:30 PM	G	206, JW Marriott	NARST Session: Teaching Science to English Language Learners: Teaching Strategies of an Inquiry-based Astronomy Curriculum That Work (p. 80)
12:30–1:30 PM	E–H	Grand Ballroom 2, Westin	How Do We Know? Using the Electromagnetic Spectrum to Explore the Universe (p. 86)
12:30–1:30 PM	E–H	Grand Ballroom 5, Westin	NESTA Session: National Earth Science Teachers Association Earth System Science Share-a-Thon (p. 86)
12:30–1:30 PM	M–C	Congress I/II, Westin	Modeling Microclimate in a Science Course (p. 82)
12:30–1:30 PM	E–M	233, Conv. Center	NASA's Reading, Writing, and Rings: Using Saturn to Teach Science and Language Arts (p. 83)
12:30–1:30 PM	G	Capitol III, Westin	Interdisciplinary Space Exploration Units with NASA and WWT (p. 82)

2:00–2:45 PM	9–12	Booth #2153, Exhibit Hall	A Calendar in the Stars: Seasonal Constellations (p. 92)
2:00–3:00 PM	E–H	Congress I/II, Westin	What's Under the Shrubbery? Study Erosion, Landslides, Dinosaur Tracks, and More with LiDAR and Google Earth (p. 98)
2:00–3:00 PM	S	White River B, JW Marriott	BEST Pathway Session: Energy in K–12 Earth Science (p. 96)
2:00–3:00 PM	E–M	210, Conv. Center	CESI Session: Inquiry, Creativity, and Learning Variation—That's How to Teach the Lunar Cycle! (p. 99)
2:00–3:00 PM	M	232, Conv. Center	Moon Geology and Martian Minerals, Oh My! (p. 99)
2:00–3:00 PM	E–M	233, Conv. Center	Promoting Authentic Learning with Problem-Based Learning Units (p. 94)
2:00–3:00 PM	M–C	Grand Ballroom 3, Westin	NESTA Session: Drama in "Near Earth" Space: The Sun, Space Weather, and Earth's Magnetic Field as We Approach Solar Maximum! (p. 101)
2:00–3:00 PM	I	Grand Ballroom 1, Westin	Soils—More Than the Dirt Under Your Feet (p. 101)
2:00–3:00 PM	M–H	Grand Ballroom 2, Westin	NASA's Project SPECTRA! (p. 101)
3:00–3:45 PM	6–12	142, Conv. Center	NASA Aquarius Brings New STEM Resources to Your Classroom (p. 106)
3:30–4:30 PM	M–H	Congress I/II, Westin	Visualizing the Unviewable: Simple Models to Activate Your Earthquake Instruction (p. 114)
3:30–4:30 PM	M–H	Capitol III, Westin	NASA's INSPIRE: Stories of Success from the Students Themselves (p. 114)
3:30–4:30 PM	E–M	233, Conv. Center	Combine, Ignite, Fuse: The Synergy of Language and Science (p. 115)
3:30–4:30 PM	E–H	Grand Ballroom 2, Westin	Go to the Moon with NASA: Introducing the Design Process (p. 116)
3:30–4:30 PM	M–C	Grand Ballroom 1, Westin	Oxygen Isotopes and Climate Change Education: An Inquiry-based Activity for Secondary School Students (p. 116)
3:30–4:30 PM	S	Grand Ballroom 5, Westin	NESTA Session: Earth and Space Science Education Today in K–12: Status and Trends at the State and National Levels (p. 114)
4:00–5:30 PM	6–9	106, Conv. Center	Constructive Destruction (p. 120)
4:00–5:30 PM	6–12	141, Conv. Center	Earth Science Investigation: Modeling Ocean Circulation (p. 121)
4:00–5:30 PM	6–8	140, Conv. Center	Middle School Earth Science: Investigating Alternative Energy Sources Through Hands-On, Probeware-based Activities (p. 121)
5:00–5:30 PM	G	123, Conv. Center	Exploring the Boundaries of Earth Systems Education (p. 122)
5:00–6:00 PM	E–M	233, Conv. Center	Questioning Strategies for Science Knowledge/Academic Language Development (p. 125)
5:00–6:00 PM	M–H	Capitol III, Westin	Seeing the Light: Help NASA Process Color Images of Astronomical Objects Captured by the WISE Space Telescope (p. 128)
5:00–6:00 PM	M–H	Congress I/II, Westin	Teaching Weather with STEM (p. 129)
5:00–6:00 PM	I	House, Westin	AMSE Session: The Station Approach: Scaffolded Inquiry and Brain-based Learning Activities (p. 131)
5:00–6:00 PM	M–H	Grand Ballroom 2, Westin	Engaging Students with Real-Time NASA Data (p. 131)
5:00–6:30 PM	E–H	Grand Ballroom 5, Westin	The "FAMOUS" Indiana and Ohio Earth Science Teachers Association Rock Raffle (p. 131)

Environmental Science

8:00–9:00 AM	G	JW Grand 5/4, JW Marriott	Informal Science Day Session: Dark Skies Rangers: Immersive Learning Experiences in Energy Conservation While Preserving Dark Skies (p. 30)
8:00–9:00 AM	M–H/I	Caucus, Westin	Support Scientific Inquiry with Authentic Field Investigations (p. 24)
8:00–9:00 AM	E–M	234, Conv. Center	Changes in Earth and Sky: Weather Adages for a Sustainable Planet (p. 27)
8:00–9:00 AM	M–H	Caucus, Westin	Investigating the Invaders and Other Inquiries for the Outdoor Classroom (p. 24)
8:00–9:00 AM	G	Capitol I, Westin	Facilitating Early Childhood Education with Project Learning Tree (p. 30)
8:00–9:00 AM	M–C	Capitol II, Westin	Study Effects of Environmental Agents on Human Health via Zebra Fish, Earthworms, and Fathead Minnows (p. 24)
8:00–9:30 AM	32	133, Conv. Center	Developing Focused Environmental Classroom Campaigns for Quality Service Learning (p. 35)
9:30–10:30 AM	G	Sagamore blrm. 2, Conv. Center	Cloud and Precipitation in a Future Climate: Why Isn't There an App for This Yet? (p. 42)

9:30–10:30 AM	G	Colorado, Marriott	DuPont Presents—Soil Erosion and Fertilizer Testing in Runoff (p. 50)
9:30–10:30 AM	EE	235, Conv. Center	Learning for a Sustainable Future (p. 49)
9:30–10:30 AM	G	Capitol II, Westin	Everglades National Park: The Last Stand (p. 47)
9:30–10:30 AM	G	124, Conv. Center	NSTA Avenue Session: Siemens We Can Change the World Challenge: Using Project Based Learning (PBL) to Boost Achievement…and Help Change the World (p. 42)
9:30–10:30 AM	G	Capitol I, Westin	Photovoice: Engage Students in Place-based Socio-scientific Inquiry (p. 51)
9:30–10:30 AM	E–H	123, Conv. Center	Lake St. Clair: Use or Abuse? (p. 48)
9:30–10:30 AM	M–C	Caucus, Westin	Paper Clip Pedagogy: Hands-On Environmental Science Activities—Easy and Cheap (p. 47)
9:30–10:30 AM	G	Capitol III, Westin	Transforming Minds in a Transitioning Community: Flipping Greenway from Criminal Activity to Educational Intent (p. 47)
10:00–11:30 AM	9–12	141, Conv. Center	AP® Environmental Science: Modeling an Ecosystem (p. 55)
10:00–11:30 AM	9–C	103, Conv. Center	Environmental Science: Use Recent Case Studies to Teach Core Content (p. 54)
10:00–11:30 AM	6–12	106, Conv. Center	Fuel for the Next Generation? (p. 54)
11:00 AM–12 Noon		Capitol III, Westin	Upper Mississippi River High School Symposium (p. 65)
11:00 AM–12 Noon	H–C	Capitol III, Westin	Get Green for Blue: Water Quality Investigations (p. 65)
11:00 AM–12 Noon	G	JW Grand 5/2, JW Marriott	Informal Science Day Session: Taking Care of Our Environment for Future Generations (p. 69)
11:00 AM–12 Noon	H	Capitol I, Westin	Human Health and Global Environmental Change (p. 69)
11:00 AM–12 Noon	G	Capitol II, Westin	EmPOWERing Students: Fight Climate Change by Harnessing the Forces of Nature for Renewable Energy (p. 65)
11:00 AM–12 Noon	EE	235, Conv. Center	Understanding the Impact of an Environmental Inquiry Project on Student Behavior: Reducing Lunchroom Waste (p. 62)
11:00 AM–12 Noon	E–H	123, Conv. Center	Connecting Students to the Above- and Below-Ground Connection (p. 66)
11:30 AM–12 Noon	H	Caucus, Westin	Mercury Cycle and Lighting Decisions (p. 71)
12 Noon–1:30 PM	10–12	131, Conv. Center	STEM Activities: Environmental Science Using Microslides—Microbe Growth and ID System (p. 73)
12:30–1:30 PM	M–H/I	Capitol I, Westin	School Yard Plants as Indicators of Climate Change? Project BudBurst Can Show You How (p. 85)
12:30–1:30 PM	G	Caucus, Westin	Connecting the Dots on the Global Ocean (p. 82)
12:30–1:30 PM	G	Capitol II, Westin	Bringing Students, Parents, Schools, and Communities Together through a Green School Program (p. 82)
12:30–1:30 PM	P	235, Conv. Center	Educating Young Children About the Environment (p. 83)
12:30–1:30 PM	H–C	White River H, JW Marriott	Maintaining Biodiversity Through Environmental Conservation Awareness Programs in School Sectors: A Case Study of Nigeria (p. 81)
12:30–1:30 PM	E–M	124, Conv. Center	NSTA Avenue Session: Disney's Planet Challenge: Project Based Learning and Service Learning–based Lesson Development and Funding (p. 79)
12:30–1:30 PM	M–H	Grand Ballroom 1, Westin	Climate Change: Global Connections and Sustainable Solutions (p. 85)
12:30–1:30 PM	E–M	123, Conv. Center	Water in the Valley: Watershed Monitoring for Children (p. 79)
1:30–3:00 PM	G	Sagamore blrm. 5, Conv. Center	The Modern Antarctic Climate: Variability and Change (p. 90)
2:00–3:00 PM	G	Sagamore blrm. 3, Conv. Center	FrankenClimate: The Perils of Engineering Our Way Out of Global Warming (p. 92)
2:00–3:00 PM	E–H	123, Conv. Center	Can Venice Be Saved? (p. 98)
2:00–3:00 PM	H	Capitol III, Westin	Getting Involved Locally (p. 98)
2:00–3:00 PM	H	Capitol I, Westin	Climate Change and the Carbon Cycle (p. 100)
2:00–3:00 PM	E	235, Conv. Center	Place-based Practices in School Yard Settings (p. 99)
2:00–3:00 PM	E–H	Capitol II, Westin	Biology Bob: Save the World (p. 97)
2:00–3:00 PM	G	Cabinet, Westin	Teaching Climate and Energy: The CLEAN Collection of Peer-reviewed Climate and Energy Learning Resources (p. 97)
2:00–3:00 PM	H–C	302/303, JW Marriott	Campus Sustainability and Project-based Teaching (p. 95)
2:00–3:00 PM	M–C	Cabinet, Westin	Energy, Environment, and Climate—In My Backyard! (p. 97)
2:00–3:00 PM	G	Caucus, Westin	From Field Research to the Science Classroom: Integrating Sustainability (p. 98)

2:00–3:00 PM	C	302/303, JW Marriott	Inquiry-based Poster Project on Sustainability in a Large Nonmajors Environmental Science Course (p. 95)
2:00–3:00 PM	M	234, Conv. Center	Connecting Formal and Informal Learning Experiences (p. 94)
2:00–3:00 PM	M–C	206, JW Marriott	NARST Session: From Teaching-to-Know to Learning-to-Think via Research-to-Practice (p. 95)
2:00–3:30 PM	10–12	131, Conv. Center	STEM Activities: Environmental Science Using Microslides—Microbe Growth and ID System (p. 104)
2:00–3:30 PM	7–C	117, Conv. Center	Environmental Science with Vernier (p. 103)
3:30–4:30 PM	E–M	202, JW Marriott	ASTE Session: Teaching Science in the Elementary and Middle School Classrooms with Case Studies (p. 116)
3:30–4:30 PM	H–C	302/303, JW Marriott	Sustainability Through Literature and Action (p. 111)
3:30–4:30 PM	M–H/I	Caucus, Westin	Discovering the Science of the Environment: Integrating Technology and the Environment to Inspire Future Scientists (p. 114)
3:30–4:30 PM	E	235, Conv. Center	Elementary (K–4) GLOBE (p. 115)
3:30–4:30 PM	M–H	Caucus, Westin	Google Earth, ImageJ, and GIS: Tools to Investigate and Communicate About Environmental Change (p. 114)
3:30–4:30 PM	H	Capitol I, Westin	Drop the Lecture and Let the Students Pick Up the Learning in Environmental Science (p. 116)
5:00–6:00 PM	M–H	Capitol I, Westin	How to Teach Inquiry-based Science (p. 130)
5:00–6:00 PM	I	Capitol II, Westin	Model My Watershed: Modeling the Hydrology of Your Neighborhood (p. 128)
5:00–6:00 PM	E	235, Conv. Center	Once Upon a Tide: Connecting Ocean Health and Human Health (p. 130)
5:00–6:00 PM	G	Caucus, Westin	Science and Conservation Through Community Partnerships: Foundational Ideas from the Advanced Inquiry Program (AIP) (p. 128)

Integrated/General

8:00–8:30 AM	G	Chamber, Westin	Climate, Environment, and Global Literacies for the 21st Century (p. 16)
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8:00–8:45 AM	K4	142, Conv. Center	NASA's Museum in a Box How-To for Elementary Teachers (p. 17)
8:00–9:00 AM	M–H	111/112, Conv. Center	Improve Learning Using Writing: Go Beyond Note-taking and Basic Lab Reports (p. 17)
8:00–9:00 AM	E–H	206, JW Marriott	NARST Session: An Investigation of Different Models of Integrating Engineering into Science Classrooms (p. 22)
8:00–9:00 AM	G	201, JW Marriott	NSELA Session: Tools for Science Leaders (p. 20)
8:00–9:00 AM	G	202, JW Marriott	ASTE Session: Five Keys to Facilitating Classroom Discourse That Improve Student Achievement (p. 28)
8:00–9:00 AM	G	Colorado, Marriott	DuPont Presents—The Science of Food Safety (p. 30)
8:00–9:00 AM	G	305/306, JW Marriott	BSCS Pathway Session: The Science of Climate Change and Your Biology Class (p. 30)
8:00–9:00 AM	E–H	White River B, JW Marriott	BEST Pathway Session: The Science of Energy (p. 30)
8:00–9:00 AM	G	101, JW Marriott	Coaching: Knowledge That Works for Science Education Leadership—Strategies for Checking for Understanding (p. 28)
8:00–9:00 AM	G	JW Grand 5/2, JW Marriott	Informal Science Day Session: Integrating Student-led Inquiry into Science Courses (p. 22)
8:00–9:00 AM	G	JW Grand 5/1, JW Marriott	Informal Science Day Session: Citizen Science and Science Literacy: Evaluating the Connection (p. 22)
8:00–9:00 AM	C	203, JW Marriott	SCST Session: Nanotechnology Workshop: An Interdisciplinary Teaching Tool, Part I (p. 20)
8:00–9:00 AM	C	203, JW Marriott	SCST Session: Nanotechnology Workshop: An Interdisciplinary Teaching Tool, Part II (p. 20)
8:00–9:00 AM	C	203, JW Marriott	SCST Session: Nanotechnology Workshop: An Interdisciplinary Teaching Tool, Part III (p. 20)

8:00–9:00 AM	9–12	132, Conv. Center	Engineering the Future: A Practical Approach to STEM for High School Students (p. 31)
8:00–9:00 AM	M–C	JW Grand 7, JW Marriott	NSTA Press Session: Daltonian Atoms in Five Discrepantly E(z) Steps: The (w)Hole Truth? (p. 23)
8:00–9:00 AM	M–H	128, Conv. Center	The Time for Inquiry Is Now! (p. 26)
8:00–9:00 AM	G	204/205, JW Marriott	Better Assessment Through Four Essential Questions (p. 20)
8:00–9:00 AM	E–H	124, Conv. Center	NSTA Avenue Session: Models in the Classroom: Making Meaning Come Alive for Students Through the Use of Models (p. 26)
8:00–9:00 AM	G	302/303, JW Marriott	What Do Engineers Really Do? How Can I Make It Work in My Classroom? (p. 22)
8:00–9:00 AM	E–M	121, Conv. Center	Students' Science Notebooks: Implementing Writing Standards with Hands-On Science (p. 26)
8:00–9:00 AM	G	Indiana Ballroom G, Marriott	Podcasting in the Science Classroom (p. 23)
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8:00–9:00 AM	G	314, JW Marriott	Grant Writing: How to Get What You Need (p. 22)
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8:00–9:00 AM	P–E	122, Conv. Center	Science on the Cheap: Teaching Science Activities Without Spending a Ton of Money (p. 26)
8:00–9:00 AM	G	Marriott Blrm. 7, Marriott	Teaching and Learning by Guided Inquiry: What Do Teachers Say? (p. 24)
8:00–9:00 AM	M	241, Conv. Center	Teaching Middle School Students Data Analysis (p. 28)
8:00–9:00 AM	G	Marriott Blrm. 1, Marriott	Technology Tools in the Younger Years (p. 23)
8:00–9:00 AM	E–M	240, Conv. Center	The Use of Writing Frameworks in the Inquiry Science Classroom (p. 20)
8:00–9:00 AM	G	Michigan/Texas, Marriott	Motivation Matters: Designing Science Learning Environments to Ignite, Excite, and Engage Students (p. 24)
8:00–9:00 AM	G	Marriott Blrm. 10, Marriott	Meeting the Diverse Needs of Young Parents and Students in Alternative School Settings (p. 24)
8:00–9:00 AM	E–H	Marriott Blrm. 9, Marriott	Sock It to Me: Hydrophilic and Hydrophobic Materials (p. 30)
8:00–9:00 AM	E–M	238, Conv. Center	Charging Up Your Curriculum! Solar, Wind, and Biofuels: Possible Solutions to Our Energy Crisis (p. 28)
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8:00–9:15 AM	4–9	136, Conv. Center	A New Spin on a Classic Mass Measurement Tool (p. 32)
8:00–9:30 AM	5C	103, Conv. Center	Mapping and Analyzing Science Data (p. 34)
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8:00–9:30 AM	K–6	143, Conv. Center	The Science and Writing Connection: Increasing Achievement of Diverse Learners in Both Domains (p. 36)
8:00–9:30 AM	G	Wabash 2, Conv. Center	The Private Eye®—Hands-On Inquiry for an Interdisciplinary Mind: Science, Writing, and Art (p. 37)
8:00–9:30 AM	G	120, Conv. Center	iPads and Mobile Apps in Science (p. 32)
8:00–9:30 AM	G	White River G, JW Marriott	McREL Pathway Session: What Works in Science Classrooms: Constructing Understanding via Visual Tools (p. 33)
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8:00–10:00 AM	G	White River A, JW Marriott	ITEEA Pathway Session: STEM Resources for Grade 4 (p. 37)
8:00–10:00 AM	G	102, JW Marriott	WestEd Pathway Session: Assessment-centered Teaching: A Reflective Practice (p. 37)
8:00–11:00 AM	G	White River D, JW Marriott	SPS Pathway Session: Integrating Science and Literacy: A Journey, Not a Destination (p. 38)
9:00–9:45 AM	K–5	142, Conv. Center	NASA's Endeavor Science Teaching Certificate Project: Focus on Preservice and Elementary Inservice Education (p. 39)
9:30–10:00 AM	E–C	JW Grand 4, JW Marriott	Discover Discovery Boxes (p. 44)
9:30–10:30 AM	G	Sagamore blrm. 6, Conv. Center	Next Generation Science Standards (p. 41)
9:30–10:30 AM	E–M/I	242, Conv. Center	A Place for Inquiry (p. 44)

9:30–10:30 AM	G	Michigan/Texas, Marriott	The Magic of Science: Using Discrepant Events in the Science Classroom (p. 47)
9:30–10:30 AM	E–M/I	211, Conv. Center	CESI Session: Helping Children Imagine and Invent (p. 43)
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9:30–10:30 AM	M–C	Marriott Blrm. 1, Marriott	Science 2.0: Integrating Technology in the Science Classroom (p. 46)
9:30–10:30 AM	I	232, Conv. Center	Get SIMulated! (p. 43)
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9:30–10:30 AM	E–C	Marriott Blrm. 3, Marriott	Formative Assessments Supporting Inquiry (p. 46)
9:30–10:30 AM	E–C	Marriott Blrm. 3, Marriott	Evolving Elementary Science Teaching: Inclusion of Students with Special Needs (p. 46)
9:30–10:30 AM	G	Marriott Blrm. 7, Marriott	Providing a Valuable Purpose for Learning (p. 46)
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9:30–10:30 AM	I	244, Conv. Center	Teach Hands-On Science with the Super Power of Rap Music (p. 44)
9:30–10:30 AM	G	Marriott Blrm. 2, Marriott	Effective Inquiry-based Professional Development Leads to Successful Inquiry-based Student Learning (p. 46)
9:30–10:30 AM	E–H	302/303, JW Marriott	Get REAL (p. 45)
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3:30–4:30 PM	G	240, Conv. Center	NMLSTA Session: Grant Proposal Writing: Basics for Beginners (p. 110)
3:30–4:30 PM	E–H	Marriott Blrm. 9, Marriott	Ends of the Earth: Combine Research and Science Inquiry with Penguins and Polar Bears (p. 116)
3:30–4:30 PM	G	White River F, JW Marriott	Turn Kids Ages 6–14 "ON" to STEM with FREE Turn-Key Resources from WGBH Boston (p. 116)
3:30–4:30 PM	M–H	234, Conv. Center	Meteorites CSI: The Sky Has Fallen—Now What? (p. 110)
3:30–5:00 PM	G	JW Grand 7, JW Marriott	NSTA Press Session: Linking NSTA Press Books—Connecting Content, Inquiry, Picture Books, and Formative Assessment (p. 118)
4:00–4:45 PM	4	142, Conv. Center	Virtual Lab and NASA Explorer Schools (p. 119)
4:00–5:30 PM	21	136, Conv. Center	The Singapore Approach: Teaching and Learning Elementary Science (p. 121)
4:00–5:30 PM	7–C	102, Conv. Center	Fuel Cell Technology in Your Classroom—Powered by h-tec (p. 119)
4:00–5:30 PM	K–12	Wabash 1, Conv. Center	Notebook Foldables®—Let Them "Envelope" You (p. 122)
4:00–5:30 PM	G	103, Conv. Center	Teach Overseas! (p. 119)
4:00–5:30 PM	31	Wabash 2, Conv. Center	What the Heck Happened?! (p. 122)
4:00–5:30 PM	K–12	110, Conv. Center	Developing STEM Process Skills with the Discovery Education Science Techbook (p. 120)
4:00–5:30 PM	K–8	203, Conv. Center	RIDES for Higher Achievement in Math and Science (p. 122)
4:00–5:30 PM	G	133, Conv. Center	Next Generation Science Standards—What It Means for Earth Science (p. 121)
4:00–5:30 PM	G	White River G, JW Marriott	McREL Pathway Session: What Works in Science Classrooms: Helping Students Think Scientifically (p. 119)
5:00–5:30 PM	G	Marriott Blrm. 1, Marriott	Multimedia Journaling (p. 123)
5:00–6:00 PM	E–H	Michigan/Texas, Marriott	Cool and Crazy Demos for Your Science Class (p. 128)
5:00–6:00 PM	E–H	309/310, JW Marriott	Scientific Discourse to Promote STEM Literacy (p. 128)
5:00–6:00 PM	E–H	121, Conv. Center	Engaging Science Instruction for Special Needs Students (p. 124)
5:00–6:00 PM	M–H	113, Conv. Center	Lungs Are in Cells? Guiding Students Through Misconceptions (p. 124)
5:00–6:00 PM	M–H	234, Conv. Center	Flip for STEM Careers (p. 130)
5:00–6:00 PM	E	231, Conv. Center	Becoming Organism Experts (p. 125)
5:00–6:00 PM	E–M	241, Conv. Center	Science and Mathematics Integration through the Water Cycle, Chemistry, Geology, Ecosystems, and More (p. 130)
5:00–6:00 PM	G	Marriott Blrm. 9, Marriott	Reconstructing Earth's History (p. 130)
5:00–6:00 PM	MS	201, JW Marriott	Steps to Becoming a STEM Middle School (p. 126)
5:00–6:00 PM	M–H	111/112, Conv. Center	The ABCs of STEM (p. 124)
5:00–6:00 PM	PM	242, Conv. Center	Using Literature to Promote the State Standards in the Elementary Science Classroom (p. 126)
5:00–6:00 PM	G	120, Conv. Center	Online Just-in-Time Professional Development (p. 124)
5:00–6:00 PM	E–M	242, Conv. Center	Inquiring Minds Want to Know: Teach Science via Current Events (p. 126)
5:00–6:00 PM	I	232, Conv. Center	Socratic Science Circles (p. 125)
5:00–6:00 PM	E–H	Marriott Blrm. 8, Marriott	It Is Possible! Science Fair as a Successful Teaching Strategy (p. 130)

5:00–6:00 PM	C	103, JW Marriott	Project-based Middle School Science Materials for Teacher Professional Development (p. 126)
5:00–6:00 PM	G	Marriott Blrm. 7, Marriott	Documenting the Impact of Professional Development in Inquiry-based Teaching Practices (p. 128)
5:00–6:00 PM	M–H	128, Conv. Center	Effective, Engaging Methods for Writing in Science (p. 129)
5:00–6:00 PM	CS	209, JW Marriott	The Impact of a Professional Development Program to Enable Elementary Teachers to Implement Inquiry Science Instruction on Their Self-Efficacy Beliefs (p. 126)
5:00–6:00 PM	M	243, Conv. Center	Misconceptions? Preconceptions? Mixed Conceptions? (p. 126)
5:00–6:00 PM	G	Indiana Ballroom F, Marriott	Integrating Inquiry Through Interdisciplinarity: Philosophy, Science, and Math (p. 130)
5:00–6:00 PM	P–E	211, Conv. Center	Observation, Inference, and the Nature of Science for Grades K–5 (p. 129)
5:00–6:00 PM	G	Chamber, Westin	Learning About Climate Change in Death Valley with a Four-Part Blended Inquiry (p. 129)
5:00–6:00 PM	G	Chamber, Westin	Flowers in Antarctica: Teaching Climate Change with the Scope-On-A-Rope (p. 129)
5:00–6:00 PM	M	239, Conv. Center	The Problem with Plastics (p. 130)
5:00–6:00 PM	C	314, JW Marriott	Scientists and Science Educators: A Working Partnership in Developing Project-Based Science (PBS) Courses for Teachers (p. 128)
5:00–6:00 PM	CS	209, JW Marriott	Science Futures: Creating Teacher Leaders for Reform Efforts (p. 126)
5:00–6:00 PM	E	212, Conv. Center	Building Elementary Science Units to Meet Standards (p. 125)
5:00–6:00 PM	G	206, JW Marriott	NARST Session: Student Learning Through the Science Writing Heuristic: Iowa Tests of Basic Skills, Cornell Critical Thinking Tests, and Classroom Implementation (p. 126)
5:00–6:00 PM	M	White River B, JW Marriott	BEST Pathway Session: Supporting Students Learning Energy Throughout the Middle School Curriculum (p. 130)
5:00–6:00 PM	6–12	142, Conv. Center	NASA's Endeavor Science Teaching Certificate Project: Focus on Middle School and High School (p. 131)
5:00–6:30 PM	K–12	Sagamore 6, Conv. Center	Just Physics (p. 131)
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 II (p. 133)

Physics/Physical Science

8:00–9:00 AM	H–C	White River H, JW Marriott	Defeating Misconceptions in Physics (p. 23)
8:00–9:00 AM	G	126, Conv. Center	Come Float with Me! (p. 18)
8:00–9:00 AM	M–H	125, Conv. Center	Teaching Engineering Design: A Scenario-based Design Project Approach (p. 18)
8:00–9:00 AM	M–H	125, Conv. Center	Physics, Technology, and Toys: What a Combination (p. 18)
8:00–9:00 AM	H	205, Conv. Center	Shock Your Students (p. 26)
8:00–9:00 AM	E–H	207, Conv. Center	NASA: Teaching from Space (p. 18)
8:00–9:30 AM	6–C	102, Conv. Center	Water, Power, and Science (p. 34)
8:00–9:30 AM	5–8	201, Conv. Center	Introducing a Lesson Plan on the Optical Refraction Using a Light Source and a Lens (p. 36)
8:00–9:30 AM	5	139, Conv. Center	Genetics: Crazy Traits and Adaptation Survivor (p. 35)
8:00–9:30 AM	1–5	202, Conv. Center	Engaging Elementary Learners in STEM with LEGO® Education (p. 36)
8:00–9:30 AM	9–C	116, Conv. Center	Advanced Physics with Vernier (p. 35)
8:00–9:30 AM	6–8	101, Conv. Center	STEM activities flying model aircraft in your classroom! (p. 33)
9:30–10:30 AM	G	JW Grand 5/3, JW Marriott	Informal Science Day Session: Quick and Easy STEM Starters (p. 49)
9:30–10:30 AM	9–12	135, Conv. Center	Data Collection and Analysis for Physics Using the TI-Nspire™ CX (p. 52)
9:30–10:30 AM	G	126, Conv. Center	Household Physics (p. 42)
9:30–10:30 AM	E–H	207, Conv. Center	Creatively Crossing Science and Art Borders with Sailboat Vehicles (p. 48)

9:30–10:30 AM	M–H	205, Conv. Center	Formative Assessment, Inquiry Activities, and Data Collection with the TI-Nspire™ CX Navigator™ (p. 48)
9:30–10:30 AM	M–H	125, Conv. Center	Wind Power (p. 48)
9:30–10:30 AM	E–M	206, Conv. Center	Targeted Connections: Jumping into Science with a Parachute (p. 43)
9:30–10:30 AM	E–M	122, Conv. Center	Are You Remotely Interested? (p. 48)
9:30–11:00 AM	G	Marriott Blrm. 6, Marriott	Middle Level Share-a-Thon (p. 52)
10:00–11:00 AM	13	202, Conv. Center	Using LEGO® Bricks to Introduce Simple Machines (p. 53)
10:00–11:30 AM	5	139, Conv. Center	Chemistry and the Atom: Fun with Atom Building Games! (p. 55)
10:00–11:30 AM	5C	102, Conv. Center	Wind-energized Classroom (p. 53)
11:00–11:30 AM	H–C	White River H, JW Marriott	The Difference Between Students Understanding Gravity and Getting the Correct Answer (p. 60)
11:00 AM–12 Noon	E–H	207, Conv. Center	PHENOMenology: Stepping Through the Scientific Method (p. 67)
11:00 AM–12 Noon	G	126, Conv. Center	LEGO® Education WeDo™ for Field-based Science Instruction (p. 66)
11:00 AM–12 Noon	M–H	125, Conv. Center	Developing Thinking Skills Through Fuzzy Problems (p. 61)
11:00 AM–12 Noon	E–M/I	206, Conv. Center	Spark Kids' Creativity with Hands-On Invention Activities from Time to Invent (p. 67)
11:00 AM–12 Noon	M	240, Conv. Center	NMLSTA Session: Explore and Experiment: Puzzling Polymer Properties (p. 68)
11:00 AM–12 Noon	H	205, Conv. Center	"Invisible" Physics (p. 66)
11:00 AM–12 Noon	H	Marriott Blrm. 5, Marriott	STEM Educator Award Share-a-Thon: High School (p. 64)
11:00 AM–12 Noon	E–H	White River B, JW Marriott	BEST Pathway Session: Energy in K–12 Physics (p. 64)
11:30 AM–12:30 PM	24	202, Conv. Center	Enhancing the Elementary Classroom Through Robotics (p. 71)
12 Noon–1:30 PM	5	139, Conv. Center	Light and Optics: A Series of EnLIGHTening Experiments! (p. 73)
12 Noon–1:30 PM	6–8	140, Conv. Center	Middle School Physical Science: Learning Newton's Laws of Motion Through Hands-On, Probeware-based Activities (p. 74)
12 Noon–1:30 PM	9–12	141, Conv. Center	Physics & Physical Science: Investigating Motion (p. 74)
12 Noon–1:30 PM	6–C	102, Conv. Center	WindWise Science Curriculum (p. 72)
12 Noon–1:30 PM	59	Wabash 2, Conv. Center	Get Charged Up with Educational Innovations! (p. 75)
12:30–1:00 PM	H	125, Conv. Center	Improving Physics Lessons: Teach Conceptual History of Physics in the Classroom (p. 77)
12:30–1:30 PM	E–M	240, Conv. Center	Motion in the Sky: The Sun and Stars—From a Geocentric Model to a Heliocentric Model (p. 84)
12:30–1:30 PM	G	126, Conv. Center	Kick-Start Scientific Inquiry with Thinking Starters (p. 83)
12:30–1:30 PM	M	205, Conv. Center	Teaching Newton's Laws of Motion Using Wooden Coaster Cars (p. 83)
12:30–1:30 PM	P–E	207, Conv. Center	The Magnet Lab: Magnets Is What We Do! (p. 79)
12:30–1:30 PM	H–C	204/205, JW Marriott	"E.T. Phone Home" (p. 84)
12:30–1:30 PM	H–C	103, JW Marriott	Promoting Students' Argument Skills and Science Understanding Through the Nature of Light (p. 80)
12:30–1:30 PM	E–M	122, Conv. Center	Cell Phones Uncovered (p. 83)
1:00–2:00 PM	5	134, Conv. Center	What's New in Astronomy News? (p. 88)
1:30–3:00 PM	5–8	202, Conv. Center	Build and Explore the Future of Space with LEGO® Education (p. 90)
2:00–3:00 PM	G	Colorado, Marriott	DuPont Presents—Driving Science (p. 100)
2:00–3:00 PM	M–H/I	205, Conv. Center	Hands-On Optics and Photonics Activities (p. 98)
2:00–3:00 PM	E–M	206, Conv. Center	Lesson Study: An Innovative Strategy for Science Teachers to Collaborate with Colleagues to Create Successful Learning Experiences (p. 93)
2:00–3:00 PM	M–H	125, Conv. Center	SmartGraphs for Learning: Free, Open-Source, Web-based Activities for Science Classes (p. 98)
2:00–3:00 PM	H–C	White River F, JW Marriott	Dialogues for the Physics Classroom (p. 96)
2:00–3:00 PM	G	126, Conv. Center	Hooke's Law Orbital Motion: Springs, Masses, and Zero Gravity (p. 93)
2:00–3:00 PM	E–M	240, Conv. Center	Forces and Things at Rest: Why Do Ships Made of Concrete Float? (p. 99)
2:00–3:00 PM	E–M	122, Conv. Center	Fun with Flight (p. 98)
2:00–3:30 PM	5	139, Conv. Center	Sound, Waves, and Music (p. 104)
2:00–3:30 PM	22	103, Conv. Center	Motivate Your Students! Exciting Demonstrations Using Cool Tools for Force and Motion! (p. 102)
2:00–3:30 PM	9–C	116, Conv. Center	Physics with Vernier (p. 103)

2:00–3:30 PM	9–C	130, Conv. Center	The Physics of Baseball (p. 103)
2:00–3:30 PM	6–C	102, Conv. Center	Renewable Power, Vernier, and KidWind (p. 102)
3:30–4:30 PM	M–H	205, Conv. Center	NASA Brings You Newton's Laws of Motion (p. 115)
3:30–4:30 PM	M–H	125, Conv. Center	High-Tech Sounds of Physics (p. 109)
3:30–4:30 PM	E–M	206, Conv. Center	How Strong Is Your Magnet? An Attractive Topic for Inquiry (p. 115)
3:30–4:30 PM	E	211, Conv. Center	CESI Session: Simple Toys Link the Physics of Sound and STEM (p. 115)
3:30–4:30 PM	E–H	207, Conv. Center	ROKET and AILDI: Science from an American Indian Perspective (p. 109)
3:30–4:30 PM	G	126, Conv. Center	Frisbee® Dog Physics (p. 109)
3:30–5:00 PM	5–8	202, Conv. Center	Robotics in the Classroom: Science, Engineering, and Math Come Alive! (p. 118)
4:00–5:30 PM	5	139, Conv. Center	Chemistry and the Atom: Fun with Atom Building Games! (p. 121)
4:00–5:30 PM	K–3	101, Conv. Center	Investigating Magnetism with AIMS (p. 119)
5:00–6:00 PM	I	207, Conv. Center	NASA Sun-Earth Day: The Transit of Venus (p. 125)
5:00–6:00 PM	M–H	125, Conv. Center	ZAP! It's Electrifying! (p. 124)
5:00–6:00 PM	M	206, Conv. Center	Using School Buildings as Teaching Tools for STEM Concepts (p. 124)
5:00–6:00 PM	M	205, Conv. Center	Dive! Dive! Discovering Density Through a Virtual Submarine Simulation (p. 129)

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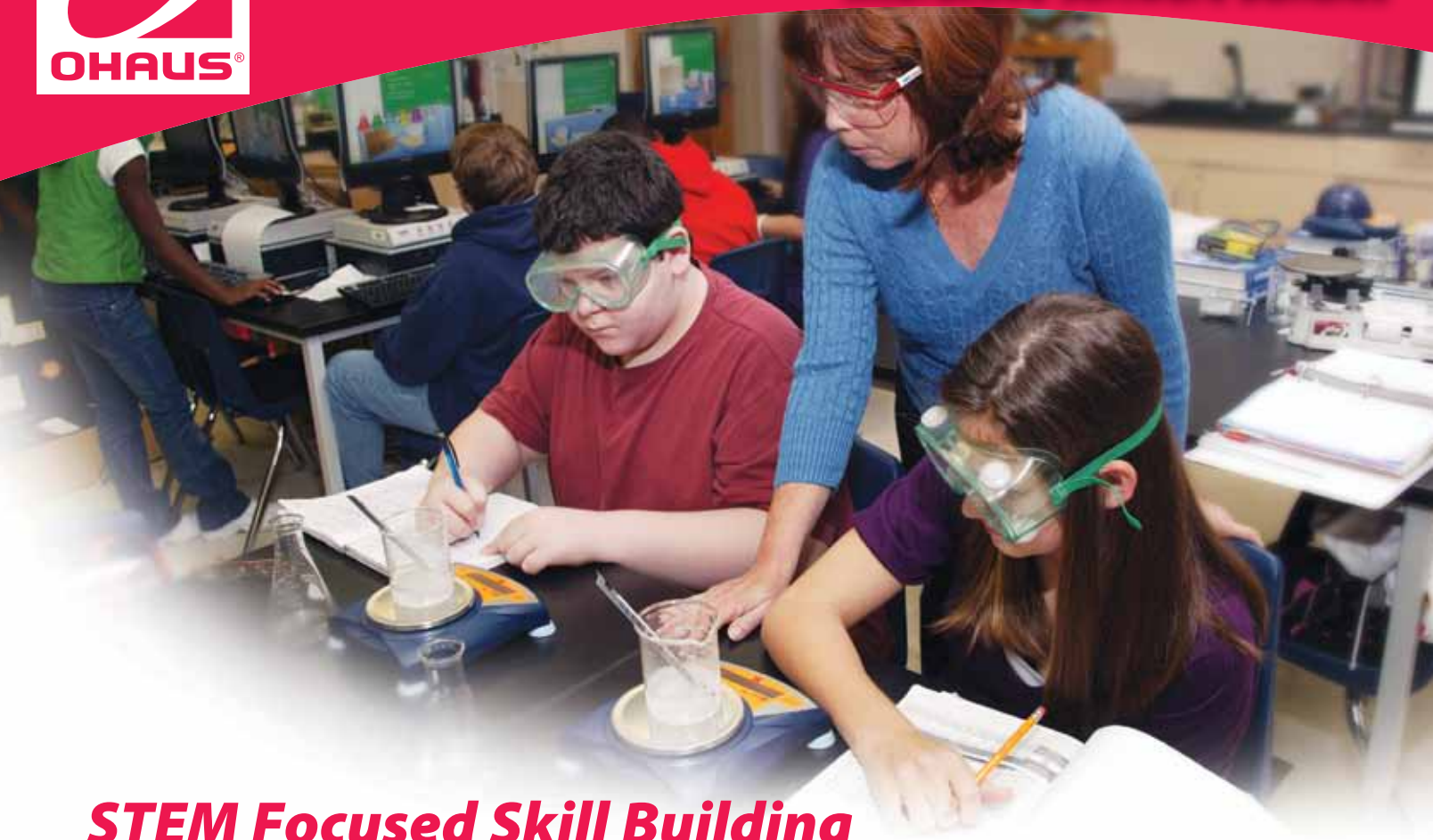

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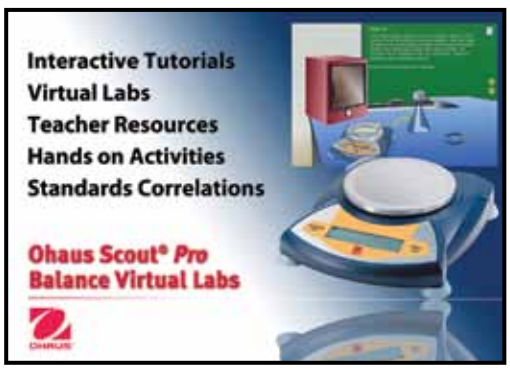

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