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The Science of Design: Structure and Function
Student Learning—How Do We Know What They Know?

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Scientific Minds

BOOTH #1443

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WORKSHOP SCHEDULE
Friday April 4, 2014 • Room 153C

Inspire Scientific Minds with Technology & Manipulatives

8:00 am  3-8, Biology, Chemistry
2:00 pm  3-8, Biology, Chemistry

Teach critical science standards with technology and manipulatives using Scientific Minds’ NEW lab kits for grades 3-8, Biology, & Chemistry. Lessons are aligned to the standards of all states and the NGSS. Attendees receive door prizes, a FREE lab kit, and trial access to the award-winning Science Starters program!

WIN PRIZES at Workshops & Booth Demos!

STOP BY THE BOOTH FOR A DEMONSTRATION!

www.ScientificMinds.com
Conference Program • Highlights

Friday, April 4

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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.

A historic neighborhood in Boston, Beacon Hill is known for its narrow, gaslit streets
and brick sidewalks.
Science and Literacy: A Symbiotic Relationship
Attention to literacy is often seen as taking time away from science. In fact, built right into the Common Core State Standards, ELA, literacy can and should be used to enhance the effective teaching of science. Well-designed and integrated science and literacy instruction creates a symbiosis that supports classroom practice and student achievement. The investigation of science concepts within the elementary classroom enhances the development of reading, writing, and communication skills. At the upper grades, strengthened literacy skills continue to empower all students to access the science content and communicate their understanding. This strand will address how literacy and science are in service to each other across the learning continuum.

Teaching Elementary Science with Confidence!
With limited time, resources, and opportunities to learn science, it is no wonder elementary teachers find teaching science within the school day to be challenging. There is a constant struggle to find the time for engaging students in active science experiences. We also know that simply doing a science activity does not produce a deep understanding of concepts. This strand provides opportunities for elementary teachers to enhance their content knowledge, locate resources, incorporate science and engineering practices from the Next Generation Science Standards, and explore classroom management strategies when teaching science.

Leading from the Classroom
Throughout their careers, teachers grow professionally and often see opportunities to improve science education. But does that mean leaving the classroom? Why can’t a teacher be both a classroom teacher and leader? Effective science teachers often think that the only way to increase their impact on science education is to leave the classroom. In fact, there are myriad leadership roles that can be fulfilled as a teacher leader. This strand addresses the skills and opportunities for developing leadership capacity while continuing to serve as effective classroom teachers.

Engineering and Science: Technological Partners
Are you integrating science and engineering practices into your instruction? Are you looking for the latest cool tools to enrich your classroom? With the NRC Framework and the Next Generation Science Standards defining science and engineering as intertwined, teachers are expected to integrate both within the science curriculum. This strand explores the thoughtful, effective, and meaningful integration of technologies to increase STEM learning and understanding.

The Boston Conference Committee has planned the conference around these 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.
Science and Literacy: A Symbiotic Relationship

Friday, April 4

8:00–9:00 AM  
Liberating Literacy Strategies for Today’s Science Classroom

9:00 AM–12 Noon  
Short Course: To Read or Not to Read: That Is No Longer the Question  
(By Ticket: SC-10)

12:30–1:30 PM  
Collaborative Editing of Student Work Online in Science and English Language Arts

2:00–3:00 PM  
Bringing Primary Scientific Literature to the Classroom Through the Journal of Emerging Investigators

3:30–4:30 PM  
Telling a Story with Data and Visuals: Critiquing and Creating Infographics in the Classroom

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Apply online: www.dallasisd.org
### Conference Program • Conference Strands

#### Teaching Elementary Science with Confidence!

**Friday, April 4**

- **8:00–9:00 AM**
  - Using Electric Circuit Puzzles for Design and Assessment

- **8:00–11:15 AM**
  - Short Course: Our Changing Earth: New England’s Geologic Past
    (By Ticket: SC-8)

- **8:00 AM–12 Noon**
  - Short Course: We’re All in This Together: Cooperative Learning in the Science Classroom
    (By Ticket: SC-9)

- **9:30–10:30 AM**
  - Doing Science the Scientific Way: It’s Not as Hard as It Sounds

- **10:30–11:30 AM**
  - Featured Presentation: Chrysalis: Transforming Your Teaching
    (Speaker: Steve Rich)

- **11:00 AM–12 Noon**
  - Engineering Made Easy: NGSS Practices for Elementary Students

- **3:30–4:30 PM**
  - Differentiating Science for Elementary Students

- **5:00–6:00 PM**
  - Butterfly Gardening Using Native Plants

#### Engineering and Science: Technological Partners

**Friday, April 4**

- **8:00–9:00 AM**
  - Digitizing the Learning Experience and Taking IT Mobile

- **9:00 AM–12 Noon**
  - Short Course: Sustainability and Engineering
    (By Ticket: SC-11)

- **9:30–10:30 AM**
  - Going Beyond Data Collection—Sharing in a Science Classroom
  - How-To Workshop on Organizing a STEM Design Challenge Day

- **11:00 AM–12 Noon**
  - Google Me This! How to Make Collaboration Work in a Wiki World

- **12:30–1:30 PM**
  - Engage Students by Writing Your Own Science Book

- **2:00–3:00 PM**
  - Engineering Practices in Early Childhood: Designing Mechanisms with Mech-a-Blocks

- **2:00–5:00 PM**
  - Short Course: STEM in Motion: The Pasta Car Challenge!
    (By Ticket: SC-14)

- **3:30–4:30 PM**
  - Bridging Engineering and Science

- **5:00–5:30 PM**
  - Supporting Students in Optimizing Engineering Design Solutions with Modeling and Mathematics

---

#### Leading from the Classroom

**Friday, April 4**

- **8:00–9:00 AM**
  - Featured Presentation: The NRC Framework and the NGSS: An Opportunity for Teacher Growth and Leadership
    (Speaker: Arthur Eisenkraft)

  - Building Teacher Capacity: The Role of Science Leader-Teachers

- **9:00 AM–3:00 PM**
  - Short Course: Building Capacity for Collaborative School Communities for Science Learning
    (By Ticket: SC-12)

- **9:30–10:30 AM**
  - Science Education Fellowship Program: Supporting District Cohorts of Science Teacher Leaders

- **11:00 AM–12 Noon**
  - How to Effectively Implement a Curricular Review as a Teacher Leader

  - Teachers Developing as Leaders: A Panel Discussion

- **12:30–1:30 PM**
  - Analyzing Student Work for Language Structures That Support Conceptual Understanding

- **2:00–3:00 PM**
  - Teacher Leaders in the RESTEP to STEM

- **3:00–6:00 PM**
  - Short Course: Integrating Outdoor Teaching and Learning into the Boston Public Schools Science Curriculum
    (By Ticket: SC-15)

- **5:00–6:00 PM**
  - Developing Teachers into Master Educators and Leaders: National Board Certification
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STORE HOURS

Wednesday  5:00 PM–8:00 PM
Thursday   7:00 AM–5:30 PM
Friday    7:00 AM–5:30 PM
Saturday  7:00 AM–5:00 PM
Sunday   7:30 AM–12 Noon
Informal Science Day

Friday, April 4, 7:30 AM–4:00 PM
Ballroom West, BCEC

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 museums and science centers, media, after-school programs, university outreach, and others that provide and/or support out-of-school science education.

Friday, April 4

7:30–9:00 AM Science in the Community Breakfast
Sponsored in part by DuPont
(Tickets Required: M-3)
Wizard Tales: Mostly True Stories from Discovery Channel, MythBusters, and Mr. Wizard’s World
Steven “Jake” Jacobs, Faraday Studios, Wichita, Kans. (p. 17)

9:30–10:30 AM Breakout Sessions

11:00 AM–12 Noon Breakout Sessions

12:30–1:30 PM Breakout Sessions

2:00–4:00 PM Informal Science Day Share-a-Thon (p. 100)

Meet Me in the Middle Day

Sponsored by the National Middle Level Science Teachers Association (NMLSTA)

Friday, April 4, 8:00 AM–2:00 PM
Grand Ballroom A/B, Westin Waterfront

Calling all middle school science teachers! Meet Me in the Middle Day is designed just for you. The day will include a Bring Your Own Breakfast networking session featuring middle school leaders, sessions geared toward middle school, and a share-a-thon with a room full of activities that you can take back to your classroom. Join us and re-energize your teaching. You may even be the lucky winner of an iPad mini or other door prizes.

Friday, April 4

8:00–9:15 AM Bring Your Own Breakfast (BYOB) for Middle School Educators (p. 32)

9:30–10:30 AM Concurrent Sessions*
11:00 AM–12 Noon Concurrent Sessions*
12:30–2:00 PM Lunch and Learn Share-a-Thon (p. 84)

* Concurrent sessions are in Commonwealth Ballrooms A and B and Grand Ballrooms C and E.

Photo of Jason Chin courtesy of Carol Scrimgeour. See page 62 for Meet Me in the Middle Session: Science in 32 Pages: The Brilliant and Graceful Work of Jason Chin.
Visit us at booth #1215 and learn how to win a STEM trip to Japan! A Toshiba Tablet giveaway every hour!

How can I motivate my students to love science?

The Toshiba/NSTA ExploraVision STEM competition inspires K–12 students to envision the technologies of the future. ExploraVision lets your students engage in hands-on learning, problem solving, critical thinking, and collaboration.

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• Schools submitting the most team projects win a $1000 tech upgrade from Toshiba! *(at maturity value)

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Through Toshiba’s shared mission partnership with NSTA, the Toshiba/NSTA ExploraVision competition makes a vital contribution to the educational community.
NSTA Exemplary Science Program (ESP)
ESP: Unique Features of Programs That Meet “More Emphasis”
Features in the NSES
Friday, April 4, 9:00 AM–12 Noon
Grand Ballroom D, Westin Waterfront

NSTA’s Exemplary Science Programs (ESP) series identifies people and places where the reforms recommended have emerged. The exemplary include: 1) Exemplary Science in Grades PreK–4; 2) Exemplary Science in Grades 5–8; 3) Exemplary Science in Grades 9–12; 4) Exemplary Science: Best Practices in Professional Development; 5) Inquiry: The Key to Exemplary Science; 6) Exemplary Science in Informal Education Settings; 7) Exemplary Science for Resolving Societal Challenges; 8) Exemplary Programs for Building Interest in STEM Careers; and 9) Exemplary College Science Teaching.

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

ESP symposia are described on page 38.

Coordinators: Robert E. Yager, 1982–1983 NSTA President, and University of Iowa, Iowa City
Susan Koba, Retired Educator, Omaha, Neb.

Community of Excellence in Mathematics and Science
Susan Koba, Retired Educator, Omaha, Neb.

Adapting the JASON Project

Bringing School Science to College
Sondra Akins, William Paterson University, Wayne, N.J.

The Road to Becoming an Exemplary College Science Teacher
Katherine Follette, The University of Arizona, Tucson

Teaching Science with Pictures
Karl Spencer, The Visual Realization Program, Houston, Tex.

Developing Students’ Authentic Inquiry Skills
Judith A. Scheppler, Illinois Mathematics and Science Academy®, Aurora

Why STEM? Why Now?
Brenda Wojnowski, WAI Education Solutions, Dallas, Tex.

Stop Talking, Start Listening
Peter Veronesi, The College at Brockport, N.Y.
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Conference Program • Special Programs

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, April 4
8:00–9:00 AM
Reaching the Next Stephen Hawking: Tips for Including Students with Disabilities in Advanced Science Classes
Earth Science Puzzles—Making Meaning from Data

9:30–10:30 AM
Teacher Liability—Walking on the Safer Side!

11:00 AM–12 Noon
Get the FACTs for Supporting Evidence-based Talk and Argument
Inside-Out—Enhancing Field-based Learning in Environmental Science for the Upper Elementary Classroom

12:30–1:00 PM
Beyond the Numbers: Making Sense of Statistics

12:30–1:30 PM
Picture-Perfect Science Lessons: Using Picture Books to Guide Inquiry

2:00–3:00 PM
Special Needs Students in Science
Science & Children—A Year of Inquiry

3:30–4:30 PM
Newly Designed Whole Class Inquiry Projects and Assessment in Biology, Chemistry, and Physics
The Authors’ Picks! Teaching Science Through Trade Books

5:00–6:00 PM
Five E(z) Elementary Steps to Next Generation Science Teaching
Argumentation in the Science Classroom

---

ELEMENTARY EXTRAVAGANZA

Friday, April 4, 2014
8:00–10:00 AM • Ballroom East
Boston Convention & Exhibition Center

- Hands-on activities
- Preview science trade books
- Learn about award and grant programs
- Walk away full of ideas and arms filled with materials
- Door prizes and refreshments—Win an iPad!
- 100+ presenters

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### Featured Speakers/Special Events

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<th>Time</th>
<th>Event</th>
<th>Location</th>
<th>Details</th>
</tr>
</thead>
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<td>8:00 AM</td>
<td><strong>Featured Presentation</strong> 8:00–9:00 AM</td>
<td>210C, BCEC</td>
<td>Speaker: Arthur Eisenkraft sponsored by Shell</td>
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<tr>
<td>10:30 AM</td>
<td><strong>Featured Presentation</strong> 10:30–11:30 AM</td>
<td>210C, BCEC</td>
<td>Speaker: Steve Rich</td>
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<tr>
<td>2:00 PM</td>
<td><strong>Featured Presentation</strong> 2:00–3:00 PM</td>
<td>210C, BCEC</td>
<td>Speaker: Joseph Acaba</td>
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<tr>
<td>12:30 PM</td>
<td><strong>SCST Marjorie Gardner Lecture</strong> 12:30–1:30 PM</td>
<td>Caspian, Renaissance</td>
<td>Speaker: Mike Klymkowsky</td>
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<tr>
<td>3:30 PM</td>
<td><strong>Robert H. Carleton Lecture</strong> 3:30–4:30 PM</td>
<td>210C, BCEC</td>
<td>Speaker: John E. Penick</td>
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<td>Speaker: Mike Klymkowsky</td>
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<tr>
<td>7:00 PM</td>
<td><strong>President's Mixer</strong> 9:00 PM–12 Midnight</td>
<td>Atlantic Ballroom, Renaissance</td>
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<tr>
<td>9:00 PM</td>
<td><strong>AGU Lecture</strong> 2:00–3:00 PM</td>
<td>210 A/B, BCEC</td>
<td>Speaker: Suchi Gopal</td>
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<td><strong>President's Mixer</strong> 9:00 PM–12 Midnight</td>
<td>Atlantic Ballroom, Renaissance</td>
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### Special Events

- **Informal Science Day** 7:30 AM–4:00 PM
  Ballroom West, BCEC
- **Informal Science Share-a-Thon** 7:00–4:00 PM
  Ballroom West, BCEC
- **NSTA ESP Symposium**
  - **Meeting** ESP: Unique Features of Programs That Meet "More Emphasis" Features in the NSES
  - **Location** 9:00 AM–12 Noon
  - **Details** Grand Ballroom D, Westin Waterfront
- **NSTA Chapter and District Ice Cream Social in Honor of Wendell Mohling**
  - **Time** 1:30–2:30 PM
  - **Location** Booth #1107, Exhibit Hall
  - **Sponsored by GEICO**
- **NSTA Teacher Awards Gala**
  - **Time** 6:15–8:45 PM
  - **Location** Pacific A–E, Renaissance
  - **Ticket Required (M-5)**
- **Special Evening Session**
  - **Time** 6:00 PM–12 Midnight
  - **Location** Caspian, Renaissance
  - **Details** A Festival of Engineering, Technology, and Science Treats as Related to STEM, the NRC Framework, and the NGSS, Part II

---

*Note: Some events are repeated in different locations and times, indicating their importance or duration.*
7:00–9:00 AM  Breakfasts
APAST Breakfast Meeting
(By Invitation Only)  Flagship A, Seaport
This annual corporate-sponsored breakfast for the Association of Presidential Awardees in Science Teaching is only open to members who registered with APAST in advance. Visit apast.org for details.

AMSE Alice J. Moses Breakfast
(By Invitation Only)  Seaport Ballroom B, Seaport

7:30–9:00 AM  Science in the Community Breakfast
Wizard Tales: Mostly True Stories from Discovery Channel, MythBusters, and Mr. Wizard's World
(Ticket Required: $15)  M-3  Ballroom West, BCEC
Sponsored in part by DuPont

Steven “Jake” Jacobs (jakesattic@aol.com), Faraday Studios, Wichita, Kans.

Answering a key question on the minds of all informal science educators; yes, Virginia, Wizards do exist. The world has known four of them. In 1995, NSTA Life Member and former Informal Education Division Director Steve “Jake” Jacobs was named Wizard IV at the Royal Institution of Great Britain. While entertaining breakfast attendees with hilarious behind-the-scenes stories from several popular science education television series, Jake will share fascinating and inspirational messages from his Wizard predecessors; Michael Faraday, and NSTA members Hubert Alyea from Princeton, and Don Herbert, television’s Mr. Wizard.

Steve “Jake” Jacobs, chief scientist for Faraday Studios, is—among other things—a science writer/researcher for Discovery Channel’s MythBusters and new series Head Rush. He has also served in a similar capacity for FOX (Jake’s Attic), National Geographic TV (Known Universe), Nickelodeon (Mr. Wizard’s World), FOX Sports Network (Sports Science), ESPN (Holiday Sports Spectacular), PBS, and others.

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

“The wizards are a strange class of kindly mortal, impelled by an almost insane impulse to seek their pleasure among smoke and vapor, soot and flame, poisons and poverty. Yet among all these evils they seem to live so sweetly that they may die if they would change places with even a King.”  Johann Joachim Becher, phlogistonist (1669)

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.

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 131, 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

Glossary
STEM stands for Science, Technology, Engineering, and Mathematics.

Strands
The Boston 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.

Science and Literacy: A Symbiotic Relationship
Teaching Elementary Science with Confidence!
Leading from the Classroom
Engineering and Science: Technological Partners

The following icons will be used throughout this program.

NSTA Press® Sessions
PDI  Professional Development Institutes
Friday, 7:30–9:00 AM

7:30–9:00 AM  High School Breakfast
Implementing Classroom STEM Projects: A “Teacher at Sea”
(Ticket Required: $50)  M-2  Lighthouse II, Seaport

Rory Wilson (rorywilsonis@gmail.com), Virtual Teacher/Adventurer, Port Townsend, Wash.

Rory Wilson, recently a mathematics teacher at Bainbridge High School near Seattle, has extensive sailing and ocean experience ranging from sailing in Hawaii, Europe, Asia, and North America as well as from time aboard a Scripps research vessel in the Southern Indian Ocean during the summer of 2006. Join Rory and hear how he crossed the Pacific Ocean in a small boat built with innovative STEM projects as the first leg of an ocean circumnavigation. Learn how to implement engaging projects for students in a standards-based classroom and how to extend the classroom using available technology and open resources.

Rory Wilson is a teacher extending the classroom with ocean STEM activities aboard an innovative boat designed and built with student projects. Rory just completed a record-breaking solo ocean voyage from San Diego to Hawaii in a custom fiberglass boat that students in Colorado and Washington helped to design, fit out, and test. The boat used large power kites for wind energy, oars for rowing, and solar electronics for navigation. The 21-foot boat could surf at high speeds on large ocean waves, had a small sleeping cabin, and carried supplies and food for the 2,700-mile ocean adventure. During this 44-day solo passage, he kept in touch with students on Facebook via satellite, rowed through tropical storms near Mexico, and encountered pilot whales, flying fish, and curious seabirds.

Rory has now moved the ideas, technology, and equipment aboard a vessel that will continue on a multi-ocean circumnavigation. This extended passage is the culmination of seven years of STEM projects with middle school and high school students. Rory has a MS degree in technology, learning, and cognition with extensive graduate work in mathematics and pedagogy. His awards include the 2012 Excellence in Mathematics Education Award sponsored by the Washington State Mathematics Council and Olympic ESD 114 and the Innovative Educator of the Year Award in 2010 for student work in sustainable architecture.

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

7:30–10:00 AM  Breakfast
Next Steps Networking Forum
(By Invitation Only)  Seaport Ballroom A, Seaport

Join your Next Step friends for breakfast and engaging dialogue. Bring your best practices and experiences to share; take away inspiration, ideas, and encouragement! Visit www.nextstepsinscience.org for details.

8:00–8:30 AM Presentation
SESSION 1
From XKCD to Infinite Jest—Strengthening Science with Language and Vice Versa (Gen)  (Middle Level–High School)  Plaza C, Seaport

Vin Urbanowski (vurbanowski@aitestamford.org) and April Kassman, Academy of Information Technology and Engineering, Stamford, Conn.

Excellent science writing often appears where you least expect it—and can be a lot of fun! Learn to find, evaluate, assign, and assess science writing to engage students to lock in concepts generating better lab reports, presentations, and papers.
8:00–9:00 AM  Featured Presentation
The NRC Framework and the NGSS: An Opportunity for Teacher Growth and Leadership  (Gen)  (General)  210C, BCEC

Sponsored by Shell

Arthur Eisenkraft (arthur.eisenkraft@umb.edu), 2000–2001 NSTA President, and Distinguished Professor of Science Education, Professor of Physics, and Director of the Center of Science and Math in Context, UMass Boston, Mass.

Presider: Joyce Gleason, Strand Leader, Leading from the Classroom, NSTA Boston National Conference, and Educational Consultant, Bourne, Mass.

As we all look at our past successful lessons through the lens of NRC’s A Framework for K–12 Science Education and the NGSS, we will better understand what makes some lessons highly effective. Identifying and implementing successful lessons and curriculum is the way in which teachers bridge research and practice. In this manner, teachers grow professionally and improve science education. Sharing these vital experiences is the path from being a teacher to becoming a teacher leader.

Arthur Eisenkraft is a distinguished professor of science education and director of the Center of Science and Math in Context (COSMIC) at the UMass Boston.

For 25 years, Arthur taught high school physics and is chair and co-creator of the Toshiba/NSTA ExploraVision Awards, involving 15,000 students annually. He is the recipient of many awards, among them the Presidential Award for Excellence in Science Teaching, the American Association of Physics Teachers Millikan Medal, the Disney Corporation’s Science Teacher of the Year, and the NSTA Robert Carleton Award.

Arthur is a past president of NSTA and project director of the NSF-supported Active Physics Curriculum Project that is introducing physics instruction for the first time to all students and leading a similar effort with Active Chemistry.

CALLING ALL MIDDLE SCHOOL EDUCATORS

Friday, April 4, 2014 | 8:00 AM–2:00 PM | Westin Boston Waterfront

*Must be registered for the conference to attend*

Join us for a special “Meet Me in the Middle Day,” designed just for middle school educators, at NSTA’s 2014 National Conference in Boston!

The day’s events will include a Bring Your Own Breakfast networking session, more than a dozen presentations specifically for middle school educators, and an afternoon share-a-thon.

Sponsored by the National Middle Level Science Teachers Association (NMLSTA)

#mmitm

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Attend for a chance to win an iPad mini and other door prizes!
Friday, 8:00–9:00 AM

8:00–9:00 AM  Presentations

SESSION 1
Science Says: Science and Literacy for Students with Language-based Learning Disabilities  (Gen)
(Elementary)  158, BCEC
Stacy Miller (stacym@mmfsmyc.org) and Greg Hill-Ries (gregh@mmfsmyc.org), Mary McDowell Friends School, Brooklyn, N.Y.
Understanding, speaking, and writing about science are challenging for students with language-based learning disabilities. Explore strategies to support and enhance students’ abilities to access and apply language.

SESSION 2
Teaching Physical Science Through Robotics and Engineering Design  (Phys)
(Middle Level)  159, BCEC
Sabrina Grossman (sabrina.grossman@ceismc.gatech.edu) and Jayma Koval (jayma.koval@ceismc.gatech.edu), Georgia Tech, Atlanta, Ga.
Use LEGO® robotics to integrate engineering into middle school physical science classes and meet the NGSS standards. Engage in inquiry activities and receive access to NSF-developed materials.

SESSION 3
(Middle Level)  160B, BCEC
Hallie S. Edgerly (hallieedgerly@gmail.com) and Kate A. Willems (kwillems@adm.k12.ia.us), Adel-DeSoto-Minburn Middle School, Adel, Iowa
Let us introduce you to a collaborative project for grade 8 students spanning science, reading, and writing courses to tell the story of fictional families affected by a genetic disorder.

SESSION 4 (two presentations)
(Middle Level/Informal Education)  161, BCEC
School Buildings Can Teach, Too: Assessment of Direct and Indirect Teaching  (Env)
Victoria A. Kazmerski (vak1@psu.edu), Penn State Erie, Erie, Pa.
Glenn A. McKnight (mcknight@mtsd.org), James S. Wilson Middle School, Erie, Pa.
Green schools can do more than save energy. Learn about how a green school teaches students about innovative and environmentally friendly features.

Watershed Wonders: Inspiring Environmental Stewardship  (Env)
Bernadette M. McEvoy (bmcvoy@miltonps.org), Pierce Middle School, Milton, Mass.
Environmental awareness breeds environmental stewardship. Learn new ways to incorporate watershed education into your middle school curriculum. Students care when they’re aware.

SESSION 5
Hands on the Sun  (Earth)
(Middle Level)  162A, BCEC
Steele W. Hill (steele.w.hill@nasa.gov) and Wendy M. Van Norden (wendy.m.vannorden@nasa.gov), NASA Goddard Space Flight Center, Greenbelt, Md.
Shine new learning in your classroom. Walk away with a dozen techniques/approaches (some hands on) for teaching about the Sun.
SESSION 6 (two presentations)

**Introducing the ChemMatters Compilation Project**

Marta U. Gmureczyk, American Chemical Society, Washington, D.C.

Steven Long (slong@rps.k12.ar.us), Rogers High School, Rogers, Ark.

Are you looking for free, high-quality, and engaging reading materials and activities to integrate reading and chemistry? Come learn about the new ChemMatters compilation project, which includes past articles from ChemMatters with inquiry-based lesson plans correlated with the Common Core State Standards, ELA as well as the Next Generation Science Standards. The goal of this project is to help students think critically as they use engaging content to learn important chemistry concepts.

**Using iTunes U in the High School Science Classroom**

Julie B. Willcott (julie.willcott@staff.foxcroftacademy.org), Foxcroft Academy, Dover-Foxcroft, Maine

Come hear about the development and implementation of a high school chemistry iTunes U course. Additional uses of the iPad in the science classroom will be introduced.

SESSION 7

**Frisbee® Dog Physics**

Jen Gilbert (gilbertmediagroup@gmail.com), DePaul University, Chicago, Ill.

Come examine an inquiry-based physics lesson using media featuring Frisbee dogs and discuss how to create the same level of engagement in your classroom.

SESSION 8

**Wheelock Pathway Session: Connecting Science and Literacy in the Middle School Classroom**

Janet MacNeil (janet_macneil@brookline.k12.ma.us), Brookline (Mass.) Public Schools

Mark Goldner (mgoldner3@gmail.com), Heath School, Brookline, Mass.

Melissa London (melissa_london@brookline.k12.ma.us), Pierce School, Brookline, Mass.

We’ll share a science and literacy toolkit and examples of middle school science discussions and student writing (notebooks, argument writing) that address the NGSS and the CCSS ELA.
SESSION 9
Farm-to-School Digital Stories: Integrating Science, Literacy, and Technology in Primary Classrooms  
(General)  
(Elementary)  
211, BCEC  
Patricia Bricker (bricker@email.wcu.edu), Kelly Tracy, and Nancy Luke, Western Carolina University, Cullowhee, N.C.  
April Hicks, Cullowhee Valley School, Cullowhee, N.C.  
Discover how educators blend hands-on investigations, writing, and digital stories through a Farm-to-School project. Leave with practical strategies for implementing similar projects.

SESSION 10
A Student Exercise in Determining the Efficiency of a Working Photovoltaic Array  
(Physics)  
(High School)  
251, BCEC  
Hughes Pack (hpack@nmhschool.org), Northfield Mount Hermon School, Mount Hermon, Mass.  
Learn how to use real-time data from a photovoltaic array to calculate efficiency. I’ll describe a related exercise using benchtop materials.

SESSION 11
The Shell Science Teaching Award: Fueling Success with Students  
(General)  
252A, BCEC  
Norma Neely (nneely@ou.edu), University of Oklahoma, Norman  
Share your passion and practice by applying for this $10,000 award. Learn from Shell awardees, finalists, and judging panel members. Door prizes—Visa gift cards!

SESSION 12 (two presentations)
(Riding the Wave of the NGSS on a PBL Surfboard)  
(Elementary)  
252B, BCEC  
Catherine M. Koehler, Southern Connecticut State University, New Haven  
This workshop instructs elementary teachers in the use of Problem-Based Learning to help teach engineering design.

Science and Engineering Practices—What’s Art Got to Do with It?  
(General)  
Catherine McCulloch (cmcculloch@edc.org), Education Development Center, Inc., Waltham, Mass.  
Do you know what is going on in the art classroom that can help the science teacher implement the NGSS engineering practices and content? Come find out.

SESSION 13 (two presentations)
(NARST Session: Establishing Trust via Lesson Study)  
(Elementary)  
253A, BCEC  
Sharon Dotger (sdotger@syr.edu), Syracuse University, Syracuse, N.Y.  
Kevin Moquin (fkmoquin@syr.edu), Willowfield Elementary School, Liverpool, N.Y.  
Join us as we explore how teachers and university educators built trust through lesson study to improve elementary science.

NARST Session: Young Children’s Understandings of Earth's Surface Features and Changes  
(Earth)  
Deb C. Smith (debsmith16823@gmail.com), Retired Educator, Bellefonte, Pa.  
The NRC Framework recommends the core disciplinary content, crosscutting concepts, and scientific and engineering practices that students will need in the future. However, there has been little research on K–4 students’ scientific ideas, especially in the Earth sciences. This presentation discusses K–4 children’s ideas about Earth’s surface features and changes, and suggests an early learning progression to support their progress in this area.

SESSION 14
NSTA Press® Session: Reaching the Next Stephen Hawking: Tips for Including Students with Disabilities in Advanced Science Classes  
(General)  
(High School)  
254A, BCEC  
Ed Linz (coachlinz@cox.net), Author and Education Consultant, Springfield, Va.  
Presider: Mary Jane Heater  
Join us as we focus on how to recruit and include students with disabilities into advanced science (AP, Honors) classes.

SESSION 15
If You Want Your Students to Engage with Content Using Textbooks, You’ve Got to Try This Strategy!  
(Gen)  
255, BCEC  
Susan Gran (sgran@purdue.edu), Purdue University, West Lafayette, Ind.  
Triad Summarizing is a cooperative reading strategy used to get all students to engage with and make sense of text. Great for students of all reading abilities!
SESSION 16
Integrating Reading, Writing, and Research into Biotechnology  (Bio)
(Middle Level—High School)  257A, BCEC
Jenna E. Mendell (jennifer.mendell@bridgew.edu) and Meri K. Krevosky (mkrevosky@bridgew.edu), Bridgewater State University, Bridgewater, Mass.
The Whale of a Mystery curriculum promotes reading, writing, communication skills, and scientific literacy in the context of a “progression of inquiry” model.

SESSION 17
Using the Flipped Class as a Stepping-Stone to a Student-centered Classroom  (Bio)
(Middle Level—College)  257B, BCEC
James Schreiner (jschreiner@bbchs.org) and Tony Swafford (tswafford@bbchs.org), Bradley-Bourbonnais Community High School, Bradley, Ill.
Having flipped for three years using case studies as well as problem-based and inquiry learning, we’ll share our expertise on creating your own student-centered classroom.

SESSION 18
Liberating Literacy Strategies for Today’s Science Classroom  (Gen)
(Middle Level—High School)  258C, BCEC
Suzanne Alberich (salberich@mvyps.org) and Connie Alexander (calexander@mvyps.org), Tisbury School, Vineyard Haven, Mass.
Empower and enthuse your students. Take away 10 research-based literacy strategies to help all students become more independent in accessing and learning science content.

SESSION 19
Digitizing the Learning Experience and Taking IT Mobile  (Gen)
(Supervision/Administration)  259B, BCEC
Ben Smith (ben@edtechinnovators.com) and Jared Mader (jared@edtechinnovators.com), York, Pa.
Come learn how to use iPads and other mobile devices in your science classroom…and how to put your content on your students’ devices.

Middle School Science with Robotics
Come by booth #644 and check it out!

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SESSION 20

Building Teacher Capacity: The Role of Science Leader-Teachers  
(General)  
Gelyn Cornell (gelyn.cornell@aliefisd.net) and Monica Ibanez (monica.ibanez@aliefisd.net), Alief ISD, Houston, Tex.  
Joan Henington (joan.henington@aliefisd.net), Youngblood Intermediate School, Houston, Tex.  
Learn effective systems to build and sustain a cadre of science leader-teachers with a significant impact on student learning and school improvement.

SESSION 21 (two presentations)

Helping Students Across the Transition from Small, Student-collected Datasets to “Big Data”  
(General)  
Kim A. Kastens (kkastens@edc.org), Ruth A. Krumhansl, and Irene Baker (ibaker@edc.org), Education Development Center, Inc., Waltham, Mass.  
Help your students prepare for a world of “Big Data” by building on existing “small data” activities.

Performance Assessments in Earth Science  
(General)  
Colleen K. Buzby (buzbywork@gmail.com), Antioch Community High School, Antioch, Ill.  
Are your students truly gaining science reasoning skills from lab? Take examples of authentic assessments for earthquakes, water quality, mineral ID, and more that emphasize process skills over rote memorization.

SESSION 22

Preparing Today’s Youth to Become Tomorrow’s Computational Thinking–enabled Scientists and Engineers  
(General)  
Joyce Malyn-Smith (jmalynsmith@edc.org), Education Development Center, Inc., Waltham, Mass.  
Irene Lee, Santa Fe Institute, Santa Fe, N.Mex.  
Let’s review what computational thinking–enabled STEM professionals know and do. We’ll discuss if today’s students can succeed in tomorrow’s scientific enterprise.

SESSION 23

Apps in the Middle School Classroom  
(Middle Level)  
Katye M. Couch and Sally Spraker, Girls Preparatory School, Chattanooga, Tenn.  
Find out how apps, app combinations, and other creative uses of the iPad have transformed our middle school Earth and life science classrooms. Also, we will share challenges of using iPads or similar devices in the classroom.

SESSION 24 (two presentations)

SCST Session: Assessing the NGSS Performance Expectations: Teachers’ Reflections on Successes and Challenges when Using Hands-On Performance Tasks  
(General)  
Renee M. Clary (rclary@geosci.msstate.edu), Mississippi State University, Mississippi State, Miss.  
Deborah L. Tucker (deborahlt@aol.com), Independent Science Education Consultant, Napa, Calif.  
Charles L. Wax, Retired Educator, Mississippi State, Miss.  
Hear from middle level teachers introduced to and trained with hands-on performance assessment tasks about both the benefits and challenges for classroom implementation.

SCST Session: Headline News: Using Current Topics to Facilitate Student Research, Argumentation, and Understanding of the Multivariate Nature of Controversies  
(General)  
Renee M. Clary (rclary@geosci.msstate.edu), Mississippi State University, Mississippi State, Miss.  
Students identify controversies, research opposing viewpoints, and argue assigned positions. Although students’ primary views typically remained unchanged, they reported greater awareness of issues’ multivariate nature.

SESSION 25

Using Energy to Connect Multidisciplinary Curricula  
(General)  
Allison Scheff (ascheff@bhe.mass.edu) and Robert F. Chen (bob.chen@umb.edu), UMass Boston, Mass.  
Pam Pelletier (ppelletier@boston.k12.ma.us), Boston (Mass.) Public Schools  
Join us as we share energy connection cards to help you navigate to the best places for making connections across grade levels and disciplines.

SESSION 26

An Ice Core Classroom Investigation That Embodies the Three Dimensions of the Next Generation Science Standards  
(Earth)  
Donna L. Young (donna@aavso.org), NASA/Chandra E/PO Office, Bullhead City, Ariz.  
Experience a unique ice core investigation that incorporates absolute and relative dating, history, volcanoes, solar proton events, energy cycles, Earth systems, terrestrial events, and supernovas.
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SESSION 27
Teaching with Minecraft Across the Content Areas (Gen)
(Elementary—High School) Pacific C, Renaissance
Wayne J. Wheatley (wwheatley@dcds.edu), Detroit Country Day Middle School, Beverly Hills, Mich.
Many middle school students already love a game called Minecraft. Learn how you could use it to teach science, engineering, architecture, and even history!

SESSION 28
ASTE Session: A Paradigm Shift Is Underway—Are You and Your Students Ready? (Gen)
(General) Pacific F, Renaissance
Jeff C. Marshall (marsha9@clemson.edu), Clemson University, Clemson, S.C.
The NGSS requires a radical departure from traditional approaches. Come learn what ultimately has changed and what you can do to excel in today’s new classroom.

SESSION 29
POGIL (Process-Oriented Guided Inquiry Learning) for the AP Physics Classroom (Phys)
(High School—College) Pacific G/H, Renaissance
Sandeep J. Coats-Haan (sandeep.coatshaan@lakotaonline.com), Lakota East High School, Liberty Township, Ohio
Structured POGIL activities replace lectures with minds-on learning to ensure that the instructor is not the only person thinking in the AP Physics classroom.

SESSION 30
Sci-Fi and STS for Literacy (Gen)
(High School) Lighthouse I, Seaport
James E. Hollenbeck (jehollen@ius.edu), Indiana University Southeast, New Albany
Science fiction uses scientific concepts with imagination, creativity, and “what if?” Come learn how we integrate science fiction in methods to teach literacy with science, technology, and society.

SESSION 31
Climate Change—STEM Project-based Inquiry Modules (Gen)
(Middle Level—High School) Plaza A, Seaport
Jaclyn F. Austin (jaclyn_austin@hcpss.org) and Mary Weller (mary_weller@hcpss.org), Howard County Public School System, Ellicott City, Md.
Through a National Commission on Teaching & America’s Future (NCTAF) grant, schools have tackled climate change! Discover ways to integrate disciplines, engage scientists and educators, and deliver project-based STEM inquiry modules.

SESSION 32
Literacy and Inquiry with High School Science Notebooks (Gen)
(High School) Plaza B, Seaport
Brittany A. Stanford and Eric W. Schwartz (eschwartz_56@hotmail.com), Grace King High School, Metairie, La.
Promote organization, cooperative learning, critical thinking, literacy, and inquiry in your classroom with rigorous notebooks. See student samples from biology and physics classrooms and leave with lesson plans for your first unit!

SESSION 33
NSELA Session: Tools for Science Leaders, Part 1 (Gen)
(General) Alcott, Westin Waterfront
Darlene Ryan, Glenwood Elementary School, Chapel Hill, N.C.
Elizabeth A. Allan (eallan@uco.edu), University of Central Oklahoma, Edmond
Gail G. Hall, Vermont Dept. of Education, Montpelier
Bob Sotak (bsotak@mac.com), Washington Alliance for Better Schools, Edmonds
Brian Day, Everett (Wash.) Public Schools
Keri E. Randolph (krandolph@pefchattanooga.org), Southeast Tennessee STEM Innovation Hub, Chattanooga
Nicole Jacquay (nicole.jacquay@sdhc.k12.fl.us), Michele Detwiler (michele.detwiler@sdhc.k12.fl.us), and Mindy Pearson (mindy.pearson@sdhc.k12.fl.us), Hillsborough County Public Schools, Tampa, Fla.
Presider: Darlene Ryan
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 34
Fostering and Enhancing Data Analysis and Literacy Through Visual Representation (Gen)
(Middle Level–College/Supv.) Burroughs, Westin Waterfront
Bill Dinkelmann (bdinkelm@oaisd.org), Ottawa Area Intermediate School District, Holland, Mich.
Free software tools are available to make sense of data sets. See how ArcGIS, infogr.am, and Tableau Public can be incorporated into teaching and student activities.

SESSION 35
Addressing the Unique Needs of Diverse Learners—Particularly Those with Learning Disabilities—in Introductory Biology Curricula (Bio)
(High School–College) Faneuil, Westin Waterfront
Abigail P. Littlefield (alittlefield@landmark.edu), Landmark College, Putney, Vt.
Emphasis will be placed on specific techniques to adapt the curriculum of introductory biology courses (high school and college) to better serve traditional learners and those with learning disabilities.

SESSION 36 (two presentations)
A Model to Disseminate NGSS Statewide (Gen)
Rayelynn Connable (rconnole@mtech.edu), Montana Tech, Butte
Christina Gillespie (christina.gillespie@livingston.k12.mt.us), East Side Intermediate School, Livingston, Mont.
Attention will be paid to a statewide dissemination model designed to deliver high-quality professional development on the NGSS.
Cognitive Planning for the K–8 NGSS: A Team Approach! (Gen)
Keith G. Palz (kpalz@distinctiveschools.org), Distinctive Schools, Chicago, Ill.
Take your science instruction to the next level by collaboratively focusing on the BIG picture—getting deeper into the NGSS.

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SESSION 37
Integrating CCSS and NGSS: Building Leadership Capacity to Transform Science Teaching and Learning  (Bio)
(Middle Level–High School/Supv.)  Griffin, Westin Waterfront
Dawn O’Connor (dawno@acoe.org), Alameda County Office of Education, Hayward, Calif.
Let’s explore a model for building distributed leadership capacity of districts to support systemic implementation of the NGSS and CCSS in science.

SESSION 38
Scaffolding Students Toward Argumentation: Strategies for Developing Literacy and Reasoning Skills  (Gen)
(Secondary–High School)  Harbor Blrm. II, Westin Waterfront
Douglas Llewellyn (dllewellyn@sjfc.edu), St. John Fisher College, Rochester, N.Y.
Find out how to take sensible, student-friendly steps to promote literacy and scientific reasoning skills as fostered through the Common Core State Standards, the NRC Framework, and the NGSS.

SESSION 39
Five Easy Pieces—From STEAM to Telescopes: A Teacher Leadership Montage  (Gen)
(General)  Harbor Ballroom III, Westin Waterfront
Steven G. Ruthford (ruthfords@einsteinfellows.org), Sehome High School, Bellingham, Wash.
Britta Culbertson (brittaculbertson@gmail.com), Einstein Fellow, NOAA Office of Education, Washington, D.C.
Joseph Isaac (jisaac@@einsteinfellow.trianglecoalition.org), Einstein Fellow, National Science Foundation, Arlington, Va.
Chris T. Campbell (ccampbell@lincolnschools.org), Simsboro High School, Ruston, La.
Using an interactive presentation style, these accomplished teacher leaders will present valuable techniques that can immediately impact student learning in your classroom, school, or district.

SESSION 40
Evidence-based Argumentation: Engaging Science Students in Boston Public Schools  (Gen)
(General)  Lewis, Westin Waterfront
Brandon Finegold (brandon@bostondebate.org) and Paul E. Madden (paul@bostondebate.org), Boston Debate League, Boston, Mass.
Rachel Chess and Ivyrose Hess (ivyrose.hess@gmail.com), Jeremiah E. Burke High School, Dorchester, Mass.
Learn multiple debate-style activities from evidence-based argumentation, an initiative that has improved student literacy skills in science in Boston Public Schools.

SESSION 41
Infusing Engineering into the High School Physics Curriculum  (Phys)
(High School/Supervision)  Paine, Westin Waterfront
Kristen B. Wendell (kristen.wendell@umb.edu), UMass Boston, Mass.
Derek van Beever, Newton South High School, Newton, Mass.
Shu-Yee Chen Freake (chentyi@gmail.com), Newton North High School, Newtonville, Mass.
Join us as we showcase an approach for infusing the engineering concepts of design, analysis, modeling, and systems into high school physics courses.
8:00–9:00 AM Workshops

Project-based Approach to Teaching Newton’s Three Laws with Coaster Cars (Chm) (Middle Level) 160A, BCEC
Beth Gorak and Mary K. Fassbender (mary.fassbender@franklin.k12.wi.us), Forest Park Middle School, Franklin, Wis.
Sharon A.L. Hushak (sharon.hushek@franklin.k12.wi.us), Ben Franklin Elementary School, Franklin, Wis.
Test-drive new learning in your classroom. Align your curriculum to NGSS practices and crosscutting concepts using a project-based hands-on unit to teach Newton’s three laws using wooden coaster cars.

BSCS Pathway Session: Exploring the NGSS Practices of Science and Engineering (Gen) 203, BCEC
Brooke Bourdélat-Parks (bbparks@bscs.org) and Jody Bintz (jbinetz@bscs.org), BSCS, Colorado Springs, Colo.
This interactive session will deepen participant understanding of the science and engineering practices. The session will focus on what teachers and students are doing when using each practice in the STEM classroom. Participants will explore ideas for scaffolding these practices so that students come to understand and use each practice to make sense of scientific phenomena.

From Data Visualization to Argument—Tools for Lifelong Science Literacy (Bio) (High School) 205A, BCEC
Amy F. Smith (amy.falk.smith@iamstem.ucdavis.edu) and Alisa Lee, University of California, Davis
Join us and get introduced to SeeIt, a free online data visualization tool designed to help students interpret biostatistical data and write evidence-based arguments.

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1st Prize A Ward’s DataHub unit of your choice. A $600 value.
3rd Prize TeacherGeek Advanced Rubber Band Racer, Classroom 10-Pack. A $150 value.
Creating LGBTQ-inclusive Science Learning Classrooms (Bio)  
(Jenny Betz (jbetz@glsen.org), GLSEN, New York, N.Y.) and (Eric V. Patridge (eric.patridge@ostem.org), oSTEM, West Haven, Conn.)
Learn about the needs/strengths of LGBTQ learners. We will then break into differentiated groups to focus on improving our practices within science classrooms.

Is That a FACT? Formative Assessment Classroom Techniques for the Elementary Science Classroom (Gen)  
(Carolyn Mohr, Southern Illinois University, Carbondale) and (Tina A. Harris (taharris79@yahoo.com), Ball State University, Muncie, Ind.)
This hands-on workshop provides teachers with toolboxes of formative assessment tools/strategies to take back to their classrooms and use. Come check out the FACTs.

Integrating Science with Core Academic Subjects in the Preschool and Elementary Classroom (Gen)  
(Katie M. Morrison (katiem@ucds.org) and Deb Chickadel (debc@ucds.org), University Child Development School, Seattle, Wash.)
Investigate the interconnectedness of subjects and take away planning and implementation strategies to more easily incorporate science into the school day.

Designing the Future (Gen)  
(Shirley Willingham (sw6@rice.edu), Rice University, Houston, Tex.)
Children are natural engineers. Learn how to integrate design challenges into your everyday science curriculum using engineering briefs. Practice by designing and testing your own beam bridge!

Can You Justify That? Tricks and Tips to Easily Assess the Justifications in Students’ Arguments (Gen)  
(Amanda M. Knight (knightam@bc.edu), Boston College, Chestnut Hill, Mass.) and (Kris Grymonpré (krgrymonpre@gmail.com), Dever-McCormack School, Dorchester, Mass.)
We will present an innovative scientific argumentation lesson and illustrate how to assess students’ oral and written arguments using a checklist and “pathway to mastery.”

The Little Things That Run the World: Soil Ecology in the Classroom (Env)  
(David L. Brock (brockda@rpcs.org), Roland Park Country School, Baltimore, Md.)
Come discover the realm of the amoeba! Learn how to engage your students in field studies exploring the ecology of the microscopic world.

Using Electric Circuit Puzzles for Design and Assessment (Phys)  
(Cherubim Cannon and Janice Porter (porter42b@aol.com), P.S. 005 Dr. Ronald McNair, Brooklyn, N.Y.) and (Anja Hernandez (anjahernandez@ccny.cuny.edu), City College of New York, N.Y.) and (Joaquin Rodriguez (jrvillage@rcr.com), PS 41M The Greenwich Village School, New York, N.Y.) and (Heather-Marie Montilla (heather@doingarttogether.org), Doing Art Together, Inc., New York, N.Y.)
Electric circuit diagrams can be challenging! Learn to make and use a 4x4 block puzzle that can represent a large variety of circuits.

Improving Observation Skills Through Dichotomous Keys (Bio)  
(Richard A. Grumbine (rgrumbine@landmark.edu), Landmark College, Putney, Vt.)
In this workshop, participants will engage in a hands-on activity designed to enhance the observation skills of biology students.

NSTA Press® Session: Earth Science Puzzles—Making Meaning from Data (Earth)  
(Margie Turrin (mkt@ldeo.columbia.edu), Lamont-Doherty Earth Observatory, Columbia University, Palisades, N.Y.)
Empower your students to learn science the way scientists do—from collected evidence! Infuse Data Puzzles into your Earth and environmental science curricula.
Using Case Study Analysis as a Tool for Differentiating Science Instruction for Students with Special Needs

(Gen)  
( Elementary—High School)  
Atlantic 2, Renaissance  
Gregory Borman, The City College of New York, N.Y.  
Lionel Callender (lcallen4@schools.nyc.gov) and Derek Ramdass (dramdas@schools.nyc.gov), New York City Dept. of Education, Floral Park, N.Y.

Analyze a variety of case studies in small groups to help identify effective strategies for differentiating science instruction for students with disabilities.

Achieving the Goal of Literacy: Science and Literature as Partners

( Gen)  
( Middle Level—High School)  
Constitution, Seaport  
Norman G. Lederman (ledermann@iit.edu), Judith S. Lederman (ledermanj@iit.edu), and Selina L. Bartels (sbartels@hawk.iit.edu), Illinois Institute of Technology, Chicago

Teach language arts effectively and learn how to incorporate, teach, and assess the Common Core State Standards, ELA into your current science curriculum. Free materials!

Enhancing Literacy and Inquiry in Science with Technology

( Gen)  
( General)  
Commonwealth Ballroom C, Westin Waterfront  
Loryn N. Windwehen (lorynw@gmail.com), Harris Middle School, San Antonio, Tex.

Come to this hands-on workshop to see how we can incorporate Web 2.0 and other technology resources to encourage inquiry and literacy. You’re sure to love these easy-to-use sites and apps!

Effective STEM Education: Project Envisioning with Young Makers

( Gen)  
( Preschool—Middle Level)  
Douglass, Westin Waterfront  
Jerry D. Valadez (jdvscience@yahoo.com), Fresno State University, Fresno, Calif.  
Ana G. Lopez (anaglopez4@att.net), Central Valley Science Project, Fresno, Calif.

Discover how to foster a collaborative culture of creativity, innovation, and experimentation with cross-disciplinary projects that effectively teach STEM and science and engineering practices.

NCAA Final Four Watch Party!

Basketball Physics

Saturday, April 5  
7:30 PM–12 Midnight  
Atlantic Ballroom, Renaissance

(By ticket only: M-9; $20 *includes snacks and one beverage ticket, distributed at the door)

Join your colleagues on Saturday night as NSTA President Bill Badders invites you to attend the NSTA NCAA Final Four Watch Party—if you enjoy basketball, the science of the game, or just want to have an evening of fun with colleagues. Our guest speaker, John J. Fontanella, professor emeritus of Physics at the U.S. Naval Academy, will share tips for improving your game and understanding more about the science and physics of basketball!

Sponsored in part by Vernier Software & Technology.
CSSS Session: Core K–12 Ideas That Support Student Understanding of the NGSS  
(Informal Education)  
Harbor Ballroom I, Westin Waterfront

Brett Moulding (mouldingb@ogdensd.org), Council of State Science Supervisors, Ogden, Utah

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

Attention will be paid to illustrating how the logic progression of the disciplinary core ideas as described in the NRC Framework support student understanding of the NGSS.

DuPont Presents: Bringing Literacy and STEM Together—BLAST  
(Elementary)  
Otis, Westin Waterfront

Renee G. O’Leary, Holy Angels School, Newark, Del.

Peggy Vavalla, DuPont, Wilmington, Del.

BLAST for Success at School and Home (for grades 3–5) uses hands-on explorations and “fractured fairy tales” as catalysts to introduce STEM concepts to early learners. Participants will receive sample plans and materials that utilize multisensory and integrated practices that can be used immediately in the classroom.

Crystallography: A World of Wonders  
(Elementary—High School)  
Stone, Westin Waterfront

Claudia Rawn (crawn@utk.edu), University of Tennessee, Knoxville

Celebrate the International Year for Crystallography 2014 with simple crystallographic concepts explored through hands-on activities suitable for all grades.

Life Cycle of the Monarch Butterfly  
(General)  
Webster, Westin Waterfront

Jim O’Leary (oleary@mdsci.org) and Maureen Sullivan, Maryland Science Center, Baltimore

De Cansler (decansler@gmail.com) and Katie-Lyn Bunney (kbunney@umn.edu), University of Minnesota, St. Paul

Examine the four stages of the Monarch butterfly with live specimens of each stage—egg, larva, pupa, and adult monarchs.

8:00–9:00 AM Exhibitor Workshop
Engineering in the Next Generation Science Standards  
(Phys)  
(Grades 9–12)  
156C, BCEC
Sponsor: It’s About Time

Cary I. Sneider, Portland State University, Portland, Ore.

The NGSS will break from previous documents by merging science and engineering. This workshop will illustrate how a new high school curriculum—Engineering the Future: Science, Engineering, and the Design Process—can help students develop their abilities to argue from evidence and learn core ideas about energy through engaging hands-on activities.

8:00–9:15 AM  Presentation
SESSION 1
Meet Me in the Middle Session: Bring Your Own Breakfast (BYOB) for Middle School Educators  
(Middle Level)  
Grand Ballroom A/B, Westin Waterfront


Bring your own breakfast to this networking session with middle school leaders. Roundtables will feature topics related to the NGSS, science literacy, and more!

8:00–9:30 AM  Workshop
NGSS Pathway Session: Developing a STEM Philanthropic Plan  
(General)  
206 A/B, BCEC

Mariel Milano (mariel.milano@ocps.net) and Debi Pedraza (debi.pedraza@ocps.net), Orange County Public Schools, Orlando, Fla.

Jo Anne Vasquez (jvasquez@helios.org), 1996–1997 NSTA President, and Helios Education Foundation, Phoenix, Ariz.

This session will focus on the development of a strategic plan for securing resources to launch a large-scale STEM initiative. Participants will examine the development process behind a large urban district’s STEM philanthropic plan and identify ways to begin local philanthropic efforts.
8:00–9:30 AM  Exhibitor Workshops

Comparative Vertebrate Anatomy with Carolina’s Perfect Solution® Specimens  (Bio)
(Grades 6–12)  102A, BCEC
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Animals look different, but are they really that different on the inside? Students find out firsthand with this hands-on dissection of a pig, rat, shark, and frog. It’s a fascinating comparative dissection activity that features our very best Carolina’s Perfect Solution vertibrate specimens. Free dissection supplies and great door prizes.

Inquiry + Nonfiction Readings = Engaged Biology and Chemistry Students  (Bio)
(Grades 9–12)  102B, BCEC
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Seamlessly integrate nonfiction readings and authentic technical text into your hands-on biology or chemistry curriculum. Learn how combining science inquiry with newspaper articles, book excerpts, and other real-world informational text can increase interest and foster content mastery as students critically think through claims based on evidence. The result? Scientifically literate citizens.

Captivating Digital Natives’ Imaginations with STEM Visual Literacy  (Gen)
(Grades K–8)  103, BCEC
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Reflect on the makeup of the Next Generation Science Standards. Apply this knowledge and understanding to effectively integrate visual literacy to engage students of the digital age. Learn how to incorporate engaging online resources into your inquiry-based classroom instructional strategies.

Explore STEM Integration with PASCO Probe—Free Sensor Set for Five Attendees!  (Gen)
(Grades 6–12)  104A, BCEC
Sponsor: PASCO scientific
Tom Loschiavo, PASCO scientific, Roseville, Calif.
Experience a showcase of sensor-based activities compatible with iPad, Android, Chromebook, Mac, and PC environments that engage students as they deepen their understanding of science concepts. A variety of topics in biology, chemistry, physics, Earth, environmental, and physical science will be available for demonstration. Five lucky attendees will win a 50th Anniversary Sensor Pack—a $600 value!

Transform Your Classroom and Integrate Engineering Concepts with PLTW’s K–12 STEM Programs  (Gen)
(Grades K–12)  104B, BCEC
Sponsor: Project Lead The Way
Carolyn Malstrom (cmalstrom@pltw.org), Project Lead The Way, Indianapolis, Ind.
Hear from fellow educators about the transformative power of Project Lead The Way’s activity-, project-, problem-based STEM programs. PLTW’s curricula are aligned to the Common Core State Standards and NGSS; proven to improve student performance; and emphasize critical thinking, problem solving, and the engineering design process.

Biomes and Invasive Species  (Bio)
(Grades 9–12)  104C, BCEC
Sponsor: LAB-AIDS, Inc.
Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.
How do the characteristics of a biome determine the plant and animal life found there? How do nonnative species survive to become invasive species? In this activity from the SEPUP’s Science and Global Issues: Biology program from LAB-AIDS, students match a set of organism cards to proper climate/biome cards, then use literacy strategies to consider the impact of invasive species. Participants receive a full set of kit and print materials for later use.

College Readiness in Science: What’s Ideal…and What’s Real?  (Bio)
(Grades K–12)  105, BCEC
Sponsor: Pearson
Kenneth R. Miller, Brown University, Providence, R.I.
One of the stated goals of both new national education initiatives, the CCSS and the NGSS, is the preparation of all students for college and career. Given the increasingly technical nature of the workplace in the decades ahead, acquiring skills in science and mathematics will become even more important for all students, whether they move directly into careers or continue their educations at the college level.
Plate Tectonics: Continents on the Move  
(Grades 5–12)  
106, BCEC
Sponsor: Simulation Curriculum Corp.
Herb Koller (hkoller@simcur.com), Simulation Curriculum Corp., Minnetonka, Minn.
Join us as we use Simulation Curriculum’s The Layered Earth to investigate continental drift and the theory of plate tectonics. Classroom-ready lessons engage students with interactive learning activities, thought-provoking exercises, and historical links while displaying a contextual and interactive model of Earth.

STEM Resources for Teaching Climate Change: Easy, Engaging, and Free  
(Grades 6–College)  
107A, BCEC
Sponsor: Howard Hughes Medical Institute
Laura Dinerman, Sherwood High School, Rockville, Md.
Mark Nielsen, Howard Hughes Medical Institute, Chevy Chase, Md.
Earth’s climate is dynamic and its history is written in the rocks. This workshop will highlight free classroom resources developed by HHMI’s BioInteractive website for teaching climate both in the past and present. Using our popular Earth history app, we will highlight what is known about how climate has changed in the past and how that improves our understanding of present-day climate change.

Neuroscience as a STEM Subject  
(Grades 6–College)  
107B, BCEC
Sponsor: Society for Neuroscience
Rochelle D. Schwartz-Bloom, Duke Institute for Brain Sciences, Durham, N.C.
James E. Olson, Wright State University, Dayton, Ohio
Neuroscience isn’t just for biology class! Learn how you can use the science of the brain to enliven your chemistry or physics lessons. Explore relevant and engaging topics like drug addiction, neuroimaging, and the action potential; discuss teaching approaches and lesson ideas; and learn hands-on activities to take back to your classroom.

Applying Common Core State Standards, ELA Through Active Science Instruction  
(Grades K–5)  
107C, BCEC
Sponsor: Sangari Active Science
Ellen Mintz (emintz621@gmail.com), Charleston County Schools, Charleston, S.C.
The Common Core State Standards, ELA require students to read using informational text and write using skills encouraged through science instruction. Using a hands-on/minds-on activity, we will investigate and use the data we collect to write a claims and evidence response. Reading strategies will be used to tie our investigation to informational text.

Bats, iPads, and Citizen Science in the Classroom  
(General)  
108, BCEC
Sponsor: Wildlife Acoustics, Inc.
Sherwood Snyder (sherwood@wildlifeacoustics.com), Wildlife Acoustics, Inc., Concord, Mass.
Learn how to turn your iPad, iPhone, and iPod into a bat detector/recorder/analyzer for bioacoustics and Citizen Science bat classroom projects. Wildlife Acoustics will introduce the Echo Meter Touch—ultrasonic is now ultracool.

Exploring the Molecular World: Scientifically Accurate Visualization and Simulation Tools  
(Chem)  
109B, BCEC
Sponsor: Wavefunction, Inc.
Paul Price (sales@wavefun.com), Wavefunction, Inc., Irvine, Calif.
The 3-D visualization of modern software is uniquely suited to help students develop an intuitive grasp of the molecular basis of chemistry. Bring your laptop (Windows or Mac OS X) to this hands-on workshop and learn how to support your teaching with the powerful recent releases of ODYSSEY High School Chemistry and ODYSSEY AP Chemistry.

Teaching Astronomy During the Day and Beyond the Classroom  
(General)  
150, BCEC
Sponsor: Fisher Science Education
Robert Marshall (marshallr@carnegiesciencecenter.org), Carnegie Science Center, Pittsburgh, Pa.
Join an expert educator from the Buhl Planetarium and Observatory as you explore STEM activities and educational research opportunities to implement in your classroom. Then, investigate initiatives to continue learning outside the classroom such as observing projects and star parties, complete with an instructive hands-on telescope tutorial.

SparkFun: “Scratch”ing the Surface of Programming  
(General)  
151A, BCEC
Sponsor: SparkFun Electronics
Linz Craig (linz@sparkfun.com), SparkFun Electronics, Boulder, Colo.
Scratch™ is an open-source application developed at MIT to teach students as young as five years old to program using
drag and drop blocks. We will uncover an often overlooked feature of Scratch and integrate external sensors and inputs through our PicoBoard. We will enhance existing projects such as using light sensors to control your animation’s background, sliders to control character speed, and sound to make characters jump. If you are already using Scratch, come see what new activities you can do to enhance student learning. If you’ve never seen Scratch before, come and play with us—we have lots to share!

**Genetics: Crazy Chromosomes**  
*Bio*  
(Grades 5–12)  
151B, BCEC

**Sponsor:** CPO Science/School Specialty Science

**Scott Eddleman** and **Nathan Olsson,** CPO Science/School Specialty Science, Nashua, N.H.

This workshop uses our new Crazy Chromosomes along with our Crazy Traits set. Explore the connection between traits, chromosomes, genes, and DNA by building a model of your creature’s chromosomes. Use the chromosomes to model the processes of meiosis and fertilization. Take away strategies for addressing the NGSS performance expectations.

**Online Assessment That Informs Instruction!**  
*Gen*  
(Grades 3–6)  
152, BCEC

**Sponsor:** Delta Education/School Specialty Science—FOSS

**Kathy Long** and **Brian T. Campbell,** The Lawrence Hall of Science, University of California, Berkeley

Join developers for an introduction to the new assessment system created for FOSS 3rd Edition, including computer software (FOSSmap). Experience how formative assessment plays an integral role throughout the FOSS program. Grades 3–6 students can now take benchmark assessments online with most items automatically coded to generate useful reports.

**K–8 Science with Vernier**  
*Gen*  
(Grades K–8)  
153A, BCEC

**Sponsor:** Vernier Software & Technology

**David Carter** ([info@vernier.com](mailto:info@vernier.com)), Vernier Software & Technology, Beaverton, Ore.

Conduct a variety of experiments for elementary and middle school science using Vernier sensors with a LabQuest 2 or computer in this engaging hands-on workshop. Experience how Vernier has been incorporating the principles of the NGSS science and engineering practices for 33 years!

**Water Quality with Vernier**  
*Env*  
(Grades 7–College)  
153B, BCEC

**Sponsor:** Vernier Software & Technology

**Jack Randall** ([info@vernier.com](mailto:info@vernier.com)), Vernier Software & Technology, Beaverton, Ore.

Learn how to use sensors and LabQuest 2 with its Data Matrix Mode and built-in GPS to study water quality in the field. Try the new Optical DO Probe, designed to make dissolved oxygen measurements easy! See how to map your data on Google Maps using Logger Pro software.

**Inspire Scientific Minds with Technology and Manipulatives**  
*Gen*  
(Grades 3–12)  
153C, BCEC

**Sponsor:** Scientific Minds

**Kathy Reeves** and **Angie Casteel,** Scientific Minds, Orange, Tex.

Teach critical science standards with technology and manipulatives using Scientific Minds’ new lab kits for grades 3–8, biology, and chemistry. Lessons support the standards of all states and the NGSS. Attendees receive door prizes, a free lab kit, and trial access to the award-winning Science Starters program.

**Evaluating Student Knowledge: Formative Assessments with Discovery Education Science Techbook**  
*Gen*  
(Gen)  
154, BCEC

**Sponsor:** Discovery Education

**Duane Waber,** Discovery Education, Silver Spring, Md.

In this workshop, we will explore different methods of formative evaluation using the Discovery Education Science Techbook. We will take a close look at the rich variety of ongoing assessment tools in the Techbook, including brief constructed responses, online assessments, student worksheets, the writing prompt builder, interactive science journals, and more.

**Fun with Ward’s Forensics and the NGSS**  
*Chem*  
(Grades 9–12)  
156A, BCEC

**Sponsor:** Ward’s Science

**Presenter to be announced**

Discover how forensics fits the framework for the Next Generation Science Standards with a hands-on activity involving blood spatter and fingerprint evidence. You’ll learn how to lead your students through inquiry-based crime solving while practicing forensic science techniques and addressing math and technology in context using math and computational thinking.
MINDSTORMS® EV3 Robotics in the Middle School Classroom—Getting Started  
(Grades 6–8)  
156B, BCEC  
Sponsor: LEGO® Education
William J. Church, Profile High School, Bethlehem, N.H.  
Middle school physical science + robotics = great learning experiences! Get your hands on the latest LEGO MINDSTORMS Education EV3 curriculum and resources designed to address the Next Generation Science Standards and cover renewable energy, thermal physics, mechanics, and light.

Fantastic Physical Science Demonstrations from Flinn Scientific  
(Phys)  
(Grades 6–12)  
258A, BCEC  
Sponsor: Flinn Scientific, Inc.
Janet Hoekenga (jhoekenga@flinnsci.com) and Mike Marvel (m marvel@flinnsci.com), Flinn Scientific, Inc., Batavia, Ill.  
Amaze your students with quick demonstrations that teach common physical science topics, including density, motion, force and equilibrium, rotation, waves, light and color, energy, pressure, and scientific inquiry. More than a dozen effective demonstrations will be performed. Handouts provided for all activities.

What the Heck Happened?!?!  
(Grades 6–10)  
258B, BCEC  
Sponsor: Educational Innovations, Inc.
Discrepant events seize students’ attention, and Educational Innovations has real jaw-droppers. Come explore our favorite student confusers. Door prizes and freebies!

You Be The Chemist®: Activities for Making Chemistry Fun!  
(Chem)  
(Grades 5–8)  
Pacific D/E, Renaissance  
Sponsor: The Dow Chemical Co.
The Dow Chemical Company and Chemical Educational Foundation® (CEF), a national nonprofit organization, have partnered to introduce CEF’s You Be The Chemist (YBTC) educational programs. These innovative programs introduce students to the central role of chemistry in everyday life by providing educators with inquiry-based and easy-to-use activities. Join us and engage in experiment demonstrations from CEF’s in-depth lesson plan guides (take home a complimentary copy of the guide) and discuss ways to integrate similar content into your curriculum! CEF will also introduce the organization’s other YBTC offerings, which include a hands-on professional development workshop for educators and an exciting academic competition for their students!

8:00–10:00 AM  Workshops
PDI  
AMNH Pathway Session: Analyzing and Interpreting Data Using Visualizations and Scientific Data Sets  
(Earth)  
(Middle Level–High School)  
208, BCEC  
Sponsor: American Museum of Natural History, New York, N.Y.
Dave Randle (d randle@amnh.org) and Jay Holmes (jholmes@amnh.org), American Museum of Natural History, New York, N.Y.  
This session engages in visualizations of GRACE scientific data on ice sheets in Greenland and Antarctica to explore how climate change is affecting these regions.
8:00–10:00 AM  **Elementary Extravaganza**  
*(Preschool–Elementary)*  
Ballroom East, BCEC  

This Extravaganza is not to be missed! Join elementary groups of professionals for an exceptional opportunity—more than 100 presenters will provide ideas. 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, and much more will be available to participants. Come grab some coffee, enter to win prizes, and walk away with a head full of ideas and arms full of materials! Visit *bit.ly/1dhrzPk* for a complete list of Extravaganza participants or please pick up a program at the door.


This event is sponsored in part by Carolina Biological Supply Co.; Center for Educational Outreach, Baylor College of Medicine; Delta Education; Educational Innovations, and Science Companion.

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8:00–11:15 AM  **Short Course**  
*Our Changing Earth: New England’s Geologic Past*  
*(SC-8)*  
Elementary–Middle Level  
Tremont, Marriott Copley Place  
Tickets Required; $45  
Jennifer Cross Peterson *(jenniferpeterson@hmsc.harvard.edu)* and Arielle Ascrizzi *(arielle_ascrizzi@harvard.edu)*, Harvard Museum of Natural History, Cambridge, Mass.

David Heiser *(david.heiser@yale.edu)* and Jim Sirch *(james.sirch@yale.edu)*, Yale Peabody Museum of Natural History, New Haven, Conn.

For description, see Volume 1, page 54.

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8:00 AM–12 Noon  **Short Course**  
*We’re All in This Together: Cooperative Learning in the Science Classroom*  
*(SC-9)*  
Grades K–8  
Boylston, Marriott Copley Place  
Tickets Required; $41  
Mia Dubosarsky *(mdubosarsky@wpi.edu)*, The STEM Education Center at Worcester Polytechnic Institute, Worcester, Mass.

For description, see Volume 1, page 54.

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8:30–10:00 AM  **Exhibitor Workshop**  
*Worm and Squirm Your Way into Behavior Labs (AP Big Ideas 1, 2, 3, 4)*  
*(Bio)*  
Grades 9–College  
157B, BCEC  
Sponsor: Bio-Rad Laboratories  
Damon Tighe *(damon_tighe@bio-rad.com)*, Bio-Rad Laboratories, Hercules, Calif.

How do genes influence behavior? Use the model organism *C. elegans* (a nematode) to answer this question in an engaging activity that compares normal and mutant worm behavior. We will explore worm taste preferences in a simple and fast chemotaxis assay, and examine the connection of our worm mutant to human diseases. Come see this great alternative to AP fruit fly behavior lab!

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8:30–10:30 AM  **Meeting**  
*NSTA Reports Advisory Board Meeting*  
Hale, Westin Waterfront

9:00–11:30 AM  **Exhibitor Workshop**  
*DNA Detectives: Who Killed Jose? (AP Big Ideas 3, 4)*  
*(Bio)*  
Grades 10–College  
157A, BCEC  
Sponsor: Bio-Rad Laboratories  
Sherri Andrews *(sherri_andrews@bio-rad.com)*, Bio-Rad Laboratories, Hercules, Calif.

In this hands-on lab, solve a theatrical crime scene using bio-technology skills such as DNA gel electrophoresis, restriction digestion, and pipetting. Learn about the Innocence Project and how the wrongly accused can be exonerated.
9:00 AM–12 Noon  NSTA ESP Symposium
ESP: Unique Features of Programs That Meet “More Emphasis” Features in the NSES (Gen)
Grand Ballroom D, Westin Waterfront

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

The ESP series identifies people and places where the reforms recommended have emerged. The exemplars include: 1) Exemplary Science in Grades PreK–4; 2) Exemplary Science in Grades 5–8; 3) Exemplary Science in Grades 9–12; 4) Exemplary Science: Best Practices in Professional Development; 5) Inquiry: The Key to Exemplary Science; 6) Exemplary Science in Informal Education Settings; 7) Exemplary Science for Resolving Societal Challenges; 8) Exemplary Programs for Building Interest in STEM Careers; and 9) Exemplary College Science Teaching.

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

Symposium Participants:
Community of Excellence in Mathematics and Science
Susan Koba (koba@cox.net), Retired Educator, Omaha, Neb.

Adapting the JASON Project
Warren Phillips (a1science@yahoo.com), Retired Educator, Halifax, Mass.

Bringing School Science to College
Sondra Akins (akins@wpunj.edu), William Paterson University, Wayne, N.J.

The Road to Becoming an Exemplary College Science Teacher
Katherine Follette (kfollette@as.arizona.edu), The University of Arizona, Tucson

Teaching Science with Pictures
Karl Spencer (karl.spencer@visualrealization.com), The Visual Realization Program, Houston, Tex.

Developing Students’ Authentic Inquiry Skills
Judith A. Scheppler (quella@imsa.edu), Illinois Mathematics and Science Academy®, Aurora

Why STEM? Why Now?
Brenda Wojnowski (bwojnowski@gmail.com), WAI Education Solutions, Dallas, Tex.

Stop Talking, Start Listening
Peter Veronesi (pveronesi@brockport.edu), The College at Brockport, N.Y.

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Coordinators:
Robert E. Yager, 1982–1983 NSTA President, and University of Iowa, Iowa City
Susan Koba, Retired Educator, Omaha, Neb.
9:00 AM–3:00 PM  Short Courses

**Building Capacity for Collaborative School Communities for Science Learning (SC-12)**

(General)  
**Tickets Required:** $36

Susan Mundry (smundry@wested.org), WestEd, Woburn, Mass.

Katherine Stiles (kstiles@wested.org), WestEd, Morgantown, Ind.

For description, see Volume 1, page 55.

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9:00 AM–12 Noon  Short Courses

**To Read or Not to Read: That Is No Longer the Question (SC-10)**

(Upper Elementary–Middle Level)  
Simmons, Marriott Copley Place  
**Tickets Required:** $33

Traci Wierman and Rebecca Abbott (rebabbott@berkeley.edu), The Lawrence Hall of Science, University of California, Berkeley

For description, see Volume 1, page 54.

**Sustainability and Engineering (SC-11)**

(Middle Level)  
Suffolk, Marriott Copley Place  
**Tickets Required:** $35

Sarah Soule and Kathryn Danielson (kdanielson@calacademy.org), California Academy of Sciences, San Francisco

For description, see Volume 1, page 55.

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NSTA Life Members’ Buffet Breakfast

Sunday, April 6

7:00–8:00 AM

The Westin Boston Waterfront, Douglass

Tickets are required (M-10: $50) and, if still available, must be purchased at the NSTA Registration Area by 3:00 PM on **Saturday, April 5**.

Participation is limited to NSTA life members only.
9:00 AM–5:00 PM  Networking Opportunities
NSTA International Lounge
Revere, Westin Waterfront
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.

9:00 AM–5:00 PM  Exhibits
Exhibit Hall A, BCEC
The NSTA Exhibit Hall is a must-see! NSTA brings you the leading science education companies and organizations to showcase products, services, curricula, and much more. You’ll discover something new and exciting in the world of science teaching. Some exhibitors will offer materials for sale.

9:30–10:00 AM  Workshops
Meet Me in the Middle Session: Synergy Between Science and Literacy in the Classroom  (Gen)
(General) Commonwealth Ballroom B, Westin Waterfront
Scott E. Diamond (scott.diamond@fayette.kyschools.us), The Learning Center at Linlee, Lexington, Ky.
We will provide practical approaches for using science and literacy to support student achievement developed during an ongoing collaboration between a science teacher and an English teacher.

Meet Me in the Middle Session: Middleschoolchemistry.com—Big Ideas About the Very Small  (Chem)
(Middle Level) Grand Ballroom E, Westin Waterfront
James Kessler (jhkessler@acs.org), American Chemical Society, Washington, D.C.
Conduct hands-on activities from middleschoolchemistry.com (a free resource) to explore liquids, solids, and gases. The SE (Engage, Explore, Explain, Elaborate, and Evaluate) lessons and molecular animations are freely available for use in the classroom.

9:30–10:30 AM  Meeting
Development Advisory Board Meeting
(By Invitation Only) Executive Boardroom, Westin Waterfront

9:30–10:30 AM  Presentations
SESSION 1
Building Bridges Through Elementary STEM  (Gen)
(Elementary) 158, BCEC
Audrey Andrieski (aandries@richland2.org), North Springs Elementary School, Columbia, S.C.
Presider: Sally Catoe, North Springs Elementary School, Columbia, S.C.
If you are a primary teacher, where would you start to build a primary STEM unit?

SESSION 2
PDI Wheelock Pathway Session: Supporting Science Talk in PreK Classrooms  (Gen)
(General) 209, BCEC
Cindy Hoisington (choisington@edc.org), Education Development Center, Inc., Waltham, Mass.
Karen Worth (kworth@wheelock.edu), Wheelock College, Boston, Mass.
Using video vignettes, join us as we share strategies for helping preK children communicate their science observations and emerging science ideas while also supporting language development.

SESSION 3
Creating Student Videos for Climate Education  
(Env)
(High School) 251, BCEC
Students use the NGSS and combine climate science, systems thinking, and science communications skills through media production. Using the Climate Education in an Age of Media (CAM) project at UMass Lowell and Harvard Forest LTER Schoolyard Program, Buds, Leaves & Global Warming, students learn to collect data on important long-term ecological issues and processes. They report what they have learned through media.

SESSION 4
Let’s Get Physical—Come Play!  (Phys)
(Preschool–Elementary) 252A, BCEC
Juliana Texley, NSTA President-Elect, Boca Raton, Fla.
Ruth Ruud, Venice, Fla.
You can’t put it off anymore. Both the NGSS and the Common Core State Standards ask that specific physical science concepts be taught in kindergarten and first and second grade. In this session, you’ll see that you already have the equipment you need to make it happen. You’ll move, groove, play, and sing as you learn to teach force and motion.
SESSION 5
Science Journals: Using Technology to Expand Collaboration and Sharing (Gen)
(Elementary) 252B, BCEC
Missy Shunn-Mitchell, Utah State University, Logan
Discover how a grade 3 classroom combined traditional paper-based methods with Google Apps, Chromebooks, and iPads—to expand and share science experiences beyond their classroom walls.

SESSION 6
NARST Session: There Is Much More to Teaching Evolution Than Just Presenting the Biological Science (Bio)
(Middle Level—College/Supervision) 253A, BCEC
Leslie S. Jones (lesliesj@valdosta.edu), Valdosta State University, Valdosta, Ga.
Creationist students can be far more receptive to learning about evolution if the socio-cultural controversy is explained before the biological content is addressed.

SESSION 7
NSTA Press® Session: Teacher Liability—Walking on the Safer Side! (Gen)
(General) 254A, BCEC
Ken R. Roy (royk@glastonbury.org), Glastonbury (Conn.) Public Schools
A science lab can be an unsafe place. Learn strategies to make it safer by reducing the risk of accidents and teacher liability.

SESSION 8
The Michigan Teacher Excellence Program (MiTEP) Experience: Strategies Used to Enhance Pedagogical Content Knowledge and Leadership (Earth)
(General) 254B, BCEC
Ashley E. Miller (aemiller@mtu.edu), Michigan Technological University, Houghton
Expect exemplary teacher-developed, inquiry-based lessons and resources that incorporate Eisenkraft’s 7E learning cycle, the NGSS, PLC, and lesson study strategies used to enhance pedagogical content knowledge and leadership skills.

SESSION 9 (two presentations)
(Middle Level/Informal Education) 255, BCEC
STEM on a Budget Works! (Gen)
Brandy L. Whitney (whitneybrandy@yahoo.com), Ottoson Middle School, Arlington, Mass.
Hear how to establish an inquiry-based, viable, standards-focused STEM curriculum in an urban or underfunded middle school.

Engaging Teens in STEM Online: The Sparticl Challenge (Gen)
Matthew S. Loth (mloth@tpt.org), Twin Cities Public Television, St. Paul, Minn.
We brought the best STEM content on the web together into one huge social website built just for teens. Hear the story from year one. Sparticl is a new web and mobile service that showcases STEM content in a game-like environment, with social networking and badges as a means to achieve high-quality self-directed learning and help close the achievement gap.

SESSION 10
Out-of-This-World Experiments: Student Work on the International Space Station (Gen)
(Informal Education) 256, BCEC
Jennifer S. Kelley (jkelley@pps.net), Portland (Ore.) Public Schools
Kaci Heins (kheins@northlandprep.org), Northland Preparatory Academy, Flagstaff, Ariz.
Discover the Student Spaceflight Experiments Program, a partnership between schools, nonprofit, and industry. Learn about the program and discover how to run a student-designed experiment on the International Space Station!

SESSION 11
Integrating Bioinformatics into Current STEM Curricula (Bio)
(High School) 257A, BCEC
Renee Tanner (rtanner@tctc.org), Tri County Technology Center, Bartlesville, Okla.
Stacey Davis (sdavis@swtech.edu), Southwest Technology Center, Altus, Okla.
Join us as we provide instruction to secondary life science educators on how to incorporate computational biology/bioinformatics concepts and activities into current STEM curricula.
SESSION 12
Flipped Class 101: A User’s Manual (Bio)
(General) 257B, BCEC
James Schreiner (jschreiner@bbchs.org) and Tony Swafford (tswafford@bbchs.org), Bradley-Bourbonnais Community High School, Bradley, Ill.
Using our framework and software suggestions, you’ll leave with the ability to begin flipping your classroom. Having three years’ experience, we’ll get you started!

SESSION 13
Doing Science the Scientific Way: It’s Not as Hard as It Sounds (Gen)
(Elementary) 259A, BCEC
Bev Marcum (bmarcum@csuchico.edu), California State University, Chico
Maria C. Simani (maria.simani@ucr.edu), University of California, Riverside
Learn how to do science the NGSS way in a bite-sized, confidence-building, classroom-friendly manner. This session is applicable to teachers, professional development leaders, and university instructors of future teachers.

SESSION 14
Going Beyond Data Collection—Sharing in a Science Classroom (Gen)
(General) 259B, BCEC
Ben Smith (ben@edtechinnovators.com) and Jared Mader (jared@edtechinnovators.com), York, Pa.
This model lesson will demonstrate how students can collect and share data and produce a digital report. Bring your own device to participate as a student or come observe all the action.

SESSION 15
Science Education Fellowship Program: Supporting District Cohorts of Science Teacher Leaders (Gen)
(Supervision/Administration) 260, BCEC
Pam Pelletier, Boston (Mass.) Public Schools
Mika Munakata (munakatam@mail.montclair.edu), Montclair State University, Montclair, N.J.
Discussion centers on strategies for teacher leader cohort development through collaborative professional learning communities and individual growth plans, as well as cross-district partnerships.

SESSION 16
NASA Astrobiology: The Search for Life Beyond Earth (Earth)
(General) 261, BCEC
Rachel Zimmerman Brachman (rachel.zimmerman-brachman@jpl.nasa.gov), NASA Jet Propulsion Laboratory, Pasadena, Calif.
Learn how the Astrobiology of Icy Worlds team at NASA’s Jet Propulsion Laboratory searches for signs of life on icy moons of our solar system.

SESSION 17
Informal Science Day Session: Taking the Lead in Developing the STEM Education Resources of Your Community: Asset-based Partnerships Build Capacity and Increase Effectiveness (Gen)
(Informal Education) Ballroom West/Group 1, BCEC
Rob Robertson (robertsonr@glsc.org), Great Lakes Science Center, Cleveland, Ohio
Debbie K. Jackson (d.jackson1@csuohio.edu), Cleveland State University, Cleveland, Ohio
Hear how using asset-based relationships has enabled the Great Lakes Science Center to build its capacity as a STEM education resource for the region.

SESSION 18
Informal Science Day Session: Revolutionary Venus: Investigating the Heliocentric Solar System in the Context of the NGSS (Gen)
(Informal Education) Ballroom West/Group 2, BCEC
Explore the evidence for the heliocentric solar system and learn how you can teach astronomy in the context of the Next Generation Science Standards.

SESSION 19
Informal Science Day Session: STEM-Tastic After-school Science! (Gen)
(Informal Education) Ballroom West/Group 3, BCEC
Lindsay Milner (lindsaym@madsscience.org) and Sharon King (sharonk@madsscience.org), Mad Science, Montreal, Que., Canada
Spice up the science in STEM—experience hands-on after-school activities that entertain and educate! Walk away with resources to spark enthusiasm for science—it’s elementary!
SESSION 20
Informal Science Day Session: Color and Light: Exploring Reflections at the Intersections of Art with Physical and Life Science  (Phys)  (Elementary–Middle Level)  Ballroom West/Group 4, BCEC  Lucinda Presley (lucinda.presley@gmail.com), ICEE Success Foundation, Palestine, Tex.
Engage your students in successful, standards-based, hands-on activities that use NGSS strategies to explore how physical and life science affect art experiences and survival.

SESSION 21
DNA Barcoding: Independent Research in the Classroom  (Bio)  (High School–College)  Atlantic 3, Renaissance  Jermel Watkins (jwatkins@cshl.edu), Cold Spring Harbor Laboratory, Cold Spring Harbor, N.Y.
Engage students in student-driven research by identifying plants, animals, and food sources through unique DNA barcodes.

SESSION 22
Virtually Yours: Exploratorium Teacher Institute Online Resources  (Gen)  (General)  Brewster, Renaissance  Eric P. Muller (emuller@exploratorium.edu) and Paul Doherty (pdoherty@exploratorium.edu), Exploratorium, San Francisco, Calif.
See what the Exploratorium has to offer teachers online. From classes, activities, content, avatars, and cool science apps, check out the Exploratorium from afar.

SESSION 23  (two presentations)  (General)  Caspian, Renaissance  SCST Session: The Impact of Collective Group Motivation on Student Learning in a Nonmajors Biology Course  (Bio)  Grant E. Gardner (grant.gardner@mtsu.edu), Middle Tennessee State University, Murfreesboro  This paper describes the impact of creating collaborative learning groups, heterogeneous for student motivation, on student attitudes, perceptions, content learning, and attendance.
SCST Session: Dealing with Interdisciplinary Challenges—Students’ Perceptions of and Performance on Chemistry-related Biological Concepts  (Bio)  Donald P. French (dfrench@okstate.edu) and Lance Forshee (lance.forshee@okstate.edu), Oklahoma State University, Stillwater  Traci Richardson, Stillwater High School, Stillwater, Okla.  Do students really have problems understanding biological concepts related to understanding chemistry? Is this an obstacle? Do they see value in chemistry? Come find out!

SESSION 24  The Top 5 Reasons to Stop Using the 5-Step Scientific Method  (Gen)  (General)  Mediterranean, Renaissance  Erik L. Peterson (elpeterson@ua.edu), The University of Alabama, Tuscaloosa  Gregory L. Macklem (gmacklem@nd.edu), University of Notre Dame, Ind.
Hear about distortions the classic “scientific method” produces in student understanding of genuine science—and encounter alternative ways to avoid them.

SESSION 25  Track and Explore: Hands-On Science Joins Online Field Trip Experiences for Middle School Students  (Env)  (Middle Level/College)  Pacific A/B, Renaissance  Penny Cobau-Smith (pcobausmith@adrian.edu), Auburn Quinlan (aquinlan@adrian.edu), and Brittany Basch, Adrian College, Adrian, Mich.
Presider: Julie Sinkovitz, Adrian College, Adrian, Mich.  Adrian College education and biology students partnered with the NASCAR venue Michigan International Speedway to develop standards-based environmental and physics/math virtual field trips. This project has serviced 2,000 middle school students in just over one year.
SESSION 26
Getting Students Involved in a Virtual Science Fair with Tech Advisers (Gen)
Robert M. Everett (robert.everett@ucf.edu), University of Central Florida, Orlando
Elementary, middle school, and high school teachers will learn about the Internet Science and Technology Fair (ISTF) and how it integrates STEM initiatives.

SESSION 27 (two presentations)
(General) Pacific F, Renaissance
ASTE Session: Transforming STEM Education—Your Classroom and Beyond (Bio)
Frederick W. Freking (freking@usc.edu), University of Southern California, Los Angeles
This session will provide a framework to science teachers as they strive to become leaders in their classrooms, schools, communities, and states.

ASTE Session: A Place-based Approach for Technically Integrated Science Instruction: The River Run Experience (Env)
Justin R. McFadden (mcfad062@umn.edu), University of Minnesota, St. Paul
Technology integration (as it can apply to an environmental science class) will be the focus of this session. Water sampling techniques using Vernier lab equipment and its use in investigating a socio-scientific issue related to a local watershed will be highlighted.

SESSION 28
Use Professional Journals to Enrich Advanced Chemistry (Chem)
(High School–College) Pacific G/H, Renaissance
Deanna M. Cullen (dcullen@jce.acs.org), Whitehall High School, Whitehall, Mich.
Engage your advanced chemistry students in the meaningful use of professional journals.

SESSION 29 (two presentations)
(General) Constitution, Seaport
AME Session: The Smarts Are There (Bio)
Sue Ford, Retired Educator, Rocky Mount, N.C.
Join this dialogue! Discover the learning fun in the NGSS while challenging ALL students in welcoming classroom atmospheres drenched with the feeling of “Belonging.” Handouts!

AME Session: Using Games and Challenges to Formatively Assess Students’ Conceptual Understanding in Science (Gen)
Karen D. Jacobs (karen.d.jacobs@aliefisd.net), Alief ISD, Houston, Tex.
Gale C. Stanford (gale.stanford@aliefisd.net), Holub Middle School, Houston, Tex.
Add excitement and pizzazz to your classroom by playing games and challenging your students to think on an entirely new level! This session will keep your students coming back for more!

SESSION 30
Developing Students’ Scientific Practice Skills with NOVA Labs (Gen)
(Middle Level–High School) Lighthouse I, Seaport
Maiken C. Lilley, WGBH Educational Foundation, Boston, Mass.
Discover how you can develop your students’ skills in analyzing and interpreting scientific data with NOVA Labs.

SESSION 31
Teaching Science with Case Studies (Gen)
(Middle Level–High School) Plaza A, Seaport
Emily Sherman, Longview School, Deerfield, N.H.
Allow students to solve real-life problems by using case studies in the classroom. Learn how to find, evaluate, and write case studies for your students.

SESSION 32
Creatively Integrate Multiple Technologies as You Connect Mathematics and Science (Gen)
(Middle Level–High School) Plaza B, Seaport
Tom Reardon (tom@tomreardon.com), Fitch High School/Youngstown State University, Austintown, Ohio
Jeff Lukens (jeffrey.lukens@k12.sd.us), Roosevelt High School, Sioux Falls, S.Dak.
Collect data, model mathematically, and interpret using science standards—from both math and science teachers’ perspectives. We will effectively integrate graphing calculators, data collection devices, and iPads.
SESSION 33

STEM Can Change the World: Providing Context and Connections for Tackling Global Problems

(Gen)

Plaza C, Seaport
Kimberley Berndt (kimberleyberndt@stmarksschool.org) and Lindsey Lohwater (lindseylohwater@stmarksschool.org), St. Mark’s School, Southborough, Mass.

Hear how we structured an advanced-level independent research program around core STEM subjects and challenged students to help solve a problem facing developing nations.

SESSION 34

NSELA Session: Tools for Science Leaders, Part 2

(General)

Alcott, Westin Waterfront
Darlene Ryan, Glenwood Elementary School, Chapel Hill, N.C.

Elizabeth A. Allan (eallan@uco.edu), University of Central Oklahoma, Edmond
Bob Sotak (bsotak@mac.com), Washington Alliance for Better Schools, Edmonds
Brian Day, Everett ( Wash.) Public Schools
Keri E. Randolph (krandolph@pechattanooga.org), Southeast Tennessee STEM Innovation Hub, Chattanooga
Nicole Jacquay (nicole.jacquay@sdhc.k12.fl.us), Michele Detwiler (michele.detwiler@sdhc.k12.fl.us), and Mindy Pearson (mindy.pearson@sdhc.k12.fl.us), Hillsborough County Public Schools, Tampa, Fla.

Lauren Amaturo (lamaturo@crec.org), Two Rivers Magnet High School, Hartford, Conn.

Learn how to help green your school using the Green Ribbon Schools model—from education to healthy students and staff to resources conservation. Something for all schools—www.ctgreenschools.org.

SESSION 35

We Turned Over a New (Green) LEAF: Leading, Educating, Achieving, and Fostering Healthy, Green Schools for All

(Gen)

Burroughs, Westin Waterfront
Laurel Kohl (kohl@easterncn.edu), Eastern Connecticut State University, Willimantic
Marjorie Drucker (marjorie.drucker@new-haven.k12.ct.us), Barnard Environmental Studies Magnet School, New Haven, Conn.

Peter Dart (dartp001@hartfordschools.org), Environmental Studies Magnet at Mary Hooker, Hartford, Conn.

Lauren Amaturo (lamaturo@crec.org), Two Rivers Magnet High School, Hartford, Conn.

Learn how to help green your school using the Green Ribbon Schools model—from education to healthy students and staff to resources conservation. Something for all schools—www.ctgreenschools.org.

SESSION 36 (two presentations)

(Middle Level) Commonwealth Ballroom A, Westin Waterfront
Meet Me in the Middle Session: What the NGSS Means to a Middle Level Teacher—Thoughts from a Member of the NGSS Writing Team

(Ken Huff (khuff@williamsvillek12.org), Mill Middle School, Williamsville, N.Y.

Kenneth Huff (khuff@williamsvillek12.org), Mill Middle School, Williamsville, N.Y.

Engage in a conversation about the development of the Next Generation Science Standards and how they impact a middle level classroom.

Meet Me in the Middle Session: Curriculum Crosswalks: Aligning the Common Core State Standards, Mathematics and the Next Generation Science Standards

John Milam (jmilam@jcu.edu), John Carroll University, University Heights, Ohio

Explore the complementary standards and practices between the CCSS Mathematics and the NGSS for middle level educators.
SESSION 37
Proficient, Exemplary, and Flexible—Technology, the NGSS, and My Classroom (Gen)
(Elementary—High School) Faneuil, Westin Waterfront
Kathleen M. Gorski, Wilbraham & Monson Academy, Wilbraham, Mass.
Caryn Meirs (caryn.meirs@gmail.com), Half Hollow Hills Central School District, Dix Hills, N.Y.
Presider: Barbara R. Pietrucha, Earth/Environmental Science Educator, Point Pleasant, N.J.
How will the NGSS inform the way I incorporate technology into the classroom? Learn what great technologies you can implement now that demonstrate the approach advocated by the NGSS.

SESSION 38 (two presentations)
(General) Grand Ballroom C, Westin Waterfront
Meet Me in the Middle Session: Science Formative Assessment: What Do Middle School Students Really Think? (Gen)
Page Keeley (pagekeele@gmail.com), 2008–2009 NSTA President, Jefferson, Maine
Joyce B. Tugel (jtugel@mmsa.org), Maine Mathematics and Science Alliance, Augusta
Find out how a variety of formative assessment techniques can be used to promote intellectual engagement and uncover middle school students’ ideas and ways of reasoning.

Meet Me in the Middle Session: The NSTA Learning Center—Free Professional Development Resources and Opportunities for Educators (Gen)
Flavio Mendez (fmendez@nsta.org), Senior Director, NSTA Learning Center/SciLinks, NSTA, Arlington, Va.
Looking for online resources to enhance your content knowledge and skills? With more than 10,000 resources (25% free), the NSTA Learning Center has the answers!

SESSION 39
Let’s Talk Science: Using Baby Steps to Design a Districtwide Science Collaborative (Gen)
(Elementary—High School) Griffin, Westin Waterfront
Jean M. Roesner (jean_roesner@maranacook.org), Maranacook Community High School, Readfield, Maine
Katie R. Conway (katie_conway@maranacook.org), Readfield Elementary School, Readfield, Maine
Come learn how an overheard conversation led to a multi-grade level, districtwide science collaborative, and a good friendship. Learn about funding tools, finding time, and engaging staff and students alike.

SESSION 40
The Magic of Science! Motivate and Excite Your Science Students Using Discrepant Events (Gen)
(General) Harbor Ballroom III, Westin Waterfront
Buzz Putnam (dputna@wboro.org), Whitesboro High School, Marcy, N.Y.
This fast-paced session will highlight thought-provoking, paradoxical discrepant demonstrations with music and humor that can energize any science classroom throughout the year—for all subjects/levels.

SESSION 41
Virtual Field Trips—Bring the World to Your Classroom (Gen)
(General) Lewis, Westin Waterfront
Marcie D. Reuer (marcie.reuer@prrd.ab.ca), New Brigden School, New Brigden, Alta., Canada
Take a live dive in the Pacific Ocean, watch an open heart surgery in real time, and so much more using video conference technology.

SESSION 42
Using a Tuning Protocol to Analyze Lesson Plans in a Student Teacher Seminar (Gen)
(High School—College/Supervision) Paine, Westin Waterfront
Marlene A. Hilkowitz (mhilkowitz@mac.com) and Michele H. Lee (mlee@post.harvard.edu), Temple University, Philadelphia, Pa.
This interactive session shows how secondary science and math student teachers critically analyze their lesson plans using a tuning protocol over eight weeks.
9:30–10:30 AM  Workshops

NESTA Session: National Earth Science Teachers Association Geology Share-a-Thon (Earth) (Elementary—High School) 052 A/B, BCEC
Michelle C. Harris, Wakefield High School, Arlington, Va.
Robert M. Johnson (rmjohnsn@gmail.com), NESTA, Boulder, Colo.
Margaret A. Holzer (mhholzer@monmouth.com), Chatham High School, Chatham, N.J.
Sharon K. Cooper (scooper@oceanleadership.org), Consortium for Ocean Leadership, Washington, D.C.
Don Duggan-Haas (ad55@cornell.edu), PRI and Its Museum of the Earth and Its Cayuga Nature Center, Ithaca, N.Y.
Mark Francek (mark.francek@cmich.edu), Central Michigan University, Mount Pleasant
Laura Guertin (paesta@psu.edu), President-Elect, Pennsylvania Earth Science Teachers Association, University Park
Lynne Hehr (lhehr@uark.edu), University of Arkansas, Fayetteville
Carole J. Reesink (cjreesink@muscanet.com), Retired Educator, Muscatine, Iowa
Mary Shane (shamen@interact.ccsd.net), Advanced Technologies Academy, Las Vegas, Nev.
Judy T. Sweeney (judytsweeney@gmail.com), Shanghai American School, Shanghai, Peoples Republic of China
David Thesenga (dthesenga@gmail.com) and Jim Town (james.ross.town@gmail.com), Einstein Fellows, National Science Foundation, Arlington, Va.
Lesley Urasky (lesleyurasky@gmail.com), Rawlins High School, Rawlins, Wyo.
Shannon R. Vogt (svogt@gmail.com; svogt@nsccd.org), North Syracuse (N.Y.) Central Schools
Jodi Wheeler-Toppen (wheelertop@gmail.com), Atlanta, Ga.
Join many NESTA members and other education specialists as they share their favorite classroom activities. Lots of free handouts!

Focus on Forests Using STEM and Project Learning Tree (Middle Level—High School) 157C, BCEC
Al Stenstrup (alstenstrup@plt.org) and Jaclyn Stallard (jstallard@plt.org), Project Learning Tree, Washington, D.C.
Discover how secondary students can explore the major issues facing forests today, including climate change, invasive species, and land management—while also connecting to STEM subjects. Take home PLT’s Focus on Forests activity guide.

The Science of Technology: Introduction to Engineering (Phys) (Middle Level) 159, BCEC
Deborah K. Leach-Scampavia and Rosie Albarran-Zeckler (rzeckler@scripps.edu), The Scripps Research Institute, Jupiter, Fla.
This middle school workshop uses hands-on “engineering boards” and LEGO MINDSTORMS® NXT robotics for math fluency exercises that contribute to computational thinking and engineering applications.

Maximize Instructional Time and Student Learning: Science in Reading and Reading in Science (Gen) (Elementary) 160A, BCEC
Christine Royce (caroyce@aol.com), Shippensburg University, Shippensburg, Pa.
This workshop will model several activities that incorporate the use of trade books within science and/or reading lessons as well as provide a variety of resources for locating lessons.

DNA Is Elementary! (Bio) (Elementary—Middle Level) 160B, BCEC
Michelle Ventura and Chandan Morris Robbins, Georgia State University, Atlanta
Encounter modules built on the premise that the principles involved in understanding DNA closely parallel the concepts used by novice learners to build language arts skills.

Using Lesson Study to Engage Elementary Teachers in the Next Generation Science Standards (Earth) (Elementary) 160C, BCEC
Mark K. Mitchell (mmitchell@air.org) and Gary Appel (gappel@air.org), American Institute for Research, Naperville, Ill.
Focused on the NGSS, we will engage in lesson study to enhance content knowledge, instill science and engineering practices, and improve science teaching.

Science Beyond the Standards! (Gen) (Elementary) 161, BCEC
Jaymee Herrington (jaymee.herrington@gmail.com), K5 Science Consultant, Washington, D.C.
Betsy O’Day (boday@hallsville.org), Hallsville Intermediate School, Hallsville, Mo.
Now that NGSS is here, what does it look like for grades K–2 and 3–5? What could a lesson look like? How can I connect the pieces of the puzzle? Come pick the brains of two NGSS elementary team writers. Take home hands-on activities and curriculum CDs.
Friday, 9:30–10:30 AM

The Great Rock Mix-Up  (Earth)  162A, BCEC
Middle Level

Janelle Wilson (janellewilson@gmail.com), Lanier Middle School, Sugar Hill, Ga.

Rocks and inquiry? Yes! Learn how in this hands-on workshop. Lesson strategies and student handouts will be provided for this inquiry rock unit.

Simple to Sublime—Mathematics Turns Simple Hands-On Labs into Deep Science  (Chem)  162B, BCEC

Mark Schlawin, Princeton Charter School, Princeton, N.J.

Participants apply mathematics to simply executed physics and chemistry labs and uncover deep and important science concepts.

A New Twist on Measuring Catalase Activity  (Bio)  205A, BCEC

Pam Bryer (pbryer@bowdoin.edu), Bowdoin College, Brunswick, Maine

Encapsulate yeast in nontoxic sodium alginate and use the resultant spheres to measure catalase activity and perform inquiry-based experiments.

Lead Your Students on an Exploration of the Human Body by Building It from the Inside Out  (Bio)  205B, BCEC

Charles Roney, Retired Educator, Haddonfield, N.J.

Increase student interest and success by using simple hands-on methods to investigate human anatomy. We will start with the skeletal framework and build the body.

The Sounds of Music!  (Phys)  205C, BCEC

Elise Burns and Borislaw Bilash, Pascack Valley Regional High School District, Montvale, N.J.

Take part in a sequence of sound- and music-related activities to engage our youngest scientists with basic physical science ideas—that cost nearly nothing and use inquiry methods.

Science Starters  (Gen)  207, BCEC

Preschool–Middle Level/Informal Education

Kristen Scopinich, Mass Audubon’s Drumlin Farm Wildlife Sanctuary, Lincoln, Mass.

Engage students by beginning with science starters—guided observation activities that turn the study of elementary science content into an engaging science investigation.

Energy Literacy: A Grade 4 Energy Unit Based on the NGSS and Incorporating Environmental Education  (Gen)  212, BCEC

Elementary

Patty A. O’Donnell (patty@hitchcockcenter.org) and Micky McKinley (micky@hitchcockcenter.org), Hitchcock Center for the Environment, Amherst, Mass.

This hands-on workshop will introduce you to a two-week unit based on the new NGSS grade 4 energy topic, which includes energy flows, energy systems, renewable energy, and energy decisions.

Full STEAM Ahead  (Gen)  213, BCEC

Melissa McCallihan and Clara Buckley, Mustard Seed School, Hoboken, N.J.

Find out how three teachers (4th, 5th, and Art) implement a multi-age STEM and art education program that inspires children to be creative scientific problem solvers.

GLOBE at Night: A Fun, Immersive, STEM-based Citizen Science Program for Students  (Earth)  (General)  253C, BCEC

Constance E. Walker (cwalker@noao.edu), National Optical Astronomy Observatory, Tucson, Ariz.

With GLOBE at Night, student-scientists measure the brightness of their backyard’s night sky, collecting data for a project that might take them to city hall.

Teaching Metabolic Diseases: The Great Diseases Project—A Collaborative Approach to Real-World Science in the Classroom  (Bio)  (High School–College)  Atlantic 1, Renaissance

Berri H. Jacque, Tufts University School of Medicine, Boston, Mass.

Aimee Gauthier (blsbiorules@gmail.com) and Kathleen Bateman (kbatemann@boston.k12.ma.us), Boston Latin School, Boston, Mass.

Leslie S. Schneider, Tufts University, Boston, Mass.

Come learn about our novel Metabolic Diseases curriculum for Biology II, which emphasizes critical thinking, problem solving, authentic science practices, and health literacy.
Differentiating Teacher Research Through Teacher Inquiry Groups  
(General) Atlantic 2, Renaissance
Deborah Roberts-Harris (drober02@unm.edu), University of New Mexico, Albuquerque
Teachers often dislike professional development because it is one size fits all, one time, and often does not relate to their practice. Come discover a way to personalize professional development.

Science and Literacy? That’s NEWS to Us!  
(General) Commonwealth Ballroom C, Westin Waterfront
Billy McClune (w.mcclune@qub.ac.uk), Queen’s University, Belfast, Northern Ireland
Evaluating claims in media reports, as NGSS requires, is a challenge, demanding science knowledge and literacy skill. Explore how to “use the news” to develop your students’ critical abilities.

Blending the Arts with Chain Reaction STEAM Machines™  
(General) Douglass, Westin Waterfront
Shawn S. Jordan (ssjordan@alumni.purdue.edu), Arizona State University, Mesa
Nielsen Pereira (nielsen.pereira@wk.edu), Western Kentucky University, Bowling Green
This hands-on workshop explores summer camps that blend chain reaction machines with music, dance, drama, and spoken word to create STEAM Machines!

CSSS Session: A Vision for Science Education: The Integration of the NGSS Practices in Classroom Instruction  
(General) Harbor Ballroom I, Westin Waterfront
Peter J. McLaren (peter.mclaren@ride.ri.gov), Rhode Island Dept. of Education, Providence
Brett Moulding, Council of State Science Supervisors, Ogden, Utah
This workshop is designed to highlight the importance of the science and engineering practices in developing student knowledge of science and engineering. Come engage in the use of meaningful and effective instructional strategies using these practices. We’ll model instructional strategies designed to help students understand how scientific knowledge is developed.

DuPont Presents: Driving Science  
(Middle Level–High School) Otis, Westin Waterfront
Dot Moss (dmos@clemson.edu), Clemson University, Clemson, S.C.
Presider: Peggy Vavalla (marguerite.e.vavalla@dupont.com), DuPont, Wilmington, Del.
Come learn how to connect science content involving laws of motion to motorsports. Join me for this hands-on workshop and investigate standards related to Newton’s laws of motion in the context of real-world applications and connections to motorsports. We’ll examine design processes and teaching strategies that build connections across STEM disciplines.

How-To Workshop on Organizing a STEM Design Challenge Day  
(Elementary–Middle Level) Stone, Westin Waterfront
Lindsey M. Polizzotti (lindsey@cohenhillel.org) and Sharon Shore Taitelbaum (sharon@cohenhillel.org), Cohen Hillel Academy, Marblehead, Mass.
In this hands-on workshop, discover tips and tricks for planning and hosting a STEM Design Challenge Day using the engineering design process to engage and excite students, teachers, and parents!

Life Cycle of the Monarch Butterfly  
(Bio) Webster, Westin Waterfront
Jim O’Leary (oleary@mdsci.org) and Maureen Sullivan, Maryland Science Center, Baltimore
De Cansler (decansler@gmail.com) and Katie-Lyn Bunney (kbunney@umn.edu), University of Minnesota, St. Paul
Examine the four stages of the Monarch butterfly with live specimens of each stage—egg, larva, pupa, and adult monarchs.

9:30–10:30 AM Exhibitor Workshop
Investigating Astronomy: A Project-based Astronomy Course Written Expressly for High School  
(Grades 6–12) 156C, BCEC
Sponsor: It’s About Time
Presenter to be announced
Learn about and experience the engaging hands-on investigations, the stunningly realistic software package, the web-based data center, and the Investigating Astronomy website to see how you can motivate your students to work as student astronomers, ask questions, use models, analyze and interpret data, and make scientific claims supported by evidence.
9:30 AM–12:30 PM Workshop

PDI BSCS Pathway Session: Explanation and Argumentation in the Classroom (NGSS Practices 6 and 7) (Gen)
(General) 203, BCEC
Jody Bintz (jbintz@bscs.org) and Betty Stennett, BSCS, Colorado Springs, Colo.
This session will deepen your understanding of NGSS Practices 6 and 7. Engage in an inquiry-oriented activity that utilizes tools to scaffold the construction of evidence-based explanations and engage in scientific argumentation. The session will focus on what the use of this practice looks like in the classroom and how the use of this practice can help students learning scientific concepts.

10:00–11:00 AM Presentation
SESSION 1
CESI Session: Family Science Events—Logistics, Engaging Science, and Parent Involvement (Gen)
(Preschool—Middle Level) 211, BCEC
Jim McDonald (jim.mcdonald@cmich.edu), Jackie Swanson (swans1jm@cmich.edu), Kali Remelts (remel1kn@cmich.edu), and Jenna Orr (orr1jm@cmich.edu), Central Michigan University, Mount Pleasant
Come learn how to set up Family Science events as we describe the process and demonstrate several activities.

10:00–11:30 AM Exhibitor Workshops
AUTOPSY: Forensic Dissection Featuring Carolina’s Perfect Solution® Pigs (Bio)
(Grades 6–12) 102A, BCEC
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Considering the popularity of today’s forensic science—based TV shows, this “real” classroom autopsy is sure to be a hit with your students. Participants learn about mammalian structure and function by dissecting a Carolina’s Perfect Solution pig—while modeling the protocols of a forensic pathologist. Free materials and door prizes!

Engineer Excitement in Your Classroom with a Carolina STEM Challenge® (Phys)
(Grades 6–12) 102B, BCEC
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Catapult, float, and race your way into hands-on activities that will engage your middle school and high school students while fostering both critical-thinking and creative problem-solving skills! Join us and experience how Carolina makes it easy to incorporate STEM into your classroom. Free handouts and door prizes.
Flipping Out Over Chemistry!  
(Chem)  
(Grades 9–12)  
103, BCEC  
Sponsor: Carolina Biological Supply Co.  
Jon Bergmann, Flipped Learning Network, LLC, Lake Forest, Ill.  
Wish you had time to increase individual instruction and improve student understanding of key concepts? Explore a blend of digital and hands-on activities that allow students to review content as “homework” so you can devote valuable classroom time to inquiry activities, assignments, and tests. Free materials and giveaways!

Advancing NGSS Practices with Probeware—Free Sensor Set for Five Attendees!  
(Gen)  
(Grades K–12)  
104A, BCEC  
Sponsor: PASCO scientific  
Dori Haggerty, PASCO scientific, Roseville, Calif.  
Learn about the essential tools you need to integrate the NGSS science and engineering practices into your instruction. You’ll experience how to effectively engage students in the eight practices by using PASCO probeware and SPARKvue® software on iPads. Five lucky attendees will win a 50th Anniversary Sensor Pack—a $600 value!

Engaging Students Effectively: The BIOZONE Solution  
(Bio)  
(Grades 9–12)  
104B, BCEC  
Sponsor: BIOZONE International  
Richard Allan (richard@biozone.co.nz), BIOZONE International, Hamilton, New Zealand  
BIOZONE’s unique presentation of content with fabulous graphics provides an effective solution for student engagement. Find out how and why teachers of AP biology, NGSS biology, environmental science, and anatomy/physiology are using BIOZONE’s workbooks to improve outcomes for their students. Attendees receive FREE books.

NSTA District Director and Chapter Ice Cream Social  
Friday, April 4  
1:30–2:30 PM  
Exhibit Hall, Convention Center  
NSTA Booth #1107  

In honor of Wendell Mohling, enjoy complimentary refreshments while meeting and networking with colleagues and representatives from all of NSTA’s 18 districts. Learn more about events, initiatives, and happenings in your district, directly from your representatives in an informal setting. The GEICO Gecko may even make an appearance!
Using Climate Proxies to Learn About Earth’s Climate History (Earth)
(Grades 9–12) 104C, BCEC
Sponsor: LAB-AIDS, Inc.
Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.
How can scientists tell what Earth’s climate was like thousands of years before human measurements? This activity simulates the use of fossil ocean foraminifera, tiny organisms whose growth patterns are different in warm or cold water. Your students will analyze and graph samples of replicas of these organisms, and use this information to determine relative warm and cold periods in the past 200,000 years. This activity is from EDC: Earth Science, a new NSF-supported high school Earth science program from LAB-AIDS that uses an active, data-oriented approach.

The Next Generation Science Standards: What They Mean for Earth and Space Science (Earth)
(Grades K–12) 105, BCEC
Sponsor: Pearson
Michael Wysession (michael@wucore.wustl.edu), Washington University in St. Louis, Mo.
The new Next Generation Science Standards represent a bold new direction for K–12 science in America, but also pose many challenges and questions. Professor Michael Wysession, a lead author of the NGSS, will talk about the implications for teaching, assessment, and professional development in American Earth and space science education.

Hurricanes and Typhoons: Nature on the Rampage (Earth)
(Grades 5–12) 106, BCEC
Sponsor: Simulation Curriculum Corp.
Herb Koller (hkoller@simcur.com), Simulation Curriculum Corp., Minnetonka, Minn.
Join us as we use Simulation Curriculum’s The Layered Earth Meteorology to investigate two of the most destructive storms of recent times—Hurricane Sandy and Typhoon Haiyan. With the help of classroom-ready lessons, we will trace the causes, paths, and destructive effects of these superstorms.

Math and Statistics in the Biology Classroom (Bio)
(Grades 9–College) 107A, BCEC
Sponsor: Howard Hughes Medical Institute
Ann Brokaw, Rocky River High School, Rocky River, Ohio
Paul K. Strode, Fairview High School, Boulder, Colo.
The newly designed AP Biology course, IB Biology, the NGSS, CCSS, and many state science standards encourage the use of math and statistics to solve problems and analyze experimental data. This workshop will provide participants with free classroom-ready resources and strategies for incorporating math and statistics in their biology classroom.

Chemistry in the Community, 6th Edition—Reinventing Itself (Chem)
(Grades 8–College) 107B, BCEC
Sponsor: American Chemical Society
Michael T. Mury (m_mury@acs.org), American Chemical Society, Washington, D.C.
Think you know ChemCom? Think again. Want your students thinking scientifically and learning how chemistry has an important role in their everyday lives? Learn about the exciting new features in the 6th edition of this engaging and groundbreaking chemistry text. We will perform text activities, share supplemental resources, and give prizes!

Adventures into the Digital Biology Classroom: How Technology Can Revolutionize Teaching (Bio)
(Grades 5–College) 107C, BCEC
Sponsor: Animalearn
Nicole Green, Animalearn, Jenkintown, Pa.
Tracie Treahy, Digital Frog International, Puslinch, Ont., Canada
Join Animalearn as we examine the use of animals to teach anatomy and explore how by using technology instead, we can conserve resources, eliminate harmful chemicals in our classroom, and promote habitat protection. Learning stations will be set up for attendees to try out ANATOMY IN CLAY®, Digital Frog, and a variety of other innovative science teaching tools. One participant will win a copy of Digital Frog—a $200 value!

A Revolutionary Way to Address All Your Standards with National Geographic (Gen)
(Grades 2–5) 108, BCEC
Sponsor: National Geographic Learning
Tom Hinojosa (tom.hinojosa@cengage.com), National Geographic Learning, Littleton, Colo.
We’ll discuss exciting ways to address the NGSS and literacy concerns relating to CCSS—all within engaging themes of science! A STEM approach utilizing National Geographic Emerging Explorers will be featured. Learn how your literacy strand infused with differentiated science materials can provide access and understanding for all your students!
What If Your STEM Program Could Talk, Walk, and Interact with Your Students—All the Way from Middle School to College? (Gen) (Grades 8–College) 109A, BCEC

Sponsor: Aldebaran Robotics

Mandy Dwight and Natanel Dukan, Aldebaran Robotics, Boston, Mass.

Come get your hands on the robot that’s bringing the future into your classroom. We’ll work through a CCSS-aligned curriculum that’s bringing excitement to STEM education at all levels. Graduate from LEGO® and VEX and improve college and career readiness with a platform that’s defining the future of STEM careers.

Perimeter Institute: Beyond the Atom: Remodeling Particle Physics (Phys) (Grades 9–College) 109B, BCEC

Sponsor: Perimeter Institute

Damian Pope (d pope@perimeterinstitute.ca) and Kevin Donkers (k donkers@perimeterinstitute.ca), Perimeter Institute, Waterloo, Ont., Canada

The discovery of the Higgs boson was one of the biggest physics announcements of our generation. Join us as we explore concepts of momentum, charge, and fields being applied to modern particle physics. Beyond the Atom is a multimedia resource designed by educators in collaboration with Perimeter Institute researchers.

The STEM Design Challenge (Phys) (Grades 4–8) 150, BCEC

Sponsor: Fisher Science Education

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

First, use inquiry and scientific investigations to answer testable questions about force, energy, and motion. Then, solve an energy problem using creative and realistic world processes. Finally, support your understanding with a team competition. You’ll be surprised at how you reach conclusions and what tools you’ll learn for your classroom.

Solar Hack Lab (Env) (Grades 4–12) 151A, BCEC

Sponsor: KidWind Project

Asia M. Ward (asia@kidwind.org), KidWind Project, St. Paul, Minn.

Discover what’s inside a dollar store solar lamp, learn how it works, and then use its parts to go on a Solar Scavenger Hunt discovering how different light sources affect output.

Wind Turbine: A STEM Approach to Science Concepts (Phys) (Grades 5–12) 151B, BCEC

Sponsor: CPO Science/School Specialty Science

Scott Eddleman and Nathan Olsson, CPO Science/School Specialty Science, Nashua, N.H.

Explore energy transformations, electricity, and magnetism through hands-on experiences. Use the engineering cycle to design a working model of a wind turbine. Build, test, and revise your model so that it generates as much power as possible. Take away STEM activities and an understanding of how to apply the engineering cycle in science classes.

Engineering in Elementary Science: Designing with FOSS (Gen) (Grades K–5) 152, BCEC

Sponsor: Delta Education/School Specialty Science–FOSS

Brian T. Campbell and Linda De Lucchi, The Lawrence Hall of Science, University of California, Berkeley

FOSS modules provide students with opportunities to engage in engineering experiences to develop solutions to problems, construct and evaluate models, and use systems thinking. We’ll describe and display the opportunities to design with science for K–5 students.

Advanced Physics with Vernier (Phys) (Grades 9–College) 152A, BCEC

Sponsor: Vernier Software & Technology

David Carter (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

Get hands-on experience with our physics 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.

Environmental and Earth Science with Vernier (Env) (Grades 7–College) 153B, BCEC

Sponsor: Vernier Software & Technology

Jack Randall (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

Conduct a variety of environmental science and Earth science experiments using Vernier sensors with a LabQuest 2 in this engaging hands-on workshop. Experience how Vernier has been incorporating the principles of the NGSS science and engineering practices for 33 years!
Integrating Online Learning into the Science Classroom  
(Grades 1–10) 153C, BCEC  
Sponsor: NewPath Learning
Melissa Hughes, NewPath Learning, Victor, N.Y.
Experience NewPath’s Online Learning Program, which allows teachers to assign and present ready-to-use, standards-based multimedia lessons, interactive activities, lab simulations, and assessments, as well as track and report student progress. Additionally, the program provides easy-to-use authoring tools and templates to develop customized, interactive lessons. Each participant will receive a free trial subscription.

STEMtastic Strategies  
(General) 154, BCEC  
Sponsor: Discovery Education
Cindy Moss, Discovery Education, Silver Spring, Md.
Discover compelling data about why STEM teaching and learning is critical. Experience STEM strategies that are appropriate and engaging for K–12 students as well as find out about STEM competitions and funding sources for STEM.

Building Readiness in Physical Science and the NGSS  
(Phys) 156A, BCEC  
Sponsor: Ward’s Science
Deborah Linscomb, Ward’s Science, Rochester, N.Y.
Is your elementary science program building a solid foundation in physical science? We’ll show you how you can with Ward’s NGSS Activity Kits. These exclusive kits are designed to save you time in the classroom and develop conceptual understanding of heat, light, sound, and thermal and electrical energy through hands-on exploration. Win door prizes, too!

MINDSTORMS® EV3 Robotics in the Middle School Classroom—Getting Started  
(General) 156B, BCEC  
Sponsor: LEGO® Education
William J. Church, Profile High School, Bethlehem, N.H.
Middle school physical science + robotics = great learning experiences! Get your hands on the latest LEGO MINDSTORMS Education EV3 curriculum and resources designed to address the Next Generation Science Standards and cover renewable energy, thermal physics, mechanics, and light.

Morning of Inquiry—Making Inquiry Safe, Manageable, and Inspirational in Grades 6–12  
(Chem)  
(General)  
Sponsor: Flinn Scientific, Inc.
Science was developed by questioning and experimentation, so why is science often taught as a series of facts? To be literate in science, students should be comfortable with inquiry—asking questions and deriving answers. The inquiry approach to teaching science is reflected in the recent changes in national curricula like AP® and NGSS. Jamie will guide you through the process of integrating inquiry into your lesson plans for grades 6–12 no matter what subjects you teach. Jamie will present new inquiry activities geared around chemistry, while sharing tips and ideas to help all teachers safely manage inquiry, reduce teacher workload, build inquiry skill across grade levels, and adapt inquiry principles to other science disciplines. Handouts!

New Advanced Inquiry Labs for AP Biology from Flinn Scientific  
(Bio)  
(Grades 9–12) 258A, BCEC  
Sponsor: Flinn Scientific, Inc.
Jennifer Sternberg (jsternberg@flinnsci.com) and Irene Cesa (icesa@flinnsci.com), Flinn Scientific, Inc., Batavia, Ill.
Four big ideas, more great labs! The revised AP Biology curriculum integrates scientific inquiry and reasoning through a series of student-directed, inquiry-based laboratory investigations. Join Flinn Scientific as we model the inquiry process and demonstrate activities from our new guided inquiry labs for AP Biology. We will share proven strategies for improving students’ ability to generate meaningful questions, design experiments, and analyze scientific evidence. Handouts provided for all activities include alignment with the new AP Biology curriculum.

Fantastical Chemistry Demos for All Classrooms  
(Chem)  
(General) 258B, BCEC  
Sponsor: Educational Innovations, Inc.
Bill Richey, Educational Innovations, Inc., Bethel, Conn.
These super fun and exciting chemistry demonstrations can be used by all teachers at any level to get your classroom students excited about the amazing world of chemistry. These easy and practical demonstrations will truly show your students what we already know—that science is fun!
Come to FLINN SCIENTIFIC’s
Morning of Inquiry

Stand Back—I’m Going to Try Science!
Making Inquiry Safe, Manageable, and Inspirational in Grades 6–12
By Jamie Benigna, The Roeper School, Birmingham, MI

Friday, April 4, 2014 • 10:00 a.m. — 11:30 a.m.
Room 210 A/B, Boston Convention Center

Science was developed by questioning and experimentation, so why is science often taught as a series of facts? To be literate in science, students should be comfortable with inquiry—asking questions and deriving answers. The inquiry approach to teaching science is reflected in recent changes to national curricula like AP and NGSS. Jamie will guide you through the process of integrating inquiry into your lesson plans for grades 6–12 no matter what subjects you teach.

Jamie will present new inquiry activities centered around chemistry, while sharing tips and ideas to help all teachers:

- Safely manage inquiry
- Reduce teacher workload
- Build inquiry skills across grade levels
- Adapt inquiry principles to other science disciplines

Handouts will be provided.

FLINN
SCIENTIFIC, INC
www.flinnsci.com/NSTA2014
10:30–11:30 AM  Featured Presentation
Chrysalis: Transforming Your Teaching  (Bio)
( Elementary)
Steve Rich (bflywriter@comcast.net), NSTA Director, Professional Development, and Director, GYSTC, University of West Georgia, Carrollton
@bflyguy
Presider: Michele Daigle, Central Tree Middle School, Rutland, Mass.
Elementary teachers can exude confidence using simple strategies and reliable resources. Join Steve Rich as he challenges teachers to emerge from their chrysalis and share their enthusiasm for science with students—making standards-based learning practical, informative, and fun.

As a science teacher in elementary and middle schools, Steve Rich created two outdoor classrooms that were honored with NSTA awards—the Ciba Exemplary Science Teaching Award and the Ohaus Award for Innovations in Science Teaching. He served as a science specialist for the Georgia Department of Education and is currently coordinator of the Youth Science and Technology Center at the University of West Georgia. Steve is a frequent NSTA presenter and author of the NSTA Press® books Outdoor Science: A Practical Guide and Bringing Outdoor Science In: Thrifty Classroom Lessons.

A National Board Certified teacher, Steve is the recipient of the Presidential Award for Excellence in Science Teaching. Currently, he serves as the NSTA Director for Professional Development. He was president of the Georgia Science Teachers Association. At present, he is working toward his doctoral degree in school improvement at the University of West Georgia, where his research focuses on teaching elementary science outdoors.

In 2013, Steve was commissioned by former First Lady Rosalynn Carter to design a butterfly garden at her home in Georgia. This garden became the beginning of the Rosalynn Carter Butterfly Trail, comprised of a dozen public gardens featuring Steve’s designs for the Jimmy Carter National Historic Site.

11:00–11:30 AM  Workshop
Meet Me in the Middle Session: Everyday Engineering  (Gen)
(Middle Level)
Commonwealth Ballroom A, Westin Waterfront
Richard H. Moyer and Susan A. Everett (everetts@umich.edu), University of Michigan–Dearborn
Engage in STEM activities related to everyday engineering (ballpoint pens or life jackets) and learn how to integrate the four STEM disciplines into one lesson.

11:00 AM–12 Noon  Presentations
SESSION 1
If I Do a Lab, Must I Write a Lab Report?  (Gen)
( Elementary)
Sharon LaRosa (teachnsglearningtwice@gmail.com), Swampscott (Mass.) Public Schools
Come pick up positive strategies using science notebooking and techniques to develop writing/critical-thinking skills at the elementary level. Learn 21st-century writing skills as they relate to STEM.

SESSION 2
Moving Forward with NGSS Crosscutting Concepts: Questions and Strategies to Elicit Student Ideas in Life Science  (Bio)
( Elementary—Middle Level)
Bethann Lavoie (bethann.lavoie@mnsu.edu), Stephanie J. Zojonc (stephanie.zojonc@mnsu.edu), and Brittany Ziegler (brittany.ziegler@mnsu.edu), Minnesota State University, Mankato
Take away key questions and organizational strategies that deepen understanding of NGSS crosscutting concepts. Integrate them when students experiment, read, observe organisms, and decode images.

SESSION 3
Sustainability, STEM, and the Built Environment  (Env)
( Elementary—High School)
Tim Cole (jtcole@vbschools.com) and Melanie A. Loney, Virginia Beach (Va.) City Public Schools
Join us as we demonstrate how one school division is educating students about sustainability by connecting STEM and the built environment.
SESSION 4
The Yearlong Space Epic: Immersing and Engaging Students in Science Through an Alternate Reality Game (Chem) (General) 162B, BCEC
Jeffrey King, Camden County Technical Schools, Pennsauken, N.J.
Explore how immersing students in a yearlong space mission increases student excitement in STEM and empowers students to solve scientific problems and make choices that can alter humanity’s fate in the universe.

SESSION 5
Connecting Physical Science and Engineering Through the Design of an Underwater Robot (Phys) (Middle Level—High School) 205C, BCEC
Jason C. Sayres (jason.sayres@stevens.edu), Stevens Institute of Technology, Hoboken, N.J.
Join me for an in-depth discussion of underwater robotics projects as vehicles for teaching and connecting physical science and engineering principles, along with the unique challenges involved.

SESSION 6
Wheelock Pathway Session: Weaving Science and Literacy into the Elementary Classroom to Meet the NGSS and CCSS (Gen) (Elementary/Supervision) 209, BCEC
Janet MacNeil (janet.macneil@brookline.k12.ma.us), Brookline (Mass.) Public Schools
Emily Leonard, Runkle School, Brookline, Mass.
Jeri Hammond (jeri.hammond@brookline.k12.ma.us), Driscoll School, Brookline, Mass.
We’ll share our experience integrating talk, writing (notebooks and argument writing), and reading into elementary science units while meeting both the NGSS and the Common Core State Standards, ELA.

SESSION 7
STEM Project: Build and Use a Simple Colorimeter (Chem) (High School) 251, BCEC
Fred C. Fotsch (ffotsch@spmail.org), Glendale High School, Springfield, Mo.
This STEM activity—building a colorimeter, designed to fulfill the NGSS—is constructed from easily obtained, inexpensive parts, and then calibrated with a TI-Nspire™ voltage probe.

SESSION 8
The NSTA Learning Center: A Tool to Develop Preservice Teachers (Gen) (General) 252A, BCEC
Al Byers (abyers@nsta.org), Acting Associate Executive Director, e-Learning and Government Partnerships, NSTA, Arlington, Va.
Flavio Mendez (fmendez@nsta.org), Senior Director, NSTA Learning Center/SciLinks, NSTA, Arlington, Va.
Come learn about a new online system to assist professors in creating customized e-textbooks using the Learning Center’s interactive and e-print resources for their preservice teachers.

SESSION 9 (two presentations)
Preschool STEM Family Night: A University, Preschool, and Community Partnership (Gen) (Middle Level) 252B, BCEC
Nicole Glen (nglen@bridgew.edu), Emma Lee Hunt, Emily Tuminelli (emtuminelli@yahoo.com), and Allison Mooney, Bridgewater State University, Bridgewater, Mass.
Preservice early childhood teachers planned and implemented a “kitchen science” preschool STEM family night. Join us as we present details of the partnership, activities, and assessment results.

Building Family STEM Literacy (Gen) Ellen M. Streng (streng.3@wright.edu) and Madison B. Gearhart, Wright State University, Dayton, Ohio Discover interactive exhibits, demonstrations, and family-oriented games that support STEM content, the Next Generation Science Standards, and the Common Core State Standards, ELA.

SESSION 10
NARST Session: Exploring Next Generation Curriculum Models Implementing the Vision in the NRC Framework and the NGSS (Gen) (Elementary—High School) 253A, BCEC
Katie Van Horne (katievh@uw.edu), Elizabeth A. Wright, Nancy Vye (nancyvye@u.washington.edu), and Paul Sutton, University of Washington, Seattle
Suzanne Reeve, Bill Palmer, and Angie DiLoreto (diloretod@bsd405.org), Bellevue (Wash.) School District
Claudia Lemus (lemus@fwps.org), TAF Academy, Kent, Wash.
This session describes a range of instructional approaches and curriculum development models that can be used to support the learning goals embedded in the NGSS.
SESSION 11

STEM Share-a-Thon (Gen)
(Elementary—High School) 253B, BCEC

Jeffrey Grant (jgrant@csd99.org), North High School, Downers Grove, Ill.
Kenneth Huff (khuff@williamsville12.org), Mill Middle School, Williamsville, N.Y.
Benjamin McCombs (benjamin.mccombs@ketteringschools.org), Van Buren Middle School, Kettering, Ohio
Terence McMahon (terry.mcmahon@palmbeachschools.org), Meadow Park Elementary School, West Palm Beach, Fla.

Presider: Amanda Upton (aupton@nsta.org), Manager, Nominations and Teacher Awards Program, NSTA, Arlington, Va.

Come learn about the latest STEM classroom initiatives by the PASCO STEM Educator award winners! They’ll present their winning ideas at the elementary, middle school, and high school levels.

SESSION 12

NSTA Press® Session: Get the FACTs for Supporting Evidence-based Talk and Argument (Gen)
(General) 254A, BCEC

Page Keeley (pagekeeley@gmail.com), 2008–2009 NSTA President, Jefferson, Maine
Joyce B. Tugel (jtugel@mmsa.org), Maine Mathematics and Science Alliance, Augusta

This interactive session will provide you with a collection of formative assessment classroom techniques (FACTs) that both inform instruction and support learning as students engage in evidence-based talk and argument—integral practices of the NGSS.

SESSION 13

Disciplinary Literacy in Middle School Science Classrooms (Gen)
(Middle Level) 255, BCEC

Gregory MacDougall (gregm@usca.edu), University of South Carolina, Aiken

This session will explain the IQ-MS model of professional development and support designed to infuse disciplinary literacy strategies in middle science classrooms across South Carolina.

SESSION 14

Teaching About the Teen Brain: Linking Neuroscience and Health Curricula Through the Study of Addiction (Bio)
(Middle Level—High School) 257A, BCEC

Elliott Gimble (egimble@sch.ci.lexington.ma.us), Sarah Legge (slegge@sch.ci.lexington.ma.us), and Laura Byron (lbyron@sch.ci.lexington.ma.us), Lexington High School, Lexington, Mass.

Sion Harris (sion.harris@childrens.harvard.edu), CeASAR Children’s Hospital, Boston, Mass.

Presider: Elliott Gimble

Explore an adaptable neuroscience curriculum on adolescent brains and addiction developed by high school biology and health teachers and a specialist from Children’s Hospital—Boston.

SESSION 15

Top 10 Findings in Genetics and Biotechnology (Bio)
(Middle Level—College) 257B, BCEC

Neil Lamb, HudsonAlpha Institute for Biotechnology, Huntsville, Ala.

Want to include cutting-edge genetic research in your class? See the top 10 findings in genetics and biotechnology presented in student-friendly language and correlated to national standards.

SESSION 16

Google Me This! How to Make Collaboration Work in a Wiki World (Gen)
(General) 259B, BCEC

Ben Smith (ben@edtechinnovators.com) and Jared Mader (jared@edtechinnovators.com), York, Pa.

Join us for a behind-the-scenes look at how to create a collaborative work environment in your science classroom using web-based tools.

SESSION 17

How to Effectively Implement a Curricular Review as a Teacher Leader (Gen)
(General) 260, BCEC

Jennifer Towleh (jennifer_towleh@asl.org) and Janet E. Bradshaw (janet_bradshaw@asl.org), American School in London, U.K.

Discussion centers on how to bring about curricular change. Engage in activities that can enable you to effectively lead meetings and discussions about curricular implementation.
SESSION 18
Keys to Success for The DuPont Challenge® Science Essay Competition (Gen)
(Brian P. Short, Director, Science Education Competitions, NSTA, Arlington, Va.)
Teachers whose students have previously won The DuPont Challenge will share their science essay writing tips in this panel-based discussion. How do students choose an essay topic? What are the key features of an award-winning science essay? What are common pitfalls to avoid? How much guidance do teachers need to provide? These are just some of the important issues that will be addressed so that attendees can take winning strategies back to their students, or simply help their students improve their science writing.

SESSION 19
Informal Science Day Session: Collaborate to Innovate: An Interactive Session to Develop Exciting Partnerships for Recruiting and Retaining Girls in STEM (Gen)
(Karen A. Peterson, kpeterson@edlabgroup.org, EdLab Group, Lynnwood, Wash.)
The National Girls Collaborative Project will share an innovative collaboration model to help educators provide high-quality activities to K–12 girls in STEM.

SESSION 20
Informal Science Day Session: Engaging Early Childhood Educators with Science: Presentation of and Findings from the Sackler Early Childhood Science Education Initiative (Preschool–Elementary)
(Natalie Tahsler, ntahsler@amnh.org), Jane Kloecker (jkloecker@amnh.org), Ilana April (iapril@amnh.org), Caitlin Coe (cco@amnh.org), Bilexis Casado (bcasado@amnh.org), and Janice Jang (jjangl@amnh.org), American Museum of Natural History, New York, N.Y.
What does effective professional development look like for early childhood educators? How can museums serve as a resource for educators? The Sackler Early Childhood Science Education Initiative was a two-year professional development pilot (2011–2013), designed for early childhood educators from community centers, public schools, and independent schools. Join us as we share knowledge learned from the initiative and discuss best practices for building an effective museum/school partnership.

SESSION 21
Informal Science Day Session: Informalscience.org: A Newly Rebuilt Resource for Informal Educators (Gen)
(Kalie Sacco, ksacco@astc.org, Association of Science-Technology Centers, Washington, D.C.)
Join staff from the Center for the Advancement of Informal Science Education (CAISE) as they introduce you to Informalscience.org, a newly rebuilt resource website for informal science professionals.

SESSION 22
Informal Science Day Session: Web-based Classroom Resources: How Evaluations Can Aid Program Development (Gen)
(Jessica Sickler, jsickler@cosi.org, Lifelong Learning Group, Columbus, Ohio)
Mary Ann Wojton (mwojton@cosi.org), COSI, Columbus, Ohio
Evaluators and content providers will discuss how evaluations supported the development of two web-based teacher resources that are designed to connect learners to scientific data and investigative tools.

SESSION 23
Online Teaching and Learning—Not Your Parents’ Classroom (Gen)
(John Graves, graves@montana.edu, Montana State University, Bozeman)
Online learning can be as good as or better than face to face. Share the experiences of a 15+ year online instructor.

SESSION 24
Globalizing Your Science Class for the 21st Century (Gen)
(Kottie Christie-Blick, kchristieblick@socsd.org, Cottage Lane Elementary School, Blauvelt, N.Y.)
Leverage the NGSS and CCSS to help students collaborate internationally on scientific issues. See what’s worked in classrooms when students use science as a focal point while developing global competence.
SESSION 25
The Science Behind Advanced Coursework in High School (Gen)
(High School–College) Pacific A/B, Renaissance
Philip M. Sadler (psadler@cfa.harvard.edu) and Gerhard Sonnert (gsonnert@cfa.harvard.edu), Harvard-Smithsonian Center for Astrophysics, Cambridge, Mass.
Hear evidence from our national studies measuring the impact of AP, IB, and other advanced coursework on STEM career interest and later performance in college science.

SESSION 26 (two presentations)
(General) Pacific C, Renaissance
Amazing Apps and Scintillating Software for Science (Gen)
James O’Keefe (jokeefe@lesley.edu), Lesley University, Cambridge, Mass.
James O’Keefe IV (james.okeefe42@gmail.com), Hingham High School, Hingham, Mass.
Join us for an overview and demonstration of the effective use of iPad apps and other educational software in teaching biology and general science.

Teaching with Screen-capture Podcasts (Gen)
Wendy Van Norden (wvannorden@hw.com), Harvard-Westlake School, Studio City, Calif.
Discover how to turn science lessons into short screen capture podcasts that your students can watch and take notes at their own pace.

SESSION 27
Achieving Conceptual Understanding in Stoichiometry with Cognitive Skills (Chem)
(High School–College) Pacific D, Renaissance
Wai S. Chan (waisum.chan@yahoo.com), William P. Clements High School, Sugar Land, Tex.
Frustrated in teaching stoichiometry? Join me and learn about a conceptual strategy, incorporated with educational theories, to make stoichiometry meaningful for students.

SESSION 28
An Assessment for a 21st-Century Society: The National Assessment of Educational Progress Technology and Engineering Literacy Assessment (Gen)
(General) Pacific F, Renaissance
William Ward (william.ward@ed.gov), National Center for Education Statistics, Washington, D.C.
Join the National Assessment of Educational Progress to learn about the first-ever national assessment of technology and engineering literacy.

SESSION 29
You Can Teach Science! Properties of Materials for K–5 in NGSS (Chem)
(Elementary/College) Pacific G/H, Renaissance
Martin L. Brock (martin.brock@eku.edu), Eastern Kentucky University, Richmond
Diane Johnson (diane.johnson@uky.edu), University of Kentucky, Lexington
Through teacher/university partnerships, hands-on activities aligned with the NGSS and engineering components have been developed and will be presented in this interactive session.

SESSION 30
AMSE Session: Leadership for the Next Generation in Science Education (Gen)
(Supervision/Administration) Constitution, Seaport
Sharon J. Delesbore (sharon.delesbore@hmhco.com), The Leadership and Learning Center, Houston, Tex.
A.I.M. to establish a successful science program with support of knowledgeable leadership willing to prepare all students for the Next Generation Science Standards. Participants will utilize the A.I.M. framework to establish a successful science program.
SESSION 31
Moviemaking in an iMinute (Gen)
(Middle Level–High School) Lighthouse I, Seaport
Achim Dangerfield (achimdangerfield@berkeley.net), B Tech Academy, Berkeley, Calif.
Create a science lesson in one minute with iMovie for iPads and iPhones. Put yourself ahead of the YouTube tutorial pack by crafting a “Hollywood-ready” lesson.

SESSION 32
★ Teachers Developing as Leaders: A Panel Discussion (Gen)
(General) Plaza A, Seaport
Joyce M. Gleason (joycegle@earthlink.net), Educational Consultant, Punta Gorda, Fla.
Christine Royce (caroyce@aol.com), Shippensburg University, Shippensburg, Pa.
Betsey Clifford (betsey.clifford@gmail.com), President, Massachusetts Association of Science Teachers, Braintree
Krishna R. Millsapp (loyolagirl@aol.com), Mount Carmel High School, Chicago, Ill.
Jeffrey Spencer, Vista Peak Preparatory, Aurora, Colo.
Teachers do not automatically see themselves as leaders. Exemplary young teachers will describe their experiences as developing leaders. Their personal stories will instruct and inspire.

SESSION 33
Build a Bridge and Get Over It! (Gen)
(Middle Level–High School) Plaza B, Seaport
Keith F. Sevigny (sevik001@hartfordschools.org), Annie Fisher STEM Magnet School, Hartford, Conn.
Jennifer G. Sevigny (jenny.glieco@gmail.com), Preston Plains Middle School, Preston, Conn.
Discover a novel interdisciplinary unit on bridge construction that has been implemented in urban and rural communities to emphasize an integrated STEM approach. Curriculum provided!

SESSION 34
Toying Around with the Nature of Science (Gen)
(Middle Level–High School) Plaza C, Seaport
Ellen Barnett (eb4nd@mail.missouri.edu) and Deborah Hanuscin, University of Missouri, Columbia
How could a toy help your students understand the nature of science? Come play with us! The first 20 participants will receive a toy.

SESSION 35
NSELA Session: Lead, Follow, or Get Out of the Way (Gen)
(Elementary/Supervision) Alcott, Westin Waterfront
Elizabeth Niehaus (niehaus_p@msn.com) and Carol L. Jones (caroljones8710@yahoo.com), Lawrence Technological University, Southfield, Mich.
Jennifer Wickersham (wickershamj@clps.org), Crothers Elementary School, Warren, Mich.
The only true leadership frequently comes from the classroom teacher who has a direct relationship with either the student, their parent, or the administrator. The teacher is the great facilitator of making things happen!

SESSION 36
Exploring the Science Encountered in the Young Child’s World—Nurturing, Observing, Questioning, Investigating, Thinking, and Talking About Science (Gen)
(Preschool–Elementary/Supv.) Burroughs, Westin Waterfront
Donna L. Knoell (dknoell@sbcglobal.net), Educational Consultant, Shawnee Mission, Kans.
Find out how to use everyday examples of science that comprise a young child’s world to motivate students by creating rich, engaging instruction.

SESSION 37 (two presentations)
Meet Me in the Middle Session: Practical Lessons and Demonstrations on a Budget (Gen)
(Middle Level) Commonwealth Ballroom B, Westin Waterfront
Kathleen Brooks, Educational Consultant, Madison, Conn.
Ideas will be shared for lessons and demonstrations that help teach science concepts to middle school students using everyday lab equipment and additional inexpensive materials.

Meet Me in the Middle Session: Cheap and Cool Education Technology for the Middle School Classroom (Gen)
Jacob Noel-Storr (jake@cis.rit.edu), Brandon Cole, and Colby Carll, Rochester Institute of Technology, Rochester, N.Y.
We will present some portable, easy-to-set-up technology ideas to use in your middle level science classroom.
SESSION 38
Video Analysis as Reflective Practice (Gen)
(General) Faneuil, Westin Waterfront
Jessica S. Krim (jkrim@siue.edu), Southern Illinois University, Edwardsville
I will share results from a study based on reflective practice, in which I work with preservice educators to analyze videos of their teaching.

SESSION 39 (two presentations)
(General) Grand Ballroom C, Westin Waterfront
Meet Me in the Middle Session: Candy Geometry: Using Mathematical Models to Solve a Problem—Sweet!
Mary Lou Lipscomb (mlipscomb3536@aol.com), Retired Educator/NMLSTA Board Member, Naperville, Ill.
Liz Martinez (lizmartinez@gmail.com), Illinois Mathematics and Science Academy, Aurora
Let’s integrate math and science using various geometric models to calculate the volume of one Skittles® candy and compare the calculated volumes to the actual volume.

Meet Me in the Middle Session: Science in 32 Pages: The Brilliant and Graceful Work of Jason Chin
Jason Chin, Author and Illustrator, Burlington, Vt.
Author and illustrator Jason Chin is a master at pairing stories and science in his award-winning Outstanding Science Trade Books Redwoods, Coral Reef, and Island. Jason will delight you with how he uses his bookmaking talents to present accurate views of the scientific world in a way that entertains and delights. He will discuss his process in researching, writing, and illustrating inviting and accessible science and provide a sneak peek into his forthcoming book Gravity.

SESSION 40
Getting at the Core of Project-based and Inquiry Science (Gen)
(Elementary–High School) Griffin, Westin Waterfront
Larry Weathers, Arlington (Mass.) Public Schools
Katrina Scherben (katrina.scherben@gmail.com), Innovate Manhattan Charter School, Bronx, N.Y.
Project-based and inquiry science lessons provide powerful opportunities for students to use evidence to explain and support scientific claims. Come learn methods that can enrich the writing in your classroom.

SESSION 41
Expanding Students’ Digital Footprint Beyond Social Media (Gen)
(General) Harbor Ballroom II, Westin Waterfront
Robert A. White (rwhite@bbchs.org) and Bill L. Sadler (bsadler@bbchs.org), Bradley-Bourbonnais Community High School, Bradley, Ill.
Create awareness of digital citizenship, promoting real-time online student collaboration and using online notebooks to document scientific activities inside and outside of the classroom.

SESSION 42
Using the 5Es to Become Next Generation Ready (Gen)
(General) Harbor Ballroom III, Westin Waterfront
Sally Creel (sally.creel@cobbk12.org), Cobb County Schools, Marietta, Ga.
The NGSS requires more than rote learning, memorization, and fact-based learning. Learn how to effectively use the 5Es (Engage, Explore, Explain, Elaborate, and Evaluate) to teach an NGSS standard. Elementary-friendly strategies incorporating the NGSS practices, crosscutting concepts, and literacy connections will be shared.

SESSION 43 (two presentations)
(General) Lewis, Westin Waterfront
Sense-of-Place Writing Templates: Connect Your Students’ Past Experiences with Science AND Literacy!
Renee M. Clary (rclary@geosci.msstate.edu), Mississippi State University, Mississippi State, Miss.
Reflecting and writing on their past experiences connects your students to science content—and promotes literacy skills! Free botany, geology, and meteorology writing templates provided.

Using Writing to Motivate Students to Learn Science (Gen)
Nancy G. Caukin (nancy.caukin@mtsu.edu), Middle Tennessee State University/Eagleville High School, Murfreesboro
Motivate students to learn science by using a science writing heuristic, a strategy that supports the NGSS and CCSS. Watch your students become scientists.
SESSION 44
Designing Professional Development and Using Technology to Support It (Gen)
(Supervision/Administration) Paine, Westin Waterfront
Lisa Bohn (lbohn@astate.edu), Arkansas State University, State University, Ark.
Elizabeth A. Allan (eallan@uco.edu), University of Central Oklahoma, Edmond
Patricia Shane (pshane@unc.edu), 2009–2010 NSTA President, and North Carolina Science Leadership Association, Chapel Hill
Walk away with ideas and best practices for designing and providing professional development in your school and district. We will be discussing various technologies to support the event, including cloud storage, blogs, and electronic scheduling.

An excellent networking opportunity for preservice and new teachers alike. Also, learn how you can establish (or improve) an NSTA student chapter on your campus and the benefits of doing so.
Refreshments included.

Friday, April 4
5:30–7:30 PM
Renaissance Boston Waterfront Hotel
Atlantic 2/3
11:00 AM–12 Noon  Workshops

NESTA Session: National Earth Science Teachers Association Weather, Climate, and Ocean Share-a-Thon (Earth) (Elementary–High School) 052 A/B, BCEC
Michelle C. Harris, Wakefield High School, Arlington, Va.
Roberta M. Johnson (rmjohnsn@gmail.com), NESTA, Boulder, Colo.
Margaret A. Holzer (mholzer@monmouth.com), Chatham High School, Chatham, N.J.
Ileana Betancourt (tab27@cornell.edu), Cornell Lab of Ornithology, Ithaca, N.Y.
Lynne Cherry (youngvoicesforplanet@gmail.com), Young Voices on Climate Change, Thurmond, Md.
Kathleen Couchon, Narragansett High School, Narragansett, R.I.
LuAnn Dahlman (luann.dahlman@noaa.gov), NOAA, Mesa, Ariz.
Annette deCharon (annette.decharon@maine.edu), University of Maine Darling Marine Center, Walpole
Wendy DeMers (2ydnew2@gmail.com), E. Hynes Charter School, New Orleans, La.
Diane Duffus (duffus@dutchessday.org), Dutchess Day School, Millbrook, N.Y.
Don Duggan-Haas (dad55@cornell.edu), PRI and Its Museum of the Earth and Its Cayuga Nature Center, Ithaca, N.Y.
Lisa Gardiner, UCAR Science Education, Boulder, Colo.
Kevin Goff (kdgoff@vims.edu), Virginia Institute of Marine Science, Gloucester Point
Margaret Greaves (mgreaves@bostonpublicschools.org), Boston Latin School, Boston, Mass.
Marian Grogan (marian_grogan@terc.edu), Nick Haddad (nick_haddad@terc.edu), and Tamara Shapiro Ledley (tamara_ledley@terc.edu), TERC, Cambridge, Mass.
Laura Guertin (paesta@psu.edu), President-Elect, Pennsylvania Earth Science Teachers Association, University Park
Lynne H. Hehr (lhehr@uark.edu), University of Arkansas, Fayetteville
Preston Lewis (preston.lewis@nasa.gov), NASA Langley Research Center, Hampton, Va.
Bruce Moravchik (bruce.moravchik@noaa.gov), NOAA, Silver Spring, Md.
Deb Morrison (educator.deb@gmail.com), University of Colorado, Boulder
Andi Nelson (anelson@adlerplanetarium.org), Adler Planetarium, Chicago, Ill.
Ruth Paglierani (ruthp@ssl.berkeley.edu), University of California, Berkeley
Kristen Poppleton (kristen@willstegerfoundation.org), Will Steger Foundation, Minneapolis, Minn.
Carole J. Reesink (creesink@muscanet.com), Retired Educator, Muscatine, Iowa
Randy Russell (rrussell@ucar.edu), NCAR, Boulder, Colo.
Al Stenstrup (alstenstrup@plt.org), Project Learning Tree, Washington, D.C.
Jessica Taylor (jessica.e.taylor@nasa.gov), NASA Langley Research Center, Hampton, Va.
Eleanor Vallier-Talbot (eleanor-vallier-talbot@noaa.gov), NOAA/National Weather Service, Taunton, Mass.
Courtney White, Rainforest Alliance, New York, N.Y.
Join more than 20 NESTA members and other education specialists as they share their favorite classroom activities. Lots of free handouts!
Follow Your (Our) Star  
(Env)  
(General)  
157C, BCEC  
Alice (Jill) A. Black (ablack@missouristate.edu), Missouri State University, Springfield  
Sometimes our Sun and its functioning and uses are omitted in the study of astronomy. Engage in three hands-on activities involving the relationship of temperature and color of the Sun; sunspots; the ecliptic; sundials; scale models of the Earth, Sun, and Moon; and solar cooking.

Engineering: Integrate the 3 Ds in the NGSS  
(Phys)  
(Elementary–Middle Level)  
159, BCEC  
Karen L. Ostlund (klostlund@utexas.edu), NSTA Retiring President, and Retired Professor, The University of Texas at Austin  
Experience a model lesson integrating the three dimensions (science and engineering practices, disciplinary ideas, and crosscutting concepts) in the Next Generation Science Standards.

Learning Made EEEEE-Z!  
(Chem)  
(Elementary)  
160A, BCEC  
Kimberly L. Trotter (kimtrotter3@gmail.com), Shwab Elementary School, Nashville, Tenn.  
Join me as I demonstrate the 5E learning model in an engaging, exciting, exhilarating, enriching, and enhancing method. Take home a free CD of lessons.

And They All Lived Scientifically Ever After  
(Gen)  
(Preschool–Elementary)  
160C, BCEC  
Elizabeth Kersting-Peterson (elizabeth.kerstingpeterson@duluth.k12.mn.us), Piedmont Elementary School, Duluth, Minn.  
In this hands-on workshop, participants use literature, common household materials, science, engineering, and inquiry to engage K–3 students in creative adventures.

Interdisciplinary Model-eliciting Activities Bring Design, Engineering Practices, and Real-World Context to the Science Classroom  
(Bio)  
(Middle Level–High School)  
205A, BCEC  
Melissa Dyehouse (mdyehouse@lsi.fsu.edu), Adam L. Santone (asantone@lsi.fsu.edu), and Rabieh Razzouk (rrazzouk@lsi.fsu.edu), Florida State University, Tallahassee  
Learn to use model-eliciting activities in your classroom as your students learn to think like engineers to solve real-world problems while learning standards-based science content.

Using Climatograms to Understand Biomes  
(Bio)  
(Middle Level–College)  
205B, BCEC  
Thomas R. Hinckley (thinthckley@landmark.edu), Landmark College, Putney, Vt.  
This life science workshop will engage you in the construction and interpretation of climatograms that can then be integrated into a larger biomes unit.

Elementary Engineering  
(Gen)  
(Elementary–Middle Level)  
207, BCEC  
Elizabeth A. Strong (libby@smartcenter.org) and Robert E. Strong (robert@smartcenter.org), SMART-Center, Wheeling, W.Va.  
Engineering in the elementary and middle school classrooms can be easier than you think. Join us as we share ideas and activities from the elementary engineering workshop.

CESI Session: Do You Have a Problem?  
(Gen)  
(Elementary–Middle Level)  
211, BCEC  
Melissa Sleeper (melissa.sleeper@indiansriverschools.org), Sebastian River Middle School, Sebastian, Fla.  
Come learn how to design meaningful and successful problem-based projects while students learn science content and build 21st-century skills. Leave with classroom-ready activities.

Exploring Interactions in the Sciences: Inquiry-based Investigations  
(Gen)  
(Elementary)  
212, BCEC  
Jane Heinze-Fry, Sandra Ryack-Bell, and Jennifer Klein (jklein@mits.org), Museum Institute for Teaching Science (MITS), Quincy, Mass.  
Participate with K–5 teachers in inquiry-based, minds-on/hands-on science activities they developed for their classrooms during MITS summer institutes involving museums and science education centers.

A Way with Words: Integrating Science and Engineering in Reading  
(Gen)  
(Preschool–Elementary)  
213, BCEC  
Brian J. Raygor (braygor@wcboe.org) and Kevin Hill (khill@wcboe.org), Wicomico County Public Schools, Salisbury, Md.  
Discover activities and lessons that can help you make more time for science by integrating investigations with reading. Take home a CD with resources.
NSTA Press® Session: Inside-Out—Enhancing Field-based Learning in Environmental Science for the Upper Elementary Classroom  
(Env)  
(Elementary)  
253C, BCEC  
Sarah Haines (shaines@towson.edu) and Robert Blake (rblake@towson.edu), Towson University, Towson, Md.  
John A. Frederick (frederic@mdsg.umd.edu), University of Maryland, Baltimore  
This workshop will not only enhance your content knowledge in the environmental sciences, but will help you in the construction and implementation of meaningful field-based learning experiences for your students.

Space Week: An Integrated Curriculum Unit for Grades 6–8  
(Gen)  
(Middle Level)  
254B, BCEC  
Kelly Graveson (kgraveson@douglasps.net), Douglas High School, Douglas, Mass.  
Rachel Usher (rusher@douglas.k12.ma.us), Douglas Intermediate Elementary School, Douglas, Mass.  
Design and test a Mars lander as we share our engaging, inspiring, and award-winning unit that infuses space studies into all middle school subject areas.

Creating Meaningful Field Trip Experiences  
(Gen)  
(Informal Education)  
256, BCEC  
Dustin Axe (dustin.axe@msichicago.org), Jason Dupuis (jason.dupuis@msichicago.org), and Andy North (andy.north@msichicago.org), Museum of Science and Industry, Chicago, Ill.  
Create a field trip experience that makes the most out of your destination. Take home resources and tips to be used in many field trip environments.

Using Web-based Curriculum Materials to Build Strong STEM Programs  
(Env)  
(General)  
Atlantic 1, Renaissance  
Gregory Vogt and Nancy Moreno (nmorenob@bcm.edu), Baylor College of Medicine, Houston, Tex.  
STEM subjects are often gatekeepers to future success. Access peer-reviewed online resources to build STEM knowledge, as well as curricula to prepare students for 21st-century careers.

Building Students’ Understanding of Theories One Puzzle Piece at a Time  
(Gen)  
(Elementary—High School)  
Atlantic 2, Renaissance  
Juan P. Jimenez (jjimen10@hawk.iit.edu), Norman G. Lederman (ledermann@iit.edu), Elana R. Jacobs (ejacobsl@hawk.iit.edu), and Megan F. Campanile (mfaurot@hawk.iit.edu), Illinois Institute of Technology, Chicago  
Presider: Juan P. Jimenez  
By putting puzzle pieces together, we are helping students make connections to biology and nature of science. Lesson plans and activities provided.

3-D Tissue Models That Anyone Can Build  
(Bio)  
(High School–College)  
Atlantic 3, Renaissance  
Ruth L. Hutson (ruthhutson@bluevalley.net), Blue Valley High School, Randolph, Kans.  
These activities can help educators increase their students’ 3-D spatial understanding by constructing models of the four types of tissues.

Literacy Skills for Visual Scientific Text  
(Middle Level–High School)  
Seaport Ballroom A, Seaport  
Jaclyn F. Austin, Naté Hall (nate_hall@hcpss.org), and Mary Weller (mary_weller@hcpss.org), Howard County Public School System, Ellicott City, Md.  
In science, the text that students need to access can be visual such as a chart, graph, or diagram that contains essential information. In a hands-on activity, participants will explore how to help students become literate to a variety of texts in science and focus on the skill of summarization that supports the NRC Framework.
Using the Five-Practice Framework to Facilitate Productive Classroom Discussions (Gen)

Sarah Macway (sarah.macway@mvla.net), Mountain View High School, Mountain View, Calif.
Laura Nutter, T.C. Williams High School, Alexandria, Va.

The five-practice framework allows teachers to orchestrate rich learning and discussions around cognitively demanding tasks. Participants will engage with examples from schools across the U.S.

CSSS Session: Understanding the Student Science Performances in the NGSS (Gen)

Juan-Carlos Aguilar (jaguilar@doe.k12.ga.us), Georgia Dept. of Education, Atlanta
Brett Moulding, Council of State Science Supervisors, Ogden, Utah

Attention will be paid to identifying and analyzing examples of student performance in a science classroom under the expectations set forth by the NGSS.

DuPont Presents: The Science of Packaging (Gen)

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

Participants will be introduced to a brief history of polymers and how they are utilized in the packaging industry. Hands-on activities will illustrate the variables that must be considered as we design a package to preserve dry dog food.

A Mutual Relationship Between Science and Literacy (Gen)

Deanna Boyd (sherrise77@gmail.com), South Carolina Dept. of Education, Columbia

Experience a hands-on demonstration of science literacy tools, including lessons that strengthen students’ communication skills, science notebooks, journaling activities, and various literacy techniques. Free materials!
11:00 AM–12 Noon Exhibitor Workshop
A Project-based Earth and Space Systems Science Program Developed by the American Geosciences Institute (Earth) (Grades 9–12) 156C, BCEC
Sponsor: It’s About Time
Presenter to be announced
Become familiar with the latest edition of EarthComm and experience how its systems approach incorporates the crosscutting concepts of the Next Generation Science Standards as well as science and engineering practices. Also discover how the disciplinary core ideas in Earth and space science are presented in this engaging, project-based, active learning curriculum.

11:00 AM–12:30 PM Workshop
AMNH Pathway Session: Using a Web-based Graphing Tool to Analyze and Interpret Weather Data, Climate Change, and Patterns in Weather and Climate (Earth) (Middle Level–High School) 208, BCEC
Dave Randle (drandle@amnh.org) and Jay Holmes (jholmes@amnh.org), American Museum of Natural History, New York, N.Y.
Presider: Hudson Roditi, American Museum of Natural History, New York, N.Y.
This session explores weather and climate data through an online graphing tool that simplifies data visualization so students can focus on data analysis and interpretation.

11:30 AM–12 Noon Presentation
SESSION 1
Meet Me in the Middle Session: Climate Change Curriculum to Support Argumentation in Middle School (Gen) (Middle Level) Commonwealth Ballroom A, Westin Waterfront
Emily Weiss (weisse@berkeley.edu), The Lawrence Hall of Science, University of California, Berkeley
The GEMS Ocean Sciences Sequence for Grades 6–8 develops student argumentation skills while exploring the ocean-atmosphere connection, carbon cycle, and climate change.

12 Noon–1:00 PM Presentation
SESSION 1
CESI Session: So You Want to Be a Scientist—Where Science Meets Adventure (Gen) (Elementary–Middle Level) 211, BCEC
Jeanelle B. Day (dayj@easternct.edu) and Susannah Richards (richards@easternct.edu), Eastern Connecticut State University, Willimantic
Pamela S. Turner (pstrst@pacbell.net), Author, Oakland, Calif.
Steve Swinburne (stephen.swinburne@gmail.com), Author, Boston, Mass.
Explore the world of science and scientists with Scientist in the Field authors Steve Swinburne and Pamela Turner. Learn strategies to ignite a young scientist.

12 Noon–1:30 PM Exhibitor Workshops
Hands-On Activities to Model Habitat Preference and Population Sampling (Bio) (Grades 9–12) 102A, BCEC
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Hate it when a lab activity fizzles? Explore easy, engaging, safe chemistry activities that work every time—so they’re sure to produce a reaction from students. Whether you’re new to chemistry or feeling out of your element, you’ll learn new ways to create excitement. Free materials and giveaways!

Focus and Explore Wave Energy and STEM Education K–8 (Gen) (Grades K–8/Supervision) 103, BCEC
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Focus on getting started with STEM education while effectively teaching the Next Generation Science Standards through inquiry-based practices instruction. Explore how to prepare your students for future careers in the 21st-century workforce and ensure effective achievement. Leave with tools to accelerate your STEM journey.
JOIN US AT THE NSTA EXPO #1107

• Find out what’s new with NGSS@NSTA (hint: our new NGSS@NSTA Hub will be launching soon!) and connect with NGSS curators
• Hear about and sign up for upcoming webinars based around critical topics in science education
• Learn more about NSTA professional programs and how they benefit you
• Learn all about our special benefits for members, and why joining NSTA is a smart career choice
• Discover our teacher awards and how to get your students and community involved in our competitions

WE CAN’T WAIT TO MEET YOU!
(Grades K–8) 104A, BCEC
Sponsor: PASCO scientific
Joe Todd, PASCO scientific, Roseville, Calif.
Through an interactive iPad demonstration, you’ll experience how SPARKscience engages students in science and engineering practices, affording a deeper understanding of scientific concepts. Participate in investigations to experience real-time data collection with probeware and SPARKvue software. Five lucky attendees will win a 50th Anniversary Sensor Pack—a $600 value!

STEM Behind Hollywood—Adventure, Drama, and Mystery in Your Classroom  
(Grades 6–12) 104B, BCEC
Sponsor: Texas Instruments
Jeff Lukens, Roosevelt High School, Sioux Falls, S.Dak.
Tom Reardon, Fitch High School/Youngstown State University, Austintown, Ohio
Come to this special hands-on workshop on STEM Behind Hollywood, an exciting new program from the National Academy of Sciences and Texas Instruments. Learn about disease spread and epidemiologists with “Zombie Apocalypse” or learn about astronomers, computer programmers, and Newton’s law of universal gravitation with “Earth Impact.” Are you into CSI? Then check out “Body of Evidence,” an interactive lesson exploring forensic anthropology and body decay rates. Are superheroes for you? Check out “Science Friction” as a civil engineer turns evil and hijacks a city with his knowledge of road surfaces and coefficients of friction. All in all, STEM Behind Hollywood helps students with the context of the content through Hollywood theme–based stories, characters with STEM careers, and real science and math concepts all rolled into an action-packed set of lessons.

Hot Bulbs: Investigating Energy Efficiency  
(Grades 6–8) 104C, BCEC
Sponsor: LAB-AIDS, Inc.
Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.
Why use compact fluorescent instead of incandescent bulbs? In this activity from the SEPUP’s Issues and Physical Science program from LAB-AIDS, participants use specially designed equipment to measure the energy lost as heat by small incandescent bulbs. Energy concepts include calories, heat transfer, efficiency, and more.

The Best Test Prep Book Ever for AP Chemistry  
(Grades 9–12) 105, BCEC
Sponsor: Pearson
Ed Waterman, Retired Educator, Fort Collins, Colo.
It concisely summarizes all the important content in the 6 Big Ideas and 117 Learning Objectives, and is greatly revised and expanded to include photoelectron spectroscopy (PES), mass spectrometry, and chromatography. It also contains hundreds of new and revised practice questions focusing on graphical and tabular data analysis and atomic-molecular representations.

Simple Programming Tools to Enhance Student Engagement  
(Grades 6–College) 106, BCEC
Sponsor: SparkFun Electronics
Derek Runberg (derek.runberg@sparkfun.com), SparkFun Electronics, Boulder, Colo.
Processing is a simple, easy-to-learn open-source programming language used by artists, scientists, mathematicians, and gamers. Integrating this tool into your classroom can empower your students to create simulations, models, and data visualizations. This hands-on workshop will culminate in designing your own data collection dashboard.

How and Why Species Multiply: Free Resources for Teaching Speciation  
(Grades 6–College) 107A, BCEC
Sponsor: Howard Hughes Medical Institute
Jason J. Crean, Lyons Township High School, Western Springs, Ill.
Keri Shingleton, Holland Hall, Tulsa, Okla.
The richness and diversity of life raises two of the most profound questions in biology: How do new species form? And why are there so many species? This workshop will introduce participants to a wide range of classroom-ready resources, from lesson plans to interactive modules and a virtual lab for teaching speciation.

Stream Ecology: Slimy Leaves for Clean Streams  
(Grades 5–College) 107B, BCEC
Sponsor: LaMotte Co.
Christina Medved, Stroud Water Research Center, Avondale, Pa.
Observe aquatic macroinvertebrate specimens, conduct experiments, learn classification skills, and calculate a biotic index in this hands-on introduction to stream ecology. Learn from the Stroud Water Research Center scientists. Takeaways and door prize!
Taking Science Practices Outside  (Env)  
(Grades K–12)  
Sponsor: Mass Audubon  
Jessica L. MacManus (jmacmanus@massaudubon.org), Mass Audubon’s Wellfleet Bay Wildlife Sanctuary, South Wellfleet, Mass.  
Kristen Scopinich (kscopinich@massaudubon.org), Mass Audubon’s Drumlin Farm Wildlife Sanctuary, Lincoln, Mass.  
The NGSS make conducting science a priority. Learn from Mass Audubon experts how to take your students outside to engage in authentic science practices while deepening content learning. Use your school’s backyard for meaningful place-based learning experiences. Activities are aligned with NGSS and Massachusetts STE frameworks.

Perimeter Institute: Curved Space-time in the Classroom and GPS  (Phys)  
(Grades 9–College)  
Sponsor: Perimeter Institute  
Damian Pope (dpope@perimeterinstitute.ca) and Kevin Donkers (kdonkers@perimeterinstitute.ca), Perimeter Institute, Waterloo, Ont., Canada  
Bring Einstein’s curved space-time model for gravity into your classroom using masking tape and balloons to explain free fall and predict time dilation, as observed in GPS calculations. The Revolutions in Science and GPS and Relativity multimedia resources were designed by educators in collaboration with Perimeter Institute researchers.

Solar Fountain  (Env)  
(Grades 4–12)  
Sponsor: KidWind Project  
Asia M. Ward (asia@kidwind.org), KidWind Project, St. Paul, Minn.  
Learn about different types of solar panels and how to hook them up in parallel and series in order to power a fountain. Also learn about Solar Thermal water heating.

Chemistry and the Atom: Fun with Atom Building Games!  (Phys)  
(Grades 5–12)  
Sponsor: CPO Science/School Specialty Science  
Scott Eddleman and Nathan Olsson, CPO Science/School Specialty Science, Nashua, N.H.  
Understanding abstract concepts about atoms can be difficult. Use our model to experience innovative games and activities that present students with opportunities to grasp atomic structure and its connection to the periodic table.

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**NSTA Teacher Awards Gala**

**Friday, April 4, 6:15–8:45 PM**

**Pacific A–E, Renaissance, Cost: $80**

Hosted by Ira Flatow, come 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.

By ticket only: M-5; Evening/Cocktail attire requested.
Let’s Go Outside! Taking Science to the School Yard

(Grades K–8) 152, BCEC
Sponsor: Delta Education/School Specialty Science—FOSS
Erica Beck Spencer, The Lawrence Hall of Science, University of California, Berkeley
Dean Martin, Boston Public Schools, Dorchester, Mass.
Learn how Boston educators have led the way in implementing outdoor teaching strategies to improve teaching and learning, and how FOSS embedded outdoor activities into the new 3rd Edition program. Classroom and materials management strategies will be woven into our active outdoor experiences. Dress appropriately for going outside.

Biology with Vernier

(Bio) 153A, BCEC
Sponsor: Vernier Software & Technology
Colleen McDaniel (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.
Conduct a variety of biology experiments using Vernier sensors with a LabQuest 2 or computer in this engaging hands-on workshop. Experience how Vernier has been incorporating the principles of the NGSS science and engineering practices for 33 years!

Chromebook, Android, and BYOD with Vernier

(Grades 3–College) 153B, BCEC
Sponsor: Vernier Software & Technology
Verle Walters (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.
Using data-collection technology builds deeper student understanding of critical concepts in science and increases test scores. See how you can use Vernier sensors and a LabQuest 2 to support science inquiry in classrooms using Chromebook, Android, or BYOD. This technology empowers students to collaboratively collect and independently analyze their data.

STEM Certificate Program

(Grades 1–12) 153C, BCEC
Sponsor: STEM Certificate Program
Ayora Berry (aberry@ptc.com), Boston University, Boston, Mass.
Alyssa Walker, Framingham State University, Framingham, Mass.
Jordan Cox, PTC Academic Program, Needham, Mass.
Discover how Massachusetts teachers are getting trained in integrated STEM education through the STEM Certificate Program. We will share our training model that encourages Project Based Learning, differentiated assessment, and industry connections. We will then dive deep into the curriculum with a hands-on design challenge you can use in the classroom.

Busting the Myth That Common Core State Standards Are Difficult to Meet in Science

(General) 154, BCEC
Sponsor: Discovery Education
Brad Fountain, Discovery Education, Silver Spring, Md.
Learn how teachers can easily meet the Common Core State Standards through everyday science instruction. We will explore a vast collection of resources available from across the web and explain how to use those resources to meet the requirements of the CCSS.

STEM Engineering for Middle School and High School with TeacherGeek Wind Lift

(Phys) 156A, BCEC
Sponsor: Ward’s Science
Kelly Smith (kelly.smith@vwr.com), Ward’s Science, Rochester, N.Y.
Engage students and encourage problem solving and creative thinking with this hands-on physical science activity that addresses the crosscutting concept “cause and effect.” In this “make and take” workshop, you’ll build a wind lift and measure results with digital data collection. The completed machine is yours to keep and share with your students!
Machines and Mechanisms for ALL Ages  (Gen)  
(Grades K–6) 156B, BCEC
Sponsor: LEGO® Education
From preschool to lower elementary and even through the upper elementary years, LEGO Education has simple and powered machines learning solutions for all ages. In this workshop, participants will gain hands-on experience building and completing a grade-appropriate activity using one of our machines and mechanisms platforms.

Flinn Favorite Biology Lab Activities and Games  (Bio)  
(Grades 6–12) 258A, BCEC
Sponsor: Flinn Scientific, Inc.
Jennifer Sternberg (jsternberg@flinnsci.com) and Irene Cesa (icesa@flinnsci.com), Flinn Scientific, Inc., Batavia, Ill.
Students learn better and faster when they are actively involved in hands-on activities that are not only fun, but that create learning opportunities along the way. We’ll share some inquiry-based labs, interactive demonstrations, and collaborative games you can use to motivate your students. We’ll focus on core topics like cell biology, genetics, ecology, and more—you’re sure to find a Flinn Favorite that works for you! Handouts provided for all activities.

Elementary Teacher Survival Kit  (Gen) 
(Grades K–6) 258B, BCEC
Sponsor: Educational Innovations, Inc.
Ken Byrne and Cathy Byrne, Educational Innovations, Inc., Bethel, Conn.
This hands-on workshop—chock-full of easy-to-do science inquiry lessons—enables new and veteran teachers to expand their bag of tricks. Using discrepant events, these activities give students a sense of mystery and awe. Topics include energy, air pressure, scientific investigations, data collection, and graphing. Door prizes and giveaways!

PASCO Presents the 12th Annual Evening of

Just Physics

Special Guest—David Maiullo
Rutgers University

Friday, 12 Noon–1:30 PM

Friday, April 4th, 2014
5:00pm-6:30pm
Ballroom 210A/B
Boston Convention & Exhibition Center

David Maiullo is the Physics support specialist, department of physics and astronomy, at Rutgers University. David creates entertaining demonstrations that physics professors use to convey hard-to-grasp scientific principles.

Come for the food, fun, Physics, and Free T-shirt! (first 400 attendees)
12 Noon–2:00 PM ASTE/NSELA Luncheon
The Long-Term Impacts of Teachers: Teacher Value-Added and Student Outcomes in Adulthood
(Ticket Required: $65) M-4 Grand Blrm. E, Westin Waterfront

Raj Chetty, Harvard University, Cambridge, Mass.

Many policy makers advocate increasing the quality of teaching, but there is considerable debate about the best way to measure and improve teacher quality. One method is to evaluate teachers based on their impacts on students’ test scores, commonly termed the “value-added” (VA) approach. Is teacher value-added a good measure of teacher quality? Proponents argue that using VA can improve student achievement, while critics argue that test score gains are poor proxies for a teacher’s true quality. Join Raj Chetty as he addresses these questions based on a study of a million children from a large urban school district from grade 4 to adulthood and discusses the implications for STEM teacher professional development.

Raj Chetty is a professor in the Economics Department at Harvard University, co-director of the Public Economics group at the National Bureau of Economic Research, and editor of the Journal of Public Economics. His research combines empirical evidence and theory to inform the design of more effective government policies. His work on tax policy, unemployment, and education has been widely cited in media outlets and in Congressional testimony.

Raj received his PhD from Harvard in 2003 at the age of 23 and is one of the youngest tenured professors in the university’s history. He has been named one of the top economists in the world by The New York Times and the Economist Magazine. He was awarded a MacArthur “Genius” Fellowship in 2012. Raj recently became one of the youngest recipients of the John Bates Clark medal, given by the American Economic Association to the best American economist under age 40.

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

12:15–6:30 PM NSTA Symposium
Flight of the Monarch Butterflies (SYM-1)
(Grades K–12) Off-site (Museum of Science, Boston)
Tickets Required: $54
Ann Hobbie (ann.s.hobbie@gmail.com) and De Cansler (decansler@gmail.com), University of Minnesota, St. Paul
For description, see Volume 1, page 51.

Note: Please meet your symposium leader 15 minutes prior to departure time in the Northwest Lobby of the BCEC on the Exhibit Level.

12:30–1:00 PM Presentations
SESSION 1
NSTA Press® Session: Beyond the Numbers: Making Sense of Statistics
(Middle Level–College) 254A, BCEC
Edwin P. Christmann (edwin.christmann@sru.edu), Slippery Rock University, Slippery Rock, Pa.
Add new learning to your classroom. Join us as we focus on the NSTA Press book Beyond the Numbers: Making Sense of Statistics.

SESSION 2
Teaching Science to English Language Learners (ELLs)
(Elementary–High School) Commonwealth B, Westin Waterfront
Fabian Torres-Ardila (fabian.torres-ardila@umb.edu), UMass Boston, Mass.
Discussion centers on analyzing the linguistic demands that the Next Generation Science Standards impose on English language learners. Join me as I propose strategies to address those demands in the science classroom.
When trying to make science teaching more effective, it is common to focus on pedagogical fixes. More often than not, unrealistic expectations of what can be learned in the time available are left unchanged. This is a situation that is likely to defeat or trivialize the effects of well-meaning pedagogical innovations. We have to turn a skeptical eye on the inherited, received curriculum and think in terms of combining relevant facts, useful generalizations, and overarching themes in order to help students reach the goal of being able to approach novel scenarios and to generate plausible and conceptually rigorous answers. Based on the virtual laboratories Biofundamentals™ and CLUE: Chemistry, Life, the Universe & Everything, and Teaching and Learning Biology projects, I will present some lessons learned and some hopeful strategies for course and curricular redesign leading to improved student learning.

Mike Klymkowsky is professor of Molecular, Cellular, and Developmental Biology at the University of Colorado Boulder (UC Boulder). He was named a Pew Biomedical Scholar and awarded a Basil O’Conner award from the March of Dimes.

Dr. Klymkowsky’s ongoing scientific studies focus on the inductive interactions involved in early vertebrate embryonic development, with particular interest in cytoskeletal dynamics and the behavior of the neural crest. Driven by a recognition of the deficiencies in student understanding due to defects in course and curricular design, he has been involved in developing assessment methods, including the NSF-funded Biology Concept Inventory, and educational materials, including a redesigned introductory molecular biology course, Biofundamentals, and an online laboratory course (virtuallaboratory.net).

Dr. Klymkowsky is a AAAS Fellow, a recipient of a Best Should Teach Award, and a codirector of the CU Teach Science Teacher Recruitment and Certification program.
SESSION 5
Genetics Gets Personal: Teaching the Ethical, Legal, and Social Issues in Personal Genetics  (Bio)
(High School–College)  252A, BCEC
Dana Waring (dwaring@pged.med.harvard.edu) and Lauren Tomaselli (ltomaselli@pged.med.harvard.edu), Harvard Medical School, Boston, Mass.
Explore the cutting-edge field of personal genetics and its benefits and challenges for individuals and our society through relatable lenses, including athletics and crime.

SESSION 6 (two presentations)
(Preschool–Elementary)  252B, BCEC
The Claim-Evidence-Reason Framework in Scientific Explanation: Lessons from Field Experience  (Gen)
Anicia A. Alvarez (aalvarez@adams.edu), Adams State University, Alamosa, Colo.
Let’s focus on elements of inquiry science with sheltered instruction. Hear how preservice science teachers use the claim-evidence-reason framework for children to explain recorded data.

Strategies for Teaching in the Inclusive Elementary Science Classroom  (Gen)
Heather L. Miller and Mary R. Sawyer (sawyer.116@buckeyemail.osu.edu), The Ohio State University, Columbus
Elementary teachers are required to teach science in inclusive classrooms with little support. Research-supported strategies are presented to provide tested ideas for all science learners.

SESSION 6
NARST Session: Research to Inform the Implementation of the NGSS  (Gen)
(General)  253A, BCEC
Deborah Hanuscin, University of Missouri, Columbia
Learn more about the research base that can inform NGSS implementation—in a format accessible to teachers, administrators, and the general public.

SESSION 7
Assessment of Approach, Inquiry, and Evidence in Middle School  (Gen)
(Middle Level)  255, BCEC
Margaret J. Wollner (mwollner@avenues.org) and Sally Kent (skent@avenues.org), Avenues: The World School, New York, N.Y.
Discover methodology, materials, and work samples for assessing approaches to learning, inquiry skill development, and evidence of student learning in inquiry-based science programs.

SESSION 8
Authentic Classroom Science: Students as Scientists  (Bio)
(Middle Level–High School)  257A, BCEC
Leah Bug (leahbug@psu.edu), Penn State, University Park, Pa.
Jacqui Wagner (jwagner@pennsvalley.org), Penns Valley Area High School, Spring Mills, Pa.
Build student understanding of the complexities of science through parallel science research opportunities in the classroom, moving beyond the scientific method for deeper science knowledge.

SESSION 9
Labs for the Next Generation  (Bio)
(Middle Level–College)  257B, BCEC
Michael C. Ralph (mralph03@gmail.com), Olathe East High School, Olathe, Kans.
Shannon M. Ralph (sralph81@gmail.com), Dodge City High School, Dodge City, Kans.
Join us as we present two biology labs as they are modified to be rich inquiry experiences. Teacher’s guides, lab videos, and more will be provided.

SESSION 10
Collaborative Editing of Student Work Online in Science and English Language Arts  (Gen)
(Middle Level–High School)  258C, BCEC
Tom Rawson (rawsont@sudbury.k12.ma.us) and Christine Carosella (christine_carosella@sudbury.k12.ma.us), Curtis Middle School, Sudbury, Mass.
Help students edit collaboratively to improve science writing using online tools for rapid response to peer and teacher feedback during the editing process.

SESSION 11
Engage Students by Writing Your Own Science Book  (Gen)
(General)  259B, BCEC
Ben Smith (ben@edtechinnovators.com) and Jared Mader (jared@edtechinnovators.com), York, Pa.
iBooks are easy to create. Discover how to create your own and what media elements should be included.
SESSION 12
NASA’s High-Energy Vision: Chandra and the X-ray Universe (Earth) (General) 261, BCEC
Donna L. Young (donna@aaavso.org), NASA/Chandra E/PO, Bullhead City, Ariz.
Discover the latest discoveries about the universe, including massive black holes, neutron stars, supernovas, star formation, colliding galaxies, X-ray binaries, and dark matter.

SESSION 13
Informal Science Day Session: Maker Corps: Cultivating Makers and Creativity (Gen) (Informal Education) Ballroom West/Group 1, BCEC
Stephanie Chang (stephanie@makered.org), Maker Education Initiative, Oakland, Calif.
Chad Ratliff and Ira David Socol (isocol@k12albemarle.org), Albemarle County Public Schools, Charlotte, Va.
Margaret Kaufer (mkaufer@lmstemalliance.org), STEM Alliance of Larchmont-Mamaroneck, Larchmont, N.Y.
The Maker Education Initiative partnered with organizations nationwide to engage youth during the summer in making experiences. Engage with our host sites to discover the possibilities!

SESSION 14
Informal Science Day Session: Colors of Light (Gen) (Informal Education) Ballroom West/Group 3, BCEC
Dayle Brown (dayledavid@comcast.net), Pegasus Productions, South Bend, Ind.
Shine new learning in your classroom. Participants will learn from the stars by their light, examine the eye’s reaction to light and color, and experience the loss of color vision in the Starlab planetarium. Students will experiment with colors of light to predict true colors as well as mix primary colors of light to create white light. Note: Participants will meet the presenter in Ballroom West and walk as a group to the Starlab located in the Exhibit Hall.

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courtesy of the NSTA Conference Department.

Your feedback helps us in creating the best conference experience for you and other attendees.

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SESSION 15
Informal Science Day Session: Using Role Models Effectively in Your STEM Program (Gen)
(Informal Education) Ballroom West/Group 4, BCEC
Rita Karl (rkarl@tpt.org), Twin Cities Public Television, St. Paul, Minn.
Nimisha Ghosh Roy (nghoshroy@edlabgroup.org), EdLab Group, Lynnwood, Wash.
Where can you find great role models and resources for effectively integrating them into STEM programs? This session will provide resources and explore these questions.

SESSION 16
How the Free Skate Revived Scientific Literacy in My Nonmajors Biology Course (Bio)
(High School—College) Atlantic 3, Renaissance
Meg Delgato (delgato.meg@spcollege.edu), St. Petersburg College, Tarpon Springs, Fla.
Find out how to work smarter—not harder—by using independent and collaborative strategies designed to promote and encourage scientific literacy in all students.

SESSION 17
Assessments, Research, and Scavenger Hunts, Oh My! Using QR Codes in the Science Classroom (Gen)
(General) Brewster, Renaissance
Elizabeth H. Clements (elizabeth.clements@jefferson.kyschools.us), Martha M. Day (martha.day@wku.edu), and Les Pesterfield (lester.pesterfield@wku.edu), Western Kentucky University, Bowling Green
Discover how to create and use QR codes to facilitate technology-infused instruction that fosters student engagement in your classroom.

SESSION 18
History of Science, Nature of Science, and Science Content (Gen)
(General) Mediterranean, Renaissance
Gregory L. Macklem (gmacklem@nd.edu), University of Notre Dame, Ind.
Attention will be paid to ways that history of science can illuminate for students the nature of science and support content teaching.

SESSION 19
The iPad Ecosystem: Peripherals That Blend Digital and Traditional Learning (Gen)
(Elementary—High School) Pacific C, Renaissance
Martin G. Horejsi (martin.horejsi@umontana.edu), The University of Montana, Missoula
Lukas Horejsi, Student, Washington Middle School, Missoula, Mont.
iPads create their own ecosystem by becoming digital hubs for peripherals content with connectivity expanding the potential within blended teaching environments. Unleash creativity and curiosity!

SESSION 20
Changing Their Idea of “Studying” into Our Idea of “Learning”: The Efficacy of Interactive Online Programs (Bio)
(College) Pacific D, Renaissance
Leslie S. Jones (lesliesj@valdosta.edu), Valdosta State University, Valdosta, Ga.
Online, text-based platforms transform passive learners via automatically graded reading comprehension activities, directed practice, and quiz/test banks that improve skills and mastery of course content.

SESSION 21
Large-Scale Assessment in Engineering Courses Using Multiple Approaches (Gen)
(General) Pacific F/H, Renaissance
Niva Wengrowicz (nivawen@mit.edu), MIT, Cambridge, Mass.
In our session, we will discuss challenges, report on field experiences, and suggest practical approaches for coping with a variety of large-scale engineering courses assessment types.

SESSION 22
edTPA and Methods for Teaching Science Courses: Ideas for Increasing Teacher Candidate Success (Gen)
(College) Pacific G/H, Renaissance
Lauren D. Rentfro (rentfro@lewisu.edu), Lewis University, Romeoville, Ill.
Revisions to science methods courses can better prepare preservice teachers for their future classrooms, as well state licensure assessments.
SESSION 23  (two presentations)  
(General) Constitution, Seaport
AMSE Session: A Science Teacher’s Power: Concrete Strategies for Improved Classroom Equity  
(Gen) Deb Morrison (2debmorrison@gmail.com), University of Colorado, Boulder
Melissa Campanella (melissa.rae.campanella@gmail.com), Noel Community Arts School, Centennial, Colo.
As classrooms become more linguistically, racially, and economically diverse, teachers need to develop a toolbox of strategies to meet the needs of all students.

AMSE Session: Small Talk, Big Ideas!  
(Gen) Veronica D. Betancourt (veronica.betancourt@idra.org) and Paula Martin Johnson (paula.johnson@idra.org), Intercultural Development Research Association, San Antonio, Tex.
Engage in conversational techniques promoting rich academic classroom exchanges designed to increase student opportunities for effective communication in math and science.

SESSION 24
Designing an Integrated, Student-centered STEM Curriculum  
(General) Lighthouse I, Seaport
Elizabeth Helfant and Robert B. Shaw, Mary Institute and Saint Louis Country Day School, St. Louis, Mo.
Explore an integrated STEM curriculum that incorporates the NGSS, leverages technology, uses an engineering process, and has been updated to include topics like the Big Bang and the standard model of particle physics.

SESSION 25
Online, Just-in-Time Professional Development  
(General) Plaza B, Seaport
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” in which teachers use student data to inform instruction.

SESSION 26
Focus on Formative Assessment in the Science Classroom to Realize the Vision of the NGSS  
(General) Alcott, Westin Waterfront
Anne Tweed (atweed@mcrel.org), 2004–2005 NSTA President, and McREL, Denver, Colo.
Cynthia J. Long (clong@mcrel.org), McREL, Denver, Colo.
Learn how to use the formative assessment process, including feedback and responsive action, aligned to the Next Generation Science Standards to meet the needs of all students.

SESSION 27
Engaging Students in Argumentation Across Elementary, Middle School, and High School  
(General) Burroughs, Westin Waterfront
Pam Pelletier (ppelletier@boston.k12.ma.us), Boston (Mass.) Public Schools
Katherine L. McNell (kmcnell@bc.edu), Boston College, Chestnut Hill, Mass.
We will discuss examples of students’ written arguments across grades K–12 to illustrate how to support greater complexity in claims, evidence, and reasoning. Join us for instructional strategies, such as modeling and providing feedback, as we illustrate these strategies using video clips from a variety of classrooms.

SESSION 28
University STEM Faculty and K–8 Teachers: A Winning Partnership for STEM Education  
(General) Commonwealth A, Westin Waterfront
Jonathan E.H. Wilson (jonathan.wilson@morgan.edu) and Keisha Matthews, Morgan State University, Abington, Md.
Come gain successful strategies for providing content and resources that develop confidence to effectively teach science in public and private elementary and middle schools.

SESSION 29
Spark Student Interest: Integrate Engineering into Your Science Teaching  
(General) Faneuil, Westin Waterfront
Jacqueline T. McDonnough (jwtmcdnough@vcu.edu) and Rosalyn H. Hargraves (rhaps@vcu.edu), Virginia Commonwealth University, Richmond
Learn how engineering can engage students, increase their understanding of science content, promote interest in STEM, and build your own product.
SESSION 30
CSSS Session: Professional Development for the NGSS and CCSS ELA in Elementary Classrooms (Gen)
(30) Grand Ballroom C, Westin Waterfront
Samuel D. Shaw (sam.shaw@state.sd.us), South Dakota Dept. of Education, Pierre
Presider: Roby Johnson, Holgate Middle School, Aberdeen, S.Dak.
This workshop highlights a statewide training that focuses on how the instructional implications within the NGSS act as “glue” to bind the inputs (reading/listening) to the outputs (writing/speaking) through constructing explanations (using the science and engineering practices).

SESSION 31
reVisioning: A Creative Process for Teaching (Gen)
(30) Harbor Ballroom II, Westin Waterfront
Wendi Laurence (wendi@create-osity.com), Create-osity, Park City, Utah
Discover a creative process for teaching—so we can infuse our teaching with inspiration, innovation, and the passion to continue to make a difference.

SESSION 32
Photabulary That Connects! (Gen)
(30) Harbor Ballroom III, Westin Waterfront
Vivian Lynn Rogers (photabulary@gmail.com), Magnolia School, Magnolia, Tex.
Presider: Mark Rogers, Magnolia (Tex.) ISD
Do you teach bilingual, English as Second Language, at-risk, Special Education, or anyone that can’t just memorize and regurgitate information? Discover vocabulary strategies that are designed for building long-term memory retention with the aid of a mini concept card and mobile devices. With text and picture apps, students create a personalized dictionary that is easy to share and use.

SESSION 33 (two presentations)
Teaching Science in Literature (Gen)
(30) Lewis, Westin Waterfront
Tara A. Kristoff (tara_kristoff@yahoo.com), Summit (Ill.) School District 104
Teachers and administrators—come learn how to incorporate science concepts within any novel, poem, or short story to enhance and maximize student learning.

Between the Lines: Discovering Science with Literature (Gen)
Stacey Klimkosky, Truro Central School, Truro, Mass.
Bryan Hirschman (bhirschman@ccsuvt.org), Essex High School, Essex Junction, Vt.
The best discoveries come when least expected! Using a cross-curricular approach, reading classic literature, like Henry Beston’s The Outermost House, leads to scientific discoveries for students of all ages.

SESSION 34
Project SEE: Science in Early Elementary (Phys)
(30) Quincy, Westin Waterfront
Rosemary Geiken (geiken@etsu.edu) and Gary Henson (hensong@etsu.edu), East Tennessee State University, Johnson City
Join us as we share a project with K–3 teachers on teaching physics to early elementary students.
12:30–1:30 PM  Workshops

NESTA Session: National Earth Science Teachers Association Earth System Science Share-a-Thon

*(Earth)*

(Elementary—High School) 052 A/B, BCEC

Michelle C. Harris, Wakefield High School, Arlington, Va.

Roberta M. Johnson (rmjohnsn@gmail.com), NESTA, Boulder, Colo.

Margaret A. Holzer (mholzer@monmouth.com), Chatham High School, Chatham, N.J.

Sharon K. Cooper (scooper@oceanleadership.org), Consortium for Ocean Leadership, Washington, D.C.

Marian Grogan (marian_grogan@terc.edu), Nick Haddad (nick_haddad@terc.edu), and Tamara Shapiro Ledley (tamara_ledley@terc.edu), TERC, Cambridge, Mass.

Laura Guertin (paesta@psu.edu), President-Elect, Pennsylvania Earth Science Teachers Association, University Park

Lynne H. Hehr (lhehr@uark.edu), University of Arkansas, Fayetteville

Michael Hubenthal (hubenthal@iris.edu), IRIS, Washington, D.C.

Preston Lewis (preston.lewis@nasa.gov), NASA Langley Research Center, Hampton, Va.

Andi Nelson (anelson@adlerplanetarium.org), Adler Planetarium, Chicago, Ill.

Ruth Paglierani (ruthp@ssl.berkeley.edu), University of California, Berkeley

Gary Randolph (randolph@globe.gov), The GLOBE Program, Boulder, Colo.

Emily Schaller (emily.schaller@nasa.gov), NASA/NSERC, Palmdale, Calif.

Mary Shane (shanem@interact.ccsd.net), Advanced Technologies Academy, Las Vegas, Nev.


Margie Turrin (mkt@ldeo.columbia.edu), Lamont-Doherty Earth Observatory, Columbia University, Palisades, N.Y.

Mark P. Turski (markt@plymouth.edu), Plymouth State University, Plymouth, N.H.

Glenn E. Van Knowe (gevanknowe@meso.com), MESO, Inc., Troy, N.Y.

Jodi Wheeler-Toppen (wheelertop@gmail.com), Atlanta, Ga.

Join more than 20 NESTA members and other education specialists as they share their favorite classroom activities. Lots of free handouts!

S.M.I.L.E. with Physical Science  

*(Phys)*

(Elementary—Middle Level) 160A, BCEC

Kelly S. Chaney (kschaney@ualr.edu) and Michelle B. Buchanan (mbbuchanan@ualr.edu), University of Arkansas at Little Rock

Come find out how Science and Math Inquiry Learning Explored (S.M.I.L.E.) can help you explore sound and light in this inquiry-based hands-on workshop.

Exciting Engineering Endeavors  

*(Gen)*

(Elementary) 160C, BCEC

Terri G. George (terrigeorge1@gmail.com), McDonough, Ga.

Donna Barrett (donna.barrett@mresa.org), Metro RESA, Smyrna, Ga.

Come explore easy and exciting engineering experiences for the elementary level using the 5E (Engage, Explore, Explain, Elaborate, and Evaluate) model.

Nuts About Nature  

*(Env)*

(Preschool–Elementary) 161, BCEC

DeLene Hoffner, School in the Woods, Colorado Springs, Colo.

Experience outdoor inquiry/hands-on nature lessons, including notebooks, bird nests, Mr. Grasshead, and track making. Gain ecology concepts and management strategies from a grade 4 teacher at an environmental school.

Fly to Mercury via NASA’s Discovery Mission MESSENGER!  

*(Earth)*

(Elementary—Middle Level) 162A, BCEC

Sally J. Jensen (sajean@roadrunner.com), Waterville Valley Academy, Waterville Valley, N.H.

Using the “Journey Through the Solar” module, travel through the inner planets, orbit Mercury, and collect data. Take home a CD and resources.

Using the NGSS to Promote Understanding of Sound  

*(Chem)*

(Elementary) 162B, BCEC

Lloyd H. Barrow (barrowl@missouri.edu), University of Missouri, Columbia

Help your students understand that all sounds are caused by vibrations, even musical instruments. A series of investigations helps students construct understanding as envisioned by the NGSS.
Climate Change and Insect-borne Diseases at the Yale Peabody Museum of Natural History  
(Middle Level–High School)  
Beth B. Hines (beth.hines@yale.edu), Yale Peabody Museum of Natural History, New Haven, Conn.
Christine M. Lawlor-King (lawlor-king.cm@easthartford.org), East Hartford High School, East Hartford, Conn.
This SEPA/NIH–funded curriculum investigates how insect-borne infectious diseases such as dengue, malaria, and leishmaniasis are shifting their ranges as climate variables change, particularly temperature and precipitation.

Using Simulations in Inquiry-based Science  
(Elementary–High School)  
Carole Johnson (carole.johnson@vai.org), Van Andel Institute, Grand Rapids, Mich.
Engage in a pollination simulation, generate a rich database, and then analyze and interpret the collected data. Simulation directions will be distributed.

Inquiry Stations  
(General)  
Jean H. Leach, Bethesda Elementary School, Lawrenceville, Ga.
Encounter physical science experiments requiring participants to measure and count as they set up the lab, hypothesize, observe, record, graph, and analyze data as well as reach conclusions.

Integrating English Language Arts, Math, and the NGSS into the Elementary and Middle School Classroom  
(Elementary–Middle Level)  
Glenda S. Pepin (apepin@clemson.edu), Clemson University, Greenville, S.C.
Perform an experiment and get a graphic organizer that serves as a lab debrief to check for student understanding while building writing-from-evidence skills.

(Elementary)  
Jennifer Klein (jklein@mits.org), Museum Institute for Teaching Science, Quincy, Mass.
David S. Unger (dunger@athm.org), American Textile History Museum, Lowell, Mass.
Engage in activities and discussion demonstrating how science practices and engineering design can work together effectively in the classroom.

The Integrating Engineering and Literacy Project: Engaging Elementary Students in Engineering Design Challenges from Children’s Literature  
(Elementary/Informal Ed)  
Kristen B. Wendell (kristen.wendell@umb.edu), UMass Boston, Mass.
Elissa Milto (elissa.milto@tufts.edu) and Mary McCormick (mary.mccormick@tufts.edu), Tufts University, Medford, Mass.
At this workshop, participants will solve a hands-on engineering challenge based on a popular children’s book and interact with samples of student engineering work.

Make Your Own Virtual Fieldwork Experience!  
(Middle Level–College)  
Richard A. Kissel, Yale Peabody Museum of Natural History, New Haven, Conn.
Don Duggan-Haas (dad55@cornell.edu), PRI and Its Museum of the Earth, Ithaca, N.Y.
Bring your laptop with digital photos of an interesting site you want your students to explore. Using an electronic template, you’ll create your own VFE.

NSTA Press® Session: Picture-Perfect Science Lessons: Using Picture Books to Guide Inquiry  
(Elementary)  
Emily Morgan (emily@pictureperfectscience.com) and Karen Ansberry (karen@pictureperfectscience.com), Picture-Perfect Science, LLC, Lebanon, Ohio
The authors of NSTA’s best-selling Picture-Perfect Science series will show you how to use picture books to teach science and reading together!

Bring Nanoscience into Your Middle School Program!  
(General)  
Robert H.I. Neudel (neudelb@albanyacademies.org) and Bridgett Frary, The Albany Academies, Albany, N.Y.
Presider: Joshua I. Neudel, Gann Academy, Waltham, Mass.
Complete exciting activities introducing the power of nanotechnology. Make buckyballs and complete simple science labs showing how materials behave differently on the nanoscale.
Understanding Plate Tectonics Using Actual Earthquake Location Data  
(Informal Education)  
Patrick McQuillan (mcquillan@iris.edu), IRIS, Washington, D.C.

Enhance plate tectonics lessons using actual earthquake location data. The IRIS earthquake database will be explored using software, lessons, and live map displays.

Analyzing Student Work for Language Structures That Support Conceptual Understanding  
(General)

Marie B. Bacher (mabobiasbacher@yahoo.com), Santa Clara (Calif.) Unified School District

Join me for this interactive presentation modeling how teacher leaders can facilitate a group to analyze student work for overlapping Next Generation Science Standards and Common Core State Standards, ELA.

Informal Science Day Session: Traveling Through Time: A Short Walk Through Geologic Time  
(Earth)

Karen Maher (kmaher@fs.fed.us), USDA Forest Service, Mendenhall Glacier Visitor Center, Juneau, Alaska

Lauren DeMicco (ldemicco@sssd.k12.co.us), Steamboat Springs Middle School, Steamboat Springs, Colo.

Hands-on opportunities guide grades 5–8 teachers (and students) into a world once dominated by glacier ice. Topics covered include water cycle, weathering, and erosion, especially as caused by glaciers. Activities will range from those that can be set up and completed in a classroom setting as well as firsthand field-based experiences.

Launching the University of Memphis Early Childhood Preservice Teachers’ Science Preparation Opportunities at the Children’s Museum: A “Win Win” for All Science Learners  
(Phys)

Shelly L. Counsell (sksnell@memphis.edu), University of Memphis, Tenn.

Felicia Peat (felicia.peat@cmom.com), Children’s Museum of Memphis, Tenn.

In this workshop, you will actively engage in two physics workshops using a learning cycle format developed by University of Memphis EC majors in collaboration with the Children’s Museum of Memphis.

Up for the Challenge! Fun Science Challenges That Build Teamwork and Engage All Students  
(General)

Roy J. Whitley (roy.whitley@del-valle.k12.tx.us), Ojeda Middle School, Austin, Tex.

Engage students of all abilities in your class. Learn how to teach science concepts through experiential challenges using PVC pipes, marbles, Hula-Hoops®, and more.

Affordable Inquiries from a Third World Country for Your Classroom  
(General)

Maureen Lemke (ml43@txstate.edu) and Gail Dickinson (dickinson@txstate.edu), Texas State University—San Marcos

Limited budget? These field-tested lessons from a Cambodian general science course use basic materials for student inquiries on nutrition and the environment.

Teachers on the Estuary: A Taste of TOTE  
(General)

Joan C. Muller (joan.muller@state.ma.us), Waquoit Bay National Estuarine Research Reserve, Waquoit, Mass.

Come sample hands-on and web-based activities from NOAA’s National Estuarine Research Reserve’s Teachers on the Estuary field-based professional development program focused on coastal research.

SMART Books  
(General)

Kelly Green (greenk13@verizon.net), Howard High School of Technology, Wilmington, Del.

Sherry Geesaman, Milford Middle School, Milford, Del.

Victoria Deschere (victoria.deschere@appo.k12.de.us), Redding Middle School, Middletown, Del.

Explore interdisciplinary teaching strategies through the use of nonfiction trade books to enhance student literacy through writing.

Integrating the Common Core State Standards Through the Interdisciplinary Structure of STEM  
(General)

Mary Lou Blanchette Smith (msmith@windham.k12.ct.us), Nicole Bay (nbay@windham.k12.ct.us), and Ashley M. Welch (awelch@windham.k12.ct.us), Charles H. Barrows STEM Academy, North Windham, Conn.

Kelly Doubleday (kdoubleday@tolland.k12.ct.us), Tolland (Conn.) Public Schools

Through a collaborative process, participants will learn the basics of the Common Core State Standards through the lens of STEM education.
Got the iPads, Now Let’s Get “Appy”!  
(Beth S. Guzzetta @bguzzetta@allendalecolumbia.org) and  
Martha Bjorklund (mbjorklund@allendalecolumbia.org).  
Allendale Columbia School, Rochester, N.Y.

Katherine Guzzetta (katie.guzzetta@gmail.com), Student,  
Pittsford Sutherland High School, Pittsford, N.Y.

Join us as we share numerous available educational iPad apps  
plus other ways we integrate technology in our 1:1 program.

DuPont Presents: Portable Affordable Simple STEM  
(PASS)  
(General)  
(Renee G. O’Leary, Holy Angels School, Newark, Del.  
Peggy Vavalla, DuPont, Wilmington, Del.)

PASS (K–2) provides teachers with developmentally appropri-  
ate, integrated materials to introduce STEM concepts  
using simple multisensory elementary explorations. Walk  
away with sample lesson plans.

Engineer Your World: Engineering Design for High  
Schools  
(Grades 9–12)  
(Cheryl Farmer (cheryl.farmer@mail.utexas.edu), The University of Texas at Austin)

Engineer Your World offers implementation grants to high  
schools seeking to establish an innovative engineering design  
and problem-solving course for their students.

12:30–1:30 PM  
Exhibitor Workshop  
Project-based Learning Promotes the Development of  
CCSS ELA in the Secondary Science Classroom  
(Grades 9–12)  
(Grades 9–12)  
(156C, BCEC  
Sponsor: It’s About Time  
Presenter to be announced)

Collaborating, presenting, and communicating are key 21st-  
century skills that are also an integral part of the Common  
Core State Standards, ELA. Explore how Active Physics, Active  
Chemistry, and EarthComm are project-based curricula that  
promote the development of these important skills, including  
writing, reading, communicating, presenting, and literacy  
in science.

12:30–2:00 PM  
Presentation  
SESSION 1  
Meet Me in the Middle Session: Lunch and Learn  
Share-a-Thon  
(General)  
(Grand Ballroom A/B, Westin Waterfront)

Organizer: Todd F. Hoover (thoove2@bloomu.edu), Blooms-  
burg University of Pennsylvania, Bloomsburg.

The NMLSTA Share-a-Thon brings together almost 100  
individuals and organizations from all over the U.S. in a flea  
market–style format where guests can circulate the room to  
meet with individual presenters who showcase and share their  
innovative and exciting teaching ideas geared specifically for  
middle level science. During the share-a-thon, participants  
can engage in hands-on activities, collect information and  
resources from national and international organizations,  
review recommended middle level science materials and  
resources, and more... all in a single location. All attendees  
will be entered into our drawing for a chance to win one  
of our many door prizes! Attend this session and discover  
valuable resources that will engage your middle level stu- 
dents in exciting and inspiring science learning!

1:00–2:00 PM  
Workshop  
CESI Session: The Life Cycle of Literacy Through  
Science  
(Grades 6–9)  
(Grades 6–9)  
(211, BCEC)

Julie V. McGough, Valley Oak Elementary School, Fresno,  
Calif.

Prepare the environment, sow some seeds of thought, and  
dig deeper to understand living things while engaging in  
reading, writing, and collaborative discussions!

1:00–2:00 PM  
Exhibitor Workshop  
Solve a Forensic Mystery Story Using Engineering  
and Science  
(Grades 6–9)  
(Grades 6–9)  
(157B, BCEC)

Sponsor: Bio-Rad Laboratories  
Damon Tighe (damon_tighe@bio-rad.com), Bio-Rad Laborato-  
ries, Hercules, Calif.

Engage your students as they play the role of forensic scientists  
to solve the case of the stolen cell phones. Candy provides the  
crime scene evidence as they engineer a gel electrophoresis  
system to sort out the suspects and determine “whodunit.”
1:00–2:30 PM  Exhibitor Workshops
Shifting Practices to Infuse Science and Engineering Practices with the NGSS  
(Bio)  
(Grades 5–12)  157A, BCEC
Sponsor: Bio-Rad Laboratories
Sherri Andrews (sherri_andrews@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.
This workshop will focus on illustrating the science and engineering practices described in the NGSS for California and the NRC Framework. Explore chromatography techniques to separate pigments using paper and column chromatography.

1:00–3:00 PM  Workshop
PDI
NGSS Pathway Session: Making Connections Between Engineering, Technology, Science, and Society in Your Local Community  
(C)  
(General)  206 A/B, BCEC
Mariel Milano (mariel.milano@ocps.net), Orange County Public Schools, Orlando, Fla.
Cary I. Sneider (c sneider@pdx.edu), Portland State University, Portland, Ore.
How are engineering, technology, and science related? Join us as we make the NGSS come to life and develop model service learning design challenges that leverage the needs of your local community as a vehicle to accomplish the Next Generation Science Standards. Participants will explore sample lessons and develop sample service-oriented design challenges that focus on the crosscutting concepts of Engineering, Technology, Science, and Society using the STEM Lesson Essentials unit template.

1:30–2:30 PM  Social
NSTA Chapter and District Director Ice Cream Social in Honor of Wendell Mohling—Sponsored by GEICO
NSTA Booth #1107, Exhibit Hall
Enjoy complimentary Brownie Sundaes while meeting and networking with colleagues and representatives from all of NSTA’s 18 Districts. Learn more about events, initiatives, and happenings in your district directly from your representatives in an informal setting. We’ll have lots of goodies for everyone and we hear the GEICO gecko will be making an appearance! Please note that Brownie Sundaes are available on a first-come, first-served basis while supplies last.

1:30–3:00 PM  Exhibitor Workshop
Chemical and Environmental Technology  
(Chem)  
(Grades 9–12)  150, BCEC
Sponsor: Fisher Science Education
Robert Marshall (marshallr@carnegiesciencecenter.org), Carnegie Science Center, Pittsburgh, Pa.
Following the NGSS model, design and interpret the results of your team’s experiment in order to answer basic chemistry and environmental science questions. You will be using innovative lab equipment created to put the power in your students’ hands. Then, share your data and ideas to keep the learning going.

2:00–2:30 PM  Presentations
SESSION 1
AMSE Session: Science Instruction for All Students  
(General)  Constitution, Seaport
Melissa Sleeper (melissa.sleeper@indianriverschools.org), Sebastian River Middle School, Sebastian, Fla.
Extend learning by allowing students to creatively demonstrate understanding of science content. These activities provide students with choices that appeal to their interests and learning profiles.

SESSION 2
Formative Assessment of Process Skills in Science  
(Middle Level–High School)  Plaza A, Seaport
Darrin Ellsworth (darrin.ellsworth@act.org) and Mark McDermott (mark.mcdermott@act.org), ACT Inc., Iowa City, Iowa
Join us as we highlight a curriculum-based plan for formative assessment of science process skills. Learn about a framework for how science inquiry should be conducted that provides opportunities to formatively assess process skills in the classroom.

SESSION 3
Increasing Minority Participation in STEM Through Autonomy Support  
(General)  Griffin, Westin Waterfront
Anthony C. Derriso (acderriso@crimson.ua.edu), The University of Alabama, Tuscaloosa
Autonomy supportive science learning environments can help students overcome stereotypes associated with STEM fields. Learn the psychology behind the theory as well as practical steps.
2:00–2:30 PM  Exhibitor Workshop
A Change of Seasons  (Earth)
(Grades 3–8)  Booth #1457, Exhibit Hall
Sponsor: Science First®/STARLAB®
Helmut Albrecht (helmut.albrecht@sciencefirst.com) and
Nathaniel Bell (nate.bell@sciencefirst.com), Science First/
STARLAB, Yulee, Fla.
In this in-dome workshop, we will introduce one of the
Starry Night Small Dome lessons. Join us as we take a look
at why we have seasons here on Earth.

2:00–3:00 PM  Featured Presentation
Educator? Astronaut? You Can Do Both!  (Earth)
(General)  210C, BCEC

Joseph Acaba, Educator Astronaut, NASA Johnson Space Center,
Houston, Tex.  @AstroAcaba

So what’s it really like living and working aboard the International
Space Station? Join NASA astronaut Joseph Acaba as he shares the lessons
he’s learned as a mission specialist and flight engineer aboard the International Space Station. He will trace the journey of four classroom teachers who made their way from the selection process, through training, and eventually into space. Hear about the evolution of NASA’s Teacher in Space Program to the Educator Astronaut Program and engage in a conversation about what it takes for a classroom teacher to be competitive in the current astronaut selection process. You just might have the “Right Stuff.”

It’s a rare leap to go from teaching math and science to logging 138
days in space as an astronaut, but that is precisely Joseph Acaba’s career trajectory. Before being selected in 2004 as a NASA astronaut candidate, Joseph taught high school science and middle school math and science.

A member of the U.S. Marine Corps Reserve, Joseph’s experience includes work as a hydrogeologist in Los Angeles, primarily on Superfund sites, and as an environmental education awareness promoter in the Dominican Republic for the Peace Corps.

Completing his NASA training in 2006, astronaut Acaba was assigned to STS-119, which flew from March 15–28, 2009, to deliver the final set of solar arrays to the International Space Station. Joseph has also conducted numerous scientific research experiments while in space.

2:00–3:00 PM  American Geophysical Union Lecture
Geosciences: The Nexus of Data-driven Science and Applications  (Earth)
(General)  210 A/B, BCEC

Suchi Gopal (suchi@bu.edu), Professor, of Earth and Environment and Research Professor at Pardee Center for the Study of the Longer-Range Future, Boston University, Boston, Mass.

Geosciences will become increasingly prominent in the 21st century as humanity confronts daunting challenges such as population growth, mitigating natural hazards, climate change, and accelerated resource and environmental degradation. The first step in making sense of the processes and events that shape our dynamic Earth is to observe and analyze them. Massive amounts of digital data are being collected from a growing number of satellites and sensors monitoring the Earth, atmosphere, and oceans. In addition, crowdsourcing and social media technologies are providing local and detailed observations. Geoscientists analyze this data using a variety of methods, including data visualization and modeling, statistical techniques, and machine learning algorithms to address and solve problems for resource management, environmental protection, and public health. Join Dr. Gopal as she shares her research and illustrates how geosciences can assist in analyzing disease patterns and managing natural disasters. She encourages all educators to explore and analyze sample datasets in their classrooms to foster practical problem solving for societal issues.

Suchi Gopal is a professor in the department of Earth and Environment at Boston University. Her research is multidisciplinary dealing with spatial analysis and modeling, GIS, data mining, information visualization, and artificial neural networks. Her current research projects include the development of a spatial decision analysis system on a mobile platform, assessing the impact of climate change on food security and biodiversity in Cambodia, urban land cover characterization using fuzzy sets, and mapping maternal health service delivery in Zambia. She is funded by the National Science Foundation on a GK-12 grant—GLobAl Change Initiative—Education and Research (GLACIER) focusing on outreach to middle schools in the Boston area. She holds a PhD in geography from the University of California, Santa Barbara.
2:00–3:00 PM  Presentations

SESSION 1
Next Generation Science Stations  (Gen)  (Elementary—Middle Level)  158, BCEC
Halle Quezada, Eugene Field Elementary School, Chicago, Ill.
Katherine Eaton (kathy.e.eaton@wmich.edu), Western Michigan University, Kalamazoo
Discover how to plan and implement science stations centered around the NGSS. The components discussed will include assessment, portfolios, room organization, mini-lessons, and student routines. The resources will help build confidence in using stations while transitioning to the NGSS.

SESSION 2
Dozens of Demonstrations—Physics for All Ages  (Phys)  (Elementary—Middle Level)  159, BCEC
Fred R. Myers (myersf@glastonburyus.org), Glastonbury (Conn.) Public Schools
Walk away with dozens of vivid demonstrations of physics concepts that can help any teacher provide better instruction for his or her students, particularly for grades 3 and up. The demonstrations involve common and inexpensive materials. Instructional tips and clear explanations included.

SESSION 3
The Science of Service Learning: One School’s Journey to Promote Science Knowledge Through Service (Env)  (General)  160A, BCEC
Jennifer C. Williams (jenniferwilliams@newmanschool.org) and Lisa J. Swenson (lisaswenson@newmanschool.org), Isidore Newman School, New Orleans, La.
Find out how one school implemented science-based service learning programs that increase student understanding of coastal issues facing communities along the Gulf Coast. In these programs, students work with university scientists.

SESSION 4
Above, Through, and Beyond with SOFIA  (Earth)  (General)  162A, BCEC
David V. Black (elementsunearthed@gmail.com), Walden School of Liberal Arts, Provo, Utah
Study the universe as an Airborne Astronomy Ambassador with the Stratospheric Observatory for Infrared Astronomy. Find out how to apply, what you’ll experience, and how students are creating a video about SOFIA and infrared astronomy.

SESSION 5 (two presentations)
Common Labs for All Students  (Chem)  (High School)  162B, BCEC
Elizabeth Potter-Nelson (e.potter.nelson@gmail.com) and Colleen K. Buzby (buzbywork@gmail.com), Antioch Community High School, Antioch, Ill.
What happens when you and your colleagues decide that all students need to be exposed to the same lab experiences? Come find out how we’ve differentiated crucial labs so that all students learn the content at the level that is right for them!

Making Biodiesel: A Problem-based Multidisciplinary Sustainability Exploration  (Chem)
Sharon Geyer (sgeyer@pomfretschool.org) and Brian Geyer (bgeyer@pomfretschool.org), Pomfret School, Pomfret, Conn.
Pomfret School is on a collaborative, multidisciplinary journey through the production of biodiesel, including chemistry, environmental studies, the environmental club, and our Facilities Department.

SESSION 6
The NSTA Learning Center: Free Professional Development Resources and Opportunities for Educators  (Gen)  (General)  252A, BCEC
Flavio Mendez (fmendez@nsta.org), Senior Director, NSTA Learning Center/SciLinks, NSTA, Arlington, Va.
Lost when it comes to finding online professional development resources to enhance your content knowledge and skills? With more than 10,000 resources (25% of which are free) and quality PD opportunities to assist educators with core subject content, the Learning Center has the answers! Get free resources and ICE CREAM!

SESSION 7
Connecting Science Content Using Trade Books!  (Gen)  (Preschool–Elementary)  252B, BCEC
Diana L. McMillan (mcmillandiana@gmail.com) and Gail Laubenthal (glaubenthal@yahoo.com), Austin (Tex.) ISD
Presider: Diana L. McMillan
Bringing it all together! Come learn how to use literacy to enhance your science lessons. Sample lessons provide ideas on how to integrate science, literacy, math, technology, and art!
SESSION 8
The 50 Best Physics Demos to Do Before You Die…
(Phys)
(High School–College) 253A, BCEC
Peter Hopkinson (phopkinson@shaw.ca), Retired Educator, Burnaby, B.C., Canada
Well, maybe not quite all 50, but we’ll get to as many as we can, and they are definitely the best. Trust me, I’m a physics teacher!

SESSION 9
Award-winning Share-a-Thon Featuring NSTA Distinguished Teachers
(Gen) 253B, BCEC
Tom Lough (mlough@murraystate.edu), Murray State University, Murray, Ky.
Julie E. Taylor (julie_taylor@eee.org), Adelanto (Calif.) School District
Susan German (sgerman@hallsville.org), Hallsville Middle School, Hallsville, Mo.
James M. Brown (james.brown@southcolonic.k12.ny.us), Forest Park Elementary School, Albany, N.Y.
Shirley Sypolt (ssypolt@hampton.k12.va.us), Cooper Elementary Magnet School, Hampton, Va.
Paul Adams (padams@fhsu.edu), Fort Hays State University, Hays, Kans.
Alan J. McCormack (amccormac@mail.sdsu.edu), 2010–2011 NSTA President, and San Diego State University, San Diego, Calif.
Ellen O’Donnell (eodonnell@sau53.org), Deerfield Community School, Deerfield, N.H.
Karen L. Ostlund (klkolstlund@utexas.edu), NSTA Retiring President, and Retired Professor, The University of Texas at Austin
Past winners of the NSTA Distinguished Teaching Award share their reflections, describe their science teaching approaches and experiences, and discuss their favorite projects. Handouts! Demonstrations!

SESSION 10
NSTA Press® Session: Special Needs Students in Science
(Gen)
(General) 254A, BCEC
Ed Linz (coachlinz@cox.net), Author and Education Consultant, Springfield, Va.
Let’s discuss what the science teacher MUST do and what the science teacher SHOULD do! We’ll share a list of mostly DO’s and a few DON’T’s.

SESSION 11
Discussion Strategies for Using Computer Simulations to Develop Understanding of Scientific Models
(Middle Level) 255, BCEC
Norman T. Price (normprice@gmail.com), Amherst-Pelham Regional Middle School and UMass Amherst, Mass.
Zach Holmboe (holmboez@arps.org), Amherst-Pelham Regional Middle School, Amherst, Mass.
Move beyond computer simulation show and tell. This set of teacher/researcher–tested discussion strategies can help you use a simulation as a “tool for asking.”

SESSION 12
Simulate STEM Online Through Virtual Clinical Trials
(Bio) 256, BCEC
Lynn Lauterbach (lynnlauterbach@gmail.com), Loveland, Colo.
Expose high school students to science and biomedical engineering practices using free online simulations that engage them in technology while designing authentic neuroscience-based clinical trials. Also, learn about a built-in assessment notebook.

SESSION 13
Teach with the World’s Most Extravagant Birds
(Bio) 257B, BCEC
Jennifer Fee (jms327@cornell.edu), Cornell Lab of Ornithology, Ithaca, N.Y.
Most every middle school and high school teacher knows about Darwin and his Galápagos finches and uses them as an example for teaching some of the concepts of evolution. But watch out finches…a more colorful bird is the new biology teacher in town! Learn how you can cover evolution and natural selection through the birds-of-paradise.
SESSION 14
Bringing Primary Scientific Literature to the Classroom Through the Journal of Emerging Investigators (Gen) (Middle Level–High School) 258C, BCEC
Rebecca K. Reh (reh@fas.harvard.edu), Harvard University, Boston, Mass.
Incorporate JEI—a journal publishing the original research of grades 6–12 students—into the classroom through journal club discussions. Find out how your students can publish!

SESSION 15
Teacher Leaders in the RESTEP to STEM (Gen) (General) 260, BCEC
Sharon Schleigh (sschleig@purdue.edu) and Karina Longfellow, Purdue University Calumet, Hammond, Ind.
Jennifer Stalls (jstalls@gmail.com), C.M. Eppes Middle School, Greenville, N.C.
Changes to improve STEM are effective through leveraged collaborations among higher education, K–12 teachers, scientists, and funding agencies. Join us as we present a successful model of this collaboration.

SESSION 16
Explore Earthquakes! (Earth) (Middle Level–High School/Informal Ed.) 261, BCEC
Gary Lewis (glewis@geosociety.org), The Geological Society of America, Raymond, Maine
Using several inquiry-based activities, we will explore earthquakes in a way that will allow students to become actively engaged in the learning process. Free resources!

SESSION 17
Creating Professional Development e-Portfolios Using NOAA Resources (Gen) (General) Brewster, Renaissance
Shannan Lewinski, The Baldwin Group, Charleston, S.C.
Atziri Ibanez, National Estuarine Research Reserve System, Silver Spring, Md.
Learn to create your own free professional development e-portfolio on Google sites. We will use the NOAA Sea Earth Atmosphere curriculum as a case study.

SESSION 18 (two presentations)
(SCST Session: Using Bean Beetle “Vision” to “Change” the Undergraduate Biology Student’s Idea of Scientific Investigations (Bio) 262C, BCEC
Betsy Morgan (elizabeth.r.morgan@lonestar.edu) and Brian R. Shmaefsky (brian.r.shmaefsky@lonestar.edu), Lone Star College–Kingwood, Tex.
We will discuss our lab experiences using bean beetles to help majors and nonmajor students understand scientific investigations through inquiry.

SESSION 19
Managing Science Fairs in the Classroom (Gen) (General) Mediterranean, Renaissance
JoEllen Schuleman (missschuleman@yahoo.com), P.S. 199 Jessie Isador Straus, New York, N.Y.
Presider: Stefi Preiss, PS 140 Nathan Straus, New York, N.Y.
Participating in the science fair is a challenge for many students. Gone are the days of home-based projects and, increasingly, the classroom teacher is left to provide the support formerly given by parents. Discover how to manage a classroom full of projects with ease.

SESSION 20
Project S.P.A.C.E.—A Case Study (Gen) (General) Pacific A/B, Renaissance
Join students as they take you through creating and participating in community-driven projects from the students’ point-of-view rather than the teacher’s point-of-view.

SESSION 21
Digital Tools for Teacher Leadership (Gen) (General) Pacific C, Renaissance
Conn McQuinn, Puget Sound Educational Service District, Renton, Wash.
Social networking tools can be used to develop and enhance professional learning networks and extend the reach of teacher leaders.
SESSION 22
Beyond X and Y: Recent Discoveries About the Mechanisms Governing Sex Determination and Differentiation  
(Bio)  
(High School—College)  
Pacific D, Renaissance  
Terry Maksymowych (tmaksymowych@ndapa.org), Academy of Notre Dame de Namur, Villanova, Pa.  
Genetics and embryology lessons should include this new information to help students understand the complexities of multifactorial and epigenetic influences on human sex development.

SESSION 23
Someday Is Not a Day of the Week: On-Time Tactics for Fighting Procrastination  
(General)  
Pacific F, Renaissance  
Bonnie Nelson (bonnie.nelson@apsva.us), Wakefield High School, Arlington, Va.  
Hear current research and strategies to help all students overcome procrastination and promote academic achievement. Learn about the dynamics that fuel procrastination.

SESSION 24
Using the Nation’s Report Card (NAEP) to Improve Science Education  
(General)  
Pacific G/H, Renaissance  
Hector Ibarra, National Assessment Governing Board Member, Iowa City, Iowa  
The Nation’s Report Card provides information that helps teachers assess student progress and develop ways to improve science education. Get links to previously used test questions and view a snapshot of test results from Massachusetts and surrounding states. Take away a comprehensive NAEP folder along with information on how to incorporate state performance results in your classroom and school district.

SESSION 25
Collaborative Tools for Customizing STEM Instruction  
(Middle Level—High School)  
Lighthouse I, Seaport  
Patricia A. Kincaid (kincaidpatty@msn.com), Denver (Colo.) Public Schools  
Heather Leary (heather.leary@colorado.edu), University of Colorado, Boulder  
Next generation collaboration tools enable STEM educators working together online to plan, customize, and implement innovative STEM instruction using high-quality open educational resources.

SESSION 26
Writing to Learn Science  
(Middle Level—High School)  
Plaza B, Seaport  
Jennifer T. Ellis (jennifer-t-ellis@utc.edu) and Lauren Ingraham, The University of Tennessee at Chattanooga  
Join us for an introduction to two teaching strategies that are ideal for use with the Common Core State Standards and the NGSS—writing to learn and the 5E (Engage, Explore, Explain, Elaborate, and Evaluate) instructional model.

SESSION 27
NSELA Session: Disciplinary Literacy in Middle School Science Classrooms  
(Middle Level)  
Alcott, Westin Waterfront  
Tom Peters (tpeters@clemson.edu), S’TEM Centers SC, Clemson, S.C.  
This session will explain the Inquiring Minds: Reading to Learn and Innovate in Mathematics and Science (IQMS) model of professional development and support designed to infuse disciplinary literacy strategies in middle science classrooms across South Carolina.

SESSION 28
CSI and NGSS—Coordinators and Supervisors Implementing the NGSS  
(Supervision/Administration)  
Burroughs, Westin Waterfront  
Kelly Price (price_kel@yahoo.com), Forsyth County Schools, Cumming, Ga.  
Interact with members of the NSTA Committee on Coordination and Supervision of Science Teaching as they share timelines, strategies, tools, and “lessons learned” through their implementation of the NRC Framework and the NGSS at the district and state levels.

SESSION 29
Research Worth Reading: 2013 Research Selected by NSTA Affiliates  
(General)  
Commonwealth Ballroom B, Westin Waterfront  
Kathryn Scantlebury (kscantle@udel.edu), University of Delaware, Newark  
Each year, the NSTA Research Committee works with NSTA affiliates to identify research that teachers should read. This session will share the identified research of 2013.
SESSION 30
Continue Changing the Equation Through Addressing Engineering and Science with Technology (Gen)
(Faneuil, Westin Waterfront
Elizabeth Niehaus (niehaus_p@msn.com) and Carol L. Jones (caroljones8710@yahoo.com), Lawrence Technological University, Southfield, Mich.
Michelle Kirkland, Mount Clemens (Mich.) Community School District
With the impending adoption of the NGSS by many states, the question remains...what technology do we purchase? Come see what we have successfully implemented with no purchasing. BYOD (bring your own device)!

SESSION 31
Reason to Write: Argumentative and Persuasive Writing in the Science Classroom (Gen)
(Middle Level–College) Grand Ballroom D, Westin Waterfront
Judith H. Sumner (sumnerbotany@gmail.com), Massachusetts Academy of Math and Science, Worcester
Argumentation and persuasion are essential CCSS components that can be engaging aspects of science instruction. We will explore several scientific controversies, STEM research and writing strategies, and claim/evidence/reasoning organization.

SESSION 32
High School Contributions to the Development of Presidential Early Career Awardees in Science and Engineering (PECASE) (Gen)
(Harbor Ballroom II, Westin Waterfront
John T. Almarode (almarojt@jmu.edu), James Madison University, Harrisonburg, Va.
Edward Crowe (edw.crowe@gmail.com), Woodrow Wilson National Fellowship Program, Washington, D.C.
Christopher G. Kolar (ckolar@imsa.edu), Illinois Mathematics and Science Academy, Aurora
Geesoo Maie Lee (glee@apa.org), American Psychological Association, Washington, D.C.
Presider: Christopher G. Kolar
PECASE is the highest honor bestowed by the United States government on scientists and engineers in the early stages of their independent research careers.

SESSION 33
How Do We Know What They Know? Using Student Interviews to Illuminate Student Knowledge (Gen)
(Harbor Ballroom III, Westin Waterfront
Mary A. Bearkland (mabearkl@syr.edu) and Sharon Dotger (sharter@syr.edu), Syracuse University, Syracuse, N.Y.
Kevin Moquin (kmquoinqu@sy.edu), Deb Walsh, and Sue Osborne (sobasblr@liverpool.k12.ny.us), Willowfield Elementary School, Liverpool, N.Y.
Join us to hear how interviews can be designed and used to pre-assess students’ science content knowledge and lead to improved science instruction.

SESSION 32
The Best in Literature—How We Choose It, How We Use It (Gen)
(Lewis, Westin Waterfront
Suzanne Flynn, Lesley University, Cambridge, Mass.
Emily Brady, Executive Administrator and Manager, NSTA Recommends, NSTA, Arlington, Va.
NSTA Recommends has a searchable database of almost 10,000 materials and NSTA has 42 years of “The Best of the Best” in trade books. Join us to see how we evaluate, try your own hand at evaluation, and learn how to use these materials.

SESSION 33
Cycles of Inquiry Around Unit Planning, Delivery, and Student Outcomes (Gen)
(Quincy, Westin Waterfront
Dan Novak, Sephali R. Thakkar (sephali@gmail.com), and Fred Feraco (frederick.feraco@gmail.com), Columbia Secondary School for Math, Science, & Engineering, New York, N.Y.
Presider: Sephali R. Thakkar
Our departmental collaboration encompasses an inquiry cycle that involves every tier of collaboration—from students and teachers to administrators—in order to meet instructional goals.
2:00–3:00 PM  Workshops

NESTA Session: It’s Elementary! Effective Approaches for Addressing the Earth Science Next Generation Science Standards in the Elementary Classroom  
(Earth)  
(Preschool–Elementary)  
052 A/B, BCEC  
Roberta M. Johnson (rmjohnsn@gmail.com), NESTA, Boulder, Colo.  
Margaret A. Holzer (mholzer@monmouth.com), Chatham High School, Chatham, N.J.  
Michael J. Passow (michael@earth2class.org), Dwight Morrow High School, Englewood, N.J.  
This NESTA hands-on workshop provides exemplary lessons and strategies that prepare students for the NGSS performance expectations for Earth science topics in the K–5 classroom.

Using Virtual Field Experiences in Earth Science Education  
(Earth)  
(Middle Level–High School)  
157C, BCEC  
Randy Russell (rrussell@ucar.edu), NCAR, Boulder, Colo.  
Take students on virtual field trips and have them simulate the experiences of scientists in the field using role-playing and computer-assisted activities.

Early Bird Lessons: Practicing Early Learning Skills Using Birds  
(Bio)  
(Preschool–Elementary)  
160B, BCEC  
Kim Soper, University of Nebraska Medical Center, Omaha  
Kathleen C. Murphy (kmurphy@fontenelleforest.org), Fontenelle Forest, Bellevue, Neb.  
Discover a curriculum that encourages preschoolers to develop and practice inquiry skills and challenges them to “Eat Like A Bird,” measure their wingspan, and “Build a Bird.”

Writing to Learn and Learning to Write in Middle Grades Science Classrooms  
(Bio)  
(Middle Level)  
160C, BCEC  
Rose M. Pringle (rpringle@coe.ufl.edu) and Jennifer C. Mesa (jmesa@coe.ufl.edu), University of Florida, Gainesville  
Explore and construct explanations for relationships in ecosystems. Using related samples of student writing, we will model strategies for guiding writing in science.

Starting a Robotics Club for Elementary School Students—It’s Easy!  
(Gen)  
(Primary)  
161, BCEC  
Kara Crowley (kara.crowley@swcs.us), Darby Woods Elementary School, Galloway, Ohio  
This session will show you how easy it can be to start a Robotics Club at your elementary school!

Organelle of the Day  
(Bio)  
(Middle Level–High School)  
205A, BCEC  
Discover an innovative approach to teaching and learning about cell structure and function while using proper microscope technique. Digital cameras and iPads document student work. Handouts!

Perception and Performance: Investigating the Human Body  
(Bio)  
(Primary–High School)  
205B, BCEC  
Richard A. Frazier (rfrrazier@aes.ac.in), American Embassy School, New Delhi, India  
The human body holds immediate interest for students. This workshop introduces phenomena that prove surprising for many and investigations that have no foregone conclusions.

Building Bridges Between Games and Curricula  
(Phys)  
(Middle Level–High School)  
205C, BCEC  
Erin Bardar and Barbara MacEachern (barbara_maceachern@terc.edu), EdGE at TERC, Cambridge, Mass.  
George Papayannis (gpapayannis@fenwayhs.org), Fenway High School, Boston, Mass.  
Ed Yoo (eyoo@codmanacademy.org), Codman Academy, Dorchester, Mass.  
Leverage your students’ passion for games to engage them in STEM learning. Come play games and explore activities that bridge game play and classroom physics.

Integrating Science, Mathematics, and Technology into Elementary Classroom Units  
(Gen)  
(Primary–Middle Level)  
207, BCEC  
Rick Varner (rvarner@bcps.org), Deer Park Middle Magnet School, Randallstown, Md.  
Ellyssa Varner (ellyssa_varner@bcpss.org), Bollman Bridge Elementary School, Jessup, Md.  
It is no small task incorporating new standards into your existing curriculum. Join us as we share a hands-on interdisciplinary unit for the elementary classroom.
CESI Session: Engineering Is Everywhere (E2)  (Phys)  
(Elementary)  211, BCEC  
Julie Thomas (julie.thomas@unl.edu), University of Nebraska–Lincoln  
E2 resources help grade 5 students make sense of engineering as applied to science and mathematics. Try hands-on activities and get access to videos and curricula.

Master Experimental Design and Science Practices  (Gen)  
( Elementary)  212, BCEC  
Helen Pashley, Putnam Northern Westchester BOCES, Yorktown Heights, N.Y.  
Beyond steps of the scientific method, experimental design is essential to science practices. Learn easy strategies to help students understand experiments, variables, and lab reports.

Integrating Science and Engineering Learning  (Gen)  
( Elementary)  213, BCEC  
Cathy P. Lachapelle (clachapelle@mos.org) and Kristin Sargianis (ksargianis@mos.org), Museum of Science, Boston, Mass.  
Join us as we demonstrate through hands-on activities that an engineering design challenge can increase students’ engagement, motivation, and science content learning. Relevant research on design-based learning will be discussed.

Science Notebooks as First Drafts? Connect Science and Literacy Through the Water Cycle and Weathering and Erosion Investigations  (Earth)  
( Elementary)  251, BCEC  
Reeda Hart (hartr@nku.edu) and Carrie Holloway (hollowayc2@nku.edu), Northern Kentucky University, Highland Heights  
These water cycle investigations apply the framework for science and engineering practices, disciplinary core ideas, and crosscutting concepts while addressing literacy objectives. Take home a CD.

NSTA Press® Session: Science & Children—A Year of Inquiry  (Gen)  
(Preschool–Elementary)  253C, BCEC  
Linda Froschauer (fro2@me.com), 2006–2007 NSTA President, and Field Editor, Science & Children, Westport, Conn.  
The Next Generation Science Standards support inquiry as a teaching strategy. Learn ways to infuse components of inquiry into your curriculum.

Let’s Go STEM! Part I  (Gen)  
(Middle Level)  254B, BCEC  
Terri Ladd (tladd@menifeeusd.org), Menifee Valley Middle School, Menifee, Calif.  
We want to share our first-year experiences of STEM classes with you! Join us for this hands-on workshop where we will share activities that worked.

Engineering Practices in Early Childhood: Designing Mechanisms with Mech-a-Blocks  (Gen)  
(Preschool–Elementary)  259B, BCEC  
Travis Sloane, East Side Elementary School, New York, N.Y.  
Donna Johnson (djohnson11@schools.nyc.gov), P.S. 021 Crispus Attucks School, Brooklyn, N.Y.  
Anja Hernandez (anjahernandez@ccny.cuny.edu), City College of New York, N.Y.  
Presider: Donna Johnson  
Mech-a-Blocks are large, connectable pegboard pieces in pattern-block shapes and colors. Find out how to use them to design and test your own mechanisms!

Science Trio: NGSS Practices, Nature of Science, and the Habits of Mind  (Gen)  
( Elementary/College)  Atlantic 1, Renaissance  
Kathy Sparrow (sparrowk@bellsouth.net) and George E. O’Brien (obrieng@fiu.edu), Florida International University, Miami  
We will share teaching approaches supportive of 16 Habits of Mind (Costa & Kallick) from our preservice and inservice science education workshops for elementary teachers. Engage in hands-on activities modeling the use of the NGSS practices of developing and analyzing data, constructing explanations, and engaging in argumentation from evidence—facilitative for developing the 16 Habits of Mind.

Evaluate Your Sessions Online!  
This year, we’re giving away a Kindle Fire HDX 7” to two lucky attendees who complete a session evaluation! Remember, the more sessions you attend and evaluate, the more chances you have to win! (See Volume 1, page 17 for details.)
ASTE Session: Understanding the Relationship Between Mass, Volume, and Density by Engineering a Prototype of a Prosthetic Limb (Bio) (Elementary)—Atlantic 2, Renaissance

Nikki Rumpler (nrumpler@plymouth.k12.in.us), Riverside Intermediate School, Plymouth, Ind.

Brenda M. Capobianco (bcapo@purdue.edu) and Chell Nyquist (nyquist@purdue.edu), Purdue University, West Lafayette, Ind.

Nancy Tyrie (ntyrie@lsc.k12.in.us), Sunnyside Middle School, Lafayette, Ind.

Presider: Chell Nyquist

Help students develop an applied understanding of mass, volume, and density by designing, constructing, and testing a prototype of a prosthetic limb.

Nature of Science and the NGSS Science and Engineering Practices (Gen) (Middle Level–High School/Inf.)—Seaport Ballroom A, Seaport

Alicia Shaw (ashaw@towson.edu) and Mary Stapleton (mkstapleton@towson.edu), Towson University, Baltimore, Md.

Explore the NGSS science and engineering practices and their relationship to the nature of science using student-centered activities that are easily integrated into the classroom.

Scaffolding Instruction in the Science Classroom (Gen) (Middle Level–High School)—Seaport Ballroom B, Seaport

Mark D. Little (mark.little@bvsd.org), Broomfield High School, Broomfield, Colo.

Come learn techniques about scaffolding instruction as well as walk through a lab demonstrating how the lab can be scaffolded to meet student needs.

CSSS Session: The Next Generation of Science Leaders—What Does It Take to Prepare and Support Them? (Gen) (General)—Commonwealth Ballroom A, Westin Waterfront

Deborah L. Tucker (deborahlt@aol.com), Independent Science Education Consultant, Napa, Calif.

Participants will use essential leadership tools and resources intended to assist leaders in their efforts to implement the new vision of the science framework.

Writing to Learn Through Science Notebooks/Journals in Elementary and Secondary Classrooms (Gen) (Elementary–High School)—Commonwealth C, Westin Waterfront

Nancy K. Magnuson (nmagnuson@fsu.edu), Florida State University Schools, Tallahassee

Find out how students can benefit from using science notebooks in K–12 classrooms. Take home resources!

Geometry of Life: The Engineered World (Gen) (General)—Douglass, Westin Waterfront

M. Gail Jones, North Carolina State University, Raleigh

Amy R. Taylor, University of North Carolina, Wilmington

Explore the amazing shapes/sizes that make up our world. Build an icosahedral virus and a bucky ball, and explore amazing patterns in nature. Free materials!

Some of the Above: Writing Quality Multiple-Choice Questions (Gen) (Elementary–High School)—Harbor I, Westin Waterfront

Israel Solon (isolon@ets.org), ETS, Princeton, N.J.

Well-written multiple-choice questions can assess the higher-level skills found in the performance objectives of the NGSS. Test developers from Educational Testing Service will share the techniques you can use to write these questions.

DuPont Presents: Fishing Your Way to a Sustainable Future (Gen) (Middle Level–High School)—Otis, Westin Waterfront

Kim O’Byrne (kobyrne@lcps.k12.md.us), Mayfield High School, Las Cruces, N.Mex.

Christa Williamson (cwilliamson@kms.k12.mn.us), Kerkhoven Murdock Sunburg Junior/Senior High School, Kerkhoven, Minn.

Presider: Peggy Vavalla, DuPont, Wilmington, Del.

Cast your line, set your hook, and prepare for an inquiry-based learning activity guaranteed to catch your students’ attention with a new approach to teaching about sustainability.

Connecting Science, Engineering, and Literacy in an Elementary Classroom (Gen) (Elementary/Supervision)—Stone, Westin Waterfront

Katya Denisova (kdenisova@gmail.com), Baltimore (Md.) City Public Schools

Amanda Laurier (alaurier@jhu.edu), Johns Hopkins University, Baltimore, Md.

In this hands-on workshop, we will share several engaging and rigorous STEM lessons designed for grades 3–5. Funded by NSF, this work is a product of collaboration of Baltimore City Public Schools and Johns Hopkins School of Engineering.
2:00–3:00 PM  Exhibitor Workshop
Project-based Learning: A Gathering of Science Educators and It’s About Time (Gen)
(Grades 6–College) 156C, BCEC
Sponsor: It’s About Time
Presenter to be announced
It’s About Time is excited to host a gathering of educators who teach It’s About Time curricula and programs, to discuss project-based learning in middle school, high school, and college-level science classrooms. Posters and T-shirts will be given out to all participants who preregister at www.IAT.com.

2:00–3:00 PM  Meeting
GLBT Science Teachers Annual Meeting
Hancock, Westin Waterfront
This is the annual meeting for the Gay, Lesbian, Bisexual, Transgender Science Teachers organization. You do not have to be a current member to attend.

2:00–3:30 PM  Workshop
PDI AMNH Pathway Session: Connecting Earth Science Content and the CCSS ELA Using Museum Resources (Earth)
(Middle Level–High School) 208, BCEC
Dora Kravitz (dkravitz@amnh.org) and Rebecca Taylor (rtaylor@amnh.org), American Museum of Natural History, New York, N.Y.
Presider: Cristina A. Trowbridge, American Museum of Natural History, New York, N.Y.
This session explores how the reading strategy paraphrasing and museum resources can support Common Core State Standards, ELA in reading and science content in Earth science.

“Life begins at retirement.” —Author Unknown

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

Before and After Retirement—Practicalities and Possibilities
Saturday, April 5
8:00–9:00 AM
Boston Convention & Exhibition Center, 252A

For more information on the Retired Members Advisory Board, contact Virginia Baltay, chair, at virginia.baltay@gmail.com.
2:00–3:30 PM   Exhibitor Workshops

Genes and conSEQUENCES with HudsonAlpha   (Bio)
(Grades 9–12)  102A, BCEC
Sponsor: Carolina Biological Supply Co.
Jennifer Carden, HudsonAlpha Institute for Biotechnology, Huntsville, Ala.
Help your students dig into the central dogma of biology using real-world examples and modern research tools. Utilize this hands-on kit to help students master the processes involved in moving genetic information from DNA to protein and the impacts of DNA changes. This workshop is presented in partnership with Carolina Biological Supply Company.

Bring Visual Science into Grades 6–8 Classrooms—It's a Game Changer!   (Gen)
(Grades 6–8)  102B, BCEC
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Spark student interest by combining visual, auditory, and hands-on learning techniques. Harvey Bagshaw discusses and models how he teaches science with video and activities to support blended learning. Learn how to integrate compelling visuals and video and receive a one-year subscription to Carolina’s Twig online video-based learning program!

Reflection and Application of the NGSS: Learning to Write to Argue with Claims and Evidence K–8   (Gen)
(Grades K–8/Supervision)  103, BCEC
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Reflect on the makeup of the Next Generation Science Standards. Apply this knowledge and understanding to effectively integrate reading informational text and writing to argue through science notebooking.

Gene Expression and Cellular Differentiation   (Bio)
(Grades 9–12)  104C, BCEC
Sponsor: LAB-AIDS, Inc.
Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.
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 SEPUP's Science and Global Issues: Biology program from LAB-AIDS. Activities focus on ways to integrate selective gene expression as a relevant and engaging sustainability issue.

New Tools, New Insight, and New Ways of Understanding Science with Miller and Levine Biology   (Bio)
(Grades 6–12)  105, BCEC
Sponsor: Pearson
Kenneth R. Miller, Brown University, Providence, R.I.
Students are changing—their abilities and interests are more diverse, their learning styles are more varied, and they are “wired” into new media. Join coauthors Ken Miller and Joe Levine as they explore the teaching strategies they’ve put into their new Biology program. See how the power of new science and technology can be leveraged to bring NGSS-friendly instruction and exploration into your classroom and teaching lab.
Simple Programming Tools to Enhance Student Engagement (Gen)
(Grades 6–College) 106, BCEC
Sponsor: SparkFun Electronics
Derek Runberg (derek.runberg@sparkfun.com), SparkFun Electronics, Boulder, Colo.
Processing is a simple, easy-to-learn open-source programming language used by artists, scientists, mathematicians, and gamers. Integrating this tool into your classroom can empower your students to create simulations, models, and data visualizations. This hands-on workshop will culminate in designing your own data collection dashboard.

Meet Your Inner Fish and Other Great Transitions in Evolution (Bio)
(Grades 6–College) 107A, BCEC
Sponsor: Howard Hughes Medical Institute
Mark Eberhard, St. Clair High School, St. Clair, Mich.
Laura Bonetta, Howard Hughes Medical Institute, Chevy Chase, Md.
Learn about key evolutionary events in the history of life on Earth and what transitional fossils reveal about our evolutionary past. Hear about an exciting new short film from HHMI and obtain free ready-to-use resources and supplements to increase the impact of the film in the classroom.

Take a Swipe at Microbes! (Bio)
(Grades 7–12) 107B, BCEC
Sponsor: LaMotte Co.
Ken Rainis, Fairport, N.Y.
Excite students with fun and safe ways to become scientific explorers of microbes in air, water, and food…and on surfaces. As scientists, they will use technology to identify the microbes that they find. As engineers, they will design methods to collect data using BioPaddles®. As mathematicians, they will quantify microbes in CFU/cm² units. Engage students to ponder real-world connections of microbes and life. Come microbe hunting with us and pick up takeaways!

Experience the Power of a Digital Middle School Program (Gen)
(Grades 6–8) 107C, BCEC
Sponsor: Achieve3000®
Steven Weniger (steven.weniger@achieve3000.com), Achieve3000, Lakewood, N.J.
Experience the power of digital with differentiated levels of rich content from National Geographic. eScience3000 is tightly aligned to the CCSS, the NGSS, and STEM initiatives. See how science, literacy, and real-life experiences come together in this engaging middle school resource.

iPads in Biology—Digital Microscopy and More! (Bio)
(Grades 6–College) 109A, BCEC
Sponsor: Exo Labs, Inc.
Jeff Shaver (drjeffshaver@exolabs.com), Exo Labs, Inc., Seattle, Wash.
Looking to transform students’ learning experience in biology? Want to encourage better engagement in the classroom? Exo Labs’ Focus Camera connects directly to iPads, instantly creating effective platforms for collaboration! The Focus app allows students to capture high-resolution images and videos, add labels and measurements, and easily share their discoveries.

New Technologies: What They Can Teach Us About Childhood Brain Disorders (Bio)
(Grades 6–College) 109B, BCEC
Sponsor: Society for Neuroscience
Damien Fair, Oregon Health and Science University, Portland
Learn about new and exciting technologies in neuroscience from a leading expert in the field. Discover the tools and techniques that are teaching scientists about brain development, giving insight into brain disorders like autism and ADHD. Engage your students in hands-on neuroscience activities while promoting positive attitudes toward brain health!
MacGyver Windmills (Env) (Grades 4–12) 151A, BCEC
Sponsor: KidWind Project
Asia M. Ward (asia@kidwind.org), KidWind Project, St. Paul, Minn.
Build a windmill using materials commonly found in the classroom. Determine blade efficiency by using the wind to lift weights. Windmills are the ancient ancestors of modern wind turbines. To understand how wind turbines work, one must first understand a basic windmill.

Solving the Mystery of STEM Using Forensic Science (Gen) (Grades 7–12) 151B, BCEC
Sponsor: Frey Scientific/School Specialty Science
Lou Loftin, Consultant, Reno, Nev.
Conduct a number of STEM-focused forensic activities that link scientific investigations with analysis and investigative skills to solve multifaceted “cases” involving fingerprint, trace, DNA, and document evidence. Examine additional STEM-focused assets. See how the program software allows the integration of virtual labs, investigative activities, the preparation of web-based content, and individualized assessment.

Science Practices: What Does Argumentation Look Like in an Elementary Classroom? (Gen) (Grades K–6) 152, BCEC
Sponsor: Delta Education/School Specialty Science–FOSS
Brian T. Campbell, The Lawrence Hall of Science, University of California, Berkeley
Join FOSS developers to learn about the science practices within the context of the FOSS program. Experience analyzing and interpreting data, constructing explanations, and engaging in argumentation from evidence as tools to deepen student learning within a FOSS lesson.

Chemistry with Vernier (Chem) (Grades 9–College) 153A, BCEC
Sponsor: Vernier Software & Technology
Elaine Nam (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.
Conduct a variety of chemistry experiments using Vernier sensors with a LabQuest 2 or computer in this engaging hands-on workshop. Experience how Vernier has been incorporating the principles of the NGSS science and engineering practices for 33 years!

iPad and Wireless Sensors with Vernier (Gen) (Grades 3–College) 153B, BCEC
Sponsor: Vernier Software & Technology
Verle Walters (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.
Using data-collection technology builds deeper student understanding of critical concepts in science and increases test scores. See how you can use Vernier sensors, including our new Go Wireless Temp, to support science inquiry in classrooms using iPads. This technology empowers students to collaboratively collect and independently analyze their data.

Inspire Scientific Minds with Technology and Manipulatives (Gen) (Grades 3–12) 153C, BCEC
Sponsor: Scientific Minds
Kathy Reeves and Angie Casteel, Scientific Minds, Orange, Tex.
Teach critical science standards with technology and manipulatives using Scientific Minds’ new lab kits for grades 3–8, biology, and chemistry. Lessons support the standards of all states and the NGSS. Attendees receive door prizes, a free lab kit, and trial access to the award-winning Science Starters program.

Hands-On Digital in the High School Science Classroom (Gen) (Grades 9–12) 154, BCEC
Sponsor: Discovery Education
Patti Duncan, Discovery Education, Lakeville, Pa.
Giving students a variety of experiences helps to make the content “stick.” Learn how the resources found in the Discovery Education Science Biology, Chemistry, Earth and Space Science, and Physics Techbooks™ make it easier with engaging, interactive digital resources coupled with the all-important hands-on experience.

Life Science and the NGSS (Bio) (Grades 6–12) 156A, BCEC
Sponsor: Ward’s Science
Patty Muscatello (patty.muscatello@vwr.com), Ward’s Science, Rochester, N.Y.
Looking for ways to connect your favorite life science activities to the Next Generation Science Standards and crosscutting concepts? We’ll show you how with all-new Ward’s NGSS Activity Kits. In this hands-on workshop, you’ll learn how to connect key life science concepts to the NGSS with easy-to-use materials and pre-organized activities.
Bring the World of Digital Learning to Your Classroom with WeDo (Gen)  
(Grades 2–5) 156B, BCEC  
Sponsor: LEGO® Education  
LEGO Education WeDo is a motivational hands-on tool that enhances learning in literacy, math, engineering, and science and demonstrates how digital technology plays an active role in students’ everyday lives. Experience how this differentiated and substantial solution stimulates both the teaching and learning process, and can be applied to everyday lessons.

New Advanced Inquiry Labs for AP Chemistry from Flinn Scientific (Chem)  
(Grades 9–12) 258A, BCEC  
Sponsor: Flinn Scientific, Inc.  
Joan Berry (jberry@flinnsci.com) and Mike Marvel (mmarvel@flinnsci.com), Flinn Scientific, Inc., Batavia, Ill.  
This interactive hands-on workshop can help you implement the revised laboratory investigations and curriculum framework for AP Chemistry! Join Flinn Scientific as we present two new guided inquiry chemistry experiments that support the integrated learning objectives and applied science practice skills your students will need for success. Pre-lab preparation and preliminary activities for each investigation have been optimized so teachers can effectively guide students and provide maximum opportunities for inquiry. Handouts provided for all activities!

Cool! Can We Do That Again?!?! (Gen)  
(Grades 4–12) 258B, BCEC  
Sponsor: Educational Innovations, Inc.  
Jeff Feidler, Educational Innovations, Inc., Bethel, Conn.  
Tired of hearing “Do we have to do that?” from your students? Come check out some of the coolest activities involving color, light, and mirrors. Your students will be asking if they can do that again! Door prizes, freebies, and fun!

2:00–4:00 PM Workshop  
PDI BSCS Pathway Session: Obtaining, Evaluating, and Communicating Information in the Classroom (NGSS Practice 8) (Gen)  
(General) 203, BCEC  
Jody Bintz (jbintz@bscs.org) and Anne Westbrook, BSCS, Colorado Springs, Colo.  
This session will deepen your understanding of NGSS Practice 8: Obtaining, Evaluating, and Communicating Information in the Classroom. Engage in an inquiry-oriented activity that requires you to learn about and use a protocol for student discourse that supports their learning of science content.
2:00–4:00 PM  Informal Science Day Share-a-Thon
(Informal Education)  Ballroom West, BCEC

Organizer: Candace J. Lutzow-Felling (cj6b@virginia.edu), The State Arboretum of Virginia, Boyce
Melissa Ballard (mjballard@afterschoolalliance.org), After-school Alliance, Washington, D.C.
James Bell (caise@informalscience.org) and Kalie Sacco (ksacco@astc.org), Center for Advancement of Informal Science Education, Washington, D.C.
Tara Chudoba (tchudoba@nyscience.org), New York Hall of Science, Queens
Anne Pfitzner Gatling (gatlinga@merrimack.edu), Merrimack College, North Andover, Mass.
Janice Harvey (jharvey@gemini.edu), Gemini Observatory, Hilo, Hawaii
Mia Jackson (mjackson@davidheil.com), Foundation for Family Science & Engineering, Portland, Ore.
Debbie Jackson (djackson1@csuohio.edu), Cleveland State University, Cleveland, Ohio
Rita Karl (rkarl@tpt.org), Twin Cities Public Television, St. Paul, Minn.
Sharon King (sharonk@madscience.org) and Lindsay Milner (lindsaym@madscience.org), Mad Science, Montreal, Que., Canada
Brian Kruse (bkruse@astrosociety.org), Astronomical Society of the Pacific, San Francisco, Calif.
Karen Maher (kmaher@js.fs.fed.us), USDA Forest Service, Tongass National Forest, Juneau, Alaska
Eric Muller (emuller@exploratorium.edu), Exploratorium, San Francisco, Calif.
Jessica Sickler (jsickler@cosi.org), Lifelong Learning Group, Columbus, Ohio
Amanda Solarsh (amandasolarsh@gmail.com) and Gina Tesoriero, Simon Baruch Middle School MS104, Brooklyn, N.Y.
Brad Tanner, Mote Marine Laboratory, Sarasota, Fla.
Mary Ann Wojton (mwojton@cosi.org), COSI/Lifelong Learning Group, Columbus, Ohio

Come to the Informal Science Day Share-a-Thon, where informal science educators showcase their programs, resources, and share ideas with the science education community.

2:00–5:00 PM  Short Course
STEM in Motion: The Pasta Car Challenge! (SC-14)  (Upper Elementary—Middle Level)  Tremont, Marriott Copley Place
Ticket Required: $29
Donna Taylor (dtaylor@nps.org), Northbridge Middle School, Whitinsville, Mass.
Kelly Graveson (kgraveson@douglasps.net), Jessica Findlay (jfjindlay@douglasps.net), and Rachel Usher (rusher@douglasps.net), Douglas Middle School, Douglas, Mass.
For description, see Volume 1, page 55.

2:00–5:00 PM  Workshop
Wheelock Pathway Session: Science and Writing: A Research-based Approach That Enhances Learning in Both Domains  (Gen)  (Elementary)  209, BCEC
Betsy Rupp Fulwiler (bruppfulwiler@comcast.net), Writing in Science Partnership, Seattle, Wash.
Through video and mini-lessons, learn research-based strategies for using scaffolding to increase students’ achievement, as described in the NGSS and CCSS ELA.

2:30–4:30 PM  Meeting
NMLSTA Board of Directors Meeting  Executive Boardroom, Westin Waterfront

3:00–4:00 PM  Presentation
SESSION 1  CESI Session: Encouraging Environmental Stewardship Through an Integrated Science, Social Studies, and Literacy Activity  (Env)  (Elementary)  211, BCEC
Cynthia C.M. Deaton (cdeaton@g.clemson.edu), Clemson University, Clemson, S.C.
This integrated science, social studies, and literacy lesson guides students in examining their “backyard” and developing an understanding of environmental issues.
3:00–4:00 PM Exhibitor Workshop
Ecology to Enzymes to Industry (AP Big Ideas 1, 2, 4) (Bio)
(Grades 9–College) 157B, BCEC
Sponsor: Bio-Rad Laboratories
Damon Tighe (damon_tighe@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.
In this inquiry-based hands-on workshop, learn to use ecological knowledge of the kingdom fungi to find and characterize novel cellobiase enzymes for application in cellulosic biofuel production. The enzyme cellobiase is easy to extract from mushrooms and a colorimetric system for assaying activity can be used to determine how pH, temperature, and concentrations affect the rate of reaction.

3:00–4:30 PM Exhibitor Workshop
Communicating Science Through Lab Notebooking (Bio)
(Grades 9–College) 157A, BCEC
Sponsor: Bio-Rad Laboratories
Sherri Andrews (sherri_andrews@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.
Maintaining a proper lab notebook is key to communicating processes and findings to build on your results. It’s also been the difference in being awarded patents. Find out what the critical elements are to good documentation practice and how to assess student notebooks using a rubric.

3:00–5:00 PM Meetings
Association for Multicultural Science Education (AMSE) Membership Meeting
Seaport Ballroom C, Seaport
International Advisory Board Meeting
Hale, Westin Waterfront
Polar Educators International Open Meeting
Paine, Westin Waterfront
This meeting is open to all—polar and non-polar. Learn what has been accomplished so far and how you can join in now!

3:00–6:00 PM Short Courses
Integrating Outdoor Teaching and Learning into the Boston Public Schools Science Curriculum (SC-15) (Elementary) Boylston, Marriott Copley Place
Ticket Required: $34
John Sheridan (jacksheridan381@gmail.com) and Kristin Metz (kristinmetz@outlook.com), Boston Schoolyard Initiative, Boston, Mass.
Dean M. Martin (dmartin2@bostonpublicschools.org), Beverly Nadeau, Angela Palo, Elizabeth Hadly (elizabeth.b.ely@gmail.com), Sarah Colella (sarmarcolella@gmail.com), and Jose Rosa (jrosa@bostonpublicschools.org), Boston (Mass.) Public Schools
Holly Rosa (hollyrosa@gmail.com), Russell Elementary School, Dorchester, Mass.
Luis J. Arroyo (larroyo2@bostonpublicschools.org), Taylor Elementary School, Mattapan, Mass.
Melanie LaForce, CEMSE, The University of Chicago, Ill.
For description, see Volume 1, page 56.

Back It Up: Evidence-based Argumentation (SC-16) (Grades 4–8) Simmons, Marriott Copley Place
Ticket Required: $57
April Chancellor (april.chancellor@msichicago.org), Museum of Science and Industry, Chicago, Ill.
Susanne Hokkanen (shokkanen@dist159.com), Colin Powell Middle School, Matteson, Ill.
For description, see Volume 1, page 56.
Friday, 3:30–4:30 PM

3:30–4:30 PM  Robert H. Carleton Lecture
Teaching with the Brain in Mind  (Gen)
(General)  210C, BCEC

John E. Penick (penick@ncsu.edu), Professor and Head Emeritus, North Carolina State University, Raleigh

With increasingly available information from neuroscience and physiology—we, teachers, can now focus more on what causes changes in the brain and brain functioning, rather than just observing behaviors from students or responses to test items. Come learn how stress, exercise, nutrition, sleep, and the environment affect brain function and learning, and how we can combine knowledge of these factors with good teaching practices to produce desired outcomes.

Professor emeritus at North Carolina State University, Raleigh, John E. Penick has been committed to science education for more than four decades. He began his teaching career as a biology and chemistry teacher at Jackson High School, an inner city high school in Miami, Florida, where he also served as science department chairperson. He later taught community college biology, served as science department chairperson in an urban high school, was a professor at three universities, and was vice president of research and development at a private company in Brazil.

Widely published, he has authored or co-authored dozens of books, including Teaching with Purpose: Closing the Research-Practice Gap. In 2012, NSTA presented him with its most prestigious award—the Robert H. Carleton Award sponsored by the Dow Chemical Company. A former NSTA president in 2003, John has worked on numerous NSTA committees and advisory boards and served as the program and planning chairperson for the NSTA Soviet-American Conference in Moscow in 1991. He has received NSTA’s Distinguished Service to Science Education Award and has twice received the association’s Gustav Ohaus Award for Innovations in College Science Teaching.

Crossing the globe, Dr. Penick has been actively involved in education projects, including teaching university faculty in Indonesia to use computer spreadsheet software; attending and evaluating local teacher workshops at multiple sites in Portugal; teaching workshops in numerous foreign universities and for ministries of education; designing and writing a proposal to create a university science education center in Venezuela; and translating science curriculum from Portuguese to English.

3:30–4:30 PM  Presentations

SESSION 1
Only Math Can Save the World: Integrating Key Math Skills into Middle Grades Environmental Science  (Env)
(Middle Level)  157C, BCEC
Bryan Nichols (bryanhnichols@gmail.com), Plant City, Fla.
Roderic Ian Brame (rodbrame@hotmail.com), All Saints Academy, West Winter Haven, Fla.

A pair of math and science professors will present tips and activities from their graduate certificate program in middle school STEM integration.

SESSION 2  (two presentations)
(Intermediate–Middle Level)  158, BCEC
Presider: Charri A. Trembley, Kaneland Harter Middle School, Sugar Grove, Ill.

Just a Few New Twists on Old Tricks to Improve Nonfiction Literacy  (Gen)

Kevin S. Boltz and Charri A. Trembley (charri.trembley@kaneland.org), Kaneland Harter Middle School, Sugar Grove, Ill.

CRISS stands for Creating Independence through Student-owned Strategies. Join us as we introduce CRISS strategies that can enhance old favorites to improve comprehension of nonfiction literature. We’ll share how modified graphic organizers, questioning, and vocabulary strategies worked in our classrooms.

The Nature Classroom: Your Door to Integrating Science and the Common Core State Standards  (Gen)

Ingrid J. Judge (ingridjudge@yahoo.com), Pond Cove Elementary School, Cape Elizabeth, Maine

Find out how to use field and classroom work in nature ecology study as a springboard for literacy instruction in a highly engaging unit of study.

SESSION 3
Science Fair on Steroids  (Gen)
(Intermediate–Middle Level)  161, BCEC
Christina Hwande (christhwande@claytonschools.net), Ralph M. Captain Elementary School, Clayton, Mo.
Brendan Kearney (brendankanearney@claytonschools.net), Glenridge Elementary School, Clayton, Mo.

Presider: Christina Hwande

Make your science fair a science extravaganza! Learn how to use mentors, incorporate technology, and plan activities that will blow everyone out of the water!
All NESTA sessions are in the Boston Convention & Exhibition Center, 052A/B unless otherwise indicated

Friday, April 4

➢ 9:30 – 10:30 am  NESTA Geology Share-a-Thon
➢ 11:00 am – noon  NESTA Climate, Oceans and Atmosphere Share-a-Thon
➢ 12:30 – 1:30 pm  NESTA Earth System Science Share-a-Thon
➢ 2:00 – 3:00 pm  It’s Elementary! Effective Approaches for Addressing the Earth Science Next Generation Science Standards in the Elementary Classroom
➢ 2:00 – 3:00 pm  American Geophysical Union Lecture, “Geosciences – The Nexus of Data Driven Science and Applications”, Prof. Suchi Gopal, Boston University (CC 210A/B)
➢ 3:30 – 4:30 pm  Effective Approaches for Addressing the Next Generation Science Standards in the Earth and Space Science Classroom
➢ 6:30 – 7:00 pm  NESTA Friends of Earth Science Reception (Boston Museum of Science)

Saturday, April 5

➢ 8:00 – 9:00 am  NESTA Space Science Share-a-Thon
➢ 9:30 – 10:30 am  Effective Strategies for Sharing Climate Change Science and Energy Consumption Implications in the Classroom
➢ 11:00 am – noon  High-Impact Classroom Earth Science in a STEM World
➢ 12:30 – 1:30 pm  NESTA Advances in Earth and Space Science Lunchtime Lecture, “The CLEAN Collection – Reviewed Climate And Energy Teaching Resources To Enhance Teaching”, Dr. Tamara Ledley, TERC
➢ 2:00 – 3:00 pm  Using Natural Hazards as a Hook in the Earth and Space Science Classroom
➢ 3:30 – 4:30 pm  NESTA Rock and Mineral Raffle
➢ 5:00 – 6:00 pm  NESTA Annual Membership Meeting

NESTA gratefully acknowledges co-sponsorship of our events by the following organizations:
SESSION 4
Conducting Small-Scale Microgravity Experiments in Your Classroom (Phys) (General) 162A, BCEC
Mark R. Malone (mmalone@uccs.edu), University of Colorado, Colorado Springs
Conduct microgravity investigations inside your classroom. This presentation focuses on building and using a device that incorporates a USB video camera to observe and analyze small objects in a “weightless” (microgravity) environment.

SESSION 5
Engineering + Science = Music (Phys) (Middle Level–High School) 205C, BCEC
Vin Urbanowski (vurbanowski@aitestamford.org), Academy of Information Technology and Engineering, Stamford, Conn.
Have your students tune in to class. Lead your students to design, build, and calibrate a real one-string electric guitar, deriving music theory from physics—and playing a jam.

SESSION 6
Mission to Mars: A Technological Collaborative to Inspire the Next Generation (Earth) (Middle Level/Informal Education) 252A, BCEC
Leslie M. Sadowski-Fugitt (leslie.sadowski-fugitt@msichicago.org), Museum of Science and Industry, Chicago, Ill.
Susan Evens (susan.evens@heartland.edu), Heartland Community College, Normal, Ill.
Rebecca Dolmon (rdolmon@challengerillinois.org), Challenger Learning Center, Woodstock, Ill.
Learn how the Museum of Science and Industry and its Challenger Learning Center partners developed a successful STEM program, incorporating technology into an informal learning environment.

SESSION 7 (two presentations) (Elementary/Informal Education) 252B, BCEC
Using Twin Texts to Engage Learners for Science (Gen)
Denise Dallmer (dallmerd@nku.edu) and Kimberly P. Clayton-Code (codek@nku.edu), Northern Kentucky University, Highland Heights
Children learn best when science content, processes, and literature are integrated to make science relevant. Emphasis will be placed on providing examples of twin text integration for elementary learners.

Thinking, Analyzing, and Speaking Like Scientists (Gen)
Bela F. Luis (belaluis@shaw.ca), University of Manitoba, Winnipeg, Canada
As in literacy, scientists read literature before embarking on investigations, they write continuously, and they present their findings for others to read and critique. Research shows that students can attain a higher level of learning if given this same opportunity. Come learn more.

SESSION 8
NSTA Press® Session: Newly Designed Whole Class Inquiry Projects and Assessment in Biology, Chemistry, and Physics (Gen) (Middle Level–High School) 254A, BCEC
Dennis W. Smithenry (smithenryd@elmhurst.edu), Elmhurst College, Elmhurst, Ill.
Joan Gallagher-Bolos (jgallagher-bolos@glenbrook225.org), Glenbrook North High School, Northbrook, Ill.
By popular demand, we have designed new Whole Class Inquiry projects and assessments in the areas of biology, chemistry, and physics. Come learn about them.

SESSION 9
Students CAN Design and You CAN Enjoy It! Let’s Experiment! (Gen) (Middle Level) 255, BCEC
Lynn Lauterbach (lynnlauterbach@gmail.com), Loveland, Colo.
Simple supplies of Post-it® Notes and a graphic organizer template can help you guide your students to the experimental design level. Handouts and free online support!
SESSION 10
Make Room for STEM by Flipping Your Classroom (Phys) (Middle Level–College) 257A, BCEC
Borislaw Bilash, Pascack Valley Regional High School District, Montvale, N.J.
Lecture becomes homework, leaving class time for learning by doing—using the engineering cycle.

SESSION 11
Sharks—The Good, the Bad, and the Toothy (Bio) (General) 257B, BCEC
Sharon M. Morrell (smorrell@njaas.org), Center for Aquatic Sciences, Camden, N.J.
Dive into how you can use your students’ interest in sharks to foster excitement in a variety of science topics.

SESSION 12
Differentiating Science for Elementary Students (Chem) (Elementary) 259A, BCEC
Karen Weeks (karen.weeks@jhu.edu) and Laura Saxton (lsaxton@jhu.edu), Johns Hopkins University Center for Talented Youth, Baltimore, Md.
Using lessons from biology, chemistry, and physical science, presenters illustrate how to differentiate elementary science for mixed classes at content, process, and product levels.

SESSION 13
Bridging Engineering and Science (Phys) (High School) 259B, BCEC
David J. Salonia (d salonia@simsbury.k12.ct.us), Simsbury High School, Simsbury, Conn.
Join me for an integrated approach to teaching statics using a truss bridge. Find out how to teach a project that applies engineering and science concepts.

SESSION 14
NASA: The Latest Discoveries from the Stratospheric Observatory for Infrared Astronomy (SOFIA) (Earth) (Middle Level–College) 261, BCEC
Dana E. Backman, NASA Ames Research Center, Moffett Field, Calif.
Join me for the latest findings from NASA’s SOFIA airborne observatory. Free lessons and resources regarding the electromagnetic spectrum and multiwavelength astronomy.

SESSION 15
Teaching Science Content and the NGSS with Geotechnologies (Gen) (Elementary–High School)
Erika S. Klose (eklose@access.k12.wv.us), Winfield Middle School, Winfield, W.Va.
Walk away with a series of lessons designed to teach core science knowledge through the use of geotechnologies such as GIS and GPS.

SESSION 16
Engineering and Life Sciences: Interdisciplinary Approaches Enabling Innovation at NASA Johnson Space Center (Gen) (General)
Marguerite A. Sognier, The University of Texas Medical Branch at Galveston
Hear how real-life scientists and engineers work together to generate amazing technologies and innovations…and then work to produce your own technology!

SESSION 17
Science and Special Education—How to Make It Work (Gen) (Middle Level–High School)
Kathleen Brooks, Madison, Conn.
Encounter strategies for working with both special needs students and with special education teachers and paraprofessionals who do not know science.

SESSION 18
Literacy in Science and Science in Reading: A Two-Way Street (Gen) (Middle Level–High School)
Diane Lapp, San Diego State University, San Diego, Calif.
A reading expert will present guidance on building student literacy in complex and discipline-based texts using video examples from an upcoming resource for science teachers.

SESSION 19
Engineering by Design (Gen) (High School)
Ramiro Gonzalez (rgonzalez@bostonartsacademy.org) and Amanda Hanna (ahanna@bostonartsacademy.org), Boston Arts Academy, Boston, Mass.
Join us for this session that explores the nexus of art and science—STEAM.
SESSION 20
Sliding Classrooms: Lessons Learned Through Two Years of Practice (Gen) (High School)
Sarah Eales (sarah_eales@gwinnett.k12.ga.us), Peachtree Ridge High School, Suwanee, Ga.
Come hear about some of the challenges and rewards of implementing sliding classrooms to reach every student.

SESSION 21
BioGraph: A Complex Systems Lens for Learning Introductory Biology (Bio) (High School–College/Supervision) Burroughs, Westin Waterfront
Josh Sheldon (jsheldon@mit.edu), Massachusetts Institute of Technology, Cambridge
Melissa Holland (mholland@medford.k12.ma.us), Medford High School, Medford, Mass.
Amy Tom, Milton High School, Milton, Mass.
Presider: Josh Sheldon
BioGraph is a research collaboration among MIT, the University of Pennsylvania, and high school teachers to facilitate introductory biology learning through understanding of complex systems supported by computer models.

SESSION 22
Integrating Climate Change and Engineering Across the High School Curricula (Gen) (High School/Supervision) Commonwealth B, Westin Waterfront
Diane Johnson (diane.johnson@uky.edu) and Susan Mayo (susan.mayo@att.net), University of Kentucky, Lexington Discussion centers on the process, lessons learned, and products from a Math and Science Partnership grant that brought teams of teachers from eight high schools together. These teams developed and taught units of study for high school biology, physical science, and Earth science that used climate change as a context and integrated engineering design. Units will be shared!

SESSION 23
Designing and Offering Professional Development Aligned to the New Science Standards (Gen) (General)
Joyce Bowen, Massachusetts Dept. of Elementary and Secondary Education, Malden
In this session, I will share Massachusetts’ efforts and experience in designing new as well as tailoring existing professional development to help educators implement the new science standards.

SESSION 24
Teachers from the NGSS Writing Team: Our Journey and How Teachers Can Build on the NGSS Diversity and Equity Team’s Work (Gen) (General)
Emily Miller (emilycatherine329@gmail.com), Madison (Wis.) Metropolitan School District
Rita Januszyk (ritajanuszyk@gmail.com), Gower West Elementary School, Willowbrook, Ill.
Susan Cohen, Cherokee Middle School, Madison, Wis.
While we were writing the NGSS, we planned, implemented, and wrote case studies that highlight how diverse groups of students can meet the new science standards. We will describe our learning trajectory while writing the case studies and discuss how these case studies can inform your science instruction and increase access for diverse students.

SESSION 25
Integrated STEM Education: Findings from a National Academies Study (Gen) (General) Griffin, Westin Waterfront
Greg Pearson (gpearson@nae.edu), National Academy of Engineering, Washington, D.C.
Explore findings and recommendations of a report—slated for release in the summer of 2013—from the National Academy of Engineering and National Research Council on the topic of integrated K–12 STEM education. This session will review a descriptive framework for integrated STEM education and a research agenda.
SESSION 26 (two presentations)  
(General)  
Harbor Ballroom II, Westin Waterfront  
STEM Integration for District Leaders: Planning for Districtwide STEM Focus  
(Mia Dubosarsky (mdubosarsky@wpi.edu), Worcester Polytechnic Institute, Worcester, Mass.)  
Emphasis will be placed on the need, structure, and products of a program for school and district leaders working to develop a strategic plan for STEM integration.

It Takes a Village to Raise an Engineer: Involving Local Urban Communities in an Elementary STEM Initiative  
(Katya Denisova (kdenisova@gmail.com), Baltimore (Md.) City Public Schools  
Amanda Laurier (alaurier@jhu.edu), Johns Hopkins University, Baltimore, Md.)  
Baltimore City Public Schools teamed up with Johns Hopkins University School of Engineering to engage nine elementary school communities in a rigorous STEM in-school and after-school initiative (grades 3–5). We’ll share the results of the first cycle of this NSF-funded project’s implementation.

SESSION 27  
Notebooking for Meaning  
(Karen Ziminski (kziminski@boston.k12.ma.us) and Erin A. Hashimoto-Martell (ehashimoto@bostonpublicschools.org), Boston (Mass.) Public Schools)  
Join us and gain an introduction to a variety of notebooking techniques that can increase student engagement and their love of learning. Students will take pride in their notebooks and, therefore, increase the level of their work.

SESSION 28 (two presentations)  
(General)  
Lewis, Westin Waterfront  
Using Literature as a Foundation for Teaching Science  
(Pamela G. Christol, Northeastern State University, Broken Arrow, Okla.)  
Denise McDonald, University of Houston–Clear Lake, Houston, Tex.)  
A professor/reading specialist and a science education professor will present strategies for correlating and integrating literature into the teaching of science content.

Engage and Motivate Students with Trade Books: Ideas and Techniques from Picture Perfect Science Lessons  
(Michelle Tharpe (mtharpe2@aum.edu), Nicholas F. Bourke (nbourke@aum.edu), and Connie Buskist (cbuskist@aum.edu), Auburn University at Montgomery, Ala.)  
Explore creative ways to use trade books to enhance your curriculum as we share ideas presented in Ansberry and Morgan’s book, Picture Perfect Science Lessons.

SESSION 29  
Best Practices for University-based Research Collaborations  
(Tevfik Eski, Kenilworth Science and Technology School, Baton Rouge, La.)  
Minority middle school students conducted research with university faculty and graduate students, which was published in national scientific journals. Join us as we present best practices for research partnerships.

3:30–4:30 PM  
Workshops  
NESTA Session: Effective Approaches for Addressing the Next Generation Science Standards in the Earth and Space Science Classroom  
(Earth)  
(052 A/B, BCEC)  
Roberta M. Johnson (rmjohnsn@gmail.com), NESTA, Boulder, Colo.  
Margaret A. Holzer (mholzer@monmouth.edu), Chatham High School, Chatham, N.J.  
Michael J. Passow (michael@earth2class.org), Dwight Morrow High School, Englewood, N.J.

This NESTA hands-on workshop highlights lessons and strategies using NGSS crosscutting concepts to unite core ideas and science and engineering practices for the geoscience classroom.
Energy Transformations for Kindergarten  (Phys)  
(Preschool—Elementary)  159, BCEC
John W. Payne, Mercer University, Lithia Springs, Ga.
Come discover energy transformation demonstrations and experiments appropriate for kindergarten and preK classes.

Conquering the Content: A Physical Science Content Workshop for Elementary Science Teachers  (Chem)  
(Elementary)  160A, BCEC
Andrea Smith (andrea.smith@bvsd.org), Boulder Valley School District, Lafayette, Colo.
Intimidated by physical science or just need a content refresher to improve your physical science instruction? Take part in hands-on physical science activities to identify common teacher misconceptions and expand your ability to accurately teach physical science concepts.

Let’s Talk Science: Seeding Argumentation  (Bio)  
(Elementary—Middle Level)  160B, BCEC
Deena L. Gould (DNAmartin@cox.net), Arizona State University, Tempe
How do you begin scientific argumentation in a classroom? A framework for seeding collaborative discourse will be shared around concepts of living and growing.

Weather Through Time = Climate  (Earth)  
(Elementary)  160C, BCEC
Lynne H. Hehr (lhehr@uark.edu), University of Arkansas, Fayetteville
From an elementary perspective, explore weather around the world, make predictions about all kinds of weather happenings, and learn how weather patterns over time create climate.

Chemistry…It’s a Gas, Gas, Gas!  (Chem)  
(High School)  162B, BCEC
Kristi G. Barber (kristi.barber@amaisd.org) and Brittney Mays (brittney.mays@amaisd.org), Caprock High School, Amarillo, Tex.
Discover student-centered activities designed to build comprehension of the gas laws and air pressure. Come experiment with temperature, pressure, and volume using differentiated lessons, demos, and technology. Door prizes and handouts!

Engaging Students in Developing and Using Models: Using Clay Models to Visualize Action Potentials  (Bio)  
(High School)  205A, BCEC
Natasha D. Capell (capelln@unity.k12.il.us), Unity High School, Tolono, Ill.
Barbara Hug (bhug@illinois.edu), University of Illinois at Urbana-Champaign, Champaign
Learn how to enhance student understanding of neuron physiology through the cooperative construction of a clay neuron model and recorded simulation of an action potential.

Using Models as Evidence in High School Biology  (Bio)  
(High School)  205B, BCEC
Matt Silberglitt (msilber@wested.org), WestEd, Oakland, Calif.
Discover how to use new models and augmented reality as evidence of structure and function in biology, incorporating science practices into biology instruction.

Fun with Energy Sources: Exciting Student-led Energy Source Activities  (Gen)  
(Elementary—Middle Level)  207, BCEC
Rebecca Lamb (rlamb@need.org), The NEED Project, Manassas, Va.
In this make-and-take workshop, engage in short, fun activities for teaching energy sources and take home an energy carnival game.

Elementary STEM Conservation Projects  (Gen)  
(Elementary)  212, BCEC
Donna L. Burrus (dlburrus@fayetteacademy.com), Fayette Academy, Somerville, Tenn.
Find out how to conduct elementary STEM projects that generate enthusiasm for science for you and your students.

Engineering Tales  (Gen)  
(Elementary)  213, BCEC
Keri Porter, Los Angeles Unified School District and UCLA Center X, Carson, Calif.
Experience an active CCSS approach linking engineering design processes with folk tales and adventure tales.
Exploring Imaging of the Scales of the Universe (Earth)
(Middle Level–High School/Informal Ed.) 251, BCEC
Jacob Noel-Storr (jake@cis.rit.edu), Rochester Institute of Technology, Rochester, N.Y.

Come explore some of the latest Imaging Science data showing the scales of the universe, and learn how to access the content to deploy in your classroom!

NSTA Press® Session: The Authors’ Picks! Teaching Science Through Trade Books (Gen)
(Elementary) 253C, BCEC
Christine Royce (caroyce@aol.com), Shippensburg University, Shippensburg, Pa.
Emily Morgan (emily@pictureperfectscience.com) and Karen Ansberry (karen@pictureperfectscience.com), Picture-Perfect Science, LLC, Lebanon, Ohio

Join the authors of Science & Children’s “Teaching Science Through Trade Books” column as they share their favorite picks for trade book–inspired lessons featured in their book.

POGIL (Process-Oriented Guided Inquiry Learning): The “L” Is Also for Learning Team (Gen)
(High School) Seaport Ballroom A, Seaport
Michelle Klein, Carrie Kaestner (cjkessinger@cps.edu), and Urik Halliday (urhalliday@cps.edu), Von Steuben Metropolitan Science Center, Chicago, Ill.

POGIL offers a way to foster a student-centered classroom and incorporate literacy strategies into your science lessons.

What’s the Cache? Using Geocaching and EarthCaching to Educate and Excite Student About Natural and Human History (Gen)
(Middle Level–High School) Seaport Ballroom B, Seaport
Kathryn Buckley (keb42@georgetown.edu), Robert H. Adams Middle School, Holliston, Mass.

Use GPS to locate sites of scientific and historical significance in Boston while familiarizing yourself with how to use these activities with students.

Literacy in Support of Secondary Science Content (Gen)
(General) Commonwealth Ballroom C, Westin Waterfront
Adrienne B. Somera (adrienne.somera@gmail.com), North-west Educational Service District 189, Anacortes, Wash.

Don’t let content-reading strategies feel like another add-on! Learn to embed them in your existing curriculum to support deep, meaningful science learning for every student.

Survival of the Fittest: Addressing the Needs of Teachers in Their First to Fifth Years (Gen)
(General) Douglass, Westin Waterfront
Melissa Soulsas, Page Middle School, San Antonio, Tex.

Create survival instructional kits that can help you grow as a teacher leader in science. Be guided in strategies to strengthen your reflective practices while addressing the needs of promoting a positive learning environment in the classroom.

DuPont Presents: Tracking the Spread of Infectious Diseases—Human and Animal (Gen)
(Middle Level–High School) Otis, Westin Waterfront
Laura Hasselquist, Chippewa Falls Senior High School, Chippewa Falls, Wis.

Presider: Peggy Vavalla, DuPont, Wilmington, Del.
Help students understand the spread of diseases in a human or animal (livestock) population through using this engaging hands-on lab. Model how health organizations trace a disease while teaching important concepts of disease transmission and exponential growth.
Meeting the NGSS—Climate Science and Global Change (Gen)
( Elementary—Middle Level) Stone, Westin Waterfront
Louise T. Huffman, Rotonda West, Fl.
Recognize the urgency to teach climate change science, but
not sure where it fits the NGSS? Need resources? This is the
workshop for you!

3:30–4:30 PM Exhibitor Workshop
Active Physics: A Project-based Program Capturing
the Essence of the NGSS and STEM (Phys)
(Grades 9–College) 156C, BCEC
Sponsor: It's About Time
Arthur Eisenkraft, 2000–2001 NSTA President, and
UMass Boston, Mass.
Learn from the author, Dr. Arthur Eisenkraft, how this
proven program implements STEM and the essence of the
Next Generation Science Standards. Understand the benefits
of the Engineering Design Cycle and learn how physicists,
teachers, and science educators designed this project-driven
course, recognized for the positive impact it has on students
of all levels.

3:30–5:00 PM Meeting
SCST Business Meeting
Caspian, Renaissance

3:30–5:00 PM Exhibitor Workshop
Using a STEM Teaching Approach to Investigate
Alternative Energy (Env)
(Grades 9–12) 150, BCEC
Sponsor: Fisher Science Education
Robert Marshall (marshallr@carnegiesciencecenter.org),
Carnegie Science Center, Pittsburgh, Pa.
Continuing to explore various renewable energy sources,
solar energy proves to be a vast and inexhaustible resource. It
represents a clean alternative to fossil fuels, but there are other
options to consider like hydrogen. Introduce the options to
your students and provide the knowledge they need to consider
these alternatives.

3:30–5:30 PM Workshop
NGSS Pathway Session: Using Engineering Practices
to Develop Science Concepts (Gen)
(General) 206 A/B, BCEC
Mariel Milano (mariel.milano@ocps.net), Orange County
Public Schools, Orlando, Fla.
Jaymee Herrington (jaymee.herrington@gmail.com), K5
Science Consultant, Washington, D.C.
Join NGSS writing team members in exploring how to use
the engineering practice to develop science concepts in the
classroom. Participants will engage in a hands-on unit of
study and leave with ideas perfect for use in mastery of the
disciplinary core ideas.

4:00–5:00 PM Meeting
NSTA Recommends Meeting
Independence Boardroom, Westin Waterfront

4:00–5:00 PM Presentation
SESSION 1
CESI Session: Using Web-based Tools to Connect
Science, Literacy, and Technology in the Elementary
Grades (Gen)
(Elementary) 211, BCEC
Jeff A. Thomas (jathomas@usi.edu), University of Southern
Indiana, Evansville
Join me as I present Web 2.0 tools and their connections to
science, recent award-winning children's literature selec-
tions, and elementary learning.

4:00–5:30 PM Workshop
AMNH Pathway Session: Using Common Core State
Standards, ELA and Museum Resources to Construct
Science Explanations (Earth)
(Middle Level–High School) 208, BCEC
Dora Kravitz (dkravitz@amnh.org) and Rebecca Taylor
(rtaylor@amnh.org), American Museum of Natural History,
New York, N.Y.
Presider: Cristina A. Trowbridge, American Museum of
Natural History, New York, N.Y.
This session explores how writing strategies, graphic
organizers, and museum resources can support CCSS ELA
in writing and science content in Earth science.
4:00–5:30 PM  Exhibitor Workshop

Labs That Fit: Making Inquiry Work in Your AP Biology Classroom  (Bio)
(Grades 9–12)  102A, BCEC
Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner
Looking for a seamless transition to the new curriculum? Enrich your students’ experience in AP Biology with unique solutions from Carolina. This hands-on workshop introduces you to new resources designed for the revised College Board AP Biology curriculum, and gives you practical ways to introduce inquiry into your classroom.

Carolina Investigations™ for AP Chemistry  (Chem)
(Grades 9–12)  102B, BCEC
Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner
Watch your whole class come alive when you bring inquiry to your classroom with new Carolina chemistry activities. Carolina’s new labs help students develop essential chemistry practices, understand core chemistry concepts, and learn chemistry through inquiry per the new curriculum. Experience three different activities in this hands-on workshop. Handouts/giveaways!

Great Explorations in Math and Science for the Next Generation: The Roles of Water in Earth System, Ecosystems, and Human Activity  (Gen)
(Grades K–8/Supervision)  103, BCEC
Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner
Investigate climate change through the evolution of the ocean and atmosphere throughout Earth’s history; movement of the atmosphere and ocean through density, air, and water currents; the carbon cycle; and the ocean’s relationship to climate and climate change using multiple crosscutting concepts and science and engineering practices.

SPARKscience: Sensor-based Science for High School—Free Sensor Set for Five Attendees!  (Gen)
(Grades 9–12)  104A, BCEC
Sponsor: PASCO scientific

Mike Blasberg, PASCO scientific, Roseville, Calif.
Through an interactive iPad demonstration, you’ll experience how SPARKscience engages students in science and engineering practices, affording a deeper understanding of scientific concepts. Participate in investigations to experience real-time data collection with probeware and SPARKvue software. Five lucky attendees will win a 50th Anniversary Sensor Pack—a $600 value!

Chemi-Paloosa and Hands-On Activities That Will Really Get a Reaction  (Chem)
(Grades 6–12)  104B, BCEC
Sponsor: Aldon Corp.
Alex Molinich (amolinich@aldon-chem.com), Aldon Corp., Avon, N.Y.
Bring chemistry to life for your students with hands-on activities. The demonstrations are guaranteed to grab your students’ attention and enhance their learning experience, all while teaching fundamental science concepts. This workshop includes an overview of Innovating Science’s chemistry kits, including sample activities highlighting topics such as hydrogen fuel cell technology, electrochemical remediation of waste water, and others.

Comparing Earth to Other Worlds  (Earth)
(Grades 9–12)  104C, BCEC
Sponsor: LAB-AIDS, Inc.
Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.
What is it about conditions on Earth that makes it especially hospitable for life as we know it? In this activity, your students will read an excerpt from a science fiction story about Mars colonists and use a card-sort procedure to analyze the resources necessary to sustain human population on the “Red Planet.” This activity is from EDC: Earth Science, a new NSF-supported high school Earth science program from LAB-AIDS that uses an active data-oriented approach.

Using Problem-Based Learning to Up Your NGSS Game  (Gen)
(Grades K–12)  105, BCEC
Sponsor: Pearson
Michael Padilla, 2005–2006 NSTA President, and Clemson University, Clemson, S.C.
One of the biggest shifts involved with the implementation of the NGSS is the movement to incorporate more scenario-based and Problem-Based Learning. To help prepare students for their next steps in school and beyond, students need to be doing science and seeing how it fits into their daily lives. Join Pearson author Michael Padilla as he brings Problem-Based Learning into the science classroom to help prepare students for science and technology careers of the future.
Data Collection with High-Altitude Balloons  
(Grades 6—College) 106, BCEC  
Sponsor: SparkFun Electronics  
Jeff Branson (jeff.branson@sparkfun.com), SparkFun Electronics, Boulder, Colo.  
Design and build a high-altitude balloon with SparkFun Electronics. This engaging project introduces tools for real-world science and data collection. We will build a weather balloon, add instrumentation, and launch it (tethered, for safety, of course) in Boston to characterize temperature, humidity, and pressure as a function of height.

Using Cancer to Teach Cell Biology  
(Grades 9—College) 107A, BCEC  
Sponsor: Howard Hughes Medical Institute  
Ann Brokaw, Rocky River High School, Rocky River, Ohio  
Robert Cooper, Pennsbury High School, Levittown, Pa.  
Use the latest findings in cancer research to teach core concepts in cell biology and genetics with HHMI’s free classroom resources. Cancer is a great hook to gain students’ interest in genetic mutations and gene regulation, the cell cycle, and cell signaling pathways. The resources presented can be used in a blended or flipped classroom. Free DVDs and other materials will be distributed.

(Grades 6—9) 107B, BCEC  
Sponsor: eCYBERMISSION  
Sue Whitsett, eCYBERMISSION Outreach Manager, NSTA, Arlington, Va.  
Many teachers of science feel overwhelmed by the new Next Generation Science Standards and their emphasis on engineering design. But there’s no reason to be afraid! Many science classrooms and curricula already include engineering design ideas and implementing new ones can be easy and fun. We will discuss the differences between science practices and engineering design practices as they are laid out in the NGSS and we will give you a chance to work hands on with some demos that you can take back to your middle school science class. In addition, we will provide you with information about the free STEM competition eCYBERMISSION, and explain how it can help you integrate engineering design into your classroom.

Introduction to Plant Cloning and Growth Regulation  
(Grades 9—College) 107C, BCEC  
Sponsor: AquaPhoenix Education (Kemtec)  
Roxane Ohl (rohl@aquaphoenixsci.com), AquaPhoenix Education (Kemtec), Hanover, Pa.  
Discover how to effectively, economically, and confidently teach plant biotechnology topics—such as plant cloning, growth regulation, and plant cancer—in your high school or college classroom without any special equipment by using Kemtec Plant Science kits. You’ll learn to make your own media and disinfect and culture plant leaves, axillary buds, and seeds in a hands-on setting using sterile technique.

Nanotechnology: Hands-On Activities for All Disciplines  
(Grades 9—College) 108, BCEC  
Sponsor: Nano-Link: Center for Nanotechnology Education  
Deb Newberry (dmnewberry2001@yahoo.com) and Billie Copley, Dakota Country Technical College, Rosemount, Minn.  
Taking advantage of the multidisciplinary nature and the interest by students in nanotechnology, Nano-Link has created a set of more than 20 hands-on activities. Not only do these activities include nanoscience concepts, they also include concepts from traditional science as well as biotech, photonics, and material science. This hands-on workshop will teach you how to use these activities in myriad ways and then register to get materials for your classroom at no charge.

The ABCDs of Modeling: An NGSS Authentic Practice of Science  
(Grades 6—College) 109B, BCEC  
Sponsor: 3D Molecular Designs  
Shannon Colton (colton@msoe.edu) and Gina Vogt (vogt@msoe.edu), Milwaukee School of Engineering, Milwaukee, Wis.  
The NGSS emphasize core science and engineering practices, including the practice of modeling. Your students can engage in the Art of Analysis, Build a Beast, Create a Catalyst, and the Data Dilemma using hands-on modeling activities. Observing, journaling, interpreting, testing, and revising models are just a few of the skills they will practice.
The Grid (Env)  
(Grades 4–12) 151A, BCEC  
Sponsor: KidWind Project  
Asia M. Ward (asia@kidwind.org), KidWind Project, St. Paul, Minn.  
Work together to create a mini town that uses the power from a wind turbine to light up. Understand how to make wind turbine blades, adjusting pitch, and testing variables in order to make an efficient wind turbine.

What’s the “Big Idea” in AP Biology? (Bio)  
(Grades 7–12) 151B, BCEC  
Sponsor: Frey Scientific/School Specialty Science  
Ken Rainis, Fairport, N.Y.  
Explore a series of innovative, hands-on, inquiry-based lab kits designed to cover the revised AP Biology laboratory framework. Participants will be exposed to various laboratory experiences and inquiry ideas to assist students through a new set of standards for AP Biology.

Addressing Engineering Practices and Design Standards in the Middle School (Env)  
(Grades 5–8) 152, BCEC  
Sponsor: Delta Education/School Specialty Science–FOSS  
Jessica Penchos and Virginia Reid, The Lawrence Hall of Science, University of California, Berkeley  
Explore how FOSS Middle School supports the NRC Framework’s engineering practices and the NGSS engineering design standards while engaging in hands-on activities from the newly revised FOSS Force and Motion Course. Design an air trolley to solve a problem, and take home materials and strategies to support engineering in your classroom.

The Evolution of the Animal Kingdom on Planet Earth (Bio)  
(Grades 5–10) 153C, BCEC  
Sponsor: Shape of Life  
Nancy Burnett, Shape of Life, Soquel, Calif.  
Learn from the founder of the Monterey Bay Aquarium sharing one of the greatest stories every told on planet Earth: the evolution of the animal kingdom. Join Nancy Burnett as she shares her experience and Shape of Life short videos derived from the popular PBS series. These videos that support the CCSS and NGSS are offered to teachers for free. Hear from teacher leaders how Shape of Life classroom media captures students’ imagination with its innovative depiction of a delicate and tenacious evolution. Visit shapeoflife.org for more information.

Celebrate Discovery Education’s Newest Life Science Program (Gen)  
(Grades 6–8) 154, BCEC  
Sponsor: Discovery Education  
Kyle Schutt, Discovery Education, Silver Spring, Md.  
Ann LaBrode, Hopedale Junior Senior High School, Hopedale, Mass.  
Join us in celebrating the new life science program From the Ground Up: The Science of Soil. During this reception, we will share our latest FREE resources and you’ll have the opportunity to hear how local teacher Ann LaBrode has started integrating new, engaging, standards-based life science modules into her middle school curriculum. Discover ways to utilize these interactive whiteboard resources and valuable digital tools to benefit your own classroom instruction. Nutrients for Life modules address soil properties, plant and soil interactions, environmental issues related to agriculture, and the role agriculture plays in feeding the world’s ever-growing population. We’ll have refreshments, prizes, and a lot of fun, so register early at dlc.com/NSTAlaunchparty.

Ward’s Chemistry In-the-Bag Activities and the NGSS (Chem)  
(Grades 6–12) 156A, BCEC  
Sponsor: Ward’s Science  
Liz Hoffman (lisabeth.hoffman@vwr.com), Ward’s Science, Rochester, N.Y.  
Fun, hands on, and mess free—Ward’s Chemistry In-the-Bag activities are the ideal way to kick-start a new chemistry topic, or to reinforce key concepts at the end of a unit. Experience these Ward’s Science exclusive activities in action and learn how they align to the Next Generation Science Standards.

MINDSTORMS® EV3 Robotics in the Middle School Classroom: Space Activity (Earth)  
(Grades 6–8) 156B, BCEC  
Sponsor: LEGO® Education  
William J. Church, Profile High School, Bethlehem, N.H.  
Mission: Mars! Enable instant success with STEM through robotics—blast off with the new LEGO MINDSTORMS Education EV3 Space Challenge Set and Activity Pack! Get your hands on the new mission models and explore how these 30+ hours of classroom lessons can set your students up for STEM learning.
The Private Eye® Way to Magnify Minds! Hands-On Science, Writing, and Art to Fire Up STEM  (Gen)  (General)  258B, BCEC
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. Power up thinking by analogy—the core of cognition, creativity, and critical thinking—as students write, draw, and theorize in this acclaimed inquiry program. Start on Monday, use all year. Free loupes, fieldwork-in-a-bag, and lesson plans.

4:00–6:00 PM Presentation
SESSION 1
NSTA/NSELA Leadership Standards Forum: NGSS: Using Standards as Leverage to Build Science and Language Literacy  (Gen)  (General)  Grand Ballroom A, Westin Waterfront
Darlene Ryan, Glenwood Elementary School, Chapel Hill, N.C.
Bill Badders (baddersb@roadrunner.com), NSTA President, and Retired Director, Cleveland (Ohio) Metropolitan School District
Jo Anne Vasquez (jvasques@helios.org), 1996–1997 NSTA President, and Helios Education Foundation, Phoenix, Ariz.
P. Sean Smith (ssmith62@horizon-research.com), Horizon Research, Inc., Chapel Hill, N.C.
Join other science leaders and administrators to hear the results of the 2012 National Survey of Science and Mathematics Education (Horizon Research). Learn more about our current reality of instructional minutes, instructional practices, teacher preparedness, teacher beliefs, etc. We’ll have opportunities to dialog with colleagues, ask questions of the panel, and plan for next steps.

5:00–5:30 PM Presentations
SESSION 2
Students Teaching Students: An After-School Program to Engage Elementary School Kids in Active Science Discovery  (Chem)  (Elementary–High School)  254B, BCEC
Sohail Nizam (sohailnizam14@gmail.com), Zoe C. Ravina (ravina.zoe@paideiaschool.org), and Connor A. Machen, The Paideia School, Atlanta, Ga.
Walk away with a blueprint of a high school student-led program to engage after-school elementary and junior high students in active scientific learning and discovery.

SESSION 3
Supporting Students in Optimizing Engineering Design Solutions with Modeling and Mathematics  (Bio)  (Elementary–Middle Level)  259B, BCEC
David Crismond (dcrismond@ccny.cuny.edu) and Laura Gellert (lgellert@ccny.cuny.edu), City College of New York, N.Y.
Grades 4–6 students design models of an “energy tree” that will optimize its energy production through photosynthesis. Connections to NGSS engineering design and CCSS Mathematics are emphasized in this developmental comparison of how students use ratio-based reasoning as they optimize their trees’ performances.

5:00–5:45 PM Reception
Shell Reception  (By Invitation Only)  Atlantic 1, Renaissance
5:00–6:00 PM Presentations

SESSION 1
Building Scientific Understanding Through the Visual Arts (Gen)
(Elementary–Middle Level) 158, BCEC
Carole L. Ware (clware@cbe.ab.ca), Chelsea R. Baxter, Erick E. Noriega (enoriega@cbe.ab.ca), and Elaine McCrady (kemccrady@cbe.ab.ca), Langevin School, Calgary, Alta., Canada
The essence of science and art is discovery. This session will showcase how an arts-based integration can help students comprehend scientific theories and improve their critical-thinking skills while fostering creativity.

SESSION 2
Bring the Magic of Space to Your Classroom! (Gen)
(Elementary–Middle Level) 161, BCEC
Diane Matthews, Center for the Advancement of Science in Space, Melbourne, Fla.
Learn how you can conduct experiments on the International Space Station. Find out about ground-based and other STEM activities that engage students in real-world activities. Discuss how to best use and integrate this newest resource in the classroom.

SESSION 3
Sliding Classrooms (Chem)
(High School) 162A, BCEC
Maria G. Thurmond (maria_thurmond@gwinnett.k12.ga.us) and Beth Feustel (beth_feustel@gwinnett.k12.ga.us), Peachtree Ridge High School, Suwanee, Ga.
An entire chemistry department used large-scale differentiated instruction based on continued assessment to meet the needs of all students (Gifted, ESOL, general education, special education, and RTI students). As a result, success for all was significantly increased.

SESSION 4
A Demo a Week Makes Science Class the Peak (Chem)
(Elementary–High School) 162B, BCEC
Vinay Dulip (vdulip@yahoo.com), Julian Abrego (julian.abrego@gmail.com), Jesus Baca, Victoria Cantu, Joseph Fryer, Blaze Kinch, Edward Macias, and Shivam Parbhoo, Foy H. Moody High School, Corpus Christi, Tex.
Join us as we perform about 30 simple demonstrations with materials easily obtained from local stores. These demos will excite students’ interest and challenge them to do higher level thinking. The demos include slime, bubbles, balloons, invisible glue, sinkers, floaters, color changes, and density. Sources for materials will be cited as well as how to get the maximum learning benefits from these demos. Handouts!

SESSION 5
Climate Change for Dummies (Env)
(Elementary–Middle Level) 252A, BCEC
Stephanie Selznick (sselznick71@gmail.com), Curley K–8 School, Jamaica Plain, Mass.
See how we teach climate change to grades 4—8. Come learn something new as we share lots of simple ideas and handouts about climate change. Door prizes!

SESSION 6
Enhancing Scientific Inquiry with the iPad (Gen)
(Elementary) 252B, BCEC
Amber L. Muscarello (alm12@rice.edu), Rice University, Houston, Tex.
Experience the power of allowing students the freedom to design, implement, and film their own scientific investigations. See student-made projects and receive lesson plans.

SESSION 7
NSTA Press® Session: Five E(z) Elementary Steps to Next Generation Science Teaching (Gen)
(Elementary) 254A, BCEC
Thomas P. O’Brien (tobrien@binghamton.edu), Binghamton University, Binghamton, N.Y.
William Banko (wb@phaco.com), Knowing Science LLC, Armonk, N.Y.
Experience an engaging 5E cycle (Metric Measurement, Models, and Moon Matters) that also explores the analogy between the NGSS, the work of scientists, and K–5 teachers.

SESSION 8
Society’s Grand Challenges for Engineering in the Science Classroom (Gen)
(Middle Level) 255, BCEC
Amy Wendt (wendt@engr.wisc.edu), University of Wisconsin, Madison
Amy Schiebel (aschiebel@edgewood.edu), Edgewood College, Madison, Wis.
Learning activities inspired by “Grand Challenges for Engineering” themes make authentic connections from core math and science concepts to engineering solutions for societal needs.
SESSION 9
Making Sense of Science: A System for Systems Thinking (Bio)
(General) 257B, BCEC
Cailean Cooke, Kirsten Daehler (kdaehler@wested.org), and Staceylyn Machi (smachi@wested.org), WestEd, Redwood City, Calif.
Discover how to define systems, a crosscutting concept in the NGSS. Explore systems at different scales by looking at inputs/outputs of matter and energy.

SESSION 10
Developing Teachers into Master Educators and Leaders: National Board Certification (Gen)
(General) 260, BCEC
Lisa J. Swenson (lisawenson@newmanschool.org), Isidore Newman School, New Orleans, La.
Hear from a National Board–certified teacher on how and why teachers should go through the National Board certification process, and how it can benefit them personally and professionally.

SESSION 11
Up, Up, and Away with Weather Balloons (Earth)
(Middle Level–High School) 261, BCEC
Nathan L. Shotwell (nshotwell@henrico.k12.va.us), Holman Middle School, Glen Allen, Va.
See how eighth-graders launched a weather balloon 20 miles into the atmosphere and successfully recovered it. We’ll discuss how you can replicate the experience with your students.

SESSION 12
How a Title 1 Middle School Became a Statewide Leader in STEM Collaborations (Gen)
(Middle Level) Mediterranean, Renaissance
Tevfik Eski, Kenilworth Science and Technology School, Baton Rouge, La.
Through area and regional competitions, events, and establishment of a statewide network, a Title 1 middle school became a leader in STEM collaborations.

SESSION 13
Mercury Deposition in New England: High School Students Get Their Feet Wet for Citizen Science (Gen)
(High School/Informal Ed) Plaza A, Seaport
Emily Sherman, Longview School, Deerfield, N.H.
Sarah Nelson (sarah.j.nelson@maine.edu), The University of Maine, Orono
Students and research scientists have been studying mercury deposition across watersheds using dragonflies as bioindicators. View student research findings and learn about the scientist-teacher collaboration.

SESSION 14
New Teacher Boot Camp (Gen)
(Middle Level–High School) Plaza B, Seaport
Ellen A. Reys (reyse@parkhill.k12.mo.us), Park Hill High School, Kansas City, Mo.
Get tricks for navigating your first years as a science teacher. I’ll share science and life lessons as well as resources and labs I discovered during my beginning years of teaching.

SESSION 15
Differentiating K–6 Science Instruction to Enable All Students to Inquire, Explore, Participate, and Achieve Success (Gen)
(General) Commonwealth Ballroom B, Westin Waterfront
Donna L. Knoell (dknoell@sbcglobal.net), Educational Consultant, Shawnee Mission, Kans.
Gain an overview of the components of differentiation in the K–6 science classroom, and learn ways to differentiate effectively maximizing student participation and learning. Handouts!

SESSION 16
Problem-Based Learning: A Perfect Fit for NGSS (Gen)
(Middle Level–High School) Faneuil, Westin Waterfront
Alicia Bitler (alicia_m_bitler@mcpsmd.org), Gaithersburg Middle School, Gaithersburg, Md.
Let’s examine how Problem-Based Learning can perfectly align with the visions of the Next Generation Science Standards.

SESSION 17
Changing the Face of Science: Inspiring Future STEM Professionals (Gen)
(General) Griffin, Westin Waterfront
Jessica L. Parsons (jessica.parsons@woodward.edu), Woodward Academy, College Park, Ga.
Adopt or adapt this STEM biography project to affirm diverse learners, build community, and ignite curiosity! Enduring digital citizenship and inquiry skills connect students to global STEM professionals.
5:00–6:00 PM  Workshops

Introducing and Assessing Argumentation in Your Science Classroom  
(Middle Level) 157C, BCEC  
Lauren Brodsky (brodsky@berkeley.edu) and Megan Goss,  
The Lawrence Hall of Science, University of California, Berkeley  
Learn several effective approaches for integrating scientific argumentation into your classroom through reading, writing, and talking, as well as gain an introduction to a formative assessment system designed to promote progressively deeper argumentation skills and opportunities for students in the middle school classroom.

Extreme Makeover, Science Edition  
(Phys) (Elementary–Middle Level) 159, BCEC  
Deanna Lankford (lankfordd@missouri.edu), Matt Martin, Victoria Keuth, Meghan Boyle, and Christina Smith, University of Missouri, Columbia  
Come rekindle the fires of science teaching and learning as we “make over” familiar activities to focus on inquiry, the NGSS, and stimulating student curiosity.

NASA: Inquiry Activities for Learning About Light and the EM Spectrum and Multiwavelength Astronomy  
(Middle Level–College) 160A, BCEC  
Pamela K. Harman (pharman@seti.org), SETI Institute, Mountain View, Calif.  
Experience inquiry activities for learning about visible and invisible light using simple classroom technologies. Take home standards-based lessons, colorful posters, and spectroscopic glasses.

NASA’s “Reading, Writing & Rings”: Using Saturn to Teach Science and Language Arts  
(Elementary) 160C, BCEC  
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.

BioBuilder: Ready-to-Use Classroom and Lab Curricula That Integrate Engineering into Biology  
(Bio) (Middle Level–College) 205B, BCEC  
Natalie Kuldell (nkuldell@mit.edu), MIT, Cambridge, Mass.  
Rebekah Ravgiala (rav3@comcast.net), Tyngsborough High School, Tyngsborough, Mass.  
Aaron Mathieu (amathieu@abschools.org), Acton-Boxborough Regional High School, Acton, Mass.  
Jo-Anne Purdy (purdyj@westboroughk12.org), Westborough High School, Westborough, Mass.  
Thomas Martinez (thomas_martinez@glenbard.org), Glenbard East High School, Lombard, Ill.  
Anne Maxwell, Mount Saint Mary Academy, Watchung, N.J.  
Orla Berry (oberry@medfield.mec.edu), Medfield High School, Medfield, Mass.  
Lisa Woodruff (lwoodruff@sau21.org), Lincoln Akerman School, Hampton Falls, N.H.  
Presider: Natalie Kuldell  
BioBuilder connects students to current research questions and asks them to use synthetic biology to solve real-world problems through engineering, design, and biotechnology.

Hot Spot: Student Explorations of Urban Heat  
(Earth) (Middle Level–High School) 205C, BCEC  
Lisa Gardiner (lisagard@ucar.edu), Spark: UCAR Science Education, Boulder, Colo.  
Randy Russell (rrussell@ucar.edu), NCAR, Boulder, Colo.  
Join us for hands-on inquiry activities that get students exploring the science of urban heat and align with the NGSS.

MacGyver Science  
(Gen) (Preschool–Middle Level) 207, BCEC  
Linda L. Smith, NASA EPO, Pittsgrove, N.J.  
Find out how discrepant events lead to science discovery in physics, Earth, and space science. Walk away with tips on classroom management, assessment, and incorporating writing into these dynamic activities.
NSTA Boston National Conference on Science Education

Friday, 5:00–6:00 PM

Thinking Lab: 1 Science Teacher, 1 Art Teacher, 1 Classroom (Env) (Elementary) 212, BCEC
Shannon R. Merenstein and Chelsea Young (chelsea.young@environmentalcharterschool.org), Environmental Charter School, Pittsburgh, Pa.
At our K–3 Thinking Lab at the Environmental Charter School, we help students build connections between art, science, and design while fostering collaboration and creativity. Come find out how we do it!

Integrating the Performing Arts with Elementary Science (Gen) (Preschool–Elementary) 213, BCEC
Dona Packer (dspacker@memphis.edu), The University of Memphis, Tenn.
Claudia Nisbett (cnisbett@belhaven.edu), Belhaven University, Jackson, Miss.
Join us as we examine fiction/nonfiction books supporting science concepts. Learn songs, movements, and skits reinforcing the concepts plus receive a planning form to design new activities.

STEM and Physical Science: A Perfect Match (Phys) (High School) 251, BCEC
Tami Lunsford (tami.lunsford@ncs.k12.dc.us), Newark Charter Junior/Senior High School, Newark, Del.
Go beyond building wooden bridges. Join me for examples of how an engineering teacher and a physical science teacher worked together to build robotic arms and more.

Creating Stop-Motion Videos to Illustrate Learning of Cell Processes (Bio) (High School–College) 258C, BCEC
Cynthia C.M. Deaton (cdeaton@g.clemson.edu), Clemson University, Clemson, S.C.
Benjamin E. Deaton (bdeaton@andersonuniversity.edu) and Diana Ivankovic (divankovic@andersonuniversity.edu), Anderson University, Anderson, S.C.
Presider: Diana Ivankovic
We will discuss and guide participants on how to implement stop-motion assignments to support students’ illustration of biology concepts, such as cell processes.

Butterfly Gardening Using Native Plants (Env) (General) 259A, BCEC
Nancy Sale (nancysale@dadeschools.net), Lillie C. Evans K–8 Center, Miami, Fla.
Butterfly Bonanza provides a roadmap for success for implementing a native butterfly habitat. Take home a starter kit that will enable you to immediately set up a habitat at your school. In addition, there will be door prizes and a DVD shared.

NSTA Press® Session: Argumentation in the Science Classroom (Gen) (General) 253C, BCEC
Sharon Schleigh (ssschleig@purdue.edu; schleighs@yahoo.com), Purdue University Calumet, Hammond, Ind.
Learn about and experience models that effectively embed argumentation in science instruction. Join us for a review of activities from the newest NSTA book on argumentation for science teachers and the research that supports it.

The Perfect Package: Tying Together STEM Education and Community-based Service Learning (Gen) (Informal Education) 256, BCEC
Mindy L. Hart (mindy.l.hart@gmail.com) and Jean Trusedell (jtrusedell@msddecatur.k12.in.us), The EPICS High Program at Purdue, West Lafayette, Ind.
Many schools engage in community service or service learning, but rarely are these connected to engineering or science curricula. Find out how in this engaging workshop.
Looking for exciting STEM design challenges and activities to engage students?

Hoping to steer students toward STEM-related career fields?

Get ideas, inspiration, and much more from these books in NSTA's STEM collection.

To order or learn more, visit www.nsta.org/store
Friday, 5:00–6:00 PM

Soils—More Than the Dirt Under Your Feet  (Gen)  
(Middle Level–High School)  
Seaport Ballroom A, Seaport 
Emily Fuger (efuger@soils.org), Soil Science Society of America, Madison, Wis. 
Margaret A. Holzer (mholzer@monmouth.com), Chatham High School, Chatham, N.J. 
Julia Lieberman (jalieberman@gmail.com), South Middle School, Morgantown, W.Va. 
Soil science is the best-kept secret to meeting Earth science, chemistry, and biology standards. In this active workshop, we will reveal this deep secret.

Supporting Literacy in Science Through “Paired Passage Prompts”  (Gen)  
(Middle Level)  
Seaport Ballroom B, Seaport 
Gina Tesoriero and Amanda Solars (asolarsh@schools.nyc.gov), Simon Baruch Middle School MS104, Brooklyn, N.Y. 
Learn strategies that support students’ synthesis of nonfiction texts through a reading and writing framework that leads to deeper understanding and communication of science content.

CSSS Session: Simulations for Assessments That Integrate Practices, Core Ideas, and Crosscutting Concepts  (Gen)  
(Middle Level)  
Commonwealth Ballroom A, Westin Waterfront 
Matt Silbergliit (mshilber@wested.org), WestEd, Oakland, Calif. 
See examples of simulation-based, online formative and summative science assessments that integrate the dimensions of the NGSS. Bring your own laptop to try the simulations.

Building Visual Literacy by Integrating Science and Math  (Gen)  
(General)  
Commonwealth C, Westin Waterfront 
Jeff Lukens (jeffrey.lukens@k12.sd.us), Roosevelt High School, Sioux Falls, S.Dak. 
Evaluating graphical representations of data is an essential skill for the science student. In this workshop, we’ll collect data, graph it, and evaluate it.

Using NASA Real-World Engineering to Reinforce Science  (Gen)  
(General)  
Douglass, Westin Waterfront 
Becky Jaramillo (rebecca.jaramillo@nianet.org), National Institute of Aerospace, Hampton, Va. 
Use a STEM notebook and NASA missions to show students real-world relevance for classroom science.

5:00–7:00 PM  Meeting/Social  
APAST Business Meeting and Social  
(By Invitation Only)  
Flagship A, Seaport 
This annual Business Meeting and Social for the Association of Presidential Awardees in Science Teaching is open to all members of APAST. Visit apast.org for details.

5:00–7:00 PM  Reception  
NSTA Learning Center Reception  
(By Invitation Only)  
Harbor Ballroom I, Westin Waterfront

5:00–7:00 PM  Exhibitor Workshop  
PASCO’s 12th Annual Just Physics Evening Event  
(Phys)  
(Grades K–12)  
210 A/B, BCEC  
Sponsor: PASCO scientific 
David Maiullo, Rutgers University, Piscataway, N.J. 
We invite NSTA attendees to join us for a special night to celebrate physics! This is our 12th annual Just Physics Event, and this year we’re celebrating PASCO’s 50th year of serving the science education community. Join us for a night of food, fun, and physics. The first 400 attendees will receive a free T-shirt and boxed lunch to enjoy during the exciting demonstration!
5:30–7:30 PM  Reception
NSTA Student Chapter and Student Members Reception
Atlantic 2/3, Renaissance
No Ticket Required; open to all preservice teachers and those who work with them.

If your institution has an NSTA Student Chapter, bring examples of the work of your chapter, 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, come hear your future colleagues’ best practices and learn about starting and running 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
(Ticket Required: $80)  M–5  Pacific A–E, Renaissance
Hosted by Ira Flatow, come 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. 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 Registration Area before 3:00 PM on Thursday.

6:30–7:00 PM  Reception
NESTA Friends of Earth Science Reception
Off-site (Museum of Science, Boston)

7:00–9:00 PM  Social
SCST Dessert Social and Poster Session
Pacific F–H, Renaissance

9:00 PM–12 Midnight  Mixer
President’s Mixer
Atlantic Ballroom, Renaissance
DJ and Cash Bar
This three-part program features cinematic jewels, electrifying teachers, and the creative use of video technology to inform, inspire, motivate, entertain, and provoke thought. The screenings will be interspersed with commentary, discussion, and some live demonstrations. There will be humor, wonder, and perplexity mixed with a lot of information on a wide range of topics. Pick up ideas and content that will broaden your knowledge and that you can use in your teaching. The audience will help select from this extensive and enticing menu of course excerpts:

The inspiring teaching of **Kay Toliver** in New York City’s East Harlem Tech/P.S.72 • **Bill Nye** on Inventions • **Bill Hammack’s** *Eight Amazing Engineering Stories* • **Richard Feynman** on *Tiny Machines* • Twin Views of the Tacoma Narrows Bridge Collapse • **Steve Spangler’s** *Energy and Clarity* • **Philip Morrison** on *From Atoms to Asteroids to SETI* • **Alex Filippenko** on *The Search for Extraterrestrials*...and the role of engineering in this quest • *The Language and Grammar of Science and Engineering* • **Bassam Shakhashiri** on three dazzling chemistry demonstrations • **Paul Hewitt’s** enticing physics demos • *The Bolero* (Academy Award, 1973) • **Michael DiSpezio** on *STEM Challenges for the Classroom* • Evidence from *The Search for Solutions*
Dozens of door prizes directly related to this session will be raffled off throughout the entire evening right up to 12 Midnight. Come and go, stay as long as you wish. Bring your dinner. Also, pick up a comprehensive Resource Guide relevant to the three Special Evening Sessions.

Stephen Ressler on Understanding the World’s Greatest Structures
• Don Herbert (Mr. Wizard), introduction to a thought-provoking hands-on activity • The Elements Video Project

David P. Billington’s popular Princeton course, “Engineering in the Modern World” • Lennart Nilsson shares the state-of-the-art technology behind films like The Miracle of Life

• Nineteen Types of Engineer • Cornell’s Verne Rockcastle on Quantitative Meaningful Investigations, K–8 • Extreme Engineering

• John J. Renton on Earthquakes, Structures, and Engineering

Carl Sagan, excerpt from COSMOS • Sybil E. Hatch on Changing Our World: True Stories of 238 Women Engineers • Neil deGrasse Tyson on The Inexplicable Universe: Unsolved Mysteries • Thirty-six Devices/Inventions that Pervade Technology • Mario Salvadori on The Art of Construction: Projects and Principles for Beginning Engineers and Architects and his work with children in the New York City School System • Steven L. Goldman on Great Scientific Ideas that Changed the World • Project Physics’ People and Particles • The Science of Disney Imagineering: Design and Models • The National Academy of Engineering’s Greatest Engineering Achievements of the 20th Century • more than a 100 choice internet sites for great video segments related to STEM

—courtesy of Devlinhair Productions
Meetings and Social Functions Index

**Friday, April 4**

AMSE Alice J. Moses Breakfast
By Invitation Only
    Lighthouse II, Seaport ......................... 7:00–9:00 AM

APAST Breakfast Meeting
By Invitation Only
    Flagship A, Seaport .......................... 7:00–9:00 AM

High School Breakfast (M-2)
(Tickets Required: $50)
    Seaport Ballroom B, Seaport ..................... 7:30–9:00 AM

Science in the Community Breakfast (M-3)
(Sponsored in part by DuPont) (Tickets Required: $15)
    Ballroom West, BCEC .......................... 7:30–9:00 AM

Next Steps Networking Forum
By Invitation Only
    Seaport Ballroom A, Seaport .................. 7:30–10:00 AM

Aerospace Programs Advisory Board Meeting
    Hale, Westin Waterfront ....................... 8:30–10:30 AM

NSTA Reports Advisory Board Meeting
    Georges, Renaissance .......................... 9:00–10:30 AM

NSTA International Lounge
    Revere, Westin Waterfront ...................... 9:00 AM–5:00 PM

Development Advisory Board Meeting
By Invitation Only
    Executive Boardroom, Westin Waterfront ...... 9:30–10:30 AM

Next Steps Advisory Board Meeting
By Invitation Only
    Seaport Ballroom C, Seaport .................. 10:30 AM–12 Noon

ASTE/NSELA Luncheon (M-4)
(Tickets Required: $65)
    Grand Ballroom E, Westin Waterfront .......... 12 Noon–2:00 PM

NSTA Chapter and District Director Ice Cream Social in Honor of Wendell Mohling (sponsored by GEICO)
    Booth #1107, Exhibit Hall, BCEC .............. 1:30–2:30 PM

GLBT Science Teachers Annual Meeting
    Hancock, Westin Waterfront ................... 2:00–3:00 PM

NMLSTA Board of Directors Meeting
    Executive Boardroom, Westin Waterfront .... 2:30–4:30 PM

AMSE Membership Meeting
    Seaport Ballroom C, Seaport .................. 3:00–5:00 PM

International Advisory Board Meeting
    Hale, Westin Waterfront ....................... 3:00–5:00 PM

Polar Educators International Open Meeting
    Paine, Westin Waterfront ..................... 3:00–5:00 PM

SCST Business Meeting
    Caspian, Renaissance .......................... 3:30–5:00 PM

NSTA Recommends Meeting
    Independence Boardroom, Westin Waterfront .... 4:00–5:00 PM

Shell Reception
By Invitation Only
    Atlantic 1, Renaissance ....................... 5:00–5:45 PM

APAST Business Meeting and Social
By Invitation Only
    Flagship A, Seaport .......................... 5:00–7:00 PM

NSTA Learning Center Reception
By Invitation Only
    Harbor Ballroom I, Westin Waterfront ....... 5:00–7:00 PM

NSTA Student/Student Chapter Reception
Open to all preservice teachers and those who work with them
    Atlantic 2/3, Renaissance ..................... 5:30–7:30 PM

NSTA Teacher Awards Gala (M-5)
(Tickets Required: $80)
    Pacific A–E, Renaissance ..................... 6:15–8:45 PM

NESTA Friends of Earth Science Reception
    Off-site, Museum of Science .................. 6:30–7:00 PM

SCST Dessert Social and Poster Session
    Pacific F/H, Renaissance ........................ 7:00–9:00 PM

President’s Mixer
    Atlantic Ballroom, Renaissance ............... 9:00 PM–12 Mid.
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## Delta Education/School Specialty Science—FOSS (Booth #415)

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P = Preschool                 H = High School                              I = Informal Education
E = Elementary                 C = College                                     R = Research

Biology/Life Science

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<td>9–C 107A, BCEC</td>
<td>105, BCEC</td>
<td>104C, BCEC</td>
<td>157B, BCEC</td>
<td>157A, BCEC</td>
<td>Webster, Westin</td>
<td>Constitution, Seaport</td>
<td>Caspian, Renaissance</td>
<td>105, BCEC</td>
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<td>157B, BCEC</td>
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ASTE Session: Transforming STEM Education—Your Classroom and Beyond (p. 44)
<table>
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<tr>
<th>Time</th>
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<th>Title</th>
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<tr>
<td>10:00–11:30 AM</td>
<td>5–C</td>
<td>107C, BCEC</td>
<td>Adventures Into the Digital Biology Classroom: How Technology Can Revolutionize Teaching</td>
<td>52</td>
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<td>10:00–11:30 AM</td>
<td>9–12</td>
<td>258A, BCEC</td>
<td>New Advanced Inquiry Labs for AP Biology from Flinn Scientific</td>
<td>54</td>
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<tr>
<td>10:00–11:30 AM</td>
<td>6–12</td>
<td>102A, BCEC</td>
<td>AUTOPSY: Forensic Dissection Featuring Carolina’s Perfect Solution® Pigs</td>
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<td>10:30–11:30 AM</td>
<td>6–C</td>
<td>157B, BCEC</td>
<td>Science, Fashion, and Fun! Genes in a Bottle™ Kit</td>
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<td>10:30–11:30 AM</td>
<td>E</td>
<td>210C, BCEC</td>
<td>Chrysalis: Transforming Your Teaching</td>
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<tr>
<td>11:00 AM–12 Noon</td>
<td>M–H</td>
<td>205A, BCEC</td>
<td>Interdisciplinary Model-eliciting Activities Bring Design, Engineering Practices, and Real-World Context to the Science Classroom</td>
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<tr>
<td>11:00 AM–12 Noon</td>
<td>E–M</td>
<td>160B, BCEC</td>
<td>Moving Forward with NGSS Crosscutting Concepts: Questions and Strategies to Elicit Student Ideas in Life Science</td>
<td>56</td>
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<tr>
<td>11:00 AM–12 Noon</td>
<td>M–H</td>
<td>257A, BCEC</td>
<td>Teaching About the Teen Brain: Linking Neuroscience and Health Curricula Through the Study of Addiction</td>
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<td>11:00 AM–12 Noon</td>
<td>M–C</td>
<td>205B, BCEC</td>
<td>Using Climatograms to Understand Biomes</td>
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<td>11:00 AM–12 Noon</td>
<td>M–C</td>
<td>257B, BCEC</td>
<td>Top 10 Findings in Genetics and Biotechnology</td>
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<tr>
<td>11:00 AM–12 Noon</td>
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<td>Atlantic 3, Renaissance</td>
<td>3-D Tissue Models That Anyone Can Build</td>
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<tr>
<td>12 Noon–1:30 PM</td>
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<td>258A, BCEC</td>
<td>Flinn Favorite Biology Lab Activities and Games</td>
<td>73</td>
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<tr>
<td>12 Noon–1:30 PM</td>
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<td>Hands-On Activities to Model Habitat Preference and Population Sampling</td>
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<td>12 Noon–1:30 PM</td>
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<td>Biology with Vernier</td>
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<td>12 Noon–1:30 PM</td>
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<td>107A, BCEC</td>
<td>How and Why Species Multiply: Free Resources for Teaching Speciation</td>
<td>70</td>
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<tr>
<td>12:30–1:30 PM</td>
<td>G</td>
<td>Caspian, Renaissance</td>
<td>SCST Session: Marjorie Gardner Lecture: Authentic Learning, Student Engagement, and Socratic Course Design</td>
<td>75</td>
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<tr>
<td>12:30–1:30 PM</td>
<td>E–M</td>
<td>160B, BCEC</td>
<td>Adopt a Microbe: Intraterrestrials from the Deep Sea!</td>
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<tr>
<td>12:30–1:30 PM</td>
<td>M–C</td>
<td>257B, BCEC</td>
<td>Labs for the Next Generation</td>
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<td>12:30–1:30 PM</td>
<td>M–H</td>
<td>257A, BCEC</td>
<td>Authentic Classroom Science: Students as Scientists</td>
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<td>12:30–1:30 PM</td>
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<td>Pacific D, Renaissance</td>
<td>Changing Their Idea of “Studying” into Our Idea of “Learning”: The Efficacy of Interactive Online Programs</td>
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<td>12:30–1:30 PM</td>
<td>E–H</td>
<td>205B, BCEC</td>
<td>Using Simulations in Inquiry-based Science</td>
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<tr>
<td>12:30–1:30 PM</td>
<td>H–C</td>
<td>252A, BCEC</td>
<td>Genetics Gets Personal: Teaching the Ethical, Legal, and Social Issues in Personal Genetics</td>
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<tr>
<td>12:30–1:30 PM</td>
<td>M–H</td>
<td>205A, BCEC</td>
<td>Climate Change and Insect-borne Diseases at the Yale Peabody Museum of Natural History</td>
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<tr>
<td>12:30–1:30 PM</td>
<td>H–C</td>
<td>Atlantic 3, Renaissance</td>
<td>How the Free Skate Revived Scientific Literacy in My Nonmajors Biology Course</td>
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<td>1:00–2:00 PM</td>
<td>E</td>
<td>211, BCEC</td>
<td>CESI Session: The Life Cycle of Literacy Through Science</td>
<td>84</td>
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<td>1:00–2:00 PM</td>
<td>6–9</td>
<td>157B, BCEC</td>
<td>Solve a Forensic Mystery Story Using Engineering and Science</td>
<td>84</td>
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<tr>
<td>1:00–2:30 PM</td>
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<td>157A, BCEC</td>
<td>Shifting Practices to Infuse Science and Engineering Practices with the NGSS</td>
<td>85</td>
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<tr>
<td>2:00–3:00 PM</td>
<td>C</td>
<td>Caspian, Renaissance</td>
<td>SCST Session: Using Bean Beetle “Vision” to “Change” the Undergraduate Biology Student’s Idea of Scientific Investigations</td>
<td>89</td>
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<tr>
<td>2:00–3:00 PM</td>
<td>E</td>
<td>Atlantic 2, Renaissance</td>
<td>ASTE Session: Understanding the Relationship Between Mass, Volume, and Density by Engineering a Prototype of a Prosthetic Limb</td>
<td>94</td>
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<tr>
<td>2:00–3:00 PM</td>
<td>P–E</td>
<td>160B, BCEC</td>
<td>Early Bird Lessons: Practicing Early Learning Skills Using Birds</td>
<td>92</td>
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<td>2:00–3:00 PM</td>
<td>E–H</td>
<td>205B, BCEC</td>
<td>Perception and Performance: Investigating the Human Body</td>
<td>92</td>
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<tr>
<td>2:00–3:00 PM</td>
<td>I</td>
<td>256, BCEC</td>
<td>Simulate STEM Online Through Virtual Clinical Trials</td>
<td>88</td>
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<td>2:00–3:00 PM</td>
<td>H–C</td>
<td>Pacific D, Renaissance</td>
<td>Beyond X and Y: Recent Discoveries About the Mechanisms Governing Sex Determination and Differentiation</td>
<td>90</td>
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<tr>
<td>2:00–3:00 PM</td>
<td>M–H</td>
<td>205A, BCEC</td>
<td>Organelle of the Day</td>
<td>92</td>
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<tr>
<td>2:00–3:00 PM</td>
<td>M</td>
<td>160C, BCEC</td>
<td>Writing to Learn and Learning to Write in Middle Grades Science Classrooms</td>
<td>92</td>
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<tr>
<td>2:00–3:00 PM</td>
<td>M–C</td>
<td>257B, BCEC</td>
<td>Teach with the World’s Most Extravagant Birds</td>
<td>88</td>
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<tr>
<td>2:00–3:30 PM</td>
<td>6–C</td>
<td>109B, BCEC</td>
<td>New Technologies: What They can Teach Us About Childhood Brain Disorders</td>
<td>97</td>
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### Schedule at a Glance  Biology/Life Science

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<tr>
<th>Time</th>
<th>Session</th>
<th>Room</th>
<th>Description</th>
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<tr>
<td>2:00–3:30 PM</td>
<td>7–12</td>
<td>107B, BCEC</td>
<td>Take a Swipe at Microbes! (p. 97)</td>
</tr>
<tr>
<td>2:00–3:30 PM</td>
<td>9–12</td>
<td>102A, BCEC</td>
<td>Genes and conSEQUENCES with HudsonAlpha (p. 96)</td>
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<tr>
<td>2:00–3:30 PM</td>
<td>6–12</td>
<td>105, BCEC</td>
<td>New Tools, New Insight, and New Ways of Understanding Science with Miller and Levine Biology (p. 96)</td>
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<tr>
<td>2:00–3:30 PM</td>
<td>6–C</td>
<td>107A, BCEC</td>
<td>Meet Your Inner Fish and Other Great Transitions in Evolution (p. 97)</td>
</tr>
<tr>
<td>2:00–3:30 PM</td>
<td>6–12</td>
<td>156A, BCEC</td>
<td>Life Science and the NGSS (p. 98)</td>
</tr>
<tr>
<td>2:00–3:30 PM</td>
<td>9–12</td>
<td>104C, BCEC</td>
<td>Gene Expression and Cellular Differentiation (p. 96)</td>
</tr>
<tr>
<td>2:00–3:30 PM</td>
<td>6–C</td>
<td>109A, BCEC</td>
<td>iPads in Biology—Digital Microscopy and More! (p. 97)</td>
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<tr>
<td>2:00–3:30 PM</td>
<td>9–C</td>
<td>157B, BCEC</td>
<td>Ecology to Enzymes to Industry (AP Big Ideas 1, 2, 4) (p. 101)</td>
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<tr>
<td>2:00–3:30 PM</td>
<td>9–C</td>
<td>157A, BCEC</td>
<td>Communicating Science Through Lab Notebooking (p. 101)</td>
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<tr>
<td>3:00–4:30 PM</td>
<td>9–C</td>
<td>210C, BCEC</td>
<td>Teaching with the Brain in Mind (p. 102)</td>
</tr>
<tr>
<td>3:00–4:30 PM</td>
<td>6–C</td>
<td>205B, BCEC</td>
<td>Using Models as Evidence in High School Biology (p. 108)</td>
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<tr>
<td>3:30–4:30 PM</td>
<td>6–C</td>
<td>156B, BCEC</td>
<td>Let’s Talk Science: Seeding Argumentation (p. 108)</td>
</tr>
<tr>
<td>3:30–4:30 PM</td>
<td>6–C</td>
<td>257B, BCEC</td>
<td>Sharks—The Good, the Bad, and the Toothy (p. 105)</td>
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<tr>
<td>4:00–5:30 PM</td>
<td>7–12</td>
<td>151B, BCEC</td>
<td>Engaging Students in Developing and Using Models: Using Clay Models to Visualize Action Potentials (p. 108)</td>
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<tr>
<td>4:00–5:30 PM</td>
<td>9–12</td>
<td>102A, BCEC</td>
<td>What’s the “Big Idea” in AP Biology? (p. 113)</td>
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<td>4:00–5:30 PM</td>
<td>5–10</td>
<td>153C, BCEC</td>
<td>Labs That Fit: Making Inquiry Work in Your AP Biology Classroom (p. 111)</td>
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<tr>
<td>4:00–5:30 PM</td>
<td>6–C</td>
<td>109B, BCEC</td>
<td>The Evolution of the Animal Kingdom on Planet Earth (p. 113)</td>
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<tr>
<td>4:00–5:30 PM</td>
<td>9–C</td>
<td>107C, BCEC</td>
<td>The ABCs of Modeling: an NGSS Authentic Practice of Science (p. 112)</td>
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<tr>
<td>4:00–5:30 PM</td>
<td>9–C</td>
<td>107A, BCEC</td>
<td>Using Cancer to Teach Cell Biology (p. 112)</td>
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<tr>
<td>5:00–5:30 PM</td>
<td>6–C</td>
<td>259B, BCEC</td>
<td>Supporting Students in Optimizing Engineering Design Solutions with Modeling and Mathematics (p. 114)</td>
</tr>
<tr>
<td>5:00–6:00 PM</td>
<td>6–C</td>
<td>258C, BCEC</td>
<td>Creating Stop-Motion Videos to Illustrate Learning of Cell Processes (p. 118)</td>
</tr>
<tr>
<td>5:00–6:00 PM</td>
<td>6–C</td>
<td>205B, BCEC</td>
<td>BioBuilder: Ready-to-Use Classroom and Lab Curricula That Integrate Engineering into Biology (p. 117)</td>
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### Chemistry/Physical Science

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<th>Time</th>
<th>Session</th>
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<th>Description</th>
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<tr>
<td>8:00–9:00 AM</td>
<td>H</td>
<td>162B, BCEC</td>
<td>Introducing the ChemMatters Compilation Project (p. 21)</td>
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<tr>
<td>8:00–9:00 AM</td>
<td>H</td>
<td>162B, BCEC</td>
<td>Using iTunes U in the High School Science Classroom (p. 21)</td>
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<tr>
<td>8:00–9:00 AM</td>
<td>M</td>
<td>160A, BCEC</td>
<td>Project-based Approach to Teaching Newton’s Three Laws with Coaster Cars (p. 29)</td>
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<tr>
<td>8:00–9:30 AM</td>
<td>7–C</td>
<td>109B, BCEC</td>
<td>Exploring the Molecular World: Scientifically Accurate Visualization and Simulation Tools (p. 34)</td>
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<tr>
<td>8:00–9:30 AM</td>
<td>9–12</td>
<td>156A, BCEC</td>
<td>Fun with Ward’s Forensics and the NGSS (p. 35)</td>
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<tr>
<td>8:00–9:30 AM</td>
<td>5–8</td>
<td>Pacific D/E, Renaissance</td>
<td>You Be The Chemist®: Activities for Making Chemistry Fun! (p. 36)</td>
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<tr>
<td>9:30–10:30 AM</td>
<td>M</td>
<td>Grand Ballroom E, Westin</td>
<td>Meet me in the Middle Session: Middleschoolchemistry.com—Big Ideas About the Very Small (p. 40)</td>
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<tr>
<td>9:30–10:30 AM</td>
<td>H–C</td>
<td>Pacific G/H, Renaissance</td>
<td>Use Professional Journals to Enrich Advanced Chemistry (p. 44)</td>
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<tr>
<td>10:00–11:00 AM</td>
<td>8–C</td>
<td>107B, BCEC</td>
<td>Chemistry in the Community, 6th Edition—Reinventing Itself (p. 52)</td>
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<tr>
<td>10:00–11:00 AM</td>
<td>K–C</td>
<td>258B, BCEC</td>
<td>Fantastical Chemistry Demos for All Classrooms (p. 54)</td>
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<tr>
<td>10:00–11:30 AM</td>
<td>G</td>
<td>210 A/B, BCEC</td>
<td>Morning of Inquiry—Making Inquiry Safe, Manageable, and Inspirational in Grades 6–12 (p. 54)</td>
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<tr>
<td>10:00–11:30 AM</td>
<td>9–12</td>
<td>103, BCEC</td>
<td>Flipping Out Over Chemistry! (p. 51)</td>
</tr>
<tr>
<td>11:00 AM–12 Noon</td>
<td>H–C</td>
<td>Pacific D, Renaissance</td>
<td>Achieving Conceptual Understanding in Stoichiometry with Cognitive Skills (p. 60)</td>
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<tr>
<td>11:00 AM–12 Noon</td>
<td>K–5</td>
<td>Pacific G/H, Renaissance</td>
<td>You Can Teach Science! Properties of Materials for K–5 in NGSS (p. 60)</td>
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</table>
Schedule at a Glance  Chemistry/Physical Science

11:00 AM–12 Noon  G  162B, BCEC  The Yearlong Space Epic: Immersing and Engaging Students in Science Through an Alternate Reality Game  (p. 57)
11:00 AM–12 Noon  E  160A, BCEC  Learning Made EEEEE-Z!  (p. 65)
11:00 AM–12 Noon  H  251, BCEC  STEM Project: Build and Use a Simple Colorimeter  (p. 57)
12 Noon–1:30 PM  9–12  102B, BCEC  Keep Calm and Chemistry On: Successful Lab Activities for the New Chemistry Teacher  (p. 68)
12 Noon–1:30 PM  9–12  105, BCEC  The Best Test Prep Book Ever for AP Chemistry  (p. 70)
1:30–3:00 PM  9–12  108, BCEC  Making Biodiesel: A Problem-based Multidisciplinary Sustainability Exploration  (p. 87)
1:30–3:00 PM  9–12  258A, BCEC  Common Labs for All Students  (p. 87)
2:00–3:00 PM  9–12  259A, BCEC  Teaching Forensic Science with Tales from the Poisoner’s Handbook  (program changes)
3:30–4:30 PM  E  160A, BCEC  Conquering the Content: A Physical Science Content Workshop for Elementary Science Teachers  (p. 108)
3:30–4:30 PM  H  162B, BCEC  Chemistry…It’s a Gas, Gas, Gas!  (p. 108)
3:30–4:30 PM  E  259A, BCEC  Differentiating Science for Elementary Students  (p. 105)
4:00–5:30 PM  6–12  104B, BCEC  Chemi-Paloosa and Hands-On Activities That Will Really Get a Reaction  (p. 111)
4:00–5:30 PM  6–12  156A, BCEC  Carolina InvestigationsTM for AP Chemistry from Flinn Scientific  (p. 99)
5:00–6:00 PM  E–H  162B, BCEC  A Demo a Week Makes Science Class the Peak  (p. 115)

Earth/Space Science

8:00–9:00 AM  H  261, BCEC  Helping Students Across the Transition from Small, Student-collected Datasets to “Big Data”  (p. 24)
8:00–9:00 AM  M–C  253C, BCEC  NSTA Press® Session: Earth Science Puzzles—Making Meaning from Data  (p. 30)
8:00–9:00 AM  H–C  Pacific A/B, Renaissance  An Ice Core Classroom Investigation that Embodies the Three Dimensions of the Next Generation Science Standards  (p. 24)
8:00–9:00 AM  E  253A, BCEC  NARST Session: Young Children’s Understandings of Earth’s Surface Features and Changes  (p. 22)
8:00–9:00 AM  M  162A, BCEC  Hands On the Sun  (p. 20)
8:00–9:00 AM  H  261, BCEC  Performance Assessments in Earth Science  (p. 24)
8:00–9:30 AM  6–C  107A, BCEC  STEM Resources for Teaching Climate Change: Easy, Engaging, and Free  (p. 34)
8:00–9:30 AM  9–C  150, BCEC  Teaching Astronomy During the Day and Beyond the Classroom  (p. 34)
8:00–9:30 AM  S  106, BCEC  Plate Tectonics: Continents on the Move  (p. 34)
8:00–10:00 AM  M–H  208, BCEC  AMNH Pathway Session: Analyzing and Interpreting Data Using Visualizations and Scientific Data Sets  (p. 36)
9:30–10:30 AM  M  162A, BCEC  The Great Rock Mix-Up  (p. 48)
9:30–10:30 AM  G  261, BCEC  NASA Astrobiology: The Search for Life Beyond Earth  (p. 42)
9:30–10:30 AM  G  254B, BCEC  The Michigan Teacher Excellence Program (MiTEP) Experience: Strategies Used to Enhance Pedagogical Content Knowledge and Leadership  (p. 41)
9:30–10:30 AM  E  160C, BCEC  Using Lesson Study to Engage Elementary Teachers in the Next Generation Science Standards  (p. 47)
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<td>052 A/B, BCEC</td>
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<td>9:30–10:30 AM</td>
<td>G</td>
<td>253C, BCEC</td>
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<tr>
<td>9:30–10:30 AM</td>
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<td>156C, BCEC</td>
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<td>10:00–11:30 AM</td>
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<td>156C, BCEC</td>
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<td>E–H</td>
<td>052 A/B, BCEC</td>
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<td>11:00 AM–12:30 PM</td>
<td>M–H</td>
<td>208, BCEC</td>
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<tr>
<td>12:30–1:30 PM</td>
<td>I</td>
<td>Ballroom West/Group 2, BCEC</td>
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<td>E–H</td>
<td>052 A/B, BCEC</td>
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<td>251, BCEC</td>
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<tr>
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<td>261, BCEC</td>
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<td>E–M</td>
<td>162A, BCEC</td>
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<td>2:00–2:30 PM</td>
<td>5–8</td>
<td>Booth #1457, Exhibit Hall, BCEC</td>
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<tr>
<td>2:00–2:30 PM</td>
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<td>210C, BCEC</td>
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**Schedule at a Glance** Earth/Space Science

- NESTA Session: National Earth Science Teachers Association Geology Share-a-Thon (p. 47)
- GLOBE at Night: A Fun, Immersive, STEM-based Citizen Science Program for Students (p. 48)
- Investigating Astronomy: A Project-based Astronomy Course Written Expressly for High School (p. 49)
- The Next Generation Science Standards: What They Mean for Earth and Space Science (p. 52)
- Hurricanes and Typhoons: Nature on the Rampage (p. 52)
- Using Climate Proxies to Learn about Earth’s Climate History (p. 52)
- A Project-based Earth and Space Systems Science Program Developed by the American Geosciences Institute (p. 68)
- NESTA Session: National Earth Science Teachers Association Weather, Climate, and Ocean Share-a-Thon (p. 64)
- AMNH Pathway Session: Using a Web-based Graphing Tool to Analyze and Interpret Weather Data, Climate Change, and Patterns in Weather and Climate (p. 68)
- Informal Science Day Session: Traveling Through Time: A Short Walk Through Geologic Time (p. 83)
- NESTA Session: National Earth Science Teachers Association Earth System Science Share-a-Thon (p. 81)
- Make Your Own Virtual Fieldwork Experience! (p. 82)
- Understanding Plate Tectonics Using Actual Earthquake Location Data (p. 83)
- NASA’s High-Energy Vision: Chandra and the X-ray Universe (p. 77)
- Fly to Mercury via NASA’s Discovery Mission MESSENGER! (p. 81)
- A Change of Seasons (p. 86)
- Educator? Astronaut? You Can Do Both! (p. 86)
- Geosciences: The Nexus of Data-driven Science and Applications (p. 86)
- Explore Earthquakes! (p. 89)
- Science Notebooks as First Drafts? Connect Science and Literacy Through the Water Cycle and Weathering and Erosion Investigations (p. 93)
- NESTA Session: It’s Elementary! Effective Approaches for Addressing the Earth Science Next Generation Science Standards in the Elementary Classroom (p. 92)
- Above, Through, and Beyond with SOFIA (p. 87)
- AMNH Pathway Session: Connecting Earth Science Content and the CCSS ELA Using Museum Resources (p. 95)
- NASA: The Latest Discoveries from the Stratospheric Observatory for Infrared Astronomy, (SOFIA) (p. 105)
- Weather Through Time = Climate (p. 108)
- Exploring Imaging of the Scales of the Universe (p. 109)
- NESTA Session: Effective Approaches for Addressing the Next Generation Science Standards in the Earth and Space Science Classroom (p. 107)
- Mission to Mars: A Technological Collaborative to Inspire the Next Generation (p. 104)
- AMNH Pathway Session: Using Common Core State Standards, ELA and Museum Resources to Construct Science Explanations (p. 110)
- MINDSTORMS® EV3 Robotics in the Middle School Classroom: Space Activity (p. 113)
- Comparing Earth to Other Worlds (p. 111)
- Introducing and Assessing Argumentation in Your Science Classroom (p. 117)
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<td>NASA’s “Reading, Writing &amp; Rings”: Using Saturn to Teach Science and Language Arts (p. 117)</td>
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<td>M–H 205C, BCEC</td>
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<td>NASA: Inquiry Activities for Learning About Light and the EM Spectrum and Multiwavelength Astronomy (p. 117)</td>
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<td>M 161, BCEC</td>
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<td>School Buildings Can Teach, Too: Assessment of Direct and Indirect Teaching (p. 20)</td>
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<td>I 256, BCEC</td>
<td>The Little Things That Run the World: Soil Ecology in the Classroom (p. 30)</td>
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<td>Focus on Forests Using STEM and Project Learning Tree (p. 47)</td>
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<td>Creating Student Videos for Climate Education (p. 40)</td>
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<td>M–C Pacific A/B, Renaissance</td>
<td>Track and Explore: Hands-On Science Joins Online Field Trip Experiences for Middle School Students (p. 43)</td>
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<td>G Pacific F, Renaissance</td>
<td>ASTE Session: A Place-based Approach for Technically Integrated Science Instruction: The River Run Experience (p. 44)</td>
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<td>7–C 153B, BCEC</td>
<td>Environmental and Earth Science with Vernier (p. 53)</td>
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<td>4 151A, BCEC</td>
<td>Solar Hack Lab (p. 53)</td>
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<td>NSTA Press® Session: Inside-Out—Enhancing Field-based Learning in Environmental Science for the Upper Elementary Classroom (p. 66)</td>
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<td>Nuts About Nature (p. 81)</td>
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<td>M–H 157C, BCEC</td>
<td>Using Virtual Field Experiences in Earth Science Education (p. 92)</td>
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<td>The Science of Service Learning: One School’s Journey to Promote Science Knowledge Through Service (p. 87)</td>
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<td>MacGyver Windmills (p. 98)</td>
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<td>E 211, BCEC</td>
<td>CESI Session: Encouraging Environmental Stewardship Through an Integrated Science, Social Studies, and Literacy Activity (p. 100)</td>
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<td>Only Math Can Save the World: Integrating Key Math Skills into Middle Grades Environmental Science (p. 102)</td>
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<td>5–8 152, BCEC</td>
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<td>Thinking Lab: 1 Science Teacher, 1 Art Teacher, 1 Classroom (p. 118)</td>
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<tr>
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<td>G 259A, BCEC</td>
<td>Butterfly Gardening Using Native Plants (p. 118)</td>
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### General Science

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<td>M–H Plaza C, Seaport</td>
<td>From XKCD to Infinite Jest—Strengthening Science with Language and Vice Versa (p. 18)</td>
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### Schedule at a Glance  
**General Science**

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<td>G 210C, BCEC</td>
<td>The NRC Framework and the NGSS: An Opportunity for Teacher Growth and Leadership</td>
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<td>8:00–9:00 AM</td>
<td>G Commonwealth Ballroom C, Westin</td>
<td>Enhancing Literacy and Inquiry in Science with Technology</td>
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<tr>
<td>8:00–9:00 AM</td>
<td>E 213, BCEC</td>
<td>Designing the Future</td>
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<tr>
<td>8:00–9:00 AM</td>
<td>E 252B, BCEC</td>
<td>Science and Engineering Practices—What’s Art Got to Do with It?</td>
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<td>Using Energy to Connect Multidisciplinary Curricula</td>
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<td>8:00–9:00 AM</td>
<td>S 259B, BCEC</td>
<td>Digitizing the Learning Experience and Taking IT Mobile</td>
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<td>E–M 207, BCEC</td>
<td>Is That a FACT? Formative Assessment Classroom Techniques for the Elementary Science Classroom</td>
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<td>G Lewis, Westin</td>
<td>Evidence-based Argumentation: Engaging Science Students in Boston Public Schools</td>
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<td>Literacy and Inquiry with High School Science Notebooks</td>
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<td>8:00–9:00 AM</td>
<td>E 158, BCEC</td>
<td>Science Says: Science and Literacy for Students with Language-based Learning Disabilities</td>
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<td>Riding the Wave of the NGSS on a PBL Surfboard</td>
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<td>G Grand Ballroom E, Westin</td>
<td>Cognitive Planning for the K–8 NGSS: A Team Approach!</td>
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<td>M–H Plaza A, Seaport</td>
<td>Climate Change: STEM Project-based Inquiry Modules</td>
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<tr>
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<td>M–C Burroughs, Westin</td>
<td>Fostering and Enhancing Data Analysis and Literacy Through Visual Representation</td>
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<td>8:00–9:00 AM</td>
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<td>Building Teacher Capacity: The Role of Science Leader-Teachers</td>
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<td>8:00–9:00 AM</td>
<td>M 255, BCEC</td>
<td>If You Want Your Students to Engage with Content Using Textbooks, You’ve Got to Try This Strategy!</td>
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<td>P–E 212, BCEC</td>
<td>Integrating Science with Core Academic Subjects in the Preschool and Elementary Classroom</td>
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<td>Achieving the Goal of Literacy: Science and Literature as Partners</td>
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<td>G Harbor Ballroom III, Westin</td>
<td>Five Easy Pieces—From STEAM to Telescopes: A Teacher Leadership Montage</td>
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<td>8:00–9:00 AM</td>
<td>S Grand Ballroom E, Westin</td>
<td>A Model to Disseminate NGSS Statewide</td>
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<td>Sci-Fi and STS for Literacy</td>
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<td>M 254B, BCEC</td>
<td>Can You Justify That? Tricks and Tips to Easily Assess the Justifications in Students’ Arguments</td>
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<td>G Brewster, Renaissance</td>
<td>Apps in the Middle School Classroom</td>
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<td>G Alcott, Westin</td>
<td>NSELA Session: Tools for Science Leaders, Part 1</td>
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<td>Effective STEM Education: Project Envisioning with Young Makers</td>
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<td>E–H Harbor Ballroom II, Westin</td>
<td>Scaffold Students Toward Argumentation: Strategies for Developing Literacy and Reasoning Skills</td>
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<td>Farm-to-School Digital Stories: Integrating Science, Literacy, and Technology in Primary Classrooms</td>
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<tr>
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<td>Teaching with Minecraft Across the Content Areas</td>
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<td>Liberating Literacy Strategies for Today’s Science Classroom</td>
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<td>NSTA Press® Session: Reaching the Next Stephen Hawking: Tips for Including Students with Disabilities in Advanced Science Classes</td>
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<td>The Shell Science Teaching Award: Fueling Success with Students</td>
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<td>Using Case Study Analysis as a Tool for Differentiating Science Instruction for Students with Special Needs</td>
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<td>Preparing Today’s Youth to Become Tomorrow’s Computational Thinking—enabled Scientists and Engineers</td>
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<th>Speaker, Location</th>
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<td>K–8 Science with Vernier (p. 35)</td>
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<td>Strategies for Teaching in the Inclusive Elementary Science Classroom</td>
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<td>G 259B, BCEC</td>
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<td>Engage Students by Writing Your Own Science Book</td>
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<td>I Ballroom West/Group 1, BCEC</td>
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<td>Affordable Inquiries from a Third World Country for Your Classroom</td>
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<td>G Constitution, Seaport</td>
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<td>AMSE Session: A Science Teacher’s Power: Concrete Strategies for Improved Classroom Equity</td>
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<td>NSTA Press® Session: Picture-Perfect Science Lessons: Using Picture Books to Guide Inquiry</td>
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<td>G Grand Ballroom C, Westin</td>
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<td>CSSS Session: Professional Development for the NGSS and CCSS ELA in Elementary Classrooms</td>
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<td>12:30–2:00 PM</td>
<td>G Grand Ballroom A/B, Westin</td>
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<td>Meet Me in the Middle Session: Lunch and Learn Share-a-Thon</td>
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<td>NGSS Pathway Session: Making Connections Between Engineering, Technology, Science, and Society in Your Local Community</td>
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<td>G Griffin, Westin</td>
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<td>Increasing Minority Participation in STEM Through Autonomy Support</td>
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<td>G Faneuil, Westin</td>
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<td>Continue Changing the Equation Through Addressing Engineering and Science with Technology</td>
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<td>Integrating Science and Engineering Learning</td>
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<td>Integrating Science, Mathematics, and Technology into Elementary Classroom Units</td>
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<td>Award-winning Share-a-Thon Featuring NSTA Distinguished Teachers</td>
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<td>G Harbor Ballroom II, Westin</td>
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<td>High School Contributions to the Development of Presidential Early Career Awardees in Science and Engineering (PECASE)</td>
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<td>Connecting Science, Engineering, and Literacy in an Elementary Classroom</td>
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<td>G Harbor Ballroom III, Westin</td>
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<td>How Do We Know What They Know? Using Student Interviews to Illuminate Student Knowledge</td>
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<td>S Quincy, Westin</td>
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<td>Cycles of Inquiry Around Unit Planning, Delivery, and Student Outcomes</td>
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<td>Discussion Strategies for Using Computer Simulations to Develop Understanding of Scientific Models</td>
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<td>Creating Professional Development e-Portfolios Using NOAA Resources</td>
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<td>Using the Nation’s Report Card (NAEP) to Improve Science Education</td>
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<td>G Lewis, Westin</td>
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<td>The Best in Literature—How We Choose It, How We Use It</td>
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