

SATURDAY SUNDAY /// APRIL 5 & 6

NATIONAL CONFERENCE
on SCIENCE EDUCATION

BOSTON

APRIL 3-6, 2014

VOL. 3

NSTA National
Science
Teachers
Association

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WORKSHOP SCHEDULE

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NSTA 62nd National Conference on Science Education

Boston, Massachusetts • April 3–6, 2014

Volume 3 Saturday and Sunday, April 5–6

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National Science Teachers Association

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NSTA CONFERENCES ON SCIENCE EDUCATION



SAVE THE DATES

2014

RICHMOND, VA

OCTOBER 16-18

ORLANDO, FL

NOVEMBER 6-8

LONG BEACH, CA

(IN COLLABORATION WITH CSTA)

DECEMBER 4-6

Professional Development Strands

- Watershed Science: Learning Inside and Out
- Partnerships and Collaborations: Learning Inside and Out
- Integrating Science with Other Disciplines: Learning Inside and Out

- Elementary Science — Early and Often
- Environmental Explorations: Indoors and Outdoors
- STEM Connections: Preparing the Workforce of Tomorrow

- #NGSS #Implementation
- Science: The Gateway to *Common Core State Standards*
- STEM Classrooms: Anytime/ Anyplace/Anywhere



For more information or to register, visit

www.nsta.org/conferences or call 1.800.722.6782

NSTA National
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Courtesy of Boston Harbor Association



Saturday, April 5

8:30 AM–4:30 PM	Teacher Researcher Day	10
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9:30–10:30 AM	Featured Presentation; James Balog	31
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11:00 AM–12 Noon	Paul F-Brandwein Lecture: David T. Sobel	48
	<i>sponsored by Paul F-Brandwein Institute, Inc.</i>	
12 Noon–1:30 PM	NSTA/SCST College Luncheon (M-6): Michael Jackson	58
12 Noon–2:00 PM	Aerospace Educators Luncheon (M-8): Joseph Acaba	60
	<i>speaker sponsored by Northrop Grumman</i>	
12 Noon–2:00 PM	CESI/NSTA Elementary Science Luncheon (M-7):	61
	Susan H. Wirth	
2:00–3:00 PM	NSTA/ASE Honors Exchange Lecture: Pete Robinson	70
	<i>sponsored by The Association for Science Education</i>	
3:30–4:30 PM	Featured Presentation: Wendy Saul	80
6:00 PM–12 Mid	Special Evening Session: A Festival of Engineering, Technology, and Science Treats as Related to STEM, the NRC <i>Framework</i> , and the NGSS, Part 3	96–97
7:30 PM–12 Mid	NCAA Final Four Watch Party! (M-9): John Fontanella	95

Sunday, April 6

7:00–8:00 AM	NSTA Life Members’ Buffet Breakfast (M-10)	99
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Mission Statement

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

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

The 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

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.

Science and Literacy: A Symbiotic Relationship

Saturday, April 5

8:00–9:00 AM

Teaching Science Through Literacy to English Language Learners and Early Childhood Kindergarten Learners

8:00–11:00 AM

Short Course: Supporting K–12 Students in Argumentation Across Reading, Writing, and Talking (By Ticket: SC-18)

Short Course: The Role of Oral and Written Language in Inquiry-based Science Learning (By Ticket: SC-19)

9:30–10:30 AM

Active Reading of Nonfiction Text

2:00–3:00 PM

Tricks of the Trade 4.0: Literacy Strategies to Enhance Your Science Instruction

3:30–4:30 PM

Featured Presentation: Reading and Writing Science: What Should Be My Line? (Speaker: Wendy Saul)

Sunday, April 6

8:00–9:00 AM

Discourse—Worth Discussing!

9:30–10:30 AM

Expand the Popular Mary Pope Osborne’s *Magic Tree House* Adventures by Building in Hands-On Science Activities as They Are Read

Teaching Elementary Science with Confidence!

Saturday, April 5

8:00–9:00 AM

Wow, We Are Scientists!

12:30–1:30 PM

How Can I Help? Empowering Students with Citizen Science

2:00–3:00 PM

Unhuggable Critters

3:30–4:30 PM

Connecting STEM and American History Through Water Wheels

5:00–6:00 PM

Wiggly Worms: Active Learning for the Early Grades

Sunday, April 6

8:00–9:00 AM

“Nature”-ally Good Science Teaching in Early Childhood Education

9:30–10:30 AM

Teaching Ocean Science to Elementary Students Using National Marine Sanctuaries

11:00–11:30 AM

Stars and Crafts

Leading from the Classroom

Saturday, April 5

8:00–9:00 AM

Who Me? Yes, YOU! How to Become a Teacher Leader

8:00–11:00 AM

Short Course: Leading the Way; Classroom Teachers in Action (By Ticket: SC-20)

11:00 AM–12 Noon

Making the Case for Elementary Science Specialists

12:30–1:30 PM

Professional Development: Capturing the Trends, Practices, and Research to Strengthen Teaching and Learning

2:00–3:00 PM

Partners in Learning and Leading: Teacher Residencies in a Science Museum

3:30–4:30 PM

To Lead from the Classroom, Get Out of the Classroom!

5:00–5:30 PM

Streamline to Mastery: A Model for STEM Professional Development

Sunday, April 6

8:00–9:00 AM

SILT (Science Instructional Leadership Teams): A Model of Student Work Analysis to Improve Teacher Practice

9:30–10:00 AM

Levels of Leadership for Teachers in Educator-based Organizations: An Example from the Pennsylvania Earth Science Teachers Association

11:00–11:30 AM

Collaborative Capacity Building for Next Generation Science Teacher-Leaders

Engineering and Science: Technological Partners

Saturday, April 5

7:30 AM–5:15 PM

Short Course: How Do We Explore?
Teaching the *Next Generation Science Standards*
Through NOAA Ocean Exploration
(By Ticket: SC-17)

8:00–9:00 AM

Advancing Science Learning: Teaching
Elementary Life Science Through
Engineering Problems

8:00 AM–12 Noon

Short Course: Building Structures with
Young Children to Support STEM Learning
(By Ticket: SC-21)

9:30–10:30 AM

Bioengineering Challenges and Middle School
Life Science

11:00 AM–12 Noon

3-2-1 Blastoff!

12:30–1:30 PM

Slingshot Physics: An Authentic Application
of Work, Energy, Friction, and Newton's
First Law of Motion

2:00–3:00 PM

Burps and Chirps: Using Bioacoustics to
Encourage Inquiry-based Learning in STEM

Sunday, April 6

9:30–10:30 AM

3-2-1 Blast Off! Launching Rockets to Merge
Science and Engineering Practices

Play Click! A Photo Scavenger Hunt at NSTA

Sponsored by Ward's Science

Download the NSTA App to Play and Win up to \$600 in STEM Products!

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Here's how it works:

- Download the NSTA App in your app store
- Complete challenges by snapping photos of yourself at the show, at Ward's Science booth and workshops, and having fun in Boston!
- Earn points for each challenge, or for being the first to earn badges.

1st Prize A Ward's DataHub unit of your choice. A \$600 value.

2nd Prize Ward's Digital Slides: High School Life Science Set. A \$250 value.

3rd Prize TeacherGeek Advanced Rubber Band Racer, Classroom 10-Pack. A \$150 value.



STEM STARTS HERE!

NGSS@NSTA FORUM SATURDAY, APRIL 5

BOSTON CONVENTION & EXHIBITION CENTER, ROOM 210 A & B

Take a deep dive into the *Next Generation Science Standards* with writers, state science supervisors, assessment experts, and more.

9:30 a.m. Planning an NGSS Curriculum

11:00 a.m. Translating the NGSS for Classroom Instruction

12:30 p.m. Finding and Evaluating Resources for NGSS: The EQUIP Rubric and the NGSS@NSTA Hub

2:00 p.m. Literacy and Science: NGSS and Common Core ELA

3:30 p.m. Panel Discussion: The Future of Assessment With NGSS

SPECIAL ONE-DAY EVENT **FREE** TO ALL CONFERENCE ATTENDEES. PARTICIPATE IN ONE OR MORE PRESENTATION.

FOR MORE DETAILS, VISIT
www.nsta.org/ngss



NGSS@
NSTA

Teacher Researcher Day

Saturday, April 5, 8:30 AM–4:30 PM

Plaza Ballroom, Seaport

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

8:30–9:30 AM

Saturday, April 5

Poster Session for Teachers and Teacher Educators Inquiring into Science Learning and Teaching (p. 30)

9:30–11:00 AM

Special Session: *Finding Meaning Through Teacher Inquiry* (p. 43)

11:00 AM–12 Noon

Concurrent Sessions

12 Noon–12:30 PM

Science Inquiry Group Network (p. 57)

12:30–1:30 PM

Concurrent Sessions

2:00–3:00 PM

Concurrent Sessions

3:30–4:30 PM

Presentation: *Collaborative Leadership* (p. 84)

NSTA Press Sessions

NSTA Press® books offer new classroom ideas and standards-based strategies.

Join NSTA Press authors for these sessions linked to the topics of their books.

Saturday, April 5

8:00–9:00 AM

Everyday Science Mysteries—The Details

9:30–10:30 AM

Uncovering K–5 Students' Ideas with Science Talk

11:00 AM–12 Noon

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

12:30–1:30 PM

Brain-powered Science Teaching and Learning with Discrepant Events

2:00–3:00 PM

Outdoor Science and Bringing It Indoors

3:30–4:30 PM

Pendulums and Porch Swings—Using Probes and Mystery Stories to Link Science and Engineering

Once Upon a Science Book

5:00–6:00 PM

Be a Scientist! Bring Biology to Life Through Citizen Science

Sunday, April 6

8:00–9:00 AM

Using Science Mysteries to Promote Literacy



9:30–10:30 AM

The New Science Teacher's Handbook

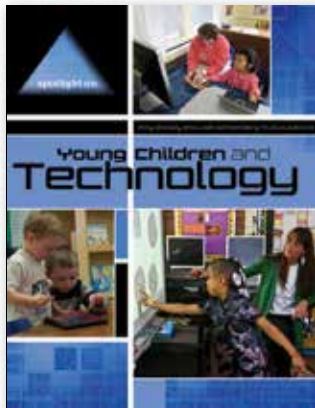
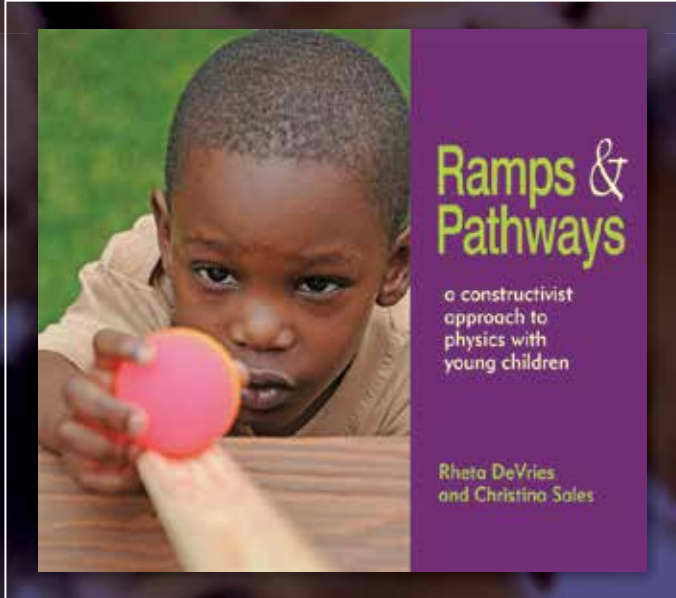
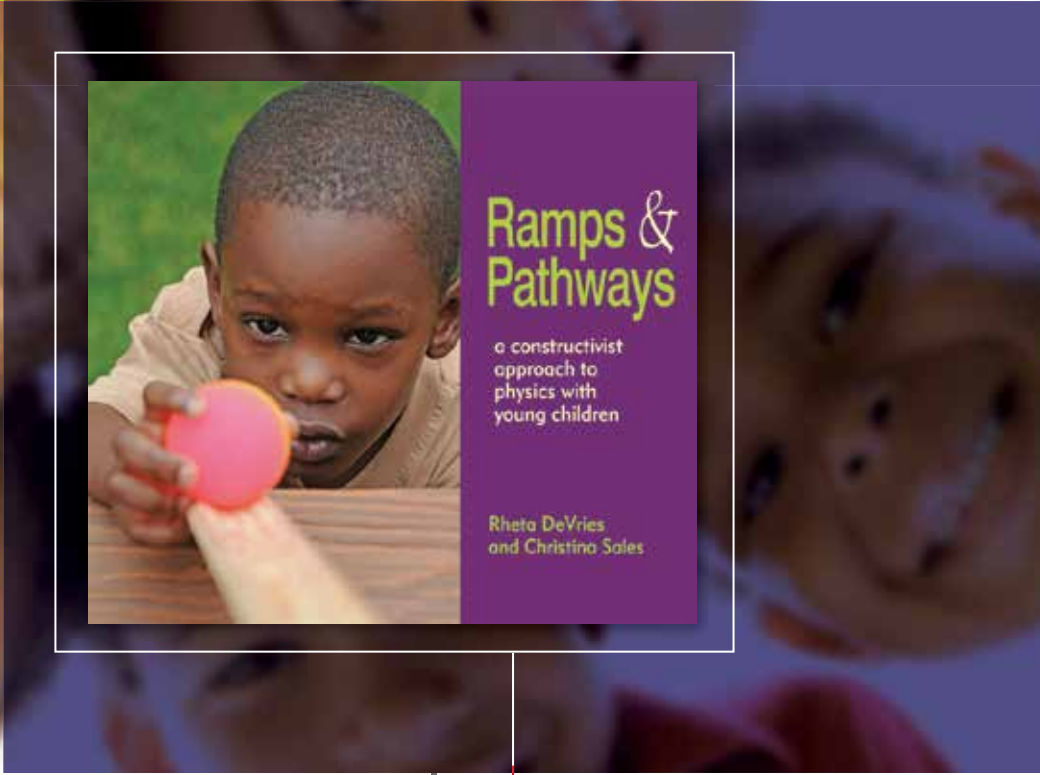
Common Core State Standards, ELA + the NGSS = Even More Brain-powered Science

11:00 AM–12 Noon

Gourmet Lab

Common Core State Standards, Mathematics + the NGSS = More Brain-powered Science

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Saturday, April 5

	Featured Speakers/Special Events	NGSS@NSTA Forum	Featured Speakers/Special Events	Featured Speakers/Special Events
7:00 AM				
8:00 AM			Teacher Researcher Day 8:30 AM–4:30 PM Plaza Ballroom, Seaport	
9:00 AM				
10:00 AM	Featured Presentation 9:30–10:30 AM 210C, BCEC Speaker: James Balog	NGSS@NSTA Forum Planning an NGSS Curriculum 9:30–10:30 AM 210 A/B, BCEC		
11:00 AM	Paul F-Brandwein Lecture 11:00 AM–12 Noon 210C, BCEC Speaker: David T. Sobel <i>sponsored by Paul F-Brandwein Institute</i>	NGSS@NSTA Forum Translating the NGSS for Classroom Instruction 11:00 AM–12 Noon 210 A/B, BCEC		
12:00 Noon				
1:00 PM		NGSS@NSTA Forum Finding and Evaluating Resources for NGSS—The EQUIP Rubric and the NGSS@NSTA Hub 12:30–1:30 PM 210 A/B, BCEC		
2:00 PM	NSTA/ASE Honors Exchange Lecture 2:00–3:00 PM Commonwealth Blrm. C, Westin Speaker: Pete Robinson <i>sponsored by The Association for Science Education</i>	NGSS@NSTA Forum Literacy and Science: NGSS and Common Core ELA 2:00–3:00 PM 210 A/B, BCEC		
3:00 PM				
4:00 PM	Featured Presentation 3:30–4:30 PM 210C, BCEC Speaker: Wendy Saul	NGSS@NSTA Forum The Future of Assessment with NGSS 3:30–5:00 PM 210 A/B, BCEC		
5:00 PM				
6:00 PM			Special Evening Session 6:00 PM–12 Midnight Caspian, Renaissance A Festival of Engineering, Technology, and Science Treats as Related to STEM, the NRC Framework, and the NGSS, Part 3	
7:00 PM				
8:00 PM	NCAA Final Four Watch Party! 7:30 PM–12 Midnight Atlantic Ballroom, Renaissance Ticket Required (M-9)			
9:00 PM				
10:00 PM				

7:00–8:30 AM Breakfast

 **NGSS@NSTA Forum GE Foundation Welcome Breakfast**

(By Invitation Only) 210 A/B, BCEC

7:00–9:00 AM Breakfast

NSTA/AMSE Minority Caucus George Washington Carver Breakfast


(By Invitation Only) Lighthouse II, Seaport

7:30–8:15 AM Breakfast

NSTA Past Presidents Breakfast

(By Invitation Only) Harbor Ballroom II, Westin Waterfront

7:30 AM–5:15 PM Short Course

 **How Do We Explore? Teaching the Next Generation Science Standards Through NOAA Ocean Exploration (SC-17)**

(Middle Level–High School) Off-site (New England Aquarium)

Ticket Required: \$49

Susan E. Haynes (susan.haynes@noaa.gov), NOAA Office of Ocean Exploration and Research, Barrington, R.I.

For description, see Volume 1, page 56.

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

8:00–8:30 AM Presentation

SESSION 1

A Supporting Story: Impact of PCB Sequence on Student Experiences (Gen)

(High School) Flagship A, Seaport

Julie A. Gaubatz (jgaubatz@hinsdale86.org), Hinsdale South High School, Darien, Ill.

Hear one school's story of how their transition to a physics-chemistry-biology sequence positively impacted multiple aspects of their students' experiences of and achievements in science.

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 123, 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.



NGSS@NSTA Sessions



NSTA Press® Sessions



Professional Development Institutes

8:00–9:00 AM Presentations

SESSION 1

Using Kites to Collect Atmospheric Data and Do Remote Sensing (Env)

(Middle Level–High School) 157C, BCEC

David F. Bydlowski (*bydlowd@resa.net*), Wayne RESA, Wayne, Mich.

Use kites and AEROPKATS Aeropods to engage students in collecting atmospheric data and do remote sensing. Students get to fly REALLY BIG KITES!

SESSION 2

Sensing Science: Temperature Readiness for K–2

(Gen)

(Elementary) 158, BCEC

Carolyn J. Staudt (*carolyn@concord.org*), **Nathan Kimball** (*nkimball@concord.org*), and **Rachel Kay**, The Concord Consortium, Concord, Mass.

George Forman (*geforman@aol.com*), UMass Amherst, Mass.

Children learn by exploring their world through everyday activities and developing intuitive understandings. Testing representations using data collection helps us learn about temperature preconceptions.

SESSION 3

Teaching Chemistry and Physics with Children’s Literature (Chem)

(Preschool–Elementary) 160A, BCEC

Lisa K. Felske (*lfelske@hcde-texas.org*), Harris County Dept. of Education, Houston, Tex.

Learn to use fiction to introduce concepts in K–3 science. Topics include properties of matter, solubility, mass vs. weight, density, force, motion, and energy.

SESSION 4

No Way? Yes Way! Develop Your Students’ Scientific Argumentation Skills (Bio)

(Middle Level) 160B, BCEC

Marian M. Pasquale (*mpasquale@edc.org*), Education Development Center, Inc., Waltham, Mass.

Lucas Fox (*lfox@kingstoncityschools.org*), J. Watson Bailey Middle School, Kingston, N.Y.

Erin Nelson (*enelson@kingstoncityschools.org*), M. Clifford Miller Middle School, Lake Katrine, N.Y.

Teachers and researchers demonstrate a playful approach to practicing this essential skill. Students analyze strange-but-true stories and find evidence that supports or refutes a claim.

SESSION 5 (two presentations)

(Middle Level–High School)

162B, BCEC

What Did I Just Read?! (Chem)

Kristin L. Straumann, Atwater-Cosmos-Grove City School District, Grove City, Minn.

For many high school students, “I don’t get it” means “I can’t read this.” See how literacy strategies can help increase your students’ science understanding.

Writing to Learn: One Week at a Time (Chem)

Matthew S. Ignash (*matthew.ignash@jefferson.kyschools.us*), Southern High School, Louisville, Ky.

Come find out how flipping the classroom and use of EDU 2.0 provided the tools for developing a writing-to-learn plan that supports student learning of chemistry and for that matter science, in general.

SESSION 6 (two presentations)

(General)

206 A/B, BCEC

The Science LEAD (Learner, Entrepreneur, Activist, and Dazzler) (Phys)

Darrell L. Walker, Elizabeth City Middle School, Elizabeth City, N.C.

Emphasis will be placed on the importance of leadership in the science classroom and ways to sustain the leadership regimen.

Leading with a Team: Building Best Practices to Improve Our Teaching and Our School (Phys)

Desirée Phillips (*dphillips@cpsd.us*) and **Kristin Newton** (*knewton@cpsd.us*), Cambridge Rindge & Latin School, Cambridge, Mass.

A physics instructional coach and special education teacher mentor from a physics teaching team will share the strategies that make their group successful teacher leaders.

SESSION 7

Biodiesel: Creating Alternative Energy in the Classroom (Env)

(Middle Level–High School)

208, BCEC

David E. Zeiger (*dzeiger@trinitychristian.org*) and **Curtis W. Blagburn** (*clagburn@trinitychristian.org*), Trinity Christian Academy, Addison, Tex.

Fuel new learning in your classroom. We will cover conservation, lab skills, and alternative fuels. Join us as we share our students’ experiences creating biodiesel in the classroom. Go from used oil to bulk quantities of fuel!

SESSION 8

ASTC Session: How Science On a Sphere® Can Captivate Your Students with Animated Earth System Science Data (Env)

(General)

251, BCEC

Abbey Spargo, Ocean Explorium, New Bedford, Mass.

Britta Culbertson (brittaculbertson@gmail.com), Einstein Fellow, NOAA Office of Education, Washington, D.C.

Learn how Science On a Sphere can enhance your Earth system science content with stunning and dynamic animated images in combination with hands-on experiences.

SESSION 9

Before and After Retirement—Practicalities and Possibilities (Gen)

(General)

252A, BCEC

Teshia Birts, Senior Manager, Chapter Relations, NSTA, Arlington, Va.

Virginia Baltay (virginia.baltay@gmail.com), Science ABC, Guilford, Conn.

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.

“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.

NSTA National Science Teachers Association

SESSION 10

Creating Digital Interactive Engineering Notebooks in a First-Grade Classroom (Gen)

(Preschool–Elementary) 252B, BCEC

Kristen B. Wendell (*kristen.wendell@umb.edu*), UMass Boston, Mass.

Join me as I showcase iPad-based, interactive engineering notebooks used by first-grade students to describe their design processes via drawings, photos, videos, and speech.

SESSION 11



NSTA Press® Session: Everyday Science Mysteries—The Details (Gen)

(Informal Education) 254A, BCEC

Richard D. Konicek-Moran (*konmor@comcast.net*), Professor Emeritus, UMass Amherst, Mass.

Andrea Allen (*andrea.allen@knoxschools.org*), Knox County Schools, Knoxville, Tenn.

This session will show how mysteries can be used in everyday situations to promote scientific principles.

SESSION 12

Physics Activities from the Exploratorium and LIGO Science Education Center (Phys)

(Middle Level–High School) 254B, BCEC

Michael B. Simoneaux, Dutchtown High School, Geismar, La.

Classroom-fielded Interactive Models will be demonstrated that target student motivation, are inquiry based, and are easily coupled with math extensions at varied ability levels.

SESSION 13

Accessing Science and Literacy Common Core State Standards Through an Interdisciplinary Project (Gen)

(Middle Level) 255, BCEC

Cynthia M. Brauer (*cynthia.brauer@bsd.k12.de.us*), **Susan C. Beck** (*susan.beck@bsd.k12.de.us*), and **Lauren A. Harwood** (*lauren.harwood@bsd.k12.de.us*), P.S. duPont Middle School, Wilmington, Del.

Encounter an interdisciplinary unit for science, English language arts, and social studies classrooms based on the CCSS. Team teachers will share the methods and practices used in their classrooms that tie together content standards from three different disciplines.

SESSION 14

Henrietta’s Contribution—Moral and Ethical? (Bio)

(Middle Level–High School) 257A, BCEC

Joan E. Estapa (*jestapa@bwsd.org*), Bay Saint Louis–Waveland Middle School, Bay Saint Louis, Miss.

The Immortal Life of Henrietta Lacks will be used to discuss the basics of genetics and the social issues that have arisen from her contribution to science and medicine. Handouts and door prizes!

SESSION 15

Hybridizing Biology with Engineering: A Curriculum Module (Bio)

(General) 257B, BCEC

Katheryn Kennedy (*katheryn.kennedy@stevens.edu*), Stevens Institute of Technology, Hoboken, N.J.

I’ll provide an overview of a freely available curriculum module that incorporates photosynthesis, the carbon cycle, human impact, and engineering through traditional and virtual lab investigations and engineering design activities.

SESSION 16



Advancing Science Learning: Teaching Elementary Life Science Through Engineering Problems (Bio)

(Elementary) 259B, BCEC

Kevin O. Mason (*masonk@uwstout.edu*) and **Brian McAlister**, University of Wisconsin–Stout, Menomonie

Discover how elementary teachers are using engineering problems to deepen their students’ understanding of life science concepts and science and engineering practices.

SESSION 17



Who Me? Yes, YOU! How to Become a Teacher Leader (Gen)

(General) 260, BCEC

Deborah Hanuscin, University of Missouri, Columbia
Michael Hall (*mike.hall@jcschools.us*), Simonsen Ninth Grade Center, Jefferson City, Mo.

Elizabeth Dyer (*dyer.elizabeth@kingston.k12.mo.us*), Kingston K–14 High School, Cadet, Mo.

Kathy Ray (*kray@columbia.k12.mo.us*), West Middle School, Columbia, Mo.

Rachel Kenning (*rakenning@spsmail.org*), Parkview High School, Springfield, Mo.

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SESSION 18

Using Plate Tectonics to Teach the Geomorphology of Continents and Ocean Basins (Earth)

(Middle Level–College)

261, BCEC

Randal L.N. Mandock (*rmandock@bellsouth.net*), Clark Atlanta University, Atlanta, Ga.

Isostatic principles will be used to explain post-glacial rebound and the large-scale geomorphology of continents and ocean basins.

SESSION 19

Flipping an Undergraduate Introductory Biology Course for Majors (Bio)

(College)

Atlantic 3, Renaissance

Jennifer C. Parrish and **Teresa Higgins** (*teresa.higgins@unco.edu*), University of Northern Colorado, Greeley

Join us as we present data on a flipping strategy in an undergraduate biology course for majors and discuss learning gains.

SESSION 20

Fostering the Growth Mind-set in the Next Generation of Scientists (Gen)

(General)

Caspian, Renaissance

Alicia Bitler (*alicia_m_bitler@mcpsmd.org*), Gaithersburg Middle School, Gaithersburg, Md.

Gain specific strategies to increase science students' growth mind-set—or belief in their ability to grow intellectually with hard work.

SESSION 21

Educating the Future Science Educator (Gen)

(Elementary/College)

Pacific A/B, Renaissance

Scott Kirst (*scott.kirst@snc.edu*) and **Tim Flood** (*tim.flood@snc.edu*), St. Norbert College, De Pere, Wis.

This collaborative session explores data and elicits discussion from practitioners as to the best way to educate the best elementary science teacher we can.

SESSION 22 (two presentations)

(High School–College)

Pacific G/H, Renaissance

History of Physics in the Classroom—Beyond the Sidebar (Phys)

Chuck Winrich (*cwinrich@babson.edu*), Babson College, Babson Park, Mass.

Peter Garik (*garik@bu.edu*) and **Andrew Duffy** (*aduffy@bu.edu*), Boston University, Boston, Mass.

The Improving the Teaching of Physics (ITOP) project at Boston University offers physics teachers professional development with a sequence of courses integrating physics content with the history and philosophy of physics and the physics education research literature. We will present examples of lessons developed by ITOP participants that include the history of physics beyond biography.

Using Authentic, Data-rich Case Studies to Teach Physics Content and Science Practices (Phys)

Rachael A. Lancor (*rlancor@edgewood.edu*) and **Brian Lancor** (*blancor@edgewood.edu*), Edgewood College, Madison, Wis.

Testing the limits of wind turbines, breaking Olympic track records, examining art forgeries...we present lessons to explicitly teach science practices using data from real-world examples.

SESSION 23

The Literacy STEM Connection (Gen)

(Middle Level–High School)

Lighthouse 1, Seaport

Barbara Mammen (*bmammen@rider.edu*), Rider University, Lawrenceville, N.J.

Donna Darden-Irons (*ddarden@camden.k12.nj.us*), Morgan Village Family School, Camden, N.J.

Promoting literacy skills in science is the focus of this session. Find out about metacognitive conversation/writing—science analogies, word splashes, vocab decoding, and science news critiques.

SESSION 24

NSELA Session: Cultivating Diverse Leadership in Science (Gen)

(General)

Alcott, Westin Waterfront

Vicki Massey (*vickimassey@cox.net*), NSTA Director, District XIV, Mesa, Ariz.

It takes a village...of leaders. Let's explore how we can encourage diverse representation in science leadership as we move into Science for the 21st Century.

SESSION 25

Brain Research and Strengthening STEM Content (Gen)

(General) *Burroughs, Westin Waterfront*
Nina D. Kuhn (*nkuhn@pendalearning.com*), Huntsville, Ala.
 Walk away with brain-based researched practices and instructional technologies that increase STEM learning and support disciplinary core ideas, such as providing key tools for understanding and problem solving.

SESSION 26

Fun Forensic Apps: Inexpensive and Interesting Ways to Integrate MST (Gen)

(Middle Level–College) *Harbor Ballroom III, Westin Waterfront*
Anthony (Bud) Bertino (*abertino@nycap.rr.com*) and **Patricia Nolan Bertino** (*nolanp@nycap.rr.com*), Retired Educators, Scotia, N.Y.
 Forensics, Biology, Physics, Math Teachers—solve real-life problems integrating math, science, and technology using

free or inexpensive apps. Time of death, anthropology, facial recognition, ballistics, crime scene documentation, and more.

SESSION 27

Teaching Science to Elementary English Language Learners (Gen)

(Elementary) *Lewis, Westin Waterfront*
Maria Aida Alanis, Austin (Tex.) ISD
 This session will focus on teaching science to elementary English language learners. Join me as I incorporate the development of language as well as learning science.



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SESSION 28

And Now We Are Science Gurus—How We Became Leaders in Our Schools (Gen)

(Elementary/Supervision) Paine, Westin Waterfront

Paul S. Markovits (*markovits@wustl.edu*), Washington University in St. Louis, Mo.

Danielle L. Sever (*severd@ritenour.k12.mo.us*) and **Mitzy A. Barnstead** (*achordm@ritenour.k12.mo.us*), Iveland Elementary School, St. Louis, Mo.

Meghan A. McNulty (*mcnultym@ritenour.k12.mo.us*), Marion Elementary School, St. Louis, Mo.

Stephanie Valli (*vallis@ritenour.k12.mo.us*), Ritenour School District, St. Louis, Mo.

Engage in activities with grades 3–5 teachers who expanded science knowledge, applied modeling concepts in their classrooms, shared ways to assess learning, and encouraged colleagues to grow with them.

SESSION 29

Bridging the Gap: Strategies to Enhance Science Instruction Through Standards-based Assessments (Gen)

(Supervision/Administration) Quincy, Westin Waterfront

Jennifer Richards, University of Tennessee, Knoxville
Meaningful assessment that supports inquiry-based science instruction is challenging. This session presents creative ways to integrate standards-based assessments to enhance instructional quality and student learning.

SESSION 30

Make Sustainable Biofuels in the Classroom: A Science and Engineering Challenge (Gen)

(Middle Level–College) Webster, Westin Waterfront

Leith Nye (*lnye@glbrc.wisc.edu*) and **John M. Greenler** (*jgreenler@glbrc.wisc.edu*), University of Wisconsin–Madison
Engage students with the integrated engineering and science challenge of producing biofuels from diverse biomass sources. Discover classroom-ready labs that originate from current bioenergy research.

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.)

8:00–9:00 AM Workshops

NESTA Session: National Earth Science Teachers Association Space 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.

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

Tom Lough (*mlough@murraystate.edu*), Murray State University, Murray, Ky.

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

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

Cassie Soeffing, Institute for Global Environmental Strategies, Arlington, Va.

Courtney Vanover (*courtney.vanover@murray.kyschools.us*), Murray Elementary School, Murray, Ky.

Shannon R. Vogt (*srvogt@gmail.com; svogt@nscsd.org*), North Syracuse (N.Y.) Central Schools

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

Science Tutti-Frutti

(Elementary) 160C, BCEC

Shirley M. Willingham (*sw6@rice.edu*), Rice University, Houston, Tex.

Discouraged by a lack of resources and limited time in your science classroom? Then this is the workshop for you! Take home a large number of 5E (Engage, Explore, Explain, Elaborate, and Evaluate), inquiry, and snapshot activities based on the NGSS and designed to allow students to construct their own knowledge through active involvement in science.

Gardening with Confidence at the Preschool and Elementary Level (Env)

(Preschool–Elementary) 161, BCEC

Erin C. Baldwin, The Berkeley Carroll School, Brooklyn, N.Y.

Gain inspiration and concrete ideas for developing an inquiry-based garden curriculum at the preschool and elementary level. Deepen student understanding with hands-on activities that build upon each other to create a cohesive unit. Discover methods for managing messy materials and setting up a classroom environment that inspires young scientists to learn.

Rocks Rock!

(Elementary–Middle Level)

Susan Gran (*sgran@purdue.edu*), Purdue University, West Lafayette, Ind.

Get students excited about the stories rocks tell! Using this hands-on/minds-on approach, students identify properties of common rocks and use them to classify rocks by type.

(Earth)

162A, BCEC

Dynamic Solar System Models for the Classroom

(Middle Level–High School)

Gary Nakagiri (*gnakagiri@seti.org*), Science Consultant, El Cerrito, Calif.

The human-powered orrery demonstrates planetary motion. Understanding that concept leads to building a model of exoplanet detection from simple materials. NASA resource materials provided.

(Earth)

204 A/B, BCEC

Teaching Reading, Writing, and Science (Gen)

(Preschool–Elementary)

203, BCEC

Judith S. Lederman (*ledermanj@iit.edu*), **Norman G. Lederman** (*ledermann@iit.edu*), and **Selina L. Bartels** (*sbartels@hawk.iit.edu*), Illinois Institute of Technology, Chicago

Teaching young children science can be done through literature and inquiry investigations. Take part in lessons and take home materials.

Engaging Students in Mitosis and Meiosis (Bio)

(Middle Level–College)

205B, BCEC

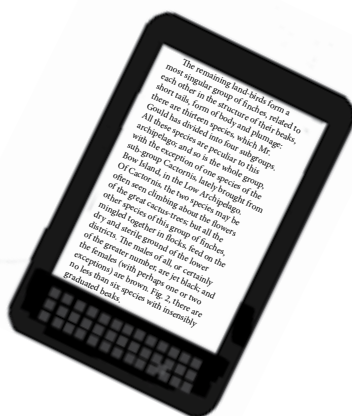
Mary A. Gobbett (*mgobbett@uindy.edu*) and **Nancy O. Steffel** (*nsteffel@uindy.edu*), University of Indianapolis, Ind. Learn 10 different teaching methods to increase students' understanding of basic cell division concepts.

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NASA Brings You Newton’s Laws of Motion (Phys)
(Middle Level–High School) 205C, BCEC

David P. Beier (david.beier@barstowschool.org), The Barstow School, Kansas City, Mo.

Join a NASA Astrophysics Ambassador and experience 25 hands-on stations designed to enhance students’ understanding of Newton’s laws. Lots of free NASA materials!

Moving from Hands-On Models to Minds-On Models (Gen)

(Elementary–Middle Level) 207, BCEC

Charlotte A. Otto (cotto@umich.edu) and **Susan A. Everett** (everetts@umich.edu), University of Michigan–Dearborn

We will illustrate how a series of inquiry activities can be used to create a coherent and robust mental model of a science concept.

Astronomy and Interdisciplinary Curricula Go Hand in Hand (Gen)

(Elementary–Middle Level) 211, BCEC

Joan A. Gillman (joan.gillman@calhoun.org), The Calhoun School, New York, N.Y.

Astronomy with an interdisciplinary approach can make science learning exciting and meaningful...and it can help students see the connection among all of the disciplines. Come learn how to develop an innovative astronomy unit with an emphasis on STEM learning. Student work will be showcased and participants will experience some classroom activities, including designing, building, and testing straw rockets.

Engineering the K–5 Curriculum (Gen)

(Preschool–Elementary) 212, BCEC

Mijana Lockard, Lincoln Avenue Academy, Lakeland, Fla. Find out how to integrate elementary subjects into cohesive STEM curricula through the use of the engineering design process. Engage in application of the NGSS engineering practices.

Science and Literacy for English Language Learners (Gen)

(Elementary) 213, BCEC

Cheryl McCaw (cdmccaw@mpsaz.org) and **Korin Forbes** (klforbes@mpsaz.org), Mesa (Ariz.) Public Schools
Presider: Vicki Massey, NSTA Director, District XIV, Mesa, Ariz.

Working with K–6 ELL students? Join us to learn fun, practical classroom strategies for integrating science and literacy while meeting all standards—*Common Core State Standards*, *ELA*, the *NGSS*, and English language proficiency.

What’s Up? Classroom Activities from the Association of Astronomy Educators, Session I: Sun, Earth, and Planets (Earth)

(Informal Education) 253B, BCEC

Jacob Noel-Storr (jake@cis.rit.edu), Rochester Institute of Technology, Rochester, N.Y.

Wendy M. Van Norden (wendy.m.vannorden@nasa.gov), NASA Goddard Space Flight Center, Greenbelt, Md.

Led by master astronomy teachers from the Association of Astronomy Educators (AAE), join us for classroom-ready, hands-on astronomy activities that really work.

Weaving EARTH (Education and Research: Testing Hypotheses) Activities and STEM in the Classroom! (Env)

(Informal Education) 256, BCEC

Barbara J. Simon-Waters (barbarasimonwaters@gmail.com), Morehead City, N.C.

STEM activities developed during Monterey Bay Aquarium Research Institute’s EARTH workshops will be presented. Teacher-designed and classroom-tested for all levels of science!



Teaching Science Through Literacy to English Language Learners and Early Childhood Kindergarten Learners (Gen)

(Preschool–Elementary) 258C, BCEC

Gabriella Marinaccio, Ridgefield (Conn.) Public Schools
Science is accessible through literacy for English language learners of the early childhood kindergarten age. Come practice a science-balanced literacy beyond a read-aloud.



Wow, We Are Scientists! (Gen)

(Elementary–Middle Level) 259A, BCEC

Laura A. Molenaar (molenaarl@nls.k12.mn.us), New London–Spicer Middle School, New London, Minn.

Are you itching to find ways to engage your students in science in your school yard? Let’s discover the adventures of inquiry through citizen science.

iTAG Barley: A Curriculum Module Exploring Inheritance of Traits and Genes (Bio)

(High School–College) *Atlantic 1, Renaissance*

Ehren L. Whigham, Iowa State University, Ames
DNA extraction, PCR, and electrophoresis—these lessons and more have been developed through a collaboration among high school teachers and university professors, all in a digital textbook.

National Earth Science Teachers Association Events at 2014 Boston NSTA Conference



All NESTA sessions are in the Boston Convention & Exhibition Center, 052A/B unless otherwise indicated

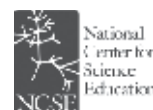
Friday, April 4

- 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:



Museum of Science.

**Canvas and PVC Boats as a Capstone for Senior Physics
(Phys)**

(High School–College) *Atlantic 2, Renaissance*
Michael Hazeltine (michael_hazeltine@newton.k12.ma.us),
Debbie Lund (deborah_lund@newton.k12.ma.us), and **Ellen Williams** (ellen_williams@newton.k12.us.ma), Newton North High School, Newtonville, Mass.
Students in a senior-level physics course design, engineer, construct, and test boats capable of carrying two students across a pool.

**Science for All: Meaningful Science with Meaningful Inclusion
(Gen)**

(General) *Pacific D, Renaissance*
Sara Aronin (saronin8@hotmail.com) and **Michael O’Neal** (michael.oneal@mail.wvu.edu), West Virginia University, Morgantown
Presider: Jared E. Turner, West Virginia University, Morgantown
Engage in hands-on activities that allow students of all abilities to be included meaningfully in a science classroom as proven through professional development data.

**ASTE Session: Designing the Strongest Voltaic Cell in a High School Classroom
(Phys)**

(High School) *Pacific E, Renaissance*
Keith Wright (wrightk@sps.springfield.ma.us), Springfield Renaissance School, Springfield, Mass.
Kathleen S. Davis, UMass Amherst, Mass.
Presider; Barbara Schulze, Ralph C. Mahar Regional School District, Orange, Mass.
Experiment with different electrodes to see which combination produces the most power. We’ll use the results in a discussion of how to build an inquiry-based unit plan around the topic of voltaic cells. *Note:* Hands-on materials available to the first 25 participants.

**Do’s and Don’ts for Having a Successful Family Science Night in Secondary Schools
(Gen)**

(Middle Level–High School) *Seaport Ballroom A, Seaport*
Carol Ann Ross (cross@astate.edu), **Karen Yanowitz** (kyanowitz@astate.edu), and **Tanja McKay** (tmckay@astate.edu), Arkansas State University, State University, Ark.
Shelley Ledbetter (shelleyledbetter@yahoo.com), Gainesville Junior/Senior High School, Gainesville, Mo.
Presider: Carol Ann Ross
Join us as we present tips compiled by junior and senior high school teachers for conducting successful Family Science Nights. Engage in selected activities and take home handouts.

**Show Me the Money: Funding Your STEM Proposal with Donors Choose
(Gen)**

(General) *Commonwealth Ballroom A, Westin Waterfront*
Lisa A. Ernst (ernstl@sfsusd.edu), San Francisco (Calif.) USD
Antoinette Schlobohm (toni@schlobohms.org), Ardenwood School, Fremont, Calif.
Come write a proposal to fund your STEM project with Donors Choose. We’ll walk you through the process. Bring your laptop, tablet, or iPad!

**Using Research-based Engineering Activities to Engage Learners
(Gen)**

(Elementary–Middle Level) *Commonwealth B, Westin Waterfront*
Michelle DiIeso (mdiieso@mos.org), Museum of Science, Boston, Mass.
Come join this hands-on workshop exploring innovative approaches that use research-based engineering challenges to build confidence, enthusiasm, and engagement in elementary and middle school learners.

**Iron Teacher
(Gen)**

(General) *Commonwealth Ballroom C, Westin Waterfront*
Elisabeth Knierim, Cary-Grove High School, Cary, Ill.
Sean Herberts and **Jessica Krim** (jkrim@siue.edu), Southern Illinois University, Edwardsville
Allycia Drummond (adrummond@wvusd5.net), Waterloo Junior High School, Collinsville, Ill.
Join us for a competition designed to test your creativity in designing an inquiry lesson around three mystery objects within a limited amount of time.

**Engaged Scientists: Using Writing and Brain-based Activities to Make Literacy and Science an Accessible Component of Every Classroom
(Gen)**

(General) *Faneuil, Westin Waterfront*
Angela Tisdale (tisdaleang@fssd.org) and **Barbara Orr** (orrbarr@fssd.org), Freedom Intermediate School, Franklin, Tenn.

Quick writes, picture books, music, narrative chains, and other research-based methods are part of this fast-paced hands-on workshop. Walk away with new ideas that will engage even the most reluctant learner.

**A Picture Is Worth a Thousand Words: Teaching Scientific Visual Literacy
(Gen)**

(General) *Harbor Ballroom I, Westin Waterfront*
Robert Stremme, Eastern University, St. Davids, Pa.
Is a picture really worth a thousand words? Find out as you construct 3-D graphic organizers to help your “eye generation” students become visually literate.

DuPont Presents: Photosynthesis, Respiration, and Starches—It’s a Plant’s Life! (Gen)

(Middle Level–High School) Otis, Westin Waterfront

Scott Stone (scott.stone@catnet.gen.mo.us), Centralia (Mo.) R-VI School District

Sara Clark (sclark@gcbe.org), Sonoraville High School, Calhoun, Ga.

Presider: Peggy Vavalla, DuPont, Wilmington, Del.

Help your students sprout and grow with a different approach to teaching photosynthesis, cellular respiration, and plant food storage and discover how this all connects to the carbon cycle. Learn how to captivate your students through inquiry activities that can challenge and excite them and discover how to easily implement activities into your current biology or plant science class.

8:00–9:00 AM Exhibitor Workshop

Climate Series I: Global and National Efforts to Characterize Our Changing Climate (Earth)

(Grades 6–12)

156C, BCEC

Sponsor: NOAA

LuAnn Dahlman, NOAA, Mesa, Ariz.

Are recent reports like the Intergovernmental Panel on Climate Change (IPCC) and the National Climate Assessment (NCA) relevant to you and your students? Learn what these reports say, why they are considered the most authoritative information sources about our changing climate, and how you can use them for learning and teaching.

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8:00–9:30 AM Exhibitor Workshops

Teach Science in Your PJs! Earn Money Tutoring Online (Gen)

(Grades 4–College) 104B, BCEC
Sponsor: Tutor.com

Joan Rooney (joan.rooney@tutor.com), Tutor.com, New York, N.Y.

Join us for an informal breakfast (PJs optional) to learn why thousands of teachers work with *Tutor.com*, the leading online tutoring and homework help service for millions of students. Our tutors and VP of Instruction will show you how easy it is to earn money and help kids while tutoring online.

Fast and Furious: Measuring Speed (Phys)

(Grades 6–8) 104C, BCEC
Sponsor: LAB-AIDS, Inc.

Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.

This activity from SEPUP's *Issues and Physical Science* program from LAB-AIDS explores Newton's laws in a context of motor vehicle safety. Participants are challenged to design an investigation to measure the speed of a moving cart as a function of its release point from a curved ramp. They carry out their experiment, discuss the role of speed in automobile collisions, and conclude by examining distance vs. motion graphs.

Experiences from a Professional Development Opportunity in Costa Rica (Env)

(Grades 5–12) 106, BCEC
Sponsor: Northrop Grumman and Conservation International

Peggy Lubchenco, Tropical Ecology Assessment and Monitoring Network, Arlington, Va.

Last summer, 16 biology and environmental science teachers participated in fieldwork at the Tropical Ecology Assessment and Monitoring (TEAM) Network site in Costa Rica as part of the second year of ECO Classroom. Come see how teachers translate their field experiences into curriculum and student projects. We will also demonstrate a new education web portal providing engaging lessons and resources for students and teachers.

Bringing Real Neuroscience (Spiking Neurons!) into Your Classroom (Bio)

(Grades 7–College) 107A, BCEC
Sponsor: Backyard Brains, Inc.

Timothy Marzullo (tim@backyardbrains.com), Backyard Brains, Inc., Ann Arbor, Mich.

Want to show your students the real electrical activity of muscles and neurons? Curious about how remote control

cockroaches work and the physiology of muscles during arm wrestling? Now you can! Via live demos, learn how to bring neuroscience into your classroom.

AP Environmental Water Quality Assessment Curriculum (Env)

(Grades 10–12) 107B, BCEC
Sponsor: LaMotte Co.

Ken Rainis, Fairport, N.Y.

This complete curriculum explores the Water Quality Index to teach students STEM-based skills they can use in both classroom and field activities to satisfy Section VI (water pollution) of the AP Environmental Topics Outline. Students study actual data from the Kansas River in the classroom, then apply those principles learned to their local water source. Curriculum includes PowerPoints and QuickTime iPad/iPod videos for Watershed Ecology, Water Quality Index, Point/Non-Point Pollution, and more. Door prize!

PBS LearningMedia: Science Resource Across the Grade Bands (Gen)

(Grades K–12) 108, BCEC
Sponsor: PBS LearningMedia

Denise Olson, PBS LearningMedia/WGBH Education, Boston, Mass.

PBS LearningMedia is a free digital media content library featuring learning resources based on top quality public media programs like *Design Squad* and *NOVA ScienceNOW*. In this workshop, we highlight resources across the grade bands, including new resources that support the NGSS and science literacy, and a new collection created with NASA.



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Saturday	7:00 AM–5:00 PM
Sunday	7:30 AM–12 Noon

NSTA National
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Teachers
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Wind Sail Cars

(Grades K–4)

Sponsor: KidWind Project

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

Chart a new course for learning in your classroom. Learn how wind can do work. Come build sail cars and then design sails that can push your car the farthest. This workshop is geared for K–4 educators, but can be used as a first-step hands-on activity for all ages.

(Env)

151A, BCEC

Chemistry with Vernier

(Grades 9–College)

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!

(Chem)

153A, BCEC

iPad and Wireless Sensors with Vernier

(Grades 3–College)

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 iPad. This technology empowers students to collaboratively collect and independently analyze their data.

(Gen)

153B, BCEC

STEMtastic Strategies

(Grades K–12)

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.

(Gen)

154, BCEC

Biology Success Stations

(Grades 9–12)

Sponsor: Ward's Science

Deborah Linscomb, Ward's Science, Rochester, N.Y.

Capture and keep the attention of your students with engaging activities that connect key disciplinary core ideas in life science with crosscutting concepts of structure and function, system models, and cause and effect. Win door prizes, too!

(Bio)

156A, BCEC

MINDSTORMS® EV3 Robotics in the Middle School Classroom—Getting Started


(Grades 6–8)

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.

(Gen)

156B, BCEC



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8:00–11:00 AM Short Courses



Supporting K–12 Students in Argumentation Across Reading, Writing, and Talking (SC-18)

(Grades K–12) *Boylston, Marriott Copley Place*
Ticket Required: \$22

Katherine L. McNeill (*kmcneill@bc.edu*), Boston College, Chestnut Hill, Mass.

Pamela Pelletier (*pam.pelletier@gmail.com*), and **Dean M. Martin** (*dmartin2@bostonpublicschools.org*), Boston (Mass.) Public Schools

Nancy Blasi (*nblasi@boston.k12.ma.us*), James P. Timilty Middle School, Boston, Mass.

For description, see Volume 1, page 56.



Leading the Way; Classroom Teachers in Action (SC-20)

(Grades K–12) *Simmons, Marriott Copley Place*
Ticket Required: \$29

Lorraine McKinin (*lmckinin@assetinc.org*) and **Diane DeMario** (*ddemario@assetinc.org*), ASSET STEM Education, Pittsburgh, Pa.

For description, see Volume 1, page 57.



The Role of Oral and Written Language in Inquiry-based Science Learning (SC-19)

(Elementary/Supervision) *St. Dunstons, Marriott Copley Place*
Ticket Required: \$29

Karen Worth (*kworth@wheelock.edu*) and **Jeff Winokur** (*jwinokur@wheelock.edu*), Wheelock College, Boston, Mass.

Martha Heller-Winokur (*mwinokur@rcn.com*), Independent Literacy Consultant, Boston, Mass.

For description, see Volume 1, page 57.

8:00 AM–12 Noon Short Course



Building Structures with Young Children to Support STEM Learning (SC-21)

(Preschool–Kindergarten) *Tremont, Marriott Copley Place*
Ticket Required: \$27

Cindy Hoisington (*choisington@edc.org*), Education Development Center, Inc., Waltham, Mass.

For description, see Volume 1, page 57.

8:15–9:15 AM Meeting

Past Presidents Advisory Board Meeting

Harbor Ballroom II, Westin Waterfront

8:30–9:00 AM Presentation

SESSION 1

Making Collaboration Worth Your Time (Gen)
(General) *Pacific F, Renaissance*

Heather J. Moore (*hjmoore1@fcps.edu*), Robert E. Lee High School, Springfield, Va.

Mark Hartman (*mhartman2@wcpss.net*), Millbrook High School, Raleigh, N.C.

Five teachers in four different schools and three districts collaborate to align curriculum, use backward design, create common assessments, and better understand content together.

8:30–9:30 AM Presentation

SESSION 1

Teacher Researcher Day Session: Poster Session for Teachers and Teacher Educators Inquiring into Science Learning and Teaching (Gen)

(General) *Plaza Ballroom, Seaport*

Deborah Roberts-Harris (*drober02@unm.edu*), University of New Mexico, Albuquerque

Find out what questions teachers and teacher educators are asking and how they are exploring these in their own classrooms.

9:00–10:30 AM Coffee

West Texas Teachers' Coffee

Carlton, Westin Waterfront

Come join the West Texas NSTA Teacher Chapter for dialogue on how to organize yearlong efforts for West Texas teacher activities and professional development.

9:00–10:30 AM Exhibitor Workshop

Show Me the Money! Finding Funds for Biotech, A Grant Writing Workshop (Bio)

(Grades 9–College) *157A, BCEC*

Sponsor: Bio-Rad Laboratories

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

Whether you are looking to start introducing a few hands-on labs or build an entire biotechnology program, this workshop will prepare you to immediately start turning your dreams into reality. You will get a number of grant writing tools, including samples of proposals, letters of support, budgets, justifications to get you started, and information on a variety of competitive grants that will be made available at the workshop. For a practical application of the new tools, participants will draft a proposal.

9:00–11:00 AM Exhibitor Workshop**Climate Series II: Antarctic Team Showcases Ice Cores (Earth)**

(Grades 6–12) 156C, BCEC
Sponsor: NOAA

Linda M. Morris and **TJ Fudge**, Dartmouth College, Hanover, N.H.

Jay Johnson, University of Wisconsin, Madison

How do scientists know what they know about climate? What clues are hidden in the ice? Meet a scientist and an engineer engaged in research at the WAIS Divide. Get up close and personal with an ancient ice core! Hands-on activities and a movie will bring this home to your classroom.

9:00 AM–1:00 PM Short Course**Teaching Astronomy with Small Telescopes (SC-22)**

(Middle Level–College) Wellesley, Marriott Copley Place
Ticket Required: \$92

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

For description, see Volume 1, page 57.

**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 Presentation**SESSION 1****Anchors for Engaging Students in Developing and Using Models (Phys)**

(High School) 205C, BCEC

Todd Campbell (*todd.campbell@uconn.edu*), University of Connecticut, Storrs

Drew Neilson, Logan High School, Logan, Utah

Emphasis will be placed on strategies for engaging students in developing and using models by grounding instruction around scientifically rich and often complex natural phenomena.

9:30–10:30 AM Featured Presentation**The Art and Science of Chasing Ice (Env)**

(General) 210C, BCEC



James Balog, Founder and Director, Extreme Ice Survey and Earth Vision Trust, Boulder, Colo.
[@earthvisiontrst](https://twitter.com/earthvisiontrst)

Photographer and author James Balog shares the latest photography and image sequences from the Extreme Ice Survey. His images provide the “smoking gun” of climate change, visual evidence that audiences young and old can understand.

His multimedia show provides a fascinating exploration of humanity's relationship with nature, and a profound understanding of how climate change is affecting our planet. It is nothing short of a call to arms to one of the greatest challenges of our generation. James will also be discussing his new educational initiatives to support middle school science teachers and curricula.

Renowned photographer James Balog has been artistically interpreting the natural environment for three decades with stunning images of endangered animals, old-growth forests, and polar ice. As glaciologists for the Extreme Ice Survey, James and his team conducted the most extensive glacier study ever, covering France, Switzerland, Iceland, Greenland, the United States (Alaska and Montana), Nepal, Bolivia, and Antarctica. He and his Extreme Ice Survey team are featured in the 2012 internationally acclaimed, award-winning documentary, Chasing Ice, and in the 2009 NOVA special, Extreme Ice.

James is the author of ICE: Portraits of Vanishing Glaciers and seven other books. His photos have been extensively published in major magazines, including National Geographic, and exhibited at more than 100 museums and galleries worldwide.

9:30–10:30 AM Presentations

SESSION 1 (two presentations)

(Preschool–Middle Level)

158, BCEC

Designing Effective Curricular Scaffolds to Differentiate Instruction in Inclusive Science Classrooms: Findings from the Accessing Science Ideas Project (Gen)

Gillian M. Puttick, TERC, Cambridge, Mass.

Content enhancements (CEs) to create curricular access produced significant changes in teacher instructional knowledge and student learning. Join me as I present example CEs and share research findings.

Never Be Wrong Again! (Gen)

Daniel P. Carroll (daniel.carroll@apsva.us), Yorktown High School, Arlington, Va.

Experimental Design is one of the most important skills for students to learn and for teachers to understand. Find out how any standard can be turned into a hands-on activity. Learn about several simple themes running throughout science standards that can simplify any complex concept.

SESSION 2

Story Books, Graphic Novels, and the Simpsons: Integrating Literature in the Middle School Physical Science Curriculum (Phys)

(Middle Level)

159, BCEC

Bill Reitz (wreitz@neo.rr.com), Retired Educator, Stow, Ohio
Classroom activities and strategies set the story for science. Let's explore examples from the NGSS's four core ideas in physical science for middle school using both fiction and non-fiction selections as students learn in a 5E (Engage, Explore, Explain, Elaborate, and Evaluate) format.

SESSION 3

Save the Penguins (Chem)

(Middle Level)

160A, BCEC

Leslie A. Gividen (leslie.gividen@jefferson.kyschools.us), **Courtney M. DeKeuster** (courtney.dekeuster@jefferson.kyschools.us), and **Shannon Smith** (shannon.smith@jefferson.kyschools.us), Farnsley Middle School, Louisville, Ky.

This unit involves incorporating science concepts along with English language arts. The students in this project build a dwelling that will protect a penguin (ice cube) from melting through warm temperatures. Lessons involve heat transfer by conduction, convection, and radiation.

SESSION 4

Dinosaurs, Volcanoes, and Scientific Research Ships (Earth)

(Elementary–Middle Level)

162A, BCEC

Kevin M. Kurtz (kevcurtz@gmail.com), Children's Author, Rochester, N.Y.

Find out how to engage elementary and middle grade students in Earth science using e-books and other online media.

SESSION 5

Design a Spacesuit for Going on a Spacewalk

(Phys)

(General)

203, BCEC

Greg Bartus, Stevens Institute of Technology, Hoboken, N.J.

Janeen Maniscalco (jmaniscalco@jcboe.org), Martin Luther King Jr. Elementary School, Jersey City, N.J.

Students explore the effects of radiation and conduction with various materials to inform their design of a spacesuit for the intense heat and cold of space.

SESSION 6

What We Know About Climate! (Earth)

(General)

204 A/B, BCEC

Randy Russell (rrussell@ucar.edu), NCAR, Boulder, Colo.

Lisa Gardiner (lisagard@ucar.edu), UCAR Science Education, Boulder, Colo.

Gain an overview of the latest research in climate science and global change and include resources for teaching these complex topics.

SESSION 7

Cooperative Learning in the Chemistry Classroom: Get Your Kids Talking and Helping Each Other Learn (Chem)

(High School)

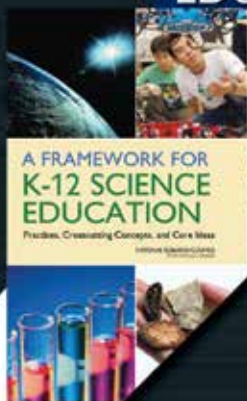
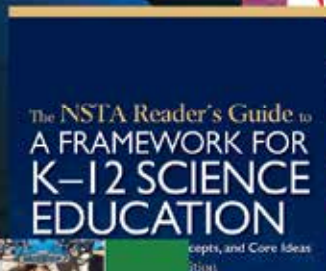
206 A/B, BCEC

Hope Lozano (hope.lozano@austinisd.org) and **Denise E. Sanders** (denise.sanders@austinisd.org), James Bowie High School, Austin, Tex.

Get your students talking, learning, and working together every day using easily integrated, low-prep strategies you can implement on Monday. Examples from on-level to AP chemistry.

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SESSION 8

Reach More of Your Learners Where They Are At: Differentiation in the High School Science Classroom (Chem)


(Middle Level–High School) 209, BCEC

Tracy H. Schloemer (*tracy.schloemer@gmail.com*), STEM High and Academy, Denver, Colo.

Jeffrey Lane Spencer (*jls Spencer@aps.k12.co.us*), Vista Peak Preparatory, Aurora, Colo.

What can differentiated instruction look like in the high school classroom? We will develop a definition of differentiation and share stories of specific experiences.

SESSION 9

 **Planning an NGSS Curriculum (Gen)**

(General) 210 A/B, BCEC

Matt Krehbiel (*mkrehbiel@ksde.org*), Kansas Dept. of Education, Topeka

While the *Next Generation Science Standards* specify what students need to learn, educators at the state, district, and school levels face many choices in developing a curriculum to support the standards. This session will provide guidance based on the model course maps in the appendixes of the NGSS. This session is part of the NGSS@NSTA Forum, but is open to all conference attendees.

SESSION 10

ASTC Session: Connecting Museum Learning Experiences to Science and Common Core State Standards, ELA (Gen)

(Elementary–High School) 251, BCEC

Jim Short, Melanie Cohen, and Rebecca Taylor, American Museum of Natural History, New York, N.Y.

Emphasis will be placed on using informational texts based on exhibition content and writing tasks to support *CCSS ELA* with museum visits.

SESSION 11

Authors Needed! (Gen)

(General) 252A, BCEC

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

Learn how to prepare and submit your manuscript for submission to an NSTA journal. Editors will be on hand to critique your article ideas.

SESSION 12 (two presentations)

(Elementary) 252B, BCEC

Tinkering with Elementary Engineering (Gen)

Barbara Bratzel (*barbara_bratzel@shs.org*) and **Jeanne McDermott** (*jeanne_mcdermott@shs.org*), Shady Hill School, Cambridge, Mass.

We've taught elementary engineering three ways—in science, integrated with literature, and as a stand-alone project. We will share video and photos highlighting the delights and pitfalls.

STEM, the Maker Movement, and an Elementary Classroom (Gen)

Kelly R. Dawson (*kdawson@richland2.org*), North Springs Elementary School, Columbia, S.C.

Find out how a grade 5 teacher uses the Maker Movement as a springboard for incorporating hands-on engineering projects into her classroom.

SESSION 13

 **NSTA Press® Session: Uncovering K–5 Students' Ideas with Science Talk (Gen)**

(Elementary/College/Supervision) 254A, BCEC

Page Keeley (*pagekeeley@gmail.com*), 2008–2009 NSTA President, Jefferson, Maine

Karen S. Norris, Salesmanship Club Youth and Family Centers, Dallas, Tex.

Learn how to use a variety of assessment probes and strategies to find out what your students really think while building the science practices of talk and argument. Join us as we share real examples from K–5 classrooms.

SESSION 14

Using ICTs to Facilitate Students' Literacy Development in Science (Gen)

(Middle Level) 255, BCEC

Hui-Yin Hsu and Shiang-Kwei Wang (*skwang@nyit.edu*), New York Institute of Technology, Old Westbury

Joshua Ng (*jhnq@lmc896.org*), Lower Manhattan Community Middle School, New York, N.Y.

Discussion centers on strategies for using information and communication technologies (ICTs) to facilitate and scaffold students' literacy development in the science learning process.

SESSION 15

School Yard Science Investigations in the Digital Age: Go Botany and iCBug (Env)

(Informal Education) 256, BCEC

Elizabeth Farnsworth (*efarnswo@mholyoke.edu*), New England Wild Flower Society, Framingham, Mass.

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

Toss the traditional dichotomous key! Test-drive these free electronic plant and butterfly guides by the New England Wild Flower Society and Yale Peabody Museum of Natural History.

SESSION 16

Teaching Evolution: Meeting the Challenge of So-called Intelligent Design (Bio)

(High School) 257A, BCEC

Michael J.V. Lazaroff (*mjvlazaroff@gmail.com*), Staples High School, Westport, Conn.

Rather than skirt the issue, meet it head on! Come learn how to use the problems with intelligent design to strengthen your teaching of evolution!

SESSION 17

Engage Your Students with NOAA’s Coral Reef and Ocean Acidification Resources (Bio)

(Elementary–High School) 257B, BCEC

Britta Culbertson (*brittaculbertson@gmail.com*), Einstein Fellow, NOAA Office of Education, Washington, D.C.

Grab your students’ attention by incorporating coral reefs into your existing curriculum. Several NOAA resources will be highlighted, including demos, labs, activities, and multimedia.

SESSION 18



Active Reading of Nonfiction Text (Gen)

(Middle Level–High School) 258C, BCEC

Patricia A. DeCoster (*decosterp@stratfordk12.org*), Stratford High School, Stratford, Conn.

Engage students in actively reading nonfiction text with these simple strategies.

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SESSION 19 (two presentations)

(Middle Level–High School)

261, BCEC

High-Adventure Science: Free Simulations Exploring Earth's Systems and Sustainability (Earth)

Amy R. Pallant (apallant@concord.org), The Concord Consortium, Concord, Mass.

Explore a free classroom-tested secondary school curriculum on climate change science, water sustainability, and hydraulic fracking while exploring uncertainty as part of scientific argumentation.

Teaching Weather and Climate Through Severe Weather Scenarios (Earth)

Jennifer White (jwhite319@gmail.com), Jefferson Middle School, Champaign, Ill.

Kristin Camp (campkr@champaignschools.org), Champaign (Ill.) Unit 4 Schools

Let us introduce you to a weather unit taught through the lens of having students assume a variety of roles as they navigate a severe weather scenario.

SESSION 20

Making the Connection: Science Inquiry and Literacy (Gen)

(Elementary/College)

Atlantic 3, Renaissance

Cynthia C. Gardner (cgardner@lander.edu) and **Ashlee Horton** (ahorton@lander.edu), Lander University, Greenwood, S.C.

Find out how to use science notebook entries to create multi-genre writing and enhance communication skills through informational text.

SESSION 21

Research-based Curriculum for High School Students #1: Astronomy and Earth/Planetary (Earth)

(High School–College/Informal)

Pacific A/B, Renaissance

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

Join us for an overview of five courses about content and research in astrophysics and Earth/planetary science, co-developed with scientists. Receive the full curricula with digital activity materials!

SESSION 22

ASTE Session: Preparing Teachers to Explore Global Climate Change with Their Middle School and High School Students (Env)

(Middle Level–College)

Pacific E, Renaissance

Patricia Morrell (morrell@up.edu), University of Portland, Ore.

Learn about a Teacher as Researcher Professional Development Model that assisted middle school and high school teachers in engaging their students with global climate change issues.

SESSION 23 (two presentations)

(High School–College)

Pacific F, Renaissance

Climate Change: Having Students Making Informed Decisions (Earth)

Jeff D. Thomas (thomasjed@ccsu.edu), Central Connecticut State University, New Britain

This five-part inquiry-oriented activity has students respond to the following research question: If the Arctic shipping routes are viable, should they be exploited?

Bringing Primary Scientific Literature into the Classroom (Gen)

Melissa McCartney (mmccartn@aaas.org), AAAS/Science, Washington, D.C.

Join me as I present a collection of annotated science papers designed to help high school to undergraduate students understand the structure and workings of scientific research.

SESSION 24

Ranking Tasks as a Next Generation Physics Assessment (Phys)

(High School–College)

Pacific G/H, Renaissance

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

Ranking tasks requires students to argue from evidence as they articulate their understanding. Join me as I share samples and have you create your own.

SESSION 25**AMSE Session: Enhancing a STEM Culture Through Multidisciplinary Education and Research Teams (Gen)***(General)**Constitution, Seaport*

Preston D. Robinson III, Jackson (Miss.) Public Schools
Come learn how to enhance an academic pipeline for training and mentoring K–12 and undergraduate students for STEM careers.

SESSION 26**Time Will Tell: Using Time-lapse Photography and Digital Storytelling to Observe Change (Gen)***(Middle Level–High School)**Flagship A, Seaport*

Roger D. Pence (*rogpence@yahoo.com*), Benicia Middle School, Benicia, Calif.

Observation of slow-moving events in time can be described using time-lapse photography and narrated via techniques used in digital storytelling. Let's explore methods, equipment, and applications. Resources and samples provided.

SESSION 27**Scientists and Their Stories: Teaching the Nature of Science and Science Concepts Through the History of Science (Gen)***(Middle Level–High School)**Lighthouse I, Seaport*

Jacqueline S. Miller (*jmiller@edc.org*), Education Development Center, Inc., Waltham, Mass.

Join me as I share strategies for using the history of science as a way to engage students in understanding the nature and development of scientific knowledge.

SESSION 28**NSELA Session: Digital Curriculum, Mobile Devices, and Student Achievement? Action Research Results (Gen)***(General)**Alcott, Westin Waterfront*

Barbara J. Reinert (*breinert@susd.org*), Scottsdale (Ariz.) Unified School District

Join us as we review results of an action research project comparing students who used digital curricula with mobile devices to students taught in a more traditional manner.

**SESSION 29****Focus Any Classroom Practice on Higher-Order Thinking: A Revolutionary Model for Teachers and the Nation (Gen)***(Supervision/Administration)**Burroughs, Westin Waterfront*

Patrick Leighton (*patrickleighton@gmail.com*), Coventry High School, Coventry, Conn.

We're either crazy or...! See how 25 years of teacher research have produced a practical, comprehensive, multidimensional, and no-cost model and tool that works incredibly well.

SESSION 30**Square Pegs (Gen)***(Middle Level–High School/Inf.)**Harbor III, Westin Waterfront*

Juliana Texley, NSTA President-Elect, Boca Raton, Fla.

Everyone knows them—those learners with such diverse learning styles that they just don't fit in a standard classroom. They may be in detention, in alternative education settings, in adult education...or occasionally dropping in to disrupt your well-organized learning environment. But many have tremendous potential. Let's discuss the methods that help create great learning spaces for "square pegs."

SESSION 31**Science Glossaries as Teaching Tools (Phys)***(Middle Level–High School)**Lewis, Westin Waterfront*

Christopher M. Martell (*christopher.martell@austinisd.org*), **Raegan Witt-Malandruccolo** (*rwitt@austinisd.org*), and **Adrienne Fan-Arroyo** (*afan@austinisd.org*), Austin (Tex.) ISD

Presider: Adrienne Fan-Arroyo

Science glossaries can serve as excellent teaching tools. Try out engaging strategies for implementation and receive free digital copies for middle school and high school.

SESSION 32

Using Data to Inform Instructional Decisions and Drive Student Engagement (Bio)

(Middle Level–High School/Supv.) Paine, Westin Waterfront

Margie L. Johnson (*margie.johnson@mnps.org*), Metro Nashville (Tenn.) Public Schools

Cliff Cockerham (*cc149@cornell.edu*), Metro Nashville Public Schools and The Sierra Club of Tennessee, Nashville

Ramesh Kasetty (*rk@fortunapix.com*), FortunaPix, Nashville, Tenn.

Find out how a high school science teacher uses the district's data warehouse to guide instruction and deploy differentiated science. Learn how to apply these data in concert with EPA's Toxic Release Inventory, driving student engagement on local environmental health issues through authentic problem-based learning in the surrounding neighborhood and leveraging free geospatial analysis resources funded by the Bill & Melinda Gates Foundation. Bring laptop computers if you would like to walk through the process of using these resources in the interactive portion of the session.



SESSION 33 (two presentations)

(Middle Level–High School/Supv.) Quincy, Westin Waterfront

President: Bill Zoellick, Schoodic Institute, Winter Harbor, Maine

Professional Learning Partnerships: Fostering Multi-School Communities to Strengthen Science Teaching and Learning (Gen)

Susan R. McKay (*susan_mckay@umit.maine.edu*) and **Erika Allison** (*erika.allison@maine.edu*), University of Maine, Orono

Laura Matthews (*lmatthews@rsu20.org*), Reeds Brook Middle School/University of Maine, Hampden

Bill Zoellick (*bzoellick@schoodicinstitute.org*), Schoodic Institute, Winter Harbor, Maine

Beth Byerssmall, Katahdin Middle High School, Stacyville, Maine

Kelley J. Littlefield (*klittlefield@rsu20.org*), Troy A. Howard Middle School, Belfast, Maine

Carla Magoon, RSU 20/Maine PSP, Bellefart

A panel of science teachers, administrators, and faculty members share their experiences as participants and leaders in the MainePSP, a partnership-driven professional development community.

Curriculum Evaluation Task Force: Making Evidence-guided Decisions and Creating Shared Ownership (Gen)

Michael Wittmann, **Susan R. McKay** (*susan_mckay@umit.maine.edu*), and **Travis Hall**, University of Maine, Orono, Maine

Susan Smith (*ssmith@sad63.org*), SAD #63, Holden, Maine

Andrew Ford, Ellsworth Elementary Middle School PK–4, Ellsworth, Maine

Attention will be paid to a model for facilitating evidence-driven evaluations of the curriculum you currently use or are considering adopting and building stakeholder buy-in.

SESSION 34

Supporting Your Leadership Through Grants (Gen)

(General) Stone, Westin Waterfront

Diana M. Hunn (*dhunn1@udayton.edu*), University of Dayton, Ohio

Discover the basics of how to write a good proposal and where to find sources for money to support your creative ideas. We will review terminology, library resources, online resources, budgets, sample proposals, and more.

**SESSION 35** (two presentations)*(General)**Webster, Westin Waterfront***Using Design Briefs to Bring Engineering into STEM Education** (Gen)**Rebecca Monhardt**, Loras College, Dubuque, Iowa**Leigh C. Monhardt** (*monhardt1@uwplatt.edu*), University of Wisconsin, Platteville

In this session for elementary and middle school teachers, design briefs will be introduced as a vehicle to help infuse engineering into the science classroom.

The GLOBE Program: Teaching the Next Generation Science Standards by Coupling Engineering and Science (Gen)**Marcy Seavey** (*seavey@uni.edu*), Iowa Academy of Science, Cedar Falls, Iowa**David F. Bydlowski** (*bydlowd@resa.net*), Wayne RESA, Wayne, Mich.**Kristin Wegner** (*kwegner@globe.gov*) and **Gary Randolph** (*randolph@globe.gov*), The GLOBE Program, Boulder, Colo.**Jennifer Bourgeault** (*unhglobejen@comcast.net*), North Country Education Services, Stratham, N.H.

GLOBE stands for Global Learning and Observations to Benefit the Environment. The GLOBE Program will present case studies of K–12 GLOBE schools that have intertwined science and engineering in and out of the classroom through coupling engineering with GLOBE protocols and learning activities.

9:30–10:30 AM Workshops**NESTA Session: Effective Strategies for Sharing Climate Change Science and Energy Consumption Implications in the Classroom** (Earth)*(Elementary–High School)*

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.

Explore the scientific foundations of what we know about climate change, greenhouse gases, and energy consumption through effective hands-on and data-rich classroom activities from NESTA.

Our Atmosphere by the Numbers: Scale Models, Ratios, Percent (Env)*(Middle Level–High School)*

157C, BCEC

Lori Lambertson (*loril@exploratorium.edu*), Exploratorium, San Francisco, Calif.

Explore the scale and composition of Earth's atmosphere while integrating science and mathematics. Use scale models and data to build an understanding of our atmosphere.

Digging Through the Layers of Soil Science (Bio)*(Middle Level–High School)*

160B, BCEC

Nancy Bridge (*nancy.bridge@ocps.net*), Olympia High School, Orlando, Fla.

Soil is part of the geochemical cycles and is essential to feeding the world! Come make soil columns and take home curricula for middle school, high school, and APES.

Linking Classroom Lessons to Science Festival Activities (Bio)*(Middle Level/Informal Education)*

160C, BCEC

Deborah K. Leach-Scampavia and **Rosie Albarran-Zeckler** (*rzeckler@scripps.edu*), The Scripps Research Institute, Jupiter, Fla.

Discover a classroom curriculum that ties directly to hands-on science festival activities. Lessons have been developed through a partnership between festival scientists and middle school teachers.

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

(Middle Level) 161, BCEC

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

GenomeCache: How to Make Your Genome Walk (Bio)

(Middle Level–High School) 205A, BCEC

Jennifer Carden and **Madelene Loftin**, HudsonAlpha Institute for Biotechnology, Huntsville, Ala.

Using these free resources, your school can create a genome walk. Use your hallways, nature trails, or practice fields to allow students to stroll through chromosomes 1 through 22, plus X and Y, while learning about genetic points of interest.

It’s No Fun Being on Restriction: Exploring the Health and Learning Connection (Bio)

(Elementary–High School) 205B, BCEC

Linda Pruski (lpruski49@gmail.com), University of Texas Health Science Center, San Antonio

Join me and identify independent/dependent variables while conducting a simple breathing simulation comparing “healthy” with “restricted/obstructed” breathing, learning firsthand the interconnectedness between wellness and cognitive function.

Design It, Explore It (Gen)

(Elementary–Middle Level/Informal Education) 207, BCEC

Michael Koski (koskim@fitchburg.k12.ma.us), Fitchburg (Mass.) Public Schools

Charles H.R. Hutchison (chutchison@edc.org), Education Development Center, Inc., Waltham, Mass.

Discover how to teach in a student-centered manner with low-prep/high-interest engineering and design activities that any teacher can use.

Developing a Community Agricultural System (Gen)

(General) 208, BCEC

Jean L. Hill (laquidahill@gmail.com), Charlton Street School, Southbridge, Mass.

Let’s create model agricultural systems using computer software and physical materials. Identify an area within a geographic region and consider climate, terrain, water

sources, wildlife, and other factors to select livestock and develop processes to economically produce an agricultural product for a community.

CESI Session: Physical Science from Animals! (Gen)

(Elementary) 211, BCEC

Sue Dale Tunnicliffe (lady.tunnicliffe@mac.com), Institute of Education, University of London, U.K.

There is a lot of basic physics to be learned from studying animals. Come talk and do!

Commonalities, Connections, and Crosscutting Capabilities: C’s to Success (Gen)

(Elementary) 213, BCEC

Terri Hebert (thebert@iusb.edu), Indiana University South Bend

In C’s to Success, participants engage in activities designed with a blended approach toward understanding science and literacy through the *Common Core State Standards* and the *NGSS*.

What’s Up? Classroom Activities from the Association of Astronomy Educators, Session II: Beyond the Solar System (Earth)

(Informal Education) 253B, BCEC

Jacob Noel-Storr (jake@cis.rit.edu), Rochester Institute of Technology, Rochester, N.Y.

Wendy M. Van Norden (wendy.m.vannorden@nasa.gov), NASA Goddard Space Flight Center, Greenbelt, Md.

Led by master astronomy teachers from the Association of Astronomy Educators (AAE), join us for classroom-ready, hands-on astronomy activities that really work.

The Balloon-powered Car—Learn It, Create It, Test It, Graph It (Gen)

(Middle Level) 254B, BCEC

Catherine Connolly and **David T. Crowther** (crowther@unr.edu), University of Nevada, Reno

Design and create a balloon-powered car using the laws of motion and graph data gathered to make predictions about the relationship between volume and distance.



Bioengineering Challenges and Middle School Life Science (Bio)

(Middle Level) 259B, BCEC

John N. Howarth and **Maia K. Willcox** (mwillcox@berkeley.edu), Lawrence Hall of Science, University of California, Berkeley

See examples and get ideas about how to illustrate engineering practices into middle school life science through bioengineering activities.

JOIN US AT THE NSTA EXPO #1107

GIVEAWAYS

LIVE PRESENTATIONS

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FREE HANDOUTS

- 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!

NSTA National
Science
Teachers
Association

Using Real Scientific Research to Develop Students' Ability to Analyze and Interpret Data: Making Connections to the Scientific Practices (Bio)

(High School–College) Atlantic 1, Renaissance

Claire J. Scavuzzo, Barbara Hug (bhug@illinois.edu), **Claudia Lutz** (cclutz2@illinois.edu), **Robert Wallon** (rwallon2@illinois.edu), and **Sara Patterson**, University of Illinois at Urbana-Champaign

Experience how to engage students in the analysis and interpretation of real molecular neuroscience data while developing scientific explanations about how gene expression influences behavior.

Deciphering Science Literature! (Gen)

(High School–College) Atlantic 2, Renaissance

Amanda Cherry Grimes, Mesa Biotech Academy, Mesa High School, Mesa, Ariz.

Stephanie C. King (scking@mpsaz.org), Mesa (Ariz.) Public Schools

Want to have your students read “real science literature” but get bogged down and frustrated? Learn simple strategies for helping high school students navigate the complex text required by the CCSS and the NGSS.

Cookbook to Inquiry (Gen)

(General) Pacific D, Renaissance

Cathy K. Northcutt (cathy.k.northcutt@wmich.edu) and **Reneé S. Schwartz** (r.schwartz@wmich.edu), Western Michigan University, Kalamazoo

Create labs that put students at the center of their own learning. Practice strategies and take home inquiry labs that are ready to use today!

Supporting English Language Learners in the Science Classroom (Gen)

(Middle Level–High School) Seaport Ballroom A, Seaport

Robin . Lea, Lincoln Middle School, Portland, Maine

Who are our ELL students? What are their specific educational needs? Learn about literacy and background-building strategies to support ELLs in the mainstream science classroom.

How to Raise Interest in STEM: The Fascinating Examples from European Science Summer Camps (Gen)

(Middle Level–College) Commonwealth A, Westin Waterfront

Louise Bindel (louise.bindel@biodidaktik.uni-halle.de), Martin-Luther-University, Halle, Germany

In our workshop, we will share fascinating activities to engage young people both inside and outside the classroom with science and technological questions of everyday relevance.

Begin with the End in Mind: Creating a Common Summative Performance Assessment Rubric (Gen)

(High School/Supv.) Commonwealth B, Westin Waterfront

Lee Ann Haralambakis (leeann.haralamb@d214.org) and **Paul Fraser**, Rolling Meadows High School, Rolling Meadows, Ill.

How can teachers assess science practices in an authentic and valid manner? Join us as we work together to create a common standards-based lab report rubric. See how this rubric can assess science practices and support student growth for grades 9–12.

Empower ALL Students with Neuroscience (Gen)

(General) Commonwealth Ballroom C, Westin Waterfront

Katrina Scherben, Innovate Manhattan Charter School, Bronx, N.Y.

Kelsey M. Voller (kelsey_voller@icloud.com), Pacific Heights Academy, Sabin, Minn.

Incorporating neuroscience enriches classroom culture, simplifies differentiation, and motivates students. Attend this workshop for resources and strategies for an engaging and diverse classroom.

Closer Look: Integrating Science and Literacy Through Observation (Gen)

(General) Faneuil, Westin Waterfront

Nicole Scola (nscola@neaq.org), New England Aquarium, Boston, Mass.

Presenter: Tania Slywyskij, New England Aquarium, Boston, Mass.

Engage students in new ways to explore the world around them. We will use guided observations to improve students' writing, drawing, and critical-thinking skills.

A Real-Life Page Turner: Award-winning Trade Book Authors Share Their Research Strategies

(Gen)

(General) Harbor Ballroom I, Westin Waterfront

Carrie Launius, St. Louis, Mo.

Emily Brady, Executive Administrator and Manager, NSTA Recommends, NSTA, Arlington, Va.

Amy D. Broemmel (*broemmel@utk.edu*) and **Kristin T. Rearden** (*krearden@utk.edu*), University of Tennessee, Knoxville

Sarah Campbell (*campbell@sarahccampbell.com*), Author/Photographer, Jackson, Miss.

Donna German (*donnagerman@sylvandellpublishing.com*), Sylvan Dell Publishing, Mount Pleasant, S.C.

Wendy Saul, University of Missouri–St. Louis

Melissa Stewart (*melissa@melissa-stewart.com*), Children’s Book Author, Acton, Mass.

Peggy Thomas (*pegtwrite@aol.com*), Middleport, N.Y.

Diana L. Wiig (*dwiig@wyoming.com*), SBOCES, Rock Springs, Wyo.

Interact with noted science trade book authors, learn about their behind-the-scenes research strategies, and show your students real-life examples of linking the NGSS with writing!

DuPont Presents: Mac Attack—Nutrients from Farm to Fast Food

(Gen)

(Middle Level–High School) Otis, Westin Waterfront

Robert Bollier (*rbollier@chesterfieldschools.org*), Cheraw High School, Cheraw, S.C.

Lavyne Rada (*lavyne.rada@hutch.k12.mn.us*), Hutchinson Senior High School, Hutchinson, Minn.

Presenter: Peggy Vavalla, DuPont, Wilmington, Del.

There are six different food substances known to be essential for the human body to function normally. Students need to know and understand the benefits and disadvantages of consuming certain foods that are high or low in these nutrients. Learn how to instruct your students to analyze these food nutrients in making food choices as they perform tests on a popular fast food.

9:30–11:00 AM Special Session

Teacher Researcher Day Session: Finding Meaning Through Teacher Inquiry

(Gen)

*(General)**Plaza Ballroom, Seaport*

Jody Bintz (*jbintz@bscs.org*), BSCS, Colorado Springs, Colo.

Great teachers inquire into their practice—individually and collectively. Learn how small teams of teachers use video of classroom practice and a powerful set of strategies to analyze student thinking and

improve student learning.

Jody Bintz joined BSCS as a science educator in 2004 and she is currently leading work with a number of school districts to develop leadership capacity and improve the coherence of science curriculum, instruction, and assessment. Jody works with a team of national science leaders to develop tools to help teachers deepen their understanding of the NGSS and translate it into their classrooms, and a team of BSCS science educators to develop a video case-based blended learning program for preservice teachers. Jody directed the BSCS National Academy for Curriculum Leadership with more than 30 secondary science leadership teams in the state of Washington.

10:00–11:30 AM Exhibitor Workshop

Hands-On Science with Classroom Critters

(Bio)

*(Grades K–12)**102A, BCEC*

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Add action and excitement to your science class with live organisms! Discover fun, simple hands-on activities you can use in your labs with pill/sow bugs, termites, bess bugs, and butterflies. Learn about care and handling, as well as easy ways to introduce inquiry. Free product samples and literature.

Picking Apart the Owl Pellet

(Bio)

*(Grades K–8)**102B, BCEC*

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

“Whooo” isn’t fascinated by owl pellets? Use this simple product to teach students about food chains, mammalian anatomy, ecology, and more! Join us for this engaging hands-on workshop as we dissect owl pellets, explore Carolina’s Owl Pellet App, and share ways to incorporate this extremely popular product into your lessons.

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.

A World In Motion Primary Literacy-based STEM Workshop (Gen)
(Grades K–3) 104A, BCEC

Sponsor: SAE International

Chris Ciuca and **Julie MacIntyre**, SAE International, Warrendale, Pa.

Looking for a way to introduce STEM into your primary classroom? Join SAE International as we present our A World In Motion (AWIM) Primary Program. This workshop will give participants the tools to offer hands-on STEM activities to young learners through literature.

Environmental Science: The BIOZONE Solution (Env)
(Grades 9–12) 104B, BCEC

Sponsor: BIOZONE International

Richard Allan (richard@biozone.co.nz), BIOZONE International, Hamilton, New Zealand

BIOZONE presents innovative approaches to teaching environmental science for AP and state standards. Find out how BIOZONE’s highly visual, concept-based workbooks provide an effective vehicle for developing student knowledge and skills. Includes case studies, such as Fukushima Nuclear disaster, Gulf of Mexico oil spill, and hydraulic fracturing. Attendees receive free books.

Investigating Gas Exchange (Bio)
(Grades 6–8) 104C, BCEC

Sponsor: LAB-AIDS, Inc.

Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.

Teachers know their students have many misconceptions about respiration. In this activity from the SEPUP’s *Issues and Life Science* program from LAB-AIDS, participants use an acid-base indicator to determine the relative amount of carbon dioxide gas in a sample of their exhaled breath. They consider differences in individual response, explore qualitative vs. quantitative measures, and examine the structure of the lungs and their role in the process of respiration.

Make DNA Replication with 4D Frame (Bio)
(Grades 6–10) 105, BCEC

Sponsor: 4D Land Inc.

Ho Gul Park (4dland@hanmail.net), 4D Math and Science Creativity Institute, Seoul, South Korea

Hannah Lee, 4D Land Inc., Seoul, South Korea

Learn how 4D Frame, an educational tool that helps students understand, can connect the concept and activity together. Using this hands-on activity, students will better understand the DNA Replication Process and have a chance to make it.

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.

RhombOSTEAM: Practice the Art of STEM in K–6 Classrooms (Gen)
(Grades K–6) 107A, BCEC

Sponsor: Ten80 Foundation

Jeannie Ruiz (jruiz@ten80foundation.org), **Beverly Simmons**, and **Jeffery Thompson**, Ten80 Foundation, Charlotte, N.C.

RhombOSTEAM is a long-range project with short term modules and single-day activities. Students ultimately work to meet the challenges of living on SciQ Island. Students learn how to design reasonable solutions to real-world problems. In the process, they use core skills and crosscutting standards to create structures that are both functional and aesthetically beautiful. Come explore Project Based Learning that doesn’t forget the learning!

Learn Chemistry: Assessment and Teaching Tools from The Royal Society of Chemistry (Chem)
(General) 107B, BCEC

Sponsor: The Royal Society of Chemistry

Duncan McMillan (mcmilland@rsc.org), The Royal Society of Chemistry, Cambridge, U.K.

Learn Chemistry is the flagship free education website from the Royal Society of Chemistry, and a third of our users are from the U.S. We’ve been investing in assessment, training, and teaching tools for chemistry education. Come to our workshop to find out more, and try them for yourself.

Be the First to Test Our Dynamic DNA Discovery Kit (Bio)

(Grades 9–College) 107C, BCEC

Sponsor: 3D Molecular Designs

Tim Herman (herman@msoe.edu), Milwaukee School of Engineering, Milwaukee, Wis.

Untwist, unzip, and replicate...or transcribe DNA with this atomically accurate DNA model that transforms from the iconic double helix into a ladder. Join us as we use nylon prototypes of DNA that feature the accurate atomic structure of nucleotides and discuss results. Participation limited.

Connecting the Next Generation Science Standards with the Common Core State Standards (Gen)

(Grades 3–10) 108, BCEC

Sponsor: Scholastic Inc.

Patricia Janes and **Elizabeth Carney**, Scholastic Inc., New York, N.Y.

If you're looking for engaging ways to connect the *Next Generation Science Standards* with the *Common Core State Standards, ELA*—look no further than science magazines. *Scholastic* class-

room magazine editors will team up with science teachers to show you easy ways to seamlessly integrate current science discoveries that are too new for textbooks, the principles of scientific investigation, and reading and writing standards. By the end of the workshop, you'll see why thousands of teachers are already using science magazines in their classrooms—and why you can't afford not to.

iPads in General Science—Digital Microscopy and More! (Gen)

(Grades K–9) 109A, BCEC

Sponsor: Exo Labs, Inc.

Jeff Shaver (drjeffshaver@exolabs.com), Exo Labs, Inc., Seattle, Wash.

Looking to transform students' learning experience in science? 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.

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.

$v^2 = v_0^2 + 2a(x - x_0)$

$F \Delta t = m \Delta v$

$I = \sum mr^2$

$v = \frac{\Delta s}{\Delta t}$

$P = \tau \cos \theta$

NSTA National Science Teachers Association

Perimeter Institute: BrainSTEM Career Moves

(Gen)

(Grades 9–11)

109B, BCEC

Sponsor: Perimeter Institute

Damian Pope (dpope@perimeterinstitute.ca) and **Kevin Donkers** (kdonkers@perimeterinstitute.ca), Perimeter Institute, Waterloo, Ont., Canada

It's difficult for students to choose a career path while in high school. Join us as we introduce Career Moves, an educational resource designed to help students recognize the essential skills needed for career success. We will highlight the important role of STEM in the development of those key skills.

Wind-energized Classroom

(Env)

(Grades 5–12)

151A, BCEC

Sponsor: KidWind Project

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

Join KidWind as we explore classroom wind turbine activities. Play with simple devices you can build for less than \$5 to advanced turbines that explore generators, gearboxes, and airfoils. Learn about WindWise curricula, student design challenges, and web tools to make your classroom come alive with wind-powered science.

Be Moved—Engaging Force and Motion Classroom Activities

(Phys)

(Grades 5–12)

152, BCEC

Sponsor: Arbor Scientific

Buzz Putnam, Whitesboro High School, Marcy, N.Y.

You'll be moved by these engaging force and motion demos presented by award-winning physics teacher Buzz Putnam. These classroom-ready activities include the Stunt Car Lab (inspired by the movie *Speed*), the famous Monkey-Hunter "problem," and a simple way to prove "g" is always the same. Door prizes!

Physiology/PLTW with Vernier

(Bio)

(Grades 9–College)

153A, BCEC

Sponsor: Vernier Software & Technology

John Melville (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

Students gain a deeper understanding of physiology concepts when using sensors to collect their own physiological data. This hands-on workshop will use a variety of sensors with LabQuest 2 or a computer to conduct experiments from Human Physiology with Vernier and Project Lead The Way curricula (PBS, HBS, and MI).

Video Physics with Vernier

(Phys)

(Grades 7–College)

153B, BCEC

Sponsor: Vernier Software & Technology

Matt Anthes-Washburn (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

Interested in creating and analyzing your own videos in your science classroom? Learn how you can use the Video Physics app for iOS to explore science concepts using videos. You will also learn how to extend your analysis using Graphical Analysis for iPad and Logger *Pro* computer software.

Help Students Discover the Science of Everyday Life

(Gen)

(General)

154, BCEC

Sponsor: Discovery Education

Kyle Schutt, Discovery Education, Silver Spring, Md.

Excite your students about the science that's all around them. Join us for a workshop with free resources, a custom curriculum, and interactive activities that bring science and innovation to life...everyday!

Biotechnology Basics

(Bio)

(Grades 9–12)

156A, BCEC

Sponsor: Ward's Science

Presenter to be announced

Whether you're brand new to biotechnology or just looking for fresh ideas, this workshop can equip you with new techniques and methods for bringing cutting-edge science into your classroom. Discover new equipment to help you save time in the classroom, and participate in basic biotechnology labs in a hands-on setting.

MINDSTORMS® EV3 Robotics in the Middle School Classroom—Getting Started

(Gen)

(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.

Plate Tectonics Made Fun**(Earth)***(Grades 6–8)*

157B, BCEC

Sponsor: Texas Christian University Idea Factory

Cedric James (*c.o.james@tcu.edu*) and **Eric Simanek** (*esimanek@tcu.edu*), Texas Christian University Idea Factory, Fort Worth

TCU Pangea Placemat and Cookie Cutter is a kinesthetic learning tool that teaches Earth science at a middle school grade level. Covering the elements that are part of standard science content, the Pangea mat and cutter accelerates discussions of scientific evidence underlying the theory of plate tectonics and allows students to create physical models. For more information, visit www.tcuideafactory.org.

Dynamic Demonstrations from Flinn Scientific**(Chem)***(Grades 9–12)*

258A, BCEC

Sponsor: Flinn Scientific, Inc.

Irene Cesa (*icesa@flinnsci.com*), Flinn Scientific, Inc., Batavia, Ill.

Chemistry in action! Join Flinn Scientific as we present dynamic, exciting, easy-to-perform demonstrations on core chemistry and physical science topics. Discover new demonstrations and refresh your knowledge of classic demonstrations, all guaranteed to make your science classroom come alive! Handouts provided for all activities.

3-2-1 Blast Off!**(Gen)***(Grades 4–8)*

258B, BCEC

Sponsor: Educational Innovations, Inc.

Tami O'Connor, Educational Innovations, Inc., Bethel, Conn.

Get a burst of energy! Join us for things that go bump in the day! Perfect for elementary and middle school teachers teaching energy or Newton's laws. Door prizes and freebies!

10:00 AM–12 Noon Workshop**NSTA Aerospace Share-a-Thon****(Earth)***(General)**Grand Ballroom C–E, Westin Waterfront***Coordinated by members of the NSTA Aerospace Programs Advisory Board**

From airplanes to asteroids, join teachers, industry, and organizations to discover innovative ways to connect students to STEM through aerospace! Kit refractor telescopes are available on a first-come, first-served basis while supplies last.

11:00–11:30 AM Presentations**SESSION 1****SEA: Bringing Real-Time Marine Research to the Classroom****(Env)***(Middle Level–College)*

157C, BCEC

Juliana R. Miller (*jmiller@sea.edu*), Sea Education Association, Woods Hole, Mass.

Suzanne Avtges (*savtges@gmail.com*), Maspee High School, Maspee, Mass.

Join us as we present Sea Education Association's pilot outreach programs with lessons learned, photos/videos, and information on how your students can connect live with our floating classrooms.

SESSION 2**Exploring Appendicular Anatomy Through an Inquiry-oriented Activity****(Bio)***(Middle Level–High School)*

257A, BCEC

Christine Perham (*cperham@rcmahar.org*), Mahar Regional High School, Orange, Mass.

Thomas P. Owen (*towen@educ.umass.edu*), UMass Amherst, Mass.

President: Kathleen S. Davis, UMass Amherst, Mass.

This activity presents a student-centered method for teaching skeletal-muscular relationships. Join us as we demonstrate how students use scientific inquiry skills to construct articulating arm models.

SESSION 3**Teacher Research Day Session: Teacher Research as Professional Development****(Phys)***(Elementary–High School)* *Plaza Ballroom/Group 4, Seaport*

Philip K. Watje, AIMS@UNM (Albuquerque Institute for Mathematics and Science), Albuquerque, N.Mex.

Join me and learn about a school's adventure in establishing teacher research as its professional development. This opportunity to perform teacher research has encouraged the faculty to focus in on a particular aspect of their teaching, collect and analyze data, and come to a conclusion about their investigation.

11:00 AM–12 Noon Meeting**GLBT Science Teachers Roundtable Discussion***Paine, Westin Waterfront*

This roundtable discussion of GLBT issues regarding teachers, coworkers, students, and curricula is sponsored by the GLBT Science Teachers organization. You do not have to be a current member to attend. Any questions? E-mail glbtNSTA@yahoo.com.

**11:00 AM–12 Noon Paul F-Brandwein Lecture
Global Climate Change Meets Ecophobia (Env)**

(General)

210C, BCEC

Sponsored by Paul F-Brandwein Institute, Inc.



David T. Sobel (*dsobel@antioch.edu*), Senior Faculty, Education Department, Antioch University New England, Keene, N.H. @earthvisiontrst

What happens when we lay the weight of the world's burdensome environmental problems on the shoulders of young children? We

overwhelm them, scare them, and alienate them from the natural world. Using a variety of short videos and public service announcements, we'll examine the messages about rain forest destruction and global warming that children are awash in every day. We'll consider why this approach, of scaring children into appropriate environmental behavior, is flawed.

Finally, we'll look at positive examples of educational approaches that connect children to nature, engage them in constructive activities, and provide the foundations for responsible environmental behavior. It is possible to cultivate ecological ethics and behaviors if we can avoid a fear-based approach.

Getting children to think—rather than not-think—about Earth has been a major tenant of David T. Sobel's efforts. He has written extensively on the philosophy of place-based education. His published books include Children's Special Places, Beyond Ecophobia: Reclaiming the Heart in Nature Education; Mapmaking with Children: Sense of Place Education for the Elementary Years; and Place-based Education: Connecting Classrooms and Communities.

Currently, David is director of Teacher Certification Programs in the education department and director of the Center for Place-Based Education at Antioch University New England in New Hampshire. In addition, he was co-founder of the Harrisville Children's Center in New Hampshire, and has served as a publicly elected school board member in both Nelson and Harrisville, New Hampshire. He has served as a staff development and science curriculum consultant to schools in New Hampshire and Vermont and has been a guest speaker and workshop leader for a variety of school and environmental organizations.

David earned his master's degree in elementary education and child development from The Prospect School Teacher Training Program in Vermont and Antioch New England Graduate School in Keene, New Hampshire.

11:00 AM–12 Noon Presentations

SESSION 1

A Short-focused Research Project: When You Look at the Moon, How Does the Shape Seem to Change Over Time? (Earth)

(Elementary)

158, BCEC

Pat Fitzsimmons (*pat.fitzsimmons@state.vt.us*), Vermont Agency of Education, Montpelier

Suzan Locke (*lockes@hartfordschools.net*), White River School, White River Junction, Vt.

Vermont educators have collaborated in order to create a model for a short-focused research project that meaningfully connects the major English language arts instructional shifts for the CCSS and NGSS. A first-grade model will be shared along with a template for projects. The aim is to motivate others to create and share additional short-focused research projects that meaningfully integrate science and ELA standards.

SESSION 2

When Classroom Talk Becomes Scientific (Phys)

(Elementary)

159, BCEC

Susan J. Doubler and **Sally Crissman** (*sally_crissman@terc.edu*), TERC, Cambridge, Mass.

Through the study of two classroom video cases, we'll explore the strategies teachers use to support science discussions that lead to deeper learning for all students.

SESSION 3

The Virtual Lab: Implementing the NGSS and the CCSS (Chem)

(Elementary–High School)

162B, BCEC

Frank Prill (*frankprilljr@gmail.com*), Bolingbrook High School, Bolingbrook, Ill.

Vito M. Dipinto (*vdipinto@nl.edu*), National-Louis University, Wheeling, Ill.

Deanna Murphy (*dmurphy@bpd3.org*), Beach Park Middle School, Beach Park, Ill.

Andrew Bean (*apbean@cps.edu*), Dever Elementary School, Chicago, Ill.

Join us as we present an innovative lab/writing online activity that implements the NGSS and the CCSS for preservice teachers and grades 6–12 science students.

SESSION 4

Linking Science Writing and Research Through The DuPont Challenge© (Gen)

(General) 203, BCEC

Brian P. Short, Director, Science Education Competitions, NSTA, Arlington, Va.

Barbara R. Pietrucha, Point Pleasant, N.J.

Julio Abreu (julio@aplus-media.com), A+ Media, Northbrook, Ill.

Join us to learn a natural way of integrating research and writing into your curriculum that encourages developmental skills necessary for success in STEM and meets local, state, and national standards.

SESSION 5

Defeating Misconceptions in Physics (Phys)

(High School) 206 A/B, BCEC

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

Don't just argue against misconceptions. Learn some tools

that students can use to convince themselves that the common misconceptions they firmly believe are really wrong.

SESSION 6

Climate and the Carbon Cycle (Env)

(Middle Level–High School/Informal Education) 208, BCEC

Candace A. Dunlap, TERC, Cambridge, Mass.

Jim Manley (jmmanley@garlandisd.net), Coyle Middle School, Rowlett, Tex.

Kimberly Phillips, Northwest Rankin High School, Flowood, Miss.

Experience an exciting, free internet-based curriculum module that integrates biology; biogeology; biogeochemistry; and physical, environmental, and Earth system science. Come explore carbon's journey through the oceans, soils, atmosphere, and biosphere. Learn how the carbon cycle drives climate change and reshapes the environment.



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

NSTA Life Members' Buffet Breakfast

Sunday, April 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.



SESSION 7

 **Translating the NGSS for Classroom Instruction** (Gen)

(General) 210 A/B, BCEC
Rodger W. Bybee, Executive Director Emeritus, BSCS, Golden, Colo.

Kim Bess (*kbess@sdcoc.net*), San Diego County Office of Education, San Diego, Calif.

The *Next Generation Science Standards* describe what students need to be able to do at the end of instruction, but don't specify what teachers and students need to do to make it happen in the classroom. This session will look at how educators can design classroom instruction to help their students achieve the standards.

SESSION 8

ASTC Session: Science Centers and Schools = Essential Partners (Gen)

(Middle Level–High School/Supv.) 251, BCEC

Hank Gruner (*hgruner@ctsciencecenter.org*) and **Michael Ross** (*mross@ctsciencecenter.org*), Connecticut Science Center, Hartford

Sandra Inga (*ingas001@hartfordschools.org*), Hartford (Conn.) Public School System

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

This session demonstrates the importance of partnerships to develop instructional opportunities integrating STEM (aligning with the CCSS and NGSS) into a diverse curriculum in core subjects.

SESSION 9


iPads in an Elementary Science Classroom (Gen)

(Preschool–Elementary) 252B, BCEC

Timothy G. Harkins (*tharkins@aps1.net*), West Elementary School, Andover, Mass.

Join me and uncover instructional methods incorporating iPads into the science classroom. Both free and paid apps will be demonstrated.

SESSION 10

 **NSTA Press® Session: Rise and Shine: A Practical Guide for the Beginning Science Teacher** (Gen)

(Middle Level–High School) 254A, BCEC

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

Mary L. Bigelow (*tramaire@gmail.com*), Retired Educator, Middletown, Pa.

Are you new to science teaching? Do you mentor new teachers? We'll share strategies to help new teachers be successful from the very first day.

SESSION 11

The Stories of Graphs (Gen)

(General) 255, BCEC

Carolyn J. Staudt (*carolyn@concord.org*) and **Rachel Kay**, The Concord Consortium, Concord, Mass.

SmartGraphs activities “know” what graphs mean and scaffold students as they tell their understanding of the concepts conveyed in graphs.

SESSION 12

Building STEM with Robotics Competitions for All (Gen)

(Informal Education) 256, BCEC

Caryn Meirs (*caryn.meirs@gmail.com*), Half Hollow Hills Central School District, Dix Hills, N.Y.

Susanne L. Hokkanen (*susanne.hokkanen@gmail.com*), Colin Powell Middle School, Matteson, Ill.

Find out how to start and grow a robotics program in your school for any age group, comfort level, and budget!

SESSION 13

A Visit to the Creation Museum Tells Us Why We Should Teach Evolution (Bio)

(General) 257B, BCEC

Jacob Tanenbaum (*jtanenbaum@socsd.org*), Cottage Lane Elementary School, Blauvelt, N.Y.

Join a discussion on social controversy and science as teacher/author Jacob Tanenbaum describes his visit to Kentucky's Creation Museum and the beliefs presented there.

SESSION 14

★ **Making the Case for Elementary Science Specialists** (Gen)

(Elementary) 260, BCEC

Christina Hwande (*chrishwande@claytonschools.net*) and **Amanda Stephens-Ketzer** (*amandastephens@claytonschools.net*), Ralph M. Captain Elementary School, Clayton, Mo.

Brendan Kearney (*brendankearney@claytonschools.net*) and **Cara Barnes** (*carabarnes@claytonschools.net*), Glenridge Elementary School, Clayton, Mo.

President: Christina Hwande

How can you ensure high-quality science education, provide daily pedagogical and content-based professional development, and align curriculum horizontally and vertically? Come find out!



SESSION 15

The AIAA Educator Academy (Earth)
(General) 261, BCEC
Edgar A. Bering (*ebering@central.uh.edu*), University of Houston, Tex.

Tom Milnes (*thomas.milnes@jhuapl.edu*), The Johns Hopkins University Applied Physics Laboratory, Laurel, Md.
Join the American Institute of Aeronautics and Astronautics to learn about our STEM curriculum modules for K–12 students. This curriculum is free for K–12 teachers.

SESSION 16

What Do They Think? Engaging and Assessing Through the Use of Visual Media (Gen)
(General) Caspian, Renaissance

Bruce Jones (*rbjones@mpsaz.org*), Mesa (Ariz.) Public Schools
Vicki Massey (*vickimassey@cox.net*), NSTA Director, District XIV, Mesa, Ariz.

Grab your students' attention and find out what they are thinking by using cartoons, engaging visuals, and short videos. List of resources provided.

SESSION 17

A Research-based Curriculum for High School Students #2: Biology (Bio)
(High School–College/Informal) Pacific A/B, Renaissance

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

Join us for an overview of four courses about content and research in biology, codeveloped with scientists. Take home the full curriculum with digital activity materials!

SESSION 18 (two presentations)

(General) Pacific F, Renaissance

Relevancy Is Still Relevant: Designing a Lesson for Student Engagement (Gen)

Kimberly Murie (*ksj002@uark.edu*), University of Arkansas, Fayetteville

Elizabeth Kirner, McCullough Intermediate School, Highland Park, Tex.

A lesson plan template will be modeled for use in designing relevant lesson plans, even with topics that seem to be far removed from student interest.

How to Succeed in Teaching Nature of Science Without Really Trying (Gen)

Kimberly Murie (*ksj002@uark.edu*), University of Arkansas, Fayetteville

Elizabeth Kirner, McCullough Intermediate School, Highland Park, Tex.

Using Newton's laws as an example, participants will be shown how easy it can be to incorporate NOS elements into most lessons.

SESSION 19

Combating Deterrents to Success in First-Year Chemistry Courses (Chem)

(College) Pacific G/H, Renaissance

Holly Lawson and **Cynthia Carlson** (*cynthia.carlson@fredonia.edu*), SUNY Fredonia, N.Y.

Barbara Mallette (*barbara.mallette@fredonia.edu*), Professor Emeritus, SUNY Fredonia, N.Y.

Join us as we focus on the use of high and low technology to engage and support diverse learners in introductory chemistry classes.

SESSION 20

The Promise of the NGSS and America's Forgotten Children (Gen)

(General) Constitution, Seaport

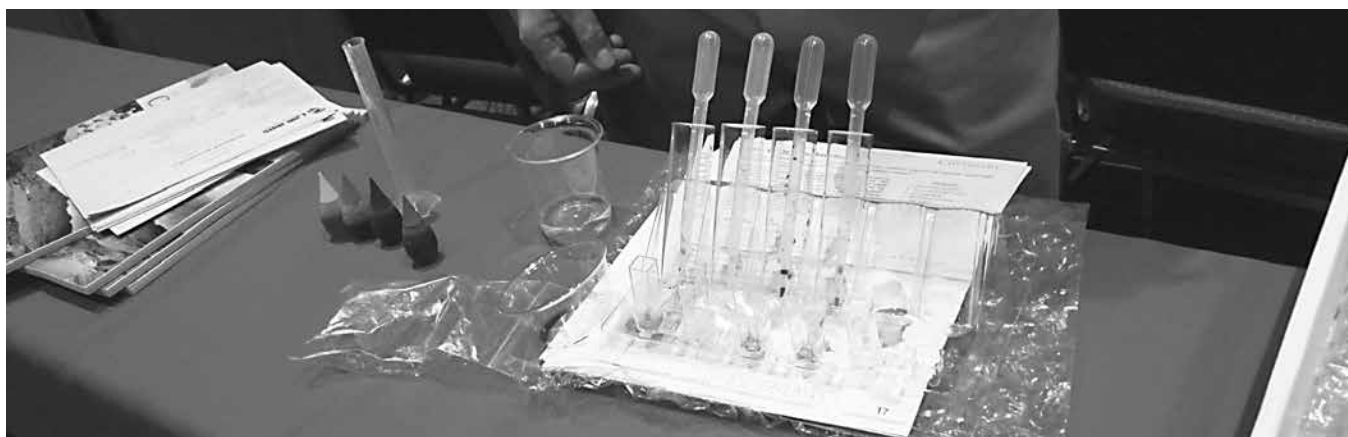
Jerry D. Valadez, Fresno State University, Fresno, Calif.
Will the promise of the NGSS to improve science education and increase opportunity for all children have a chance of success? What about the children of rural America?

SESSION 21

Engineering Your Instruction (Gen)
(High School) Flagship A, Seaport

Bev DeVore-Wedding, Meeker High School, Meeker, Colo.

Come learn how to adapt engineering practices into your instruction! Bring your own lessons or borrow from prepared lessons available at this session.



SESSION 22

Authentic Inquiry: Raise Motivation and Results with Real Science (Gen)

(Middle Level–High School)

Lighthouse I, Seaport

Antony Sherborne (t.sherborne@shu.ac.uk), Sheffield Hallam University, Sheffield, U.K.

Alexandra Okada (a.l.p.okada@open.ac.uk), Open University, Milton Keynes, U.K.

Turn traditional topics into scientific adventures that inspire students, instill scientific thinking, and improve test scores. This is based on a highly successful U.K. middle school curriculum.

SESSION 23

Teacher Researcher Day Session: An International Collaboration: U.S. and Belize Partner to Develop Science Curriculum (Env)

(Middle Level)

Plaza Ballroom/Group 1, Seaport

Cynthia A. Brossman (cab@bu.edu), **Rebecca Sanders-DeMott** (rsdemott@bu.edu), and **Maragret Hendrick** (hendricm@bu.edu), Boston University, Boston, Mass.

Ryan Keser (ryankeser@gmail.com), Lawrence School, Brookline, Mass.

President: Ryan Keser

Two middle school teachers and two Boston University graduate students from GK12 Project GLACIER (Global Change Initiative: Education and Research) teamed up with preservice teachers in Belize to learn firsthand about the rain forest and marine ecology and to develop lessons for their respective classrooms.

SESSION 24 (two presentations)

(General)

Plaza Ballroom/Group 2, Seaport

Teacher Researcher Day Session: Engaging Prospective Teachers in Exploring Climate Change Issues in a Course Integrating Physics and Literacy Learning (Phys)

Emily H. van Zee (vanzeee@onid.orst.edu), Oregon State University, Corvallis

Learn how we explore climate change issues while engaging students in speaking clearly, listening closely, writing coherently, reading with comprehension, and critiquing and creating media.

Teacher Researcher Day Session: Introducing Geospatial Reasoning and Skills into Preservice Teacher Education (Gen)

Michael Jabot (jabot@fredonia.edu), SUNY Fredonia, N.Y.

Paul Nagel (go4fan@suddenlink.net), Pleasant Hill High School, Pleasant Hill, La.

We will describe how we have woven GPS/GIS into our preservice teacher preparation programs with the intention of encouraging our candidates to get their students out into local environments and interacting with science where it occurs. One of the most important outcomes for students is helping them discover the power of seeing patterns in data and how intuitive deeper analysis of these patterns can be.

SESSION 25

Teacher Researcher Day Session: Personalizing Science: Strategies for Engaging Diverse Students with Socio-scientific Issues (Bio)

(Middle Level–High School)

Plaza Ballroom/Group 3, Seaport

Robert M. Danielowich (rdanielowich@adelphi.edu), Adelphi University, Garden City, N.Y.

Join a discussion on real-life dilemmas that intersect with science and explore five SSI instructional strategies that can engage a fuller variety of learners in any lesson.

SESSION 26**Love That Dirty Water—Celebrating the Leadership of Rita Barron in Saving the Charles River (Env)***(General)* *Alcott, Westin Waterfront***Daniel P. Carroll** (*daniel.carroll@apsva.us*), **Mike Zito**, and **Steve Papelian** (*stevepapelian@att.net*), Yorktown High School, Arlington, Va.

Come join the Yorktown Yahoos in a rousing jug band tribute to Rita Barron and the Charles River Watershed Association. Find out how grassroots efforts were responsible for one of the world's most successful environmental comebacks.

SESSION 27**Science, Pseudoscience, and Science Denial (Gen)***(General)* *Burroughs, Westin Waterfront***Paul K. Strode** (*paul.strode@bvsd.org*), Fairview High School, Boulder, Colo.

Join a discussion on irrational thinking in light of evidence and how it has led to an epidemic of pseudoscience and science denial in the U.S.

SESSION 28 (two presentations)*(General)* *Lewis, Westin Waterfront***Using Google Earth in the Classroom (Gen)****Wendy Van Norden** (*wvannorden@hw.com*), Harvard-Westlake School, Studio City, Calif.

Walk away with an introduction to the basic uses of Google Earth, demonstrating techniques such as adding placemarks, pictures, overlays, and profiles...and creating lessons. Examples of Earth Science Google Earth exercises will be highlighted.

Google Earth, ImageJ, and GIS: Tools to Investigate and Communicate About Environmental Change (Env)**Susan Kelly**, NOAA Living Marine Resources Cooperative Science Center, Princess Anne, Md.**Bhavna Rawal** (*bhavnadrawal@gmail.com*), Victory Early College High School, Houston, Tex.**Vin Urbanowski** (*vurbanowski@aitestamford.org*), Academy of Information Technology & Engineering, Stamford, Conn. Learn about free and open-source software that can support your students' ability to measure environmental change. Samples of student investigations will be provided.**SESSION 29****National Board Certification: Transforming Teaching and Learning (Gen)***(General)* *Stone, Westin Waterfront***Michael T. Harms** (*michaeltharms@hotmail.com*), Katherine Delmar Burke School, San Francisco, Calif.

Looking for professional growth that will transform your teaching and your students' learning? Learn about National Board Certification and how to bring the program to your school.

SESSION 30**Partnerships for Engineering Education: MESA/UTeachEngineering/Shades of Blue (Gen)***(General)* *Webster, Westin Waterfront***Cheryl Farmer** (*cheryl.farmer@mail.utexas.edu*), The University of Texas at Austin**Oscar F. Porter**, University of California, Oakland

Learn about an engineering education partnership among Mathematics, Engineering, Science Achievement (MESA); UTeachEngineering; and Shades of Blue that prepares high school students to succeed in rigorous university STEM programs.



11:00 AM–12 Noon Workshops

NESTA Session: High-Impact Classroom Earth Science in a STEM World (Earth)

(Elementary–High School) 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 workshop presents exemplary activities addressing fundamental concepts in Earth system science with an emphasis on the solid Earth, STEM practices, and the NGSS.

Elastic Power: Wind Up Your Engines and Explore (Phys)

(Elementary–Middle Level) 160A, BCEC

Norm B. Barstow (*barstow@hartford.edu*), Hartford, Conn. Make learning a snap in your classroom. Use an elastic-powered wooden car to explore the concepts of energy transfer, force, and motion. Continued exploration focuses on mass, friction, inertia, and momentum.

Birds Bring Your Science Class Alive (Bio)

(Elementary–Middle Level/Informal Education) 160B, BCEC

Ileana Betancourt (*iab27@cornell.edu*), Cornell Lab of Ornithology, Ithaca, N.Y.

Let learning take wing in your classroom. Join this group of educators for an interactive hands-on presentation of ideas, activities, and resources that teach fun and engaging science through birds.

It's All Related! DNA Content and the NGSS (Bio)

(Middle Level–High School) 160C, BCEC

Jennifer L. Myka, Kenton County Academies of Innovation and Technology, Edgewood, Ky.

Presider: Thomas B. Brackman, Northern Kentucky University, Highland Heights

Your personal content specialist explains how DNA's structure relates to two NGSS Life Science topics using hands-on activities. Take home a free CD of all materials.

STEM Connections: Using Hands-On Inquiry and the NGSS (Gen)

(General) 162A, BCEC

Judith Lucas-Odom (*judyps23@yahoo.com*), Toby Farms Middle School, Brookhaven, Pa.

Use STEM and inquiry to connect with the *Next Generation Science Standards*. Walk away with the ability to integrate the

NGSS into your curriculum as well as the *Common Core State Standards* using inquiry-based education through STEM.

Using NASA Mission Data to Teach Graphing Skills (Earth)

(Middle Level–High School) 204 A/B, BCEC

Edna DeVore (*edevore@seti.org*) and **Gary Nakagiri** (*gnakagiri@seti.org*), SETI Institute, Mountain View, Calif.

Experience how to use graphing software and Kepler Mission data to improve students' understanding of graphs, models, and Kepler's laws. NASA classroom resource materials provided.

Linking the NGSS and Scientists' Work to Integrate the Nature of Science: The Changing Model of the Tree of Life (Bio)

(Middle Level–High School) 205A, BCEC

Chandana Jasti, **Barbara Hug** (*bhug@illinois.edu*), and **Claudia Lutz** (*cclutz2@illinois.edu*), University of Illinois at Urbana-Champaign

Explore activities that link the NGSS to scientific research and teach students about the nature of science through the changing model of the tree of life.

English Language Learners and the Next Generation Science Standards I (Bio)

(General) 205B, BCEC

Ron W. Rohac (*ron@rohac.com*), Riverside, Calif.

This hands-on workshop will demonstrate how to build science vocabulary and improve reading comprehension to meet the challenges of the NGSS. Handouts!

The Rube Goldberg Machine Contest: Invention in the Classroom (Phys)

(General) 205C, BCEC

Jennifer George (*puffmommy@msn.com*), Rube Goldberg, Inc., Wespport, Conn.

Shawn S. Jordan (*ssjordan@alumni.purdue.edu*), Arizona State University, Mesa

Rube Goldberg Machine Contests challenge middle school, high school, and college students to build complex inventions that complete simple tasks while linking STEM and the arts.

Discourse: How to Talk the Talk (Gen)
(Elementary–Middle Level/Informal Education) 207, BCEC

Sandra Lee-Takei (sandra@crscience.org) and **Teresa Barnett** (community@crscience.org), Community Resources for Science, Berkeley, Calif.

Presider: Teresa Barnett

Join us as we guide you through learning how to effectively facilitate and assess discourse in your classroom by engaging directly with useful tools firsthand.

The Science of Solubility: Using Reverse Engineering to Brew a Perfect Cup of Coffee (Chem)

(Middle Level–College) 209, BCEC

Andrew B. West (andrew.west@wku.edu), Western Kentucky University, Bowling Green

Aaron J. Sickel (sikel@ohio.edu), Ohio University, Athens
Tired of teaching the same old grind? Come deconstruct different coffee makers, propose explanations for their design features, and then use your proposed explanations to craft a perfect cup of coffee!

Celebrate Science and Reading Throughout the Seasons and Holidays (Gen)

(Elementary–Middle Level) 211, BCEC

Chelsea K. Kennedy and **Taylor S. Hamilton**, Texas Tech University, Lubbock

Engage students in favorite hands-on science activities incorporating literature connections for seasons and holidays. Celebrate by creating a classroom where students read, write, and explore.

The Art of Science Notebook Observations (Gen)
(Elementary) 212, BCEC

Keri Porter, LAUSD and UCLA Center X, Carson, Calif.
The elements of art will be a means to bridge the gap between student observations, their preconceived ideas, and content knowledge.

The Science Behind the Boston Tea Party (Gen)
(Elementary) 213, BCEC

Tracey K. Graham (indiansprings18@yahoo.com), Westgate Elementary School, Columbus, Ohio

Using a variety of literature, participants will check out and test the science behind the event! They will complete two different labs, including testing a variety of types of tea in different temperatures of water as well as in different types of water (fresh and salt) while making observations and conclusions.

Record and Analyze Seismic Data in the Classroom with Free IRIS Software! (Earth)

(Middle Level–College) 254B, BCEC

Tammy Bravo (tkb@iris.edu), IRIS, Washington, D.C.

Monitor Earth from your classroom! Display real-time data from school seismographs or nearby professional seismometers. Students can determine earthquake locations, magnitudes, and more.



3-2-1 Blastoff! (Phys)

(Elementary–Middle Level) 259B, BCEC

Mary Rizzuto, Needham Science Center, Needham, Mass.

Peg LeGendre (plegendre@gmail.com), MIT, Cambridge, Mass.

Presider: Peg LeGendre

Come design a rocket as we cover physical science content and engineering design principles. Pick up strategies for classroom use and plans for a simple soda bottle–propelled rocket launcher.

20 in 20 (Bio)

(High School–College) Atlantic 1, Renaissance

Whitney C. Hagins, MassBioEd, Lexington, Mass.

Make your AP Biology course more inquiry based and student centered! Come learn about 20 exciting, informative 20-minute activities.

High Tech, Low Tech, No Tech? Differentiating for Diverse Student Populations and Interests! (Gen)

(General) Atlantic 2, Renaissance

Kenneth Davis, Brackenridge High School, San Antonio, Tex.

Join us as we model a menu-style lesson aimed at differentiating for multiple levels of student needs, incorporating a variety of options for your students. We will present a lesson modeling different options, involving apps for iPads and smartphones, interactive notes and journals, index cards, and hands-on activities.

Student Research—Getting a Good Idea Is the Hardest Part (Gen)

(General) Pacific D, Renaissance

Dan Plas (plasdt@utpa.edu) and **Tim Sears** (tjsears@utpa.edu), The University of Texas–Pan American, Edinburg

Come explore ways to generate original feasible ideas for student research—a problem that often frustrates students and teachers.

ASTE Session: The Circus Is Coming to Town—Center of Gravity, STEM Design Challenge (Gen)

(Middle Level–High School) Pacific E, Renaissance

Mia Dubosarsky (*mdubosarsky@wpi.edu*), Worcester Polytechnic Institute, Worcester, Mass.

This workshop engages middle school and high school teachers in a STEM design challenge that focuses on the topics of center of gravity and balance.

Engineering the Internet (Gen)

(Middle Level–High School) Seaport Ballroom A, Seaport

Kelly M. Shepard (*kshepar1@iit.edu*), Illinois Institute of Technology, Chicago

Through the use of hands-on activities and inexpensive materials, learn about the nature of engineering with a focus on the internet.

LGBTQ Safe Space Training for STEM Teachers (Gen)

(Elementary–High School) Commonwealth A, Westin Waterfront

Jenny Betz (*jbetz@glsen.org*), GLSEN, New York, N.Y.

Eric V. Patridge (*eric.patridge@ostem.org*), oSTEM, West Haven, Conn.

STEM teachers will learn about students' diversity of gender expression and sexual orientation and discover how to develop safe space strategies explicitly tailored to the STEM classroom.

Fun Family STEM Learning Experiences Created by Community Partnerships (Gen)

(General) Commonwealth Ballroom C, Westin Waterfront

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

Wendy S. Goldfein and **Cheryl Nelson**, Newington Forest Elementary School, Springfield, Va.

Discover hands-on activities that engage the entire family and learn how to partner with businesses and universities to host family STEM events in your community.



11:00 AM–12 Noon Exhibitor Workshop

Climate Series III: U.S. Forest Service Climate Change Education Resources (Earth)

(Grades 6–12) 156C, BCEC

Sponsor: NOAA

Victoria Arthur, U.S. Forest Service, Washington, D.C.

Explore Forest Service climate change education resources. Collect and enter tree data to quantify and value services trees provide. Learn about computer modeling and potential effects of different emissions scenarios on birds and trees. Bring climate change closer to home; helping to answer, “What does climate change mean to me?”

11:00 AM–1:00 PM AMSE Town Hall Meeting
Following the Lead of the *Next Generation Science Standards: All Standards, All Students*

Lighthouse II, Seaport

Facilitators:

Cherry C. Brewton (*cbrewton@georgiasouthern.edu*), AMSE Past President, Statesboro, Ga.

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

Special Panelist: **Emily Miller** (*emilycatherine329@gmail.com*), NGSS Writer, and Madison (Wis.) Metropolitan School District

Panelists:

Kathy D. Thigpen-Wright (*kathydwright@hotmail.com*), NSTA Director, Multicultural/Equity in Science Education, and Hughes STEM High School, Cincinnati, Ohio

Sharon J. Delesbore (*sjd.opportunity@yahoo.com*), Association for Multicultural Science Education, Houston, Tex.

Veronica D. Betancourt (*sciencebuggin@gmail.com*), Intercultural Development Research Association, San Antonio, Tex.

Sue Ford (*top9teach6@aol.com*), Retired Educator, Rocky Mount, N.C.

Pamela O. Gilchrist (*pogilchr@ncsu.edu*), North Carolina State University, Raleigh

Bobby J. Jeanpierre (*bobby.jeanpierre@ucf.edu*), University of Central Florida, Orlando

Joe Moore (*joejoejoemoore@gmail.com*), Wheelless Road Elementary School, Augusta, Ga.

Lovelle Ruggiero (*lovelruggiero@mac.com*), New Rochelle, N.Y.

Melissa Campanella (*melissa.rae.campanella@gmail.com*), Noel Community Arts School, Denver, Colo.

With the increase of learner diversity in our classrooms, the *Next Generation Science Standards (NGSS)* make it clear that concerns about equity should be at the forefront of efforts to improve and support learning for all students. What are the strategies and what are the promises? Join our discussion and share your ideas!

Visit www.amsek16.org for more information.



12 Noon–12:30 PM Presentation

SESSION 1

Teacher Researcher Day Session: Science Inquiry Group Network (Gen)

(General)

Plaza Ballroom, Seaport

Emily H. van Zee (*vanzee@onid.orst.edu*), Oregon State University, Corvallis

Deborah Roberts-Harris (*drober02@unm.edu*), University of New Mexico, Albuquerque

Join our conversation about ways to inquire into science learning and teaching.

12 Noon–1:00 PM Exhibitor Workshop

Climate Series IV: Lunch with Climate Scientists and Educators—Bring Your Own Lunch! (Earth)

(Grades 6–12)

156C, BCEC

Sponsor: NOAA

Victoria Arthur, U.S. Forest Service, Washington, D.C.

Bruce Moravchik, NOAA, Silver Spring, Md.

LuAnn Dahlman, NOAA, Mesa, Ariz.

Linda M. Morris, Dartmouth College, Hanover, N.H.

Jay Johnson, University of Wisconsin, Madison

What do you want to learn about climate change? Where to find high-quality education resources? How to address student misconceptions? What the latest research tells us? Join informal one-on-one discussions with scientists and educators about issues surrounding climate change. Come prepared with your questions!

12 Noon–1:30 PM NSTA/SCST College Luncheon

Interactive Engagement in the Introductory Physics Sequence: Implementing Elements of the SPIN-UP Report

(Ticket Required: \$65)

M-6 Atlantic 3, Renaissance



Michael Jackson (jacksonm@cwu.edu), Professor of Physics, Central Washington University, Ellensburg

Since the publication of the Strategic Programs for Innovations in Undergraduate Physics (SPIN-UP) report, the physics department at Central Washington University has been implementing various recom-

mendations to strengthen its program. A critical element has been the transformation of the introductory physics sequence from a traditional format to an integrated, activity-based lecture/lab environment, similar to the SCALE-UP model. The SCALE-UP name originally stood for “Student-Centered Activities for Large Enrollment Undergraduate Physics,” but since its conception many different institutions have begun teaching a variety of courses of various sizes. Join Michael Jackson as he outlines some of these activities and how they can be applied to disciplines beyond physics.

Michael Jackson is a professor of physics at Central Washington University (CWU). His ongoing scientific research is on the discovery and measurement of laser radiation in the terahertz region, with applications in molecular spectroscopy. In carrying out these investigations, he has consistently and productively engaged undergraduates in this research and mentored them as partners in the scientific process. One significant measure of this is that undergraduates have served as co-authors on about 80% of the peer-reviewed manuscripts he has published as a faculty member. His research has been continuously funded by several agencies and organizations, including the National Science Foundation and NASA’s Space Grant Consortium, for nearly 15 years.

As chairperson of the physics department, Michael revamped the introductory physics sequence as well as addressed unmet student and department needs to incorporate meaningful research experiences for undergraduates, which has spurred growth in the number of physics majors.

Michael is recipient of the 2013 David Halliday and Robert Resnick Award for Excellence in Undergraduate Physics Teaching given by the American Association of Physics Teachers. He holds a PhD in physics from New Mexico State University.

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

12 Noon–1:30 PM Exhibitor Workshops

Introduction to Wisconsin Fast Plants® (Bio)

(Grades K–12)

102A, BCEC

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Experience the versatility of Wisconsin Fast Plants. These small, quick-growing plants are ideal classroom tools for all learning levels. Learn the basics for successful planting, flower dissections, and pollination. Integrate plant development, life cycle, environmental effects, genetics, and evolution into your class with these amazing plants. Door prizes!

Strawberry DNA and Molecular Models (Bio)

(Grades 9–12)

102B, BCEC

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

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

A World In Motion Elementary STEM Workshop

(Phys)

(Grades 4–6)

104A, BCEC

Sponsor: SAE International

Julie MacIntyre, SAE International, Warrendale, Pa.

Rick Comeau, Cape Neddick, Maine

Looking for an exciting and engaging way to introduce your students to STEM? Come join us to experience SAE International’s award-winning A World In Motion (AWIM) Program. Participants will have a chance to build the popular JetToy car as well as experience the Skimmer and Gravity Cruiser in a fun, interactive session.

Making Science Notebooks FOLD-tastic (Gen)

(General)

104B, BCEC

Sponsor: Dinah-Might Adventures, LP

Nancy Wisker (nancy@dinah.com), Dinah Zike Academy, Comfort, Tex.

Cut, fold, and more in this hands-on workshop as you construct Notebook Foldables® that are sure to make your students’ science notebooks FOLD-tastic. Use basic classroom materials and depart with a mini-composition book made on-site that is filled with immediately usable ideas.

Designing Coastal Breakwaters (Earth)*(Grades 6–8)**104C, BCEC*

Sponsor: LAB-AIDS, Inc.

Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.

When is the last time you engineered a coastal breakwater? Here's your chance! In this lesson from SEPUP's *Issues and Earth Science* program from LAB-AIDS, students analyze the trade-offs of different designs. The lesson provides a model for combining student exploration and problem solving that uses the NGSS practices as well as content from science and engineering.

STEM Education Using Robotics ROBOTIS Kits: Project-based Building and Curriculum (Gen)*(Grades 3–12)**105, BCEC*

Sponsor: ROBOTIS Inc.

Rachel Miller (kidslab@robotis.com) and **Aaron Park**, ROBOTIS Inc., Irvine, Calif.

Join us as we demonstrate how to use robotics kits for STEM education in classrooms, enrichment classes, or after-school programs. Also, learn about some of our robot kits and hands-on activities.

Perimeter Institute Physics Teacher Network (Phys)*(Grades 9–College)**109B, BCEC*

Sponsor: Perimeter Institute

Greg Dick (gdick@perimeterinstitute.ca), Perimeter Institute for Theoretical Physics, Waterloo, Ont., Canada

Looking for an opportunity to bring the wonder of science to life? The Perimeter Institute Teacher Network is a group of educators spanning the globe committed to providing cutting-edge educational opportunities. We will introduce you to the network and provide you with the opportunity to join other committed educators making a difference.

Offshore Wind (Env)*(Grades 5–12)**151A, BCEC*

Sponsor: KidWind Project

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

Propel new learning in your classroom. Build a wind turbine that can work on the water and learn the engineering behind tower building.

Physics with Vernier (Phys)*(Grades 9–College)**153A, BCEC*

Sponsor: Vernier Software & Technology

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

Conduct a variety of physics 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!

Inquiry-based Chemistry with Vernier (Chem)*(Grades 9–College)**153B, BCEC*

Sponsor: Vernier Software & Technology

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

Involving your students in inquiry-based chemistry can be easy and fun. Many investigations have already been designed and tested in our lab book, *Investigating Chemistry through Inquiry*. In this engaging hands-on workshop, come learn how to conduct an inquiry-based chemistry investigation using Vernier sensors with a LabQuest 2.

Discovery Education Science Techbook—The Student Experience (Gen)*(General)**154, BCEC*

Sponsor: Discovery Education

Patti Duncan, Discovery Education, Lakeville, Pa.

Walk through the door of this workshop and experience the life of a digital student in a Discovery Education classroom. Take advantage of the great resources available for classwork, homework, and beyond. No matter what your tech situation is—you will learn how to transform your classroom. Who knows? You might even enjoy the homework.

Coaching Science Olympiad with Confidence (Chem)*(Grades 6–12)**156A, BCEC*

Sponsor: Ward's Science

Kelly Price, Forsyth County Schools, Cumming, Ga.

Coaching Science Olympiad this year? Learn how to spend more time preparing your team, and less time preparing materials with Ward's Science Olympiad Kits. In this "make and take" workshop, you'll work in groups to incorporate key STEM concepts as you build and test the Rotor Egg Drop kit to see whose creation will make it—and whose will break it!

Machines and Mechanisms for ALL Ages (Gen)

(Grades K–6) 156B, BCEC

Sponsor: LEGO® Education

Kelly Reddin, LEGO Education, Pittsburg, Kans.

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 Scientific Activities to Integrate STEM Education (Gen)

(Grades 6–12) 258A, BCEC

Sponsor: Flinn Scientific, Inc.

Janet Hoekenga (jhoekenga@flinnsci.com), Flinn Scientific, Inc., Batavia, Ill.

This interactive hands-on workshop can help you integrate STEM inquiry and design principles into your science curriculum. Join Flinn Scientific in a “build-it-yourself” lab project that can actively engage your students and increase their understanding of concepts that cut across scientific disciplines. Interactive demonstrations highlight inquiry skills and reasoning based on the evidence. Handouts provided for all activities!



12 Noon–2:00 PM Aerospace Educators Luncheon

How the Skills I Learned as a Teacher Helped Me Become an Astronaut

(Ticket Required: \$65) M-8 Grand Blrm. A/B, Westin Waterfront

Speaker sponsored by Northrop Grumman



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

@AstroAcaba

Join NASA astronaut Joseph Acaba as he shares how his teaching experience led him to become one of four NASA educators to travel to space.

Hear how the skills that educators use and develop in the classroom served him in transitioning from a middle school teacher to an astronaut candidate and from a shuttle mission specialist to a flight engineer for a four-month stay onboard the International Space Station. He will also discuss his decision to pursue an advanced degree, focusing on learning more about the vital role educators play in developing soft skills that allow students to fulfill their potential as individuals and make similar transitions into future leaders of this country.

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 at Melbourne High School, Florida, and middle school math and science at Dunnellon Middle School, Florida.

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. He also was manager of the Caribbean Marine Research Center at Lee Stocking Island in the Exumas, Bahamas.

Joseph is the first person of Puerto Rican heritage to serve as an astronaut and has carried the Puerto Rican flag with him in space. Completing his NASA training in 2006, astronaut Acaba was assigned to STS-119 to deliver the final set of solar arrays to the International Space Station. An intra-vehicular crew member for two U.S.-based spacewalks, he assisted in the restoration of a critical power unit and in exchanging a faulty camera on the station's robotic arm. Joseph has also conducted numerous scientific research experiments while in space.

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

12 Noon–2:00 PM CESI/NSTA Elementary Science Luncheon

Enabling Children's Nature Connections and Early Science Learning Momentum

(Ticket Required: \$65) M-7 Harbor Blrm. II, Westin Waterfront



Susan H. Wirth (swirth@natureexplore.org), Outreach Director, Nature Explore, Dimensions Educational Research Foundation/Nature Explore, Lincoln, Neb.
@Nature_Explore

Join Susan Wirth and gain hands-on experience with research-based, field-tested principles for develop-

mentally appropriate outdoor learning environments that support young children's deep connection with nature and inspire long-term interest in science learning. Come discover ways to strengthen children's close observation skills and contextual science learning in nature-rich outdoor classrooms, while also supporting skill development across all learning domains! This luncheon presentation will include free, take-away resources for all participants including hands-on teaching materials and print resources.

Susan Wirth constantly seeks and embraces innovative ways to make nature part of children's daily lives. Susan is a Nature Explore outreach director for the Arbor Day Foundation and Dimensions Educational Research Foundation. She has been involved in the creation of the Arbor Day Foundation's youth education materials for video, web, and print, including educational content for the Arbor Day National Poster Contest, reaching nearly two million students nationwide and a Nature Explore Families' Club in use across the country.

Susan has secured Eisenhower Mathematics and Science Education grant funding for seven consecutive years to offer inservice and preservice teacher workshops in collaboration with 11 colleges and universities across Nebraska. She organized and instructed at these teacher workshops that focused on teaching environmental science in developmentally appropriate ways and using nature investigations to interest girls in science.

Susan is a member of the International Nature Action Collaborative for Children. She holds degrees in education and zoology from the University of Nebraska—Lincoln and a degree in Medical Technology from the University of Nebraska Medical Center.

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

12:30–1:00 PM Presentations

SESSION 1

Storytelling and Collaborative Projects in Online Biology Classes (Bio)

(High School—College)

Atlantic 1, Renaissance

Mike Tveten (mtveten@pima.edu), Pima Community College, Northwest Campus, Tucson, Ariz.

Join me as I share my permanent website of biology stories created by students, and explain how my students work collaboratively building web pages on applied concepts.

SESSION 2

Teacher Researcher Day Session: Systems Thinking in the Context of Climate Literacy (Gen)

(High School)

Plaza Ballroom/Group 2, Seaport

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

The complexities of Earth's climate can be understood through explicit teaching of system dynamics. Discussion centers on research that assists learners to think systematically.

SESSION 3

Teacher Researcher Day Session: Critical Choices, Critical Content, and Critical Literacies (Gen)

(General)

Plaza Ballroom/Group 3, Seaport

Michael Jabot (jabot@fredonia.edu), SUNY Fredonia, N.Y.

Review results of an integrated approach using the *Common Core State Standards, ELA* and the *Next Generation Science Standards* to help shape students' understanding of climate and climate change through critical literacies.

12:30–1:30 PM Special Session

NESTA Advances in Earth and Space Science Lunchtime Lecture (Earth)

(General)

052 A/B, BCEC

Join us to hear from a scientist about the forefront of Earth and space science research on a topic relevant to classroom instructional needs. Visit www.nestanet.org for more information.

12:30–1:30 PM Presentations

SESSION 1 (two presentations)

(Elementary–Middle Level/Informal) 158, BCEC

Asking, Imagining, Arguing—Using Books to Provide Examples of Science Practices in Action (Gen)

Kristin T. Rearden (krearden@utk.edu) and **Amy D. Broemmel** (broemmel@utk.edu), University of Tennessee, Knoxville

The *Next Generation Science Standards* identify eight science practices essential for all students to learn. Books can provide young scientists with examples of these practices in action.

Claim and Evidence in Every Content Area: Linking Science with Other Disciplines Through Argumentation (Gen)

Sarah Davis, Mario Umana Academy, Boston, Mass.

Join me as I highlight how our school has successfully linked the critical practice of argumentation in science with argumentation in other content areas.

SESSION 2

Simple Machine Junkyard Cars (Phys)

(Middle Level) 159, BCEC

Chris Herald (chrish@usd383.org), Eisenhower Middle School, Manhattan, Kans.

Building mini-junkyard vehicles is a great way to allow students to problem solve through a hands-on STEM project. All designs include three simple machines.

SESSION 3

Leaders in Science: A Partnership Between Formal and Informal Science Education (Gen)

(Preschool–Middle Level/Informal Education) 160A, BCEC

Lisa Dwinal (lisa.dwinal@perotmuseum.org) and **Nicole Bates** (nicole.bates@perotmuseum.org), Perot Museum of Nature and Science, Dallas, Tex.

Discover how one museum has established a partnership with area school districts to help elementary science teachers build confidence and creativity in delivering science instruction.

SESSION 4

Science Literacy Is for the Birds: How to Use Field Guides to Leverage Science Time (Bio)

(Elementary–Middle Level) 160B, BCEC

Carol J. Mahan (carol.mahan@mdc.mo.gov) and **Patricia J. Holloway** (pat.holloway@mdc.mo.gov), Missouri Dept. of Conservation, Puxico

How do we engage children in science and connect to the world around them? Come hear how field guides can provide answers to these questions.

SESSION 5

Peering into the Telescope with PBS LearningMedia (Earth)

(General) 205C, BCEC

John Sessler (jbsessler@pbs.org), PBS, Arlington, Va.

Investigate the solar system, peer into distant galaxies, and show your students how astronauts, scientists, and astronomers interact with their environment using PBS LearningMedia!

SESSION 6

Renewable Energy Engineering Project (Env)

(Middle Level–High School) 206 A/B, BCEC

Charles R. Mixer (cmixer@sch.ci.lexington.ma.us) and **Michael Horesh** (mhoresh@sch.ci.lexington.ma.us), Lexington High School, Lexington, Mass.

Students research, design, and build small-scale inventions that use renewable resources like solar radiation to solve a human need.

SESSION 7

ACS ChemClubs—Engaging Students Outside the Classroom (Chem)

(General) 209, BCEC

Karen M. Kaleuati (hschemclubs@acs.org), American Chemical Society, Washington, D.C.

The American Chemical Society ChemClub is a high school chemistry club that provides students with a unique opportunity to experience chemistry beyond the classroom. Join us to learn about this free and fast-growing program, and how you can easily start your own ChemClub with support and free resources from ACS.



SESSION 8

NGSS@NSTA Finding and Evaluating Resources for NGSS—The EQuIP Rubric and the NGSS@NSTA Hub (Gen)*(General)* 210 A/B, BCEC**Molly Ewing** (*mewing@achieve.org*), Achieve Inc., Washington, D.C.**Joseph Krajcik**, Michigan State University, East Lansing
Flavio Mendez, Senior Director, Learning Center/SciLinks, NSTA, Arlington, Va.**Ted Willard** (*twillard@nsta.org*), Program Director, COMPASS, NSTA, Arlington, Va.

To aid the search for resources that support NGSS, NSTA and Achieve have been working with science educators across the country to develop the EQuIP (Educators Evaluating the Quality of Instructional Products) Rubric for determining whether resources address the letter and spirit of the standards. In addition, NSTA has formed a group of 55 curators that are using this rubric to identify resources. These resources will be one of many features of the NGSS@NSTA Hub, a new digital destination to support educators' implementation of NGSS.

SESSION 9

ASTC Session: Connecting Science and Literacy: The National Writing Project and Science Centers (Gen)*(General)* 251, BCEC**Tanya Baker** (*tbaker@nwp.org*), University of California, Berkeley**Margaret Glass**, Association of Science-Technology Centers, Washington, D.C.**Alana Kulesa** (*kulesa@carnegiesciencecenter.org*), Carnegie Science Center, Pittsburgh, Pa.**Steve Fulton** (*steve.fulton@kcs.k12.nc.us*), Kannapolis Middle School, Kannapolis, N.C.

This session will share promising science literacy projects launched in partnerships among National Writing Projects and science centers.

SESSION 10 (two presentations)

(Elementary) 252B, BCEC

President: Stefi Preiss, New York City (N.Y.) Dept. of Education

An Informal Science Institution/University Model for Preparing Early Elementary Teachers (Gen)**Amanda Lindell** (*alindell@wcs.org*), Wildlife Conservation Society, Bronx, N.Y.**Judith Hutton** (*jhutton@nybg.org*), New York Botanical Garden, Bronx

The Wildlife Conservation Society, New York Botanical Garden, and Lehman College created Outside-the-Box to prepare teachers to incorporate outdoor settings across the disciplines.

Yes, You ARE Smarter Than a Fifth Grader! (Gen)**JoEllen Schuleman** (*missschuleman@yahoo.com*), P.S. 199 Jessie Isador Straus, New York, N.Y.

So...you have your curriculum, you have reviewed your lesson, but you worry “what if I don’t know all the answers?” Learn about sources and resources to help you build content knowledge in elementary science.

SESSION 11

📖 NSTA Press® Session: Brain-powered Science Teaching and Learning with Discrepant Events (Gen)*(Middle Level–High School)* 254A, BCEC**Thomas P. O'Brien** (*tobrien@binghamton.edu*), Binghamton University, Binghamton, N.Y.

Engaging, dual-purpose “minds-on” activities (and cartoons) explore the question: What does research on learning tell us about the desired direction for “next generation” teaching (Curriculum-Instruction-Assessment)?

SESSION 12

Building a Tapestry of Science Literacy with Digital Resources (Gen)*(Middle Level)* 255, BCEC**Pamela J. Simmons-Brooks** (*pam_brooks@lovejoyisd.net*) and **Jennifer D. Beimer**, Lovejoy ISD, Allen, Tex.

Discover how to effectively weave a tapestry of science literacy within a digital environment of iPad apps, online interactives, animations, flipped videos, and more!





SESSION 13

The Radix Endeavor: Exploring Biological Systems in an Online Game World (Bio)

(General) 257B, BCEC

Susannah Gordon-Messer (sgmesser@mit.edu), **Jody Clarke-Midura** (jodycm@mit.edu), and **Louisa Rosenheck**, MIT, Cambridge, Mass.

Discover the world of Radix, MIT's multiplayer online game for STEM! Hear from teachers about their piloting experiences and sign up your class to play.

SESSION 14

How Can I Help? Empowering Students with Citizen Science (Bio)

(General) 259A, BCEC

Loree Griffin Burns, West Boylston, Mass.

Scientist and author Loree Griffin Burns explores citizen science as a means of empowering students and elementary science teachers in an age of environmental uncertainty.

SESSION 15

Using Stress Fields to Teach Plate Tectonics (Earth)

(Middle Level–College) 261, BCEC

Randal L.N. Mandock (rmandock@bellsouth.net), Clark Atlanta University, Atlanta, Ga.

Find out how to use stress fields associated with faults and earthquakes to teach the fundamentals of plate tectonics and earthquake hazards.

SESSION 16

Grey Matter: Learning and Teaching Science with the Brain in Mind (Gen)

(General) Caspian, Renaissance

Carolyn A. Hayes (caahayes@comcast.net), Indiana University School of Medicine, Indianapolis

Experience via science activities how discoveries in cognitive neuroscience are applied to the *Next Generation Science Standards* as well as the principles of how students learn science.

SESSION 17 (two presentations)

(General) Pacific A/B, Renaissance

Yes, You Can Have Fun in Science Class! (Gen)

Ashley S. Bloch, Islip Middle School, Islip, N.Y.

Using everyday materials, engage students with a series of activities that not only help them understand core concepts but are fun to do, too!

Motivate ALL Students to Become Actively Engaged in Your Science Classroom! (Gen)

Kelsey M. Voller (kelsey_voller@icloud.com), Pacific Heights Academy, Sabin, Minn.

Discover how to use systems that motivate students, create a positive classroom environment, and increase academic accountability so all students are engaged in your classroom!

SESSION 18

Stay Involved! (Gen)

(General) Pacific G/H, Renaissance

Rebecca H. Bell, Ligonier, Pa.

Retired? Been away from the classroom? Not sure about STEM, NGSS, or technology? This panel of experts gets you current on hot topics in science education.

SESSION 19

AMSE Session: A Glimpse at the Science Education in India (Gen)

(General) Constitution, Seaport

Kitchka Petrova (kpetrova@fsu.edu), Florida State University, Tallahassee

Are you interested to learn about science education in India? This session will provide information about the science curricula and standardized testing in India.

SESSION 20

Project-based Learning in an Alternative Classroom (Gen)

(Middle Level–High School) Flagship A, Seaport

Jason E. Russeau (jrussea@yahoo.com), Orchard Center High School, Monroe, Mich.

Students in an alternative school are a diverse population with varied needs. Learn about my experiences implementing project-based science with difficult-to-reach students.

SESSION 21**Achieving Literacy with Literacy Design Collaborative Modules and Interdisciplinary Projects (Gen)***(Middle Level–High School) Lighthouse I, Seaport***Ronnda D. Cargile**, Hughes STEM High School, Cincinnati, Ohio

This session introduces the Literacy Design Collaborative (LDC) and demonstrates how LDC modules offer the best strategy for preparing students for college and career while executing English language arts, *CCSS Mathematics*, and the *NGSS*.

SESSION 22**Teacher Researcher Day Session: Integrating Global Change into the Middle School Curriculum (Env)***(Middle Level) Plaza Ballroom/Group 1, Seaport***Sucharita Gopal** (*suchi@bu.edu*) and **Asher Mullokandov** (*asher@bu.edu*), Boston University, Boston, Mass.**Stephanie Selznick** (*sselznick71@gmail.com*), Curley K–8 School, Jamaica Plain, Mass.**Ryan Keser** (*ryankeser@gmail.com*), Lawrence School, Brookline, Mass.

Presider: Sucharita Gopal

Our NSF GK12 Project GLACIER (Global Change Initiative: Education and Research) focuses on enhancing the science curricula in grades 5–8 classrooms by partnering graduate fellows with classroom teachers. Several fellow-teacher pairs will describe how they introduced global change topics related to the biosphere, atmosphere, and geospatial technologies in their respective classrooms.

SESSION 23**Aquaponics, Hydroponics, and the Greenhouse Project (Gen)***(General) Burroughs, Westin Waterfront***Gregory E. Reiva** (*gereiva@aol.com*), Streamwood High School, Streamwood, Ill.

This session introduces K–12 science educators to exciting and challenging project-based research that engages students in real-world problem solving emphasizing sustainability.

SESSION 24**Differentiated Science Inquiry (Gen)***(Elementary–High School) Harbor Ballroom I, Westin Waterfront***Douglas Llewellyn** (*dllewellyn@sjfc.edu*), St. John Fisher College, Rochester, N.Y.

Emphasis will be placed on strategies to differentiate an inquiry investigation into different levels using choice as a motivator to develop greater ownership of the investigation.

SESSION 25**iLiteracy—Using iPads to Increase Scientific Literacy (Gen)***(General) Lewis, Westin Waterfront***Michael A. Chapman** (*mchapman@bchigh.edu*) and **Jennifer S. McLarnon** (*mclarnon@bchigh.edu*), Boston College High School–Arrupe Division, Boston, Mass.

Find out how an iPad can be used to scaffold better scientific reading comprehension and give more effective feedback on scientific writing.

SESSION 26**NSELA Session: Leading School-Level Program Change in Science (Gen)***(Supervision/Administration) Quincy, Westin Waterfront***Julie A. Gaubatz** (*jgaubatz@hinsdale86.org*), Hinsdale South High School, Darien, Ill.

Let's connect specific leadership behaviors with stages of the change cycle—based on research findings of science department chairpersons leading change.

SESSION 27 (two presentations)*(General) Stone, Westin Waterfront***It Takes a “Scientific Village” (Gen)****Monica M. Bowman** (*mbowman@ladueschools.net*), Ladue Horton Watkins High School, St. Louis, Mo.**William C. Bowman** (*wbowman@pkwy.k12.mo.us*), Parkway North High School, Creve Coeur, Mo.**Elizabeth Petersen** (*epetersen@ladueschools.net*), Ladue Middle School, Ladue, Mo.

In science, we are urged to share information with fellow scientists. Why not do so within your community in order to increase student scientific achievement?

Teachers Creating Professional Learning Communities (Gen)**Debra Ervin** (*dervin@shermanisd.net*), Dillingham Intermediate School, Sherman, Tex.

Take charge of the learning in your school by discovering how to be a successful leader by building a positive learning community.

SESSION 28 (two presentations)

(General) *Webster, Westin Waterfront*

President: Lauren B. Birney, Pace University, New York, N.Y.

Success in STEM—From the Professors (Gen)

Debbie K. Jackson (*d.jackson1@csuohio.edu*) and **Nigamanth Sridhar** (*n.sridhar1@csuohio.edu*), Cleveland State University, Cleveland, Ohio

Gina Weisblat (*gweisblat@neomed.edu*), Northeast Ohio Medical University, Rootstown

During this session, faculty members from engineering, mathematics, medical school, and STEM education will facilitate a discussion about the academic requirements for success in STEM degrees.

Building STEM Education with Multinationals (Gen)

Lauren B. Birney (*lbirney@pace.edu*), Pace University, New York, N.Y.

The development of modalities to enhance and motivate students through the support of STEM partnerships and affiliations is a critical component of STEM education. Participants will explore the creation of partnership opportunities, mobile app building in the classroom through partnership support, and innovative teaching constituents formed through lucrative STEM multinationals.



12:30–1:30 PM Workshops

STEM Is Easy with PLT GreenSchools! (Env)

(Elementary–High School) *157C, BCEC*

Al Stenstrup (*alstenstrup@plt.org*) and **Jaclyn Stallard** (*jstallard@plt.org*), Project Learning Tree, Washington, D.C. GreenSchools! connects Project Learning Tree hands-on activities, STEM subjects, and service learning. Come learn more about the program and get free access to GreenSchools! resources and materials.

Science and Math Connections Through Story Problems (Gen)

(Elementary) *160C, BCEC*

Donna Gunderson, Greenwood, S.C.

Develop connections between science and mathematics through inquiry-based science investigations that facilitate constructing multiplication/division story problems proposed in the *Common Core State Standards, Mathematics*.

Hands-On Activities for a Very Popular Planet

(Env)

(Elementary) *161, BCEC*

Carol Bliese (*cbliese@popconnect.org*), Population Connection, Washington, D.C.

Discover lively, interdisciplinary activities that help elementary students understand the human ecological footprint and the challenges of sharing finite resources as demand grows.

Finding Your Way Around the Sky (Earth)

(Elementary) *162A, BCEC*

Michelle Miskelley (*michelle.miskelley@trussvillecitieschools.com*) and **Angie Seeley** (*angie.seeley@trussvillecitieschools.com*), Paine Primary School, Trussville, Ala.

Help your students explore ways to look at the Sun, Moon, and stars from an integrated standpoint. Walk away with resources and real-world applications.

Nanotechnology in the Classroom: Synthesis of Nanogold Sensors (Chem)

(Middle Level–College) *162B, BCEC*

AnneLynn Gillian-Daniel (*agillian@wisc.edu*), **Ben Taylor** (*bltaylor2@wisc.edu*), and **Troy Dassler**, University of Wisconsin, Madison

In this hands-on workshop, learn about nanotechnology and synthesize a nanogold sensor that can be used to detect electrolytes.

Energy Deeper and Cheaper—Lessons Low in Cost but High in Potential (Phys)*(Elementary–High School)*

203, BCEC

Gene L. Easter, Brushfire Science Consultants, Tallmadge, Ohio

A guide to teaching energy concepts using the cheap and the familiar—aligned with the NGSS. Learn to use energy theater (embodied learning activities) to assess and develop deeper conceptual understanding of energy storage, transfer, transformation, and degradation. Learn to “teach the concepts of energy for less” and leave with effective and captivating activities, interactive demos, labs, and formative assessment activities for grades 4–9.

Why Does Earth Quake in the Eastern U.S.? (Earth)*(General)*

204 A/B, BCEC

Alan Kafka, Boston College, Chestnut Hill, Mass.**Michael Hubenthal** (hubenth@iris.edu), IRIS, Washington, D.C.**Gary B. Lewis** (glewis@geosociety.org), The Geological Society of America, Boulder, Colo.

Join us as we investigate intraplate earthquakes in the Earth science classroom. Explore where and why Earth quakes far from plate margins through simple physical models designed for classroom use and IRIS’s online seismic data portal.

Birds and Buds: Citizen Science in Your School Yard (Bio)*(Middle Level–High School)*

205A, BCEC

Sandra Henderson, National Ecological Observatory Network, Boulder, Colo.**Jennifer Fee** (jms327@cornell.edu), Cornell Lab of Ornithology, Ithaca, N.Y.

Have your students engage in authentic ecological research as citizen scientists in two nationally acclaimed citizen science programs—BirdSleuth and Project BudBurst.

Science Worksheets Don’t Grow Dendrites: Using Multiple Strategies to Teach Genetics in a Fun, Interactive Environment (Bio)*(General)*

205B, BCEC

Warren G. Phillips (alscience@yahoo.com) and **Ian Shea**, Silver Lake Regional Middle School, Kingston, Mass.

Presider: Ian Shea

Come get involved in making creatures called “Taters” that create offspring with diverse traits. A family tree will show phenotypes and genotypes. Social implications discussed.

3, 2, 1 Lift Off! Using Rocketry to Integrate Curricula (Gen)*(Elementary–Middle Level)*

207, BCEC

Anthony E. Grisillo, Glenwood Elementary School, Media, Pa.**Judy Williams**, Hancock International College, Irvine, Calif.

Here’s a surefire boost to your classroom. Review a rocketry activity in which students create a corporation, balance a budget, and “purchase” materials while building a rocket.

Building a Stronger School Community with Cross-Grade Partnerships (Env)*(General)*

208, BCEC

Louise H. Levy (llevy@belchertown.org) and **David C. Monroe** (dmonroe@belchertown.org), Belchertown High School, Belchertown, Mass.

See how our 2011–2012 Toyota TAPESTRY grant kindled cross-grade partnerships and powerful interdisciplinary lessons. Foster a stronger sense of place and interest in STEM careers!

Kid-created Toys and User Manuals (Gen)*(Elementary–Middle Level)*

211, BCEC

Sheung Y. Wong, Emerson Elementary School, Houston, Tex.

Toys from trash! Let me introduce you to the endless possibility of creating highly engaging science toys with your students using easy-to-obtain objects with simple instructions. The beauty of these activities is not only in empowering students to make toys that work, but also in promoting and explaining their own products by writing a user manual for their toys. Walk away with your own self-made toy complete with a manual and instructions to make many more.

Energy Potential: Teaching Energy Transformations to Elementary Students (Gen)*(Elementary)*

212, BCEC

Emily Hawbaker (ehawbaker@need.org), The NEED Project, Manassas, Va.

Students explore energy transformations using common classroom and household objects. Lessons break concepts into stations that students experience in small groups.

Let's S.A.I.L. (Science Arts Integrated in Literacy)
(Gen)

(Elementary) 213, BCEC
Patrice F. Caldwell, North Springs Elementary School,
Columbia, S.C.

Think about your favorite book. How can literacy be a springboard for creating a community of science learners? In this hands-on workshop, learn how to integrate science and literacy in a natural way that develops students' interest in science and enhances their development of reading, writing, and communication skills. Take home a packet/CD of activities.

EarthKAM: Taking Pictures of Earth from Space
(Gen)


(Middle Level) 254B, BCEC
Leesa Hubbard (*leesa@sallyridesience.com*), Teacher in
Residence, Sally Ride Science, San Diego, Calif.

Your students can take their own pictures of Earth from the International Space Station! Learn how to get your students involved in this free program while participating in engaging hands-on activities!

NASA Galileo Educator Network: Galileo and the Moons of Jupiter
(Earth)

(Informal Education) 256, BCEC
Brian Kruse and **Greg Schultz** (*gschultz@astrosociety.org*),
Astronomical Society of the Pacific, San Francisco, Calif.

Experience an investigation recreating Galileo's observations of Jupiter's moons and his promotion of the heliocentric solar system, and then learn about the NASA-sponsored Galileo Educator Network.

 **Slingshot Physics: An Authentic Application of Work, Energy, Friction, and Newton's First Law of Motion**
(Phys)

(High School) 259B, BCEC
Aaron Osowiecki (*aosowiecki@gmail.com*) and **Jesse Southwick** (*jesse.southwick@gmail.com*), Boston Latin School,
Boston, Mass.

Assess your students' understanding of work, energy, friction, and Newton's First Law of Motion using an inexpensive rubber band slingshot.

★ **Professional Development: Capturing the Trends, Practices, and Research to Strengthen Teaching and Learning**
(Gen)

(General) 260, BCEC

LaMoine L. Motz (*llmotz@comcast.net*), 1988–1989 NSTA President, and Science Education/Facilities Specialist, White Lake, Mich.

Jack Rhoton (*rhotonj@etsu.edu*), East Tennessee State University, Johnson City

Gerry M. Madrazo, Jr. (*gerry.madrazo@gmail.com*), 1993–1994 NSTA President, Elon, N.C.

Hiya Aimazroa (*hiya_10@hotmail.com*), Princess Nora University, Riyadh, Saudi Arabia
Prsident: LaMoine L. Motz

Join our group of science education leaders as we share current research, teaching and learning models, projects, and collaborative initiatives toward improving science teaching and learning through professional development and leadership. Materials packet to be distributed.

Help! I Need to Get Organized! (Gen)

(General) Pacific D, Renaissance

Sarah B. Andres (*sbandres@interact.ccsd.net*), Hyde Park Middle School, Las Vegas, Nev.

Join me for this workshop that covers the history and application of concept mapping in a science classroom. Discussion includes assessment options using concept maps.

ASTE Session: Mastering the Science Practices: Using Hands-On Performance Assessment with K–5 Students
(Gen)

(Elementary) Pacific E, Renaissance

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

Grant M. Gardner (*grantmgardner@msn.com*), Assessment Services, Inc., Pepperell, Mass.

Assessing mastery of practices of science is essential. Engage in a hands-on performance task and explore the uses and advantages of this form of assessment.

Teacher Researcher Day Session: Why Teach Elementary Science Anyway? (Gen)

(Elementary) Plaza Ballroom/Group 4, Seaport

Deborah Roberts-Harris (*drober02@unm.edu*), University of New Mexico, Albuquerque

In our current educational climate, elementary science is more important than ever. Come find out how to integrate all content areas with science.

Re-Engineering Your Curriculum: Great Ideas from the Exploratorium Teacher Institute (Gen)

(Middle Level–High School) Seaport Ballroom A, Seaport
Linda S. Shore (*lshore@exploratorium.edu*) and **Julie Yu** (*jyu@exploratorium.edu*), Exploratorium, San Francisco, Calif. Let us show you how to infuse your science curriculum with innovative, low-cost activities, and digital tools that emphasize the engineering practices referenced in the NGSS.

Combining Metacognition with Science and Engineering Practices to Enhance Student Learning in All Content Areas (Gen)

(General) Commonwealth Ballroom A, Westin Waterfront
Sandra M. Justin, University of Connecticut, Storrs
Eloise Farmer (*eloise@cssaonline.net*), Project Opening Doors, New Hartford, Conn.

Through hands-on activities, participants will practice techniques that they can use with students to identify and apply science and engineering practices to all content areas.

English Language Learners and the Next Generation Science Standards II (Chem)

(Middle Level–High School/Supv.) Commonwealth B, Westin Waterfront
Ron W. Rohac (*ron@rohac.com*), Riverside, Calif.

This hands-on workshop will demonstrate how to build science vocabulary and improve reading comprehension to meet the challenges of the NGSS. Handouts!

Creating Confident Elementary Teachers in Science (Bio)

(Elementary/College) Commonwealth C, Westin Waterfront
Nancy O. Steffel (*nsteffel@uindy.edu*), **Mary Gobbett** (*mgobbett@uindy.edu*), and **Beverly A. Reitsma**, University of Indianapolis, Ind.

Presider: Nancy O. Steffel

Become energized to build science knowledge, disciplinary literacy, and personal confidence through a sample biology lesson for elementary students and teacher candidates.

Science and Literacy—Perfect Together! (Gen)

(Preschool–Middle Level) Faneuil, Westin Waterfront
Eva M. Ogens (*eogens@ramapo.edu*), Ramapo College of New Jersey, Mahwah

Learn how to integrate children's books with science activities by making watercolors and creating chromatography flowers. Discover other books perfect for integrating science!

12:30–2:30 PM Presentation**SESSION 1**

The Social Science Teacher (Gen)
 (General) 252A, BCEC

Lauren E. Jonas (*social@nsta.org*), Director, Social Media and e-Newsletters, NSTA, Arlington, Va.

Paul Andersen, Bozeman High School, Bozeman, Mont.

Brad Graba (*bgraba@d211.org*), William Fremd High School, Palatine, Ill.

Cheska M. Lorena, Brighter Choice Charter Middle School for Girls, Albany, N.Y.

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

Jon Bergmann (*jon@jonbergmann.com*), Flipped Learning Network, LLC, Lake Forest, Ill.

Learn how science teachers are using social media professionally—in the classroom. Discussion centers on classroom-tested strategies, including Q&A time. Come ready to share!

1:00–1:30 PM Presentation**SESSION 1**

Using and Coaching Reflective Activities to Support Teachers (Gen)

(General) Pacific F, Renaissance

Cynthia C.M. Deaton (*cdeaton@g.clemson.edu*), Clemson University, Clemson, S.C.

Join me as I guide you on using reflective activities to examine your teaching practices and in supporting your peers through reflective coaching exercises.

1:00–1:30 PM Exhibitor Workshop

Shaping Earth (Earth)

(Grades 5–12) 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.

This “in dome” workshop introduces the internal and external processes that modified Earth's surface. By using a “in dome” version of *The Layered Earth*, this lesson creates an immersive teaching experience.

1:00–2:00 PM Exhibitor Workshop

Climate Series V: ClimateChangeLIVE! Bringing Climate Change into Your Classroom! (Earth)

(Grades 6–12) 156C, BCEC

Sponsor: NOAA

Victoria Arthur, U.S. Forest Service, Washington, D.C. Learn about an exciting new distance learning project spearheaded by the U.S. Forest Service—ClimateChangeLIVE, featuring interactive webcasts, webinars, and free online educational resources. Integrating Facebook and Twitter with a dynamic website, ClimateChangeLIVE offers students and teachers the opportunity to affect the discussion and take action on climate change.

2:00–2:30 PM Presentation

SESSION 1

Teacher Researcher Day Session: Connecting Energy to Place (Phys)

(General) Plaza Ballroom/Group 3, Seaport

Michael Jabot (jabot@fredonia.edu), SUNY Fredonia, N.Y.

Join us as we share ways in which spatial technologies can be used to develop powerful place-based understanding of energy use and development.

2:00–3:00 PM NSTA/ASE Honors Exchange Lecture

STEM: Translating a Vision to Classroom Practice (Gen)

(General) Commonwealth Ballroom C, Westin Waterfront

Sponsored by The Association for Science Education



Pete Robinson (support@peterobinson.org.uk), Chair, The Association for Science Education, and Independent Teaching and Learning Consultant, Lancashire, England @PeteSciSupport

STEM is a nebulous term that does not easily translate to classroom practice in science. Join Pete Robinson as he explores the vision for an effective and engaging STEM curriculum and drivers and enablers to support achieving this vision in the classroom.

Pete Robinson is chairperson of the Association for Science Education, the largest subject association in the U.K., involved in science education from preschool to higher education.

After teaching in U.K. schools for nearly 20 years as a teacher and department head, Pete became a local government teaching and learning consultant working in North Manchester, England, attaining Chartered Science Teacher status.

Since 2010, Pete has been working as an independent teaching and learning consultant working in a wide range of contexts and settings. A key part of his work has been with the National STEM Centre in York. His international work includes leading a team of writers to create a gifted and creative science curriculum for the Kingdom of Saudi Arabia, writing and training for an ESL science program in Abu Dhabi, and supporting pedagogical reform in Kazakhstan.

2:00–3:00 PM Presentations

SESSION 1

The 3 Rs of Science Notebooking: Record, Reflect, and Reach Out (Gen)

(Preschool–Elementary) 158, BCEC

Lisa K. Rish (lisa.rish@trussvillecityschools.com), Paine Primary School, Trussville, Ala.

Learn how to make sure that your science notebook is helping you and your students. Many paper and digital examples!

SESSION 2

Using the Environment to Integrate Science and Social Studies Literacy (Env)

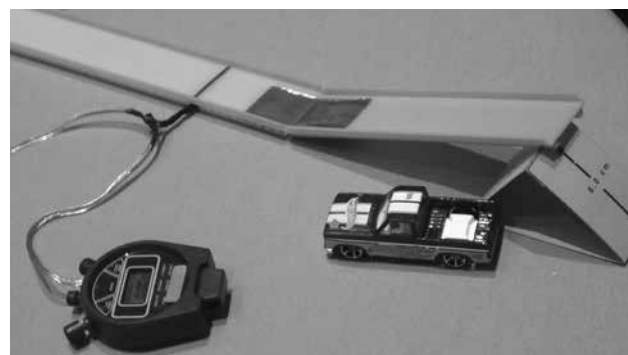
(High School) 159, BCEC

Laura Murray, University of Maryland Center for Environmental Science, Cambridge

Tom Ackerman (tackerman@cbf.org), Chesapeake Bay Foundation, Annapolis, Md.

President: Laura Murray

Learn about an innovative partnership approach involving a model for the development of educational modules that combine the science and social studies of environmental issues.



SESSION 3

Boston Schools Environmental Initiative (BSEI): Discovering the Natural World Through Integrated Thematic Curriculum and Outdoor Learning (Env)
(Elementary) 161, BCEC

Jean Dorcus, Boston Nature Center & Wildlife Sanctuary, Boston, Mass.

Anne Patrick (*apatrick@boston.k12.ma.us*), Dennis Haley Elementary Pilot School, Roslindale, Mass.

Discover methods and evaluation tools of a multiyear collaboration that enhances the integration of science throughout the curriculum in grades K–5.

SESSION 4 (two presentations)

(High School) 162B, BCEC

Improving Science Literacy and Scientific Understanding by Writing Scientific Explanations in High School Chemistry (Chem)

Thomas W. Shiland (*tomshiland@gmail.com*), Saratoga Springs High School, Saratoga Springs, N.Y.

Join me as I share a template, a rubric, and the results of having students write scientific explanations in a high school chemistry class.

Argument from Evidence (Chem)

Rebecca L. Sansom (*sansom.becca@gmail.com*), Einstein Fellow, National Science Foundation, Arlington, Va.

Evidence is different in science! We will describe ways to incorporate argument from evidence in lab activities and open-response questions in chemistry classes.

SESSION 5

Understanding Lightning and Lightning Safety (Earth)

(Elementary–High School) 204 A/B, BCEC

John S. Jensenius, NOAA National Weather Service, Gray, Maine

Learn what causes lightning and exactly what happens during a lightning discharge with this animated presentation containing very slow-motion video of actual lightning discharges.

SESSION 6

Planning and Designing Outdoor-based Education Spaces (Env)

(High School) 208, BCEC

Ninah A. Butler, Kansas State University, Manhattan

Learning can take place in a variety of environments. This session will provide information and resources to begin creating outdoor education spaces on your campus.

SESSION 7

NGSS[®] Literacy and Science: NGSS and Common Core ELA (Gen)

(General) 210 A/B, BCEC

Kathy DiRanna (*kdirann@wested.org*) and **Karen Cerwin** (*kcerwin@wested.org*), WestEd, Santa Ana, Calif.

Both the *Next Generation Science Standards* and the *Common Core State Standards* have an emphasis on discourse, sense making, and evidence-based argumentation. This session will take a close look at the commonalities between both sets of standards and how they can be integrated during instruction.

SESSION 8

Multicultural Share-a-Thon (Gen)

(Informal Education) 253B, BCEC

Kathy D. Thigpen-Wright (*kathydwright@hotmail.com*), Hughes STEM High School, Cincinnati, Ohio

Margaret Helen Carter (*margaretc@wapatosd.org*), Wapato Middle School, Wapato, Wash.

Debra Hutchinson (*hutchde@cps-k12.org*) and **Anna E. Hutchinson** (*hutchia@cps-k12.org*), Aiken New Tech High School, Cincinnati, Ohio

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

Presenter: Sharon J. Delesbore, AMSE, Houston, Tex.

Presenters will share mini-lessons in STEM that also address unique strategies that increase engagement of minority students.

SESSION 9

Engaging Students in the Science of Climate Change: Using Earth-observing Data in the Classroom

(Env)

(Middle Level–High School) 254B, BCEC

Erik Froburg (*erik.froburg@unh.edu*) and **Lara Gengarelly** (*lara.gengarelly@unh.edu*), University of New Hampshire, Durham

Use learning progressions that integrate authentic research components, including field investigations, student-oriented data products, and climate change visualizations.

SESSION 10

Developing Creative Scientists (Gen)

(Middle Level/Informal Education) 255, BCEC

Kelly J. Anthony (*kelly.anthony@pwcs.edu*), E.H. Marstler Middle School, Bristow, Va.

Creativity is essential to innovative science but is overlooked in science class. Come learn methods to increase student creativity in your classroom.

SESSION 11

Evidence and Explanation: Using the NGSS Practices to Help Religious Students Study Evolution (Bio)

(Middle Level–High School) 257A, BCEC
Lee Meadows (*lmeadows@uab.edu*), The University of Alabama at Birmingham

You're teaching in a public school where religious students object to evolution. Hear an approach that engages them in understanding the evidence, but minimizes conflict.

SESSION 12

Scaffolding Inquiry Using iPads and Model Organisms (Bio)

(Elementary–High School) 257B, BCEC

Randall Schregardus (*randy.schregardus@vai.org*) and **Carole Johnson** (*carole.johnson@vai.org*), Van Andel Institute, Grand Rapids, Mich.

Find out how students can use the model organism *Daphnia magna* to experience three different levels of inquiry—structured, guided, and open. See the eight science and engineering practices in action.

SESSION 13



Tricks of the Trade 4.0: Literacy Strategies to Enhance Your Science Instruction (Gen)

(General) 258C, BCEC

Sally Creel (*sally.creel@cobbk12.org*), Cobb County Schools, Marietta, Ga.

Explore a variety of reading and writing strategies to enable students to become scientifically literate! Simple “Tricks of the Trade” will help you teach and formatively assess students in fun, nontraditional methods. Several new fun formative assessment strategies will be shared. Take home a CD of materials, resources, and sample assessments.

SESSION 14



Burps and Chirps: Using Bioacoustics to Encourage Inquiry-based Learning in STEM (Bio)

(Middle Level–High School) 259B, BCEC

Laura N. Klopper (*ask.a.bioacoustician@gmail.com*), Brown University, Providence, R.I.

Gain an introduction to a free STEM curriculum that allows students to design and conduct virtual experiments, observe research in action, and communicate directly with scientists.

SESSION 15

★ **Partners in Learning and Leading: Teacher Residencies in a Science Museum (Gen)**

(General) 260, BCEC

Lesley G. Kennedy (*lkennedy@mos.org*), Museum of Science, Boston, Mass.

Leslie J. McRobie (*lmcrobie@hotmail.com*), Idlehurst School, Somersworth, N.H.

Roxanne Donahue (*donahue@westboroughk12.org*), Mill Pond School, Westborough, Mass.

Siobhan Foley (*sfoley@arlington.k12.ma.us*), Thompson School, Arlington, Mass.

Find out how summer residencies at a science museum inspired and strengthened teachers' leadership capacity through the stories of four teachers.

SESSION 16

Interdisciplinary Space Exploration Units with NASA and WWT (Earth)

(General) 261, BCEC

Mari Westerhausen, Monterey Park School, Phoenix, Ariz.

Join your NASA Ambassador in exploring interdisciplinary space units that integrate STE(A)M (science, technology, engineering, arts/architecture, and math) concepts using NASA Heliophysics and Solar System resources and the Microsoft® WorldWide Telescope (WWT).

SESSION 17 (two presentations)

(High School–College/Informal) *Atlantic 1, Renaissance*

Integrating Science Through Energy (Gen)

Stacey L. Olson (*solson@rcc.mass.edu*), Roxbury Community College, Roxbury Crossings, Mass.

What is the bridge from K–12 to university? The answer—Roxbury Community College's new course: “Integrated Science: Energy.” Learn about this course that connects everyday living to science through energy.

Using Online Learning Communities to Enhance Learning and Create Positive Attitudes (Gen)

Anu A. Gokhale (*aagokhale@ilstu.edu*), Illinois State University, Normal

Our NSF-funded project works with today's Net-generation students in introductory STEM courses and uses online learning communities led by rotating student leaders to enhance learning.

SESSION 18 (two presentations)*(General)* *Atlantic 2, Renaissance***Family Science Nights: Engaging the Entire Community in Science Learning (Gen)****Julie B. Coder** (*juliecoder@gmail.com*), Bellefonte Area High School, Bellefonte, Pa.

Creating an evening of science fun and learning that appeals to the entire community can be a challenge—but one that is worth doing! Come find out what you can do to start an annual Family Science Night in your school.

Making Hands-On Science Affordable: A Multi-District Resource Management Subscription Model (Gen)**Jason Baker** (*jason.baker1@maine.edu*), **Susan R. McKay** (*susan_mckay@umit.maine.edu*), and **Erika Allison** (*erika.allison@maine.edu*), University of Maine, Orono

Join us as we share an example leveraging economies of scale, customized materials allocation, and centralized ordering to maximize the use of hands-on science instruction in a cost-effective way.

SESSION 19**Positively Gay! (Gen)***(General)* *Caspian, Renaissance***Jo Williams**, GLBT Science Teachers Association, Round Rock, Tex.**Jaymee Herrington** (*jaymee.herrington@gmail.com*), K5 Science Consultant, Washington, D.C.**Teresa Fuller** (*Teresa.fuller@nt.crosscountyschools.com*), Cross County High School, Cherry Valley, Ark.**Andrew Milbauer** (*andrew.milbauer@conserveschool.org*), Conserve School, Land O' Lakes, Wis.

Join us as we present scientific research on the topic of sexual orientation, which creates an opportunity for discussion in biology and science classrooms.

SESSION 20 (two presentations)*(General)* *Pacific A/B, Renaissance***Edible Labs (Gen)****John Vaden** (*vadenj@rcschools.net*) and **Lee Ann Richardson** (*richardsonl@rcschools.net*), Riverdale High School, Murfreesboro, Tenn.

Serve up new learning in your classroom. Edible labs allow teachers an innovative means of presenting science concepts such as DNA and density to diverse students using food.

Science Tao: An Open Framework to Guide Teachers and Learners Toward an Increasingly Sophisticated Understanding of Science (Gen)**Bryan Nichols** (*bryanhnichols@gmail.com*), Plant City, Fla. Unsure how to describe science effectively? Teachers can use the free Science Tao framework to improve their grasp of modern scientific concepts, competencies, and attitudes.**SESSION 21****ASTE Session: Uncovering Evolution: An Inquiry-oriented Activity for Introducing Evolution by Way of Modeling an Archaeological Excavation (Bio)***(Elementary–High School)* *Pacific E, Renaissance***Cathy Wilkins**, Greenfield High School, Greenfield, Mass.**Thomas P. Owen** (*towen@educ.umass.edu*), UMass Amherst, Mass.

Join us as we describe an activity appropriate for grades K–12 that introduces students to evolution by modeling archaeological excavation sites while simultaneously fostering scientific skill development.

SESSION 22**The Role of Values and the Evaluation of Evidence in Scientific Controversies (Gen)***(General)* *Pacific F, Renaissance***Craig B. Merow** (*merowcra@msu.edu*) and **Daniel Steel** (*steel@mau.edu*), Michigan State University, East Lansing

Critical environmental and medical policy decisions are often delayed due to scientific controversy. Walk away with tools to help students evaluate controversial evidence.

SESSION 23

Size DOES Matter!...When It Comes to Science: Teaching Scale in the Science Classroom (Gen)

(Elementary–High School) Pacific G/H, Renaissance

Katherine M. Unruhe (*katherine.unruhe@dpsnc.net*), **Joshua Roberts** (*joshua.roberts@dpsnc.net*), and **Sam I. Fuerst** (*samuel.fuerst@dpsnc.net*), Northern High School, Durham, N.C.

We will give you ideas and lessons that will allow you to make sense of all of those very large and very small numbers used in science in a way students can understand.

SESSION 24

Engaging High School Students in Primary STEM Research (Gen)

(High School) Flagship A, Seaport

JulieAnn Villa (*julvil@d219.org*) and **Ruth Gleicher** (*rutgle@d219.org*), Niles West High School, Skokie, Ill.

Join us as we share our experiences from the past four years, during which time we developed the following—a research course, an investigation club, and a freshman biology course that integrates research.

SESSION 25

Woodrow Wilson Fellows—Shaping Teaching Practice Through Field-based Action Research (Gen)

(High School) Lighthouse I, Seaport

Gary Holliday, **Nidaa Makki** (*nm32@uakron.edu*), **Karen B. Plaster** (*kbp9@uakron.edu*), and **Shannon Kotradi** (*skotrad@uakron.edu*), The University of Akron, Ohio

Michael Benich (*benicht1@gmail.com*), Brecksville Broadview Heights High School, Broadview Heights, Ohio

Diane Fennell, Early College Academy, Canton, Ohio

Damon A. Young (*day12@zips.uakron.edu*), Willoughby South High School, Willoughby, Ohio

Join The University of Akron's Woodrow Wilson Fellows as they share action research projects conducted during their first year of teaching and discuss the impact on their teaching practice.

SESSION 26

Teacher Researcher Day Session: Collaborative Explorations of Global Climate Change (Gen)

(General) Plaza Ballroom/Group 1, Seaport

Emily H. van Zee (*vanzeee@onid.orst.edu*), Oregon State University, Corvallis

Find out how teachers from a variety of disciplines can work together to engage students in activities exploring aspects of climate change.

SESSION 27 (two presentations)

(Elementary–High School) Alcott, Westin Waterfront

Making Science Meaningful: Scientist/Teacher Partnerships Show Students Why They Care About Science (Gen)

Randi Wold-Brennon, Hawai'i Academy of Arts & Science Public Charter School, Pahoa, Hawaii

Teacher/scientist partnerships move everyone forward. Explore strategies to bring scientists into the classroom, teachers into the field, and students into the world of science.

Being Scientists: Involving Fifth-Graders in Real Science (Gen)

Kate Bennett (*kbennett@awrsd.org*), John R. Briggs Elementary School, Ashburnham, Mass.

Pamela Snow (*psnow@fas.harvard.edu*), Harvard Forest, Petersham, Mass.

Elementary teacher Kate Bennett has been involving her grades 5–6 students in authentic field research for the past seven years in collaboration with Harvard Forest, an ecological research center affiliated with Harvard University. Join us as we share very accessible resources and stories about making science come to life in the classroom.

SESSION 28

Using Aquaponics to Build a STEM Program in an Urban School (Gen)

(General) Burroughs, Westin Waterfront

Matt Johnson (*mattjoh@siue.edu*), SIUE Charter High School, East St. Louis, Ill.

Cultivate new learning in your classroom. Learn how to inexpensively make a farm in your classroom without soil, and discover how it can help develop a STEM program in an urban school.

SESSION 29

Untangling Science and Engineering Practices in the NGSS (Gen)

(General) Harbor Ballroom III, Westin Waterfront

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

Cary I. Sneider (*csneider@pdx.edu*), Portland State University, Portland, Ore.

Explore the engineering aspect of the practices by designing and improving technologies to solve a problem or meet a goal.

SESSION 30**Harness the Power of Social Networking in Your Classroom Safely and for FREE (Gen)***(General)* Lewis, Westin Waterfront**Katy Scott** (*kscott@mbayaq.org*), Monterey Bay Aquarium, Monterey, Calif.

Social networking can engage students, increase academic discussion, and extend the school day. Explore how to effectively use free social networking tools in any classroom.

SESSION 31**Beyond the Buzz—Truly Transforming Your School Through Engineering-focused, Integrated STEM (Gen)***(Elementary–Middle Level/Supv.)* Paine, Westin Waterfront**Carolyn A. DeCristofano**, Blue Heron STEM Education, Plympton, Mass.**Sharlene Yang** (*sharleneyang@yahoo.com*), SY|STEM Education Consulting, Cambridge, Mass.

STEM specialists lead active examinations of three schools' STEM-based transformations, shedding light on the foundations critical to creating—and sustaining—effective, integrated STEM programs.

SESSION 32**Merging Literacy into Science Instruction (Gen)***(Middle Level–High School/Supv.)* Quincy, Westin Waterfront

Jennifer Richards, University of Tennessee, Knoxville
Scientific inquiry intrinsically supports literacy skills and concepts. This session presents creative ways to integrate strong pedagogical practice enhancing science instructional quality and student learning.

SESSION 33 (two presentations)*(General)*

Stone, Westin Waterfront

Producing Productive Participants: Developing Teacher Leaders Through Sustained Professional Development (Gen)**Daniel M. Alston** (*dmalsto@clemson.edu*) and **Jeff C. Marshall** (*marsha9@clemson.edu*), Clemson University, Clemson, S.C.

Design sustained professional development that not only increases teachers' ability to enact new practices but has the goal of developing teachers into teacher leaders.

Initiating and Improving Instructional Leadership and Infrastructure in the Era of the NGSS (Gen)**Vanessa B. Lujan** (*vlujan@berkeley.edu*), Lawrence Hall of Science, University of California, Berkeley

Come learn how to build and maintain multiple levels of instructional leadership and district/school infrastructure around implementation of the NGSS.

SESSION 34**Innovation Academy of Northeast Tennessee: Placing STEM Squarely at the Center of the Educational Enterprise (Gen)***(General)*

Webster, Westin Waterfront

Jack Rhoton (*rhotonj@etsu.edu*), East Tennessee State University, Johnson City**Jessica Carr** (*jessica.carr@iak12tn.net*), and **Sandy Watkins** (*sandy.watkins@iak12tn.net*), Innovation Academy of Northeast Tennessee, Kingsport, Tenn.

Emphasis will be placed on exemplars of transdisciplinary units development implemented by Innovation Academy teachers. Join us and see how instructional technologies are expanding and strengthen STEM content.

2:00–3:00 PM Workshops**NESTA Session: Using Natural Hazards as a Hook in the Earth and Space Science Classroom (Earth)***(Elementary–High School)* 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 workshop highlights effective approaches for leveraging dramatic natural events to engage your students and bring your classroom to life with high-impact hands-on activities!

Yellowstone: Using Extreme Environments to Make Connections in the Classroom (Env)*(Middle Level–High School/Informal Education)* 157C, BCEC**Susan B. Kelly** (*sbkelly2@illinois.edu*), University of Illinois at Urbana-Champaign

Join us to learn about the science of Yellowstone's thermal areas, and the life that lives there. Hands-on activities for grades 5–12 tie biology, geology, and astrobiology together!

Inquiry in Action: Investigating Matter Through Inquiry (Chem)

(Elementary) 160A, BCEC

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

Conduct guided inquiry activities from the free website *inquiryinaction.org*. Design experiments to distinguish between similar-looking liquids, discuss explanations at the molecular level, and receive a handout of all activities.



Unhuggable Critters (Bio)

(Elementary) 160B, BCEC

Becky Blumenthal (*bblumenthal@berkeleycarroll.org*), The Berkeley Carroll School, Brooklyn, N.Y.

Captivate children and embrace NGSS while watching the metamorphosis of mealworms into darkling beetles. Encompasses life cycles, insects, adaptation, observation, and more.

Helping Young Learners to Understand the Complex Concept of Time (Gen)

(Preschool–Elementary) 160C, BCEC

Carol Ann Brennan (*carolb@hawaii.edu*), University of Hawaii, Honolulu

Learn about and participate in a progression of integrated inquiry activities shown to help young students, preK–3, construct their understanding of time.

Innovative Strategies for Deep Understanding of Weather, Erosion, and Deposition (Earth)

(Elementary–Middle Level) 162A, BCEC

Alison Pierce and **Amanda McGee** (*amanda.mcgee@humble.k12.tx.us*), Humble ISD, Kingwood, Tex.

Take your stream tables to the next level! Come learn how to use innovative instructional strategies to ensure a deep understanding of the hard-to-teach topics of weather, erosion, and deposition.

Technology-infused Conceptual Physics (Phys)

(High School) 203, BCEC

Jacalyn Crowe, Lexington High School, Lexington, Mass.

This workshop will demonstrate how a variety of technologies have been incorporated into the teaching of conceptual physics. The goal of this effort was to strengthen students' conceptual understanding of physics concepts while simultaneously building their ability to use a variety of scientific technologies.

Humans vs. Mosquitoes: A Deadly Serious Game at the Yale Peabody Museum (Bio)

(Middle Level–High School) 205A, BCEC

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.

A real-world disease transmission game used by the Red Cross teaches how climate change is affecting dengue fever expansion around the world. This game is funded by SEPA/NIH.

Analyzing Ocean Tracks: Help Your Students Work with Real-Life Data Sets (Bio)

(High School) 205B, BCEC

Julianne Marie Mueller-Northcott (*jmuellet-northcott@edc.org*), Souhegan High School/Education Development Center, Inc., Amherst, N.H.

Ruth A. Krumhansl, Education Development Center, Inc., Waltham, Mass.

Bring your laptop and explore a web interface designed to involve students in analyzing data collected by migrating marine animals, drifting buoys, and satellites.

Using an Engineering Challenge to Apply Physics Concepts (Phys)

(High School) 205C, BCEC

Ryan Grams (*rgrams@sch.ci.lexington.ma.us*), Lexington High School, Lexington, Mass.

Learn how a challenge-based design task can provide an opportunity for physics students to apply what they are learning to an open-ended problem. We'll examine 10 years of development and student feedback on the engineering design process with a chance to try it out yourself.

Model a Chemical Reaction with Common LEGO® Bricks! (Chem)

(Middle Level) 206 A/B, BCEC

Jessica E. Garrett and **Amy M. Fitzgerald**, MIT, Cambridge, Mass.

Teach chemistry concepts using a hands-on wet lab activity and LEGO bricks as models of atoms and molecules.

Simple Machines Made Simple (Gen)*(Elementary–Middle Level/Informal Education)* 207, BCEC

Julie Boyk (julie.boyk@msichicago.org) and **Andy North** (andy.north@msichicago.org), Museum of Science and Industry, Chicago, Ill.

Presider: Kevin Conley, Museum of Science and Industry, Chicago, Ill.

Discover how to teach simple machines using everyday classroom objects and materials. Free lesson plans and prizes!

Supporting All Students in Writing Scientific Arguments (Gen)*(Elementary–Middle Level)* 211, BCEC

Rebecca Katsh-Singer (katsh@bc.edu), **Katherine L. McNeill** (kmcneill@bc.edu), **Daniel R. Pimentel** (pimentda@bc.edu), and **María González-Howard** (gonzaldx@bc.edu), Boston College, Chestnut Hill, Mass.

Discover strategies for supporting students in writing high-quality scientific arguments, examine student work, and analyze how this science practice aligns with the *Common Core State Standards*.

PreK–K Hands-On Science—Get an Early Start on Building Scientific Habits of Mind! (Gen)*(Preschool–Middle Level/Informal Education)* 212, BCEC

Judy A. Brown (jabrown@miamisci.org), **Cheryl L. Juarez** (cheryl@miamisci.org), and **Krista F. Kaiser**, Miami Science Museum, Miami, Fla.

Learn research-based strategies that build early childhood educators' confidence in incorporating science into their classrooms to increase development of basic science concepts and process skills.

Using Children's Literature as Vehicles to Teach Science (Gen)*(Preschool–Elementary)* 213, BCEC

Carole K. Lee (carole.lee@maine.edu), University of Maine at Farmington


This workshop explores how science, literacy, mathematics, and diversity can be taught using two children's books—*Mouse Paint* by Ellen Stoll Walsh and *The Mitten* by Jan Brett.

ASTC Session: Full STEAM Ahead (Gen)*(Elementary)* 251, BCEC

Jill Foster (jfoster@discoverymuseums.org) and **Denise LeBlanc** (dleblanc@discoverymuseums.org), The Discovery Museums, Acton, Mass.

Susan J. Erickson (serickson@colonial.net), Thoreau School, Concord, Mass.

Exposing students to STEM topics in elementary school is critical to the STEM movement, but many teachers feel uncomfortable teaching STEM topics with too much curriculum to teach and not enough time. Come learn about Full STEAM Ahead, which created a learning community that explores STEAM as a methodology and develops elementary teachers' confidence by creating engaging, interdisciplinary, project- and challenge-based learning experiences.

 **NSTA Press® Session: Outdoor Science and Bringing It Indoors (Bio)***(Elementary–Middle Level)* 253C, BCEC

Steve Rich (bflywriter@comcast.net), University of West Georgia, Carrollton, Ga.

Taking it outside or *Bringing Outdoor Science In*, explore school yard resources for crosscutting concepts, and how sticks and stems bring in STEM. Free seeds!

Climate Models: Everything You Ever Wanted to Know, Ask, and Teach (Earth)*(Informal Education)* 256, BCEC

Randy Russell (rrussell@ucar.edu), NCAR, Boulder, Colo.

Lisa Gardiner (lisagard@ucar.edu), UCAR Science Education, Boulder, Colo.

What is a climate model? How are they built and used? Join staff from NCAR, a leading NSF-sponsored national laboratory that develops weather and climate models, in a fun and informative workshop packed with hands-on activities, easy-to-master technological tools, games, and exceptional content regarding the latest climate indicators.

Show Me the Data! (Gen)*(General)* Pacific D, Renaissance

Christopher J. Thompson (cthompson@rice.edu), Rice University, Houston, Tex.

Presider: Lara Arch, Rice University, STEMscopes, Houston, Tex.

Join us for an exploration of the main types of graphs and charts and which data are best suited to each.

Teacher Researcher Day Session: Getting Elementary Teachers Excited About Science (Gen)

(General) Plaza Ballroom/Group 2, Seaport
Deborah Roberts-Harris (*drober02@unm.edu*), University of New Mexico, Albuquerque

In this workshop, ideas will be shared about empowering teachers to want to teach science. Come share your best ideas as well!

Helping Your Students to Flip Out! (Gen)

(Middle Level–High School) Seaport Ballroom A, Seaport

Andrea Smith (*andrea.smith@bvsd.org*), Boulder Valley School District, Lafayette, Colo.

All across the country, teachers are “flipping” their classrooms to create student-centered classrooms. Come learn how these same strategies can become a tool for students to show mastery and teach each other concepts—and it doesn’t have to cost a fortune!

Use PowerMyLearning to Find the Best Engaging, Accurate, and Aligned Engineering Content (Gen)

(General) Commonwealth Ballroom A, Westin Waterfront

Caryn Rogoff (*crogoff@cfy.org*), CFY, New York, N.Y.

PowerMyLearning has collected the top online engineering videos, activities, and games. These activities have been aligned to the NGSS and CCSS by teachers. Content can be easily searched by teachers and students, as well as used in the classroom or at home.

Science + Literacy = Lesson in Electricity (Gen)

(General) Faneuil, Westin Waterfront

Karen J. Matsler (*kjmatsler@gmail.com*), The University of Texas at Arlington

Use literature to engage students and then explore circuits by making fireflies and connecting them in various combinations while making observations about the brightness of bulbs (i.e. the firefly abdomen).

Debate, Dialogue, and Democracy: Using Socio-scientific Issues to Develop Scientifically Literate Citizens! (Gen)

(General) Harbor Ballroom I, Westin Waterfront

Sami Kahn (*samikahn@mail.usf.edu*), University of South Florida, Tampa

During this interactive workshop, participants will model the use of controversial societal issues related to science to develop their students’ scientific literacy.

2:00–3:30 PM Exhibitor Workshops

A World In Motion Middle School STEM Workshop (Phys)

(Grades 6–8) 104A, BCEC

Sponsor: SAE International

Claudia Mazzola, SAE International, Warrendale, Pa.

This hands-on workshop will allow participants to experience SAE International’s award-winning A World In Motion (AWIM) STEM curriculum designed for grades 6–8. Participants will have a chance to build the popular Glider, as well as experience the Fuel Cell Vehicle and Motorized Toy Car in a fun, interactive session.

Bringing Real Neuroscience (Spiking Neurons!) into Your Classroom (Bio)

(Grades 7–College) 107A, BCEC

Sponsor: Backyard Brains, Inc.

Timothy Marzullo (*tim@backyardbrains.com*), Backyard Brains, Inc., Ann Arbor, Mich.

Want to show your students the real electrical activity of muscles and neurons? Curious about how remote control cockroaches work and the physiology of muscles during arm wrestling? Now you can! Via live demos, learn how to bring neuroscience into your classroom.

SparkFun: “Scratch”ing the Surface of Programming (Env)

(Grades 5–12) 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 play with us—we have lots to share!

Engineering with Vernier Using LEGO, Arduino, and LabVIEW (Phys)*(Grades 7–College)*

153A, BCEC

Sponsor: Vernier Software & Technology

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

Join us for this three-part workshop. The first 30 minutes will demonstrate use of Vernier sensors with LEGO®'s MINDSTORM® NXT and EV3 robotics kits. The middle section will be a demonstration of some do-it-yourself Arduino projects using Vernier sensors. The final 30 minutes will demonstrate projects using LabVIEW software.

Wireless Sensor Exploration with Vernier (Gen)*(Grades 3–College)*

153B, BCEC

Sponsor: Vernier Software & Technology

Verle Walters (*info@vernier.com*), Vernier Software & Technology, Beaverton, Ore.

Get hands-on experience with new wireless sensors available from Vernier. Perform experiments using our Go Wireless Temp, the first in our line of wireless sensors for iPad and other supported devices. You will also use the NODE wireless sensor platform from Variable, Inc., to explore motion, temperature, and more.

COMMON Practices That Get to the CORE of Great Instruction using Discovery Education Science Techbook (Gen)*(General)*

154, BCEC

Sponsor: Discovery Education

Brad Fountain, Discovery Education, Silver Spring, Md.

This workshop will provide concrete examples and activities that meet the *Common Core State Standards* through science instruction. We will explore how the resources available in the Discovery Education Science Techbook are easily utilized to enhance science instruction and address literacy skills through science journals and digital media.

Connecting AP Biology to New Science Practices (Bio)*(Grades 9–12)*

156A, BCEC

Sponsor: Ward's Science

Michelle Pagani, Ward's Science, Rochester, N.Y.

Learn how to continue transitioning your AP Biology curriculum and meet new AP standards with the all-new Ward's AP Biology Investigations—the ONLY kits that meet the new seven science practices—designed to help you save time in the lab and better prepare your students for success on the AP Biology assessment and beyond.

Bring the World of Digital Learning to Your Classroom with WeDo (Gen)*(Grades 2–5)*

156B, BCEC

Sponsor: LEGO® Education

Kelly Reddin, LEGO Education, Pittsburg, Kans.

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.

Climate Series VI: NOAA Climate Stewards—Education, Collaboration, and Action! (Earth)*(Grades 6–12)*

156C, BCEC

Sponsor: NOAA

Bruce Moravchik, NOAA, Silver Spring, Md.

CSEP promotes experiential education to enhance connections between human actions and effects on Earth systems. Through sustained professional development and collaborative online tools, CSEP supports 200+ educators to build a climate-literate public engaged in climate stewardship. Hear how this national community is working to reduce carbon footprints and “go green.”

2:00–4:00 PM Social**An Exploration of Uncommon Collaboration for Success in STEM***Seaport Ballroom C, Seaport*

Join Next Steps, powered by Earth Force, for a fun exploration of collaboration. We will discuss sharing our strengths across sectors to positively impact students in STEM. Visit www.nextstepsinscience.org for details.

2:00–4:00 PM Meeting**NSTA Council Roundtable***(By Invitation Only)**Adams, Westin Waterfront*

2:00–4:00 PM Presentation

SESSION 1

**AoA Session: Next Steps for the Next Generation...
Implementing the NGSS (Gen)**

(General) Otis, Westin Waterfront

Margaret Glass, Association of Science-Technology Centers, Washington, D.C.

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

Deborah Hanuscin, University of Missouri, Columbia
What steps have different stakeholders undertaken in planning and implementing the NGSS? What barriers and challenges have been encountered? What lessons have been learned? Join representatives of the nine NSTA affiliates to discuss this key issue and to gain insight on support for implementing the NGSS.



3:30–4:30 PM Featured Presentation



Reading and Writing Science: What Should Be My Line? (Gen)

(General)

210C, BCEC



Wendy Saul, Professor and Allen B. and Helen S. Shopmaker Endowed Chair, College of Education, University of Missouri–St. Louis

President: Patricia Ruane, Strand Leader, Science and Literacy: A Symbiotic Relationship, NSTA Boston National Conference, NSTA Director, District I, and Educational Consultant, Bridgeport, Conn.

Both the *Next Generation Science Standards* and the *Common Core State Standards* call for better integration of English language arts and other critical-thinking practices into K–12 science classrooms. What literacy strategies support science thinking? What is the role of the science teacher in guiding informational and argumentative reading and writing across the curriculum? In exploring these questions, join Wendy as she offers concrete help for practitioners and helps us to rethink the relationship between science and literacy.

As a faculty member at the University of Missouri–St. Louis, Wendy Saul serves as the Allen B. and Helen S. Shopmaker Endowed Professor of Education and International Studies in Collaboration with Springboard. She teaches graduate courses in teacher research and literacy.

She is editor-in-chief of Thinking Classroom: An International Journal of Reading, Writing, and Critical Reflection and author/editor of a number of books about the science-literacy connection, including Vital Connections: Children, Science, and Books; Crossing Borders in Literacy and Science Instruction: Perspectives on Theory and Practice; and her most recent book, Front-Page Science: Engaging Teens in Science Literacy by NSTA Press®. As director of the National Science Foundation–supported “Elementary Science Integration Projects,” Wendy researches how science and language might be better integrated in a variety of environments, including elementary and secondary schools and libraries.

3:30–4:30 PM Presentations**SESSION 1** (two presentations)*(General)**157C, BCEC/***Youth Environmental Action Programs (Env)**

Zach Smith and **Cate Arnold**, Boston Latin School, Boston, Mass.

Initiating a new program can be a real challenge. In this session, we will highlight strategies for connecting green student programs with classroom and field-based science curriculum at your school.

Sustainable School Grounds and Outdoor Learning (Env)

Anne E. Muller (*amuller@austinisd.org*), Austin (Tex.) ISD Experience ways to effectively engage students outdoors and how to overcome the challenges of maintaining school gardens and outdoor classrooms.

SESSION 2 (two presentations)*(Elementary–Middle Level)**158, BCEC***How to Fail Well (Gen)**

Andrea J. Overton, STEM Launch K–8, Thornton, Colo.
Tracey Wise-Calderon, STEM Lab, Northglenn, Colo. Using Problem-Based Learning, students can embrace “fail-ure” and build upon it in order to advance their science and engineering learning.

21st-Century Learning: The Power of Project Based Learning (PBL) in the Science Classroom (Gen)

Bobbi Hansen (*chansen@sandiego.edu*), University of San Diego, Calif.

Walk away with ways to use Project Based Learning (PBL) in your science classroom to help prepare students for the real world with 21st-century skills.

SESSION 3**STEM—What Does It Really Look Like in the Classroom? (Gen)***(Elementary–Middle Level)**160A, BCEC*

Brian Crosby (*bcrosby@washoeschools.net*), Nevada’s North-west RPDP, Reno

You’ve heard of STEM, perhaps you know something about it. See what it really looks like as we show and explain student work, video, and sample projects.

SESSION 4**Let’s Put the Fun Back in Fungi (Bio)***(Elementary–Middle Level)**160B, BCEC*

Joan Gillman (*joan.gillman@calhoun.org*), The Calhoun School, New York, N.Y.

The world of fungi can be a very fascinating topic. See how to develop a “Fungi Fair,” make fungi origami, grow your own fungi, play “Wheel of Fungi,” or write personal ads for mushrooms. During this workshop, you will learn how to develop an innovative interdisciplinary unit around the topic of fungi. Student work will be showcased.

SESSION 5**Natural Inquirer—Supporting Science and Literacy (Env)***(Middle Level)**161, BCEC*

Jessica G. Nickelsen (*jessica@cfaia.org*), USDA Forest Service/Cradle of Forestry in America Interpretive Association, Athens, Ga.

Participants will receive samples of Natural Inquirers as well as engage in literacy activities involving anticipation guides, close reading strategies, vocabulary activities, and more.

SESSION 6**Explore Alien Worlds from Your Classroom Using Online Telescopes (Phys)***(Middle Level–College)**203, BCEC*

Roy R. Gould, Harvard-Smithsonian Center for Astrophysics, Cambridge, Mass.

Nathan Carle (*ncarle@sprise.com*), Souhegan High School, Amherst, N.H.

Susan Sunbury (*ssunbury@cfa.harvard.edu*), Smithsonian Astrophysical Observatory, Cambridge, Mass.

Bring the excitement of the search for habitable worlds into your classroom while helping your students to consolidate and apply core ideas in physical science.

SESSION 7

Not Just the Facts, Ma'am—Using Digital Tools and International Dialogue to Make Ocean Acidification and Climate Change Real and Personal for Students (Env)

(High School–College) 206 A/B, BCEC

Jason Hodin (*seastar@stanford.edu*), **Pamela J. Miller**, and **David Epel**, Stanford University, Pacific Grove, Calif. Learn to use our interactive virtual lab—a carbon footprint calculator designed to target choices that students make as well as international dialogues—that help students see themselves as agents of change. We will share Our Acidifying Ocean, The International Student Carbon Footprint Challenge, and Einztein: Social Learning Network student peer-to-peer discussion platform.

SESSION 8 (two presentations)

(General) 208, BCEC

You Can Become a Climate Change Challenge Champion! (Env)

Tanya A. Flores (*tanya.flores@aps.edu*), Albuquerque (N.Mex.) Public Schools

The designer of a unique web-based educational tool will introduce the design and the use of the application to teach about Climate Change Science.

Model My Watershed (Env)

Nanette I. Marcum-Dietrich (*ndietrich@millersville.edu*), Millersville University of Pennsylvania, Millersville

Susan E. Gill (*sgill@stroudcenter.org*), Stroud Water Research Center, Avondale, Pa.

Harness the power of real data to assess the health of your local watershed. This easy-to-use web application allows students to accurately model watershed health.

SESSION 9

Write Your Way to Success: Grant-writing Strategies for You and Your Chemistry Students (Chem)

(High School) 209, BCEC

Kenetia Thompson (*k_thompson2@acs.org*) and **Karen M. Kaleuati**, American Chemical Society, Washington, D.C. Find out how to prepare a proposal that gets funded and hear about two grant opportunities available through ACS.

SESSION 10

Seeing the Science: Using a Rubric to Examine Written Science Observations of English Language Learners (Gen)

(Preschool–Elementary) 252B, BCEC

Anne P. Gatling (*gatlinga@merrimack.edu*), Merrimack College, North Andover, Mass.

Using a rubric to analyze English language learners' written observations of two plants over time can illuminate their strengths and weaknesses. Emphasis will be placed on teaching strategies that support these students in moving their scientific observation practices forward.

SESSION 11



NSTA Press® Session: Pendulums and Porch Swings—Using Probes and Mystery Stories to Link Science and Engineering (Gen)

(Elementary–Middle Level/Supervision) 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

Richard D. Konicek-Moran (*konmor@comcast.net*), Professor Emeritus, UMass Amherst, Mass.

Encounter an example of how a probe from the *Uncovering Student Ideas* series is used with the *Everyday Mysteries* series to launch into a scientific investigation and apply findings to an engineering problem. Classroom, preservice, and professional development implications will be addressed.

SESSION 12

Reinventing the Science Fair (Gen)

(Middle Level) 255, BCEC

Kelly J. Anthony (*kelly.anthony@pwcs.edu*), E.H. Marstler Middle School, Bristow, Va.

Come see how our school transformed a traditional science fair into a modern learning experience that increased student enthusiasm and participation.

SESSION 13

Why Test If You Don't Have To? Using Virtual Representations and Screencasting to Alternatively Assess Learning (Bio)

(Middle Level–High School) 257A, BCEC

Katie White (*kwhite@marymountnyc.org*), Marymount School of New York, N.Y.

Tired of using traditional assessments? This session will illustrate a novel way to elicit student explanations and illuminate misconceptions through screencasting and virtual visual representations.

SESSION 14 (two presentations)*(General)*

257B, BCEC

Tradebooks in the Classroom and a Preservice Teacher's Experiences (Bio)

S. Rená Smith (*srsmith@nwmissouri.edu*), **R. Alex Bolick** (*s504442@mail.nwmissouri.edu*), **Andrea Dobney** (*s507875@mail.nwmissouri.edu*), **Kelsey Fish** (*s507942@mail.nwmissouri.edu*), **Samantha Barton** (*s504388@mail.nwmissouri.edu*), and **Garrett Hargiss** (*s400446@mail.nwmissouri.edu*), Northwest Missouri State University, Maryville

Find out how to incorporate tradebooks in grades 6–12 science classrooms. We'll share mini-lessons originally created by a preservice teacher and taught in a high school setting.

Teaching Genetics Through Harry Potter Characters! (Bio)

Lisa Neesemann (*lolsson@bayridgeprep.org*), Bay Ridge Preparatory School, Brooklyn, N.Y.

Use J.K. Rowling's famous characters from the *Harry Potter* series to teach genetic inheritance patterns. Avoid your students personal narratives while tying in popular literature!

SESSION 15**★ To Lead from the Classroom, Get Out of the Classroom! (Gen)***(Elementary–High School)*

260, BCEC

Bruce Taterka (*btaterka@wmrhsd.org*), West Morris Mendham High School, Mendham, N.J.

Presider: Gamal D. Sherif, Science Leadership Academy, Philadelphia, Pa.

By engaging in opportunities for scientific research, policy-making, and community service, teachers can improve their practice, expand professional networks, and become leaders.

SESSION 16**EarthScope: A Hubble Space Telescope for Earth's Interior That's in Your Neighborhood! (Earth)***(Middle Level–High School)*

261, BCEC

John Taber (*taber@iris.edu*), IRIS Consortium, Washington, D.C.

Learn how your students can use data from a continental-scale seismograph array to visualize seismic waves and explore Earth structure and earthquake hazards.

SESSION 17**Integrating Science into Teacher Preparation Programs to Educate ELLs and ELLs with Disabilities (Gen)***(General)**Caspian, Renaissance*

Stephen W. Showalter, Northern Arizona University, Flagstaff

Best practices in science instruction for English language learners are integrated into teacher education programs serving culturally/linguistically diverse ELLs and ELLs with disabilities.

SESSION 18**Building Best Practice into a Building Program: A Massachusetts Story (Gen)***(General)**Pacific A/B, Renaissance*

Terry Kwan (*terry8kwan@yahoo.com*), Brookline, Mass.

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

Karl Brown (*karl.brown@massschoolbuildings.org*), Massachusetts School Building Authority, Boston

Presider: Terry Kwan

Join us as we show ways you can ensure that appropriate physical facilities and class sizes support your science and technology instruction.

SESSION 19**Equal Access to Science: Universal Design and Students with Disabilities (Gen)***(Middle Level–High School)**Flagship A, Seaport*

Lyla Mae Crawford (*lylac@uw.edu*), University of Washington, Spokane

Full inclusion of students with disabilities in STEM involves both accommodation strategies for students and universal design of instruction that enhances learning for all students.

SESSION 20**Teaching and Leading—Create a Citizen Science Education Program in Your Community! (Gen)***(General)**Lighthouse I, Seaport*

Vicky Gorman (*vgorman@medford.k12.nj.us*), Medford Memorial Middle School, Medford, N.J.

Become an advocate for science education throughout your community and beyond, while teaching students NGSS skills. Come learn how to create a Citizen Science Education Program.

SESSION 21

Developing Skills in Scientific Writing (Gen)

(Middle Level–High School) *Lighthouse II, Seaport*

Lori Lancaster, Centennial High School, Gresham, Ore.

Evaluating student lab reports got you down? Make it easier for you and your students. Create step-by-step guides for students and scoring guides for assessment.

SESSION 22

Teacher Researcher Day Session: Collaborative Leadership (Gen)

(General) *Plaza Ballroom, Seaport*

Deborah Roberts-Harris (*drober02@unm.edu*), University of New Mexico, Albuquerque

This session will address ways in which teachers share leadership collaboratively in a school for grades 6–12. Come talk with us!

SESSION 23

NSELA Session: Baby Steps: Implementing the NGSS (Gen)

(General) *Commonwealth Ballroom B, Westin Waterfront*

April Holton (*april.holton@dysart.org*), Dysart Unified School District, Surprise, Ariz.

Come learn how one Arizona school district began implementing the NGSS by starting small with one elementary school (K–5). We will share how we engaged teachers in the process, our successes, and our areas of improvement before districtwide implementation.



SESSION 24

Using the NGSS Learning Progressions to Create Content Storylines (Gen)

(General) *Commonwealth Ballroom C, Westin Waterfront*

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

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

Find out how to identify learning goals and criteria for success using progressions from the NGSS to create a solid storyline. Share this storyline with your students to help them build conceptual understanding.

SESSION 25

Interactive Science Notebooks: Supporting the Common Core State Standards While Putting the NGSS into Action (Gen)

(Elementary–High School) *Harbor Blrm. I, Westin Waterfront*

Kellie M. Marcarelli (*kmarcarelli@sandi.net*), Johnson Magnet School, San Diego, Calif.

Presider: Frank Calantropio, Space and Naval Warfare Systems Command, San Diego, Calif.

Join us as we highlight notebooking strategies that reinforce the CCSS through listening, speaking, reading, and writing while putting the NGSS into action.

SESSION 26

Focus On the Crosscutting Concepts (Gen)

(Elementary–High School) *Harbor Blrm. III, Westin Waterfront*

Sarah C. Soule, California Academy of Sciences, San Francisco

Get to know the NGSS crosscutting concepts! Engage in creative and collaborative brainstorming of ways to implement the concepts, and gather ideas from other participants.

SESSION 27

Linking Literacy in Science—There’s More Than Just Lab Reports! (Gen)

(Middle Level–High School/Supv.) *Paine, Westin Waterfront*

Kevin Fleming (*kffleming@oldsaybrook.k12.ct.us*), Old Saybrook (Conn.) Public Schools

Emphasis will be placed on how to incorporate literacy and writing into the science classroom that goes beyond just lab reports. Join me as I share specific instructional activities and a science writing portfolio system that includes assessment measures and student reflections.

SESSION 28 (two presentations)*(Elementary/College/Supv.) Quincy, Westin Waterfront***Teaching Elementary Science Leadership Academy (TESLA): Bringing Together Future Elementary Teachers Around Science Teaching (Plus a Catchy Acronym!) (Gen)****Mark Merritt** (*mdm35@psu.edu*), **Carla Zembal-Saul** (*czem@psu.edu*), and **Michele Crowl**, Penn State, University Park, Pa.

Advisers and members of TESLA will describe this innovative program designed to foster a community of preservice elementary teachers with an interest in science teaching.

The Learning Center Builds Content-confident Preservice Teachers (Gen)**Amy Larrison Gillan** (*agillan@saintmarys.edu*), Saint Mary's College at Notre Dame, Ind.**Terri Hebert** (*thebert@iusb.edu*), Indiana University South Bend, South Bend

Join science teacher educators as they share their approaches to improving preservice elementary teachers' content knowledge confidence by leveraging NSTA's Learning Center resources.

SESSION 29**The Great Meadow's Blanding's Turtle Project: Empowering Students to Become a Rare Species Voice While Finding Their Own Voice at the Same Time (Gen)***(Elementary–High School) Stone, Westin Waterfront***Susan J. Erickson** (*serickson@colonial.net*), Thoreau School, Concord, Mass.**Bryan Windmiller** (*bwindmiller@gmail.com*), Grassroots Wildlife Conservation, Concord, Mass.

Students became voices for turtles, alerting the community about this threatened species, while at the same time improving their literacy, math, science, and communication skills.

SESSION 30**ACT STEM Profile Report (Gen)***(General) Webster, Westin Waterfront***Steven Kappler**, ACT, Inc., Iowa City, Iowa

This session will highlight how analysis of student data can help traditional and nontraditional educators identify and assist students early in the academic pipeline.

3:30–4:30 PM Workshops**NESTA Session: National Earth Science Teachers Association Rock and Mineral Raffle (Earth)***(General) 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.

NESTA offers more than 50 specimen to choose from for a chance to win display-quality specimen of rocks, minerals, fossils, and other Earth science–related materials.

Diving into the Science Practices with Oceans (Earth)*(Elementary) 160C, BCEC***Marilyn Decker** (*mdecker@doe.mass.edu*), Massachusetts Dept. of Elementary and Secondary Education, Malden**Mary Bodkin** (*mbodkin@miltonps.org*), Glover Elementary School, Milton, Mass.

Presider: Robert F. Chen, UMass Boston, Mass.

Milton Public Schools has put in place an ocean science unit that makes science practices come alive for their students. Through hands-on activities, participants will sample some of the investigations in the unit. Join us and view student work and videos of the students in action.

NASA's MAVEN Mission: Red Planet Literacy Program (Earth)*(Elementary) 162A, BCEC***Erin Wood**, University of Colorado, Boulder

MAVEN stands for the Mars Atmosphere and Volatile Evolution mission. Join me and encounter the MAVEN mission, the next Mars mission, and the literacy program Red Planet: Read, Write, Explore!

Using a Patterns Approach to Meet NGSS in Physics (Phys)*(High School) 162B, BCEC***Susan Holveck** (*susan_holveck@beaverton.k12.or.us*), Beaverton (Ore.) School District**Heather E. Buskirk** (*heather.buskirk@gmail.com*), Johnstown High School, Johnstown, N.Y.**Bradford Hill** (*bradford_hill@beaverton.k12.or.us*), Southridge High School, Beaverton, Ore.

Four patterns are used to help freshmen develop a conceptual, graphical, and symbolic understanding of physics. Attention will be paid to hands-on inquiry and engineering that engages students.

Early Elementary Students CAN Engage in Scientific and Engineering Practices: A Model Lesson on Sinking and Floating (Gen)

(Elementary) 205A, BCEC

Andrew West (andrew.west@wku.edu), **Brittany Stigall** (brittany.stigall463@topper.wku.edu), and **Courtney Woodlee** (courtney.woodlee609@topper.wku.edu), Western Kentucky University, Olmstead

Join us as we model and discuss a lesson on sinking and floating that highlights age-appropriate science and engineering practices for early elementary students.

Using Crash Debates to Teach Logic, Bioethics, and Communication in AP and IB Sciences (Bio)

(High School–College) 205B, BCEC

Kristen R. Dotti (kristen_dotti@yahoo.com), Christ School, Arden, N.C.

Bring controversy into your classroom using debates that are well researched, articulately presented, and taught using a quick, clean teaching structure.

My Science Story: Where Science Inquiry Meets the Common Core (Gen)

(Elementary–Middle Level) 207, BCEC

Kristin L. Kandel (kandelk@ewsdmail.org) and **Natalie W. Brew** (brewn@ewsdmail.org), East Williston School District, Roslyn Heights, N.Y.

Presenter: Natalie W. Brew

Engage in a hands-on workshop focused on balancing science curriculum while incorporating *Common Core State Standards* through the development and creation of a personal science journal.

Literacy and Labs in 55 Minutes or Less (Gen)

(Elementary–Middle Level) 211, BCEC

Lucie M. Davis, St. HOPE Leadership Academy, New York, N.Y.

Learn how to set up and break down five lab inquiry stations and include literacy! Prizes and handouts!

Asking Questions in Science: Guiding Students' Curiosity and Understanding (Gen)

(Elementary) 212, BCEC

Briana K. McCarthy (bmccarthy@calacademy.org) and **Emily Gibson** (egibson@calacademy.org), California Academy of Sciences, San Francisco

This workshop focuses on pedagogical strategies that support student-generated questions and explores how asking meaningful questions can lead to deeper understanding of scientific concepts.

Elementary Investigations Strengthen Science and Literacy Skills (Gen)

(Elementary) 213, BCEC

Sandra Ryack-Bell (sryackbell@mits.org) and **Jane Heinze-Fry**, Museum Institute for Teaching Science, Quincy, Mass.

Rachel Stronach (rstronach@lloydcenter.org) and **Liz Moniz** (liz@lloydcenter.org), Lloyd Center for the Environment, Dartmouth, Mass.

Marley O'Neil (moneil@zoonewengland.com), Zoo New England, Boston, Mass.

Come “inquire” your thinking with the Museum Institute for Teaching Science and its partners and experience synergy of science and literacy and receive classroom-ready investigations.



NSTA Press® Session: Once Upon a Science Book (Gen)

(Middle Level–High School) 253C, BCEC

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

Find out why students struggle with reading and the top three ways you can help them. Connect your teaching to the Common Core with this workshop by the author of *Once Upon a Life Science Book*.

Predicting and Constructing Molecules from Simple to Complex (Gen)

(Middle Level) 254B, BCEC

Sally Kent (skent@avenues.org), **Margaret J. Wollner** (mwollner@avenues.org), and **Elizabeth Rosenberger** (erosenberer@avenues.org), Avenues: The World School, New York, N.Y.

Presenter: Danielle Gardella, Avenues: The World School, New York, N.Y.

Students apply reasoning skills to predict simple to complex molecular structures and construct 3-D models, which are hands-on, inexpensive, and require no disassembly. (NGSS: MS-PS1)

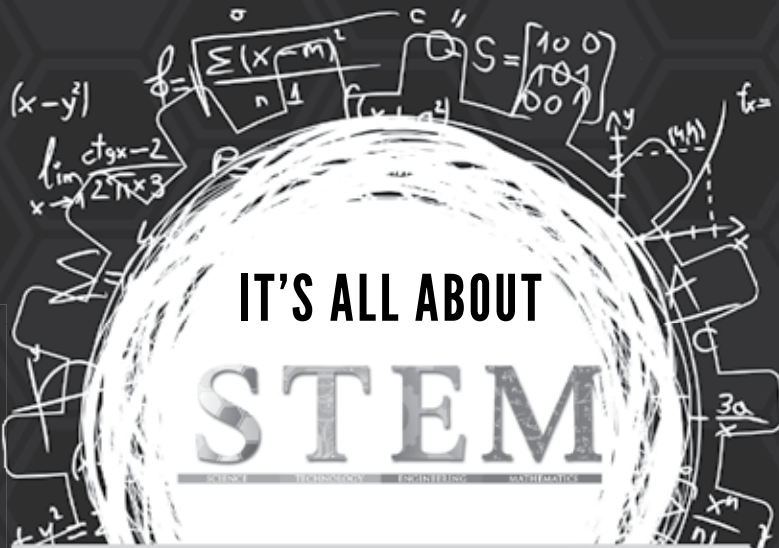
DinoTracks: Integrating Science, Math, and Literacy to Unlock the Past (Bio)

(Informal Education) 256, BCEC

Alexander J. Dunn (adunn@ecotarium.org), EcoTarium, Worcester, Mass.

Presenter: Lisa Levine, EcoTarium, Worcester, Mass.

Leaping from the imagined to the real, workshop participants will collect data and estimate the size and speed of dinosaurs by measuring their own “trackways.”

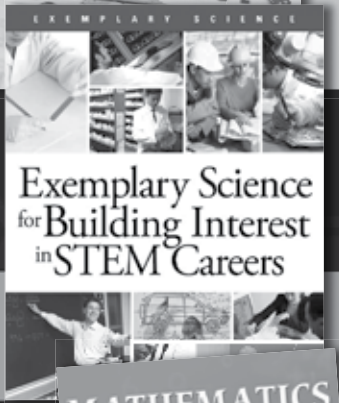


IT'S ALL ABOUT STEM

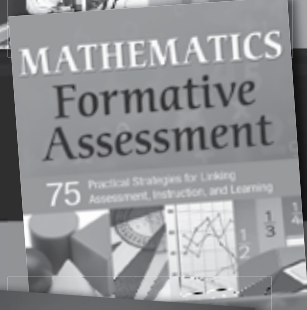
Looking for exciting STEM design challenges and activities to engage students?



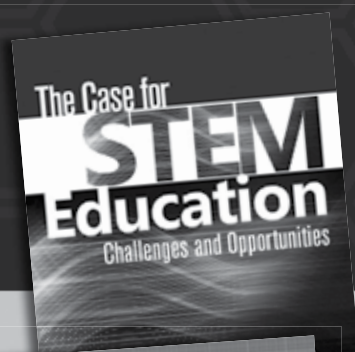
Hoping to steer students toward STEM-related career fields?



Get ideas, inspiration, and much more from these books in NSTA's STEM collection.



To order or learn more, visit www.nsta.org/store





Connecting STEM and American History Through Water Wheels (Gen)

(Elementary) 259A, BCEC

Sean D. Musselman (*musselman@bpsk12.org*), Burlington Science Center, Burlington, Mass.

Jane M. Lynch (*jlynch@bpsk12.org*), Pine Glen Elementary School, Burlington, Mass.

Liam Gillian, Thomas Gallagher, and Jenna Lyon-naise, Students, Pine Glen Elementary School, Burlington, Mass.

Follow the design process and construct your own water wheel while exploring the local history of the Lowell Mills (and their place in the Industrial Revolution).

ASTE Session: Dollar Store Elementary Science: Activities and Ideas to Help Build Your Science Teaching Confidence (Chem)

(Elementary) Pacific E, Renaissance

Richard P. Hechter (*hechter@cc.umanitoba.ca*), University of Manitoba, Winnipeg, Canada

Jerrold K. Wiebe, Westdale School, Winnipeg, Man., Canada

Through inexpensive hands-on/minds-on activities, explore elementary science concepts as well as teaching and learning strategies designed to boost your science teaching confidence!

Can Students Think Critically and Solve Problems? (Gen)

(Middle Level–High School) Seaport Ballroom A, Seaport

Lori D. Dunklin, Young Women’s College Preparatory Academy, Houston, Tex.

Walk away with hands-on activities you can use to encourage your students to think critically and problem solve.

Hey, That’s MY Data! (Gen)

(General) Faneuil, Westin Waterfront

Jeff Lukens (*jeffrey.lukens@k12.sd.us*), Roosevelt High School, Sioux Falls, S.Dak.

Developing, planning, carrying out, analyzing, interpreting, constructing, designing, engaging...all are verbs used in the NGSS “Big Ideas.” Come to this workshop and experience all of them!

3:30–5:00 PM Panel

NGSS@NSTA The Future of Assessment with NGSS (Gen)
(General) 210 A/B, BCEC

Moderator: **David L. Evans**, NSTA Executive Director, Arlington, Va.

Chris Lazaro, The College Board, New York, N.Y.

April McCrae (*april.mccrae@doe.k12.de.us*), Delaware Dept. of Education, Dover

Peter J. McLaren (*peter.mclaren@ride.ri.gov*), Rhode Island Dept. of Education, Providence

Lee Ann Nickerson, Jefferson County Public Schools, Louisville, Ky.

Susan Tierney (*tierney.susan@measuredprogress.org*), Measured Progress, Dover, N.H.

The performance expectations in the *Next Generation Science Standards* were designed to require assessment that would not measure just what students know, but what they can do with that knowledge. Many changes will be necessary in what assessment looks like, from simple formative assessment within the classroom to statewide (and possibly nationwide) summative assessments. This panel discussion will feature the perspectives of educators who have begun to explore this new world.

3:30–5:00 PM Exhibitor Workshop

Climate Series VII: NOAA Climate Stewards: What Works, What Doesn’t, What’s the Difference (Earth)

(Grades 6–12) 156C, BCEC

Sponsor: NOAA

Hilarie Davis, NOAA, Silver Spring, Md.

Join facilitated discussion groups and hear directly from peers about how they introduced climate change science and active environmental stewardship to their students and communities. Educators will share experiences of what has and has not worked, why, and how you can incorporate a solid evaluation component into your project.



4:00–5:30 PM Exhibitor Workshops

Solar Fountain

(Env)

(Grades 4–12)

151A, BCEC

Sponsor: KidWind Project

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

Come find out about different types of solar panels and learn how to hook them up in parallel and series in order to power a fountain. We'll also explore Solar Thermal water heating.

Connecting AP Chemistry to New Science Practices (Chem)

(Grades 9–12)

156A, BCEC

Sponsor: Ward's Science

Liz Hoffman, Ward's Science, Rochester, N.Y.

Learn how to transition your AP Chemistry curriculum and meet new AP standards with the all-new Ward's AP Chemistry Investigations—the ONLY kits that meet the new seven science practices. These kits are designed to help you save time in the lab and better prepare your students for success on the AP Chemistry assessment and beyond.

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.

5:00–5:30 PM Presentations

SESSION 1



Streamline to Mastery: A Model for STEM Professional Development (Chem)

(General)

260, BCEC

Alisa P. Grimes, University of Colorado, Boulder

The professional learning community streamline to mastery is redesigning the professional development model. Our meetings address our individual professional growth goals by encouraging all 12 science educators to approach science instruction as educational researchers.

SESSION 2

ASTE Session: A Case Study of Sheltered Instruction in Science Education with English Language Learners (Gen)

(High School)

Pacific E, Renaissance

Jingjing Ma, Texas Christian University, Fort Worth

This case study investigates the implementation of a sheltered instruction model in a science classroom at an urban public high school in north Texas.

5:00–6:00 PM Meeting

National Earth Science Teachers Association Annual Meeting

052 A/B, BCEC

Find out what NESTA has been up to. Help plan for the future, and share your thoughts on directions for NESTA. Attendance is open! Visit www.nestanet.org for more information.

5:00–6:00 PM Presentations

SESSION 1 (two presentations)

(Elementary–Middle Level)

158, BCEC

Empowering Your Teaching Through NGSS and the STEEM-S IMPACT Model (Gen)

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

This presentation shares the implementation of a new STEM curricular education model (known as STEEM-S IMPACT) that targets empowering teachers in STEM content areas.

Bridging the Gap: Bringing Community Scientists into the Classroom (Gen)

Elliot S. Macdonald, Seven Oaks School Division, Winnipeg, Man., Canada

As teachers, we can work with the local scientific community to bridge the gap between the real world and the classroom, thereby increasing student involvement so students are active in their learning process.

SESSION 2

Science and Engineering Synergy in a MSP Project: PISA2 (Gen)

(Elementary–Middle Level)

160A, BCEC

Arthur H. Camins (*arthurcamins@gmail.com*), Stevens Institute of Technology, Hoboken, N.J.

Find out about the work we are doing to increase student understanding of science and engineering in our NSF Math Science Partnership project—lessons learned and research findings.

SESSION 3

Migration in the Balance: Teaching the Intersection of Ecology and Global Change (Env)

(Elementary/Informal Ed)

160C, BCEC

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

Deanna Pucillo, Harry M. Bailey Middle School, West Haven, Conn.

Carmen M. Andrews (*andrewsc@ces.k12.ct.us*), Six-to-Six Interdistrict Magnet School, Avon, Conn.

Victoria L. Climie (*vclimie@branford.k12.ct.us*), Branford High School, Branford, Conn.

What's not to like about an epic journey? Check out this new curriculum about the wonders of animal migration and the challenges of global change.

SESSION 4

Inclusion of Unit-culminating Projects in High School Chemistry (Chem)

(General)

162B, BCEC

Michael T. Mury (*m_mury@acs.org*), American Chemical Society, Washington, D.C.

Why are we learning this? If this sounds familiar, come to this session to learn about ways to tie together units to keep student interest.

SESSION 5

Using Engineering Projects in Physics Courses—U.S. and Singapore (Phys)

(High School)

203, BCEC

Ann D. Kaiser (*akaiser@lasalle-academy.org*), LaSalle Academy, Providence, R.I.

Discussion centers on how to ensure substantial physics content and mastery while employing the engineering design process. I will share my experiences in the U.S. and in Singapore as a Fulbright teacher.

SESSION 6

Community Science Days: Lessons Learned and Best Practices (Env)

(Informal Education)

206 A/B, BCEC

Lynn Sametz (*l_sametz@uncg.edu*), The University of North Carolina at Greensboro

Amy Germuth (*agermuth@gmail.com*), EvalWorks, LLC, Durham, N.C.

Thinking about a hands-on community science day? Join us in a discussion, learn from two NSF projects, and engage in activities.



SESSION 7**Foundations of Science Literacy: A Program That Impacts Teacher Practice and Children's Learning in Physical Science (Phys)***(Preschool)*

252A, BCEC

Cindy Hoisington (*choisington@edc.org*), Education Development Center, Inc., Waltham, Mass.**Jeff Winokur** (*jwinokur@wheelock.edu*), Wheelock College, Boston, Mass.

We will share the history, specifics, research results, and current development of an early childhood science professional development program, Foundations of Science Literacy, an IES-funded program supporting young children's science learning by building teacher knowledge/skills in physical science teaching. Intended for teachers, administrators, and coaches interested in early childhood science teaching and learning.

SESSION 8**Let's Talk: Science! (Gen)***(Preschool–Elementary)*

252B, BCEC

Theresa Lee (*tlee2@boston.k12.ma.us*), Sumner Elementary School, Boston, Mass.

Gain strategies for facilitating science talk at elementary grade levels. Discussion centers on developmentally appropriate techniques as well as classroom case studies.

SESSION 9**NSTA Press® Session: Be a Scientist! Bring Biology to Life Through Citizen Science (Bio)***(Middle Level)*

254A, BCEC

Terry M. Tomasek (*ttomasek@elon.edu*), Elon University, Elon, N.C.**Nancy Trautmann** (*nmt2@cornell.edu*) and **Jennifer Fee** (*jms327@cornell.edu*), Cornell Lab of Ornithology, Ithaca, N.Y.**NancyLee Bergey** (*nancylee@gse.upenn.edu*), University of Pennsylvania, Philadelphia

Scientific practices and core ideas of biology come alive when your students' work is used by real scientists. Successful teacher ideas will be shared.

SESSION 10**Impulse: A Game Inside a Physics Simulator (Phys)***(Informal Education)*

256, BCEC

Jodi Asbell-Clarke (*jodi_asbell-clarke@terc.edu*), **James L. Larsen** (*jamie_larsen@terc.edu*), and **Teon Edwards**, TERC, Cambridge, Mass.**Barbara MacEachern** (*barbara_maceachern@terc.edu*) and **Erin Bardar**, EdGE at TERC, Cambridge, Mass.

Impulse is part of EdGE's Leveling Up series of games focusing on tacit science knowledge development that takes place in free choice games.

SESSION 11**Leading the Way in AP Biology (Bio)***(High School)*

257A, BCEC

Traci K. Richardson, Stillwater High School, Stillwater, Okla.

We will share our successes (and failures) in conducting professional development for teachers on designing curriculum aligned to the new AP Biology curriculum framework.

SESSION 12 (two presentations)*(General)*

257B, BCEC

Hip-Hop in the Science Classroom: Writing Academic Raps to Master Science Vocabulary (Bio)**Jeffrey M. Terry**, Henrico High School, Fairfield, Va.**Jacqueline T. McDonnough** (*jtmcDonnough@vcu.edu*), Virginia Commonwealth University, Richmond

Let us introduce you to the power of integrating hip-hop into the classroom. You'll learn how to write an academic rap and see student products.

A Different Kind of Assessment: Enhancing Your Science Classroom (Bio)**Katy H. Rudolph** (*khRudolph@spsmail.org*), Jarrett Middle School, Springfield, Mo.

Get rid of traditional tests by assessing with different art forms. Strategies discussed are science 3-D, digital camera, and musical science projects.

SESSION 13**A STEM View from Space (Earth)***(General)*

261, BCEC

James W. Kuhl (*jkuhl@cssd.org*), Central Square Middle School, Central Square, N.Y.

The Space Frontier Foundation is preparing to send teachers into space. Learn about the Teachers in Space program and projects teachers are learning about at TIS Summer Workshops.

SESSION 14

Full STEAM Ahead—Adding Art to STEM Education (Gen)

(General) Pacific A/B, Renaissance

Michael T. Harms (michaeltharms@hotmail.com), Katherine Delmar Burke School, San Francisco, Calif.

From crocheted coral reefs to microscope art, learn how one teacher uses art to deepen content knowledge while boosting creativity, critical thinking, and technology proficiency.

SESSION 15

Developing a Meaningful Science Field Trip (Gen)

(General) Pacific F, Renaissance

Nicole Scola (nscola@neaq.org) and **Rebekah Stendahl** (rstendahl@neaq.org), New England Aquarium, Boston, Mass.

Effective and well-managed field trips can lead to engaged students and valuable learning experiences. Walk away with practical tools, tips, and resources needed for successful trips.

SESSION 16 (two presentations)

(General) Pacific G/H, Renaissance

Presider: Keri E. Randolph, Public Education Foundation, Chattanooga, Tenn.

Inspiring by Inquiring: Tried-and-True Techniques That Motivate Students in an Inquiry Setting (Gen)

Brian L. Purvis (2gointernational@gmail.com), Ooltewah Middle School, Ooltewah, Tenn.

Join a veteran inquiry teacher as he shares techniques that transform instruction and motivate students to succeed.

Apps to Support Inquiry Instruction (Gen)

Nanette I. Marcum-Dietrich (ndietrich@millersville.edu), Millersville University of Pennsylvania, Millersville

Apps are powerful learning tools, but not all apps are created equal. Find out about the best apps to use in your inquiry classroom.

SESSION 17

The iPad Invasion in the Middle School Classroom (Gen)

(General) Lighthouse I, Seaport

Maggie J. Mabery and **James Locke** (jlocke@mbusd.org), Manhattan Beach Middle School, Manhattan Beach, Calif.

Come learn how to use iPads in the middle school science classroom. We'll share labs, projects, and apps used with an iPad.

SESSION 18

Science Olympiad Coaches Workshop (Gen)

(Middle Level–High School) Lighthouse II, Seaport

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

Want to start a Science Olympiad team but don't know where to start? This session offers great advice to new and experienced coaches.

SESSION 19

How App-ropos: Science Apps That Align the NGSS with Common Core State Standards, ELA (Gen)

(Elementary–High School) Lewis, Westin Waterfront

Timothy A. Laubach (laubach@ou.edu), University of Oklahoma, Norman

Science apps that align the NGSS with CCSS ELA will be shared. I'll provide strategies for using a matrix to help parallel these standards.

SESSION 20 (two presentations)

(General) Stone, Westin Waterfront

Collaborative Coauthoring in the Science Classroom (Gen)

Jason Artero, Central Michigan University, Mount Pleasant

Explore using coauthoring and cognitive conflict with students to allow them to challenge other students' ideas about science through writing and discussion.

Incorporating a Curriculum-based Reader's Theater into a Laboratory Setting: Risk and Reward (Gen)

Chrissy J. Cross (chrissy.cross@ttu.edu), Texas Tech University, Lubbock

Increase literacy, engagement, and achievement by using a curriculum-based reader's theater in your laboratory!

SESSION 21

The 28%—The Few, The Proud, The Scientifically Literate (Gen)

(Elementary–High School) Webster, Westin Waterfront

Fred B. Ende (fende@pnwboces.org), Putnam/Northern Westchester BOCES, Yorktown Heights, N.Y.

Raymond LoGiudici (ralogiudici@ccsd.ws), Seven Bridges Middle School, Chappaqua, N.Y.

Scientific literacy skills are necessary for students to become well-informed members of society. Learn methods to build these skills into your curriculum.

5:00–6:00 PM Workshops**Literacy in the Field with OBIS!****(Env)***(General)*

157C, BCEC

Joanna Snyder, The Lawrence Hall of Science, University of California, Berkeley

Hands-on science requires active thinking, and thinking involves language. Expand your instruction into the school yard to increase student engagement while improving academic performance. Discover ways language may be used to help students make sense of their science learning. While outdoors, we will explore Outdoor Biology Instructional Strategies, using effective management, language development, and formative assessment strategies that connect to concepts and practices in the NGSS.

From Simple Circuits to Introductory Robotics**(Phys)***(Elementary)*

159, BCEC

Gianna Colson (*gianna.colson@gmail.com*), Noemi Dominguez Elementary School, La Feria, Tex.

Teach your students how to build and when to use a simple, series, and parallel circuit.

The Entomological Society of America Presents: Putting Some Bugs in Your Biology**(Bio)***(Elementary–Middle Level)*

160B, BCEC

Andrine A. Shufan (*andrine@okstate.edu*), Oklahoma State University, Stillwater

Join us for hands-on engagement with a grasshopper dissection, a live roach heartbeat experiment, and tons of ready-to-go materials using insects as classroom models for structure and systems.

Multidisciplinary Science Games!**(Earth)***(Elementary–Middle Level/Informal Education)*

162A, BCEC

Nicole Kurtz (*kurtz588@gmail.com*) and **Michael Kurtz** (*kurtz588@gmail.com*), Deep Earth Academy, New Orleans, La.

Come explore science games and multimedia resources focused on ocean and Earth science topics for elementary and middle school students.

Beyond the Solar System: The (Even More) Exciting Part of Astronomy**(Earth)***(General)*

204 A/B, BCEC

Alice (Jill) A. Black (*ablack@missouristate.edu*), Missouri State University, Springfield

Expand your students' knowledge of the stars and the universe. Engage in activities that involve not only information about our universe, but basics of how astronomers know what they know.

Patterns Around Us**(Bio)***(Middle Level–High School)*

205A, BCEC

Wayne R. Kermenski (*wkermenski@gmail.com*), Mohawk Trail Regional High School, Shelburne Falls, Mass.

Jennifer Welborn (*welbornj@arps.org*), Amherst Regional Middle School, Amherst, Mass.

Explore the process of pattern recognition, analysis, prediction, and testing (RAPT) through a variety of activities that align with the NRC *Framework* and investigate wrinkling patterns through hands-on activities, culminating in a real-life design challenge.

Motion and Its Sidekicks—Velocity, Acceleration, Energy, Work, and Efficiency**(Phys)***(Elementary–High School)*

205C, BCEC

Michael H. Suckley (*dr.suckley@sciencescene.com*), Macomb Community College, Warren, Mich.

Paul A. Klozik (*paklozik@wowway.com*), The MAPs Co., Fraser, Mich.

STEM-ify your students with activities investigating motion's sidekicks—velocity, acceleration, energy, and work—and the laws of energy using Hot Wheels® and a modified stopwatch. Participants receive an activity handout and the first 35 also receive complete kits containing workshop materials.

The Next Generation Science Strategies: Integrating Writing, Engineering, and Visual Art with Crosscutting Science and Math Standards**(Gen)***(Elementary–Middle Level)*

207, BCEC

Lucinda Presley (*lucinda.presley@gmail.com*), ICEE Success Foundation, Palestine, Tex.

Use fun examples and activities to learn proven 3-D paper engineering strategies that engage your students in standards-based visual analysis, STEM writing, and concept synthesis.

Your Ecological Footprint: Steps on the Pathway to a Sustainable Planet (Gen)

(General) 208, BCEC

Laurel Kohl (kohl1@easternct.edu), Eastern Connecticut State University, Willimantic

How much of our world resources do you (and your students) use? This lesson from www.ctenergyeducation.com brings global issues to a personal level and encourages student action.

Bridging the Observable to the Atom (Chem)

(Elementary–High School) 209, BCEC

Krista L. Adams (kadams12@unl.edu), University of Nebraska–Lincoln

Teaching chemistry involves helping students make connections between observable phenomena and the subatomic level. Participants will analyze laboratory activities in light of research in science education.

Something to Write Home About: Enhancing Students’ Literacy Skills in a Science Classroom (Gen)

(Elementary–Middle Level) 211, BCEC

Thomas W. Grierson, Purchase Line School District, Commodore, Pa.

Join me for this workshop designed to help science teachers incorporate writing and vocabulary standards into their lessons while still addressing the science standards for which they are responsible.

Cabinets of Curiosity: Exploring the “Ologies” with Elementary-aged Students Through the Art of Collections (Gen)

(Preschool–Elementary) 212, BCEC

Ilana April (iapril@amnh.org), **Caitlin Coe** (coe@amnh.org), and **Janice Jang** (jjang1@amnh.org), and American Museum of Natural History, New York, N.Y.

Presider: Caitlin Coe

Allow your students to step into the shoes of a scientist by teaching about scientific collections, giving them confidence with scientific process skills such as observation and classification and familiarizing them with different branches of science.

Science Notebooks Provide a Context for Literacy Development (Gen)

(Elementary) 213, BCEC

Kelly M. Corbett (kelly_corbett@needham.k12.ma.us), Broadmeadow Elementary School, Needham, Mass.

Examine the role science notebooks can play in the development of a student’s critical-thinking skills and scientific content knowledge. Through active inquiry-based tasks, the viewing of video case studies, and the examination of authentic student notebooks, participants will parallel the sequence of investigations and notebook entries that foster curiosity. Collectively, we will identify strategies that support the development of literacy skills.

To Flink or Not to Flink? (Gen)

(Elementary) 254B, BCEC

Amy Cicala and **Barbara Fuller**, Hillside Elementary School, Needham, Mass.

Experience an engaging engineering task that explores properties of materials and buoyancy, introduces the engineering design process through inquiry, and establishes guidelines for cooperative learning.

If You Build It, They Will Learn: Constructing Content Storylines as Guides for Science Units (Gen)

(Elementary) 255, BCEC

Corey Zupon (cnh13@scasd.org), **Kimber Hershberger**, and **Melissa Gleason** (maq28@scasd.org), Radio Park Elementary School, State College, Pa.

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

Alicia McDyre (amcdyre@gmail.com), Penn State, University Park, Pa.

Presider: Carla Zembal-Saul, Penn State, University Park, Pa.

Learn steps for developing questions, claims, and evidence that guide science units. Walk away with a DVD of sample content storylines created by practicing teachers.



Wiggly Worms: Active Learning for the Early Grades (Gen)

(Preschool–Elementary) 259A, BCEC

Jim McDonald (jim.mcdonald@cmich.edu) and **Lynn Dominguez** (domin11a@cmich.edu), Central Michigan University, Mount Pleasant

Based on a 5E (Engage, Explore, Explain, Elaborate, and Evaluate) and *Growing Up Wild* unit for preK–3, we’ll share activities that address NGSS in an engaging manner as well as literature connections.

Mobile Science: Unlock the Power of iPads in the Field (Gen)*(General)**Pacific D, Renaissance***Katy Scott** (kscott@mbayaq.org), Monterey Bay Aquarium, Monterey, Calif.

Don't miss the most powerful feature of iPads—mobility. Get strategies for using iPads in the field to help K–12 students access and create a wealth of information.

Close Reading in Science—Applying the Common Core State Standards, ELA (Gen)*(General)**Faneuil, Westin Waterfront***David E. Vernot** (dvernot@gmail.com), Butler County Educational Service Center, Hamilton, Ohio

Experience “Close Reading” strategies that help students dissect passages from a variety of complex texts, read like a detective, identify tiered vocabulary, and use text-dependent questions.

When Practice Doesn't Make Perfect: Common Misunderstandings of the NGSS Science Practices (Gen)*(General)**Harbor Ballroom III, Westin Waterfront***Cody Sandifer** (csandifer@towson.edu), Towson University, Towson, Md.

Join us to deepen your understanding of the eight NGSS science practices, with a focus on identifying the practices “in action” and common misunderstandings.

7:30 PM–12 Midnight NCAA Final Four Watch Party!**Basketball Physics***(Ticket Required: \$20)***M-9** *Atlantic Blrm., Renaissance**Sponsored in part by Vernier Software & Technology*

John Fontanella (fontanel@comcast.net), Professor Emeritus of Physics, United States Naval Academy, Annapolis, Md.

Join your colleagues on Saturday night. 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!

Hear about the truth and beauty in the game of basketball from the perspective of both a physicist and a player and fan of the sport. To some scientists, “final four” refers to the forces that determine the flight of a basketball. Join John for a discussion on those forces, along with the physics in action that allow the game of basketball to be played. He will share some examples from past games as well as some science-based how-to fundamentals.

John J. Fontanella was a physics professor at the United States Naval Academy from 1971 to 2008 and he became professor emeritus in 2010. John was a college basketball player at Westminster College in New Wilmington, Pennsylvania.

As a senior in 1967, he was a NAIA First Team All-American and set the single-game basketball scoring record at Westminster with 51 points. He is also tied for the single season scoring record.

John then earned an NCAA postgraduate scholarship to Case Western Reserve University, where he earned his PhD in physics. He has published widely in the field of condensed matter physics and is currently focusing his research on dielectrics. In 2006, John combined his love of basketball and physics into a book, The Physics of Basketball.

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

A Festival of Engineering, Technology, and Science Treats as Related to STEM, the NRC Framework, and the NGSS, Part 3

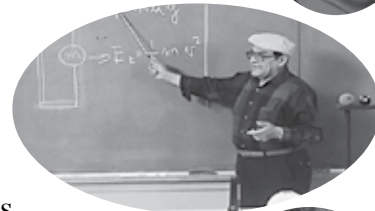
6:00 PM–12 Midnight • Caspian, Renaissance Hotel

Mitchell E. Batoff (mbatoff@aol.com), Professor Emeritus, New Jersey City University, Jersey City
Gordon D. Clark, Retired Educator, Manalapan, N.J.



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:

Bill Nye on *Probability* • Chemistry with **Lee Marek** and **David Letterman** • For the Love of Physics with MIT's **Walter Lewin** • *Cell-to-Cell Communication* with Princeton's **Bonnie Bassler** • **David Macauley** on *Bridges* • *Chaos and Engineering* with Cornell's **Steven Strogatz** • *Modeling from the Search for Solutions* • **Bill Nye** on *Renewable Energy/Transportation* • **Jamie Escalante** on *Meteorology and Mathematics* • **Paul Hewitt** on spirited physics demos • *The Way Things Go* • **Michael Wysession** on *How the Earth Works...* and the importance of the geosciences to engineering • Why does the *NRC Framework* separate Applied Science from Engineering? • **Michael Starbird** on *Change and Motion/Meaning from Data*



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.



The Origins of All Technology • an excerpt from the amazing *MicroCosmos*

• Cornell's **Verne Rockcastle** on *Quantitative Meaningful*

Investigations, K–8 • MIT's **Jeffrey Grossman** on *Understanding*

Some of the Science, Technology, and Engineering of Tomorrow: Myth and

Reality • *Fourteen Grand Challenges for Engineering During the 21st*

Century (NAE) • **Don Showalter** on *Demonstrations from*

The World of Chemistry • **Henry Petroski** on *An Engineer's*

Alphabet • **Charles and Ray Eames** on *Design, Technology,*

and Short Film Gems • **Robert Hazen** on *Properties of Materials/*

Semiconductors and Modern Microelectronics • **Ken Burns** on *The*

Brooklyn Bridge • **S. James Gates Jr.** on *It's a Bird—A Plane—No,*

It's Superstring! • *Engineering the Impossible* • **Patrick Grim** on *The*

Dream, The Brain, and The Machine • **Okada Kazuo** and

TokyoCinema on *Life in the Abyss* • **Enrico Fermi** and

the dark side of technology • *The Invisible World* including the

remarkable work of MIT's **Harold E. Edgerton** • Striking

footage of bird behaviors—made possible through

modern technology—at the Cornell Lab of Ornithology

• University of Colorado's **Albert A. Bartlett** on

Arithmetic, Population, and Energy • more than a 100

choice internet sites for great video segments related to STEM





—Photo courtesy of Yoshiki Hase, Museum of Science, Boston

7:00–8:00 AM Breakfast

NSTA Life Members' Buffet Breakfast

(Ticket Required: \$50) **M-10** *Douglass, Westin Waterfront*
Celebrate Your Lifetime Dedication. Join your fellow NSTA Life Members for a breakfast filled with memories as well as meaning. Catch up with old friends, make new ones, trade war stories, and discuss ways to share your talents and vitality with the science education community. Activities and door prizes, too!

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



8:00–9:00 AM Presentations

SESSION 1

Portfolio Assessment: Getting Students to Value What's Learned Over Points Earned (Phys)

(Middle Level–High School) *102B, BCEC*
Kristin Newton and **Desirée M. Phillips** (*dphillips@cpsd.us*), Cambridge Rindge & Latin School, Cambridge, Mass.

Find out how to encourage students to reflect on and revise work, and be responsible for showing evidence of their learning. Strategies, rubrics, and portfolios shared.

SESSION 2 (two presentations)

(General) *150, BCEC*
Science Assets Teacher Academy: A Yearlong Professional Development Model for Improving Student Science Learning (Phys)

Beth Murphy, The Bakken Museum, Minneapolis, Minn. What's the impact of yearlong professional development on teaching and learning? Explore the goals, implementation, and impact on teaching of elementary physical science.

The ToPPS Program: The Statewide Impact of Making Physics Accessible at Every Grade Level (Phys)

Steven J. Maier (*sjmaier@nwsu.edu*), Northwestern Oklahoma State University, Alva

Oklahoma ToPPS stands for Teachers of Physics and Physical Science. The ToPPS program continues to help Oklahoma elementary, middle, and high school teachers become physics leaders in their districts. Come learn about the ToPPS story at www.nwsu.edu/ToPPS/

SESSION 3

Bringing Science into the Classroom (Env)

(Middle Level–College) *151B, BCEC*

Fran Hess (*fran Hess@gmail.com*), STANYS, Laurens, N.Y.
Jonathan E. Nichols (*jnichols@ldeo.columbia.edu*), Lamont-Doherty Earth Observatory, Palisades, N.Y.

A collaboration among teachers and scientists brings Arctic field experiences into the classroom, benefiting both teacher and students.

SESSION 4

Teaching Tree-Ring Science to Elementary Students and Older: An Effective Collaboration Among Scientists and Schoolchildren (Env)

(General) *152, BCEC*

Jacob Tanenbaum (*jtanenbaum@socsd.org*), Cottage Lane Elementary School, Blauvelt, N.Y.

Branch out with a new activity in your classroom. Come hear about a collaboration between Tree-Ring scientists and elementary students. Leave knowing how your students can core and process tree ring samples.

SESSION 5

Building a Strong Foundation for Energy Literacy Through the Integration of Instruction Across Content Areas and Grade Levels with “Energy Day”!

(Env)

(General) 153A, BCEC

Deborah J. Shiflett-Fitton (dffitton@capelightcompact.org) and **Sally Andreola** (sallyandreola1@msn.com), Cape Light Compact, Barnstable, Mass.

Nancy Gifford (ngifford@monomoy.edu), **Melinda Forist** (mforist@monomoy.edu), and **Sally Rutledge** (srutledge@monomoy.edu), Harwich Middle School, Harwich, Mass.

Presider: Deborah J. Shiflett-Fitton

Explore the concept of “Energy Day” with this award-winning, innovative, and interactive model that uses interdisciplinary and multigrade-level tools to turn a middle school into an energy learning laboratory for an entire school day.

SESSION 6

Pluff Mud! Lessons Learned from Salt Marsh Restoration

(Env)

(General) 153B, BCEC

Elizabeth(E.V.) Vernon Bell (elizabeth.vernon@scseagrant.org), South Carolina Sea Grant Consortium/COSEE SE, Charleston

Pat Pierce, Blended Learning Coach-Teacher, Myrtle Beach, S.C.

Cindy Lilly (clilly001@horrycountyschools.net), Ocean Bay Middle School, Myrtle Beach, S.C.

Environmental stewardship projects are powerful education tools. This session highlights lessons learned on developing and implementing the salt marsh restoration program “From Seeds to Shoreline.”

SESSION 7

Greengineering the Future

(Gen)

(High School) 156C, BCEC

Steve R. Chinosi (stephen_chinosi@newton.k12.ma.us), Newton (Mass.) Public Schools

Join me for big ideas, lessons learned, and action plans for creating an inspired, inquiry-based integration of science and engineering through the flipped and blended Greengineering program.

SESSION 8

Exploring the 2011 Trends in International Mathematics and Science Study (TIMSS): Newly Released Science Assessment Items and Web Tools

(Gen)

(Elementary–Middle Level) 158, BCEC

Lydia B. Malley (lmalley@air.org) and **Sharlyn M. Ferguson** (sferguson@air.org), American Institutes for Research, Washington, D.C.

Receive an introduction to TIMSS 2011 science items—student performance in science and contextual data via demonstrations of the Dare-to-Compare and International Data Explorer web tools.

SESSION 9

Using a Literacy Framework: Co-developing and Contextualizing Science and Language Instruction for English Language Learners

(Gen)

(Elementary–Middle Level) 160C, BCEC

Judy Reinhartz (jreinhartz@utep.edu), The University of Texas at El Paso

Presider: Gloria Polanco-McNealy, Alicia R. Chacon International Magnet School, El Paso, Tex.

A literacy framework and language-rich science content strategies were used to support K–8 teacher learning to improve ELL’s academic success. Findings both quantitative with test scores and qualitative with analysis of student discourse and notebook entries provided evidence for students’ significant performance gains. View student videos and participate in a series of these strategies.

SESSION 10

Water, Water Everywhere and Not a Drop to Spare—Using Technology to Solve a Real-World Problems

(Chem)

(High School) 162B, BCEC

Cara Hale-Hanes, Long Beach Polytechnic High School, Long Beach, Calif.

Find out about an innovative curriculum developed to weave nanoscience and probe technology into chemistry. With this curriculum, students design an engineering solution to deliver potable water for an African village.

SESSION 11

Community Collaboration: Partnering Seventh-Graders with Professional Scientists (Gen)

(General) 208, BCEC

Pamela Shwartz (*pshwartz@cpsd.us*), Cambridge Street Upper School, Cambridge, Mass.

Lisa Van Vleck (*lpvv@comcast.net*), Cambridge School Volunteers, Cambridge, Mass.

Professional scientists mentor seventh-graders through e-mail and face-to-face meetings to foster science literacy and STEM career awareness.

SESSION 12

There’s an App for That! (Gen)

(Elementary–High School) 251, BCEC

Judith Ann Bazler, Monmouth University, West Long Branch, N.J.

Kyle A. Seiverd (*kaseiverd@aol.com*), Toms River High School North, Toms River, N.J.

We developed a systematic approach to review iPad/iPhone apps that are appropriate for a science/math classroom. We will share our process, topic list, best app reviews, and their links to national standards. Bring your iPads/iPhones and add apps on-site.

SESSION 13


Inquiring Minds Want to Know...How to Create a PBL Unit (Gen)

(Elementary) 252B, BCEC

Ryan Linton, **Shenandoah Kolbe**, **Elyse M. Smith**, **Rhea Brown**, and **Michelle A. Flores**, Smithridge STEM Academy, Reno, Nev.

Confused about incorporating STEM disciplines with Project Based Learning? In this session, you will leave with a step-by-step guide to help you create K–6 PBL units.

SESSION 14

 **NSTA Press® Session: Using Science Mysteries to Promote Literacy (Gen)**

(Elementary–High School) 254A, BCEC

Richard D. Konicek-Moran (*konmor@comcast.net*), Professor Emeritus, UMass Amherst, Mass.

Andrea Allen (*andrea.allen@knoxschools.org*), Knox County Schools, Knoxville, Tenn.

This session will use *Everyday Science Mysteries* to reinforce literacy while teaching science concepts. Participants will learn how to use thinking maps and literacy strategies to guide their students to solving the science mysteries. These strategies can scaffold for either struggling or gifted readers, showcasing the NGSS and CCSS in complete harmony.

SESSION 15

Collaborative Engineers: Incorporating Literacy Through Middle School Mentors to Enhance the Design Challenge Process (Gen)

(General) 255, BCEC

Jessica M. Addington (*jessica.addington@sdhc.k12.fl.us*), Lockhart Elementary School, Tampa, Fla.

Come find out how elementary and middle school science come together through engineering design challenges.

SESSION 16 (two presentations)

(High School) 257A, BCEC

Powerful Science Learning Tools for English Language Learners (Bio)

Yu Ren Dong (*yu.dong@qc.cuny.edu*), Queens College, Flushing, N.Y.

Attention will be paid to a discussion and demonstration of three instructional tools for teaching science to ELLs.

The GLOBE Carbon Cycle Project: Using a Systems Approach to Understand Carbon and Its Relationship to Ecosystems and Climate (Bio)

Sarah Sallade (*info@globecarboncycle.unh.edu*), Sanborn Regional High School, Kingston, N.H.

The carbon cycle is one of Earth’s most important systems. Learn about a program that engages students in carbon cycle science through data collection and systems thinking.

SESSION 17

Skull-Mania (Bio)

(Elementary–High School) 257B, BCEC

Hal Clary (*hclary@nobleps.com*), Noble (Okla.) Public Schools

Skull-mania is a multifaceted approach to studying classification, structure, and function using animal skulls. You will also learn how to acquire skulls for classroom use.

SESSION 18

 **Discourse—Worth Discussing! (Gen)**

(General) 258C, BCEC

Kirsten Daehler (*kdaehle@wested.org*) and **Cailean Cooke**, WestEd, Redwood City, Calif.

Kathy Huncosky (*khuncosky@madison.k12.wi.us*), Madison (Wis.) Metropolitan School District

Learn how to make meaning of science ideas through evidence-based discussions. Focus on ways to support listening and talking in the classroom.

SESSION 19



“Nature”-ally Good Science Teaching in Early Childhood Education (Gen)

(Preschool–Elementary/Supervision) 259A, BCEC

Nancy A. Varian (*nvarian@malone.edu*) and **Beth A. Clark-Thomas** (*bcthomas@malone.edu*), Malone University, Canton, Ohio

Nature-deficit tendencies can be evidenced in students’ preparedness for learning. Explore ways to integrate inquiry-based experiences into the early childhood classroom.

SESSION 20



SILT (Science Instructional Leadership Teams): A Model of Student Work Analysis to Improve Teacher Practice (Gen)

(High School) 260, BCEC

Scott Schneider (*scott.schneider@jefferson.kyschools.us*), Fairdale High School, Fairdale, Ky.

Elizabeth Edmondson (*ewedmondson@gmail.com*), Virginia Commonwealth University, Richmond

Miranda L. Messer (*miranda.messer@jefferson.kyschools.us*), Ballard High School, Louisville, Ky.

Presider: Lee Ann Nickerson, Jefferson County Public Schools, Louisville, Ky.

We will share a model developed to help teachers in content-specific areas from across a large urban district. Using PLC facilitation experiences, learn strategies to analyze student work and tools for collegial classroom observation and feedback.



8:00–9:00 AM Workshops

Engineering Challenges in Physical Science (Phys)

(Middle Level–High School) 102A, BCEC

Kathleen Reiss (*kmr530@interact.ccsd.net*), Cram Middle School, North Las Vegas, Nev.

Melissa Eickholt (*mmeickholt@interact.ccsd.net*), Brian and Teri Cram Middle School, North Las Vegas, Nev.

Jennifer Neri, Tarkanian Middle School, Las Vegas, Nev. Encounter motivating hands-on engineering challenges that invite the application of disciplinary core ideas to predict or formulate a solution.

Science in the Media: Bringing Cutting-Edge Astronomy from Scientists to Students (Earth)

(High School) 104B, BCEC

Barbara Mattson (*barb.mattson@nasa.gov*), Universities Space Research Association, Greenbelt, Md.

How does a scientific discovery go from scientists to interested audiences? Let your students try their hands at it with Science in the Media.

Yellowstone’s Dynamic Landscape as a Jigsaw Investigation (Earth)

(Middle Level–High School) 104C, BCEC

Shelley Olds (*olds@unavco.org*), UNAVCO, Boulder, Colo.

Discover volcanism through this Problem-Based Learning activity using data and Google Earth. Explore Yellowstone’s fascinating landscape through video, demonstrations, and seismic, hydrothermal, and GPS data.

JetStream: An Online School for Weather (Earth)
(Elementary–High School) 106, BCEC

Dennis Cain (*dennis.cain@noaa.gov*), National Weather Service, Fort Worth, Tex.

Come learn about JetStream, a free online resource from the National Weather Service with lesson plans and demonstrations teaching various aspects of weather.

2015—Pluto Awaits (After a 10-Year and Three Billion Mile Journey) (Earth)
(Elementary–High School) 107A, BCEC

Heather M. Weir, NASA Goddard Space Flight Center/SSAI, Lanham, Md.

NASA’s New Horizons will have the first-ever look at Pluto. Besides learning about this fantastic mission to the ninth “classic” planet, participants will engage in thematic STEM hands-on activities.

Practical Tools for Demystifying Science Journal Articles for Your Students (Earth)
(Middle Level–College) 107B, BCEC

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

Build science articles into your students’ science education. Learn how to attack science journal articles head on with your students—demystifying vocabulary, graphics, and charts.

An Active Sun: Solar Flares and Coronal Mass Ejections (Earth)

(Elementary–High School) 107C, BCEC

Julie E. Taylor (*julie_taylor@eee.org*), Adelanto (Calif.) School District

Our Sun definitely affects Earth, especially in its active phase. Come engage in hands-on activities that demonstrate this influence on Earth.

Pedagogical Approach for Teaching and Learning Abstract Chemistry Concepts (Chem)

(Middle Level–High School) 109A, BCEC

Sau Kheng Au (*au_sau_kheng@moe.gov.sg*), Ministry of Education, Singapore

An inquiry-based and modeling approach based on the pedagogical framework, Chemistry by Modeling, is designed for the teaching and learning of abstract chemistry concepts in Singapore.

From Lemon to Activity Series (Chem)
(High School) 109B, BCEC

Barbara Schulze, Ralph C. Mahar Regional High School, Orange, Mass.

President: Kathleen S. Davis, UMass Amherst, Mass.

Create lemon batteries and explore how to maximize voltage. Using scientific reasoning, engage in activities ranking a series of metals.

Fusing Literacy with Hands-On Data Collection (Phys)

(Middle Level–High School) 151A, BCEC

David Steeves (*steevesd@chelmsford.k12.ma.us*), Chelmsford High School, Chelmsford, Mass.

Find out how to fuse literacy with a hands-on data collection activity to provide a deeper understanding of motion. This activity will require students to analyze a motion graph and describe, in writing, the motion of the object before starting the data collection.

Engage with Engineering: Prepare a Science Department to Integrate Engineering Practices into Its Courses (Gen)

(High School/Supervision) 156A, BCEC

Amy Winston (*amy_winston@newton.k12.ma.us*), Newton North High School, Newtonville, Mass.

Baby steps, professional development, and fun!: One administrator’s experience preparing a science department to infuse engineering into its science instruction.

Using Underwater Robots to Build Your STEM Pipeline (Gen)

(General) 157A, BCEC

Diana Cost (*diana_cost@yahoo.com*) and **Darleese Monteiro** (*dmonteiro@glcps.org*), Global Learning Charter Public School, New Bedford, Mass.

Keith Bradley (*bradleyk@somerset.k12.ma.us*), Somerset Middle School, Somerset, Mass.

Meghan Abella-Bowen (*meghan.abella-bowen@bristolcc.edu*), Bristol Community College, Fall River, Mass.

Delve into using underwater robots to engage students with hands-on problem-solving activities. Lessons will incorporate Common Core, science, and engineering.

Get Your Hands on the Basics of Climate Science

(Env)

(Middle Level–High School)

157C, BCEC

Julie Yu (jyu@exploratorium.edu), Exploratorium, San Francisco, Calif.

Come do hands-on activities that show how Earth's energy balance and carbon cycle influence temperature.

A Two-Part Maglev Challenge

(Phys)

(Elementary–Middle Level)

159, BCEC

David S. Lisnitzer (dlsnitzer@gmail.com), PS/MS 124Q, South Ozone Park, N.Y.

Maglev cars are cars that float on magnets. Design, build, and test your own maglev car. Take home the entire unit that includes rubrics, writing prompts, and templates.

What Are You Inferring?

(Bio)

(Elementary–Middle Level)

160B, BCEC

Douglas R. Dawson (ddawson@worchester.edu), Worcester State University, Worcester, Mass.

Short introductory inquiry activities in biology are presented that can help introduce students to inference, using information from tracks, fossils, and “alien” animal body structures.

Making Climate Data Meaningful

(Env)

(Elementary)

161, BCEC

Sarah C. Soule, California Academy of Sciences, San Francisco

What is the difference between weather and climate? What can we learn from long-term climate patterns? Engage in data analysis and argumentation to find out.

Getting Your Hands Dirty with GLOBE: Activities for the Elementary Classroom

(Earth)

(Elementary–Middle Level)

162A, BCEC

Tony Murphy (tmurphy@globe.gov), UCAR, Boulder, Colo. GLOBE stands for Global Learning and Observations to Benefit the Environment. Experience hands-on GLOBE activities and learn how they reflect the vision of the *Next Generation Science Standards* and can be easily incorporated into the classroom.

Science and Literacy—A Natural Fit

(Gen)

(General)

203, BCEC

Cathleen Newton (newtonc@hartfordschools.net), Dothan Brook School, White River Junction, Vt.

Suzan Locke (lockes@hartfordschools.net), White River School, White River Junction, Vt.

Experience a science investigation that incorporates literacy strategies—specifically talk and notebook writing—deep-

ening their understanding of inquiry and connections to literacy.

InterLACE: Collaboration in the Classroom

(Gen)

(High School)

204 A/B, BCEC

Gary Garber (ggarber@bu.edu), Boston University Academy, Boston, Mass.

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

Do you engage students in collaborative discussions? We'll introduce an online toolkit that allows students to contribute and exchange written, verbal, and visual ideas. BYOD!

What a Difference a Degree Makes: Using Temperature Fluctuations to Induce Mitotic Mutations in Microorganisms!

(Bio)

(Middle Level–High School)

205A, BCEC

Tamica A. Stubbs (tamica.stubbs@cms.k12.nc.us), Phillip O. Berry Academy of Technology, Charlotte, N.C.

Learn how to use *Tetrahymena* protists as genetic models to demonstrate conditional mutations and apply their observations to cell division and evolutionary theory.

Sweet Math: How Much Corn Did I Drink?

(Bio)

(Elementary–High School)

205B, BCEC

Suzanne M. Cunningham (scunning@purdue.edu), Purdue University, West Lafayette, Ind.

Reading a label on that can of soda, bottle of pop or sport drink, or box of juice is NOT enough. Math is required.

Discover Bridge Building to Incorporate STEM in Your Classroom

(Phys)

(Middle Level–High School)

205C, BCEC

Elizabeth Wenk (elizabeth.wenk@palmbeachschools.org) and **Maria C. Aparicio** (maria.aparicio@palmbeachschools.org), West Boca Raton Community High School, Boca Raton, Fla. Come find out how to facilitate bridge building competitions. This hands-on workshop provides you with adaptable guidelines and rubrics to implement in your classroom.

Family Science Night Partnerships in a Culture of Science

(Gen)

(Elementary–Middle Level)

207, BCEC

Jay Holmes (jholmes@amnh.org), **Tina Glover** (tglover@amnh.org), and **Hudson Roditi** (hroditi@amnh.org), American Museum of Natural History, New York, N.Y.

Student success is improved when parents participate in the learning process. Family science nights allow teachers, students, families, and the whole community to learn together.

Engineering Teamwork: Reinforcing Collaborative Communication Through Design Challenges (Gen)

(Elementary–Middle Level) 211, BCEC

Sharlene Yang (sharloneyang@yahoo.com), SY|STEM Education Consulting, Cambridge, Mass.

Experience a hands-on engineering activity and explicitly discuss how teamwork on a design challenge can reinforce English language arts (ELA) skills in listening and speaking.

Maximize Time! Science and Writing Combined (Gen)

(General) 252A, BCEC

Sara B. Sweetman (sara_sweetman@mail.uri.edu), **Caroline Stable** (carolinestabile@uri.edu), and **Nancy Pesante**, University of Rhode Island, Narragansett

Engage in a hands-on science investigation and learn how to use student experiences to develop the literacy skills called for in the *Common Core State Standards*.

Biomimicry: Using Nature to Inform STEM Design (Gen)

(Middle Level) 254B, BCEC

Christine DeMauro (cdemauro@wcs.org), Wildlife Conservation Society/New York Aquarium, Brooklyn, N.Y.

Karen Saur (ksaur@nyscience.org), New York Hall of Science, Queens

Taking inspiration from nature to highlight the power of STEM, Urban Advantage challenges teachers to apply crosscutting concepts from biology and physics to design submersibles.

9:30–10:00 AM Presentation

SESSION 1

★ **Levels of Leadership for Teachers in Educator-based Organizations: An Example from the Pennsylvania Earth Science Teachers Association (Earth)**

(General) 260, BCEC

Laura A. Guertin (guertin@psu.edu), President-Elect, Pennsylvania Earth Science Teachers Association, University Park
Teacher leadership extends beyond classrooms/schools to educator-based professional organizations with levels of activities and opportunities. Examples presented are from Pennsylvania Earth Science Teachers Association (PAESTA).

9:30–10:30 AM Presentations

SESSION 1

Engerize Using Inquiry and Modeling (Phys)

(High School) 102A, BCEC

Meera Chandrasekhar (meerac@missouri.edu) and **Dorina Kosztin**, University of Missouri, Columbia

Discover hands-on activities introducing students to concepts on energy and energy conservation. Developed with NSF funding, these activities include experimental design, measurement, and projects. Handouts!

SESSION 2

STEM Projects for the Middle School Classroom (Gen)

(Elementary–High School) 102B, BCEC

DJ West, Schoolcraft College, Livonia, Mich.

Let's examine a variety of projects that can be used in the middle school classroom to integrate STEM concepts. Leave with instructions for the projects discussed.

SESSION 3

Fact or Fiction Project: Fun Way to Combine Literacy in the AP Chemistry Classroom (Chem)

(General) 150, BCEC

Kavita Gupta (kavita_gupta@fuhsd.org), Monta Vista High School, Cupertino, Calif.

Technical writing, research, content knowledge, and presentation skills combine to check the validity of scientific claims in movies and sitcoms via the use of Google docs, PowerPoint, and a research paper.

SESSION 4

Sail Away with Maury: Climate Change and Ocean Science (Earth)

(Middle Level–College) 151B, BCEC

Heidi Bjerke (bjerkehe@champaignschools.org), Champaign (Ill.) Unit 4 Schools

Karen Merritt (karmerritt@aol.com), North Caddo Magnet High School, Vivian, La.

Jennifer White (whiteje@champaignschools.org), Jefferson Middle School, Champaign, Ill.

Delve into how climate change and oceans science can be taught through technology. Engage students in climate change and ocean science research using free online resources available from NOAA, NASA, and the U.S. Navy.

SESSION 5

Climate Change (Env)

(General) 153A, BCEC

William J. Licopoli (*wlicopol@cbsd.org*), Central Bucks West High School, Doylestown, Pa.

Add free NGSS climate change lessons for all science courses from Maury Project, NOAA Climate Stewards, High Adventure Science, and Al Gore's Climate Reality Project.

SESSION 6

Engaging Students in Environmental Journalism with Young Reporters for the Environment (YRE) (Env)

(Middle Level–High School) 153C, BCEC

Liz Soper (*soper@nwf.org*), National Wildlife Federation-Eco-Schools USA, Montpelier, Vt.

Through the international Young Reporters program, students worldwide investigate and report on environmental issues. Find out how YRE USA can help your students become environmental journalists.

SESSION 7

Writing Using Claims, Evidence, and Reasoning in Science and English Language Arts (Gen)

(Middle Level–High School) 156C, BCEC

Tom Rawson (*rawson@sudbury.k12.ma.us*) and **Christine Carosella** (*christine_carosella@sudbury.k12.ma.us*), Curtis Middle School, Sudbury, Mass.

Explore the benefits and synergies of using a Claims/Evidence/Reasoning model for collaborative work on argument writing in science and English language arts.

SESSION 8

Fishbowling for Rigorous Curriculum (Gen)

(Supervision/Administration) 157A, BCEC

Nathan Burns (*burnsn@nashua.edu*), Nashua High School North, Nashua, N.H.

Kelly Holmes (*holmeske@nashua.edu*), Nashua High School South, Nashua, N.H.

Ian Atwell (*atwelli@nashua.edu*), Elm Street Middle School, Nashua, N.H.

Come learn how to align curriculum, instruction, and grading practices with NGSS using the Understanding by Design framework and a fishbowl protocol to increase student engagement and academic achievement.

SESSION 9

Untidy Science: Learning About the Nature of Science from Scientists in Nature (Gen)

(Elementary) 158, BCEC


Alex Griswold, Harvard-Smithsonian CFA, Cambridge, Mass.

Michele McLeod (*mmcleod@learner.org*), Annenberg Learner, Washington, D.C.

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

Witness the nature of science through video case studies of working scientists. Participants will be guided on how to use them in their classrooms.

SESSION 10

 **NSTA Press® Session: The New Science Teacher's Handbook (Gen)**

(General) 160C, BCEC

Sarah R. Young, Utah State Office of Education, Salt Lake City

Join me as I highlight strategies for new science teachers to help them be successful in their first few years.

SESSION 11

Flippin' Physics and Chemistry: Teaching Advanced Science to (Almost) All Students (Phys)

(High School) 205C, BCEC

Penny McCool (*pennymccool@gmail.com*) and **Traci Lowes**, Robert E. Lee High School, San Antonio, Tex.

Teaching students with diverse math abilities AND expected to have high scores? Hear what worked when we assigned lectures for homework and homework for classwork.

SESSION 12

Developing a Partnership for STEM in Early Childhood (Gen)

(General) 208, BCEC

Jeffrey Mehigan (*jmehigan@mos.org*), Museum of Science, Boston, Mass.

Marcia Edson (*mtedson@bu.edu*), Boston University, Boston, Mass.

Nancy Sableski (*nancy_sableski@harvard.edu*), The Arnold Arboretum of Harvard University, Jamaica Plain, Mass.

Find out how schools of education are partnering with informal science institutions to strengthen their students' knowledge and confidence in teaching inquiry science practices at early grades.

SESSION 13

Supporting Elementary Students in Constructing Models (Gen)


(Elementary) 252B, BCEC

Emily Miller (*emilycatherine329@gmail.com*), Madison (Wis.) Metropolitan School District

Joseph Krajcik (*krajcik@msu.edu*), Michigan State University, East Lansing

How can you support elementary students in constructing and revising models that rely on evidence and explain phenomena that students experience? Come learn how!

SESSION 14

 **NSTA Press® Session: Common Core State Standards, ELA + the NGSS = Even More Brain-powered Science (Gen)**

(Middle Level–High School) 254A, BCEC

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

Discrepant event activities and cartoons model how to integrate the English language arts and science literacy standards to show “the whole is greater than the sum of the parts.”

SESSION 15

Technology and Engineering: Integral Parts of STEM Education (Gen)

(General) 255, BCEC

David C. Petty, Winchester (Mass.) Public Schools

Exploratory classes and extracurricular groups integrate technology and the engineering design process in a Winchester Massachusetts public schools’ curriculum. Students present the results.

SESSION 16

Hurricanes: Helping Students Understand the Science and Storm Warnings (Gen)

(Informal Education) 256, BCEC

Christopher Knowlton (*cknowlton@uri.edu*), **Gail A. Scowcroft** (*gailscow@mail.uri.edu*), and **Holly Morin** (*holly_morin@mail.uri.edu*), University of Rhode Island, Narragansett

Prepare your classroom for hurricanes. Explore how to be prepared for a hurricane and how simple engineering can help homes and businesses mitigate hurricane impacts.



SESSION 17

Leveraging Differentiated Instruction to Increase the Number of Laboratory Experiences in a Student-centered Environment (Bio)

(General) 257A, BCEC

Michael T. Kaufmann, Concord High School, Wilmington, Del.

Discover how differentiated instruction can increase laboratory experiences and foster a strong student-centered learning environment. Save time and money while increasing student experiences.

SESSION 18


Brain Resources from the American Museum of Natural History (Bio)

(Middle Level–College) 257B, BCEC

Robert V. Steiner (*rsteiner@amnh.org*), American Museum of Natural History, New York, N.Y.

Join me as I present digital resources on the structure, function, and inner workings of the brain.

SESSION 19

 **Teaching Ocean Science to Elementary Students Using National Marine Sanctuaries (Gen)**

(Elementary) 259A, BCEC

Tracy Hajduk (*tracy.hajduk@noaa.gov*), **Michiko Martin** (*michiko.martin@noaa.gov*), and **Kate Thompson** (*kate.thompson@noaa.gov*), NOAA Office of National Marine Sanctuaries, Silver Spring, Md.

Presider: Tracy Hajduk

Dive into fun activities for your elementary classroom. The ocean is a natural learning platform for elementary students. Find out how you can use ocean lessons and activities to teach science concepts.

9:30–10:30 AM Workshops

Teach Climate Change Using Common LEGO® Bricks! (Earth)

(Middle Level–High School) 103, BCEC
Kathleen M. Vandiver (*kathymv@mit.edu*) and **Amanda N. Gruhl** (*angruhl@mit.edu*), MIT, Cambridge, Mass.

Teach the chemistry concepts behind climate change using common LEGO bricks to concretely model the processes of photosynthesis and complete and incomplete combustion.

Cosmology in the High School Classroom? Are You Crazy? (Earth)

(Middle Level–High School) 104B, BCEC
Barbara Mattson (*barb.mattson@nasa.gov*), Universities Space Research Association, Greenbelt, Md.

NASA's Cosmic Times brings Cosmology 101 to the high school classroom by integrating science, history, and journalism.

Using Data and Technology to Understand Climate, Weather, and the Biosphere (Earth)

(Middle Level–High School/Informal Education) 104C, BCEC
Betsy Youngman (*betsy.youngman@gmail.com*), TERC Consultant, Cambridge, Mass.

Dawn Michelle Chegwiddden (*chegwidddenm@lisd.net*), Lewisville High School, Lewisville, Tex.

Enrica Quartini (*enrica@ig.utexas.edu*), The University of Texas at Austin

Learn how weather and climate are observed and explained through the use of technology. Use technological tools to examine patterns of weather, climate, and life.

Stop the Solar System, I Want to Get Off! (Earth)

(Middle Level–High School) 105, BCEC
Thomas B. Brackman (*brackmant1@nku.edu*), Northern Kentucky University, Highland Heights

Presider: Jennifer L. Myka, Kenton County Academies of Innovation and Technology, Edgewood, Ky.

Come have your personal content specialist tell how the periodic table, gravity, heat, pressure, and meteor impacts relate to the solar system. Take home a CD.

How Do We Know the Paleozoic Started 542 Million Years Ago? (Earth)

(Middle Level–College) 106, BCEC
Stephen R. Mattox (*mattox@gsu.edu*), Grand Valley State University, Allendale, Mich.

Emilia Ertz (*ertz.emilia@gmail.com*), Portage, Mich.

Join us as we use activities to merge geologic cross sections, fossils, and radiometric ages to demonstrate how geologists refine the timing of a key event in Earth history.

Visualizing the Universe with WorldWide Telescope (Earth)

(General) 107A, BCEC
Patricia Udomprasert (*pudompra@cfa.harvard.edu*), Harvard University, Cambridge, Mass.

Help students visualize, understand, and tell stories about the universe with the free WorldWide Telescope computer program. Special modules teach key Earth-Sun-Moon concepts.

The Dark Side of the Paper Moon (Earth)

(General) 107B, BCEC
Alex Saulnier, Texas Tech University, Lubbock
Illuminate new learning in your classroom. Use paper lanterns to help students see how and why the phases of the moon change. You will design your own moons and practice the activity.

New Horizons: The Little Spacecraft That Could (Earth)

(Elementary–High School) 107C, BCEC
Julie E. Taylor (*julie_taylor@eee.org*), Adelanto (Calif.) School District

Come investigate NASA's New Horizons Mission, which is designed to help us understand the worlds at the edge of our solar system.

Painting on Water (Chem)

(Middle Level–High School) 109B, BCEC
Fides D. Ybanez and **Danita Gorton** (*danitagorton@usd475.org*), Junction City High School, Junction City, Kans.
Painting on water demonstrates a fun and engaging activity for students while explaining concepts in solubility, viscosity, percent concentration, surface tension, IMF, and dilution, as well as enhancing reading, writing, communication, and analytical/evaluative skills.

NASA’s Space Forensics: Solving Cosmic Mysteries with Crime Scene Narratives (Phys)

(Middle Level–High School/Informal Education) 151A, BCEC

Sara E. Mitchell (sara.mitchell@nasa.gov) and **Sarah Eyer-mann** (sarah.e.eyermann@nasa.gov), Syneren Technologies/NASA Goddard Space Flight Center, Greenbelt, Md.

Solve the universe’s greatest mysteries! Combine storytelling and science! Explore exploding stars, hidden black holes, and more through hands-on activities and resource guides using real NASA data.

Helping ELLs “Unpack” the Language of Science (Gen)

(Middle Level–High School/Supv.) 156A, BCEC

Elizabeth McEneaney (emcenean@educ.umass.edu) and **Hyun-Sook Shin** (hyunsook@educ.umass.edu), UMass Amherst, Mass.

Learn concrete applications of systemic functional linguistics and genre-based pedagogy to help English language learners build academic literacy in science.

Using Case Studies to Promote Technical Literacy in an Anatomy and Physiology Class (Bio)

(High School–College) 156B, BCEC

Shari L. Weaver (sweaver@wpi.edu), Worcester Polytechnic Institute, Worcester, Mass.

Take part in an immunology case study to explore how this pedagogical method engages students in real-world medical scenarios while strengthening their technical literacy.

Engineering with Sound Science (Phys)

(Elementary) 159, BCEC

Nicole Riegel (nriegel@growstem.org) and **Patricia Lucido** (plucido4405@gmail.com), SySTEMic Innovations, Excelsior Springs, Mo.

Elementary-level sound units can have a focus on engineering design. Join us as we explore a variety of sound device constructions, iPad apps, and sensor probes.

Frogs, Fairy Shrimp, and Dragonfly Nymphs (Bio)

(Elementary) 160B, BCEC

Sarah C. Huber and **Erika K. Whitworth**, MassAudubon Habitat Education Center & Wildlife Sanctuary, Belmont, Mass.

Biodiversity, amphibian and invertebrate life cycles, and biological form and function come to life in vernal pools. Mass Audubon educators share dynamic hands-on learning opportunities embedded in vernal pool study. Active and engaging science for you and your students.

Go Green: Helping Students Understand Their Environmental Impact (Env)

(Middle Level/Informal Education) 161, BCEC

Sarah Carter and **Rita Karl** (rkarl@tpt.org), Twin Cities Public Television, St. Paul, Minn.

Katelyn Wamsted (katelyn@girlstart.org), Girlstart, Austin, Tex.

Explore the properties of plastics, the impact they have on our environment, alternatives for their use, and what students can do to mitigate that impact. Engage in an inquiry-based, hands-on challenge using the engineering design process. Handouts!

Analysis and Argumentation: Socratic Seminars in Your Science Classroom (Gen)

(General) 203, BCEC

Christopher Baker, Moran Middle School, Wallingford, Conn.

Socratic seminars fit nicely with NGSS practices and their use can enhance these practices in your students. Discover how to implement seminars successfully in your classroom.

Reasoning in Argumentation: Helping Students Apply Science Concepts (Gen)

(Middle Level–High School) 204 A/B, BCEC

Daniel R. Pimentel (pimentda@bc.edu), **Katherine L. McNeill** (kmcneill@bc.edu), and **Amanda M. Knight** (knightam@bc.edu), Boston College, Chestnut Hill, Mass.

We will present and discuss strategies for helping students construct scientific arguments that incorporate and apply relevant scientific concepts in their reasoning.

Disease Detectives: Meningitis (Bio)

(High School) 205A, BCEC

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

Conduct simulated lab tests to determine that a teen patient has bacterial meningitis. Use a prewriting grid to organize information for writing a letter to inform parents about the importance of the meningitis vaccine. This activity and other neurobiology activities are available online from the University of Rochester’s Life Sciences Learning Center (www.urmc.rochester.edu/life-sciences-learning-center.aspx).

How NSTA's Outstanding Trade Books, the NGSS, and the Common Core State Standards Add Up to Quality Science Instruction! (Gen)

(Preschool–Middle Level) 207, BCEC

Kathy Renfrew (kathy.renfrew@state.vt.us) and **Lori Dolezal** (lori.dolezal@state.vt.us), Vermont Agency of Education, Montpelier

Come see how NSTA's Outstanding Trade Books, the NGSS, and the CCSS can be used to develop quality science instruction.

Electric Puppets and Kinetic Sculpture (Gen)

(Elementary–Middle Level/Informal Education) 211, BCEC

Gary Benenson (benenson@ccny.cuny.edu), City College of New York, N.Y.

Janice Porter (porter42b@aol.com) and **Cherubim Cannon**, P.S. 005 Dr. Ronald McNair, Brooklyn, N.Y.

Learn how to create circuits that fit inside puppets and 3-D paper constructions—and cause them to light up, spin, or sound off!



Compelling Literacy Contexts for STEM (Gen)

(Elementary) 212, BCEC

Melissa Higgins, Museum of Science, Boston, Mass.

Articles and trade books provide authentic, inspiring ways to contextualize engineering challenges and connect science to STEM themes. Come explore literacy and STEM integration in elementary classrooms.

Teaching the Nature of Science Through Process Skills Grades K–5 (Gen)

(Preschool–Elementary) 213, BCEC

Randy L. Bell (randy.bell@oregonstate.edu), Oregon State University, Corvallis

Engage in activities designed to make learning about the nature of science fun through hands-on, student-centered lessons. You'll receive free resources and lessons.

What on Earth Is Under My Feet? (Bio)

(Preschool–Elementary) 254B, BCEC

Suzanne Flynn (suzannemflynn@earthlink.net), Lesley University, Cambridge, Mass.

Stephanie Selznick (sselznick71@gmail.com), Curley K–8 School, Jamaica Plain, Mass.

Have you gotten down to ground level to really see what is underfoot recently? There is an abundance of life and decomposition waiting to be explored!



Expand the Popular Mary Pope Osborne's Magic Tree House Adventures by Building in Hands-On Science Activities as They Are Read (Gen)

(Elementary) 258C, BCEC

Marilyn H. Fitzsimmons (fitzsimmons@carnegiescience-center.org), Carnegie Science Center, Pittsburgh, Pa.

Discover how to have your students begging to read more *Magic Tree House* adventures by creating great visual and reasonably priced hands-on science activities directly correlating to Annie and Jack's travels. Handouts!



3-2-1 Blast Off! Launching Rockets to Merge Science and Engineering Practices (Phys)

(Middle Level) 259B, BCEC

Sephali R. Thakkar (sephali@gmail.com), Columbia Secondary School for Math, Science, & Engineering, New York, N.Y.

Karen Saur (ksaur@nyscience.org), New York Hall of Science, Queens

Rocket construction launches a shift in long-term science investigations from controlled experiments into design projects to overlay and meld together science and engineering cycles.

11:00–11:30 AM Presentations

SESSION 1

Stars and Crafts

(Earth)



(Elementary–High School)

259A, BCEC

James Naum-Bedigian (*jimnaum.bedigian@gmail.com*), Marist School, Atlanta, Ga.

Presider: Tim Perez, Marist School, Atlanta, Ga.

Expand knowledge about the universe in your classroom by using a variety of hands-on activities to teach astronomy. Appropriate for a variety of ages, the activities involve inexpensive, easy-to-find materials. The projects can be done by any student who can operate scissors and a glue stick.

SESSION 2



Collaborative Capacity Building for Next Generation Science Teacher-Leaders

(Gen)

(General)

260, BCEC

Beth Byerssmall, Katahdin Middle High School, Stacyville, Maine

Kelley J. Littlefield (*klittlefield@rsu20.org*), Troy A. Howard Middle School, Belfast, Maine

Carla Magoon (*cmagoon@rsu20.org*), RSU 20/Maine PSP, Bellefast

Susan R. McKay (*susan_mckay@umit.maine.edu*), University of Maine, Orono

Jane Stackpole (*jstackpole@rsu24.org*), Ellsworth Elementary and Middle School, Ellsworth, Maine

Bill Zoellick (*bzoellick@schoodicinstitute.org*), Schoodic Institute, Winter Harbor, Maine

Come learn about a model for a two-year science teacher leadership academy, with an innovative twist in year two—an RFP process to support independent or collaborative projects.

11:00 AM–12 Noon Presentations

SESSION 1

Global STEM Classroom: Engineering and Science as Global Technological Partners of the 21st Century

(Earth)

(General)

105, BCEC

Larisa K. Schelkin (*larisa.schelkin@gmail.com*), GTEC (Global Technology & Engineering Consortium)/The Global STEM Education Center, Shrewsbury, Mass.

Isa Kaftal Zimmerman (*ikz1@verizon.net*), IKZ Advisors, LLC, Boston, Mass.

Presider: Larisa K. Schelkin

Join us for a facilitated discussion about teaching science and engineering via a global STEM teamwork classroom program based on the NASA GRACE Mission and Mars Expedition.

SESSION 2

Star Trek Physics: Using Sci-Fi to Explore Technology

(Phys)

(Middle Level–High School)

150, BCEC

Michael R. Blair (*michael.blair@dmps.k12.ia.us*) and **Whitney Leverich** (*whitney.leverich@dmschools.org*), Herbert Hoover High School, Des Moines, Iowa

Physics concepts and the technology presented in *Star Trek* programs and movies are discussed as to their correctness and feasibility in the 23rd century.

SESSION 3

Using Formative Assessment to Support Science Teaching and Learning in PreK

(Gen)

(Preschool)

151B, BCEC

Cindy Hoisington (*choisington@edc.org*), Education Development Center, Inc., Waltham, Mass.

Learn about a professional development program in science that uses formative assessment to build teachers' science knowledge and skills and support young children's science learning. Intended for early childhood teachers and professional developers interested in how formative assessment can be used to strengthen science teaching and learning in preK.

SESSION 4

Climate Change Education Guided by Social Sciences

(Env)

(General)

152, BCEC

Amy L. Fleischer (*fleischer_amy@hotmail.com*), Massachusetts Audubon Society, Wellfleet

Diana Payne, Connecticut Sea Grant, Groton

Sarah Toupin, Seacoast Science Center, Rye, N.H.

Learn how applying social science research to your science teaching strategies can engage students in climate change issues in the classroom and throughout their lives.

SESSION 5

Using Our Nation's Living Classrooms to Meet the NGSS (Env)

(General) 153B, BCEC

Atziri O. Ibanez (*atziri.ibanez@noaa.gov*), NOAA National Estuarine Research Reserve System, Silver Spring, Md.

Come explore easy-to-use curriculum activities and online interfaces that put real and near real-time data into exciting and compelling contexts that are relevant to our lives and the real world.

SESSION 6

Addressing the NGSS Nature of Science Standards in Real-World Conservation Biology Contexts (Env)

(High School) 153C, BCEC

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

Carol Burch (*cburch@hannibalcsd.org*), Hannibal High School, Hannibal, N.Y.

Jim MaKinster (*makinster@hws.edu*), Hobart and William Smith Colleges, Geneva, N.Y.

Bring the nature of science in the NGSS to life with free web-based multimedia profiles portraying conservation biology research and career ambitions of six Cornell graduate students.

SESSION 7

Electrolytic MoM: Two AP Chemistry Demos Illustrate Many Concepts (Chem)

(High School–College) 156B, BCEC

Harvey Gendreau (*hgendreau@labsafety.org*), Laboratory Safety Institute, Natick, Mass.

Presider: Ken W. Brody, Retired Educator, Canton, Mass. Find out how the electrolysis of Potassium Iodide (KI) and the neutralization of milk of magnesia can be used to unite many different concepts and act as a topic review.

SESSION 8

Listening to Science: Using Audio in the Classroom (Gen)

(Middle Level–High School) 156C, BCEC

Monica Brady-Myerov (*monica@listenedition.com*), Listen Edition, Brookline, Mass.

Mark Goldner, Heath School, Brookline, Mass.

The *Common Core State Standards* require listening. Hear how to build critical listening skills by using public radio, recording, and editing apps and software—all while doing science!

SESSION 9 (two presentations)

(General) 157C, BCEC

Adapting Nature for All Learners (Env)

Deirdre A. Detjens (*ddetjens@massaudubon.org*), Mass Audubon's Long Pasture Wildlife Sanctuary, Cummaquid, Mass.

Anita Woods (*a.woods@capecodcollaborative.org*), Cape Cod Collaborative, Osterville, Mass.

Mass Audubon's Long Pasture Wildlife Sanctuary and the Cape Cod Collaborative joined together to give unique learners the chance to participate in classroom content and ecosystem field trips.

How Did a New High School and a Young Wildlife Sanctuary Collaborate to Foster New Citizen Scientists? (Env)

Deirdre A. Detjens (*ddetjens@massaudubon.org*), Mass Audubon's Long Pasture Wildlife Sanctuary, Cummaquid, Mass.

Gina Kelly (*gkelly@sturgischarterschool.org*), Sturgis West Charter School, Hyannis, Mass.

Together, a new charter high school and a young wildlife sanctuary created a three-part experimental science program involving three different ecosystems, data collection, and hopefully some future scientists!

SESSION 10

Sing a Song of Science! (Gen)

(Preschool–Middle Level) 158, BCEC

Timothy Griffin (*timteach@pacbell.net*), Griffin Education Solutions, La Canada, Calif.

Award-winning songwriter/teacher Tim Griffin performs fun standards-based music that can help students master key concepts and vocabulary of your science curriculum.

SESSION 11

An Integrated STEM Lab Activity Using Feature Films as a Platform for Inquiry (Phys)

(Middle Level) 159, BCEC

John C. Park (*john_c_park@baylor.edu*) and **Suzanne M. Nesmith** (*suzanne_nesmith@baylor.edu*), Baylor University, Waco, Tex.

Hollywood movies provide an excellent engagement step for inquiry. This activity demonstrates STEM integration of a physical science concept—force and motion.

SESSION 12

Productive Talk

(Bio)

(Middle Level)

160B, BCEC

Mary C. Buttiglieri (mary_buttiglieri@newton.k12.ma.us) and **Jason Souza** (jason_souza@newton.k12.ma.us), Bigelow Middle School, Newton, Mass.

Find out how to conduct a productive talk session by being actively engaged in the process. Support materials will be provided.

SESSION 13



NSTA Press® Session: Gourmet Lab

(Gen)

(Middle Level–High School/Informal Education) 160C, BCEC

Sarah R. Young, Utah State Office of Education, Salt Lake City

Join NSTA Press author Sarah Young as she serves up how her book *Gourmet Lab* teaches students physical science through edible labs.

SESSION 14

Teaching Chemistry Through Hawaiian Culture—*a'o haumana*

(Chem)

(General)

162B, BCEC

Joel W. Truesdell (jotruesd@ksbe.edu), Kamehameha Schools Hawaii Campus, Keeau, Hawaii

Discover a chemistry course that is Hawaiian culture first and also inquiry and project based. Let me help you incorporate traditional or modern culture into your curriculum.

SESSION 15

The Sound of a Wild Snail Eating in the Classroom

(Bio)

(General)

205B, BCEC

Elisabeth T. Bailey (tova@elisabethtovabailey.com), Author, Camden, Maine

Ryan Bromwell (rbromwell@loyolablakefield.org), Loyola Blakefield High School, Towson, Md.

Megan Shevenock (mshevenock@gmail.com), The Lyceum, Pittsburgh, Pa.

Ellen Chances, Princeton University, Princeton, N.J.

Elizabeth Halliday (elizabeth@coastalstudiesforgirls.org), Coastal Studies for Girls, Freeport, Maine

Join us for an author reading and teacher presentations on curriculum lessons for the interdisciplinary book *The Sound of a Wild Snail Eating* by Elisabeth Tova Bailey. This is a true snail story integrating literacy with biology and medical humanities.

SESSION 16

A Museum and Occupational Therapy Partnership to Support Science Learning and Inclusion for Youth with Autism Spectrum Disorders

(Gen)

(General)

208, BCEC

Diana R. DeLuca (ddeluca@mos.org), Museum of Science, Boston, Mass.

Ellen S. Cohn (ecohn@bu.edu), Boston University, Boston, Mass.

Erin Finn (efinn@bostonpublicschools.org), Orchard Gardens K–8 Pilot School, Roxbury, Mass.

Science museum educators—partnering with occupational therapists and special educators—can promote inclusive opportunities for students with autism spectrum disorders to meet state assessment and behavioral goals.

SESSION 17

Using Online Discussion Boards to Promote Literacy and Foster Engagement

(Gen)

(General)

251, BCEC

Andrew P. Nikonchuk (anikonchuk@centralcatholic.net), Central Catholic High School, Lawrence, Mass.

Discover how discussion boards can help students engage with content and readings, as well as strategies to build writing skills and effectively assess student work.

SESSION 18



NSTA Press® Session: Common Core State Standards, Mathematics + the NGSS = More Brain-powered Science

(Gen)

(Middle Level–High School)

254A, BCEC

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

Discrepant event activities and cartoons model how to integrate mathematics and science literacy standards to show “the whole is greater than the sum of the parts.”

SESSION 19

What Do Students Know About Engineering and Technology? Identifying Common Student Misconceptions

(Gen)

(General)

255, BCEC

Jonathan D. Hertel (jhertel@mos.org) and **Christopher N. San Antonio** (csanantonio@mos.org), Museum of Science, Boston, Mass.

Join us as we reveal the common misconceptions students have about engineering and technology that, when identified, can strengthen science teaching to align with the NGSS.

SESSION 20

Belly Buttons, Armpits, and Ants, Oh My! Using Citizen Science Protocols to Improve Life Science Instruction (Bio)

(General) 257B, BCEC

Leonora K. Shell (*lea_shell@ncsu.edu*), North Carolina State University, Raleigh

Kristin D. Bedell (*kristin.bedell@orange.k12.nc.us*), Elfand-Cheeks Elementary School, Efland, N.C.

Citizen science protocols are low-cost ways to involve K–12 students and families in authentic research. Learn more and see student work samples.

SESSION 21

What Can Be Done by Teachers at the High School Level to Encourage Future Geology Majors? (Earth)

(High School–College) 259B, BCEC

Rebekah M. Fuerst (*rebekah.fuerst@dpsnc.net*), Lucas Middle School, Durham, N.C.

Joshua Roberts (*joshua.roberts@dpsnc.net*) and **Sam I. Fuerst** (*samuel.fuerst@dpsnc.net*), Northern High School, Durham, N.C.

The need for geologists is increasing rapidly, and there is an opportunity for high school teachers to prepare our students for filling these positions.

11:00 AM–12 Noon Workshops

Exploring Clouds in the Classroom Through Data Visualization (Earth)

(Middle Level–High School) 103, BCEC

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

Todd Ellis (*todd.ellis@oneonta.edu*), SUNY Oneonta, NASA CloudSat Mission, Oneonta, N.Y.

Deanna TeBockhorst (*deanna@atmos.colostate.edu*), CloudSat Network, Loveland, Colo.

Through MY NASA DATA and CloudSat QuickLook, your students will have the ability to study and understand clouds like never before!

Make Science and Engineering Fun with GPS Technology! (Earth)

(Middle Level–High School) 104B, BCEC

Barbara A. Fortier (*bfortier1@une.edu*), University of New England, Biddeford, Maine

Discover the basics of how GPS works and how to use it to teach Earth science and civil engineering concepts in an exciting way outdoors!

Weather Changing Climates from the Koppen Classification (Earth)

(Middle Level–High School) 104C, BCEC

Lynne H. Hehr (*lhehr@uark.edu*) and **John G. Hehr** (*jjghehr@uark.edu*), University of Arkansas, Fayetteville

Strange weather occurrences? Seasons changing? Shifting climates? What does the most current research suggest and what should be taught?

Kinesthetic Astrophysics Activities for Elementary and Middle (and High) School (Earth)

(Elementary–High School) 106, BCEC

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

Enliven your classroom. Get your students moving around as we explore concepts in astrophysics, including why stars are round, and how stars and planets move!

Astronomy for Elementary and Middle School Teachers (Earth)

(General) 107B, BCEC

Don Powers (*dt-powers@wiu.edu*), Western Illinois University, Macomb

Add sparkle to your lessons with these astronomy activities. Join us as we focus on a handful of common elementary and middle school astronomy topics such as the motion of the Sun, Earth, and Moon; the constellations; and/or the planets of the solar system.

Engaging in Guided Inquiry and Writing in the New AP Chemistry Lab Experience (Chem)

(High School) 109A, BCEC

Serena Magrogan (*smagrogan@collegeboard.org*), The College Board, Duluth, Ga.

Participants will perform a sample AP Chemistry guided inquiry lab and engage in writing activities to understand student challenges with justifying claims with evidence.

The Generator Project: Implementing the NGSS with Modeling and Projects (Phys)

(Middle Level–High School) 151A, BCEC

Bethany L. Sjöberg, T.E.C. High School, Seattle, Wash. Discover a ninth-grade integrated science energy curriculum that includes model-based inquiry, guided inquiry, and project-based learning and is aligned with the NGSS.

Tackling NGSS Trepidation: A Workshop Model to Build Familiarity, Create Confidence, and Enhance Implementation in Elementary Classrooms (Gen)

(Elementary/Supervision) 156A, BCEC

Lauree Gott (lgott@riversidersu.org), Veazie Community School, Veazie, Maine

Erika Allison (erika.allison@maine.edu) and **Travis Hall**, University of Maine, Orono

Walk away with a workshop model you can lead at your school to help every elementary classroom become a science classroom!

Ideas and Tools for Teaching STEM and Creativity in Classroom Curricula (Gen)

(Elementary–High School) 157A, BCEC

Ayora Berry and **Donald A. DeRosa** (donder@bu.edu), Boston University, Boston, Mass.

Discover instructional best practices for teaching STEM and creativity in the classroom, and then participate in a hands-on classroom activity focused on biomimicry design.

Forests, Carbon, and Climate (Env)

(Middle Level) 161, BCEC

Lindsay Clark and **Courtney White** (cwhite@ra.org), Rainforest Alliance, New York, N.Y.

Rainforest Alliance and Project Learning Tree have created hands-on lessons to help students understand the carbon cycle and the role forests play in climate change.

Shooting the Moon: Using Technology and Children’s Books to Teach Space Science Concepts for Grades PreK–8 (Earth)

(Preschool–Middle Level) 162A, BCEC

Kathy Cabe Trundle, The Ohio State University, Columbus
Randy L. Bell (randy.bell@oregonstate.edu), Oregon State University, Corvallis

Engage in activities designed to teach astronomy concepts with free and easy-to-use software. Receive a variety of resources to facilitate science instruction.

I Am Not an English Teacher, But I Teach Reading and Writing (Gen)

(General) 203, BCEC

Julianne R. Opperman (jopperml@maine.rr.com), Greely High School, Cumberland, Maine

Emphasis will be placed on teaching scientific and technical reading and writing skills. Take home handouts with instructions and rubrics for primary sources and texts.

Materials Science Makes High School Science Better! (Gen)

(High School) 204 A/B, BCEC

Kristen Cacciatore (kcacciatore@boston.k12.ma.us) and **Shannon M. Morey** (shannon.morey@gmail.com), East Boston High School, East Boston, Mass.

We will discuss our work bringing materials science into high school classrooms and train workshop participants in the use of our classroom materials.

The EngrTEAMS Project: Engineering to Transform the Education of Analysis, Measurement, and Science (Gen)

(Elementary–Middle Level) 211, BCEC

Tamara J. Moore (tamara@purdue.edu), Purdue University, West Lafayette, Ind.

This hands-on session will present STEM integration units that use engineering as a motivator to learn science content in grades 4–8 while also meaningfully integrating data analysis and measurement.

Encouraging Questions with Confidence (Gen)

(Preschool–Elementary) 213, BCEC

Jennifer Hope (jmhope@mckendree.edu), McKendree University, Lebanon, Ill.

Glenda M. McCarty (gmcarty@culver.edu), Culver-Stockton College, Canton, Mo.

Supporting student-generated questions and investigations need not be a journey into the unknown. Join us to explore ways of building questions into familiar science lessons.

Analytical Debate in the Science Classroom (Gen)

(General) 252A, BCEC

Jennifer Stone and **Tim Gay**, Boston Latin School, Boston, Mass.

Find out how to use claims, evidence, reasoning, and rebuttal to structure meaningful debate in the science classroom.

Integrating Science and Engineering Practices with Models (Gen)

(Middle Level)

254B, BCEC

Reneé S. Schwartz (r.schwartz@wmich.edu), Western Michigan University, Kalamazoo

Christopher Schwartz, Schoolcraft, Mich.

Engage in hands-on activities developing and using models that demonstrate science practices to understand a system and apply engineering practices to address a design challenge.

NASA Galileo Educator Network: Engaging in Science Practices to Explore the Characteristics of Planets

(Earth)

(Informal Education)

256, BCEC

Brian Kruse and **Greg Schultz** (gschultz@astrosociety.org), Astronomical Society of the Pacific, San Francisco, Calif.

Experience an investigation where students examine and interpret planetary features using imagery of a variety of planets, including those with currently active NASA missions.



Photo of a Loggerhead turtle at the New England Aquarium.

—Photo courtesy of Brian Skerry/Greater Boston Convention and Visitors Bureau

Meetings and Social Functions Index

Saturday, April 5

NGSS@NSTA Forum GE Foundation Welcome Breakfast

By Invitation Only

210A/B, BCEC 7:00–8:30 AM

AMSE/NSTA Minority Caucus George Washington Carver
Breakfast

By Invitation Only

Lighthouse II, Seaport Hotel 7:00–9:00 AM

NSTA Past Presidents' Breakfast

By Invitation Only

Harbor Ballrm. II, Westin Waterfront 7:30–8:15 AM

NSTA Past Presidents Advisory Board Meeting

Harbor Ballrm. II, Westin Waterfront 8:15–9:15 AM

West Texas Teachers' Coffee

Carlton, Westin Waterfront 9:00–10:30 AM

NSTA International Lounge

Revere, Westin Waterfront 9:00 AM–5:00 PM

GLBT Science Teachers Roundtable Discussion

Paine, Westin Waterfront 11:00 AM–12 Noon

Association for Multicultural Science Education (AMSE) Town
Hall Meeting

Lighthouse II, Seaport Hotel 11:00 AM–1:00 PM

NSTA/SCST College Luncheon (M-6)

(Tickets Required: \$65)

Atlantic 3, Renaissance 12 Noon–1:30 PM

CESI/NSTA Elementary Science Luncheon (M-7)

(Tickets Required: \$65)

Harbor Ballrm. II, Westin Waterfront .. 12 Noon–2:00 PM

Aerospace Educators Luncheon (M-8)

(Tickets Required: \$65)

Gr. Ballrm. A/B, Westin Waterfront ... 12 Noon–2:00 PM

An Exploration of Uncommon Collaboration for Success in STEM

Seaport Ballrm. C, Seaport Hotel 2:00–4:00 PM

NSTA Council Roundtable

By Invitation Only

Adams, Westin Waterfront 2:00–4:00 PM

NCAA Final Four Watch Party! (M-9)

(Tickets Required: \$20)

Atlantic Ballrm., Renaissance 7:30 PM–12 Mid.

Sunday, April 6

NSTA Life Members' Breakfast (M-10)

(Tickets Required: \$50)

Douglass, Westin Waterfront 7:00–8:00 AM

Index of Exhibitor Workshops

3D Molecular Designs, LLC (Booth #309)

Saturday, April 5 10:00–11:30 AM 107C, BCEC Be the First to Test Our Dynamic DNA Discovery Kit (p. 45)

4D Land Inc. (Booth #607)

Saturday, April 5 10:00–11:30 AM 105, BCEC Make DNA Replication with 4D Frame (p. 44)

Arbor Scientific (Booth #209)

Saturday, April 5 10:00–11:30 AM 152, BCEC Be Moved—Engaging Force and Motion Classroom Activities (p. 46)

Backyard Brains, Inc. (Booth #1432)

Saturday, April 5 8:00–9:30 AM 107A, BCEC Bringing Real Neuroscience (Spiking Neurons!) into Your Classroom (p. 26)

Saturday, April 5 2:00–3:30 PM 107A, BCEC Bringing Real Neuroscience (Spiking Neurons!) into Your Classroom (p. 78)

Bio-Rad Laboratories (Booth #315)

Saturday, April 5 9:00–10:30 AM 157A, BCEC Show Me the Money! Finding Funds for Biotech, A Grant Writing Workshop (p. 30)

BIOZONE International, Ltd. (Booth #1120)

Saturday, April 5 10:00–11:30 AM 104B, BCEC Environmental Science: The BIOZONE Solution (p. 44)

Carolina Biological Supply (Booth #137)

Saturday, April 5 10:00–11:30 AM 102B, BCEC Picking Apart The Owl Pellet (p. 43)

Saturday, April 5 10:00–11:30 AM 103, BCEC Flipping Out Over Chemistry! (p. 44)

Saturday, April 5 10:00–11:30 AM 102A, BCEC Hands-On Science with Classroom Critters (p. 43)

Saturday, April 5 12 Noon–1:30 PM 102A, BCEC Introduction to Wisconsin Fast Plants® (p. 58)

Saturday, April 5 12 Noon–1:30 PM 102B, BCEC Strawberry DNA and Molecular Models (p. 58)

Dinah-Might Adventures, LP (Booth #1131)

Saturday, April 5 12 Noon–1:30 PM 104B, BCEC Making Science Notebooks FOLD-tastic (p. 58)

Discovery Education (Booth #1137)

Saturday, April 5 8:00–9:30 AM 154, BCEC STEMtastic Strategies (p. 28)

Saturday, April 5 10:00–11:30 AM 154, BCEC Help Students Discover the Science of Everyday Life (p. 46)

Saturday, April 5 12 Noon–1:30 PM 154, BCEC Discovery Education Science Techbook—The Student Experience (p. 59)

Saturday, April 5 2:00–3:30 PM 154, BCEC COMMON Practices that Get to the CORE of Great Instruction using Discovery Education Science Techbook (p. 79)

Educational Innovations, Inc. (Booths #1045/#1145)

Saturday, April 5 10:00–11:30 AM 258B, BCEC 3-2-1 Blast Off! (p. 47)

Exo Labs (Booth #558)

Saturday, April 5 10:00–11:30 AM 109A, BCEC iPads in General Science—Digital Microscopy and More! (p. 45)

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Flinn Scientific, Inc. (Booth #109)

Saturday, April 5	10:00–11:30 AM	258A, BCEC	Dynamic Demonstrations from Flinn Scientific (p. 47)
Saturday, April 5	12 Noon–1:30 PM	258A, BCEC	Flinn Scientific Activities to Integrate STEM Education (p. 60)

KidWind Project (Booth #1615)

Saturday, April 5	8:00–9:30 AM	151A, BCEC	Wind Sail Cars (p. 28)
Saturday, April 5	10:00–11:30 AM	151A, BCEC	Wind-energized Classroom (p. 46)
Saturday, April 5	12 Noon–1:30 PM	151A, BCEC	Offshore Wind (p. 59)
Saturday, April 5	4:00–5:30 PM	151A, BCEC	Solar Fountain (p. 89)

LAB-AIDS, Inc. (Booth #1245)

Saturday, April 5	8:00–9:30 AM	104C, BCEC	Fast and Furious: Measuring Speed (p. 26)
Saturday, April 5	10:00–11:30 AM	104C, BCEC	Investigating Gas Exchange (p. 44)
Saturday, April 5	12 Noon–1:30 PM	104C, BCEC	Designing Coastal Breakwaters (p. 59)

LaMotte Co. (Booth #526)

Saturday, April 5	8:00–9:30 AM	107B, BCEC	AP Environmental Water Quality Assessment Curriculum (p. 26)
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LEGO Education (Booth #644)

Saturday, April 5	8:00–9:30 AM	156B, BCEC	MINDSTORMS® EV3 Robotics in the Middle School Classroom: Getting Started (p. 28)
Saturday, April 5	10:00–11:30 AM	156B, BCEC	MINDSTORMS® EV3 Robotics in the Middle School Classroom: Getting Started (p. 46)
Saturday, April 5	12 Noon–1:30 PM	156B, BCEC	Machines and Mechanisms for ALL Ages (p. 60)
Saturday, April 5	2:00–3:30 PM	156B, BCEC	Bring the World of Digital Learning to Your Classroom with WeDo (p. 79)
Saturday, April 5	4:00–5:30 PM	156B, BCEC	MINDSTORMS® EV3 Robotics in the Middle School Classroom: Space Activity (p. 89)

NOAA Office of Education (Booth #614)

Saturday, April 5	8:00–9:00 AM	156C, BCEC	Climate Series I: Global and National Efforts to Characterize Our Changing Climate (p. 25)
Saturday, April 5	9:00–11:00 AM	156C, BCEC	Climate Series II: Antarctic Team Showcases Ice Cores (p. 31)
Saturday, April 5	11:00 AM–12 Noon	156C, BCEC	Climate Series III: U.S. Forest Service Climate Change Education Resources (p. 56)
Saturday, April 5	12 Noon–1:00 PM	156C, BCEC	Climate Series IV: Lunch with Climate Scientists and Educators—Bring Your Own Lunch! (p. 57)
Saturday, April 5	1:00–2:00 PM	156C, BCEC	Climate Series V: ClimateChangeLIVE! Bringing Climate Change into Your Classroom! (p. 70)
Saturday, April 5	2:00–3:30 PM	156C, BCEC	Climate Series VI: NOAA Climate Stewards—Education, Collaboration, and Action! (p. 79)
Saturday, April 5	3:30–5:00 PM	156C, BCEC	Climate Series VII: NOAA Climate Stewards: What Works, What Doesn't, What's the Difference (p. 88)

Northrop Grumman

Saturday, April 5	8:00–9:30 AM	106, BCEC	Experiences from a Professional Development Opportunity in Costa Rica (p. 26)
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PBS LearningMedia (Booth #422)

Saturday, April 5	8:00–9:30 AM	108, BCEC	PBS LearningMedia: Science Resource Across the Grade Bands (p. 26)
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Perimeter Institute (Booth #358)

Saturday, April 5	10:00–11:30 AM	109B, BCEC	Perimeter Institute: BrainSTEM Career Moves (p. 46)
Saturday, April 5	12 Noon–1:30 PM	109B, BCEC	Perimeter Institute Physics Teacher Network (p. 59)

Robotis, Inc. (Booth #1342)

Saturday, April 5	12 Noon–1:30 PM	105, BCEC	STEM Education Using Robotics ROBOTIS Kits: Project-based Building and Curriculum (p. 59)
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Royal Society of Chemistry (Booth #1232)

Saturday, April 5	10:00–11:30 AM	107B, BCEC	Learn Chemistry: Assessment and Teaching Tools from the Royal Society of Chemistry (p. 44)
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SAE International (Booth #609)

Saturday, April 5	10:00–11:30 AM	104A, BCEC	A World In Motion Primary Literacy-based STEM Workshop (p. 44)
Saturday, April 5	12 Noon–1:30 PM	104A, BCEC	A World In Motion Elementary STEM Workshop (p. 58)
Saturday, April 5	2:00–3:30 PM	104A, BCEC	A World In Motion Middle School STEM Workshop (p. 78)

Scholastic, Inc. (Booth #305)

Saturday, April 5	10:00–11:30 AM	108, BCEC	Connecting the <i>Next Generation Science Standards</i> with the <i>Common Core State Standards</i> (p. 45)
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Science First®/STARLAB® (Booths #1456/#1457)

Saturday, April 5	1:00–1:30 PM	Booth #1457, Exhibit Hall	Shaping Earth (p. 69)
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Simulation Curriculum Corp. (Booth #1451)

Saturday, April 5	10:00–11:30 AM	106, BCEC	Hurricanes and Typhoons: Nature on the Rampage (p. 44)
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SparkFun Electronics (Booth #1029)

Saturday, April 5	2:00–3:30 PM	151A, BCEC	SparkFun: Scratch–ing the Surface of Programming (p. 78)
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Ten80 Foundation (Booth #836)

Saturday, April 5	10:00–11:30 AM	107A, BCEC	RhombSTEAM: Practice the Art of STEM in K–6 Classrooms (p. 44)
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Texas Christian University Idea Factory (Booth #504)

Saturday, April 5	10:00–11:30 AM	157B, BCEC	Plate Tectonics Made Fun (p. 47)
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Tutor.com (Booth #302)

Saturday, April 5	8:00–9:30 AM	104B, BCEC	Teach Science in Your PJs! Earn Money Tutoring Online (p. 26)
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Vernier Software & Technology (Booth #129)

Saturday, April 5	8:00–9:30 AM	153A, BCEC	Chemistry with Vernier (p. 28)
Saturday, April 5	8:00–9:30 AM	153B, BCEC	iPad and Wireless Sensors with Vernier (p. 28)
Saturday, April 5	10:00–11:30 AM	153B, BCEC	Video Physics with Vernier (p. 46)
Saturday, April 5	10:00–11:30 AM	153A, BCEC	Physiology/PLTW with Vernier (p. 46)
Saturday, April 5	12 Noon–1:30 PM	153B, BCEC	Inquiry-based Chemistry with Vernier (p. 59)
Saturday, April 5	12 Noon–1:30 PM	153A, BCEC	Physics with Vernier (p. 59)
Saturday, April 5	2:00–3:30 PM	153B, BCEC	Wireless Sensor Exploration with Vernier (p. 79)
Saturday, April 5	2:00–3:30 PM	153A, BCEC	Engineering with Vernier Using LEGO, Arduino, and LabVIEW (p. 79)

Ward's Science (Booth #632)

Saturday, April 5	8:00–9:30 AM	156A, BCEC	Biology Success Stations (p. 28)
Saturday, April 5	10:00–11:30 AM	156A, BCEC	Biotechnology Basics (p. 46)
Saturday, April 5	12 Noon–1:30 PM	156A, BCEC	Coaching Science Olympiad with Confidence (p. 59)
Saturday, April 5	2:00–3:30 PM	156A, BCEC	Connecting AP Biology to New Science Practices (p. 79)
Saturday, April 5	4:00–5:30 PM	156A, BCEC	Connecting AP Chemistry to New Science Practices (p. 89)





Schedule at a Glance

G = General	M = Middle School	S = Supervision/Administration	T = Teacher Preparation
P = Preschool	H = High School	I = Informal Education	
E = Elementary	C = College	R = Research	

Biology/Life Science: Saturday

8:00–9:00 AM	E	259B, BCEC	Advancing Science Learning: Teaching Elementary Life Science Through Engineering Problems (p. 16)
8:00–9:00 AM	M–C	205B, BCEC	Engaging Students in Mitosis and Meiosis (p. 21)
8:00–9:00 AM	M–H	257A, BCEC	Henrietta’s Contribution—Moral and Ethical? (p. 16)
8:00–9:00 AM	C	Atlantic 3, Renaissance	Flipping an Undergraduate Introductory Biology Course for Majors (p. 18)
8:00–9:00 AM	H–C	Atlantic 1, Renaissance	iTAG Barley: A Curriculum Module Exploring Inheritance of Traits and Genes (p. 22)
8:00–9:00 AM	G	257B, BCEC	Hybridizing Biology with Engineering: A Curriculum Module (p. 16)
8:00–9:00 AM	M	160B, BCEC	No Way? Yes Way! Develop Your Students’ Scientific Argumentation Skills (p. 14)
8:00–9:30 AM	9–12	156A, BCEC	Biology Success Stations (p. 28)
8:00–9:30 AM	7–C	107A, BCEC	Bringing Real Neuroscience (Spiking Neurons!) into Your Classroom (p. 26)
9:00–10:30 AM	9–C	157A, BCEC	Show Me the Money! Finding Funds for Biotech, A Grant Writing Workshop (p. 30)
9:30–10:30 AM	ME	160C, BCEC	Linking Classroom Lessons to Science Festival Activities (p. 39)
9:30–10:30 AM	M–H	160B, BCEC	Digging Through the Layers of Soil Science (p. 39)
9:30–10:30 AM	M–H/S	Paine, Westin Waterfront	Using Data to Inform Instructional Decisions and Drive Student Engagement (p. 38)
9:30–10:30 AM	M–H	205A, BCEC	GenomeCache: How to Make Your Genome Walk (p. 40)
9:30–10:30 AM	M	259B, BCEC	Bioengineering Challenges and Middle School Life Science (p. 40)
9:30–10:30 AM	H–C	Atlantic 1, Renaissance	Using Real Scientific Research to Develop Students’ Ability to Analyze and Interpret Data: Making Connections to the Scientific Practices (p. 42)
9:30–10:30 AM	E–H	205B, BCEC	It’s No Fun Being on Restriction: Exploring the Health and Learning Connection (p. 40)
9:30–10:30 AM	H	257A, BCEC	Teaching Evolution: Meeting the Challenge of So-called Intelligent Design (p. 35)
9:30–10:30 AM	E–H	257B, BCEC	Engage Your Students with NOAA’s Coral Reef and Ocean Acidification Resources (p. 35)
10:00–11:30 AM	6	105, BCEC	Make DNA Replication with 4D Frame (p. 44)
10:00–11:30 AM	K–8	102B, BCEC	Picking Apart The Owl Pellet (p. 43)
10:00–11:30 AM	9–C	153A, BCEC	Physiology/PLTW with Vernier (p. 46)
10:00–11:30 AM	K–12	102A, BCEC	Hands-On Science with Classroom Critters (p. 43)
10:00–11:30 AM	9–12	156A, BCEC	Biotechnology Basics (p. 46)
10:00–11:30 AM	9–C	107C, BCEC	Be the First to Test Our Dynamic DNA Discovery Kit (p. 45)
10:00–11:30 AM	6–8	104C, BCEC	Investigating Gas Exchange (p. 44)
11:00–11:30 AM	M–H	257A, BCEC	Exploring Appendicular Anatomy Through an Inquiry-oriented Activity (p. 47)
11:00 AM–12 Noon	M–H	205A, BCEC	Linking the NGSS and Scientists’ Work to Integrate the Nature of Science: The Changing Model of the Tree of Life (p. 54)
11:00 AM–12 Noon	E–M/I	160B, BCEC	Birds Bring Your Science Class Alive (p. 54)
11:00 AM–12 Noon	M–H	160C, BCEC	It’s All Related! DNA Content and the NGSS (p. 54)
11:00 AM–12 Noon	H/S	Pacific A/B, Renaissance	Research-based Curriculum for High School Students #2: Biology (p. 51)
11:00 AM–12 Noon	G	257B, BCEC	A Visit to the Creation Museum Tells Us Why We Should Teach Evolution (p. 50)
11:00 AM–12 Noon	M–H	Plaza Ballroom/Group 3, Seaport	Teacher Researcher Day Session: Personalizing Science: Strategies for Engaging Diverse Students with Socio-scientific Issues (p. 52)

Schedule at a Glance Biology/Life Science, cont.

11:00 AM–12 Noon	G	205B, BCEC	English Language Learners and the <i>Next Generation Science Standards I</i> (p. 54)
11:00 AM–12 Noon	H–C	Atlantic 1, Renaissance	20 in 20 (p. 55)
12 Noon–1:30 PM	K–12	102A, BCEC	Introduction to Wisconsin Fast Plants® (p. 58)
12 Noon–1:30 PM	9–12	102B, BCEC	Strawberry DNA and Molecular Models (p. 58)
12:30–1:00 PM	H–C	Atlantic 1, Renaissance	Storytelling and Collaborative Projects in Online Biology Classes (p. 61)
12:30–1:30 PM	G	257B, BCEC	The Radix Endeavor: Exploring Biological Systems in an Online Game World (p. 64)
12:30–1:30 PM	G	259A, BCEC	How Can I Help? Empowering Students with Citizen Science (p. 64)
12:30–1:30 PM	G	205B, BCEC	Science Worksheets Don't Grow Dendrites: Using Multiple Strategies to Teach Genetics in a Fun, Interactive Environment (p. 67)
12:30–1:30 PM	E–M	160B, BCEC	Science Literacy Is for the Birds: How to Use Field Guides to Leverage Science Time (p. 62)
12:30–1:30 PM	M–H	205A, BCEC	Birds and Buds: Citizen Science in Your School Yard (p. 67)
12:30–1:30 PM	E	Commonwealth Blrm. C, Westin	Creating Confident Elementary Teachers in Science (p. 69)
2:00–3:00 PM	M–H	257A, BCEC	Evidence and Explanation: Using the NGSS Practices to Help Religious Students Study Evolution (p. 72)
2:00–3:00 PM	E–H	257B, BCEC	Scaffolding Inquiry Using iPads and Model Organisms (p. 72)
2:00–3:00 PM	M–H	259B, BCEC	Burps and Chirps: Using Bioacoustics to Encourage Inquiry-based Learning in STEM (p. 72)
2:00–3:00 PM	H	205B, BCEC	Analyzing Ocean Tracks: Help Your Students Work with Real-Life Data Sets (p. 76)
2:00–3:00 PM	M–H	205A, BCEC	Humans vs. Mosquitoes: A Deadly Serious Game at the Yale Peabody Museum (p. 76)
2:00–3:00 PM	E	160B, BCEC	Unhuggable Critters (p. 76)
2:00–3:00 PM	E–M	253C, BCEC	NSTA Press® Session: Outdoor Science and Bringing It Indoors (p. 77)
2:00–3:00 PM	E–H	Pacific E, Renaissance	ASTE Session: Uncovering Evolution: An Inquiry-oriented Activity for Introducing Evolution by Way of Modeling an Archaeological Excavation (p. 73)
2:00–3:30 PM	9–12	156A, BCEC	Connecting AP Biology to New Science Practices (p. 79)
2:00–3:30 PM	7–C	107A, BCEC	Bringing Real Neuroscience (Spiking Neurons!) into Your Classroom (p. 78)
3:30–4:30 PM	I	256, BCEC	DinoTracks: Integrating Science, Math, and Literacy to Unlock the Past (p. 86)
3:30–4:30 PM	M–C	257B, BCEC	Tradebooks in the Classroom and a Preservice Teacher's Experiences (p. 83)
3:30–4:30 PM	M–H	257A, BCEC	Why Test If You Don't Have To? Using Virtual Representations and Screencasting to Alternatively Assess Learning (p. 82)
3:30–4:30 PM	G	257B, BCEC	Teaching Genetics Through Harry Potter Characters! (p. 83)
3:30–4:30 PM	E–M	160B, BCEC	Let's Put the Fun Back in Fungi (p. 81)
3:30–4:30 PM	H–C	205B, BCEC	Using Crash Debates to Teach Logic, Bioethics, and Communication in AP and IB Sciences (p. 86)
5:00–6:00 PM	E–H	257B, BCEC	A Different Kind of Assessment: Enhancing Your Science Classroom (p. 91)
5:00–6:00 PM	M–H	205A, BCEC	Patterns Around Us (p. 93)
5:00–6:00 PM	H	257A, BCEC	Leading the Way in AP Biology (p. 91)
5:00–6:00 PM	G	257B, BCEC	Hip-Hop in the Science Classroom: Writing Academic Raps to Master Science Vocabulary (p. 91)
5:00–6:00 PM	E–M	160B, BCEC	The Entomological Society of America Presents: Putting Some Bugs in Your Biology (p. 93)
5:00–6:00 PM	M	254A, BCEC	NSTA Press® Session: Be a Scientist! Bring Biology to Life Through Citizen Science (p. 91)

Biology/Life Science: Sunday

8:00–9:00 AM	E–H	205B, BCEC	Sweet Math: How Much Corn Did I Drink? (p. 104)
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Schedule at a Glance Biology/Life Science, cont.

8:00–9:00 AM	H	257A, BCEC	The GLOBE Carbon Cycle Project: Using a Systems Approach to Understand Carbon and Its Relationship to Ecosystems and Climate (p. 101)
8:00–9:00 AM	M–H	205A, BCEC	What a Difference a Degree Makes: Using Temperature Fluctuations to Induce Mitotic Mutations in Microorganisms! (p. 104)
8:00–9:00 AM	H	257A, BCEC	Powerful Science Learning Tools for English Language Learners (p. 101)
8:00–9:00 AM	E–H	257B, BCEC	Skull-Mania (p. 101)
8:00–9:00 AM	E–M	160B, BCEC	What Are You Inferring? (p. 104)
9:30–10:30 AM	H–C	156B, BCEC	Using Case Studies to Promote Technical Literacy in an Anatomy and Physiology Class (p. 109)
9:30–10:30 AM	H	205A, BCEC	Disease Detectives: Meningitis (p. 109)
9:30–10:30 AM	E	160B, BCEC	Frogs, Fairy Shrimp, and Dragonfly Nymphs (p. 109)
9:30–10:30 AM	M–C	257B, BCEC	Brain Resources from the American Museum of Natural History (p. 107)
9:30–10:30 AM	P–E	254B, BCEC	What on Earth Is Under My Feet? (p. 110)
9:30–10:30 AM	G	257A, BCEC	Leveraging Differentiated Instruction to Increase the Number of Laboratory Experiences in a Student-centered Environment (p. 107)
11:00 AM–12 Noon	G	257B, BCEC	Belly Buttons, Armpits, and Ants, Oh My! Using Citizen Science Protocols to Improve Life Science Instruction (p. 114)
11:00 AM–12 Noon	G	205B, BCEC	<i>The Sound of a Wild Snail Eating</i> in the Classroom (p. 113)
11:00 AM–12 Noon	M	160B, BCEC	Productive Talk (p. 113)

Chemistry/Physical Science: Saturday

8:00–9:00 AM	M–H	162B, BCEC	What Did I Just Read?! (p. 14)
8:00–9:00 AM	P–E	160A, BCEC	Teaching Chemistry and Physics with Children’s Literature (p. 14)
8:00–9:00 AM	H	162B, BCEC	Writing to Learn: One Week at a Time (p. 14)
8:00–9:30 AM	9–C	153A, BCEC	Chemistry with Vernier (p. 28)
9:30–10:30 AM	H	206 A/B, BCEC	Cooperative Learning in the Chemistry Classroom: Get Your Kids Talking and Helping Each Other Learn (p. 32)
9:30–10:30 AM	M	160A, BCEC	Save the Penguins (p. 32)
9:30–10:30 AM	M–H	209, BCEC	Reach More of Your Learners Where They Are At: Differentiation in the High School Science Classroom (p. 34)
10:00–11:30 AM	9–12	103, BCEC	Flipping Out Over Chemistry! (p. 44)
10:00–11:30 AM	9–12	258A, BCEC	Dynamic Demonstrations from Flinn Scientific (p. 47)
10:00–11:30 AM		107B, BCEC	Learn Chemistry: Assessment and Teaching Tools from the Royal Society of Chemistry (p. 44)
11:00 AM–12 Noon	E–H	162B, BCEC	The Virtual Lab: Implementing the NGSS and the CCSS (p. 48)
11:00 AM–12 Noon	C	Pacific G/H, Renaissance	Combating Deterrents to Success in First-Year Chemistry Courses (p. 51)
11:00 AM–12 Noon	M–C	209, BCEC	The Science of Solubility: Using Reverse Engineering to Brew a Perfect Cup of Coffee (p. 55)
12 Noon–1:30 PM	6–12	156A, BCEC	Coaching Science Olympiad with Confidence (p. 59)
12 Noon–1:30 PM	9–C	153B, BCEC	Inquiry-based Chemistry with Vernier (p. 59)
12:30–1:30 PM	G	209, BCEC	ACS ChemClubs—Engaging Students Outside the Classroom (p. 62)
12:30–1:30 PM	G	Commonwealth Blrm. B, Westin	English Language Learners and the <i>Next Generation Science Standards</i> II (p. 69)
12:30–1:30 PM	M–C	162B, BCEC	Nanotechnology in the Classroom: Synthesis of Nanogold Sensors (p. 66)
2:00–3:00 PM	H	162B, BCEC	Improving Science Literacy and Scientific Understanding by Writing Scientific Explanations in High School Chemistry (p. 71)
2:00–3:00 PM	H	162B, BCEC	Argument from Evidence (p. 71)
2:00–3:00 PM	M	206 A/B, BCEC	Model a Chemical Reaction with Common LEGO® Bricks! (p. 76)
2:00–3:00 PM	E	160A, BCEC	Inquiry in Action: Investigating Matter Through Inquiry (p. 76)
3:30–4:30 PM	E	Pacific E, Renaissance	ASTE Session: Dollar Store Elementary Science: Activities and Ideas to Help Build Your Science Teaching Confidence (p. 88)
3:30–4:30 PM	H	209, BCEC	Write Your Way to Success: Grant-writing Strategies for You and Your Chemistry Students (p. 82)

Schedule at a Glance Chemistry/Physical Science, cont.

4:00–5:30 PM	9–12	156A, BCEC	Connecting AP Chemistry to New Science Practices (p. 89)
5:00–5:30 PM	G	260, BCEC	Streamline to Mastery: A Model for STEM Professional Development (p. 89)
5:00–6:00 PM	G	162B, BCEC	Inclusion of Unit-culminating Projects in High School Chemistry (p. 90)
5:00–6:00 PM	E–H	209, BCEC	Bridging the Observable to the Atom (p. 94)

Chemistry/Physical Science: Sunday

8:00–9:00 AM	H	162B, BCEC	Water, Water Everywhere and Not a Drop to Spare—Using Technology to Solve a Real-World Problems (p. 100)
8:00–9:00 AM	M–H	109A, BCEC	Pedagogical Approach for Teaching and Learning Abstract Chemistry Concepts (p. 103)
8:00–9:00 AM	H	109B, BCEC	From Lemon to Activity Series (p. 103)
9:30–10:30 AM	G	150, BCEC	Fact or Fiction Project: Fun Way to Combine Literacy in the AP Chemistry Classroom (p. 105)
9:30–10:30 AM	M–H	109B, BCEC	Painting on Water (p. 108)
11:00 AM–12 Noon	H–C	156B, BCEC	Electrolytic MoM: Two AP Chemistry Demos Illustrate Many Concepts (p. 112)
11:00 AM–12 Noon	H	109A, BCEC	Engaging in Guided Inquiry and Writing in the New AP Chemistry Lab Experience (p. 114)
11:00 AM–12 Noon	G	162B, BCEC	Teaching Chemistry Through Hawaiian Culture— <i>a'o haumana</i> (p. 113)

Earth/Space Science: Saturday

8:00–9:00 AM	E–H	052 A/B, BCEC	NESTA Session: National Earth Science Teachers Association Space Science Share-a-Thon (p. 20)
8:00–9:00 AM	E–M	162A, BCEC	Rocks Rock! (p. 21)
8:00–9:00 AM	I	253B, BCEC	What's Up? Classroom Activities from the Association of Astronomy Educators, Session I: Sun, Earth, and Planets (p. 22)
8:00–9:00 AM	M–C	261, BCEC	Using Plate Tectonics to Teach the Geomorphology of Continents and Ocean Basins (p. 18)
8:00–9:00 AM	M–H	204 A/B, BCEC	Dynamic Solar System Models for the Classroom (p. 21)
8:00–9:00 AM	6–12	156C, BCEC	Climate Series I: Global and National Efforts to Characterize Our Changing Climate (p. 25)
9:00–11:00 AM	6–12	156C, BCEC	Climate Series II: Antarctic Team Showcases Ice Cores (p. 31)
9:30–10:30 AM	I	253B, BCEC	What's Up? Classroom Activities from the Association of Astronomy Educators, Session II: Beyond the Solar System (p. 40)
9:30–10:30 AM	E–M	162A, BCEC	Dinosaurs, Volcanoes, and Scientific Research Ships (p. 32)
9:30–10:30 AM	H/S	Pacific A/B, Renaissance	Research-based Curriculum for High School Students #1: Astronomy and Earth/Planetary (p. 36)
9:30–10:30 AM	M–H	261, BCEC	High-Adventure Science: Free Simulations Exploring Earth's Systems and Sustainability (p. 36)
9:30–10:30 AM	G	204 A/B, BCEC	What We Know About Climate! (p. 32)
9:30–10:30 AM	E–H	052 A/B, BCEC	NESTA Session: Effective Strategies for Sharing Climate Change Science and Energy Consumption Implications in the Classroom (p. 39)
9:30–10:30 AM	H–C	Pacific F, Renaissance	Climate Change: Having Students Making Informed Decisions (p. 36)
9:30–10:30 AM	M–H	261, BCEC	Teaching Weather and Climate Through Severe Weather Scenarios (p. 36)
10:00–11:30 AM	5	106, BCEC	Hurricanes and Typhoons: Nature on the Rampage (p. 44)
10:00–11:30 AM	6–8	157B, BCEC	Plate Tectonics Made Fun (p. 47)
10:00 AM–12 Noon	G	Grand Blrm. C-E, Westin	NSTA Aerospace Share-a-Thon (p. 47)
11:00 AM–12 Noon	6–12	156C, BCEC	Climate Series III: U.S. Forest Service Climate Change Education Resources (p. 56)
11:00 AM–12 Noon	G	261, BCEC	The AIAA Educator Academy (p. 51)
11:00 AM–12 Noon	E–H	052 A/B, BCEC	NESTA Session: High-Impact Classroom Earth Science in a STEM World (p. 54)

Schedule at a Glance Earth/Space Science, cont.

11:00 AM–12 Noon	E	158, BCEC	A Short-focused Research Project: When You Look at the Moon, How Does the Shape Seem to Change Over Time? (p. 48)
11:00 AM–12 Noon	M–H	204 A/B, BCEC	Using NASA Mission Data to Teach Graphing Skills (p. 54)
11:00 AM–12 Noon	M–C	254B, BCEC	Record and Analyze Seismic Data in the Classroom with Free Iris Software! (p. 55)
12 Noon–1:00 PM	6–12	156C, BCEC	Climate Series IV: Lunch with Climate Scientists and Educators—Bring Your Own Lunch! (p. 57)
12 Noon–1:30 PM	6–8	104C, BCEC	Designing Coastal Breakwaters (p. 59)
12:30–1:30 PM	G	052 A/B, BCEC	NESTA Advances in Earth and Space Science Lunchtime Lecture (p. 61)
12:30–1:30 PM	G	204 A/B, BCEC	Why Does the Earth Quake in the Eastern U.S.? (p. 67)
12:30–1:30 PM	G	205C, BCEC	Peering into the Telescope with PBS LearningMedia (p. 62)
12:30–1:30 PM	M–C	261, BCEC	Using Stress Fields to Teach Plate Tectonics (p. 64)
12:30–1:30 PM	E	162A, BCEC	Finding Your Way Around the Sky (p. 66)
12:30–1:30 PM	I	256, BCEC	NASA Galileo Educator Network: Galileo and the Moons of Jupiter (p. 68)
1:00–1:30 PM	5	Booth #1457, Exhibit Hall	Shaping Earth (p. 69)
1:00–2:00 PM	6–12	156C, BCEC	Climate Series V: ClimateChangeLIVE! Bringing Climate Change into Your Classroom! (p. 70)
2:00–3:00 PM	E–H	204 A/B, BCEC	Understanding Lightning and Lightning Safety (p. 71)
2:00–3:00 PM	I	256, BCEC	Climate Models: Everything You Ever Wanted to Know, Ask, and Teach (p. 77)
2:00–3:00 PM	G	261, BCEC	Interdisciplinary Space Exploration Units with NASA and WWT (p. 72)
2:00–3:00 PM	E–H	052 A/B, BCEC	NESTA Session: Using Natural Hazards as a Hook in the Earth and Space Science Classroom (p. 75)
2:00–3:00 PM	E–M	162A, BCEC	Innovative Strategies for Deep Understanding of Weather, Erosion, and Deposition (p. 76)
2:00–3:30 PM	6–12	156C, BCEC	Climate Series VI: NOAA Climate Stewards—Education, Collaboration, and Action! (p. 79)
3:30–4:30 PM	M–H	261, BCEC	EarthScope: A Hubble Space Telescope for Earth’s Interior That’s in Your Neighborhood! (p. 83)
3:30–4:30 PM	E	162A, BCEC	NASA’s MAVEN Mission: Red Planet Literacy Program (p. 85)
3:30–4:30 PM	E	160C, BCEC	Diving into the Science Practices with Oceans (p. 85)
3:30–4:30 PM	G	052 A/B, BCEC	NESTA Session: National Earth Science Teachers Association Rock and Mineral Raffle (p. 85)
3:30–5:00 PM	6–12	156C, BCEC	Climate Series VII: NOAA Climate Stewards: What Works, What Doesn’t, What’s the Difference (p. 88)
4:00–5:30 PM	6–8	156B, BCEC	MINDSTORMS® EV3 Robotics in the Middle School Classroom: Space Activity (p. 89)
5:00–6:00 PM	G	261, BCEC	A STEM View from Space (p. 91)
5:00–6:00 PM	E–M/I	162A, BCEC	Multidisciplinary Science Games! (p. 93)
5:00–6:00 PM	G	204 A/B, BCEC	Beyond the Solar System: The (Even More) Exciting Part of Astronomy (p. 93)

Earth/Space Science: Sunday

8:00–9:00 AM	E–M	162A, BCEC	Getting Your Hands Dirty with GLOBE: Activities for the Elementary Classroom (p. 104)
8:00–9:00 AM	H	104B, BCEC	Science in the Media: Bringing Cutting-Edge Astronomy from Scientists to Students (p. 102)
8:00–9:00 AM	E–H	107C, BCEC	An Active Sun: Solar Flares and Coronal Mass Ejections (p. 103)
8:00–9:00 AM	M–H	104C, BCEC	Yellowstone’s Dynamic Landscape as a Jigsaw Investigation (p. 102)
8:00–9:00 AM	E–H	107A, BCEC	2015—Pluto Awaits (After a 10-Year and Three Billion Mile Journey) (p. 103)
8:00–9:00 AM	M–C	107B, BCEC	Practical Tools for Demystifying Science Journal Articles for Your Students (p. 103)
8:00–9:00 AM	E–H	106, BCEC	JetStream: An Online School for Weather (p. 103)

Schedule at a Glance Earth/Space Science, cont.

9:30–10:00 AM	G	260, BCEC	Levels of Leadership for Teachers in Educator-based Organizations: An Example from the Pennsylvania Earth Science Teachers Association (p. 105)
9:30–10:30 AM	E–H	107C, BCEC	New Horizons: The Little Spacecraft That Could (p. 108)
9:30–10:30 AM	G	107B, BCEC	The Dark Side of the Paper Moon (p. 108)
9:30–10:30 AM	M–C	106, BCEC	How Do We Know the Paleozoic Started 542 Million Years Ago? (p. 108)
9:30–10:30 AM	M–H	104A, BCEC	Stop the Solar System, I Want to Get Off! (p. 108)
9:30–10:30 AM	M–H/I	104C, BCEC	Using Data and Technology to Understand Climate, Weather, and the Biosphere (p. 108)
9:30–10:30 AM	M–H	104B, BCEC	Cosmology in the High School Classroom? Are You Crazy? (p. 108)
9:30–10:30 AM	M–H	103, BCEC	Teach Climate Change Using Common LEGO® Bricks! (p.108)
9:30–10:30 AM	M–C	151B, BCEC	Sail Away with Maury: Climate Change and Ocean Science (p. 105)
9:30–10:30 AM	G	107A, BCEC	Visualizing the Universe with WorldWide Telescope (p. 108)
11:00–11:30 AM	E–H	259A, BCEC	Stars and Crafts (p. 111)
11:00 AM–12 Noon	M–H	104B, BCEC	Make Science and Engineering Fun with GPS Technology! (p. 114)
11:00 AM–12 Noon	M–H	104C, BCEC	Weather Changing Climates from the Koppen Classification (p. 114)
11:00 AM–12 Noon	G	105, BCEC	Global STEM Classroom: Engineering and Science as Global Technological Partners of the 21st Century (p. 111)
11:00 AM–12 Noon	P–M	162A, BCEC	Shooting the Moon: Using Technology and Children’s Books to Teach Space Science Concepts for Grades PreK–8 (p. 115)
11:00 AM–12 Noon	M–H	103, BCEC	Exploring Clouds in the Classroom Through Data Visualization (p. 114)
11:00 AM–12 Noon	G	107B, BCEC	Astronomy for Elementary and Middle School Teachers (p. 114)
11:00 AM–12 Noon	H–C	261, BCEC	What Can Be Done by Teachers at the High School Level to Encourage Future Geology Majors? (p. 114)
11:00 AM–12 Noon	E–H	106, BCEC	Kinesthetic Astrophysics Activities for Elementary and Middle (and High) School (p. 114)
11:00 AM–12 Noon	I	256, BCEC	NASA Galileo Educator Network: Engaging in Science Practices to Explore the Characteristics of Planets (p. 116)

Environmental Science: Saturday

8:00–9:00 AM	P–E	161, BCEC	Gardening with Confidence at the Preschool and Elementary Level (p. 20)
8:00–9:00 AM	M–H	157C, BCEC	Using Kites to Collect Atmospheric Data and Do Remote Sensing (p. 14)
8:00–9:00 AM	I	256, BCEC	Weaving EARTH (Education and Research: Testing Hypotheses) Activities and STEM in the Classroom! (p. 22)
8:00–9:00 AM	M–H	208, BCEC	Biodiesel: Creating Alternative Energy in the Classroom (p. 14)
8:00–9:00 AM	G	251, BCEC	ASTC Session: How Science On a Sphere® Can Captivate Your Students with Animated Earth System Science Data (p. 15)
8:00–9:30 AM	5	106, BCEC	Experiences from a Professional Development Opportunity in Costa Rica (p. 26)
8:00–9:30 AM	10–12	107B, BCEC	AP Environmental Water Quality Assessment Curriculum (p. 26)
8:00–9:30 AM	K–4	151A, BCEC	Wind Sail Cars (p. 28)
9:30–10:30 AM	G	210C, BCEC	The Art and Science of Chasing Ice (p. 31)
9:30–10:30 AM	M–C	Pacific E, Renaissance	ASTE Session: Preparing Teachers to Explore Global Climate Change with Their Middle and High School Students (p. 36)
9:30–10:30 AM	M	161, BCEC	Ocean Plastic Pollution: Examining Issues and Solutions in a Middle School Classroom (p. 40)
9:30–10:30 AM	M–H	157C, BCEC	Our Atmosphere by the Numbers: Scale Models, Ratios, Percent (p. 39)
9:30–10:30 AM	I	256, BCEC	School Yard Science Investigations in the Digital Age: Go Botany and iCBug (p. 35)
10:00–11:30 AM	9–12	104B, BCEC	Environmental Science: The BIOZONE Solution (p. 44)
10:00–11:30 AM	5	151A, BCEC	Wind-energized Classroom (p. 46)
11:00–11:30 AM	M–C	157C, BCEC	SEA: Bringing Real-Time Marine Research to the Classroom (p. 47)
11:00 AM–12 Noon	G	210C, BCEC	Global Climate Change Meets Ecophobia (p. 48)
11:00 AM–12 Noon	M–H/I	208, BCEC	Climate and the Carbon Cycle (p. 49)

Schedule at a Glance Environmental Science, cont.

11:00 AM–12 Noon	H	Lewis, Westin Waterfront	Google Earth, ImageJ, and GIS: Tools to Investigate and Communicate About Environmental Change (p. 53)
11:00 AM–12 Noon	G	Alcott, Westin Waterfront	Love That Dirty Water—Celebrating the Leadership of Rita Barron in Saving the Charles River (p. 53)
11:00 AM–12 Noon	M	Plaza Ballroom/Group 1, Seaport	Teacher Researcher Day Session: An International Collaboration: U.S. and Belize Partner to Develop Science Curriculum (p. 52)
12 Noon–1:30 PM	5	151A, BCEC	Offshore Wind (p. 59)
12:30–1:30 PM	M	Plaza Ballroom/Group 1, Seaport	Teacher Researcher Day Session: Integrating Global Change into the Middle School Curriculum (p. 65)
12:30–1:30 PM	G	208, BCEC	Building a Stronger School Community with Cross-Grade Partnerships (p. 67)
12:30–1:30 PM	E–H	157C, BCEC	STEM Is Easy with PLT GreenSchools! (p. 66)
12:30–1:30 PM	M–H	206 A/B, BCEC	Renewable Energy Engineering Project (p. 62)
12:30–1:30 PM	E	161, BCEC	Hands-On Activities for a Very Popular Planet (p. 66)
2:00–3:00 PM	E	161, BCEC	Boston Schools Environmental Initiative (BSEI): Discovering the Natural World Through Integrated Thematic Curriculum and Outdoor Learning (p. 71)
2:00–3:00 PM	M–H	254B, BCEC	Engaging Students in the Science of Climate Change: Using Earth-observing Data in the Classroom (p. 71)
2:00–3:00 PM	M–H/I	157C, BCEC	Yellowstone: Using Extreme Environments to Make Connections in the Classroom (p. 75)
2:00–3:00 PM	H	208, BCEC	Planning and Designing Outdoor-based Education Spaces (p. 71)
2:00–3:00 PM	H	159, BCEC	Using the Environment to Integrate Science and Social Studies Literacy (p. 70)
2:00–3:30 PM	5	151A, BCEC	SparkFun: Scratch–ing the Surface of Programming (p. 78)
3:30–4:30 PM	G	208, BCEC	Model My Watershed (p. 82)
3:30–4:30 PM	H–C	206 A/B, BCEC	Not Just the Facts, Ma’am—Using Digital Tools and International Dialogue to Make Ocean Acidification and Climate Change Real and Personal for Students (p. 82)
3:30–4:30 PM	G	157C, BCEC	Sustainable School Grounds and Outdoor Learning (p. 81)
3:30–4:30 PM	M	161, BCEC	Natural Inquirer—Supporting Science and Literacy (p. 81)
3:30–4:30 PM	G	157C, BCEC	Youth Environmental Action Programs (p. 81)
3:30–4:30 PM	E–H	208, BCEC	You Can Become a Climate Change Challenge Champion! (p. 82)
4:00–5:30 PM	4–12	151A, BCEC	Solar Fountain (p. 89)
5:00–6:00 PM	I	206 A/B, BCEC	Community Science Days: Lessons Learned and Best Practices (p. 90)
5:00–6:00 PM	E–M	160C, BCEC	Migration in the Balance: Teaching the Intersection of Ecology and Global Change (p. 90)
5:00–6:00 PM	G	157C, BCEC	Literacy in the Field with OBIS! (p. 93)

Environmental Science: Sunday

8:00–9:00 AM	G	153B, BCEC	Pluff Mud! Lessons Learned from Salt Marsh Restoration (p. 100)
8:00–9:00 AM	E	161, BCEC	Making Climate Data Meaningful (p. 104)
8:00–9:00 AM	M–C	151B, BCEC	Bringing Science into the Classroom (p. 99)
8:00–9:00 AM	G	153A, BCEC	Building a Strong Foundation for Energy Literacy Through the Integration of Instruction Across Content Areas and Grade Levels with “Energy Day”! (p. 100)
8:00–9:00 AM	G	152, BCEC	Teaching Tree-Ring Science to Elementary Students and Older: An Effective Collaboration Among Scientists and Schoolchildren (p. 99)
8:00–9:00 AM	M–H	157C, BCEC	Get Your Hands on the Basics of Climate Science (p. 104)
9:30–10:30 AM	G	153A, BCEC	Climate Change (p. 106)
9:30–10:30 AM	M–H	153C, BCEC	Engaging Students in Environmental Journalism with Young Reporters for the Environment (YRE) (p. 106)
9:30–10:30 AM	6–12	161, BCEC	Go Green: Helping Students Understand Their Environmental Impact (p. 109)

Schedule at a Glance Environmental Science, cont.

11:00 AM–12 Noon	G	152, BCEC	Climate Change Education Guided by Social Sciences (p. 111)
11:00 AM–12 Noon	H	153C, BCEC	Addressing the NGSS Nature of Science Standards in Real-World Conservation Biology Contexts (p. 112)
11:00 AM–12 Noon	G	153B, BCEC	Using Our Nation's Living Classrooms to Meet the NGSS (p. 112)
11:00 AM–12 Noon	M	161, BCEC	Forests, Carbon, and Climate (p. 115)
11:00 AM–12 Noon	G	157C, BCEC	How Did a New High School and a Young Wildlife Sanctuary Collaborate to Foster New Citizen Scientists? (p. 112)
11:00 AM–12 Noon	G	157C, BCEC	Adapting Nature for All Learners (p. 112)

General Science: Saturday

8:00–8:30 AM	H	Flagship A, Seaport	A Supporting Story: Impact of PCB Sequence on Student Experiences (p. 13)
8:00–9:00 AM	E/C	Pacific A/B, Renaissance	Educating the Future Science Educator (p. 18)
8:00–9:00 AM	G	Commonwealth Blrm. B, Westin	Using Research-based Engineering Activities to Engage Learners (p. 24)
8:00–9:00 AM	E–M	207, BCEC	Moving from Hand-On Models to Minds-On Models (p. 22)
8:00–9:00 AM	P–E	203, BCEC	Teaching Reading, Writing, and Science (p. 21)
8:00–9:00 AM	G	Harbor Blrm. I, Westin	A Picture Is Worth a Thousand Words: Teaching Scientific Visual Literacy (p. 24)
8:00–9:00 AM	G	Pacific D, Renaissance	Science for All: Meaningful Science with Meaningful Inclusion (p. 24)
8:00–9:00 AM	E–M	211, BCEC	Astronomy and Interdisciplinary Curricula Go Hand in Hand (p. 22)
8:00–9:00 AM	M–C	Harbor Blrm. III, Westin	Fun Forensic Apps: Inexpensive, Interesting Ways to Integrate MST (p. 19)
8:00–9:00 AM	M–H	Lighthouse I, Seaport	The Literacy STEM Connection (p. 18)
8:00–9:00 AM	G	260, BCEC	Who Me? Yes, YOU! How to Become a Teacher Leader (p. 16)
8:00–9:00 AM	M	255, BCEC	Accessing Science and Literacy <i>Common Core State Standards</i> Through an Interdisciplinary Project (p. 16)
8:00–9:00 AM	G	Burroughs, Westin Waterfront	Brain Research and Strengthening STEM Content (p. 19)
8:00–9:00 AM	G	Faneuil, Westin Waterfront	Engaged Scientists: Using Writing and Brain-based Activities to Make Literacy and Science an Accessible Component of Every Classroom (p. 24)
8:00–9:00 AM	G	Commonwealth Blrm. A, Westin	Show Me the Money: Funding Your STEM Proposal with Donors Choose (p. 24)
8:00–9:00 AM	M–H	Seaport Ballroom A, Seaport	Do's and Don'ts for Having a Successful Family Science Night in Secondary Schools (p. 24)
8:00–9:00 AM	E	158, BCEC	Sensing Science: Temperature Readiness for K–2 (p. 14)
8:00–9:00 AM	P–E	258C, BCEC	Teaching Science Through Literacy to English Language Learners and Early Childhood Kindergarten Learners (p. 22)
8:00–9:00 AM	E	160C, BCEC	Science Tutti Frutti (p. 20)
8:00–9:00 AM	G	Lewis, Westin Waterfront	Teaching Science to Elementary English Language Learners (p. 19)
8:00–9:00 AM	G	Paine, Westin Waterfront	And Now We Are Science Gurus: How We Became Leaders in Our Schools (p. 20)
8:00–9:00 AM	E	213, BCEC	Science and Literacy for English Language Learners (p. 22)
8:00–9:00 AM	G	Alcott, Westin Waterfront	NSELA Session: Cultivating Diverse Leadership in Science (p. 18)
8:00–9:00 AM	G	Commonwealth Blrm. C, Westin	Iron Teacher (p. 24)
8:00–9:00 AM	M–C	Webster, Westin Waterfront	Make Sustainable Biofuels in the Classroom: A Science and Engineering Challenge (p. 20)
8:00–9:00 AM	S	Quincy, Westin Waterfront	Bridging the Gap: Strategies to Enhance Science Instruction Through Standards-based Assessments (p. 20)
8:00–9:00 AM	P–E	212, BCEC	Engineering the K–5 Curriculum (p. 22)
8:00–9:00 AM	P–E	252B, BCEC	Creating Digital Interactive Engineering Notebooks in a First Grade Classroom (p. 16)
8:00–9:00 AM	E–M	259A, BCEC	Wow, We Are Scientists! (p. 22)
8:00–9:00 AM	G	Caspian, Renaissance	Fostering the Growth Mind-set in the Next Generation of Scientists (p. 18)
8:00–9:00 AM	I	254A, BCEC	NSTA Press® Session: <i>Everyday Science Mysteries</i> —The Details (p. 16)

Schedule at a Glance General Science, cont.

8:00–9:00 AM	G	252A, BCEC	Before and After Retirement—Practicalities and Possibilities (p. 15)
8:00–9:00 AM	M–H	Otis, Westin Waterfront	DuPont Presents: Photosynthesis, Respiration, and Starches—It’s a Plant’s Life! (p. 25)
8:00–9:30 AM	3–C	153B, BCEC	iPad and Wireless Sensors with Vernier (p. 28)
8:00–9:30 AM	6–8	156B, BCEC	MINDSTORMS® EV3 Robotics in the Middle School Classroom: Getting Started (p. 28)
8:00–9:30 AM	G	154, BCEC	STEMtastic Strategies (p. 28)
8:00–9:30 AM	4–C	104B, BCEC	Teach Science in Your PJs! Earn Money Tutoring Online (p. 26)
8:00–9:30 AM	K–12	108, BCEC	PBS LearningMedia: Science Resource Across the Grade Bands (p. 26)
8:30–9:00 AM	G	Pacific F, Renaissance	Making Collaboration Worth Your Time (p. 30)
8:30–9:30 AM	G	Plaza Ballroom, Seaport	Teacher Researcher Day Session: Poster Session for Teachers and Teacher Educators Inquiring into Science Learning and Teaching (p. 30)
9:30–10:30 AM	G	Webster, Westin Waterfront	Using Design Briefs to Bring Engineering into STEM Education (p. 39)
9:30–10:30 AM	H–C	Atlantic 2, Renaissance	Deciphering Science Literature! (p. 42)
9:30–10:30 AM	G	Harbor Blrm. I, Westin	A Real-Life Page Turner: Award-winning Trade Book Authors Share Their Research Strategies (p. 43)
9:30–10:30 AM	G	Commonwealth Blrm. C, Westin	Empower ALL Students with Neuroscience (p. 42)
9:30–10:30 AM	E	252B, BCEC	STEM, the Maker Movement, and an Elementary Classroom (p. 34)
9:30–10:30 AM	M–H	Lighthouse I, Seaport	Scientists and Their Stories: Teaching the Nature of Science and Science Concepts Through the History of Science (p. 37)
9:30–10:30 AM	S	Burroughs, Westin Waterfront	Focus Any Classroom Practice on Higher-Order Thinking: A Revolutionary Model for Teachers and the Nation (p. 37)
9:30–10:30 AM	M–H/S	Quincy, Westin Waterfront	Professional Learning Partnerships: Fostering Multi-School Communities to Strengthen Science Teaching and Learning (p. 38)
9:30–10:30 AM	S	Quincy, Westin Waterfront	Curriculum Evaluation Task Force: Making Evidence-guided Decisions and Creating Shared Ownership (p. 38)
9:30–10:30 AM	E–M	158, BCEC	Designing Effective Curricular Scaffolds to Differentiate Instruction in Inclusive Science Classrooms: Findings from the Accessing Science Ideas Project (p. 32)
9:30–10:30 AM	M–C	Commonwealth Blrm. A, Westin	How to Raise Interest in STEM: The Fascinating Examples from European Science Summer Camps (p. 42)
9:30–10:30 AM	G	Webster, Westin Waterfront	The GLOBE Program: Teaching the <i>Next Generation Science Standards</i> by Coupling Engineering and Science (p. 39)
9:30–10:30 AM	G	Stone, Westin Waterfront	Supporting Your Leadership Through Grants (p. 38)
9:30–10:30 AM	M–H	Flagship A, Seaport	Time Will Tell: Using Time-lapse Photography and Digital Storytelling to Observe Change (p. 37)
9:30–10:30 AM	M	255, BCEC	Using ICTs to Facilitate Students’ Literacy Development in Science (p. 34)
9:30–10:30 AM	E/C	Atlantic 3, Renaissance	Making the Connection: Science Inquiry and Literacy (p. 36)
9:30–10:30 AM	H–C	Pacific F, Renaissance	Bringing Primary Scientific Literature into the Classroom (p. 36)
9:30–10:30 AM	E–M/I	207, BCEC	Design It, Explore It (p. 40)
9:30–10:30 AM	M–H	Seaport Ballroom A, Seaport	Supporting English Language Learners in the Science Classroom (p. 42)
9:30–10:30 AM	M–H/I	Harbor Blrm. III, Westin	Square Pegs (p. 37)
9:30–10:30 AM	E	213, BCEC	Commonalities, Connections, and Crosscutting Capabilities: C’s to Success (p. 40)
9:30–10:30 AM	M–H	258C, BCEC	Active Reading of Nonfiction Text (p. 35)
9:30–10:30 AM	G	252A, BCEC	Authors Needed! (p. 34)
9:30–10:30 AM	G	Alcott, Westin Waterfront	NSELA Session: Digital Curriculum, Mobile Devices, and Student Achievement? Action Research Results (p. 37)
9:30–10:30 AM	E	252B, BCEC	Tinkering with Elementary Engineering (p. 34)
9:30–10:30 AM	G	Faneuil, Westin Waterfront	Closer Look: Integrating Science and Literacy Through Observation (p. 42)
9:30–10:30 AM	G	208, BCEC	Developing a Community Agricultural System (p. 40)
9:30–10:30 AM	M–H/I	Commonwealth Blrm. B, Westin	Begin with the End in Mind: Creating a Common Summative Performance Assessment Rubric (p. 42)

Schedule at a Glance General Science, cont.

9:30–10:30 AM	P–M	158, BCEC	Never Be Wrong Again! (p. 32)
9:30–10:30 AM	M	254B, BCEC	The Balloon-powered Car—Learn It, Create It, Test It, Graph It (p. 40)
9:30–10:30 AM	E	211, BCEC	CESI Session: Physical Science from Animals! (p. 40)
9:30–10:30 AM	E–H	251, BCEC	ASTC Session: Connecting Museum Learning Experiences to Science and Common Core Literacy Standards (p. 34)
9:30–10:30 AM	K–5	254A, BCEC	NSTA Press® Session: Uncovering K–5 Students’ Ideas with Science Talk (p. 34)
9:30–10:30 AM	G	Constitution, Seaport	AMSE Session: Enhancing a STEM Culture Through Multidisciplinary Education and Research Teams (p. 37)
9:30–10:30 AM	G	Pacific D, Renaissance	Cookbook to Inquiry (p. 42)
9:30–10:30 AM	M–H	Otis, Westin Waterfront	DuPont Presents: Mac Attack—Nutrients from Farm to Fast Food (p. 43)
9:30–10:30 AM	G	210 A/B, BCEC	Planning an NGSS Curriculum (NGSS@NSTA Forum) (p. 34)
9:30–11:00 AM	G	Plaza Ballroom, Seaport	Teacher Researcher Day Session: Finding Meaning Through Teacher Inquiry (p. 43)
10:00–11:30 AM	K–6	107A, BCEC	RhombosTEAM: Practice the Art of STEM in K–6 Classrooms (p. 44)
10:00–11:30 AM	9–11	109B, BCEC	Perimeter Institute: BrainSTEM Career Moves (p. 46)
10:00–11:30 AM	6–8	156B, BCEC	MINDSTORMS® EV3 Robotics in the Middle School Classroom: Getting Started (p. 46)
10:00–11:30 AM	K–3	104A, BCEC	A World In Motion Primary Literacy-based STEM Workshop (p. 44)
10:00–11:30 AM	4–8	258B, BCEC	3-2-1 Blast Off! (p. 47)
10:00–11:30 AM	G	154, BCEC	Help Students Discover the Science of Everyday Life (p. 46)
10:00–11:30 AM	K–9	109A, BCEC	iPads in General Science—Digital Microscopy and More! (p. 45)
10:00–11:30 AM	3–10	108, BCEC	Connecting the <i>Next Generation Science Standards</i> with the <i>Common Core State Standards</i> (p. 45)
11:00 AM–12 Noon	M–H/S	251, BCEC	ASTC Session: Science Centers and Schools = Essential Partners (p. 50)
11:00 AM–12 Noon	P–M	Plaza Ballroom/Group 2, Seaport	Teacher Researcher Day Session: Introducing Geospatial Reasoning and Skills into Preservice Teacher Education (p. 52)
11:00 AM–12 Noon	G	Pacific F, Renaissance	How to Succeed in Teaching Nature of Science Without Really Trying (p. 51)
11:00 AM–12 Noon	G	162A, BCEC	STEM Connections: Using Hands-On Inquiry and the NGSS (p. 54)
11:00 AM–12 Noon	H	Flagship A, Seaport	Engineering Your Instruction (p. 51)
11:00 AM–12 Noon	G	210 A/B, BCEC	Translating the NGSS for Classroom Instruction (NGSS@NSTA Forum) (p. 50)
11:00 AM–12 Noon	G	Pacific E, Renaissance	ASTE Session: The Circus Is Coming to Town—Center of Gravity, STEM Design Challenge (p. 56)
11:00 AM–12 Noon	G	203, BCEC	Linking Science Writing and Research Through the DuPont Challenge (p. 49)
11:00 AM–12 Noon	G	255, BCEC	The Stories of Graphs (p. 50)
11:00 AM–12 Noon	G	Constitution, Seaport	The Promise of the NGSS and America’s Forgotten Children (p. 51)
11:00 AM–12 Noon	M–H	Seaport Ballroom A, Seaport	Engineering the Internet (p. 56)
11:00 AM–12 Noon	M–H	Lighthouse I, Seaport	Authentic Inquiry: Raise Motivation and Results with Real Science (p. 52)
11:00 AM–12 Noon	G	Stone, Westin Waterfront	National Board Certification: Transforming Teaching and Learning (p. 53)
11:00 AM–12 Noon	G	Atlantic 2, Renaissance	High Tech, Low Tech, No Tech? Differentiating for Diverse Student Populations and Interests! (p. 55)
11:00 AM–12 Noon	E–H	Commonwealth Blrm. A, Westin	LGBTQ Safe Space Training for STEM Teachers (p. 56)
11:00 AM–12 Noon	E–H	Pacific F, Renaissance	Relevancy Is Still Relevant: Designing a Lesson for Student Engagement (p. 51)
11:00 AM–12 Noon	E	212, BCEC	The Art of Science Notebook Observations (p. 55)
11:00 AM–12 Noon	E–M	211, BCEC	Celebrate Science and Reading Throughout the Seasons and Holidays (p. 55)
11:00 AM–12 Noon	G	Pacific D, Renaissance	Student Research—Getting a Good Idea Is the Hardest Part (p. 55)
11:00 AM–12 Noon	G	Caspian, Renaissance	What Do They Think? Engaging and Assessing Through the Use of Visual Media (p. 51)

Schedule at a Glance General Science, cont.

11:00 AM–12 Noon	G	Webster, Westin Waterfront	Partnerships for Engineering Education: MESA/UTeachEngineering/Shades of Blue (p. 53)
11:00 AM–12 Noon	G	Commonwealth Blrm. C, Westin	Fun Family STEM Learning Experiences Created by Community Partnerships (p. 56)
11:00 AM–12 Noon	G	Lewis, Westin Waterfront	Using Google Earth in the Classroom (p. 53)
11:00 AM–12 Noon	I	256, BCEC	Building STEM with Robotics Competitions for All (p. 50)
11:00 AM–12 Noon	M–H/I	207, BCEC	Discourse: How to Talk the Talk (p. 55)
11:00 AM–12 Noon	P–E	252B, BCEC	iPads in an Elementary Science Classroom (p. 50)
11:00 AM–12 Noon	M–H	254A, BCEC	NSTA Press® Session: <i>Rise and Shine: A Practical Guide for the Beginning Science Teacher</i> (p. 50)
11:00 AM–12 Noon	G	Burroughs, Westin Waterfront	Science, Pseudoscience, and Science Denial (p. 53)
11:00 AM–12 Noon	E	213, BCEC	The Science Behind the Boston Tea Party (p. 55)
11:00 AM–12 Noon	E	260, BCEC	Making the Case for Elementary Science Specialists (p. 50)
12 Noon–12:30 PM	G	Plaza Ballroom, Seaport	Teacher Researcher Day Session: Science Inquiry Group Network (p. 57)
12 Noon–1:30 PM	3–12	105, BCEC	STEM Education Using Robotics ROBOTIS Kits: Project-based Building and Curriculum (p. 59)
12 Noon–1:30 PM	G	104B, BCEC	Making Science Notebooks FOLD-tastic (p. 58)
12 Noon–1:30 PM	6–12	258A, BCEC	Flinn Scientific Activities to Integrate STEM Education (p. 60)
12 Noon–1:30 PM	K–6	156B, BCEC	Machines and Mechanisms for ALL Ages (p. 60)
12 Noon–1:30 PM	G	154, BCEC	Discovery Education Science Techbook—The Student Experience (p. 59)
12:30–1:00 PM	H	Plaza Ballroom/Group 2, Seaport	Teacher Researcher Day Session: Systems Thinking in the Context of Climate Literacy (p. 61)
12:30–1:00 PM	G	Plaza Ballroom/Group 3, Seaport	Teacher Researcher Day Session: Critical Choices, Critical Content, and Critical Literacies (p. 61)
12:30–1:00 PM	G	Constitution, Seaport	AMSE Session: A Glimpse at the Science Education in India (p. 64)
12:30–1:30 PM	G	Webster, Westin Waterfront	Building STEM Education with Multinationals (p. 66)
12:30–1:30 PM	G	Pacific D, Renaissance	Help! I Need to Get Organized! (p. 68)
12:30–1:30 PM	P–M	Faneuil, Westin Waterfront	Science and Literacy—Perfect Together! (p. 69)
12:30–1:30 PM	M	255, BCEC	Building a Tapestry of Science Literacy with Digital Resources (p. 63)
12:30–1:30 PM	G	Lewis, Westin Waterfront	iLiteracy—Using iPads to Increase Scientific Literacy (p. 65)
12:30–1:30 PM	E–H	Pacific A/B, Renaissance	Yes, You Can Have Fun in Science Class! (p. 64)
12:30–1:30 PM	G	Caspian, Renaissance	Grey Matter: Learning and Teaching Science with the Brain in Mind (p. 64)
12:30–1:30 PM	S	Quincy, Westin Waterfront	NSELA Session: Leading School-Level Program Change in Science (p. 65)
12:30–1:30 PM	E	252B, BCEC	An Informal Science Institution/University Model for Preparing Early Elementary Teachers (p. 63)
12:30–1:30 PM	M–H	Flagship A, Seaport	Project-based Learning in an Alternative Classroom (p. 64)
12:30–1:30 PM	M–H	Stone, Westin Waterfront	It Takes a “Scientific Village” (p. 65)
12:30–1:30 PM	E	213, BCEC	Let’s S.A.I.L. (Science Arts Integrated in Literacy) (p. 68)
12:30–1:30 PM	P–M/I	160A, BCEC	Leaders in Science: A Partnership Between Formal and Informal Science Education (p. 62)
12:30–1:30 PM	E–M	207, BCEC	3, 2, 1 Lift Off! Using Rocketry to Integrate Curriculum (p. 67)
12:30–1:30 PM	G	260, BCEC	Professional Development: Capturing the Trends, Practices, and Research to Strengthen Teaching and Learning (p. 68)
12:30–1:30 PM	E–M/I	158, BCEC	Asking, Imagining, Arguing: Using Books to Provide Examples of Science Practices in Action (p. 62)
12:30–1:30 PM	G	Commonwealth Blrm. A, Westin	Combining Meta-cognition with Science and Engineering Practices to Enhance Student Learning in All Content Areas (p. 69)
12:30–1:30 PM	E–H	Harbor Blrm. I, Westin Waterfront	Differentiated Science Inquiry (p. 65)
12:30–1:30 PM	G	Burroughs, Westin Waterfront	Aquaponics, Hydroponics, and the Greenhouse Project (p. 65)
12:30–1:30 PM	E–M	158, BCEC	Claim and Evidence in Every Content Area: Linking Science with Other Disciplines Through Argumentation (p. 62)
12:30–1:30 PM	G	Stone, Westin Waterfront	Teachers Creating Professional Learning Communities (p. 65)
12:30–1:30 PM	G	Webster, Westin Waterfront	Success in STEM—From the Professors (p. 66)

Schedule at a Glance General Science, cont.

12:30–1:30 PM	G	Plaza Ballroom/Group 4, Seaport	Teacher Researcher Day Session: Why Teach Elementary Science Anyway (p. 68)
12:30–1:30 PM	G	Pacific A/B, Renaissance	Motivate ALL Students to Become Actively Engaged in Your Science Classroom! (p. 64)
12:30–1:30 PM	E	160C, BCEC	Science and Math Connections Through Story Problems (p. 66)
12:30–1:30 PM	E	252B, BCEC	Yes, You ARE Smarter Than a Fifth Grader! (p. 63)
12:30–1:30 PM	E–M	211, BCEC	Kid-created Toys and User Manuals (p. 67)
12:30–1:30 PM	M	254B, BCEC	EarthKAM: Taking Pictures of Earth from Space (p. 68)
12:30–1:30 PM	M–H	Seaport Ballroom A, Seaport	Re-Engineering Your Curriculum: Great Ideas from the Exploratorium Teacher Institute (p. 69)
12:30–1:30 PM	G	Pacific G/H, Renaissance	Stay Involved! (p. 64)
12:30–1:30 PM	E	212, BCEC	Energy Potential: Teaching Energy Transformations to Elementary Students (p. 67)
12:30–1:30 PM	M–H	Lighthouse I, Seaport	Achieving Literacy with Literacy Design Collaborative Modules and Interdisciplinary Projects (p. 65)
12:30–1:30 PM	G	251, BCEC	ASTC Session: Connecting Science and Literacy: The National Writing Project and Science Centers (p. 63)
12:30–1:30 PM	G	210 A/B, BCEC	Finding and Evaluating Resources for NGSS—The EQUiP Rubric and the NGSS@NSTA Hub (NGSS@NSTA Forum) (p. 63)
12:30–1:30 PM	E	Pacific E, Renaissance	ASTE Session: Mastering the Science Practices: Using Hands-On Performance Assessment with K–5 Students (p. 68)
12:30–1:30 PM	M–H	254A, BCEC	NSTA Press® Session: Brain-powered Science Teaching and Learning with Discrepant Events (p. 63)
12:30–2:30 PM	G	252A, BCEC	The Social Science Teacher (p. 69)
1:00–1:30 PM	G	Pacific F, Renaissance	Using and Coaching Reflective Activities to Support Teachers (p. 69)
2:00–3:00 PM	G	Commonwealth Blrm. C, Westin	STEM: Translating a Vision to Classroom Practice (p. 70)
2:00–3:00 PM	G	Pacific A/B, Renaissance	Science Tao: An Open Framework to Guide Teachers and Learners Toward an Increasingly Sophisticated Understanding of Science (p. 73)
2:00–3:00 PM	G	Plaza Ballroom/Group 1, Seaport	Teacher Researcher Day Session: Collaborative Explorations of Global Climate Change (p. 74)
2:00–3:00 PM	P–E	160C, BCEC	Helping Young Learners to Understand the Complex Concept of Time (p. 76)
2:00–3:00 PM	G	Plaza Ballroom/Group 2, Seaport	Teacher Researcher Day Session: Getting Elementary Teachers Excited About Science (p. 78)
2:00–3:00 PM	G	Pacific D, Renaissance	Show Me the Data! (p. 77)
2:00–3:00 PM	G	Stone, Westin Waterfront	Initiating and Improving Instructional Leadership and Infrastructure in the Era of the NGSS (p. 75)
2:00–3:00 PM	G	Burroughs, Westin Waterfront	Using Aquaponics to Build a STEM Program in an Urban School (p. 74)
2:00–3:00 PM	M–H	Seaport Ballroom A, Seaport	Helping Your Students to Flip Out! (p. 78)
2:00–3:00 PM	E–H	Pacific A/B, Renaissance	Edible Labs (p. 73)
2:00–3:00 PM	E–H	Pacific G/H, Renaissance	Size DOES Matter!...When It Comes to Science: Teaching Scale in the Science Classroom (p. 74)
2:00–3:00 PM	G	Caspian, Renaissance	Positively Gay! (p. 73)
2:00–3:00 PM	P–M/I	212, BCEC	PreK–K Hands-On Science—Get an Early Start on Building Scientific Habits of Mind! (p. 77)
2:00–3:00 PM	G	Atlantic 2, Renaissance	Making Hands-On Science Affordable: A Multi-District Resource Management Subscription Model (p. 73)
2:00–3:00 PM	G	258C, BCEC	Tricks of the Trade 4.0: Literacy Strategies to Enhance Your Science Instruction (p. 72)
2:00–3:00 PM	M–H/S	Quincy, Westin Waterfront	Merging Literacy into Science Instruction (p. 75)
2:00–3:00 PM	E–M/S	Paine, Westin Waterfront	Beyond the Buzz—Truly Transforming Your School Through Engineering-focused, Integrated STEM (p. 75)
2:00–3:00 PM	H–C	Atlantic 1, Renaissance	Integrating Science Through Energy (p. 72)
2:00–3:00 PM	M–H	Alcott, Westin Waterfront	Making Science Meaningful: Scientist/Teacher Partnerships Show Students Why They Care About Science (p. 74)

Schedule at a Glance General Science, cont.

2:00–3:00 PM	G	Commonwealth Blrm. A, Westin	Use PowerMyLearning to Find the Best Engaging, Accurate, and Aligned Engineering Content (p. 78)
2:00–3:00 PM	G	Faneuil, Westin Waterfront	Science + Literacy = Lesson in Electricity (p. 78)
2:00–3:00 PM	G	Stone, Westin Waterfront	Producing Productive Participants: Developing Teacher Leaders Through Sustained Professional Development (p. 75)
2:00–3:00 PM	G	Atlantic 2, Renaissance	Family Science Nights: Engaging the Entire Community in Science Learning (p. 73)
2:00–3:00 PM	G	Lewis, Westin Waterfront	Harness the Power of Social Networking in Your Classroom Safely and for FREE (p. 75)
2:00–3:00 PM	G	Harbor Blrm. I, Westin Waterfront	Debate, Dialogue, and Democracy: Using Socioscientific Issues to Develop Scientifically Literate Citizens! (p. 78)
2:00–3:00 PM	P–E	213, BCEC	Using Children’s Literature as Vehicles to Teach Science (p. 77)
2:00–3:00 PM	H	Flagship A, Seaport	Engaging High School Students in Primary STEM Research (p. 74)
2:00–3:00 PM	G	Harbor Blrm. III, Westin Waterfront	Untangling Science and Engineering Practices in the NGSS (p. 74)
2:00–3:00 PM	E–M/I	207, BCEC	Simple Machines Made Simple (p. 77)
2:00–3:00 PM	G	Pacific F, Renaissance	The Role of Values and the Evaluation of Evidence in Scientific Controversies (p. 73)
2:00–3:00 PM	H/S	Atlantic 1, Renaissance	Using Online Learning Communities to Enhance Learning and Create Positive Attitudes (p. 72)
2:00–3:00 PM	E–M	211, BCEC	Supporting All Students in Writing Scientific Arguments (p. 77)
2:00–3:00 PM	H	Lighthouse I, Seaport	Woodrow Wilson Fellows—Shaping Teaching Practice Through Field-based Action Research (p. 74)
2:00–3:00 PM	G	260, BCEC	Partners in Learning and Leading: Teacher Residencies in a Science Museum (p. 72)
2:00–3:00 PM	G	Webster, Westin Waterfront	Innovation Academy of Northeast Tennessee: Placing STEM Squarely at the Center of the Educational Enterprise (p. 75)
2:00–3:00 PM	E–H	Alcott, Westin Waterfront	Being Scientists: Involving Fifth-Graders in Real Science (p. 74)
2:00–3:00 PM	M/I	255, BCEC	Developing Creative Scientists (p. 71)
2:00–3:00 PM	P–E	158, BCEC	The 3 Rs of Science Notebooking: Record, Reflect, and Reach Out (p. 70)
2:00–3:00 PM	G	210 A/B, BCEC	Literacy and Science: NGSS and <i>Common Core ELA</i> (NGSS@NSTA Forum) (p. 71)
2:00–3:00 PM	E	251, BCEC	ASTC Session: Full STEAM Ahead (p. 77)
2:00–3:00 PM	I	253B, BCEC	Multicultural Share-a-Thon (p. 71)
2:00–3:30 PM	2–5	156B, BCEC	Bring the World of Digital Learning to Your Classroom with WeDo (p. 79)
2:00–3:30 PM	G	154, BCEC	COMMON Practices That Get to the CORE of Great Instruction using Discovery Education Science Techbook (p. 79)
2:00–3:30 PM	3–C	153B, BCEC	Wireless Sensor Exploration with Vernier (p. 79)
2:00–4:00 PM	G	Otis, Westin Waterfront	AoA Session: Next Steps for the Next Generation...Implementing the NGSS (p. 80)
3:30–4:30 PM	G	210C, BCEC	Reading and Writing Science: What Should Be My Line? (p. 80)
3:30–4:30 PM	E–M/S	254A, BCEC	NSTA Press® Session: Pendulums and Porch Swings—Using Probes and Mystery Stories to Link Science and Engineering (p. 82)
3:30–4:30 PM	M	255, BCEC	Reinventing the Science Fair (p. 82)
3:30–4:30 PM	G	Pacific A/B, Renaissance	Building Best Practice into a Building Program: A Massachusetts Story (p. 83)
3:30–4:30 PM	M–H	Lighthouse II, Seaport	Developing Skills in Scientific Writing (p. 84)
3:30–4:30 PM	E–H	260, BCEC	To Lead from the Classroom, Get Out of the Classroom! (p. 83)
3:30–4:30 PM	E	259A, BCEC	Connecting STEM and American History Through Water Wheels (p. 88)
3:30–4:30 PM	E–M	207, BCEC	My Science Story: Where Science Inquiry Meets the <i>Common Core</i> (p. 86)
3:30–4:30 PM	E–M	158, BCEC	21st-Century Learning: The Power of Project Based Learning (PBL) in the Science Classroom (p. 81)

Schedule at a Glance General Science, cont.

3:30–4:30 PM	E–H	Stone, Westin Waterfront	The Great Meadow’s Blanding’s Turtle Project: Empowering Students to Become a Rare Species Voice While Finding Their Own Voice at the Same Time (p. 85)
3:30–4:30 PM	E	213, BCEC	Elementary Investigations Strengthen Science and Literacy Skills (p. 86)
3:30–4:30 PM	M–H	Flagship A, Seaport	Equal Access to Science: Universal Design and Students with Disabilities (p. 83)
3:30–4:30 PM	E–M	211, BCEC	Literacy and Labs in 55 Minutes or Less (p. 86)
3:30–4:30 PM	G	Lighthouse I, Seaport	Teaching and Leading—Create a Citizen Science Education Program in Your Community! (p. 83)
3:30–4:30 PM	P–E	252B, BCEC	Seeing the Science: Using a Rubric to Examine Written Science Observations of English Language Learners (p. 82)
3:30–4:30 PM	G	Commonwealth Blrm. B, Westin	NSELA Session: Baby Steps: Implementing the NGSS (p. 84)
3:30–4:30 PM	S	Quincy, Westin Waterfront	Teaching Elementary Science Leadership Academy (TESLA): Bringing Together Future Elementary Teachers Around Science Teaching (Plus a Catchy Acronym!) (p. 85)
3:30–4:30 PM	M–H	253C, BCEC	NSTA Press® Session: Once Upon a Science Book (p. 86)
3:30–4:30 PM	G	Faneuil, Westin Waterfront	Hey, That’s MY Data! (p. 88)
3:30–4:30 PM	G	Webster, Westin Waterfront	ACT STEM Profile Report (p. 85)
3:30–4:30 PM	E	212, BCEC	Asking Questions in Science: Guiding Students’ Curiosity and Understanding (p. 86)
3:30–4:30 PM	M	254B, BCEC	Predicting and Constructing Molecules from Simple to Complex (p. 86)
3:30–4:30 PM	M–H	Seaport Ballroom A, Seaport	Can Students Think Critically and Solve Problems? (p. 88)
3:30–4:30 PM	E–H	Harbor Blrm. III, Westin	Focus On the Crosscutting Concepts (p. 84)
3:30–4:30 PM	G	Commonwealth Blrm. C, Westin	Using the NGSS Learning Progressions to Create Content Storylines (p. 84)
3:30–4:30 PM	G	Caspian, Renaissance	Integrating Science into Teacher Preparation Programs to Educate ELLs and ELLs with Disabilities (p. 83)
3:30–4:30 PM	E–M	160A, BCEC	STEM—What Does It Really Look Like in the Classroom? (p. 81)
3:30–4:30 PM	E–H	Harbor Blrm. I, Westin Waterfront	Interactive Science Notebooks: Supporting the <i>Common Core State Standards</i> While Putting the NGSS into Action (p. 84)
3:30–4:30 PM	M–H/S	Paine, Westin Waterfront	Linking Literacy in Science—There’s More Than Just Lab Reports (p. 84)
3:30–4:30 PM	E–M	158, BCEC	How to Fail Well (p. 81)
3:30–4:30 PM	G	Quincy, Westin Waterfront	The Learning Center Builds Content-confident Preservice Teachers (p. 85)
3:30–4:30 PM	G	Plaza Ballroom, Seaport	Teacher Researcher Day Session: Collaborative Leadership (p. 84)
3:30–4:30 PM	E	205A, BCEC	Early Elementary Students CAN Engage in Scientific and Engineering Practices: A Model Lesson on Sinking and Floating (p. 86)
3:30–5:00 PM	G	210 A/B, BCEC	The Future of Assessment with NGSS (NGSS@NSTA Forum) (p. 88)
5:00–5:30 PM	H	Pacific E, Renaissance	ASTE Session: A Case Study of Sheltered Instruction in Science Education with English Language Learners (p. 89)
5:00–6:00 PM	G	Faneuil, Westin Waterfront	Close Reading in Science—Applying the <i>Common Core State Standards, ELA</i> (p. 95)
5:00–6:00 PM	M–H	Lighthouse II, Seaport	Science Olympiad Coaches Workshop (p. 92)
5:00–6:00 PM	G	Stone, Westin Waterfront	Collaborative Coauthoring in the Science Classroom (p. 92)
5:00–6:00 PM	M–C	Pacific G/H, Renaissance	Apps to Support Inquiry Instruction (p. 92)
5:00–6:00 PM	P–E	212, BCEC	Cabinets of Curiosity: Exploring the “Ologies” with Elementary-aged Students Through the Art of Collections (p. 94)
5:00–6:00 PM	E–M	207, BCEC	The Next Generation Science Strategies: Integrating Writing, Engineering, and Visual Art with Crosscutting Science and Math Standards (p. 93)
5:00–6:00 PM	G	Pacific G/H, Renaissance	Inspiring by Inquiring: Tried-and-True Techniques That Motivate Students in an Inquiry Setting (p. 92)
5:00–6:00 PM	G	Harbor Blrm. III, Westin Waterfront	When Practice Doesn’t Make Perfect: Common Misunderstandings of the NGSS Science Practices (p. 95)

Schedule at a Glance General Science, cont.

5:00–6:00 PM	E	255, BCEC	If You Build It, They Will Learn: Constructing Content Storylines as Guides for Science Units (p. 94)
5:00–6:00 PM	G	Pacific A/B, Renaissance	Full STEAM Ahead—Adding Art to STEM Education (p. 92)
5:00–6:00 PM	G	259A, BCEC	Wiggly Worms: Active Learning for the Early Grades (p. 94)
5:00–6:00 PM	E–H	Lewis, Westin Waterfront	How App-ropos: Science Apps That Align the NGSS with <i>Common Core State Standards, ELA</i> (p. 92)
5:00–6:00 PM	P–E	252B, BCEC	Let’s Talk: Science! (p. 91)
5:00–6:00 PM	E	254B, BCEC	To Flink or Not to Flink? (p. 94)
5:00–6:00 PM	E–M	158, BCEC	Empowering Your Teaching Through NGSS and the STEEM-S IMPACT Model (p. 90)
5:00–6:00 PM	G	Pacific D, Renaissance	Mobile Science: Unlock the Power of iPads in the Field (p. 95)
5:00–6:00 PM	G	Pacific F, Renaissance	Developing a Meaningful Science Field Trip (p. 92)
5:00–6:00 PM	E–M	158, BCEC	Bridging the Gap: Bringing Community Scientists into the Classroom (p. 90)
5:00–6:00 PM	G	Lighthouse I, Seaport	The iPad Invasion in the Middle School Classroom (p. 92)
5:00–6:00 PM	E	213, BCEC	Science Notebooks Provide a Context for Literacy Development (p. 94)
5:00–6:00 PM	E–M	160A, BCEC	Science and Engineering Synergy in a MSP Project: PISA2 (p. 90)
5:00–6:00 PM	G	208, BCEC	Your Ecological Footprint: Steps on the Pathway to a Sustainable Planet (p. 94)
5:00–6:00 PM	G	Stone, Westin Waterfront	Incorporating a Curriculum-based Reader’s Theater into a Laboratory Setting: Risk and Reward (p. 92)
5:00–6:00 PM	E–M	211, BCEC	Something to Write Home About: Enhancing Students’ Literacy Skills in a Science Classroom (p. 94)
5:00–6:00 PM	E–H	Webster, Westin Waterfront	The 28%—The Few, The Proud, The Scientifically Literate (p. 92)
6:00–12 Midnight	G	Caspian, Renaissance	A Festival of Engineering, Technology, and Science Treats as Related to STEM, the NRC <i>Framework</i> , and the NGSS, Part 3 (p. 96)

General Science: Sunday

8:00–9:00 AM	E–H	254A, BCEC	NSTA Press® Session: Using Science Mysteries to Promote Literacy (p. 101)
8:00–9:00 AM	G	203, BCEC	Science and Literacy—A Natural Fit (p. 104)
8:00–9:00 AM	E–H	251, BCEC	There’s an App for That! (p. 101)
8:00–9:00 AM	H	204 A/B, BCEC	InterLACE: Collaboration in the Classroom (p. 104)
8:00–9:00 AM	H/S	156A, BCEC	Engage with Engineering: Prepare a Science Department to Integrate Engineering Practices into Its Courses (p. 103)
8:00–9:00 AM	E–M	158, BCEC	Exploring the 2011 Trends in International Mathematics and Science Study (TIMSS): Newly Released Science Assessment Items and Web Tools (p. 100)
8:00–9:00 AM	G	157A, BCEC	Using Underwater Robots to Build Your STEM Pipeline (p. 103)
8:00–9:00 AM	M	254B, BCEC	Biomimicry: Using Nature to Inform STEM Design (p. 105)
8:00–9:00 AM	G	255, BCEC	Collaborative Engineers: Incorporating Literacy Through Middle School Mentors to Enhance the Design Challenge Process (p. 101)
8:00–9:00 AM	E–M	211, BCEC	Engineering Teamwork: Reinforcing Collaborative Communication Through Design Challenges (p. 105)
8:00–9:00 AM	H	156C, BCEC	Greeneering the Future (p. 100)
8:00–9:00 AM	G	208, BCEC	Community Collaboration: Partnering Seventh-Graders with Professional Scientists (p. 101)
8:00–9:00 AM	G	252A, BCEC	Maximize Time! Science and Writing Combined (p. 105)
8:00–9:00 AM	E–M	160C, BCEC	Using a Literacy Framework: Co-developing and Contextualizing Science and Language Instruction for English Language Learners (p. 100)
8:00–9:00 AM	P–2	259A, BCEC	“Nature”-ally Good Science Teaching in Early Childhood Education (p. 102)
8:00–9:00 AM	E	252B, BCEC	Inquiring Minds Want to Know...How to Create a PBL Unit (p. 101)
8:00–9:00 AM	E–M	207, BCEC	Family Science Night Partnerships in a Culture of Science (p. 104)

Schedule at a Glance General Science, cont.

8:00–9:00 AM	G	258C, BCEC	Discourse—Worth Discussing! (p. 101)
8:00–9:00 AM	H	260, BCEC	SILT (Science Instructional Leadership Teams): A Model of Student Work Analysis to Improve Teacher Practice (p. 102)
9:30–10:30 AM	P–M	207, BCEC	How NSTA's Outstanding Trade Books, the NGSS, and the <i>Common Core State Standards</i> Add Up to Quality Science Instruction! (p. 110)
9:30–10:30 AM	G	255, BCEC	Technology and Engineering: Integral Parts of STEM Education (p. 107)
9:30–10:30 AM	P–E	213, BCEC	Teaching the Nature of Science Through Process Skills Grades K–5 (p. 110)
9:30–10:30 AM	M–H/S	156A, BCEC	Helping ELLs “Unpack” the Language of Science (p. 109)
9:30–10:30 AM	E	259A, BCEC	Teaching Ocean Science to Elementary Students Using National Marine Sanctuaries (p. 107)
9:30–10:30 AM	S	157A, BCEC	Fishbowling for Rigorous Curriculum (p. 106)
9:30–10:30 AM	E–H	102B, BCEC	STEM Projects for the Middle School Classroom (p. 105)
9:30–10:30 AM	E	212, BCEC	Compelling Literacy Contexts for STEM (p. 110)
9:30–10:30 AM	I	256, BCEC	Hurricanes: Helping Students Understand the Science and Storm Warnings (p. 107)
9:30–10:30 AM	M–H	156C, BCEC	Writing Using Claims, Evidence, and Reasoning in Science and English Language Arts (p. 106)
9:30–10:30 AM	E–M/I	211, BCEC	Electric Puppets and Kinetic Sculpture (p. 110)
9:30–10:30 AM	M–H	204 A/B, BCEC	Reasoning in Argumentation: Helping Students Apply Science Concepts (p. 109)
9:30–10:30 AM	G	208, BCEC	Developing a Partnership for STEM in Early Childhood (p. 106)
9:30–10:30 AM	E	158, BCEC	Untidy Science: Learning About the Nature of Science from Scientists in Nature (p. 106)
9:30–10:30 AM	G	203, BCEC	Analysis and Argumentation: Socratic Seminars in Your Science Classroom (p. 109)
9:30–10:30 AM	E	258C, BCEC	Expand the Popular Mary Pope Osborne's <i>Magic Tree House</i> Adventures by Building in Hands-On Science Activities as They Are Read (p. 110)
9:30–10:30 AM	E	252B, BCEC	Supporting Elementary Students in Constructing Models (p. 107)
9:30–10:30 AM	M–H	254A, BCEC	NSTA Press® Session: <i>Common Core State Standards, ELA + the NGSS = Even More Brain-powered Science</i> (p. 107)
9:30–10:30 AM	G	160C, BCEC	NSTA Press® Session: <i>The New Science Teacher's Handbook</i> (p. 106)
11:00–11:30 AM	G	260, BCEC	Collaborative Capacity Building for Next Generation Science Teacher-Leaders (p. 111)
11:00 AM–12 Noon	E/S	156A, BCEC	Tackling NGSS Trepidation: A Workshop Model to Build Familiarity, Create Confidence, and Enhance Implementation in Elementary Classrooms (p. 115)
11:00 AM–12 Noon	M	254B, BCEC	Integrating Science and Engineering Practices with Models (p. 116)
11:00 AM–12 Noon	H	204 A/B, BCEC	Materials Science Makes High School Science Better! (p. 115)
11:00 AM–12 Noon	E–M	211, BCEC	The EngrTEAMS Project: Engineering to Transform the Education of Analysis, Measurement, and Science (p. 115)
11:00 AM–12 Noon	G	251, BCEC	Using Online Discussion Boards to Promote Literacy and Foster Engagement (p. 113)
11:00 AM–12 Noon	P–E	213, BCEC	Encouraging Questions with Confidence (p. 115)
11:00 AM–12 Noon	E–H	157A, BCEC	Ideas and Tools for Teaching STEM and Creativity in Classroom Curricula (p. 115)
11:00 AM–12 Noon	G	252A, BCEC	Analytical Debate in the Science Classroom (p. 115)
11:00 AM–12 Noon	M–H	156C, BCEC	Listening to Science: Using Audio in the Classroom (p. 112)
11:00 AM–12 Noon	P	151B, BCEC	Using Formative Assessment to Support Science Teaching and Learning in PreK (p. 111)
11:00 AM–12 Noon	G	255, BCEC	What Do Students Know About Engineering and Technology? Identifying Common Student Misconceptions (p. 113)
11:00 AM–12 Noon	G	203, BCEC	I Am Not an English Teacher, But I Teach Reading and Writing (p. 115)

Schedule at a Glance General Science, cont.

11:00 AM–12 Noon	G	208, BCEC	A Museum and Occupational Therapy Partnership to Support Science Learning and Inclusion for Youth with Autism Spectrum Disorders (p. 113)
11:00 AM–12 Noon	P–M	158, BCEC	Sing a Song of Science! (p. 112)
11:00 AM–12 Noon	M–H/I	160C, BCEC	NSTA Press® Session: <i>Gourmet Lab</i> (p. 113)
11:00 AM–12 Noon	M–H	254A, BCEC	NSTA Press® Session: <i>Common Core State Standards, Mathematics</i> + the NGSS = More Brain-powered Science (p. 113)

Physics/Physical Science: Saturday

8:00–9:00 AM	H	Pacific E, Renaissance	ASTE Session: Designing the Strongest Voltaic Cell in a High School Classroom (p. 24)
8:00–9:00 AM	M–H	205C, BCEC	NASA Brings You Newton's Laws of Motion (p. 22)
8:00–9:00 AM	H–C	Pacific G/H, Renaissance	History of Physics in the Classroom—Beyond the Sidebar (p. 18)
8:00–9:00 AM	G	206 A/B, BCEC	The Science LEAD (Learner, Entrepreneur, Activist, and Dazzler) (p. 14)
8:00–9:00 AM	M–H	254B, BCEC	Physics Activities from the Exploratorium and LIGO Science Education Center (p. 16)
8:00–9:00 AM	H–C	Pacific G/H, Renaissance	Using Authentic, Data-rich Case Studies to Teach Physics Content and Science Practices (p. 18)
8:00–9:00 AM	H–C	Atlantic 2, Renaissance	Canvas and PVC Boats as a Capstone for Senior Physics (p. 24)
8:00–9:00 AM	G	206 A/B, BCEC	Leading with a Team: Building Best Practices to Improve Our Teaching and Our School (p. 14)
8:00–9:30 AM	6–8	104C, BCEC	Fast and Furious: Measuring Speed (p. 26)
9:30–10:00 AM	H	205C, BCEC	Anchors for Engaging Students in Developing and Using Models (p. 31)
9:30–10:30 AM	H–C	Pacific G/H, Renaissance	Ranking Tasks as a Next Generation Physics Assessment (p. 36)
9:30–10:30 AM	G	203, BCEC	Design a Spacesuit for Going on a Spacewalk (p. 32)
9:30–10:30 AM	M	159, BCEC	Story Books, Graphic Novels, and the Simpsons: Integrating Literature in the Middle School Physical Science Curriculum (p. 32)
9:30–10:30 AM	M–H	Lewis, Westin Waterfront	Science Glossaries as Teaching Tools (p. 37)
10:00–11:30 AM	7–C	153B, BCEC	Video Physics with Vernier (p. 46)
10:00–11:30 AM	5–12	152, BCEC	Be Moved—Engaging Force and Motion Classroom Activities (p. 46)
11:00–11:30 AM	E–H	Plaza Ballroom/Group 4, Seaport	Teacher Researcher Day Session: Teacher Research as Professional Development (p. 47)
11:00 AM–12 Noon	H	206 A/B, BCEC	Defeating Misconceptions in Physics (p. 49)
11:00 AM–12 Noon	G	205C, BCEC	The Rube Goldberg Machine Contest: Invention in the Classroom (p. 54)
11:00 AM–12 Noon	G	Plaza Ballroom/Group 2, Seaport	Teacher Researcher Day Session: Engaging Prospective Teachers in Exploring Climate Change Issues in a Course Integrating Physics and Literacy Learning (p. 52)
11:00 AM–12 Noon	E–M	160A, BCEC	Elastic Power: Wind Up Your Engines and Explore (p. 54)
11:00 AM–12 Noon	E	159, BCEC	When Classroom Talk Becomes Scientific (p. 48)
11:00 AM–12 Noon	E–M	259B, BCEC	3-2-1 Blastoff! (p. 55)
12 Noon–1:30 PM	9–C	153A, BCEC	Physics with Vernier (p. 59)
12 Noon–1:30 PM	9–C	109B, BCEC	Perimeter Institute Physics Teacher Network (p. 59)
12 Noon–1:30 PM	4–6	104A, BCEC	A World In Motion Elementary STEM Workshop (p. 58)
12:30–1:30 PM	M	159, BCEC	Simple Machine Junkyard Cars (p. 62)
12:30–1:30 PM	H	259B, BCEC	Slingshot Physics: An Authentic Application of Work, Energy, Friction, and Newton's First Law of Motion (p. 68)
12:30–1:30 PM	E–H	203, BCEC	Energy Deeper and Cheaper—Lessons Low in Cost but High in Potential (p. 67)
2:00–2:30 PM	G	Plaza Ballroom/Group 3, Seaport	Teacher Researcher Day Session: Connecting Energy to Place (p. 70)
2:00–3:00 PM	H	203, BCEC	Technology-infused Conceptual Physics (p. 76)
2:00–3:00 PM	H	205C, BCEC	Using an Engineering Challenge to Apply Physics Concepts (p. 76)
2:00–3:30 PM	6–8	104A, BCEC	A World In Motion Middle School STEM Workshop (p. 78)
2:00–3:30 PM	7–C	153A, BCEC	Engineering with Vernier Using LEGO, Arduino, and LabVIEW (p. 79)

Schedule at a Glance Physics/Physical Science, cont.

3:30–4:30 PM	H	162B, BCEC	Using a Patterns Approach to Meet NGSS in Physics (p. 85)
3:30–4:30 PM	M–C	203, BCEC	Explore Alien Worlds from Your Classroom Using Online Telescopes (p. 81)
5:00–6:00 PM	I	256, BCEC	Impulse: A Game Inside a Physics Simulator (p. 91)
5:00–6:00 PM	P	252A, BCEC	Foundations of Science Literacy: A Program That Impacts Teacher Practice and Children’s Learning in Physical Science (p. 91)
5:00–6:00 PM	H	203, BCEC	Using Engineering Projects in Physics Courses—U.S. and Singapore (p. 90)
5:00–6:00 PM	E	159, BCEC	From Simple Circuits to Introductory Robotics (p. 93)
5:00–6:00 PM	E–H	205C, BCEC	Motion and Its Sidekicks—Velocity, Acceleration, Energy, Work, and Efficiency (p. 93)

Physics/Physical Science: Sunday

8:00–9:00 AM	M–H	151A, BCEC	Fusing Literacy with Hands-On Data Collection (p. 103)
8:00–9:00 AM	M–H	205C, BCEC	Discover Bridge Building to Incorporate STEM in Your Classroom (p. 104)
8:00–9:00 AM	G	150, BCEC	Science Assets Teacher Academy: A Yearlong Professional Development Model for Improving Student Science Learning (p. 99)
8:00–9:00 AM	E–M	159, BCEC	A Two-Part Maglev Challenge (p. 104)
8:00–9:00 AM	M–H	102A, BCEC	Engineering Challenges in Physical Science (p. 102)
8:00–9:00 AM	E–H	150, BCEC	The ToPPS Program: The Statewide Impact of Making Physics Accessible at Every Grade Level (p. 99)
8:00–9:00 AM	M–H	102B, BCEC	Portfolio Assessment: Getting Students to Value What’s Learned Over Points Earned (p. 99)
9:30–10:30 AM	M	259B, BCEC	3-2-1 Blast Off! Launching Rockets to Merge Science and Engineering Practices (p. 110)
9:30–10:30 AM	H	205C, BCEC	Flippin’ Physics and Chemistry: Teaching Advanced Science to (Almost) All Students (p. 106)
9:30–10:30 AM	E	159, BCEC	Engineering with Sound Science (p. 109)
9:30–10:30 AM	H	102A, BCEC	Energize Using Inquiry and Modeling (p. 105)
9:30–10:30 AM	M–H/I	151A, BCEC	NASA’s Space Forensics: Solving Cosmic Mysteries with Crime Scene Narratives (p. 109)
11:00 AM–12 Noon	M	159, BCEC	An Integrated STEM Lab Activity Using Feature Films as a Platform for Inquiry (p. 112)
11:00 AM–12 Noon	M–H	151A, BCEC	The Generator Project: Implementing the NGSS with Modeling and Projects (p. 115)
11:00 AM–12 Noon	M–H	150, BCEC	Star Trek Physics: Using Sci-Fi to Explore Technology (p. 111)

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