

Friday, March 31

NSTA National Conference on Science Education

SUN • SURF
Science
LOS ANGELES
March 30–April 2 2017

VOLUME 2

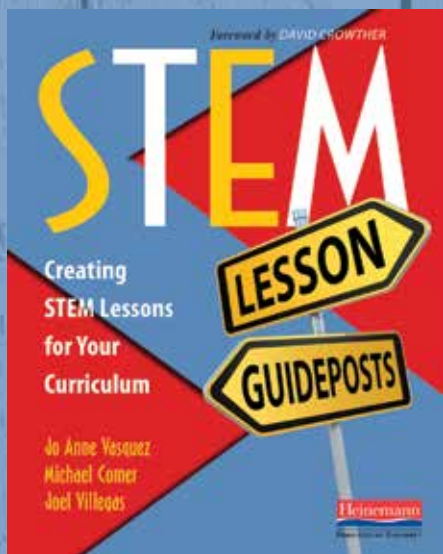
NATIONAL SCIENCE TEACHERS ASSOCIATION • LOS ANGELES 2017

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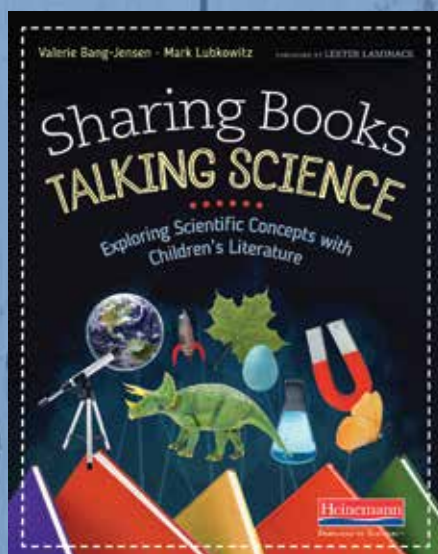
#NSTA17

NSTA National
Science
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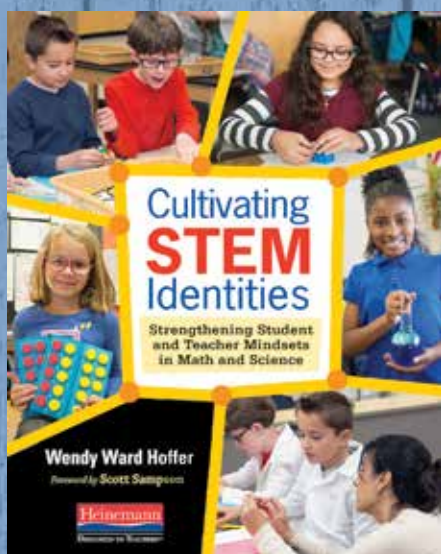
Authentic, Practical Resources for Teachers



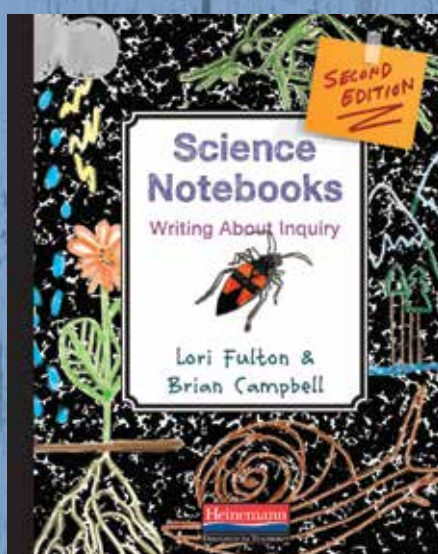
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For more information on workshop descriptions and schedules, visit us at bio-rad.com/ad/workshops.

NSTA Los Angeles Workshop Schedule

Join us at the Los Angeles Convention Center, rooms 404AB and 406AB, for our free workshops.

Thursday March 30

8:00–9:30 AM	404AB	Identify Patient Zero of a Zombie Apocalypse!
	406AB	Build a Box: Engineering Food Dye Electrophoresis for NGSS
10:00–11:30 AM	404AB	Investigate Photosynthesis and Cellular Respiration with Algae Beads
	406AB	Enzymes: Technology Inspired by Nature
2:00–3:30 PM	404AB	Effortlessly Integrate Inquiry with Glowing Bacteria
	406AB	How to Use Pop Culture in Your Life Science Class
4:00–5:30 PM	404AB	Take pGLO™ to the Next Level!
	406AB	Become a GMO Investigator

Friday March 31

8:00–9:30 AM	404AB	Conserving the Panda Population — One Hormone Test Design at a Time!
	406AB	DNA Detectives — Who Killed Jose?
10:00–11:30 AM	404AB	Upgrade Your Chemotaxis Lab! (Aligns with AP Biology Big Ideas 1–4)
	406AB	Communicating Science through Lab Notebooking
2:00–3:30 PM	404AB	Project-Based Learning for High School: Sequencing Plant Species
	406AB	Lab Skills: The Escape Room! Experience an escape room like no other. Escape room workshop space is limited. Get tickets at the Bio-Rad booth.
4:00–5:30 PM	404AB	Get That Grant Money!
	406AB	Lab Skills: The Escape Room! Experience an escape room like no other. Escape room workshop space is limited. Get tickets at the Bio-Rad booth.

Saturday April 1

8:00–9:30 AM	404AB	Contagion! Track the Spread of Dangerous Disease
10:00–11:30 AM	404AB	Investigate Photosynthesis and Cellular Respiration with Algae Beads

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Call toll free at 1-800-424-6723.
Outside the U.S. contact your local sales office.

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NSTA National Science Teachers Association



NSTA 65th National Conference on Science Education

Sun, Surf & Science

Los Angeles, California • March 30–April 2, 2017

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National Science Teachers Association

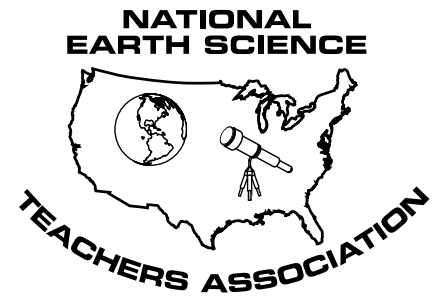
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National Earth Science Teachers Association Events at the 2017 NSTA National Conference in Los Angeles



We have a number of exciting sessions! To find our sessions, enter **NESTA** as the keyword when searching events online at NSTA's session browser for the conference. On Friday, March 31 and Saturday, April 1, we have a series of sessions all in Petree Hall D of the Los Angeles Convention Center. Don't miss out on our Share-a-Thons and the events below!

www.nestanet.org

Friday, March 31

2:00 – 3:00 p.m. **American Geophysical Union (AGU) Lecture: The Fault Lies Not in Our Stars. Speaker: Dr. Lucy Jones**



Seismology shows us that on human time scales, the timing of big earthquakes is random and the best way to manage the risk is to consider it probabilistically. Most people do not really believe in randomness—trying to find patterns even when they don't exist and then expecting scientists to find the real cause and remove randomness from the equation. Dr. Jones will probe how science education can do a better job of empowering everyone to understand and use hazards information.

Los Angeles Convention Center, Petree Hall C

6:30 – 8:00 p.m. **NESTA Friends of Earth Science Reception
JW Marriot Hotel L.A., Platinum Ballroom Salon C**

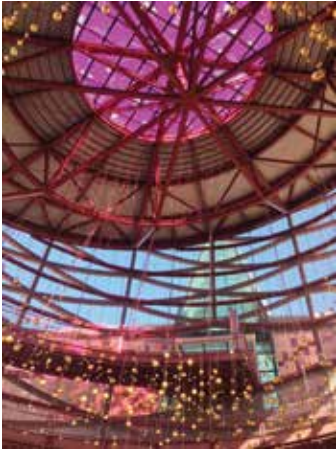
Saturday, April 1

5:00 – 6:00 p.m. **NESTA's exciting Rock, Mineral, and Fossil Raffle!
Los Angeles Convention Center, Petree Hall D**

NESTA gratefully acknowledges the following organizations as sponsors:



Courtesy of California Science Center



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.

Friday, March 31

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2:00–3:00 PM	Featured Panel: The National Academies of Sciences, Engineering, and Medicine	76
2:00–4:00 PM	Science in the Community Share-a-Thon	89
3:30–4:30 PM	Robert H. Carleton Lecture: LaMoine Motz	93
6:00–8:45 PM	NSTA Teacher Awards Gala (M-2)	110

NSTA Teacher Awards Gala



Friday, March 31, 6:00–8:45 PM
Gold Ballroom Salon 2/3, JW Marriott at L.A. LIVE
Cost: \$80

Enjoy a fabulous evening celebrating with this year’s teacher award recipients! **ALL** of the teacher awards will be presented in one grand evening. Join your colleagues in recognition of this year’s winners.

By ticket only: #M-2 Evening/Cocktail attire requested.



The Los Angeles 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.

NGSS **NGSS: The Next Generation of Science Teaching**

Celebrate the vision of three-dimensional teaching and learning in the NRC *Framework* and *Next Generation Science Standards (NGSS)*. This strand provides engaging and collaborative examination of the NGSS architecture to allow teachers to implement the changes necessary to construct a coherent program, including classroom practice and instructional sequence, as well as to build student skills. Bundling performance expectations connects the three key dimensions within a progression. This strand will focus on providing opportunities for students to collaborate as they develop and use science and engineering practices, communicate evidence of core scientific understanding, and apply real-world contexts. Alignment of assessments connecting core concepts, science and engineering practices, and crosscutting concepts is essential.



2017: A STEM Odyssey

Students' science learning has changed dramatically from learning in the past. In a STEM environment, students' understanding of the world around them is facilitated through the intentional connections between the four disciplines of science, technology, engineering, and mathematics. STEM curriculum provides research-based instructional strategies that engage diverse learners and highlight career pathways in STEM-related fields. More importantly, STEM provides opportunities for all students to place themselves in a 21st-century world. In this strand, participants will connect and collaborate to increase their understanding and ability to teach STEM-based lessons and instructional sequences.



Science & Literacy Reloaded

With the continued emphasis on mathematics and language arts, elementary teachers have not been encouraged or given opportunities to teach science. This strand will support these teachers in seeing the connections between science and literacy. Elementary science will be re-envisioned as an opportunity for authentic language learning and not just one more thing to squeeze into the curriculum. As students investigate natural phenomena, they collect data to then make claims from their evidence and explain their reasoning, arguing from their evidence. Teachers can then support their students' language and literacy through science notebooks, technical writing, interactive journals, and e-portfolios. This strand will allow teachers to become advocates of literacy in science, blending oral and written communication skills within the science curriculum.



Mission Possible: Equity for Universal Access

Access to science education is not a privilege; it is a right for students of all abilities, genders, languages, socioeconomic status, and geographic locations. A quality science education is essential in closing the skills gap in our current workforce. Science learning must start in early childhood and be sustained through postsecondary education to keep our nation as a leader in innovation. Current challenges provide opportunities for equitable access to science education. Some issues include maximizing student achievement for exceptional students while respecting cultural and linguistic diversity in order to celebrate those differences. The sessions in this strand will focus on pedagogical best practices to enhance learning for ALL.

NGSS: The Next Generation of Science Teaching

Friday, March 31

8:00–9:00 AM

Scaffolding to Support Complex Student-Created Explanations of Real-World Phenomena (Secondary Science Classrooms)

9:30–10:30 AM

Starting with the End in Mind: Building an Instructional Unit from NGSS Performance Expectations

11:00 AM–12 Noon

NGSS and 3D Implementation: Tools for Elementary Teachers

Featured Presentation: NGSS...Now What? (Speaker: Laura Henriques)

12:30–1:30 PM

Phenomena-Questions-Model

2:00–3:00 PM

Using Phenomena to Level the Playing Field in the Elementary Classroom

3:00–6:00 PM

Short Course: NGSS: Three Dimensions in Action in a California Early Implementer Classroom (By Ticket: SC-9)

5:00–6:00 PM

Designing Classroom Assessments to Address NGSS Performance Expectations

ELEMENTARY EXTRAVAGANZA

Friday, March 31, 2017
8:00–10:00 AM • West Hall B-1
Los Angeles Convention Center

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

Sponsored by:

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



2017: A STEM Odyssey

Friday, March 31

9:30–10:30 AM

STEM in the Real World: Hands On with NASA Aeronautics

9:45 AM–5:45 PM

Short Course: Stretch Your Legs for Science: An Outdoor STEM Adventure
(By Ticket: SC-7)

11:00 AM–12 Noon

Engineering and Literacy: A Path to Integrated STEM

3:30–4:30 PM

NASA Is with You When You Fly: Flying with Bernoulli

5:00–6:00 PM

Social Studies, ELA, and STEM, Oh My! Integrating It All

Mission Possible: Equity for Universal Access

Friday, March 31

9:30–10:30 AM

Environmental Literacy: All About Access!

11:00 AM–12 Noon

Incorporating Global STEM Collaboration into Your Classroom!

12:30–1:30 PM

Shifting Toward Student-Designed Experiments

2:00–3:00 PM

Interactive Science Notebooks: Low-Tech Creations for Higher-Level Thinking

3:00–6:00 PM

Short Course: Reaching Extremes! Blending Climate Science and Mathematics to Reach All Learners (By Ticket: SC-10)

3:30–4:30 PM

Engaging At-Risk Students Through Voice and Choice

Bilingual Engineering Adventures for the Whole Family

5:00–6:00 PM

Support Students Who Receive Special Education Services in STEM Education Through Engagement in Engineering Challenges

Science & Literacy Reloaded

Friday, March 31

8:00–9:00 AM

Interactive Word Walls: Enhancing Students' Ability to Speak, Read, and Write About Science Experiences

8:00–11:00 AM

Short Course: Writing in Science: A Research-Based Approach That Enhances Learning in Both Domains
(By Ticket: SC-6)

10:30 AM–4:00 PM

Short Course: NSTA Press® Short Course: Phenomenon-Based Learning: Fun, Hands-On, Cooperative Learning of Both Science and Language Arts (By Ticket: SC-8)

11:00 AM–12 Noon

Developing Graphing Skills for All

12:30–1:30 PM

Featured Presentation: A New Era: Beyond Science and Literacy Integration
(Speaker: Jacqueline Barber)

Get Energized: Problem-Based Learning EQUALS Success in Science and Literacy

2:00–3:00 PM

Screencasting in Science

3:30–4:30 PM

Using Lab Notebooks in the Preschool and Elementary Classroom

Inspire Students *Spark Innovation*

Visit Booth #2343

Inspire your students and spark innovation with K-12 programs that make science real and relevant. With exciting hands-on activities, inquiry-based learning, and engaging tech-enhanced resources, our programs help teachers excel at delivering NGSS* instruction that empowers future science innovators.

Explore our K-12 science programs and NSTA conference activities at mheonline.com/NSTA2017

*Next Generation Science Standards (NGSS) is a registered trademark of Achieve. Neither Achieve nor the lead states and partners that developed NGSS endorse or are involved in the production of McGraw-Hill Education products.

NGSS@NSTA Forum

Friday, March 31
151, Convention Center



The NGSS@NSTA Forum explores resources you can use to implement three-dimensional instruction. Participate in one or more presentations. *See daily program for details.*

8:00–9:00 AM	Designing and Using Classroom Assessments to Support Meaningful NGSS Investigations (p. 18)	12:30–1:30 PM	How Do We Grade Students in a Three-Dimensional Classroom? (p. 68)
9:30–10:30 AM	Next Generation Science Assessments (NGSA) Project (p. 34)	2:00–3:00 PM	Developing a Coherent Assessments System from the Classroom to the Year-End Exam (p. 78)
11:00 AM–12 Noon	How Do You Know If an Assessment Is Measuring Three-Dimensional Reasoning? (p. 52)	3:30–4:30 PM	The Next Generation of Statewide Assessments (p. 94)

Science in the Community Friday Events

The Science in the Community Forums and events build awareness of the abundance of existing high-quality out-of-school (informal) science education methods, resources, and opportunities available to enhance science teaching and learning. Both out-of-school and in-school science educators meet and interact to share best practices in informal science, learn about exciting collaborations happening among informal and formal science organizations, network with colleagues, and dialogue around ideas and innovations. Informal organizations participating in the Science in the Community Forums include zoos, museums, media, after-school programs, universities outreach, and others that provide or support out-of-school science education.

8:00–10:00 AM	Models of Intersections That Connect Informal Institutions with Schools, Students, and Teachers to Support STEM Learning Outside the Classroom (p. 28)	12:30–1:30 PM	Featured Presentation (Panel): The Development of a Positive STEM Identity (p. 63) (Moderator: Angela Calabrese Barton)
		2:00–4:00 PM	Science in the Community Share-a-Thon (p. 89)

NGSS@NSTA Forum

The Best Place to Explore
Assessments and the
**NEXT GENERATION
SCIENCE STANDARDS**

Friday, March 31, 2017
Los Angeles Convention Center, 151

Take a deep dive with a special event FREE to all conference attendees!

Join leading national experts as they discuss issues around classroom and large-scale assessments in the context of three-dimensional instruction. Participate in one or more presentations.

8:00 AM–9:00 AM

Designing and Using Classroom Assessments to Support Meaningful NGSS Investigations

Philip Bell, Shelley Stromholt, Deb Morrison

9:30 AM–10:30 AM

Next Generation Science Assessments (NGSA) Project

Joseph Krajcik, Christopher Harris

11:00 AM–12 PM

How Do You Know If an Assessment Is Measuring Three-Dimensional Reasoning?

Jill Wertheim, Cathy Zozakiewicz

12:30 PM–1:30 PM

How Do We Grade Students in a Three-Dimensional Classroom?

James Clark, Samantha Johnson

2:00 PM–3:00 PM

Developing a Coherent Assessment System From the Classroom to the Year-End Exam

Stephen Pruitt

3:30 PM–4:30 PM

The Next Generation of Statewide Assessments

Michelle Center, Peter McLaren, Stephen Pruitt

SHARE-A-THON

Saturday, April 1, 2017
9:30–11:00 AM
Los Angeles Convention Center, 151

Get tips and tools to implement three-dimensional standards from NSTA's NGSS Curators, NGSS writers, and other national education experts.

Leave with plenty of resources and ideas you can use in your classroom right away!

NGSS@NSTA
STEM STARTS HERE

NSTA National
Science
Teachers
Association

NSTA Press Sessions

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



Friday, March 31

8:00–9:00 AM

Teaching for Conceptual Understanding in Science: Building a Bridge Between Student Ideas and Scientific Knowledge

Doing Good Science in Middle School

Learn Strategies to Help You Implement the NGSS Practices!

Argument-Driven Inquiry in Life Science and Physical Science—Lab Investigations for Grades 6–8

9:30–10:30 AM

Formative Assessment Classroom Techniques for Uncovering ALL Students' (and Teachers') Ideas

11:00 AM–12 Noon

Integrating Engineering Practices into Whole-Class Inquiry Challenges

Picture-Perfect STEM Lessons: Using Children's Books to Inspire STEM Learning

12:30–1:30 PM

Next Time You See...

2:00–3:00 PM

Flowers to Fruit: Putting Botany Back into Your Curriculum

Learning to Read the Earth and Sky, Explorations Supporting the NGSS

The Power of Investigating: Guiding Authentic Assessments

3:30–4:30 PM

Big Data, Small Devices

How Scientific Learning Communities Promote Equity and Access Through Whole-Class Inquiry

Outdoor Science with Birds, Books, and Butterflies

Meet Me in the Middle Day

Friday, March 31, 10:15 AM–4:30 PM
Diamond Ballroom Salons 4 and 5
JW Marriott

Organized by the National Middle Level Science Teachers Association (NMLSTA) and sponsored by AquaPhoenix Scientific (Kemtec), Carolina Biological Supply Co., Flinn Scientific, Lab-Aids, Inc., PASCO scientific, and Shape of Life.

Calling all middle school science teachers! Meet Me in the Middle Day is designed just for you. The day will include sessions geared toward middle school, and a share-a-thon with a room full of activities that you can take back to your

classroom. Join us and re-energize your teaching. You may even be the lucky winner of an iPad mini or other door prizes. *Meet Me in the Middle* sessions are described throughout this volume.

10:00–10:15 AM	Registration and Welcome	1:00–1:30 PM	Concurrent Sessions (pp. 71–72)
10:15–10:45 AM	Concurrent Sessions (pp. 46–47)	1:45–2:15 PM	Concurrent Sessions (p. 73)
11:00–11:30 AM	Concurrent Sessions (pp. 47–48)	2:30–4:30 PM	Meet Me in the Middle Share-a-Thon (p. 90)

Three Dimensions of the Next Generation Science Standards (NGSS)

Science and Engineering Practices	Crosscutting Concepts
<p>SEP1 Asking Questions and Defining Problems</p> <p>SEP2 Developing and Using Models</p> <p>SEP3 Planning and Carrying Out Investigations</p> <p>SEP4 Analyzing and Interpreting Data</p> <p>SEP5 Using Mathematics and Computational Thinking</p> <p>SEP6 Constructing Explanations and Designing Solutions</p> <p>SEP7 Engaging in Argument from Evidence</p> <p>SEP8 Obtaining, Evaluating, and Communicating Information</p>	<p>CCC1 Patterns</p> <p>CCC2 Cause and Effect: Mechanism and Explanation</p> <p>CCC3 Scale, Proportion, and Quantity</p> <p>CCC4 Systems and System Models</p> <p>CCC5 Energy and Matter: Flows, Cycles, and Conservation</p> <p>CCC6 Structure and Function</p> <p>CCC7 Stability and Change</p>

Disciplinary Core Ideas

Disciplinary Core Ideas in Physical Science	Disciplinary Core Ideas in Life Science	Disciplinary Core Ideas in Earth and Space Science	Disciplinary Core Ideas in Engineering, Technology, and the Application of Science
<p>PS1: Matter and Its Interactions PS1.A: Structure and Properties of Matter PS1.B: Chemical Reactions PS1.C: Nuclear Processes</p> <p>PS2: Motion and Stability: Forces and Interactions PS2.A: Forces and Motion PS2.B: Types of Interactions PS2.C: Stability and Instability in Physical Systems</p> <p>PS3: Energy PS3.A: Definitions of Energy PS3.B: Conservation of Energy and Energy Transfer PS3.C: Relationship Between Energy and Forces PS3.D: Energy in Chemical Processes and Everyday Life</p> <p>PS4: Waves and Their Applications in Technologies for Information Transfer PS4.A: Wave Properties PS4.B: Electromagnetic Radiation PS4.C: Information Technologies and Instrumentation</p>	<p>LS1: From Molecules to Organisms: Structures and Processes LS1.A: Structure and Function LS1.B: Growth and Development of Organisms LS1.C: Organization for Matter and Energy Flow in Organisms LS1.D: Information Processing</p> <p>LS2: Ecosystems: Interactions, Energy, and Dynamics LS2.A: Interdependent Relationships in Ecosystems LS2.B: Cycles of Matter and Energy Transfer in Ecosystems LS2.C: Ecosystem Dynamics, Functioning, and Resilience LS2.D: Social Interactions and Group Behavior</p> <p>LS3: Heredity: Inheritance and Variation of Traits LS3.A: Inheritance of Traits LS3.B: Variation of Traits</p> <p>LS4: Biological Evolution: Unity and Diversity LS4.A: Evidence of Common Ancestry and Diversity LS4.B: Natural Selection LS4.C: Adaptation LS4.D: Biodiversity and Humans</p>	<p>ESS1: Earth's Place in the Universe ESS1.A: The Universe and Its Stars ESS1.B: Earth and the Solar System ESS1.C: The History of Planet Earth</p> <p>ESS2: Earth's Systems ESS2.A: Earth Materials and Systems ESS2.B: Plate Tectonics and Large-Scale System Interactions ESS2.C: The Roles of Water in Earth's Surface Processes ESS2.D: Weather and Climate ESS2.E: Biogeology</p> <p>ESS3: Earth and Human Activity ESS3.A: Natural Resources ESS3.B: Natural Hazards ESS3.C: Human Impacts on Earth Systems ESS3.D: Global Climate Change</p>	<p>ETS1: Engineering Design ETS1.A: Defining and Delimiting an Engineering Problem ETS1.B: Developing Possible Solutions ETS1.C: Optimizing the Design Solution</p> <p>ETS2: Links Among Engineering, Technology, Science, and Society ETS2.A: Interdependence of Science, Engineering, and Technology ETS2.B: Influence of Engineering, Technology, and Science on Society and the Natural World</p>



—Photo courtesy of Aquarium of the Pacific

This three-story tank at the Aquarium of the Pacific is modeled after Blue Cavern Point, a kelp forest along the northeastern coast of Santa Catalina Island.

7:30–9:30 AM Networking Opportunity

AMSE Alice J. Moses Annual Breakfast

(By Invitation Only) *Platinum Ballroom Salon C, JW Marriott*
For details, please visit www.amsek16.org.

8:00–8:30 AM Presentations

SCST-Sponsored Session: Go Online to Teach College Science!

(College) *Georgia 1, JW Marriott*
Science Focus: GEN

Barbara Fortier (@bfortier; bfortier1@une.edu), University of New England, Portland, Maine

Science courses online are accessible to more students in today’s world. Learn about best practices to help students learn globally while encouraging student engagement/interaction.

CEEMS: Challenge-Based Learning Units Incorporating Engineering Design with Secondary Science and Math Content

(Grades 6–12) *Gold Ballroom Salon 4, JW Marriott*
Science Focus: ETS1, SEP

David Vernot (@dvernot; dvernot@gmail.com), Butler County Educational Service Center, Hamilton, Ohio

Secondary teachers developed CBL engineering units through this NSF-funded program. See examples and get access to a searchable database of 150+ of these units.

Global Climate Change: Engaging in Argument from Evidence

(Grades 9–College) *501C, Convention Center*
Science Focus: ESS3.D, CCC1, CCC2, CCC4, CCC7, SEP2, SEP4, SEP5, SEP6, SEP7, SEP8

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

Hear how students investigate the effects of climate change on coastal communities, such as extreme weather events (e.g. Hurricane Sandy), to write an informed argument-based paper.

Science Current Events Journals: Real Science and Media Literacy

(Grades 6–10) *Kentia Hall K, Convention Center*
Science Focus: GEN, SEP7, SEP8

Elizabeth Weissman (weissmane@ramaz.org), The Ramaz School, New York, N.Y.

Science current events journals bring real science into the classroom. Use the news to teach science content, media literacy, and analytical thinking. . .and to reinforce language arts.

Science Area

A science area category is associated with each session. These categories are abbreviated on the Science Focus line for each session listing. On page 121, you will find the conference sessions grouped according to their assigned science area category.

The science areas and their abbreviations are:

- LS** = Life Science
- PS** = Physical Science
- ESS** = Earth and Space Science
- ETS** = Engineering, Technology, and the Application of Science
- GEN** = General Science Education
- INF** = Informal Science Education

NGSS

See page 13 for a complete list of the *NGSS* codes used in this program.

Strands

The Los Angeles 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.

NGSS *NGSS: The Next Generation of Science Teaching*



2017: A STEM Odyssey



Science & Literacy Reloaded



Mission Possible: Equity for Universal Access

The following icons will be used throughout this program.



NSTA Press® Sessions



PLI Professional Learning Institutes



INF Sessions highlighting STEM learning experiences that occur in out-of-school environments.

STEM Will Not Grow Among Our Youth Unless We Give Them the Tools to Do So

(Grades 8–College) *Kentia Hall L, Convention Center*
Science Focus: GEN, NGSS

Kareem Burney, U.S. Food and Drug Administration, Silver Spring, Md.

In order to get kids into and remain in STEM, instructors should present STEM as fun and exciting to young elementary students, and present to older students how it is interesting and can be used in many different types of fields and applications to solve real-world problems.



8:00–9:00 AM Presentations

ASTE-Sponsored Session: Introducing Nanotechnology into the Chemistry Classroom

(Grades 9–12) *Atrium 2, JW Marriott*
Science Focus: PS, CCC, SEP

Sherri Rukes (*sherri.rukes@d128.org*), Libertyville High School, Libertyville, Ill.

Nanotechnology is a topic that is taking off in many different areas of science. Learn about what nanotechnology is as well as applications from ancient time to present day. Take home a CD about activities and ideas to teach these concepts.

NSELA-Sponsored Session: STEM Lesson Guideposts: Mapping STEM Lessons into Your Curriculum


(Grades K–12) *Diamond Ballroom Salon 2, JW Marriott*
Science Focus: GEN, SEP

Jo Anne Vasquez (*jvasquez@stemlessonessentials.com*), 1996–1997 NSTA President, and Rocks to Rainbows, LLC, Gilbert, Ariz.

Michael Comer (*@mathscience1107; comermwcdad@aol.com*), Pearson Education, Boston, Mass.

Joel Villegas (*@PinalCountyESA; jvillegas@pinalesa.org*), Pinal County School Office Education Service Agency, Florence, Ariz.

This interactive hands-on session will introduce a newly developed, research-based process for developing practical integrated STEM lessons and units using existing standards and curricula.

 **NSTA Press® Session: Teaching for Conceptual Understanding in Science: Building a Bridge Between Student Ideas and Scientific Knowledge**

(General) *Diamond Ballroom Salon 3, JW Marriott*
Science Focus: GEN

Richard Konicek-Moran (*rkonicek@gmail.com*), Professor Emeritus, UMass Amherst, Mass.

Page Keeley (*@CTSKeeley; pagekeeley@gmail.com*), 2008–2009 NSTA President, and The Keeley Group, Fort Myers, Fla.

What is conceptual understanding? Learn how you can teach science for conceptual understanding in your classroom.

Friday, March 31

	Featured Speakers/Special Events	Featured Speakers/Special Events	Featured Speakers/Special Events	Special Sessions/Events	
7:00 AM					
8:00 AM					
9:00 AM		Science in the Community Session: Models of Intersections <i>That Connect Informal Institutions with Schools, Students, and Teachers to Support STEM Learning Outside the Classroom</i> 8:00–10:00 AM 152, Conv. Center	Elementary Extravaganza 8:00–10:00 AM West Hall B-1, Conv. Center <i>Sponsored by Carolina Biological Supply Co., Delta Education & FOSS, Educational Innovations, Pitsco Education, Poly, and Project Lead The Way</i>	NGSS@NSTA Forum 8:00 AM–4:30 PM 151, Conv. Center	
10:00 AM					
11:00 AM	Featured Presentation 11:00 AM–12 Noon Theatre (411), Conv. Center Speaker: Laura Henriques		Meet Me in the Middle Day 10:15 AM–4:30 PM Diamond Ballroom Salons 4 and 5, JW Marriott <i>Sponsored by AquaPhoenix Scientific (Kemtec), Carolina Biological Supply Co., Flinn Scientific, Lab-Aids, Inc., PASCO scientific, and Shape of Life.</i>		
12 Noon					
1:00 PM	Featured Presentation 12:30–1:30 PM Petree Hall C, Conv. Center Speaker: Jacqueline Barber	Science in the Community Featured Panel: <i>The Development of a Positive STEM Identity</i> 12:30–1:30 PM 152, Conv. Center Moderator: Angela Calabrese Barton			“Meet and Greet” the NSTA Presidents and Board/Council 12:45–1:30 PM entrance to Hall H, Conv. Center
2:00 PM	Featured Panel 2:00–3:00 PM Theatre (411), Conv. Center The National Academies of Sciences, Engineering, and Medicine	Science in the Community Share-a-Thon 2:00–4:00 PM 152, Conv. Center			
3:00 PM			AGU Lecture 2:00–3:00 PM Petree Hall C, Conv. Center Speaker: Lucy Jones		
4:00 PM	Robert H. Carleton Lecture 3:30–4:30 PM Theatre (411), Conv. Center Speaker: LaMoine Motz				
5:00 PM					
6:00 PM					
7:00 PM	NSTA Teacher Awards Gala 6:00–8:45 PM Gold Ballroom Salon 2/3 JW Marriott Ticket Required (M-2)				
8:00 PM					
9:00 PM					
10:00 PM					

Rolling Down the NGSS Highway*(Grades 4–10) Olympic 1, JW Marriott*

Science Focus: ETS1.B, ETS1.C, PS2.A, PS3.A, PS3.B, PS3.C, CCC2, CCC4, CCC5, SEP2, SEP3, SEP4, SEP5, SEP6

Rachel Davis (@rdavisteaches; rachedavis7@gmail.com), American School Foundation of Monterrey, Santa Catarina, N.L., Mexico

Come learn how a model car design challenge used Project-Based Learning to interweave the strands of STEM into a student-driven learning experience.


NARST-Sponsored Session: Shifting Conceptions: Identifying and Understanding Teachers' Conceptual Models of Integrated STEM Education*(General) Platinum Ballroom Salon A, JW Marriott*

Science Focus: ETS

Elizabeth Ring (@MsRing_STEM; ring0055@umn.edu) and **Gillian Roehrig** (@ghroehrig; roehr013@umn.edu), STEM Education Center, St. Paul, Minn.

Emily Dare (@thedoctordare; eadare@mtu.edu), Michigan Technological University, Houghton

We will present a study investigating teachers' conceptual models of integrated STEM followed by guided discussion/reflection toward practical application of the study's results.

 **NSTA Press® Session: Doing Good Science in Middle School***(Grades 6–9) Platinum Ballroom Salon B, JW Marriott*

Science Focus: GEN, NGSS

Vicki Massey (vickimassey@cox.net), Higley Unified School District #60, Gilbert, Ariz.

Olaf Jorgenson (ojorgenson@a-cs.org), Almaden Country School, San Jose, Calif.

Join the authors of this book in looking at what are best practices in science education. Learn the resources available to help you teach the NGSS in your classroom. The 5E (Engage, Explore, Explain, Elaborate, and Evaluate) model of instruction will be highlighted.

Serious Learning with Science Comics*(Grades 3–10) Platinum Ballroom Salon D, JW Marriott*

Science Focus: GEN, SEP8

Karen Young (@doodlebugKRY; wrenyoung@aol.com), Author, Bethel, Conn.

Science comics aren't just for enrichment. They're an invitation, providing doors into a topic or concept. Join a science comic artist and children's author/illustrator as she shares practices that use science comics as multiple entry points for diverse learners.

Tablet Invasion in the Middle School Science Classroom*(Grades 1–12) Platinum Ballroom Salon E, JW Marriott*

Science Focus: GEN

Maggie Mabery (@MaggieMabery; mabery.maggie@tUSD.org), Hickory Elementary School, Torrance, Calif.

James Locke (@jlockeh; jlocke@mbusd.org), Mira Costa High School, Manhattan Beach, Calif.

Experience innovative lessons that incorporate iPads into middle school curriculum science courses. Discover how iPads provide an easy platform for differentiating lessons and witness how student engagement increases when they are used.

EcoTech*(Grades K–12) Platinum Ballroom Salon H, JW Marriott*

Science Focus: ESS2.C, ESS2.D, ESS2.E, ESS3, ETS, LS2, LS4, CCC, SEP

Karan Wood (karan@captainplanetfdn.org), Captain Planet Foundation, Atlanta, Ga.

Spotlight on replicable three-dimensional STEM learning experiences that engage students in the use of cutting-edge technology.

Evolutionary Medicine: Medicine Without Evolution Is Like Engineering Without Physics*(Grades 10–College) Platinum Ballroom Salon I, JW Marriott*

Science Focus: LS1.A, LS1.B, LS3.A, LS4.A, LS4.B, LS4.C

Mark Friedman (marklewisfriedman@gmail.com), Marine Biology Educator, Redondo Beach, Calif.

Barbara Natterson (@zoobiquity; bnatterson@mednet.ucla.edu), University of California, Los Angeles

Evolutionary medicine or Darwinian medicine is the application of modern evolutionary theory to understanding health and disease. Integrate into your physio-anatomy course.

Reframing Professional Development for NGSS: Are We Considering All Dimensions to Support Learning?*(Grades 6–College) Platinum Ballroom Salon J, JW Marriott*

Science Focus: GEN, NGSS

Jon Kovach (@UCLASciProj; kovach@gseis.ucla.edu) and **Leticia Perez** (leticiapezehuff@gmail.com), UCLA Center X, Los Angeles, Calif.

Explore strategies from our PD model that create opportunities for teachers to deepen their understanding of NGSS and build collaborative communities of practice.

Collaboration in a Cross-Curricular PBL World

(Grades 9–12)

Plaza 1, JW Marriott

Science Focus: GEN

Jillian Estrella (jestrel2@houstonisd.org) and **Sarah Finberg** (sfinberg@houstonisd.org), Energy Institute High School, Houston, Tex.

Explore student-driven, cross-curricular Project-Based Learning with an emphasis on student voice and choice that leads to highly individualized and unique final products.

Supporting Student Independence and Metacognition in Problem Solving

(Grades 9–12)

Plaza 2, JW Marriott

Science Focus: PS, SEP5

Laura Wang (laura.cragin.wang@gmail.com) and **Michael Zitolo** (michael.zitolo@gmail.com), School of the Future, New York, N.Y.

Explore the nature of solving problems in science. Walk away with classroom-ready scaffolds and supports for teaching mathematical problem-solving skills in physical science.

Analyzing and Interpreting Data to Determine Earthquake Hazards

(Grades 9–College)

504, Convention Center

Science Focus: ESS2.B

David Randle (drandle@amnh.org) and **Adriana Aquino** (aaquino@amnh.org), American Museum of Natural History, New York, N.Y.

Use the IRIS earthquake data browser along with videos and readings to examine how scientists determine the risk of catastrophic geologic events, such as earthquakes and tsunamis.

STEM Is for Students Engaged and Motivated! Design and Innovation to Reach Struggling Science Students

(Grades 6–12)

505, Convention Center

Science Focus: ETS, SEP1, SEP6, SEP8

Joshua Edwards (@jedwardschem; joshxedwards@gmail.com), Graded School, São Paulo, Brazil

Let's harness NGSS for engineering to pique students' interest, build a peer-feedback culture, and develop communication skills in a STEM elective for struggling learners.

NGSS@NSTA Forum Session: Designing and Using Classroom Assessments to Support Meaningful NGSS Investigations

(Grades K–12)

151, Convention Center

Science Focus: GEN, NGSS

Philip Bell (@philipbell; pbell@uw.edu), **Shelley Stromholt** (@sshellery; stromhos@uw.edu), and **Deb Morrison** (@educatordeb; educator.deb@gmail.com), University of Washington, Seattle

Embedded sequences of formative assessments are a central element of exemplary science teaching. They help surface learning assets of students that can be used to productively guide instruction. Through an examination of sample student responses, attendees will explore how to design and interpret cognitive assessments of 3D learning, as well as cultural formative assessments of student and community interests and funds of knowledge.

NGSS Scaffolding to Support Complex Student-Created Explanations of Real-World Phenomena (Secondary Science Classrooms)

(Grades 5–12)

515A, Convention Center

Science Focus: GEN, SEP2

Karin Lohwasser (loh2o@uw.edu) and **Michelle Salgado** (@SalgadoScience; msalgado@uw.edu), University of Washington, Seattle

Amy Peterson, College Place Middle School, Lynnwood, Wash.

Explore examples of scaffolds from secondary science classrooms that support the connection of disciplinary core ideas, crosscutting concepts, and science and engineering practices during a unit of instruction.



Interactive Word Walls: Enhancing Students' Ability to Speak, Read, and Write About Science Experiences

(Grades P–12)

502A, Convention Center

Science Focus: GEN

Julie Jackson (@ScienceToolkit; jj32@txstate.edu), Texas State University, San Marcos

Interactive word walls are scaffolds that help students effectively communicate scientific ideas and produce domain-specific text that is intrinsic to science at every grade level.

Advancing Science Literacy While Meeting CCSS: Enable Students to Read Science Content, Organize and Communicate Information Effectively, and Increase Achievement

(Grades K–6)

Kentia Hall D, Convention Center

Science Focus: GEN, NGSS

Donna Knoell (dknoell@sbcglobal.net), Educational Consultant, Overland Park, Kans.

Emphasis will be placed on content literacy strategies that enable elementary students to read and comprehend informational science text, communicate science concepts orally and in writing, and develop their science vocabularies, while meeting the CCSS. Handouts!

Engaging Students with Literacy Strategies*(Grades 7–12) Kentia Hall G, Convention Center*

Science Focus: GEN, SEP

Kellie Dean (kdean@d125.org) and **Christine Pfaffinger** (cpfaffinger@d125.org), Adlai E. Stevenson High School, Lincolnshire, Ill.

Science literacy can be a challenge for students. Learn how to create engaging literacy activities that meet the NGSS and CCSS.

Engaging Students Through the SAMR Model and Digital Assessments*(Grades 6–12) Kentia Hall H, Convention Center*

Science Focus: GEN, NGSS

Laura Turngren (lturngren@barrington220.org), Barrington High School, Barrington, Ill.

Increase classroom engagement with proven hints, tips, and tricks for digital assessments that meet the NGSS. We will discuss the SAMR model of Substitution, Augmentation,

Modification, and Redefinition to infuse technology into teaching and learning. Easily adaptable for middle school or high school classes.

Beyond the Lab Report: Using Student-Generated Lab Data to Construct Claim, Evidence, and Reasoning Written Explanations as Assessment of Content Objectives*(Grades 9–12) Kentia Hall O, Convention Center*

Science Focus: PS1, CCC1, CCC2

Hannah Nandor ([@nandorscience](https://twitter.com/nandorscience); hnandor@cpsk12.org), **Shanna Barkume** ([@KchemistryKid](https://twitter.com/KchemistryKid); sbarkume@cpsk12.org), and **Julie Gastler** ([@JulieGastler](https://twitter.com/JulieGastler); jgastler@cpsk12.org), Muriel Battle High School, Columbia, Mo.

Three high school chemistry teachers discuss how they revamped chemistry lab notebooks and integrated technical writing in their high school chemistry classes.

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NASA’s “Eyes on the Solar System”: Bringing the Planets to Your Classroom

(Grades 5–12) *Kentia Hall P, Convention Center*
Science Focus: ESS1.B, CCC4, SEP2

Rachel Zimmerman Brachman (@RachelZBrachman; rachel.zimmerman-brachman@jpl.nasa.gov) and **Kevin Hussey** (@NASA_Eyes; kjhussey@jpl.nasa.gov), NASA Jet Propulsion Laboratory, Pasadena, Calif.

Bring the solar system to your classroom using this free computer-based model from NASA. Explore planets, spacecraft, and more!

NGSS Instruction That Makes Thinking Visible

(Grades K–12) *Theatre (411), Convention Center*
Science Focus: GEN, NGSS

Kenneth Huff (kenneth.huff@roadrunner.com), NSTA Director, Middle Level Science Teaching, and Mill Middle School, Buffalo, N.Y.

Brett Moulding (mouldingb@ogdensd.org), Partnership for Effective Science Teaching and Learning, Ogden, Utah
Join two members of the NGSS writing team to actively engage in the modeling of an innovative three-dimensional approach to science teaching and learning.



8:00–9:00 AM Hands-On Workshops

NSTA Press® Session: Learn Strategies to Help You Implement the NGSS Practices!

(Grades K–12) *Atrium 3, JW Marriott*
Science Focus: GEN, NGSS

Anne Tweed, 2004–2005 NSTA President, STEM Learning Solutions LLC, Aurora, Colo.

Use instructional tools that help provide students with multiple opportunities to learn, promote linguistic and nonlinguistic approaches to teaching, and support NGSS practices. Handouts!

DuPont Presents: Tracking the Spread of Infectious Diseases—Human and Animal

(Grades 9–12) *Diamond Ballroom Salon 1, JW Marriott*
Science Focus: LS

Kelly Becnel, Walker High School, Walker, La.

Help students understand the spread of diseases in a human or animal population by using this engaging hands-on lab.

Soils and NGSS—Perfect Together: Let’s Dig In!

(Grades 4–12) *Diamond Ballroom Salon 6, JW Marriott*
Science Focus: ESS2.A, ESS2.E, ESS3.A, LS2.B, LS2.C, PS1.B, CCC4, CCC5, CCC6

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

Susan Chapman, Soil Science Society of America, Fitchburg, Wis.

Unearth why soil is more than the dirt under your feet, and why the nature of soils makes it the perfect NGSS topic.

Becoming Teacher Leaders in a Turnaround School System

(Grades 5–11) *Diamond Ballroom Salon 7, JW Marriott*
Science Focus: GEN

Sandra Sullivan (sullivan401@aol.com) and **Sarah Chapin** (sarah_chapin@yahoo.com), Matthew J. Kuss Middle School, Fall River, Mass.

Join us to identify your leadership style, learn strategies to become a leader at your school, and stay sane through it all.

INF I Am a Scientist!

(Grades P–12) *Diamond Ballroom Salon 8, JW Marriott*
Science Focus: INF

Ben Dworken (bdworken@fhi360.org) and **Maryann Stimmer** (mstimmer@fhi360.org), Educational Equity at FHI 360, New York, N.Y.

Join us to explore strategies for developing students’ STEM identities. Connections to informal learning environments maximize this critical piece of students’ college and career trajectories.

How Do Your Activities Measure Up?*(Grades 1–12) Diamond Ballroom Salon 9, JW Marriott*

Science Focus: GEN, NGSS

Eric Hall (@hallscience; eric.hall@dmschools.org) and **Maureen Griffin** (maureen.griffin@dmschools.org), Hoover High School, Des Moines, Iowa

Just like a scale measures mass and a beaker measures volume, you can now measure the quality of your NGSS-focused classroom activities. Join us to find out how you can strengthen these experiences through the use of our versatile measurement tool that supports 3D learning.

Ignite Student Passion Through STEM*(Grades K–12) Gold Ballroom Salon 1, JW Marriott*

Science Focus: GEN, NGSS

Gina Thackrey (@SkylineSTREAM; ginathackrey@sbsd.k12.ca.us), Solana Beach (Calif.) School District**Josephine Piranio** (@jojopiranio; jpiranio@sbsd.net), Solana Ranch School, San Diego, Calif.

Encounter 10 STEM challenges to create a spark for learning. Use challenges to ignite your students' interest and develop a passion for STEM. NGSS/CCSS-focused lessons/units provided.

**NSTA Press® Session: Argument-Driven Inquiry in Life Science and Physical Science—Lab Investigations for Grades 6–8***(Grades 6–8) Platinum Ballroom Salon F, JW Marriott*

Science Focus: LS, PS, SEP, CCC

Victor Sampson (@drvictorsampson; victor.sampson@gmail.com), The University of Texas at Austin

Come discover Argument-Driven Inquiry and how it can help students learn to use the three dimensions of the NGSS—crosscutting concepts, disciplinary core ideas, and science and engineering practices—to explain natural phenomena. In this session, participants will learn about the stages of the ADI instructional model, how it was designed to address the shortcomings of current laboratory experiences, and how it supports the NGSS.

Giving Diverse Learners Access, Choice, and Voice: Performance-Based Assessment Tasks (PBATs) as a Tool for Three-Dimensional Learning*(Grades 9–12)**Plaza 3, JW Marriott*

Science Focus: GEN, NGSS

Vielca Anglin (@vielqui; vielca@cityas.org), City-As-School, New York, N.Y.**Marina Webb** (marinaw@claremontihs.org), Claremont International High School, Bronx, N.Y.**Kara Bristow MacDevitt** (bristow.kara@gmail.com), International High School at Lafayette, Brooklyn, N.Y.

Explore strategies and scaffolds for integrating the NGSS core ideas, crosscutting concepts, and science and engineering practices into Performance-Based Assessment Tasks (PBATs) for diverse learners.

Implement Coding into Your Curriculum with Project GUTS*(Grades 5–10)**Kentia Hall C, Convention Center*

Science Focus: ETS, LS2, PS1.A, PS1.B, CCC1, CCC2, CCC4, CCC6, CCC7, SEP

John Sweeney (jsweeney2002@gmail.com), St. Francis of Assisi Catholic School, Cordova, Tenn.

Project GUTS (Growing Up Thinking Scientifically) exposes teachers to a powerful way of engaging students in modern science practices using the StarLogo Nova platform. Model an outbreak and spread of a disease with variable rates of contagion, which can be expanded to model chemical reactions, complex ecosystems, and water as a shared resource while having your students gain a basic understanding of computer science. Bring your own device.

Beyond Cycles: Teaching Earth as an Evolving System*(Grades 6–College)**Kentia Hall E, Convention Center*

Science Focus: ESS2.A, ESS2.B, ESS2.C, ESS2.E, CCC1, CCC4, CCC5, CCC7, SEP2, SEP4, SEP7

Eric Pyle (pyleej@jmu.edu), NSTA Director, Preservice Teacher Preparation, and James Madison University, Harrisonburg, Va.

The Earth system has undergone evolutionary processes that define it and offer predictions for the future. Engaging activities can take instruction beyond matter cycles and into systems thinking.

JetStream: An Online School for Weather

(Grades 4–College) *Kentia Hall F, Convention Center*

Science Focus: ESS2.D

Dennis Cain (*dennis.cain@noaa.gov*), NOAA National Weather Service, Fort Worth, Tex.

Receive an overview of a free web resource developed to increase your knowledge on a wide variety of weather topics and weather safety.

Decoding Starlight—From Photons to Pixels to Images, Using Math and Art

(Grades 7–12) *Kentia Hall J, Convention Center*

Science Focus: ESS1.A, ETS2.B, PS4.B, SEP2

Pamela Perry (*pperry@lewistonpublicschools.org*), Lewiston High School, Lewiston, Maine

Donna Young (*dlyoung.nso@gmail.com*), NASA/CXC/NSO, Bullhead City, Ariz.

We will spotlight a STEM activity using NASA data that produces a scientific photon intensity image of a supernova remnant and a more artistic version for public release.

Are We Losing It?

(Grades 6–8) *Kentia Hall M, Convention Center*

Science Focus: PS1, CCC5, SEP3, SEP7

Lori Henrickson (*@MsLorisStory*; *henrile@nv.ccsd.net*), Mannion Middle School, Henderson, Nev.

Discover a three-dimensional modified Science Writing Heuristic investigation that bundles matter and interactions (MS-PS1-2 and MS-PS1-5) by using everyday materials to demonstrate conservation of matter and chemical reactions.

Safer Chemistry: Green Chemistry Replacement Labs

(Grades 8–12) *Kentia Hall N, Convention Center*

Science Focus: PS1.B, CCC2, SEP3, SEP4

Kathe Blue Hetter (*@skylinehetter*; *kbhetter@gmail.com*), Skyline High School, Ann Arbor, Mich.

Kate Anderson (*@beyondbenign*; *kate_anderson@beyondbenign.org*), Beyond Benign, Wilmington, Mass.

Green chemistry is the design of chemical products or processes that reduce or eliminate the use and/or generation of hazardous substances. Green chemistry provides an essential teaching tool for practicing all chemistry in an inherently safer and more cost-effective way.

Let's Talk Tides

(Grades 6–8)

Kentia Hall Q, Convention Center

Science Focus: ESS1.B, ESS2.C, CCC1, CCC2, CCC4, SEP2, SEP4, SEP7

Christine Shupla (*@LPItoday*; *shupla@lpi.usra.edu*), Lunar and Planetary Institute, Houston, Tex.

Do your students struggle with understanding and predicting the tides? Participate in kinesthetic, argumentation-driven, and inquiry activities to develop their understanding.

Bioengineering Challenges and Middle School Life Science

(Grades 6–8)

Kentia Hall R, Convention Center

Science Focus: ETS1.B, ETS1.C, LS1.A, CCC6, SEP6

John Howarth (*john_howarth@berkeley.edu*), The Lawrence Hall of Science, University of California, Berkeley

Participate in a hands-on activity that integrates engineering practices and three-dimensional learning in the context of middle school life science.

Biomagnification in Ocean Food Webs: You Are What You Eat

(Grades 9–12)

Kentia Hall S, Convention Center

Science Focus: LS

Elizabeth Callaghan, Monterey Bay Aquarium, Monterey, Calif.

Explore the difference between bioaccumulation and biomagnification. Learn about a consequence that plastic has on our ocean food web through an engaging simulation activity. Prizes!

Asking Questions and Defining Problems: The Foundation for Three-Dimensional Science Learning

(Grades 6–12)

West Hall B-3, Convention Center

Science Focus: GEN, SEP1

Wendy Johnson (*@WendyJohnsonMI*; *john3062@msu.edu*), Michigan State University, East Lansing

Learn research-based strategies for supporting questioning throughout a unit to motivate students and emphasize “Questions are the engine that drive science and engineering” (NRC Framework).

8:00–9:00 AM Exhibitor Workshops**Gains in the Education of Mathematics and Science: What Can GEMS Do for You?***(Grades 5–12)**150 AB, Convention Center*

Science Focus: GEN

Sponsor: AEOP

Jarod Phillips, GEMS Project Manager, NSTA, Arlington, Va.

Receive an overview of the AEOP GEMS programs and find out how you can incorporate similar ideas and practices into your science classroom.

Extraordinary Earth Science Activity: Modeling Watersheds and Human Impacts*(Grades 6–9)**405, Convention Center*

Science Focus: ESS3.A, ESS3.C, CCC2, CCC4, SEP2, SEP4

Sponsor: PASCO scientific

Tom Loschiavo (*loschiavo@pasco.com*), PASCO scientific, Roseville, Calif.**Paul Werner** (*pwerner@rocklin.k12.ca.us*), Rocklin High School, Rocklin, Calif.

How can students understand the impact of human activity on natural systems? Help students understand this by creating a make-and-take model watershed system. With the Wireless pH Sensor, you will monitor the effect of human activity on water as a “pollutant” is added to the system.

From DNA to Protein—A Modeling Approach*(Grades 8–12)**407, Convention Center*

Science Focus: LS1.A, LS1.C

Sponsor: PASCO scientific

Thomas Hsu (*thsu@pasco.com*), Ergopedia, Inc., Cambridge, Mass.**Ryan Reardon** (*rreardon71@gmail.com*), Shades Valley High School, Irondale, Ala.

How can students visualize and better understand a molecular level process? We’ll use molecular models to simulate how information in DNA is expressed in the assembly of proteins from amino acids, and conduct simple hands-on activities to help students grasp the fundamentals of molecular biology and protein structure.

K’NEX DNA Structure, Replication, and Transcription: An Expertly Engineered Molecule in Living Things*(Grades 9–12)**510, Convention Center*

Science Focus: LS1

Sponsor: K’NEX Education

Robert Jesberg (*rjesberg@knex.com*), K’NEX Education, Hatfield, Pa.

No more gumdrops and toothpicks! Build K’NEX DNA models to explore structure, replication, and transcription. Translate mRNA strands to determine amino acid sequences. Assume the role of enzymes as you manipulate models, complete DNA processes, and explore the history of DNA’s discovery. A hands-on/minds-on standards-based STEM program.

8:00–9:30 AM Exhibitor Workshops**Discourse Strategies for Three-Dimensional Learning in the K–2 Classroom***(Grades K–2)**150C, Convention Center*

Science Focus: GEN, NGSS

Sponsor: Activate Learning

Ellen Mintz, Charleston County School District, Charleston, S.C.**Heather Milo**, Activate Learning, Greenwich, Conn.

Strategies to promote effective discourse in the K–2 classroom will be presented, including reading, writing, speaking, and listening. One lucky winner will take home an Active Science unit at the end of the session!

Empower Student Voice with Flipgrid*(General)**153A, Convention Center*

Science Focus: GEN

Sponsor: Flipgrid

Jim Leslie, Flipgrid, Minneapolis, Minn.

Student voice can be a powerful tool for improving student performance and closing the achievement gap according to The Education Alliance (2004). In this workshop, we will define, assess, exemplify, and prepare your classes for student voice using Flipgrid’s video discussion platform. BYOD

Phenomena and Story Lines: What’s the Big Deal?

(Grades K–12) 153B, Convention Center

Science Focus: GEN, NGSS

Sponsor: STEMscopes™ from Accelerate Learning

Amanda McGee and **Brandi Nicholson**, STEMscopes from Accelerate Learning, Houston, Tex.

Everyone seems to be talking about phenomena and story lines these days. Come spend an hour with us as we dig into what these new buzzwords are and why they are important. Leave with new ideas to incorporate phenomena and storylines into your classroom, or maybe even find out you already are!

The Next Generation of Middle Grades Scope and Sequence

(Grades 6–8) 301 AB, Convention Center

Science Focus: GEN, NGSS

Sponsor: Pearson

Caroline Baker, Oak Park District 97, Riverside, Ill.

What is the best way to implement the NGSS into your middle grade classroom? Join NGSS writing team member Carol Baker in an interactive session that examines the best way to orient your scope and sequence to fit the NGSS.

What to Look For: Physical Science Learning Progressions

(Grades K–5) 303 AB, Convention Center

Science Focus: PS

Sponsor: Delta Education/School Specialty Science–FOSS

Brian Campbell, The Lawrence Hall of Science, University of California, Berkeley

Are you looking for coherent curricular direction in your elementary science program? Join FOSS curriculum developers to investigate learning progressions in grades K–5 using physical science modules from the new FOSS Next Generation program. Find out about transitioning to the newly released FOSS program modules.

NGSS and the Energy Car: Collisions and Restraints

(Grades 6–12) 304 AB, Convention Center

Science Focus: PS2

Sponsor: CPO Science/School Specialty Science

Erik Benton, CPO Science/School Specialty Science, Nashua, N.H.

Kat Mills, School Specialty Science, Rosharon, Tex.

See NGSS-focused physics core ideas for middle school and high school in action. Step through the CPO Science engineering cycle. Use your creativity to solve an automobile design problem with collisions and restraints. Learn how Newton’s third law, conservation of energy and momentum, plays a role. Door prizes. Free STEM resources.

See Space Live from Your Classroom with Slooh

(Grades 5–College) 305, Convention Center

Science Focus: ESS1

Sponsor: Slooh-Space for Everyone!

Michael Paolucci (mike@slooh.com) and **Deirdre Sullivan** (deirdre@slooh.com), Slooh, Washington Depot, Conn.

Work with Slooh to turn your classroom into a Space Lab by providing online access to a global network of telescopes via any internet connection. See space live! See space for everyone!

Shark Dissection: A Jawsome Experience!

(Grades 9–12) 306 AB, Convention Center

Science Focus: LS1.A, LS4.C, CCC, SEP

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Dive in and learn how to create your own Shark Week! This session guides participants through a hands-on dissection of the dogfish shark. Take a bite out of the NGSS ideas related to adaptations and structure and function while giving your students an experience they will never forget.

Arriving on the Scene: Collect and Analyze Evidence Like the Pros

(Grades 9–12) 308 AB, Convention Center

Science Focus: GEN, NGSS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Thinking about incorporating forensic science into your classroom? Expose your students to the fascinating world of forensics by using real-world techniques practiced by law enforcement agencies. Keep your students captivated by analyzing and documenting evidence to recreate a crime scene.

NGSS: How Do We Know It When We See It?

(Grades K–8) 309, Convention Center

Science Focus: GEN, NGSS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

How does NGSS change the instructional landscape of a science classroom? How is it different? How do principals/instructional leaders/coaches know NGSS is being implemented in their classrooms? Engage in examples of the instructional shift through NGSS-designed lessons. Leave with a tool for use by instructional leaders in classroom visits.

FLINN Workshops

Hands-On Science to Motivate and Educate



An Epic Adventure in Science

MORNING OF CHEMISTRY

Friday, March 31 • 10 am – 11:30 am • Petree Hall C

Other Flinn workshops are located in Room 403A of the Los Angeles Convention Center

Thursday, March 30

8:00 a.m. – 9:30 a.m.

Flinn's *Exploring Chemistry*[™]—Connecting Content through Experiments

10:00 a.m. – 11:30 a.m.

Flinn Favorite Biology Activities and Games

12:00 p.m. – 1:30 p.m.

Year-Round Solutions for Success in AP* Chemistry

2:00 p.m. – 3:30 p.m.

Teaching Forensics with Real Crime Scene Investigation Techniques

4:00 p.m. – 5:30 p.m.

Building or Renovating a Laboratory? Get Your Questions Answered

Friday, March 31

8:00 a.m. – 9:30 a.m.

Fantastic Physical Science Demonstrations

10:00 a.m. – 11:30 a.m.

Flipping AP* Biology with FlinnPREP[™]

12:00 p.m. – 1:30 p.m.

New Inquiry Investigations for AP* Physics 1 and 2

2:00 p.m. – 3:30 p.m.

Green Chemistry Experiments for General and Advanced Placement* Chemistry

4:00 p.m. – 5:30 p.m.

Enhance Your Science Course with POGIL[™] Activities

Saturday, April 1

10:00 a.m. – 11:30 a.m.

Flinn Scientific's STEM *Design Challenge*[™] Activities

12:00 p.m. – 1:30 p.m.

Hands-On Integrated Science Activities for Middle School

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For full workshop descriptions, go to
www.flinnsci.com/workshops/nsta2017

Water Quality with Vernier

(Grades 7–College) 402A, Convention Center

Science Focus: ESS2, ESS3, ETS2, LS2

Sponsor: Vernier Software & Technology

Colleen McDaniel (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

Practice best techniques for using Vernier sensors and LabQuest 2 to study water quality in the field. Try the easy-to-use Optical DO Probe and learn how to calibrate our sensors, such as the pH Sensor. See how to map your data on Google Maps and ArcGIS using Logger Pro® software.

Advanced Physics with Vernier

(Grades 9–College) 402B, Convention Center

Science Focus: ETS2, PS2, PS3, PS4

Sponsor: Vernier Software & Technology

Frances Poody (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

Already experienced using basic physics sensors and Logger Pro® software from Vernier? This hands-on workshop will introduce additional Vernier sensors and lab equipment that can enhance your AP, IB, or college physics laboratory in mechanics and beyond. Plus, you will learn to employ advanced data-analysis techniques to explore quantitative relationships.

Fantastic Physical Science Demonstrations from Flinn Scientific

(Grades 6–College) 403A, Convention Center

Science Focus: PS

Sponsor: Flinn Scientific, Inc.

Gus Alvarez (galvarez@flinnsci.com) and **Matt Anderson** (manderson@flinnsci.com), Flinn Scientific, Inc., Batavia, Ill. Amaze your students with quick demonstrations that teach common physical science topics, including density, force and motion, waves, light and color, energy, pressure, and scientific inquiry. Great demos to stimulate student interest, arouse curiosity, increase observational skills, and reinforce the learning process in a fun and positive way! More than a dozen effective demonstrations will be performed. Handouts for all activities.

Measuring Species Diversity Using Wildlife Data from Africa's Rift Valley

(Grades 9–12)

403B, Convention Center

Science Focus: LS2, LS4

Sponsor: HHMI BioInteractive

David Hong, Diamond Bar High School, Diamond Bar, Calif.

Amy Fassler, Marshfield High School, Marshfield, Wis. BioInteractive's WildCam Lab provides students with trail camera data accumulated by the WildCam Gorongosa citizen science project. Participants will be guided through activities that allow them to ask scientific questions about species diversity in Gorongosa National Park, and draw conclusions based on calculations of species diversity, richness, and evenness.

Conserving Panda Population...One Hormone Test Design at a Time!

(Grades 9–College)

404 AB, Convention Center

Science Focus: LS

Sponsor: Bio-Rad Laboratories

Leigh Brown (leigh_brown@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.

Come put your immunology and reproductive endocrinology systems knowledge basics to the test as you engineer a hormone detection system that can be used for giant panda population conservation efforts.

DNA Detectives: Who Killed Jose? (AP Big Ideas 3, 4)

(Grades 9–College)

406 AB, Convention Center

Science Focus: LS

Sponsor: Bio-Rad Laboratories

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

In this hands-on lab, you can solve a theatrical crime scene using biotechnology skills such as DNA gel electrophoresis, restriction digestion, and pipetting. Learn about the Innocence Project and how the wrongly accused can be exonerated by DNA testing.

What the Heck Happened?!

(Grades 2–9)

408A, Convention Center

Science Focus: PS1.A, PS1.B, PS2, PS3.B, PS3.C, PS3.D, CCC2, CCC5, CCC6, CCC7, SEP1, SEP3

Sponsor: Educational Innovations, Inc.

Edward Beyer, Educational Innovations, Inc., Bethel, Conn.

Discrepant events seize students' attention, and Educational Innovations has some real jaw-droppers. Come explore our

favorite student confusers, including The Chinese Spouting Bowl, “anti-gravity,” disappearing water, and much more! Door prizes and freebies!

Cool Tools for Electricity and Magnetism

(Grades 8–12) 408B, Convention Center

Science Focus: PS

Sponsor: Arbor Scientific

James Lincoln, Arbor Scientific, Newport Beach, Calif. Get a charge out of studying the intimate relationship between electricity and magnetism presented by physics teacher and education expert James Lincoln. These classroom-ready activities include how to make a light bulb filament “wiggle” 60 times a second, what a neodymium magnet and Total® cereal have in common, levitating a frog with electromagnetism, and whether it’s possible to light a bulb with only a battery and two wires. Come have fun while learning about great tools that support STEM inquiry. Lesson plans and door prizes.

The Power of Modeling in K–8 Classrooms

(Grades K–8) 409 AB, Convention Center

Science Focus: GEN, NGSS

Sponsor: Amplify

Eric Greenwald (amplifyscience@berkeley.edu) and **Carissa Romano** (amplifyscience@berkeley.edu), The Lawrence Hall of Science, University of California, Berkeley

How can students create and use models to enhance, explain, and expand their thinking? Experience a variety of ways students deepen and demonstrate their understanding of scientific phenomena through the use of models. Engage with K–8 exemplars from Amplify Science, the new NGSS-designed curriculum from The Lawrence Hall of Science.

Stop Creating Lesson Plans: Start Creating Learning Experiences

(Grades K–12) 410, Convention Center

Science Focus: GEN, NGSS

Sponsor: Van Andel Education Institute

Janyce Huff (janyce.huff@vaei.org) and **Marty Coon** (marty.coon@vaei.org), Van Andel Education Institute, Grand Rapids, Mich.

Engage your students to think and act like scientists. Be the teacher who transforms everyday lesson plans into authentic memorable learning experiences with inquiry-focused instruction. Come with a willingness to inspire learning; leave with strategies and tools to make it happen.

The STEM Design Challenge

(Grades 3–8) 501 AB, Convention Center

Science Focus: PS2

Sponsor: Fisher Science Education

Robert Marshall (robert.marshall@thermofisher.com), Fisher Science Education, Pittsburgh, Pa.

Discover how to create and develop questions about force, energy, and motion for an engaging classroom lab. Then solve an engineering problem using creative and real-world processes while supporting your understanding with a fun and exciting team competition. Finally learn how to bring this Project-Based Learning program to your community!

INF STEAM Education: The National Coalition for Aviation and Space Education Is Here for You!

(General) 503, Convention Center

Science Focus: ESS, ETS, PS2, PS3, INF

Sponsor: National Coalition for Aviation & Space Education

Judith Rice (captjudy@captainjudy.com) and **Rol Murrow** (rol.murrow@wolf-aviation.org), National Coalition for Aviation and Space Education, Lindrith, N.Mex.

Join over 50 aviation and space organizations in this one workshop! The National Coalition for Aviation and Space Education (NCASE) is a membership organization formed in 1993 in a cooperative spirit with the Federal Aviation Administration (FAA). Together with the FAA, we actively promote aviation and space education while supporting schools’ initiatives at the local, state, and national levels. NCASE works with aviation educators, government officials, and industry representatives to marshal education resources and use aviation to train America’s young people. Whether you’re an industry leader, educator looking for teaching materials, or a student seeking career information, you won’t want to miss this workshop!

Stream Ecology: Slimy Leaves for Healthy Streams

(Grades 4–College) 511 AB, Convention Center

Science Focus: ESS3.A, ESS3.C, LS2.A, LS2.C, SEP3, SEP4, SEP5, SEP8

Sponsor: LaMotte Co.

Steve Kerlin (skerlin@stroudcenter.org), Stroud Water Research Center, Avondale, Pa.

Observe aquatic macroinvertebrate specimens, conduct experiments, learn classification skills, and calculate a biotic index in this hands-on introduction to stream ecology. Come learn from a Stroud Water Research Center scientist. Takeaways and a door prize!

Black Holes for High School

(Grades 10–College) 512, Convention Center

Science Focus: PS, CCC, SEP

Sponsor: Perimeter Institute for Theoretical Physics

Damian Pope, Perimeter Institute for Theoretical Physics, Waterloo, Ont., Canada

Black holes are regions of space where gravity is so strong that nothing can escape. They are incredibly fascinating but how can you incorporate them into your science classes? This workshop will show you how to introduce black holes as applications of curriculum topics such as force, gravity, and orbits.

8:00–10:00 AM Presentation

INF Science in the Community Session: Models of Intersections That Connect Informal Institutions with Schools, Students, and Teachers to Support STEM Learning Outside the Classroom

(Grades P–12) 152, Convention Center

Science Focus: INF, SEP

Sandra Ryack-Bell (sryackbell@mits.org), MITS, Inc. (Museum Institute for Teaching Science), Quincy, Mass.

Margaret Glass (mglass@astc.org), Association of Science-Technology Centers, Washington, D.C.

Steven Walvig (@SteveWalvig; walvig@thebakken.org), The Bakken Museum, Minneapolis, Minn.

Robert Payo (robert.payo@dmns.org), Denver Museum of Nature & Science, Denver, Colo.

Rachel Chase (rchas@hunter.cuny.edu), Hunter College, New York, N.Y.

Join presenters from museums and science centers to learn how connecting informal and formal educators results in programs that extend STEM learning beyond the traditional classroom.

8:00–10:00 AM Hands-On Workshop

PLI NGSS Toolkit Pathway Session: Using the 5E Instructional Model to Develop a Conceptual Flow

(Grades 6–12) Platinum Ballroom Salon G, JW Marriott

Science Focus: LS2

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

Kathy DiRanna (kdirann@wested.org), K–12 Alliance/WestEd, Los Alamitos, Calif.

Compare classroom scenarios to learn the different phases of the BSCS 5E Instructional Model (Engage, Explore, Explain, Elaborate, and Evaluate) to plan for NGSS learning sequences.

8:00–10:00 AM Elementary Extravaganza

(Grades P–6) West Hall B-1, Convention Center

Science Focus: GEN

Sponsored by:

Carolina Biological Supply Company, Delta Education & FOSS, Educational Innovations, Pitsco Education, Poly, and Project Lead The Way

Organized by **Linda Froschauer** (fro2@me.com), 2006–2007 NSTA President, Pasadena, Calif.

Visit bit.ly/2mni1Lb for a complete list of Extravaganza participants or pick up a program at the door.

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

Organizations participating in the Elementary Extravaganza include Association of Presidential Awardees in Science Teaching, Council for Elementary Science International, NSTA Preschool Elementary Committee, *Science & Children* authors and reviewers, and Society of Elementary Presidential Awardees.



8:00–11:00 AM Short Courses**A PEEC into Evaluating NGSS Instructional Materials Programs (SC-4)**

(Grades K–12) Tickets Required; \$28 San Gabriel A, Westin
Science Focus: GEN, NGSS

Matthew Krehbiel (@ksscienceguy; mkrehbiel@achieve.org), Achieve, Inc., Washington, D.C.

For description, see Volume 1, page 57.

Ocean Plastic Pollution: Issues and Solutions (SC-5)

(Grades 6–8) Tickets Required; \$43 Santa Anita A, Westin
Science Focus: ESS3, PS1.A, CCC2, CCC6

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

For description, see Volume 1, page 57.

**Writing in Science: A Research-Based Approach That Enhances Learning in Both Domains (SC-6)**

(Grades K–6) Tickets Required; \$32 Santa Anita C, Westin
Science Focus: GEN, NGSS

Betsy Rupp Fulwiler (brupfulwiler@comcast.net), Betsy Rupp Fulwiler Consulting, Seattle, Wash.

For description, see Volume 1, page 58.

8:30–9:00 AM Presentations**SCST-Sponsored Session: The Merit Fellows Program: Lessons Learned from an NSF S-STEM Project**

(College) Georgia 1, JW Marriott
Science Focus: GEN

Gretchen Adams (gadams4@illinois.edu) and **Jennifer McNeilly** (jrmcneil@illinois.edu), The University of Illinois at Urbana-Champaign

Discussion centers on the successes and challenges of implementing an NSF S-STEM Project at a large research-focused university.

Science vs. Engineering?

(Grades 6–College) Gold Ballroom Salon 4, JW Marriott
Science Focus: ETS1, SEP

Becky McKinney (@NGSSMadeMeDoIt; rmckinney@euhsd.org), San Pasqual High School, Escondido, Calif.

Engineering in a science class? Come find out how science and engineering are similar AND different. Get the tools to use them in your classroom effectively.

Using Weather Data Collection and Analysis to Promote Data Literacy

(Grades 9–10) 501C, Convention Center
Science Focus: ESS2.D, CCC, SEP

Mark Powers (mpowers@anwsu.org), Vergennes Union High School, Vergennes, Vt.

Students manipulate data from our electronic weather station and commercial weather maps to build an understanding of the science of weather and data literacy.

Don't Take the Bait: Teaching Students to Discern Science News from Modern Sensationalist Media

(Grades 6–12) 507, Convention Center
Science Focus: GEN, SEP7, SEP8

Mihkel Allpere, Cumberland Academy of Georgia, Atlanta
Empowering students to discern accurate scientific news and media from the clever and ever-evolving viral traps online.

3-D Landform Models

(Grades K–12) Petree Hall D, Convention Center
Science Focus: ESS2.B

Ron Fabich, President, Ohio Earth Science Teachers Association, Medina

Construct a three-dimensional landform model of Mount St. Helens, pre/post eruption, using topographic mapping skills. Correlated to the NGSS core ideas relating to plate tectonics.



—Photo courtesy of Jacob Slaton

9:00 AM–5:00 PM Exhibits

Hall H, Convention Center

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.

**9:00 AM–5:00 PM Networking Opportunity
NSTA International Lounge**

Atrium 1, JW Marriott

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



9:30–10:00 AM Presentations

SCST-Sponsored Session: Can the History of Science Facilitate Climate Change Education and Climate Literacy? Lessons from Glacial Theory

(College)

Georgia 1, JW Marriott

Science Focus: ESS1.C, ESS3.D, CCC1, CCC2, SEP1, SEP7, SEP8

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

An earlier climate change debate, Agassiz's glacial theory illustrates the nature of science and facilitates student climate literacy. Classroom resources provided.

My Students Have Mastered What?! A Method of Assessment and Grading to Determine Student Knowledge and Understanding

(Grades 9–12)

Plaza 1, JW Marriott

Science Focus: GEN

Shannon Etnyre (*shannon.etnyre@gmail.com*), Vernon Hills High School, Vernon Hills, Ill.

Join us as we share our experience in moving to a standards-based approach to assessments influenced by the PEs and practices outlined by the NGSS.

Flipping the Classroom: Going Beyond Teacher-Made Videos

(Grades 6–12)

Kentia Hall K, Convention Center

Science Focus: GEN

Hannah Nandor (*@nandorscience; hnandor@cpsk12.org*), Muriel Battle High School, Columbia, Mo.

Think a flipped classroom consists of only videos made by a teacher? Think again! Come learn how to engage and challenge students by having them make videos of their learning.

How to Write the Reasoning Part of a C-E-R

(Grades 6–12)

West Hall B-4, Convention Center

Science Focus: GEN, NGSS

Elise Burns (*@efb68; eburns@pascack.k12.nj.us*), Pascack Hills High School, Montvale, N.J.

Want to help your students construct the "reasoning" section of lab reports and arguments? Lessons, tools, and student examples will be shared and discussed.

9:30–10:30 AM Meeting

Development Advisory Board Meeting

(By Invitation Only)

Olympic 2, JW Marriott



Incorporate **STEM** into your classroom with **eCYBERMISSION!**



eCYBERMISSION is a national web-based
STEM competition, free to students in grades 6–9.

Teams compete for awards up to **\$9,000** per student in
U.S. Savings Bonds.

Teachers can **APPLY** for **MINI-GRANTS**
to support implementation of student projects.

Visit booth #850 for more information on
eCYBERMISSION and mini-grant applications.



9:30–10:30 AM Presentations

NARST-Sponsored Session: Making Science Real—Supporting English Language Learners in Argumentation and Explanation Through Authentic Tasks

(Grades 6–8) *Atrium 2, JW Marriott*

Science Focus: ESS2.B, SEP7, SEP8

Emily Kang (*ekang@adelphi.edu*) and **Clara Vaz Bauler** (*cbauler@adelphi.edu*), Adelphi University, Garden City, N.Y.
Lauren Swanson (*lswanson@whittier.edu*), Whittier College, Whittier, Calif.

Explore a plate tectonics unit designed to support English language learners in discussing and applying their science understandings to explain a real-world situation.

Alliance of Affiliates–Sponsored Session: Becoming a Science Teacher Leader

(General) *Atrium 3, JW Marriott*

Science Focus: GEN

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

Join us if you would like to know more about the services that the affiliated organizations to NSTA offer to support their work as science teacher leaders in their schools and school districts.

NSELA-Sponsored Session: Introducing Teachers and Administrators to the NGSS

(Grades 1–12) *Diamond Ballroom Salon 2, JW Marriott*

Science Focus: GEN, NGSS

Kevin Niemi (*kjniemi@wisc.edu*), University of Wisconsin-Madison

Eric Brunsell (*@brunsell*; *brunsele@uwosh.edu*), NSTA Director, Professional Development in Science Education, and University of Wisconsin Oshkosh

We will highlight resources available to science leaders as they plan for the required professional development for classroom teachers.

NSTA Press® Session: Formative Assessment Classroom Techniques for Uncovering ALL Students' (and Teachers') Ideas

(Grades 5–College) *Diamond Ballroom Salon 3, JW Marriott*

Science Focus: GEN, SEP

Page Keeley (*@CTSKeeley*; *pagekeeley@gmail.com*), 2008–2009 NSTA President, and The Keeley Group, Fort Myers, Fla.

Joyce Tugel (*jtugel@gmail.com*), Maine Mathematics and Science Alliance, Augusta

Ray Barber (*@raylbarber*; *rbarber@chicousd.org*), Pleasant Valley High School, Chico, Calif.

Experience a strategy harvest of written, verbal, and digital techniques that elicit all students' ideas and support a safe classroom environment where everyone's ideas are valued.

What Do You Mean I Have to Write in Science? LAWS: Literacy and Writing in Science

(Grades 7–College) *Gold Ballroom Salon 3, JW Marriott*

Science Focus: GEN, SEP1, SEP4, SEP6, SEP7, SEP8

Rachel Murillo (*rmurillo@lbschools.net*) and **Heather Valdespino** (*@SCI_LAWS*; *hvaldespino@lbschools.net*), Ernest S. McBride High School, Long Beach, Calif.

LAWS is a supplemental writing curriculum developed for teachers, designed to engage and stimulate student inquiry and analyze scientific problems while supporting NGSS and CCSS ELA.



How to Implement STEM and NGSS into Your Classroom Through the Use of NSTA Competitions

(Grades K–12) *Gold Ballroom Salon 4, JW Marriott*
Science Focus: GEN, NGSS

Acacia McKenna (*amckenna@nsta.org*), Director, Competitions, NSTA, Arlington, Va.

Erin Lester (*@ecybermission; #AEOP; elester@nsta.org*), eCYBERMISSION Project Manager, NSTA, Arlington, Va. Hear about various NSTA competitions and how they can bring STEM and the NGSS into the classroom, as well as give students and teachers a chance to earn recognition and prizes.

ASTE-Sponsored Session: What Can I Do and How Do I Get There? Trajectories of Science Teacher Learning

(General) *Olympic 1, JW Marriott*
Science Focus: GEN

Brooke Whitworth (*@bawhit41; brooke.whitworth@nau.edu*), Northern Arizona University, Flagstaff

Julie Luft (*jaluft@uga.edu*), University of Georgia, Athens We describe a framework for science teacher learning that allows teachers to work toward a strategic professional development program to meet their professional goals.

AMSE-Sponsored Session: Creating Positive School-Home Partnerships Using Culturally Responsive Practices

(Grades K–12) *Platinum Ballroom Salon A, JW Marriott*
Science Focus: GEN

Veronica Garcia Betancourt (*veronica.betancourt@harlandale.net*), Harlandale ISD, San Antonio, Tex.

Take a reflective look at school/family relationships as we engage in conversation on how to build strong, valuable partnerships with families, while exploring our own personal experiences that promote reciprocal learning interactions.

Grey Matter: Learning and Teaching Science with the Brain in Mind

(General) *Platinum Ballroom Salon B, JW Marriott*
Science Focus: GEN, NGSS

Carolyn Hayes (*@caahayes; caahayes@comcast.net*), NSTA Retiring President, and Retired Educator, Greenwood, Ind. Experience through science activities how discoveries in cognitive neuroscience are applied to NGSS teaching strategies and the principles of how students learn science.

NASA Astrobiology: The Search for Life Beyond Earth

(Grades 9–College) *Platinum Ballroom Salon D, JW Marriott*
Science Focus: ESS1.B, ESS2.E, LS4.C, CCC4, SEP1, SEP8

Rachel Zimmerman Brachman (*rachel.zimmerman-brachman@jpl.nasa.gov*), NASA Jet Propulsion Laboratory, Pasadena, Calif.

Probe how astrobiologists at NASA’s Jet Propulsion Laboratory are searching for signs of life on icy moons of our solar system.

Science at the Dollar Store—New and Revised!

(Grades P–12) *Platinum Ballroom Salon E, JW Marriott*
Science Focus: GEN, SEP3

Nancy Foote (*@mrsfoote; tinkerbello611@gmail.com*), Sossaman Middle School, Queen Creek, Ariz.

Join me for an action-packed hour to learn how to teach science using materials bought at the dollar store. Stop spending so much money! I’ll even show you how to get stuff for free!

Communicating Contemporary Earth Issues Through “Press Kit” Construction

(Grades 9–College) *Platinum Ballroom Salon H, JW Marriott*
Science Focus: ESS3, CCC1, CCC3, CCC7, SEP1, SEP4, SEP7, SEP8

Eric Pyle (*pyleej@jmu.edu*), NSTA Director, Preservice Teacher Preparation, and James Madison University, Harrisonburg, Va. Communicating scientific information to nonscientific interested audiences requires presenting accurate information from different approaches. A “press kit” provides students with an active platform to organize information on contemporary Earth issues.

What’s App, Doc? Using Technology in Professional Development

(General) *Platinum Ballroom Salon J, JW Marriott*
Science Focus: GEN

Lisa Bohn (*@lisa_bohn; lbohn@astate.edu*), Arkansas State University, Jonesboro

Elizabeth Allan (*eallan@uco.edu*), NSTA Director, College Science Teaching, and University of Central Oklahoma, Edmond

Presider: Pat Shane (*pshane@unc.edu*), 2009–2010 NSTA President, Chapel Hill, N.C.

We will demonstrate free apps that can be used to enhance the essential elements of successful professional development: preplanning, implementation, and evaluation.

Powerful Media-Based Lab Reports

(Grades 9–College) Plaza 2, JW Marriott

Science Focus: GEN, SEP1, SEP2, SEP4, SEP6, SEP7, SEP8

Walter O'Brien (@SFHSCHEM; walter.obrien@wuhsd.org), Santa Fe High School, Santa Fe Springs, Calif.

Want a refreshing idea on lab reports? Media-based lab reports offer an innovative strategy that engages students to critically reflect and collaborate upon their lab investigation.

STEM Lesson Studies: A Teacher-Driven Professional Development Model

(Grades P–12) Plaza 3, JW Marriott

Science Focus: ETS

Jeni Davis (jenidavis@usf.edu), **Sarah Van Ingen**, and **Lakesia Dupree**, University of South Florida, Tampa
Michele Wiehagen (michele.wiehagen@sdhc.k12.fl.us) and **Joseph Ratasky**, Hillsborough County Public Schools, Tampa, Fla.

Learn how teachers used lesson studies to develop and implement STEM lessons to improve classroom practice, instructional sequence, and build students' knowledge and skills.

NGSS@NSTA Forum Session: Next Generation Science Assessments (NGSA) Project

(Grades K–12) 151, Convention Center

Science Focus: GEN, NGSS

Joseph Krajcik (@krajcikjoe; krajcik@msu.edu), CREATE for STEM Institute, Michigan State University, East Lansing
This session is designed for science teachers of all grade levels and state and district leaders who want to be introduced to an approach for developing classroom-based next generation science assessments.

Coral Reefs: Fragile Wonders Under Threat: Bring Vibrant Environmental Stewardship Lessons to Your Students with Free NOAA Resources

(Grades 5–12) 501C, Convention Center

Science Focus: ESS

June Teisan (june.teisan@noaa.gov), NOAA Office of Education, Washington, D.C.

Coral reefs are a stunning global treasure, but these fragile ecosystems are under increasing threat from pollution, harmful fishing practices, and ocean acidification. Even areas far from coasts can impact marine health. Incorporate coral reefs into your existing curriculum—biology, chemistry, climate studies, and more—using lesson plans, demos, labs, activities, and multimedia from the National Oceanic and Atmospheric Administration (NOAA).

Chemical Engineering for Middle School

(Grades 5–College) 505, Convention Center

Science Focus: PS1.A, PS1.B

Julie Smith (julietapresident@gmail.com), Lennox Middle School, Lennox, Calif.

NGSS students engineer solutions, but this means something different in chemical engineering. Help your students use separations, fluid dynamics, and heat transfer to solve real-life problems.

NGSS Starting with the End in Mind: Building an Instructional Unit from NGSS Performance Expectations

(Grades K–12) 515A, Convention Center

Science Focus: GEN, NGSS

Dean Gilbert (gilbert_dean@me.com), EDU Consulting LLC, Huntington Beach, Calif.

Using a modified version of the backward mapping design, explore an electronic tool that guides a teacher through the development of a multi-layered instructional unit. Walk away with a step-by-step guide and template that allows for a complete “electronic” design of your unit of instruction.

The Big Good Wolf: A Science-English Collaboration About Yellowstone Park Wolves

(Grades 7–10) Kentia Hall A, Convention Center

Science Focus: GEN

Anthony McClellan (amcclellan@mosesbrown.org), **Maureen Nagle** (@maureenfnagle; mnagle@mosesbrown.org), **Katie Goldman** (kgoldman@mosesbrown.org), and **Yulie Lee** (ylee@mosesbrown.org), Moses Brown School, Providence, R.I.

Yellowstone Wolves: using current news stories and literature, student stakeholders explore and debate the issue of wolf reintroduction in a science-English collaboration.

Telling the Story(line) of Earth and Atmospheric Systems

(Grades 6–8) Kentia Hall B, Convention Center

Science Focus: ESS2, CCC2, CCC3, CCC5, SEP2, SEP4, SEP6

Jeremy Peacock (@jeremy_peacock; peacock.jeremy@gmail.com), Northeast Georgia RESA, Winterville

Amy Peacock (@peacock_science; peacocka@clarke.k12.ga.us), Clarke County School District, Athens, Ga.

Jolaine Whitehead (jolaine.whitehead@negaresa.org), GYSTC Regional Director, Winterville, Ga.

Help your middle school students connect large-scale phenomena like Earth systems and global weather patterns to their personal experiences through engaging phenomena-based storylines.

The Scientific Method: Is That Still a Thing?*(Grades 6–12) Kentia Hall H, Convention Center*

Science Focus: GEN, SEP3

Jennifer Panczyszyn and **Heather Witt** (@tortugahiker), K.O. Knudson Middle School, Las Vegas, Nev.

Dispel the dogma of the scientific method with examples of student-centered investigations. Focus on the scaffolds and supports students need to plan and carry out scientific investigations.

Sustainability in the Three Cs: Curriculum, Campus, and Community*(Grades 5–9) Kentia Hall L, Convention Center*

Science Focus: ESS3, ETS, LS2, SEP

Robert McGehee (robert.mcgehee@asu.edu), Walton Sustainability Solutions Initiatives, Tempe, Ariz.**Brendan Courtot**, Kamehameha Elementary School, Keaau, Hawaii

Hear how unique teacher professional development resources from the Sustainability Teachers' Academy helped a passionate teaching team transform their school and promote sustainable behaviors.

Beyond the Egg Drop: Infusing Engineering Design into the Physics/Science Classroom*(Grades 9–12) Kentia Hall O, Convention Center*

Science Focus: ETS1, PS, SEP

Arthur Eisenkraft (arthur.eisenkraft@umb.edu), 2000–2001 NSTA President, and UMass Boston, Dorchester, Mass.**Kristin Newton** (knewton@cpsd.us), Cambridge Rindge and Latin School, Cambridge, Mass.**Julie Mills** (jmills@freelake.org), Apponequet Regional High School, Lakeville, Mass.

Egg Drop, marshmallow tower, motor-building—we certainly don't lack "activities" in our science classroom. How can we go beyond trial and error? Explore concept-based engineering infusion!

Collecting and Analyzing NASA's Operation Ice-Bridge Data Through the PolarTREC Program: Using LIDAR Over Greenland and Antarctica*(Grades 7–12) Kentia Hall P, Convention Center*

Science Focus: ESS2.D, ESS3.D, CCC

Maggie Kane (slickrocks@cablone.net), Lake County High School, Denver, Colo.**Kelly McCarthy** (@NasaOperationIcebridge; @NASA; @PolarTREC; kxm5002@gmail.com), Our Lady of Lourdes Regional School, Coal Township, Pa.

Two teachers took flight over the poles to bring ice data back

to their students. Through modeling and analysis of LIDAR data, students learn about climate change.

How Will the New Federal Education Law...ESSA... Affect You?*(Grades 4–College) Theatre (411), Convention Center*

Science Focus: GEN

Jodi Peterson (@stemedadvocate; jpeterson@nsta.org), Assistant Executive Director, Legislative and Public Affairs, NSTA, Arlington, Va.

The new federal education legislation—the Every Student Succeeds Act or ESSA—is now a reality. We will examine the new law with a focus on science/STEM education and teachers. Learn about the key changes from No Child Left Behind, get answers to your questions, and find out where (and how) you can find and access federal dollars for science/STEM programs. Science teachers, district and school science leaders, administrators, and other stakeholders are encouraged to attend.

Equity Through STEM*(Grades 1–8) West Hall B-2, Convention Center*

Science Focus: GEN

Jerry Valadez (@cswnet; jdvsience@yahoo.com), NSTA Director, Coordination and Supervision of Science Teaching, and SAM Academy, Inc., Sanger, Calif.**Gary Nakagiri** (gnakagiri@gmail.com), Alameda County Office of Education, Hayward, Calif.**Juliana Texley** (@JulianaTexley; texlelj@cmich.edu), 2014–2015 NSTA President, and Central Michigan University, Mount Pleasant**Lisa Ernst** (ernstl@sfusd.edu), Alice Fong Yu Alternative School, San Francisco, Calif.

Here's your opportunity to learn about the recently presented Equity in STEM PLI. Several strategies for creating more equitable learning/working environments and participants' feedback of the PLI will be shared.

Evaluate Your Sessions Online!

This year, we're giving away an Apple iPad mini 2 Wi-Fi tablet 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 page 17 for details.)

9:30–10:30 AM Hands-On Workshops

DuPont Presents: Photosynthesis and Respiration—It's a Plant's Life!

(Grades 9–12) *Diamond Ballroom Salon 1, JW Marriott*
Science Focus: LS

Wyatt DeJong (@WyattDeJong; *wyatt.dejong@k12.sd.us*),
Winner Middle/High School, Winner, S.Dak.

Help your students sprout and grow with a different approach to teaching photosynthesis and cellular respiration.

Back to School in Sci Olympiad Style

(Grades 5–10) *Diamond Ballroom Salon 9, JW Marriott*
Science Focus: ETS, SEP

Kelly Price-Colley (@KPriceGa; *kellyrprice@comcast.net*),
Forsyth County Schools, Cumming, Ga.

John Loehr (@SOAAlumniNetwork; *jfloehr@soinc.org*),
Science Olympiad, Villa Park, Ill.

Don't start another school year with the same boring scientific processes lessons. Kick it off with Write It Do It, Metric Mastery, Experimental Design, Grasp a Graph, and so much more. Both formative and instructional, these Problem-Based Learning events will activate your back to school like never before.

Warming Up to Innovative Modeling

(Grades 5–10) *Georgia 2, JW Marriott*
Science Focus: GEN, SEP2

Coral Clark, SETI Institute, Mountain View, Calif.

Use these simple, engaging warm-up activities to ease learners of all ages into brainstorming and innovative design thinking for modeling and other engineering practices.



Environmental Literacy: All About Access!

(General) *502B, Convention Center*
Science Focus: ESS, LS, CCC1, CCC2, CCC3, CCC4, SEP

Johannes Strobel (*strobelj@missouri.edu*), University of Missouri, Columbia

So how does location affect environmental literacy? Join us as we work through some of the initial findings of our research, and as a community determine action.

National Parks and NGSS: A Natural Fit

(Grades 4–8) *Kentia Hall G, Convention Center*
Science Focus: GEN, NGSS

Helen Hixon (@HelenHixon9; *helenhixon9@gmail.com*),
Horace Mann School, Idyllwild, Calif.

Kurt Holland (@scipolmarineman; *kurt.holland@gmail.com*),
Broader Impacts West, Pacific Palisades, Calif.

No NGSS textbook? No problem. In this workshop you will

learn how to bring the National Parks into the classroom with engaging NGSS-focused lessons.



STEM in the Real World: Hands On with NASA Aeronautics

(Grades P–12) *515B, Convention Center*
Science Focus: GEN, NGSS

April Lanotte (*april.anotte@gmail.com*), NASA Langley Research Center, Hampton, Va.

Jennifer Lane (@jlaneylady; *jennifer.colleen.lane@gmail.com*),
NASA Headquarters Washington, D.C.

Add authentic context, cross-curricular engagement, and fun to any classroom with NASA Aeronautics' range of lessons and activities. Free preK–12 resources.

Evaluating the Quality of Models in Science

(Grades 7–12) *Kentia Hall C, Convention Center*
Science Focus: GEN, SEP2

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

Vicky Pilitsis (*vickypilitsis@hvrdsd.org*), Hopewell Valley Regional School District, Pennington, N.J.

Modeling is a science practice central to knowledge building. We will explore a research-supported tool for students to evaluate the quality of scientific models.

The Power of Productive Peer-to-Peer Interactions

(Grades 6–12) *Kentia Hall D, Convention Center*
Science Focus: GEN

Leana Peltier (*lpeltier42@gmail.com*), Sleepy Hollow High School, Tarrytown, N.Y.

Push the limits of your peer-to-peer interactions to reach their full potential and value. Come learn effective peer-to-peer student activities to enhance critical thinking, reasoning, and understanding of content.

Developing Model-Based Inquiry

(Grades 6–12) *Kentia Hall E, Convention Center*
Science Focus: GEN, SEP2

Darrin Collins (*d.a.collins1831@gmail.com*), Wendell Phillips Academy High School, Chicago, Ill.

Emphasis will be placed on the science and engineering practice of modeling as we develop units based on this NGSS principle.



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Mission Earth: Students Working as Scientists

(General) *Kentia Hall F, Convention Center*

Science Focus: ESS2.D

Janet Struble (janet.struble2@utoledo.edu) and **Kevin Czajkowski**, The University of Toledo, Ohio

Tracy Ostrom (tostrom@berkeley.edu), University of California, Berkeley

Peter Garik (garik@bu.edu), Boston University, Boston, Mass.

David Padgett (@TSUGIScLab; dpadgett@tnstate.edu), Tennessee State University, Nashville

Learn how your students can be scientists using GLOBE (atmosphere protocols) and MY NASA DATA geared toward the NGSS/weather and climate. Handouts!

Engineering the Internet

(Grades 6–12) *Kentia Hall J, Convention Center*

Science Focus: ETS1, CCC4, SEP2, SEP3

Kelly Shepard, Illinois Institute of Technology, Chicago
Participants will compete to design an efficient internet and become nodes to transmit information based on their designs. The majority of this unit may be taught in the absence of internet access as the activities have been designed to use ordinary, inexpensive classroom supplies.

The Power of the Atom

(Grades 5–7) *Kentia Hall M, Convention Center*

Science Focus: LS1, CCC5

Bernice Filerman (bfilerman@ca.rr.com), Retired Educator, Culver City, Calif.

Orenda Tuason (otuason@gusd.net), Crescenta Valley High School, La Crescenta, Calif.

We will carry out three phenomena that make visible the mechanism of why the Sun is said to power almost all life.

The Power of Short Stories in History of Science for Teaching NOS in Middle School

(Grades 6–8) *Kentia Hall N, Convention Center*

Science Focus: GEN, NGSS

Yaozhen Pan, Illinois Institute of Technology, Chicago
Learn how short stories with historical context help middle school students to make connections with nature of science and science content.

Daytime Astronomy: Elementary Celestial Navigation

(Grades 5–8) *Kentia Hall Q, Convention Center*

Science Focus: ESS1, CCC4, SEP2, SEP3, SEP4

Philip Sadler (psadler@cfa.harvard.edu), Harvard-Smithsonian Center for Astrophysics, Cambridge, Mass.

Figure out one's latitude and longitude from measurements of the Sun's height using simple quadrants, which we will construct. Leave with all materials to conduct this activity in your grades 5–8 classroom.

Making Sense of Gene-Environmental Interactions in a 3D Science Classroom

(Grades 5–8) *Kentia Hall R, Convention Center*

Science Focus: LS, CCC, SEP

Jane Lee (leejanej@msu.edu) and **Irene Bayer** (rbayer@msu.edu), CREATE for STEM Institute, Michigan State University, East Lansing

Louise Mead (lsmead@msu.edu), BEACON Center for the Study of Evolution in Action, East Lansing, Mich.

Join us and find out what science classrooms using three-dimensional learning that supports students making sense of gene-environmental interactions look like. Explore Project-Based Learning environments that engage students in three-dimensional learning while investigating how genetic and environmental factors affect their family and community.

Using Modeling as a Curriculum Anchor: Learn an Instructional Approach for Uniting the NGSS Practices in High School Biology

(Grades 9–12) *Kentia Hall S, Convention Center*

Science Focus: LS, CCC, SEP

Candice Guy-Gaytán (@GuyCandice; candiceguy@gmail.com) and **Cynthia Passmore** (@cindypassmoreCA; cpassmore@ucdavis.edu), University of California, Davis

Through hands-on examples from a National Science Foundation-funded curriculum, explore how modeling can engage high school biology students in NGSS practices and content-rich learning experiences.

NESTA and NOAA Climate and Weather Share-a-Thon

(Grades K–12) *Petree Hall D, Convention Center*

Science Focus: ESS2.D, ESS3.D, LS2.B, LS4.C, PS3.B, PS4.B, CCC, SEP

Cheryl Manning (@clbmanning; clbmanning@mac.com), Evergreen High School, Evergreen, Colo.

Join more than 20 NOAA Climate Stewards, NESTA members, and other education specialists as they share their favorite NGSS-congruent classroom activities. Lots of free handouts!

9:30–10:30 AM Exhibitor Workshops

Exploring Misconceptions: Heat and Temperature

(Grades 6–12) 405, Convention Center
 Science Focus: PS1.A, PS3.B, PS3.D, CCC5, CCC7, SEP4, SEP5

Sponsor: PASCO scientific

Tom Loschiavo (loschiavo@pasco.com), PASCO scientific, Roseville, Calif.

Paul Werner (pwerner@rocklin.k12.ca.us), Rocklin High School, Rocklin, Calif.

Are heat and temperature the same thing? What does temperature really measure? What is heat and how does it flow? This hands-on workshop with Wireless Temperature Sensors will provide you with effective new ways to open students' minds to these core concepts central to physical science and chemistry.

STEM Activities: Easy-to-Teach Robotics

(Grades 6–12) 407, Convention Center
 Science Focus: ETS1, PS2.A, CCC1, CCC2, CCC3, SEP3, SEP4, SEP5, SEP6, SEP7, SEP8

Sponsor: PASCO scientific

Brett Sackett (sackett@pasco.com), PASCO scientific, Roseville, Calif.

Thomas Hsu (thsu@pasco.com), Ergopedia, Inc., Cambridge, Mass.

Feeling overwhelmed by the idea of teaching programming to tech-savvy students? We have created a curriculum and lesson plans just for you! We will cover teaching motion and introductory programming with classroom-scale robots and an easy-to-use interactive curriculum. You will be programming within minutes and leave with confidence to lead your own robotics lessons.

CALLING ALL MIDDLE SCHOOL EDUCATORS

Friday, March 31, 2017 | 10:15 AM–4:30 PM
 Diamond Ballroom Salons 4 & 5, JW Marriott

Must be registered for the conference to attend

Join us for a special **“Meet Me in the Middle Day,”** designed just for middle school educators, at **NSTA’s 2017 National Conference in LA!**

The day’s events will include a networking session, more than a dozen presentations specifically for middle school educators, and an afternoon share-a-thon featuring more than 100 presenters. You’ll walk away with ideas you can put to use in your classroom next week!



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

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www.nsta.org/LA

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Forces, Energy, Motion, and Engineering with K’NEX Machines: Using STEM to Make Work Easier

(Grades 5–9) 510, Convention Center

Science Focus: ETS1, PS2

Sponsor: K’NEX Education

Robert Jesberg (rjesberg@knex.com), K’NEX Education, Hatfield, Pa.

Experience STEM hands on by building gravity, rubber band, and spring-powered K’NEX racers to experiment with physical science concepts using 5E instructional strategies. Test your cars (Explore), graph and analyze results (Explain), and redesign (Extend). Investigate potential and kinetic energy, average speed, and more. Standards and STEM concepts will be our guide.

9:30–11:00 AM Exhibitor Workshop

AEOP RESET: Learning Through the Legacy Cycle

(Grades P–12) 150 AB, Convention Center


Science Focus: GEN, SEP

Sponsor: AEOP

Sally Pardue (spardue@tntech.edu), Millard Oakley STEM Center, Cookeville, Tenn.

Come learn how you can participate in Research Experiences for STEM Educators and Teachers (RESET), which builds on the successfully funded NSF program Research Experiences for Teachers (RET). The unique implementation for RESET relies on a “Participant as Principal Investigator” model, and participants experience a learning strategy called the Legacy Cycle.

9:45 AM–5:45 PM Short Course

 **Stretch Your Legs for Science: An Outdoor STEM Adventure (SC-7)**

(Grades 4–8) Tickets Required; \$108 Madrona Marsh Preserve

INF Science Focus: LS, INF, CCC, SEP

Jennifer Fee (jms327@cornell.edu), The Cornell Lab of Ornithology, Ithaca, NY

For description, see Volume 1, page 58.

Note: This short course will depart from the Pico Drive entrance of the Convention Center. Please arrive 15 minutes prior to the departure time.

10:00–10:30 AM Presentations

SCST-Sponsored Session: How Do We Know What to Teach? Working Backward to Build a Stronger Curriculum

(College)

Georgia 1, JW Marriott

Science Focus: GEN

Kerry Cheesman (kcheesma@capital.edu), Capital University, Columbus, Ohio

Find out how backward design has been implemented to strengthen the four-year undergraduate curriculum that prepares students for medical and health-related careers.

Supporting Lesson Planning Around Everyday Observable Phenomena in the NGSS

(Grades 6–12)

Kentia Hall K, Convention Center

Science Focus: GEN, NGSS

Jon Kovach (@UCLASciProj; kovach@gseis.ucla.edu),

Lynn Kim John (ljohn@gseis.ucla.edu), and **Jarod Kawasaki** (jarodkawasaki@gmail.com), UCLA Center X, Los Angeles, Calif.

William Sandoval (sandoval@gseis.ucla.edu), UCLA Lab School, Los Angeles, Calif.

Join us as we share a process to help teachers identify anchor phenomena to ground lessons and a tool for planning activities around additional phenomena connected to the anchor.

Navigating Lab Reports

(Grades 6–12)

West Hall B-4, Convention Center

Science Focus: GEN, CCC2, SEP8

Carrie Ball and **JoAnna Josey**, Severn School, Severna Park, Md.

Writing lab reports can be difficult. Learn to navigate the writing of a formal lab report in a way that is accessible for all students.

10:00–11:30 AM Exhibitor Workshops**Integrated Science Strategies That Make Three-Dimensional Learning Meaningful***(Grades K–5)* 150C, Convention Center

Science Focus: GEN, SEP2, SEP6, SEP8

Sponsor: Activate Learning

Ellen Mintz, Charleston County School District, Charleston, S.C.**Heather Milo**, Activate Learning, Greenwich, Conn.

Experience an integrated lesson that contains multiple ELA and math strategies designed to make learning meaningful and authentic for K–5 students. One lucky winner will take home an Active Science unit at the end!

Technovation: App Inventor and Engaging Girls in Computer Science*(Grades 5–12)* 153A, Convention Center

Science Focus: ETS, INF

Sponsor: Iridescent

Allison Colyer (allicolyer@iridescentlearning.org), Iridescent, Los Angeles, Calif.

Join us to learn about the MIT App Inventor and how Technovation incorporates this visual programming tool to teach young women about mobile app development and entrepreneurship. In this workshop, we will introduce App Inventor and Technovation and demonstrate examples of how it can be applied in the classroom or after-school programming.

Living by Chemistry: What Shape Is That Smell?*(Grades 9–12)* 153B, Convention Center

Science Focus: PS

Sponsor: Bedford, Freeman, & Worth High School Publishers

Angelica Stacy, University of California, Berkeley

Teach rigorous chemistry through guided inquiry! In this workshop, we will explore activities that help students understand molecular structure and other core chemistry concepts using the context of smell. Leave with free materials to use in your class!

Leap Forward into a Frog-Friendly Science Class*(Grades 7–College)* 153C, Convention Center

Science Focus: LS

Sponsor: Animalearn

Nicole Green, Animalearn, Jenkintown, Pa.

Want to help your students discover science without harming animals or using toxic chemicals? Join us to learn about all of the innovative hands-on non-animal resources that you can bring into your classroom to wow your students. All participants will have the opportunity to try out products and win valuable prizes!

Science Denial: Why Is It Increasing? What Can We Do About It?*(Grades 9–12)*

301 AB, Convention Center

Science Focus: ESS3

Sponsor: Pearson

Joseph Levine, Author, Boston, Mass.

Scientific literacy is vital to America; it should inform economic decisions, guide government policy, and improve health and security. Yet denial of consensus science—in evolution, climate change, vaccination, and GMOs—is growing everywhere, from pop culture to politics. How do you teach real science when your students are inundated with fake news every day? Where does science denial come from...and what can science educators do about it?

What Does Argumentation Look Like in an Elementary Classroom?*(Grades K–5)*

303 AB, Convention Center

Science Focus: GEN, SEP

Sponsor: Delta Education/School Specialty Science–FOSS

Brian Campbell, The Lawrence Hall of Science, University of California, Berkeley

Join FOSS Next Generation Program developers to learn about science practices within the context of active investigations. Experience analyzing and interpreting data, constructing explanations, and engaging in argumentation from evidence as tools to deepen student learning within a FOSS lesson. Find out about transitioning to FOSS Next Generation.

CPO Science's Link™ Learning Module Crazy Traits: Pedigrees and Sex-Linked Traits*(Grades 6–12)*

304 AB, Convention Center

Science Focus: LS3

Sponsor: CPO Science/School Specialty Science

Erik Benton, CPO Science/School Specialty Science, Nashua, N.H.**Kat Mills**, School Specialty Science, Rosharon, Tex.

CPO Science's Link Crazy Traits learning module integrates key genetics principles using technology in a real-time digital learning environment. Students break misconceptions about dominant traits while learning about inheritance over several generations. Heredity comes alive with a hands-on kit in a unique collaborative program. Door prizes. Free resources provided.

Bring Robotics to Your Science Classroom with LEGO® MINDSTORMS® Education EV3

(Grades 5–12) 304C, Convention Center

Science Focus: ETS

Sponsor: LEGO® Education

Kelly Reddin, LEGO Education, Billund, Jylland, Denmark

Want to prepare your students for STEM-related fields? Want to bring more engineering and Problem-Based Learning into the classroom? Come to this workshop to not only program a LEGO MINDSTORMS Education EV3 robot, but also leave with the confidence to bring robotics to your classroom for more student-centered learning.

Foodborne Outbreak Investigation Using Gel Electrophoresis

(Grades 10–College) 305, Convention Center

Science Focus: LS1, LS3, PS1, CCC1, CCC2, SEP4, SEP6, SEP7

Sponsor: The MiniOne Systems

Richard Chan (info@theminione.com), The MiniOne Electrophoresis, San Diego, Calif.

Learn firsthand how to engage students to use scientific reasoning by mimicking a foodborne outbreak investigation and designing an experiment with gel electrophoresis to determine the source of the outbreak. You will pour, load, and run a gel; capture a gel image; and analyze the results to test your hypothesis.

Introduction to Wisconsin Fast Plants®

(Grades K–12) 306 AB, Convention Center

Science Focus: LS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Experience the versatility of Wisconsin Fast Plants. These small, quick-growing plants engage students, suit all learning levels, and let you integrate plant development, life cycle, environmental effects, genetics, and evolution into your instruction. Learn the basics for successful planting, flower dissection, and pollination.

Genetics Brought to Life: Gene-ius Model Organisms

(Grades 9–12) 308 AB, Convention Center

Science Focus: LS, CCC, SEP

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Looking to breathe new life into your genetics activities, but not sure where to start? Combine model organisms such as *Drosophila*, corn, and Wisconsin Fast Plants® with hands-on activities to create engaging, impactful lessons. Demonstrate key concepts and prevent misconceptions.

Shifting to the Five Innovations: How Do We Transform Instruction?

(Grades 6–8)

309, Convention Center

Science Focus: GEN, NGSS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Experience three-dimensional learning, phenomena, the nature of science, ELA and math connections, and an in-depth progression of learning as you explore the new Smithsonian STCMS™ middle school curriculum designed to implement these five innovations. Leave with examples of supportive resources to make the transition easy and fun for students.

Chemistry with Vernier

(Grades 9–College)

402A, Convention Center

Science Focus: ETS2, PS1, PS3, PS4

Sponsor: Vernier Software & Technology

Nüsret Hisim (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

Use Vernier sensors to conduct chemistry experiments from our lab books in this engaging hands-on workshop. Collect and analyze data on LabQuest 2 and computers. See a demonstration of our new Go Direct wireless and USB sensors that connect directly to computers, Chromebooks, and mobile devices—no interface needed.

Explore Motion with Vernier Video Physics for iOS

(Grades 7–College)

402B, Convention Center

Science Focus: ETS2, PS2

Sponsor: Vernier Software & Technology

Verle Walters (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

Interested in creating and analyzing videos using iPad, iPhone, or iPod Touch? Attend this hands-on workshop to explore science concepts of motion and to discover best practices for capturing videos you can use with the Vernier Video Physics app. Automated object tracking streamlines data collection and analysis.

Flipping AP Biology with FlinnPREP™

(Grades 9–College)

403A, Convention Center

Science Focus: LS

Sponsor: Flinn Scientific, Inc.

Meg Griffith (mgriffith@flinnsci.com) and **Matt Anderson** (mmanderson@flinnsci.com), Flinn Scientific, Inc., Batavia, Ill.

Flipping your AP Biology class will help create an engaging and active classroom, focused on mastering the science practices. Learn how FlinnPREP, a supplemental digital curriculum with assessment solution, can ease your tran-

sition by providing video, images, and written content in a condensed form. Learn to use this tool to assess student understanding and as a jumping-off point for teaching modeling. Free teacher resources and door prizes. *AP is a trademark of the College Board.*

New from BioInteractive: Explore Infectious Diseases and Viruses

(Grades 9–College) 403B, Convention Center
Science Focus: LS1, LS3, LS4.C, LS4.D

Sponsor: HHMI BioInteractive

Steven Rogg (srrogg@cps.edu), Gwendolyn Brooks College Preparatory Academy, Chicago, Ill.

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

Extra! Extra! Hot off the presses! Presenting newly released and free classroom-ready resources and strategies for incorporating infectious diseases and viruses in your classroom. All of these HHMI BioInteractive resources meet the NGSS, AP and IB Biology curricula, and the undergraduate Vision-and-Change initiative.

Upgrade Your Chemotaxis Lab! (Aligns with AP Biology Big Ideas 1–4)

(Grades 9–College) 404 AB, Convention Center
Science Focus: LS

Sponsor: Bio-Rad Laboratories

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

Integrate genetics and neurobiology while infusing your chemotaxis lab with inquiry. Use *C. elegans* to compare normal and mutant behavior in a classical conditioned learning experiment (think Pavlov’s worms). Explore worm taste preferences in a simple chemotaxis assay and examine the connection of our worm mutant to human diseases.

Communicating Science Through Lab Notebooking

(Grades 9–College) 406 AB, Convention Center
Science Focus: GEN

Sponsor: Bio-Rad Laboratories

Leigh Brown (leigh_brown@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.

Maintaining a proper lab notebook is key to communicating processes and findings to build on your results. It can also be the difference between winning a patent or not. Learn about critical elements for good documentation and rubrics for assessment of student notebooks.

Cool! Can We Do That Again?!

(Grades 2–9) 408A, Convention Center

Science Focus: PS1.A, PS1.B, PS4.A

Sponsor: Educational Innovations, Inc.

Jeffrey Feidler, Consultant, Wilmington, Del.

Tired of hearing “Do we have to do that!?” from your students? Come check out some of the coolest activities involving polymers, color, and light. Your students will be asking if they can do that again—and again! Door prizes, freebies, and fun!

Cool Tools for Sound and Waves

(Grades 8–12) 408B, Convention Center

Science Focus: PS4

Sponsor: Arbor Scientific

James Lincoln, Arbor Scientific, Newport Beach, Calif.

Come see and use innovative hands-on activities and demos related to sound and waves. Learn how to teach about waves and wave properties, sound production and propagation, wave frequency and its relationship to sound, standing waves in springs and pipes, and how to use software to make sounds visible. Teaching tips and lesson ideas for all grade levels!

Disappearing Jaguars and Sloths: Phenomena, 3D Instruction, and Amplify Science for Grades 2–5

(Grades 2–5) 409 AB, Convention Center

Science Focus: LS

Sponsor: Amplify

Rebecca Abbott (amplifyscience@berkeley.edu) and **Meghan Comstock** (amplifyscience@berkeley.edu), The Lawrence Hall of Science, University of California, Berkeley

Experience how students investigate declining jaguar and sloth populations while figuring out principles of ecosystems and engaging in three-dimensional learning. Participants will get a hands-on dive into Amplify Science for grades 2–5, engaging with this new K–8 NGSS-designed program from The Lawrence Hall of Science.

In Memory of Al Guenther 1936–2016

Please contact Nancy Guenther at nguenther13@gmail.com for information on classroom materials that Al wished to donate to teachers and schools.

Turn-Key STEM/Engineering Program by WhiteBox Learning

(Grades 5–College) 410, Convention Center

Science Focus: ETS1

Sponsor: WhiteBox Learning

Graham Baughman (graham@whiteboxlearning.com), WhiteBox Learning, Louisville, Ky.

WhiteBox Learning provides a project-, standards-, and web-based STEM Learning System. Gliders2.0, Rover2.0, Structures2.0, Prosthetics2.0, MousetrapCar2.0, Green-Car2.0, Rockets2.0, Dragster2.0, SurvivalShelter2.0, and KidWind2.0 allow students to design, analyze, and simulate their designs—and compete “virtually,” from any browser, before building their projects hands on. Engage your students in the complete engineering design process.

Use Cheese-Making to Bring STEM into Your Classroom

(Grades 9–College) 501 AB, Convention Center

Science Focus: LS1.D, SEP

Sponsor: Fisher Science Education

Ellyn Daugherty (ellyn@biotech.com), Biotechnology Educator, Redwood City, Calif.

Discover strategies to bring STEM into your classroom and implement innovative bioscience curriculum with your students. Join Ellyn Daugherty, educator and author of *Biotechnology: Science for the New Millennium*, for a cheese-making experiment, molecular modeling, and other STEM applications.

BIOZONE’s AP Biology: New Editions of This Popular Resource

(Grades 9–12) 503, Convention Center

Science Focus: LS

Sponsor: BIOZONE International Ltd.

Richard Allan (richard@thebiozone.com), BIOZONE International Ltd., Hamilton, New Zealand

Are you looking for a sound but innovative way to teach AP Biology within the thematic framework of the four big ideas? Find out how our pedagogical approach can improve student engagement by emphasizing inquiry, collaboration, data analysis, critical thinking, and synthesis of ideas. Comprehensively illustrated, these AP resources offer proven strategies for student achievement. Attendees receive free samples.

The Raging Earth and Sky

(Grades 6–12) 511 AB, Convention Center

Science Focus: ESS2.B, ESS2.D

Sponsor: Simulation Curriculum Corp.

Herb Koller (hkoller@simcur.com), Simulation Curriculum Corp., Minnetonka, Minn.

Join us as we use Simulation Curriculum’s acclaimed The Layered Earth Geology and The Layered Earth Meteorology to investigate the role of atmosphere and tectonic plates in the destructive potential of hurricanes and earthquakes. These are part of complete curriculum solutions available for Windows, MacOS, and now Chromebooks.

Molecular-Level Visualization: Engage Your Students and Fight Misconceptions!

(Grades 7–College) 511C, Convention Center

Science Focus: PS1.A, CCC, SEP

Sponsor: Wavefunction, Inc.

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

Is it difficult for your students to relate the macroscopic and symbolic levels of chemistry to molecular phenomena? 3D Visualization can help! *ODYSSEY* Molecular Explorer is a highly interactive program for high school and AP chemistry. Bring a Windows or Macintosh laptop if you can; some loaner laptops also available.

GPS and Relativity

(Grades 9–12) 512, Convention Center

Science Focus: PS, CCC, SEP

Sponsor: Perimeter Institute for Theoretical Physics

Damian Pope, Perimeter Institute for Theoretical Physics, Waterloo, Ont., Canada

Einstein’s theories of general and special relativity are some of humanity’s greatest intellectual achievements. But, to most, they seem highly abstract and completely removed from daily life. Using hands-on classroom activities, this workshop will show your students how the widely used global positioning system (GPS) uses relativity in its operation.

Why is some fruit sour?

Your facial expression isn't the only indicator of the taste.

Talking about fruit is a great way to introduce acids and bases. Help your students understand that sourness is determined by the pH of the ions present.

Attend the free workshop to wirelessly measure pH levels of common household chemicals.

2:00pm - 3:00pm

Essential Chemistry: Meaningful Titration of Everyday Antacids

\$59
Wireless pH



Free Standards-Based Workshops: Friday, March 31, 2017

Free giveaways in every workshop!

Room #405

8:00–9:00	Extraordinary Earth Science Activity: Modeling Watersheds and Human Impacts
9:30–10:30	Exploring Misconceptions: Heat and Temperature
11–Noon	Essential Chemistry: Stoichiometry and Limiting Reactants with Gas Laws
12:30–1:00	True Colors: Spectrometry to Investigate Lights and Colors
2:00–3:00	Essential Chemistry: Meaningful Titration of Everyday Antacids
3:30–4:30	Understanding Photosynthesis: A Lab-based Approach

Room #407

8:00–9:00	From DNA to Protein: A Modeling Approach
9:30–10:30	STEM Activities: Easy-to-Teach Robotics
11–Noon	Light and Optics
12:30–1:00	STEM Activities: The Science of Musical Sound
2:00–3:00	Introducing Statistics in Biology to Improve Scientific Reasoning
3:30–4:30	STEM Activities: Fascinating Forces and Simple Machines

Booth #1639

see the full workshop descriptions pasco.com/nsta17

PASCO[®]
scientific

Grow GMO Seeds in Your Classroom and Conduct Protein and DNA Analyses Using Lateral Flow Strips and PCR

(Grades 6–College) 514, Convention Center

Science Focus: LS

Sponsor: Monsanto Co.

Valerie Bayes, Bill Moar, and Glen Rogan, Monsanto Co., Saint Louis, Mo.

Ezequiel Alvarez-Saavedra, miniPCR, Cambridge, Mass.

Join industry professionals from Monsanto Company and miniPCR to learn more about genetically modified crops (GMOs). Hear how a GMO is made, the benefits and limitations of the technology, how to use lateral flow strips to test for proteins produced by the GMO plant, and how to use PCR to amplify the inserted DNA in the GMO. Leave with GMO seeds and classroom lesson plans that meet the NGSS.

Reading River Sediments

(Grades 9–12) 518, Convention Center

Science Focus: ESS3.A, ESS3.C, ESS3.D, SEP1, SEP3, SEP4, SEP6, SEP7

Sponsor: Lab-Aids, Inc.

Mark Koker, Lab-Aids, Inc., Ronkonkoma, N.Y.

In this exemplary NGSS activity, we explore the issue of how valuable Earth minerals are formed and how the location and use of these resources affect us. Role-playing as a mining company, we prospect for mineral ore by following traces in river sediments and then evaluating the trade-offs of our choices—both for the company and the environment. This is a highly engaging lesson developed for high school Earth science by EDC and Oceans of Data Institute.

Morning of Chemistry: An Epic Adventure in Science

(Grades 6–College) Petree Hall C, Convention Center

Science Focus: PS

Sponsor: Flinn Scientific, Inc.

Jillian Saddler (jsaddler@flinnsci.com), **Joan Berry** (jberry@flinnsci.com), and **Mike Marvel** (mmarvel@flinnsci.com), Flinn Scientific, Inc., Batavia, Ill.

In a world where movies and video games are filled with action and adventure, Flinn Scientific comes along to bring that same experience into your classroom. Join us to witness the dramatic implosion of the *Can Crusher*, the amazing *Alcohol Cannon*, the awe-inspiring *Whoosh Bottle*, and a dozen more of Flinn's most critically acclaimed demonstrations. Handouts!

10:15–10:45 AM Presentations

Meet Me in the Middle Session: NMLSTA/NSTA Roundtable Conversations, Session 1

(Grades 5–9) Diamond Ballroom Salon 4/5, JW Marriott

Science Focus: GEN

Mary Lou Lipscomb (mllscience@aol.com), National Middle Level Science Teachers Association, Naperville, Ill.

Tony Bartley (abartley@lakeheadu.ca), Lakehead University, Thunder Bay, Ont., Canada

G. Michael Bowen, NSTA Director, District XVIII, and Mount Saint Vincent University, Halifax, N.S., Canada

Stephanie Brunnett (sbrunnett@lab-aids.com), Lab-Aids, Inc., Ronkonkoma, N.Y.

Stephanie Choury (schoury@aquaphoenixsci.com), **Roxane Ohl** (rohl@aquaphoenixsci.com), and **John Weatherby** (jweatherby@aquaphoenixsci.com), AquaPhoenix Scientific Inc., Hanover, Pa.

Sandra Derby (stderby@ucanr.edu), California Project Learning Tree, Davis

Charles Fulco (saros61@gmail.com), Science Education Consultant, Otis, Mass.

Jenna Garguilo (jrgarguilo@gmail.com) and **Daniella Roman** (droman4709@gmail.com), Port Chester Middle School, Port Chester, N.Y.

Chris Herald (chrish@usd383.org), Manhattan High School, East Campus, Manhattan, Kans.

Liz Martinez (emartinez@imsa.edu), Illinois Mathematics and Science Academy, Aurora

Kathy McGlaufflin, Project Learning Tree, Washington, D.C.

Edward McGrath (edward.mcgrath@redclay.k12.de.us), Red Clay Consolidated School District, Wilmington, Del.

Alison Seymour, Ridgecrest Intermediate School, Rancho Palos Verdes, Calif.

Melissa Sleeper (onewhosleeps3@aol.com), Gifford Middle School, Vero Beach, Fla.

Usha Verma (usha.verma@browardschools.com), Nova Middle School, Davie, Fla.

Join middle level science teachers for small group discussions featuring NGSS, scientific literacy, STEM integration, and more!

Meet Me in the Middle Session: What the NGSS Mean to a Middle Level Teacher: Thoughts from a Member of the Writing Team

(Grades 5–8) Diamond Ballroom Salon 6, JW Marriott
Science Focus: GEN, NGSS

Kenneth Huff (kenneth.huff@roadrunner.com), NSTA Director, Middle Level Science Teaching, and Mill Middle School, Buffalo, N.Y.

Join a member of the NGSS writing team to learn how the NGSS impact your middle level classroom.

Meet Me in the Middle Session: Safety: The Route to Successful STEM Activities!

(Grades 4–8) Diamond Ballroom Salon 7, JW Marriott
Science Focus: GEN, SEP3

Kenneth Roy (@drroysafersci; royk@glastonburyus.org), Glastonbury (Conn.) Public Schools

Find out about important components of safety when preparing for hands-on activities—be it science or STEM. Be prepared. Be safer!

Meet Me in the Middle Session: Making Diagrams Interactive and Relevant

(Grades 4–9) Diamond Ballroom Salon 8, JW Marriott
Science Focus: GEN

Kathy Biernat (@ScientistMaker; kbiernat@stmaryeg.org), St. Mary's Visitation School, Franklin, Wis.

Stop using boring diagrams! Engage students with hands-on, low-tech diagrams with paper folding, medium tech with free apps, and high tech with virtual reality.

10:30 AM–12 Noon Meeting

Urban Science Education Advisory Board Meeting

Studio 2, JW Marriott

10:30 AM–12:30 PM Meeting

AMSE General Membership Meeting

Platinum Ballroom Salon C, JW Marriott

Please visit amsek16.org for additional information.

10:30 AM–4:00 PM Short Course



NSTA Press® Short Course: Phenomenon-Based Learning: Fun, Hands-On, Cooperative Learning of Both Science and Language Arts (SC-8)

(Grades 3–12) Ticket Required; \$100 Santa Anita B, Westin
Science Focus: ETS2, PS1.A, PS2, PS3.B, PS3.C, PS4.A, PS4.B, CCC1, CCC2, CCC3, CCC4, CCC5, CCC6, SEP

Matt Bobrowsky (@DrMattB; expert_education@rocket-mail.com), Delaware State University, Dover

For description, see Volume 1, page 58.

11:00–11:30 AM Presentations

Meet Me in the Middle Session: NMLSTA/NSTA Roundtable Conversations, Session 2

(Grades 5–9) Diamond Ballroom Salon 4/5, JW Marriott
Science Focus: GEN, NGSS

Mary Lou Lipscomb (mllscience@aol.com), National Middle Level Science Teachers Association, Naperville, Ill.

Nancy Burnett, Shape of Life, Carmel Valley, Calif.

Charles Fulco (saros61@gmail.com), Science Education Consultant, Otis, Mass.

Janet Hoekenga (jhoekenga@flinnsci.com), Flinn Scientific, Inc., Batavia, Ill.

Kenneth Huff (kenneth.huff@roadrunner.com), NSTA Director, Middle Level Science Teaching, and Mill Middle School, Buffalo, N.Y.

Jay Labov (jlabov@nas.edu), The National Academies of Sciences, Engineering, and Medicine, Washington, D.C.

Katherine Lewis (klewis@animalearn.org), Animalearn, Jenkintown, Pa.

Tom Loschiavo (loschiavo@pasco.com), PASCO scientific, Roseville, Calif.

Patty McGinnis (pattymcginnis1@gmail.com), Arcola Intermediate School, Eagleville, Pa.

Alison Seymour, Ridgecrest Intermediate School, Rancho Palos Verdes, Calif.

Dee Dee Whitaker, Carolina Biological Supply Co., Burlington, N.C.

Join middle level science teachers for small group discussions featuring NGSS, scientific literacy, STEM integration, and more!

Meet Me in the Middle Session: Science and Special Education—How to Make It Work

(Grades 5–8) Diamond Ballroom Salon 6, JW Marriott
Science Focus: GEN

Kathleen Brooks, Retired Educator/Educational Consultant, Westbrook, Conn.

Strategies will be offered for working with both special needs students and with special education teachers who do not know science.

Meet Me in the Middle Session: Bringing STEAM and Literacy to the Periodic Table

(Grades 6–8) Diamond Ballroom Salon 8, JW Marriott
Science Focus: PS, SEP6, SEP8

Elizabeth Weissman (weissmane@ramaz.org), The Ramaz School, New York, N.Y.

Learn how an Elements Project integrates technology, literacy, and arts into the study of atomic structure and the periodic table.

SCST-Sponsored Session: The University of Findlay Learning Bus—Bringing NGSS to You!

(College) **CANCELED** Georgia 1, JW Marriott
Science Focus: GEN, NGSS

Gwynne Rife, The University of Findlay, Ohio
A mobile lab was designed and created to bring NGSS to area schools. Hear how the university trains teachers to use the mobile lab on-site.

Giving Life to Life Science Design Challenges

(Grades 4–12) 505, Convention Center
Science Focus: LS

Amanda Solarsh (amandasolarsh@gmail.com), Simon Baruch MS104, New York, N.Y.

Gina Tesoriero (ginateesoriero@gmail.com), M.S. 319 Maria Teresa Mirabal School, New York, N.Y.

Jeannie Gargiulo (jeanniegargiulo@gmail.com), Fieldston Lower, Middle, and Upper School, Bronx, N.Y.

Tired of biology being left out of the STEM discussion? Come learn about exciting design challenges that can be integrated into any life science curriculum.

Using Simulations to Engage Middle School Learners in Physical Science

(Grades 6–9) Kentia Hall M, Convention Center
Science Focus: PS, SEP

Krista Hachadoorian (@KristaHach), H.B. Thompson Middle School, Syosset, N.Y.

Find out how to use free online simulations as a way to engage students in inquiry-based lessons. Sample activities will be provided.

Playing with Sand: An Augmented Reality Lesson

(Grades 6–8) Kentia Hall Q, Convention Center
Science Focus: ESS2.C, CCC4

October Smith (@octobersmith; osmith@lcisd.org), Lamar CISD, Rosenberg, Tex.

Leave with plans in hand to build your own AR sandboxes, as well as lessons on topography, erosion, and weathering.

How to Make Data Accessible to ALL Learners

(Grades 6–12) West Hall B-4, Convention Center
Science Focus: GEN, CCC1, CCC2, SEP1, SEP4, SEP5, SEP6, SEP8

Lena Cosentino (@lsdnyc), College of Staten Island High School for International Studies, Staten Island, N.Y.

We will examine scaffolded activities that allow every student to access and analyze real scientific data.



11:00–11:30 AM Hands-On Workshop

Meet Me in the Middle Session: Everyday Engineering

(Grades 5–9) Diamond Ballroom Salon 7, JW Marriott
Science Focus: ETS

Richard Moyer (rhmoyer@umich.edu), Professor Emeritus, University of Michigan–Dearborn

Engage in hands-on activities based on the column *Everyday Engineering* and NSTA Press® book of the same title. We will investigate the sealing mechanisms of plastic baggies and the sweet spots on ball bats, golf clubs, and tennis rackets.

11:00 AM–12 Noon Featured Presentation**NGSS NGSS...Now What?**

(General)

Theatre (411), Convention Center

Science Focus: GEN, NGSS



Laura Henriques (laura.henriques@csulb.edu), Professor of Science Education, California State University, Long Beach

Presider: Tim Williamson, Conference Chairperson, NSTA Los Angeles National Conference, and California State University, Long Beach

My state adopted NGSS. Now what am I supposed to do? Does this sound familiar? Laura will help you understand how to move forward as you modify your instructional decisions and practices to begin implementing NGSS in your classroom.

Laura Henriques is professor of Science Education at California State University, Long Beach and past president of the California Science Teachers Association. Prior to joining the faculty at CSULB, Laura taught middle school and high school physics/physical science and served as a Lead Teacher for the Woodrow Wilson National Fellowship Foundation, conducting weeklong workshops across the country. She has been heavily involved in California's adoption, transition, and implementation efforts around Next Generation Science Standards, serving on several state level committees and coalitions.

Laura has overseen multiple funded programs supporting teachers' content development and pedagogical content knowledge—most recently, helping teachers with instructional strategies consistent with NGSS. She also runs a summer science camp program at CSULB, which provides academic enrichment for area youth while giving prospective teachers mentored teaching opportunities alongside master teachers. For the past nine years, she's run a companion camp for homeless youth.

11:00 AM–12 Noon Presentations**NARST-Sponsored Session: Promoting Student Participation in Science Practices: Strategies for Formative Assessment and Science Classroom Talk**

(Grades 3–College)

Atrium 2, JW Marriott

Science Focus: GEN, SEP1, SEP6, SEP7, SEP8

Deb Morrison (@educatordeb; educator.deb@gmail.com) and **Shelley Stromholt** (stromhos@uw.edu) University of Washington, Seattle

Have you ever wondered how to organize classroom talk for effective science learning and equity? This informal presentation offers practical solutions to this challenge.

NSELA-Sponsored Session: Professional Development Tips and Strategies to Optimize Student STEM Learning

(Grades 1–12)

Diamond Ballroom Salon 2, JW Marriott

Science Focus: GEN, SEP

Nancy Kellogg (nancy.kellogg@comcast.net), Retired Educator, Boulder, CO

Sephali Thakkar (@SephaliThakkar; thakkarS@lisd.net), Lewisville (Tex.) ISD

We will share an integrated STEM lesson coupled with interactive strategies to engage participants in key elements for quality professional development and leadership skills that can be implemented immediately.

Freshwater Stewardship: Equip Your Student-Scientists with Cutting-Edge Resources from NOAA

(Grades K–12)

Gold Ballroom Salon 1, JW Marriott

Science Focus: ESS, CCC

June Teisan (june.teisan@noaa.gov), NOAA Office of Education, Washington, D.C.

Dennis Cain (dennis.cain@noaa.gov), NOAA National Weather Service, Fort Worth, Tex.

Flooding. Water pollution. Freshwater is the lifeblood of our planet, and our future depends on the next generation of environmental stewards to preserve the health of watersheds. NOAA and the National Weather Service have a wealth of online lesson plans, videos, data sets, webinars, and more to help inform and inspire students to action in research, stewardship, and resource management for vital freshwater ecosystems.

Powerful, Free Simulations for Three-Dimensional NGSS Teaching

(Grades 6–12) *Gold Ballroom Salon 2, JW Marriott*
Science Focus: PS, SEP

Chad Dorsey (@chaddorsey; *cdorsey@concord.org*), The Concord Consortium, Concord, Mass.

Come discover how free NSF-funded molecular simulations and curricula from The Concord Consortium can add all three dimensions of the NGSS to your physics, physical science, and chemistry teaching, with a special emphasis on the science practices. Take away free tips and resources that you can use immediately to bring NGSS to life in your classroom!

ASTE-Sponsored Session: Bridging Policy and Practice—Science Teacher Education for the Next Generation

(General) *Olympic 1, JW Marriott*
Science Focus: GEN, NGSS

Lisa Martin-Hansen (@Lmartinhansen; *l.martinhansen@csulb.edu*), California State University, Long Beach

Deborah Hanuscin (*hanuscind@missouri.edu*), University of Missouri, Columbia

John Tillotson (@johnwtillotson; *jwtillot@syr.edu*), NSTA Director, Research in Science Education, and Syracuse University, Syracuse, N.Y.

Michael Clough (*mclough@iastate.edu*), Iowa State University, Ames

Joanne Olson (*jkolson@iastate.edu*), Iowa State University, Ames

Join recipients of the Outstanding Science Educator of the Year award as they share ways in which they are responding to the NGSS in teacher preparation.

Yager Scholar: Using Infographics to Increase Science Literacy

(Grades 6–12) *Platinum Ballroom Salon B, JW Marriott*
Science Focus: ETS2, CCC1, CCC2, CCC4, SEP1, SEP4, SEP5, SEP6, SEP7, SEP8

Rob Lamb (@lambchop1198; *rlamb@psdr3.org*), Pattonville High School, Maryland Heights, Mo.

Come to this Yager Scholar session to investigate how using infographics in the classroom can increase both scientific literacy and student engagement. Your time is used more effectively when you are face to face with your students through Project-Based Learning and the flip model for conveying baseline information in your course.

Academic Language: Yes, Even More Vocabulary Strategies to Enhance Engagement and Learning!

(Grades 5–12) *Platinum Ballroom Salon D, JW Marriott*
Science Focus: GEN, NGSS

Lauren Rentfro (*rentfrola@lewisu.edu*) and **Christopher Blogg** (*cjblogg34@comcast.net*), Lewis University, Romeoville, Ill.

Tiffany Albers-Lopez (*tiffany.alberslopez@gmail.com*), Marian Catholic High School, Chicago Heights, Ill.

Explore vocabulary games and strategies to enhance student learning and use of academic vocabulary in the science classroom.

Formative Assessments with Google Apps for Education

(Grades 3–College) *Platinum Ballroom Salon E, JW Marriott*
Science Focus: GEN

Marielle Venturini, Mar Vista Academy, San Diego, Calif.

Learn how to create simple formative assessments using Google Apps for Education. Participants will be provided with customizable templates in Docs, Slides, Forms, and Sheets.

Science for ALL Cultures and Climates: Constructing, Contextualizing, Conceptualizing a Framework for Teaching Diverse Learners

(General) *Platinum Ballroom Salon H, JW Marriott*
Science Focus: GEN

Gerry Madrazo, Jr. (*gerrymadrazo@gmail.com*), 1993–1994 NSTA President, and Madrazo Multicultural Science Consultancy, Elon, N.C.

Presider: Fred Johnson, 1997–1998 NSTA President, Cordova, Tenn.

Time to join the multicultural bandwagon as we traverse across the nation! Walk a mile in those multicultural moccasins! Construct different tools for linguistically and culturally diverse learners in your science classrooms!

Connecting Universities with K–12 Teachers to Develop NGSS Curricula

(Grades K–12) *Platinum Ballroom Salon I, JW Marriott*
Science Focus: GEN, NGSS

Julius Su (*jsu@caltech.edu*) and **James Maloney** (*maloney@caltech.edu*), California Institute of Technology, Pasadena

Eddie Partida (*epartida01@gmail.com*), Claremont Graduate University, Claremont, Calif.

Monica Barsever (*mbarsever@alvernoheights.org*), Alverno High School, Sierra Madre, Calif.

Just say no to off-the-shelf curricula. Learn how a community comes together to create vibrant, hands-on, inquiry-based next generation lessons.

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BOOTH #850



Through AEOP, the Army continues its long tradition and strong commitment to the advancement of STEM education and literacy. Leveraging its most valuable assets—world-class scientists and engineers and research facilities—AEOP offers our nation's youth and teachers a collaborative, cohesive portfolio of opportunities that effectively engage future workforce generations in meaningful, real-world STEM experiences, competitions and paid internships.

Friday, March 31 Workshops

Location: Los Angeles Convention Center - 150 AB

Gains in the Education of Mathematics and Science: What Can GEMS Do For You?

8:00–9:00am

AEOP RESET: Learning Through the Legacy Cycle

9:30–11:00am

Group Work: Using Student Collaboration in the Middle School Science Classroom

11:30am–1:00pm

What's the Problem? Integrating Engineering into the Science Classroom without Rockets and Bridges

1:30–3:00pm

Friday, March 31 Session

Location: JW Marriott Los Angeles, LA Live - Gold Ballroom Salon 4

How to Implement STEM and NGSS into Your Classroom through the Use of NSTA Competitions

9:30–10:30am

Saturday, April 1 Featured Presentation

Los Angeles Convention Center - Theater (Room 411)

Engaging ALL in STEM

Speaker: Louie Lopez

3:30–4:30pm

Administered by

NSTA National
Science
Teachers
Association

Teaching Students to DO Science

(Grades 10–12)

Plaza 1, JW Marriott

Science Focus: GEN, SEP

Hanna Shohfi (hshohfi@archer.org), The Archer School for Girls, Los Angeles, Calif.

Attention will be paid to a model for an on-campus research course and curriculum that builds the necessary lab skills and primary source literacy to enable successful student research experiences.

Developing Teacher Leadership through Action Research

(Grades 9–College)

Plaza 2, JW Marriott

Science Focus: GEN, SEP8

Chuck McWilliams (chuck.mcwilliams@mrhschools.net), MRH High School, Saint Louis, Mo.

Amy Welch (awelch@fjuhsd.org), Sonora High School, La Habra, Calif.

Learn how the use of action research can build teacher leadership skills and lead to increased student use and understanding of science and engineering practices.

NGSS@NSTA Forum Session: How Do You Know If an Assessment Is Measuring Three-Dimensional Reasoning?

(Grades K–12)

151, Convention Center

Science Focus: GEN, NGSS

Jill Wertheim (@snapgse; jwerthei@stanford.edu) and **Cathy Zozakiewicz** (czozakie@stanford.edu), Stanford NGSS Assessment Project, Palo Alto, Calif.

Assessments often do not measure what they might appear to measure. Sample performance assessments and student data will be used to explore the Stanford NGSS Assessment Project's (SNAP) process for developing, analyzing, and revising performance assessments to ensure that three-dimensional reasoning is being measured.

Mobilize STEM for Greater Impact

(Grades K–5)

501C, Convention Center

Science Focus: ETS, SEP1, SEP3, SEP6, SEP8

Robert Deneau (@itechbob; deneaurobert@rsdmo.org) and **Susanne Moar** (moarsusanne@rsdmo.org) Rockwood School District, Eureka, Mo.

Big STEM ideas but not a big budget? Make your STEM program mobile to broaden the impact to more students while saving money.



Incorporating Global STEM Collaboration into Your Classroom!

(Grades 9–College)

502B, Convention Center

Science Focus: GEN, SEP1, SEP3, SEP4, SEP5, SEP6, SEP8

Mariam Manuel (@ScienceManuel; mamanuel@uh.edu) and **Paige Evans** (@PaigeKEvans; pevans@uh.edu), University of Houston, Tex.

Discussion centers on the significance of Global STEM collaboration and examples of how to incorporate global collaboration into STEM classrooms.

Catch the Wave: Using Seismometers to Measure and Model Earthquakes

(Grades 7–College)

504, Convention Center

Science Focus: ESS2.A, ESS2.B, ESS3.B, ETS1.A, ETS2.B, PS2.A, PS4.A, PS4.C, CCC2, CCC4, SEP1, SEP2, SEP3, SEP4, SEP5

Tim Martin (tmartin@greensboroday.org), Greensboro Day School, Greensboro, N.C.

Based on EarthScope visualizations, we will discuss modeling and measurement of earthquakes and seismic waves using small, inexpensive seismometers and smart devices.

The NSTA Learning Center: A Tool to Develop Preservice Teachers

(College)

507, Convention Center

Science Focus: GEN

Flavio Mendez (@fljmendez; flavio_m@nsta.org), Assistant Executive Director, Learning Center, NSTA, Arlington, Va. Come learn how to use the NSTA Learning Center as an online textbook when teaching science preservice teachers.

Laser Cutters + 3D Printers + Vinyl Cutters = Bolstered K–3 Math Curriculum

(Grades K–3)

Kentia Hall B, Convention Center

Science Focus: ETS, SEP2, SEP5, SEP6

Ryan Erickson, Cedar Park Elementary STEM School, Apple Valley, Minn.

The maker movement is spreading across the country. Laser cutters, 3D printers, vinyl cutters, and more are starting to show up in elementary schools. Connecting students with experiential learning not only bolsters student engagement, but solidifies learning through making. Encounter simple ways to connect the maker movement, 3D printers, laser cutters, and vinyl cutters to K–3 math standards.

Thinking Creatively to Collaborate Across Districts in STEM Education

(Grades K–5) *Kentia Hall G, Convention Center*
Science Focus: GEN

Elisa Slee (@ejslee; ejlee@capousd.org), Capistrano Unified School District, San Juan Capistrano, Calif.

Julie Roney (@JroneyJulie; [jroney@orangeusd.org](mailto:jronney@orangeusd.org)), Orange Unified School District, Anaheim, Calif.

Learn from a four-year collaboration and acquire strategies for working across districts to provide hands-on STEM experiences for your scholars and teacher training opportunities.

Eureka! Science Trade Books: Good as Gold!

(General) *Kentia Hall K, Convention Center*
Science Focus: GEN, NGSS

Suzanne Flynn, Lesley University and Cambridge College, Carver, Mass.

Juliana Texley (@JulianaTexley; texlej@cmich.edu), 2014–2015 NSTA President, and Central Michigan University, Mount Pleasant

Need great books for student learning? Explore and use *NSTA Recommends* and the Children's Book Council Outstanding Science Trade Books. Door prizes—books, of course!

NSTA Press® Session: Integrating Engineering Practices into Whole-Class Inquiry Challenges

(Grades 6–12) *Kentia Hall L, Convention Center*
Science Focus: PS, SEP6, SEP7, SEP8

Michael Nocella (micnoc@d219.org), Niles West High School, Skokie, Ill.

Presider: Karishma Bhatt, Niles North High School, Skokie, Ill.

Learn how a chemistry teacher designs and modifies whole-class inquiry challenges to incorporate engineering practices into content curricula to enhance science-process skills.

NESTA and NOAA Share: NOAA Climate Stewards: Affecting Change Through Education, Collaboration, and Action

(General) *Petree Hall D, Convention Center*
Science Focus: ESS2.D, ESS3.C, ETS1.A, ETS1.B, CCC1, CCC2, CCC4, CCC7, SEP1, SEP4, SEP7, SEP8

Bruce Moravchik (bruce.moravchik@noaa.gov), NOAA National Ocean Service, Silver Spring, Md.

Want to receive money and training to impact climate change? NOAA Climate Stewards engage teachers with sustained professional development, collaborative online tools, and active stewardship guidance. Success stories will be shared and free education resources distributed.

11:00 AM–12 Noon Hands-On Workshops

DuPont Presents: Adding Some Color to Science

(Grades 9–12) *Diamond Ballroom Salon 1, JW Marriott*
Science Focus: LS

Kaylie Ackerley (@kca28; kackerley@svecsd.org), Spencer-Van Etten Central School District, Spencer, N.Y.

Nathan Moore (@coltonagman; nmoore@colton.k12.wa.us), Colton (Wash.) School District

Come discover pH is where it is at when it comes to flower color. Your students will love getting to the down and dirty of soil pH.

NSTA Press® Session: Picture-Perfect STEM Lessons: Using Children's Books to Inspire STEM Learning

(Grades K–5) *Diamond Ballroom Salon 3, JW Marriott*
Science Focus: GEN, NGSS

Emily Morgan (@EmilyMorganNTYS; emily@pictureperfectscience.com) and **Karen Ansberry** (karen@pictureperfectscience.com), Picture-Perfect Science, West Chester, Ohio

The authors of the *Picture-Perfect Science* series will share lessons from their new books that integrate STEM and literacy in grades K–5.

Rocket Science and Engineering in High School: A STEM Approach

(Grades 8–College) *Diamond Ballroom Salon 9, JW Marriott*
Science Focus: ESS, ETS, CCC, SEP

Dimitri Scripnic (dscripnic@gmail.com), Florida Polytechnic University, Lakeland

José Lemes de Almeida (almeidaj@colband.com.br) and **Franco Ramunno** (franco.ramunno@colband.com.br), Colégio Bandeirantes, São Paulo, Brazil

Come learn how to adapt complex concepts of aerospace engineering to high school students in a hands-on STEM program.

Intertwining an A into STEM to Support ELL and Dyslexic Students

(Grades 4–12) *Gold Ballroom Salon 3, JW Marriott*
Science Focus: GEN, NGSS

Wendi Laurence (@Createosity; wendi@create-osity.com), Salt Lake City (Utah) School District

Explore the theory and lived experience of integrating an A into STEM to see how it supports English language learners and dyslexic students in the three dimensions of NGSS.

PLI NGSS Toolkit Pathway Session: Using the 5E Instructional Model to Design Learning Sequences

(Grades 6–12) *Platinum Ballroom Salon G, JW Marriott*
Science Focus: GEN, NGSS

Dora Kastel (@Dora_AMNH; dkastel@amnh.org), American Museum of Natural History, New York, N.Y.

Kathy DiRanna (kdirann@wested.org), K–12 Alliance/WestEd, Los Alamitos, Calif.

Using the BSCS 5E Instructional Model, participants will design a NGSS learning sequence that integrates the three dimensions: disciplinary core ideas, practices, and crosscutting concepts.

An NGSS Twist on the Hands-On Classic Enzyme Catalase Lab

(Grades 9–12) *Plaza 3, JW Marriott*
Science Focus: LS1.A, CCC2, SEP1, SEP3, SEP4

Virginia (Gini) Oberholzer Vandergon (virginia.vandergon@csun.edu), **Matthew d’Alessio** (matthew.dalessio@csun.edu), **Dorothy Nguyen-Graff** (dng@csun.edu), and **Brian Foley** (@csunfoley; bfoley@csun.edu), California State University, Northridge

This hands-on workshop takes a classic lab on enzymes and their parameters, incorporating the three dimensions of NGSS and slightly modifying it to fit the new standards.



Developing Graphing Skills for All

(Grades K–12) *502A, Convention Center*
Science Focus: GEN, SEP

Sharon Schleigh, East Carolina University, Greenville, N.C.

Participate in simple strategies that successfully integrate graphing in the science classroom and meet CCSS. Hands-on activities and classroom materials are organized/available for K–12 levels.

NGSS NGSS and 3D Implementation: Tools for Elementary Teachers

(Grades K–6) *515A, Convention Center*
Science Focus: GEN, NGSS

Ana Houseal (ahouseal@uwyo.edu), University of Wyoming, Laramie

Learn about and use tools developed to help elementary teachers understand, evaluate, and revise current lessons to integrate NGSS and 3D teaching strategies. Handouts!



Engineering and Literacy: A Path to Integrated STEM

(Grades P–3) *515B, Convention Center*
Science Focus: ETS1, PS1.A, CCC1, SEP1, SEP5

Kristina Tank (kmtank@umn.edu), Iowa State University, Ames

Tamara Moore (tamara@purdue.edu), Purdue University, West Lafayette, Ind.

We will share STEM integration units that use picture books and engineering design as the “glue” for meaningfully connecting STEM in your classroom.

Creating Teachable Moments for Elementary Science Through Literacy

(Grades K–4) *Kentia Hall C, Convention Center*
Science Focus: GEN, CCC3, CCC6

Chris Campbell (@UTeachTech; ctc@latech.edu) and **Diane Madden** (dmadden@latech.edu), UTeachTech at Louisiana Tech University, Ruston

Having trouble fitting in the required content? Running out of time before you get to science? Come learn to create teachable moments for STEM through self-guided reading and hands-on investigation stations. ELA resources provided.

Elementary Engineers: Build a Balloon-Powered Car

(Grades K–5) *Kentia Hall D, Convention Center*
Science Focus: ETS1, PS2.A, INF

Kristen Tomasicchio (@TransOptions; ktomasicchio@transoptions.org), TransOptions, Cedar Knolls, N.J.

Teach engineering and science principles to grades K–5 by building a small balloon-powered car. Participants will take part as grades K–1, 2–3, or 4–5 students.

Effective Use of Science Talks in the Elementary School Classroom

(Grades K–5) *Kentia Hall E, Convention Center*
Science Focus: GEN, NGSS

Celeste Darling, Boekman Creek Primary School, Wilsonville, Ore.

With the increasing language demands of the NGSS, it is crucial to provide students with strategies to be successful. Join me to engage in effective science instruction with appropriate learning strategies to construct academic vocabulary in science that can be applied in other content areas.

CANCELED

Using Children's Books to Introduce Science Process Skills

(Grades K–5) *Kentia Hall F, Convention Center*
Science Focus: GEN, SEP

Laura Saxton (*lsaxton@jhu.edu*), Johns Hopkins Center for Talented Youth, Baltimore, Md.

Using books like *The Lorax* and *How Big Is a Foot*, this course helps teachers extend reading lessons to introduce science process skills and content.

Helping Students Make Sense of the Science Texts That Include Prose and Graphics

(Grades 1–8) *Kentia Hall H, Convention Center*
Science Focus: GEN, SEP2, SEP8

Mary Van de Kerkhof (*maryvdkerkhof@gmail.com*), IMPACT Sports & Health, Newark, Del.

Gain strategies to help students read and access science information from informational texts.

MISSIONMakers: Shoebox Rover Simple Machines

(Grades 3–7) *Kentia Hall J, Convention Center*
Science Focus: ETS1, CCC2, CCC6, SEP2, SEP6

Whitney Cobb (*@STEM_McREL; @cosmoquestX; wcobb@mcrel.org*), McREL International, Denver, Colo.

Explore simple machines while building a Shoebox Rover, investigating the engineering and technology that empowers solar system exploration...and the science questions that drive them.

Charge Up Your NGSS Classroom by Building a Battery of Batteries

(Grades 6–12) *Kentia Hall N, Convention Center*
Science Focus: ETS1.B, PS1.B, PS3.D

Julie Yu (*jyu@exploratorium.edu*), Exploratorium, San Francisco, Calif.

Engage in a three-dimensional learning experience by building a variety of batteries with safe and readily available materials.

Building a Unit Plan Using American Association of Chemistry Teachers (AACT) Member Benefits and Resources

(Grades 10–12) *Kentia Hall O, Convention Center*
Science Focus: PS

Michael Morgan (*@morganchem; mmorgan@lausd.k12.ca.us*), Francisco Bravo Medical Magnet School, Los Angeles, Calif.

Building a chemistry unit plan is difficult! Let the American Association of Chemistry Teachers (AACT) lessons, activi-

ties, labs, demonstrations, projects, videos, and animations help you.

Engineering for Earthquakes!

(Grades 6–12) *Kentia Hall P, Convention Center*
Science Focus: ESS2.B, ETS1.A, ETS2.B, PS2.A, PS2.C, PS3.C, CCC2, CCC3, CCC6, SEP3, SEP4, SEP6

Eric Lewis (*ericscottlewis18@gmail.com*), San Francisco (Calif.) Unified School District

Andrea Aust (*@KQEDaust; aaust@kqed.org*), KQED, San Francisco, Calif.

Shake up your classroom with a structural engineering design challenge for students. Explore free media resources and build your own shaking table.

Plants and the Three Dimensions of the NGSS

(Grades 3–8) *Kentia Hall R, Convention Center*
Science Focus: LS, CCC, SEP

Marnie Rackmill, Urban Advantage at Queens Botanical Garden, New York, N.Y.

Dig into lessons that use plants to teach disciplinary core ideas while using multiple science practices and crosscutting concepts.

Bring the Three Dimensions to Life with Yeast

(Grades 9–12) *Kentia Hall S, Convention Center*
Science Focus: LS1.A, LS1.B, LS3, CCC2, CCC3, CCC4, SEP1, SEP2, SEP4, SEP7

Traci Richardson (*@scienceteachtk*), Stillwater High School, Stillwater, Okla.

Megan Veldhuizen (*@mrsveldhuizen; mrsveldhuizen@gmail.com*), Lawton (Okla.) Public Schools

Looking for a new activity to help students understand cell division? What about inheritance patterns? Join us for a three-dimensional approach to integrate these concepts.

CESI-Sponsored Session: Write to Do It: Jazzing Up Literacy with Science Olympiad

(Grades K–6) *West Hall B-2, Convention Center*
Science Focus: GEN, SEP

Kelly Price-Colley (*@KPriceGa; kellyrprice@comcast.net*), Forsyth County Schools, Cumming, Ga.

Not another boring writing prompt! Write It Do It has been a competitive Science Olympiad event for many years. Find out how to use this instructional strategy in your day-to-day lessons for increasing your students' technical reading and writing skills.

Teachers' Use of a Mobile Technology Platform to Promote Scientific Inquiry Skills Among Incarcerated Youth with Special Needs

(Grades 8–12) West Hall B-3, Convention Center
Science Focus: GEN, NGSS

Wardell Powell (wapowell@umass.edu), **Christina Bosch**, and **Martina Nieswandt** (mnieswan@educ.umass.edu), UMass Amherst, Mass.

Discussion centers on an NSF project that used a mobile-based curriculum to advance scientific inquiry skills of special needs students incarcerated in juvenile justice settings.

Are You MoBILiSE'd Yet? Modeling Biology Instruction: Leaders in Science and Engineering

(Grades 7–12) West Hall B-5, Convention Center
Science Focus: LS1, CCC1, CCC2, CCC4, CCC6, SEP

Kathy Malone (klmalone60@gmail.com), The Ohio State University, Columbus

Join us to engage in a hands-on biomodeling activity designed by secondary school educators as part of a biology curriculum that is based on the NGSS and modeling instruction.



11:00 AM–12 Noon Exhibitor Workshops
Essential Chemistry: Stoichiometry and Limiting Reactants with Gas Laws

(Grades 9–12) 405, Convention Center
Science Focus: PS1.A, PS1.B, CCC1, CCC5, SEP4, SEP5
Sponsor: PASCO scientific

Tom Loschiavo (loschiavo@pasco.com), PASCO scientific, Roseville, Calif.

Jason Lee (mrlee3@att.blackberry.net), East Georgia State College—Statesboro

How can you tell when a reaction is complete? Why doesn't more reactant always lead to more product? Help students develop a better understanding of stoichiometry and limiting reactants through this hands-on activity using household chemicals and a wireless pressure sensor.

Light and Optics

(Grades 9–12) 407, Convention Center
Science Focus: PS4.A, PS4.B, PS4.C, CCC1, CCC6, SEP2, SEP3, SEP4, SEP5

Sponsor: PASCO scientific

Brett Sackett (sackett@pasco.com), PASCO scientific, Roseville, Calif.

Thomas Hsu (thsu@pasco.com), Ergopedia, Inc., Cambridge, Mass.

How can you bring optics topics into focus? Your students will see optics principles come to life with optics lessons and activities from *Essential Physics*. We will cover properties of light, ray tracing, refraction, and digital images as you get hands on with optics equipment to support required physics concepts.

Explore Solar Energy STEM Concepts with K'NEX Models: Engineering for a Sustainable Future

(Grades 5–9) 510, Convention Center
Science Focus: ETS1, PS3

Sponsor: K'NEX Education

Robert Jesberg (rjesberg@knex.com), K'NEX Education, Hatfield, Pa.

STEM and standards rule with the K'NEX Investigating Solar Energy Set. We will build working solar models. Complete experiments to quantify solar panel efficiency. Compare model speed and distance solar panels from a light or the wattage of bulbs. Isn't this the way you want your students to learn renewable energy STEM concepts? Wind and water models will also be demonstrated.

11:00 AM–12:30 PM Hands-On Workshop Igniting Student Interest and Learning in Engineering: Classroom Applications/Tools/Resources from the 2016 Northrop Grumman Foundation Teachers Academy Fellows

(Grades 5–9) *Platinum Ballroom Salon F, JW Marriott*

Science Focus: GEN, NGSS

Wendy Binder, SPIR Project Director, NSTA, Arlington, Va.

Jennifer Basalari (jennifer.basalari@ocps.net), Lakemont Elementary School,, Winter Park, Fla.

Donna Miller, Windy Hill Middle School, Owings, Md.

Charles “Andy” De Seriery (@adeseriery; adeseriery@wiseburn.k12.ca.us), R.H. Dana Middle School, Hawthorne, Calif.

Come learn and experience how a cohort of middle school teachers gained a better understanding of the knowledge and skills needed in the corporate and industrial community for a scientifically and technologically literate workforce and how these experiences may be translated into classroom applications.

11:30 AM–12 Noon Presentations

SCST-Sponsored Session: Introducing STEAM into the College Science Curriculum

(College)

Georgia I, JW Marriott

Science Focus: ESS3, ETS1, LS2

Brian Shmaefsky ([@Drshmaefsky](https://twitter.com/Drshmaefsky); brian.r.shmaefsky@lonestar.edu), Lone Star College–Kingwood, Tex.

Encounter a unique way of incorporating the arts into college-level STEM courses. Students in this project used informal education to reinforce science content.

Build a Balloon-Powered Car to Discover Newton’s Laws and the Effect of Friction

(Grades 5–8)

Kentia Hall M, Convention Center

Science Focus: PS2, SEP

Krista Hachadoorian ([@KristaHach](https://twitter.com/KristaHach)), H.B. Thompson Middle School, Syosset, N.Y.

Hear how students can engineer a “car” with easy-to-find and inexpensive materials that demonstrate Newton’s laws. Instructions provided on building and racing cars powered with only a balloon.

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Float Your Boat: An Engineering Challenge

(Grades 6–8) *Kentia Hall Q, Convention Center*

Science Focus: ETS1.B, PS2.A, SEP5

Allison Bogart (@AllieBBogart; *bogarta@bcisd.com*), Paul Cato Middle School, Bakersfield, Calif.

Anchor ideas in the science classroom with progressions that lead students from learning about properties of matter, to building their own boats.

Using Real-Life Data to Augment Science Teaching

(Grades 6–College) *West Hall B-4, Convention Center*

Science Focus: GEN, SEP4

Lisa Neesemann (*lisa.neesemann@gmail.com*), Teachers College, Columbia University, New York, N.Y.

Learn how to find, evaluate, and incorporate current, active data sets from reputable researchers effectively in your classroom instruction. Links and materials will be provided.

11:30 AM–1:00 PM Exhibitor Workshop

Group Work: Using Student Collaboration in the Middle School Science Classroom

(Grades 6–9) *150 AB, Convention Center*

Science Focus: GEN, SEP7, SEP8

Sponsor: AEOP eCYBERMISSION

Matthew Hartman, eCYBERMISSION Content Manager, NSTA, Arlington, Va.

Grades 6–9 students either love or loathe the idea of working in a group. The science and engineering practices in the NGSS involve students collectively making sense of the world around them by working in groups—plus this enhances learning for all students. We will cover aspects of quality group work and how it can be beneficial to the middle school science class through hands-on activities. Discussion includes how the online STEM competition eCYBERMISSION sets up and uses groups for investigations.

11:45 AM–12:15 PM Meeting

NMLSTA Board and Membership Meeting

(By Invitation Only) *Diamond Ballroom Salon 8, JW Marriott*

All NMLSTA members are invited to attend this board meeting. Meet the officers and board members and learn ways that you can become more involved.

12 Noon–1:30 PM Exhibitor Workshops

Structuring Discussion to Be Equitable and Rigorous

(Grades K–12) *150C, Convention Center*

Science Focus: PS2, PS3, CCC2, SEP2, SEP8

Sponsor: Activate Learning

Ellen Mintz, Charleston County School District, Charleston, S.C.

Heather Milo, Activate Learning, Greenwich, Conn.

The *Framework* promotes learning as a fundamentally social endeavor supported by collaborative and communicative norms. Yet, sustaining these norms requires teachers to examine and support K–12 students' ways of talking so they all are able to articulate, make sense of, and evaluate each other's ideas. Walk away with ready-to-use tools that foster and assess productive talk, and qualify for a chance to win an IQWST unit at the end!

Science and Engineering Practices in the NGSS

(Grades K–5) *153A, Convention Center*

Science Focus: GEN, SEP

Sponsor: TCI

Thoa Tran, TCI, Mountain View, Calif.

Join TCI and participate in an engaging Bring Science Alive! investigation that has your elementary students developing solutions and making sense of the natural and designed world. Experience this lesson from the student perspective as you carry out investigations, build models, and learn skills to analyze and interpret data, develop solutions, and communicate their methods just like professional scientists and engineers!

Supporting Excellence in STEM Programs and Teaching Through STEM Certification

(General) *153B, Convention Center*

Science Focus: GEN, NGSS

Sponsor: STEMscopes™ from Accelerate Learning

Judy Zimny and **Whitney Dove**, STEMscopes from Accelerate Learning, Houston

Our National Certification of STEM Teaching recognizes excellence at the classroom, campus, and district levels. Through participation in the certification programs, teachers, campuses, and districts will be immersed in an experience that assists them in understanding and aligning their practices to the research defining quality STEM instruction.

Reconceptualizing Chemistry Through Play: Ionic Bonding

(Grades 7–12)

153C, Convention Center

Science Focus: PS1.A, PS1.B

Sponsor: PlayMada Games

Lindsay Plavchak (lindsay@playmadagames.com) and **Edward Wang** (edwardw@playmadagames.com), PlayMada Games, New York, N.Y.

Discover a new way to teach fundamental chemistry ideas in a fun and engaging way! Explore Collisions™ and experience how gameplay can provide high school students with a deepened, enduring understanding of key concepts in the system of chemistry. Bring your laptop or tablet for this lively hands-on session!

Using Problem-Based Learning to Up Your NGSS Game

(Grades K–12)

301 AB, Convention Center

Science Focus: GEN, NGSS

Sponsor: Pearson

Michael Padilla, 2005–2006 NSTA President, and Professor Emeritus, University of Georgia and Clemson University, Clemson, S.C.

Join Pearson author Mike Padilla as he brings PBL into the science classroom to help prepare students for future science and technology careers.

What Does Conceptual Modeling Look Like in Grades K–5 Classrooms?

(Grades K–5)

303 AB, Convention Center

Science Focus: PS

Sponsor: Delta Education/School Specialty Science–FOSS

Brian Campbell, The Lawrence Hall of Science, University of California, Berkeley

Join FOSS Next Generation Program developers to explore how students construct models with about phenomena. Experience active investigations from two different grade levels and create models about physical science concepts. Find out how student models can be used to guide future instruction within the FOSS program.

Wind Turbine: An NGSS Approach to Understanding Renewable Energy

(Grades 6–12)

304 AB, Convention Center

Science Focus: ETS

Sponsor: CPO Science/School Specialty Science

Erik Benton, CPO Science/School Specialty Science, Nashua, N.H.

Kat Mills, School Specialty Science, Rosharon, Tex.

Wind is a plentiful energy source, but is the energy transfor-

mation really clean? Investigate costs and energy efficiency using an innovative model. Participants build a wind turbine, analyze costs involved, and then compete against others to see who can get the most from their engineered design. Door prizes. Free STEM resources.

INF Imaginative Thinking, Teamwork, AND Robots: FIRST® LEGO® League Builds More than Robots

(Grades 4–8)

304C, Convention Center

Science Focus: ETS, INF

Sponsor: LEGO® Education and FIRST

Jenny Nash, LEGO Education, Billund, Jylland, Denmark
Betsy Daniels, FIRST, Manchester, N.H.

FIRST is developing tomorrow's innovators today. Discover how the popular FIRST LEGO League program challenges students to research and develop a solution to a real-world problem through designing, building, and programming a robot using LEGO MINDSTORMS® Education EV3. This session will be hands on as you work with robotics and experience the joy of learning with FIRST.

Comparative Vertebrate Anatomy with Carolina's Perfect Solution® Specimens

(Grades 9–12)

306 AB, Convention Center

Science Focus: LS, CCC, SEP

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Explore animal diversity by comparing and contrasting anatomical adaptations of the pig, rat, dogfish, and frog. Participants use hands-on dissection to identify characteristics of these popular vertebrates. This is an excellent comparative dissection activity featuring our very best Carolina's Perfect Solution specimens.

Keep Calm and Chemistry On: Successful Lab Activities for the New Chemistry Teacher

(Grades 9–12)

308 AB, Convention Center

Science Focus: LS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Looking for lab activities that work every time, not just periodically? Explore easy, engaging, safe chemistry activities that are sure to produce a reaction in your students. Whether you're new to chemistry or feeling out of your element, you will learn new ways to create excitement with hands-on labs and demonstrations.

Bring Visual Science into K–5 Classrooms: It’s a Game Changer!

(Grades K–5) 309, Convention Center

Science Focus: GEN

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Spark student interest and improve outcomes! Engage science instruction using Tigttag Science real-world STEM videos, interactive content, and a hands-on activity. A blend of compelling online learning tools with hands-on fun is guaranteed to delight you and your students! Watch out! It might get messy.

Biology with Vernier Using Chromebook

(Grades 7–College) 402A, Convention Center

Science Focus: ETS2, LS1, LS2

Sponsor: Vernier Software & Technology

Rick Rutland (info@vernier.com), Five Star Education Solutions, Stockdale, Tex.

Use Vernier sensors with Chromebooks to conduct hands-on biology experiments such as “Cellular Respiration” and “Enzyme Action.” See a demonstration of our new Go Direct wireless and USB sensors that connect directly to Chromebooks—no interface needed. Explore our wide range of digital tools that promote student understanding of biology concepts.

Thermal Analysis

(Grades 7–College) 402B, Convention Center

Science Focus: ETS2, PS3

Sponsor: Vernier Software & Technology

Frances Poody (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

This engaging hands-on workshop uses the FLIR ONE infrared camera and free Vernier Thermal Analysis app for iOS to explore the hidden world of infrared radiation. Discover exciting phenomena and analyze temperature data versus time without introducing the thermal mass of a temperature probe. Export data to Graphical Analysis.

New Inquiry Investigations for AP Physics 1 and 2 from Flinn Scientific

(Grades 9–College) 403A, Convention Center

Science Focus: PS

Sponsor: Flinn Scientific, Inc.

Gus Alvarez ([galvarez@flinnsci.com](mailto:g Alvarez@flinnsci.com)) and **Mike Marvel** (m marvel@flinnsci.com), Flinn Scientific, Inc., Batavia, Ill.

Join Flinn Scientific as we share experiments correlated to the new AP Physics 1 and 2 curriculum frameworks. Four of

our new 31 guided inquiry investigations will be presented, two aligned with AP Physics 1 learning objectives and science practices and two aligned with AP Physics 2. Prelab preparation and introductory activities have been optimized to help you effectively guide students and provide maximum opportunities for inquiry. Handouts for each experiment! *AP is a trademark of the College Board.*

Telling Stories and Using Statistics to Understand Selection

(Grades 7–12) 403B, Convention Center

Science Focus: LS4, SEP4, SEP5, SEP6, SEP7

Sponsor: HHMI BioInteractive

Robert Cooper, Pennsbury High School, East Campus, Fairless Hills, Pa.

Karen Lucci, Hopewell Valley Central High School, Pennington, N.J.

Natural selection is a touchstone process, taught at different grade levels with different levels of understanding. How do we engage students and help them confront misconceptions while developing true understandings? See stories of real organisms from BioInteractive, including statistics, free resources, and activities for middle school through AP.

Fantastical Chemistry Demos for All Classrooms

(Grades 3–12) 408A, Convention Center

Science Focus: PS1.A, PS1.B, PS2.B, PS3.B, PS3.D, PS4.B

Sponsor: Educational Innovations, Inc.

William Richey, Xenia High School, Xenia, Ohio

These super fun and exciting chemistry demonstrations can be used by all teachers at any level to get classrooms of students excited about the amazing world of chemistry. These easy and practical demonstrations will truly show your students what we already know—that science is fun!

Engineering for the NGSS Middle School Science Classroom

(Grades 6–8) 408B, Convention Center

Science Focus: ETS1, PS2.A, PS2.B

Sponsor: Houghton Mifflin Harcourt

Michael DiSpezio (icaris@aol.com), HMH Author, Broadcast Host, and Global Educator, North Falmouth, Mass.

Construct your own propeller-powered craft as you learn best practices for addressing the engineering standards in the grades 6–8 NGSS classroom. Explore how the disciplinary core ideas for physical science and engineering design are seamlessly integrated into an engaging, inexpensive, and student-driven classroom project.

The Mystery of Poisonous Newts: Phenomena, 3D Instruction, and Amplify Science for Grades 6–8

(Grades 6–8)

409 AB, Convention Center

Science Focus: LS

Sponsor: Amplify

Suzanna Loper (amplifyscience@berkeley.edu) and **Carissa Romano** (amplifyscience@berkeley.edu), The Lawrence Hall of Science, University of California, Berkeley

Experience how students investigate a population of deadly newts while figuring out principles of natural selection and engaging in three-dimensional learning. Participants will get a hands-on dive into Amplify Science for grades 6–8, engaging with this new K–8 NGSS-designed curriculum from The Lawrence Hall of Science.

Beauty and the Beak: How STEM/3D Printing Rescued a Bald Eagle

(Grades 2–6)

410, Convention Center

Science Focus: ETS, LS, CCC, SEP

Sponsor: Cornell Lab of Ornithology

Karen Ostlund, 2012–2013 NSTA President, and The University of Texas at Austin

Deborah Lee Rose, Author, Walnut Creek, Calif.

Brian Sockin, Cornell Lab Publishing Group, Apex, N.C. The true inspiring story of Beauty—the bald eagle that received a 3D-printed prosthetic beak—powerfully engages students in STEM learning. How did a raptor biologist and engineer use biology, engineering, and technology to help Beauty? Resources provided include a new nonfiction children’s book preview, educational guide, STEM activities, and information for 3D-printing Beauty’s beak.

Teach Biodiversity By Building Interactive Virtual Bio Domes!

(Grades 4–7)

503, Convention Center

Science Focus: LS2.A, LS2.C

Sponsor: Springbay Studio Ltd.

Jane Ji, Springbay Studio Ltd., Toronto, Ont., Canada

Come explore the wetland and oceanic habitats, along with all the amazing species that live within. Build marshes, coral reefs, and many more habitats from scratch. Help plants and animals flourish by learning and applying the laws of nature. Engage your students in biology through engaging play and problem solving. Try “iBiome-Wetland” (awarded Best Learning STEM App) and “iBiome-Ocean” (a newly released sequel), and experience an innovative way to learn about biodiversity in the water world.



Zombie Apocalypse!

(Grades 6–12)

511 AB, Convention Center

Science Focus: GEN

Sponsor: Texas Instruments

Jeffrey Lukens, Sioux Falls (S.Dak.) School District

Be part of a zombie apocalypse! Learn about disease spread—modeling using simulations and fun story lines about a zombie outbreak. Applicable for middle school and high school, this workshop is sure to scare you and your little zombies with its exciting Hollywood themes used to engage students in learning science!

Engaging Next-Generation Labs You Can Conduct and Grade in Under an Hour

(Grades 5–10)

511C, Convention Center

Science Focus: GEN, NGSS

Sponsor: Inq-ITS

Janice Gobert (jgobert@wpi.edu), Rutgers University, New Brunswick, N.J.

Charity Staudenraus (charity@appendis.com), Appendis, Worcester, Mass.

Why spend every weekend grading lab reports when Inq-ITS will do the grading for you? Join Janice Gobert from Rutgers University as we explore Inq-ITS Virtual labs, 3D assessment tools, and real-time alerts to make monitoring student growth a cinch. Walk away with a detailed, easy-to-understand rubric grounded in research to use with hands-on labs and a free trial to use Inq-ITS for 30 days. BYOD!



Quantum in the Classroom: Wave-Particle Duality

(Grades 10–College)

512, Convention Center

Science Focus: PS4, CCC, SEP

Sponsor: Perimeter Institute for Theoretical Physics

Damian Pope, Perimeter Institute for Theoretical Physics, Waterloo, Ont., Canada

The wave-particle duality is one of the deepest mysteries of quantum mechanics. Come explore hands-on activities that introduce students to this vitally important concept in the quantum world. The Challenge of Quantum Reality multimedia educational resource was designed by experienced educators in collaboration with Perimeter Institute researchers.

Cutting Canyons

(Grades 6–8)

518, Convention Center

Science Focus: ESS2.A, ESS2.C, ESS2.D, ESS3.C, CCC3, CCC4, CCC5, SEP2, SEP3, SEP4, SEP6

Sponsor: Lab-Aids, Inc.

Lisa Kelp, Lab-Aids, Inc., Ronkonkoma, N.Y.

Turn a stream table demo into an opportunity for students run experiments at their own desks! Using the Lab-Aids Mini Stream Table, we investigate the dynamics of stream erosion and deposition and how they relate to the issue of increasing population and development needs in a fictitious town. This activity is developed by SEPUP using results from field testing and research in best practice.

12 Noon–2:00 PM Networking Opportunity Society of Elementary Presidential Awardees (SEPA) Luncheon

(By Invitation Only)

Atrium 3, JW Marriott

For more information, please visit www.sepamembers.weebly.com.

12:30–1:00 PM Presentations

NGSS as a Boundary Object for Constituting a Community of Practice

(General)

Atrium 2, JW Marriott

Science Focus: GEN, NGSS

Todd Campbell (@dtcampbe; todd.campbell@uconn.edu) and **Laura Rodriguez** (@ljsrodriguez; laura.rodriguez@uconn.edu), University of Connecticut, Storrs Mansfield

Xavier Fazio (xfazio@brocku.ca), Brock University, St. Catharines, Ont., Canada

Thomas McKenna (@tjscience; tjmckenna01@gmail.com), Connecticut Science Center, Hartford

We will introduce a community of practice that supports novice teachers, mentor teachers, and university science education researchers in learning about and implementing NGSS.

INF School-Business Partnership United and Ignited Through STEM: NGSS in Action!

(Grades K–12)

Gold Ballroom Salon 1, JW Marriott

Science Focus: INF, NGSS

Pam Vaughan, Camden Fairview School District, Camden, Ark.

Receive highlights from a unique Arkansas partnership between Camden Fairview Schools and Lockheed Martin Missiles and Fire Control. NGSS-focused activities, formats, and demonstrations will be shared.

Digital Science Notebooking: iMovie and Apps Smashing Meet Science and Engineering

(Grades 3–12)

Platinum Ballroom Salon E, JW Marriott

Science Focus: ETS

Charles Sincerbeaux, George Washington Elementary School, White Plains, N.Y.

Find out how elementary students are using digital technology to create digital notebooks filled with voice, images, slow-motion video, and links for reflection, sharing, and collaboration.

Portfolio-Based Assessments in Place of Exams*(General) Platinum Ballroom Salon I, JW Marriott*

Science Focus: GEN, NGSS

Borislav Bilash (bbilash@pascack.k12.nj.us), Pascack Valley High School, Hillsdale, N.J.

Once we had finals—now our students submit video portfolios to demonstrate their mastery level of the NGSS performance expectations. Find out how.

Exploring Time-Series Data in Lakes*(Grades 9–College) Platinum Ballroom Salon J, JW Marriott*

Science Focus: ESS2.C, INF

Janet Vail (vailj@gvsu.edu), Robert B. Annis Water Resources Institute, Muskegon, Mich.

Time-series data are key to exploring environmental patterns and cause-effect relationships. A lesson will be presented using student-friendly times-series lake data sets available online.

PEEP-ing into Prekindergarten Science Instruction*(Preschool) Kentia Hall A, Convention Center*

Science Focus: GEN

Gerrie Wiersberg (gwiersbe@wcooe.org), Wicomico County Public Schools, Salisbury, Md.

Explore free resources from public television's *Peep and the Big Wide World*. Learn how to engage early learners in hands-on science using this STEM curriculum.

Teaching Elementary Forensic Science Through Fairy Tales*(Grades 2–6) Kentia Hall B, Convention Center*

Science Focus: GEN

Rebecca Lewis (rlewis@baldwinschool.org), The Baldwin School, Bryn Mawr, Pa.

Combine the focus of STEM and literacy in a topic that is sure to engage the littlest scientists. Students love mystery so here's their chance to solve some of the mysteries in some of the most loved fairy tales.

**12:30–1:30 PM Science in the Community
Featured Presentation (Panel)****The Development of a Positive STEM Identity***(General)**152, Convention Center*

Science Focus: GEN

**Moderator:**

Angela Calabrese Barton ([@calabresebarton](https://twitter.com/calabresebarton); acb@msu.edu), Professor, Dept. of Teacher Education, Michigan State University, East Lansing

Panelists:

Jeff Davis ([@ca_afterschool](https://twitter.com/ca_afterschool); jdavis@afterschoolnetwork.org), Executive Director, California AfterSchool Network, Sacramento

Wendy Ward Hoffer ([@wendywardhoffer](https://twitter.com/wendywardhoffer); whoffer@pebc.org), Senior Director of Education, PEBC, Denver, Colo.

Yeni Violeta Garcia ([@DrVioletaGarcia](https://twitter.com/DrVioletaGarcia); violeta@stem-learningbydesign.com), STEM Initiatives Consultant & Program Designer, STEM Learning By Design, Denver, Colo.

Informal science experiences are especially important for developing a positive STEM identity. Angela Calabrese Barton will moderate this panel discussion on the development of a positive STEM identity.

A professor in science education and teacher education at Michigan State University, Angela Calabrese Barton is a leader in the areas of equity and social justice in science education, with a particular emphasis on the urban context. Drawing critically-oriented research methods (multi-sited ethnography, collaborative design-based research, and case study), she investigates youth learning and identity work across settings and over time. She also works closely with teachers to design/adapt curriculum/pedagogy toward incorporating youths' cultural knowledge and experiences.

Angela has authored Teaching Science for Social Justice, and her 2012 book, Empowering Science and Math Education in Urban Schools, co-authored with Edna Tan, won the AERA Division B Outstanding Book of the Year award. Her most recent project involves working with teachers to design teacher tools and materials to teach engineering for sustainable communities at the middle grade levels. In addition, she co-edited the Journal of Research in Science Teaching from 2011 to 2015.

12:30–1:30 PM Featured Presentation



A New Era: Beyond Science and Literacy Integration

(General)

Petree Hall C, Convention Center

Science Focus: GEN



Jacqueline Barber (@jgbarber; jbarber@berkeley.edu), Associate Director, The Lawrence Hall of Science, and Director of the Hall's Learning Design Group, University of California, Berkeley

President: Kavita Gupta, Strand Leader, Mission Possible: Equity for Universal Access, and Monta Vista

High School, Cupertino, Calif.

We used to call it integration of science and literacy. Now we recognize that reading science text, engaging in science talk, and constructing written and oral scientific arguments is simply part and parcel of science. Jacqueline will discuss this pivotal moment in science education, why it promises to transform how we think about teaching and learning science, and why that's a good thing!

Jacqueline Barber's research interests include science and literacy integration, argumentation in the science classroom, increasing access to science learning for English language learners, the impact of educative curriculum materials on teacher and student learning, and curriculum design practices. She has worked for the University of California at Berkeley's Lawrence Hall of Science for over 35 years and is currently Associate Director. She has designed two curriculum programs: Seeds of Science/Roots of Reading and Amplify Science, a new literacy-rich curriculum program addressing the NGSS.

12:30–1:30 PM Presentations

SCST-Sponsored Session: Outstanding Undergraduate Science Teacher Award 2015 Presentation (Making Education in the Sciences Accessible and Successful for Students with Disabilities)

(College)

Georgia 1, JW Marriott

Science Focus: GEN

Todd Pagano (tepnts@rit.edu), Rochester Institute of Technology, Rochester, N.Y.

Join us for a presentation by Todd Pagano, the Outstanding Undergraduate Science Teacher Awardee for 2015. A professor of Chemistry at Rochester Institute of Technology/National Technical Institute for the Deaf, he will share the goals of the Laboratory Science Technology (LST) program at Rochester Institute of Technology to produce graduates with strong foundations in applied science, hands-on laboratory applications, and "soft skills" necessary for competitive employment as laboratory scientists. The LST program is a one-of-kind Chemical Technology program specifically for deaf and hard-of-hearing students. Strategies and practices for making science curricula accessible and increasing student success will be discussed with the goal of renewing interest in broadening participation of students with disabilities in the sciences.

Making Connections to Crosscutting Concepts by Developing Powerful Essential Questions

(Grades 7–12)

Gold Ballroom Salon 2, JW Marriott

Science Focus: GEN, CCC

Jennifer Weibert (jweibert@fcoe.org), Fresno County Office of Education, Fresno, Calif.

Get the details on a successful tool that makes the crosscutting concepts a driving force—The Big Idea Page—which focuses on essential questions to drive a unit.

Science Leaders Roundtable

(Grades P–12)

Olympic 1, JW Marriott

Science Focus: GEN

John Olson (@JohnCasperOlson; john.c.olson@state.mn.us), NSTA Director, Coordination and Supervision of Science Teaching, and Minnesota Dept. of Education, Roseville
Share ideas and concerns for leadership at the state, district, and school levels with members of the NSTA Coordination and Supervision Committee. Topics may include leaderships teams, elementary curricula, safety, resource vetting, and professional development.

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Friday, March 31	7:30 AM–5:30 PM
Saturday, April 1	7:30 AM–4:00 PM
Saturday, April 2	8:00 AM–12:30 PM

NSTA National
Science
Teachers
Association

ASTE-Sponsored Session: Using Web GIS and Google Earth to Investigate Environmental Issues

(Grades 6–College) *Platinum Ballroom Salon A, JW Marriott*
Science Focus: ESS, CCC

Alec Bodzin (*amb4@lehigh.edu*), Lehigh University, Bethlehem, Pa.

Learn to use Web GIS and Google Earth to investigate local and global environmental issues related to climate change, energy resources, and land use change.

STEM Road Map Curriculum Series for Grades 9–12: Construction Materials

(Grades 9–12) *Platinum Ballroom Salon B, JW Marriott*
Science Focus: ETS, PS1, CCC, SEP

Erin Peters-Burton (*epeters1@gmu.edu*), George Mason University, Fairfax, Va.

Carla Johnson (*@drcarlaj*; *carlacjohnson@purdue.edu*), Purdue University, West Lafayette, Ind.

Receive an overview of the upcoming NSTA Press® curriculum series *STEM Road Map for High School* and explore one of its eight high school modules.

Academic Language—It’s More than Vocabulary: Teaching Language Function, Discourse, and Syntax in the Sciences

(Grades 5–12) *Platinum Ballroom Salon D, JW Marriott*
Science Focus: GEN

Lauren Rentfro (*rentfla@lewisu.edu*) and **Christopher Blogg** (*cjblogg34@comcast.net*), Lewis University, Romeville, Ill.

Tiffany Albers-Lopez, Marian Catholic High School, Chicago Heights, Ill.

Vocabulary instruction in science is very important, but what next? Language function, discourse, and syntax are critical components of teaching students to communicate science.

LiMPETS: Sandy Beach and Rocky Intertidal Monitoring in Your National Marine Sanctuaries

(Grades 6–College) *Platinum Ballroom Salon H, JW Marriott*
Science Focus: ESS2, LS2.A, SEP3, SEP4, SEP8

Claire Fackler (*@sanctuaries*; *claire.fackler@noaa.gov*), NOAA Office of National Marine Sanctuaries, Santa Barbara, Calif.

LiMPETS stands for Long-term Monitoring Program and Experiential Training for Students. Hear about this STEM-based program that gives students an opportunity to conduct real scientific observations by monitoring sandy beach and rocky intertidal ecosystems.

Common Learning Experiences in High School Science
(Grades 9–12) *Plaza 1, JW Marriott*

Science Focus: GEN, NGSS

Katrina Rotter, San Francisco (Calif.) Unified School District

How is a large urban district implementing NGSS through a teacher-developed core curriculum for high school science? Examine districtwide common learning experiences designed using the 5E model and discuss the impact on science learning and teaching!

Cross-Curricular Projects: Thinking Big and Making It Happen

(Grades 9–12) *Plaza 2, JW Marriott*
Science Focus: GEN

William Burgess (*@stemburgess*; *wburgess@wcpss.net*) and **Jennifer Parker** (*jparker6@wcpss.net*), Wake STEM Early College High School, Raleigh, N.C.

Join us for ideas, resources, and insights into planning and implementing cross-curricular, Project-Based Learning, STEM lessons from both the teacher and student perspective.

Differentiating K–6 Science Instruction to Make Science Accessible to ALL Children

(Grades K–6) *501C, Convention Center*
Science Focus: GEN, NGSS

Donna Knoell (*dknoell@sbcglobal.net*), Educational Consultant, Overland Park, Kans.

Enable all students to investigate, explore, inquire, participate, and achieve success. Discussion centers on the fundamentals of differentiation in the K–6 science classroom, as well as strategies for differentiating effectively, making science accessible to ALL, and maximizing participation and learning. Handouts!

3D Derby: Engineering the Future

(Grades 2–8) *504, Convention Center*
Science Focus: GEN, SEP1, SEP2, SEP6

Margie Hawkins (*@margiebg*; *margiebg@gmail.com*), Winfree Bryant Middle School, Lebanon, Tenn.

Discover how to use 3D printing technology in an innovative STEM project for students and an engaging after-school event for their families.

Veni, Vidi, Vici: Design, STEM, and Makerspaces*(Grades 8–11)* 505, Convention Center

Science Focus: ETS

Vito Dipinto (*vdipinto@nl.edu*), National Louis University at Wheeling, Ill.**Andrew Bean** (*apbean@cps.edu*), Dever Elementary School, Chicago, Ill.**Frank Prill** (*frankprilljr@gmail.com*), Bolingbrook High School, Bolingbrook, Ill.

Learn how to implement makerspaces as a way to bring the NGSS engineering practices into your secondary physical science classroom.

Chemistry Concepts STEAM-ified*(Grades 5–12)* 507, Convention Center

Science Focus: PS1.A, PS1.B

Julie Smith (*julieltapresident@gmail.com*), Lennox Middle School, Lennox, Calif.

Animations, online resources, and a paper chemistry set are used to teach NGSS chemistry disciplinary core ideas: modeling atomic structure, periodic table organization, and chemical bonding.

NGSS Phenomena-Questions-Model*(Grades 2–12)* 515A, Convention Center

Science Focus: ESS1.B, LS4.B, PS1.A, CCC1, CCC2, CCC3, CCC4, SEP1, SEP2, SEP4, SEP6, SEP8

Arthur Beauchamp (*acbeauchamp@ucdavis.edu*), University of California, Davis

Three-dimensional learning is supported by lessons that employ phenomena, questions, and models. What is meant by these terms and what characteristics make them useful for instruction?

Science Learning at Your Window!*(Grades P–8)* Kentia Hall K, Convention Center

Science Focus: LS, INF

Lindsay Glasner (*lig27@cornell.edu*), The Cornell Lab of Ornithology, Ithaca, N.Y.

Come get a window bird feeder and discover how it can attract birds and student interest! Take home activities and ideas to teach science content through birds.

Cars: Science Lessons That DRIVE Science Concepts*(Grades 7–12)* Kentia Hall N, Convention Center

Science Focus: ETS, PS2, PS3, CCC4, CCC5, CCC6, SEP2, SEP4

Andrew Nydam (*andrewnydam@hotmail.com*), Polymer Ambassador, Olympia, Wash.

Students love cars and tolerate school. Complex science con-

cepts can be introduced and explored using the automobile as the focus. We will cover energy transformations, chemical reactions, gas laws, and more.

Classroom-Based Assessment Tasks and Rubrics: Using Student Responses as Evidence of Three-Dimensional Learning*(Grades 6–8)* Theatre (411), Convention Center

Science Focus: PS, CCC, SEP

Brian Gane (*bgane@uic.edu*), The University of Illinois at Chicago**Kevin McElhaney** (*kevin.mcelhaney@sri.com*), SRI International, Menlo Park, Calif.**Joseph Krajcik** (*@krajcikjoe*; *krajcik@msu.edu*) and **Phyllis Haugabook Pennock** (*phyllishpennock@gmail.com*), CREATE for STEM Institute, Michigan State University, East Lansing

Explore classroom-based approaches for using NGSS-focused physical science assessment tasks and rubrics to support students' progress toward meeting NGSS performance expectations.

CESI-Sponsored Session: Using Fictional Picture Books to Do Science: How Is It Possible?*(Grades 1–5)* West Hall B-2, Convention Center

Science Focus: LS, SEP1

Catherine Bruguiere (*catherine.bruguiere@univ-lyon1.fr*), University of Lyon, France**Sue Dale Tunnicliffe** (*lady.tunnicliffe@mac.com*), Reader in Science Education, Bracknell, U.K.

We propose to explore which and how fictional picture books can enable young children to ask questions and define problems about animal metamorphosis.

Modeling for Complex Student-Created Explanations of Real-World Phenomena (Secondary Science Classrooms)*(Grades 6–12)* West Hall B-4, Convention Center

Science Focus: GEN, CCC, SEP2

Karin Lohwasser (*loh2o@uw.edu*) and **Michelle Salgado** (*@SalgadoScience*; *msalgado@uw.edu*), University of Washington, Seattle**Amy Peterson**, College Place Middle School, Lynnwood, Wash.

Engage in ideas about modeling throughout an instructional unit, including model revisions and sense-making procedures that support the implementation of NGSS in secondary classrooms.

12:30–1:30 PM Hands-On Workshops

DuPont Presents: The Science of Keeping Food Fresh

(Grades 9–12) Diamond Ballroom Salon 1, JW Marriott

Science Focus: PS, SEP3, SEP4, SEP8

Kristin Witte (@thatisso_witte; kwitte@longhornpower.org), Shickley High School, Shickley, Neb.

Mitch Davis (@MLDavis2012; mitch.davis@hallco.org), North Hall High School, Gainesville, Ga.

Discover the chemistry of how food additives make your food safe and preserved.

NARST-Sponsored Session: Using Multiple Models and Crosscutting Concepts to Support Students' Three-Dimensional Knowledge About Water Systems

(Grades 5–9) Diamond Ballroom Salon 2, JW Marriott

Science Focus: ESS2.C, CCC4, CCC5, SEP2, SEP4

Sarah Fick (@SarahFick30; ficksj@wfu.edu), Wake Forest University, Winston-Salem, N.C.

Anna Maria Arias (arias588@gmail.com), Illinois State University, Normal

Jonathan Baek (jbaek@hc.wash.k12.mi.us), Honey Creek Community School, Ann Arbor, Mich.

We will explore in-depth an approach to NGSS three-dimensional units by examining a middle school unit focused on Earth science on the role of water: MS-ESS2-4. Workshop includes opportunities to apply the concepts.



NSTA Press® Session: Next Time You See...

(Grades P–5) Diamond Ballroom Salon 3, JW Marriott

Science Focus: GEN, NGSS

Emily Morgan (@EmilyMorganNTYS; emily@pictureperfectscience.com), Picture-Perfect Science, West Chester, Ohio
The author of the *Next Time You See* series from NSTA Press will share books and activities to inspire a sense of wonder about the natural world.

PLI NGSS Toolkit Pathway Session: Using Evidence of Learning Specifications to Develop Performance Tasks

(Grades 6–12) Platinum Ballroom Salon G, JW Marriott

Science Focus: GEN, NGSS

Kathy DiRanna (kdirann@wested.org), K–12 Alliance/WestEd, Los Alamitos, Calif.

Join us and use a tool to engage in a process to create assessments that meet the performance expectations based on task specifications.

Thinking Small: Nanotechnology in the High School Classroom

(Grades 9–12)

Plaza 3, JW Marriott

Science Focus: ESS3, LS1, PS1, CCC3, SEP5

Lacey Huffling, Georgia Southern University, Statesboro
Come see and experience firsthand NGSS lessons developed by teachers to incorporate nanotechnology into high school science. Leave with resources to use in your classroom.



NGSS@NSTA Forum Session: How Do We Grade Students in a Three-Dimensional Classroom?

(Grades 6–12)

151, Convention Center

Science Focus: GEN, NGSS

James Clark (jclark@slzsd.org), San Lorenzo (Calif.) Unified School District

Samantha Johnson (@SciInnovations; smjohnson@slzsd.org), Arroyo High School, San Lorenzo, Calif.

Assessing NGSS performance expectations will require that students have multiple assessment opportunities to demonstrate their understanding of these expectations. Come see how formative assessments and standards-based grading can be the perfect fit with NGSS.



Get Energized: Problem-Based Learning EQUALS Success in Science and Literacy

(Grades 1–8)

502A, Convention Center

Science Focus: ESS3.A, PS3, CCC, SEP

Elizabeth Edmondson (ewedmondson@vcu.edu), Virginia Commonwealth University, Richmond

Anne Mannarino (amannarino@regent.edu), Regent University, Virginia Beach, Va.

Participate in integrated science and literacy tasks embedded in an energy-themed Problem-Based Learning (PBL) unit. Leave with ways to energize your classroom.



Shifting Toward Student-Designed Experiments

(Grades K–12)

502B, Convention Center

Science Focus: INF, SEP3

Terry Brown (@tabsciguy; t.brown@tvdsb.on.ca) and **Erica Alexander** (@Alexander1Ej; e.alexander1@tvdsb.on.ca), Thames Valley District School Board, London, Ont., Canada
Start with a simple demonstration. Students replicate the demonstration to develop necessary skills, allowing them to wonder and develop a procedure in their language. Your students are now ready to design their own investigations.

Elementary Students Doing Science! NGSS and CCSS: Perfect Together!

(Grades K–5) *Kentia Hall C, Convention Center*
Science Focus: GEN, NGSS

Tina Glover (tglover@amnh.org) and **Allyson Nusser** (@AllysonLiteracy; anusser@amnh.org), American Museum of Natural History, New York, N.Y.

We will engage elementary teachers in an experience that demonstrates how to leverage literacy practices to strengthen students' capacities to construct scientific explanations. Explore how using interactive read alouds, graphic organizers, and writing scaffolds enable students to build scientific explanations based on quantitative data and textual evidence.

Children's Books as Hooks to Teach NGSS Science Practices

(Grades K–5) *Kentia Hall D, Convention Center*
Science Focus: GEN

Selina Bartels (selina.bartels@cuchicago.edu), **Dionysius Gnanakkan** (dgnanakk@hawk.iit.edu), **Judith Lederman** (ledermanj@iit.edu), and **Norman Lederman** (ledermann@iit.edu), Illinois Institute of Technology, Chicago

Learn how to engage young children in science investigations inspired by children's books. Take away ideas to empower children to ask and answer their own questions.

Computers Unwrapped: Demystifying Computer Hardware by Making a Logic Circuit and Learning How It Can Be Used to Add Numbers

(Grades 4–6) *Kentia Hall E, Convention Center*
Science Focus: PS3.B, PS4.C, CCC1, CCC4, SEP1, SEP2, SEP4, SEP5, SEP8

Gary Benenson (benenson@ccny.cuny.edu), The City College of New York, N.Y.

Donna Johnson, P.S. 021 Crispus Attucks, Brooklyn, N.Y. Explore how a computer works by creating logic circuits, learning binary arithmetic, and using your circuit to add two numbers!

The Benefits of Anticipatory Training in Developing Elementary Teachers to Promote Acquisition of Scientific Thinking Through Content Learning

(Grades K–5) *Kentia Hall F, Convention Center*
Science Focus: GEN, NGSS

Jennifer Seebaran (@SeebaranSWATsci; jlseeban@yahoo.com) and **Lesley Kirkley** (lularoebylesleykirkley@gmail.com), Pasco County Schools, Land O Lakes, Fla.

We will share a practical approach to developing elementary science teachers' confidence, deeper understanding of con-

tent, and timely implementation of professional learning to improve learner outcomes.

Linking Science and Literacy for Improved Student Outcomes

(Grades K–6) *Kentia Hall G, Convention Center*
Science Focus: GEN, NGSS

Bill Badders (@baddersb; baddersb@roadrunner.com), 2013–2014 NSTA President, Cleveland Heights, Ohio
Come explore strategies for linking science and literacy that support students' abilities to read, write, and discuss in the context of science and inquiry-based learning using fiction and nonfiction texts. Hands-on examples of how science supports literacy and literacy supports science will be used.

Introduction to Argumentation: Using Evidence in a Card Sort

(Grades 5–8) *Kentia Hall H, Convention Center*
Science Focus: GEN, SEP7

Lisa Marco-Bujosa (marcobuj@bc.edu) and **Katherine McNeill** (kmneill@bc.edu), Boston College, Chestnut Hill, Mass.

For teachers interested in learning about scientific argumentation, we introduce a card sort as a strategy to engage students in argumentation and consider multiple claims.

Incorporating Sensational, Tantalizing, Engaging, Mesmerizing (STEM) Books into Your Classroom

(Grades K–8) *Kentia Hall J, Convention Center*
Science Focus: GEN

Christine Anne Royce (@caroyce; caroyce@aol.com), NSTA President-Elect-Elect, and Shippensburg University, Shippensburg, Pa.

J. Carrie Launius (@janetcarrie; janetcarrie@gmail.com), NSTA Director, District XI, Saint Louis, Mo.

Juliana Texley (@JulianaTexley; texlelj@cmich.edu), 2014–2015 NSTA President, and Central Michigan University, Mount Pleasant

Peggy Carlisle (peggy.carlisle1@gmail.com), Pecan Park Elementary School, Jackson, Miss.

Suzanne Flynn, Lesley University and Cambridge College, Carver, Mass.

Examine criteria for selecting STEM trade books for your classroom. Discussion centers on how to infuse them into learning, as well as why they help to engross students in STEM lessons.



Bring Back the Magic with Harry Potter

(Grades 6–8) *Kentia Hall M, Convention Center*
Science Focus: ESS2, PS1

Erin Eckholt (@eckzoo; eckholt@cbscd.org) and **Jessica Rosenberg** (@MrsRosenberg12; rosenberg@cbscd.org), Wilson Middle School, Council Bluffs, Iowa
Infusing Harry Potter has been a magical adventure! Potions, Quidditch, and House Points are ways we've integrated "the magic" into science. Handouts and lesson ideas! Wands optional.

NASA Earth Science: Real-World Connections to Data and Online Tools

(Grades 6–12) *Kentia Hall P, Convention Center*
Science Focus: ESS, ETS

Cassie Soeffing (@sdbikegirl; cassie_soeffing@strategies.org), Institute for Global Environmental Strategies, Arlington, Va.
Join us as we share how you can use NASA Earth system science data and resources. Learn how students can analyze geoscience satellite data and imagery to support phenomena-based investigations or for science fair research projects. Bring a laptop/iPad/tablet as we explore tools and share activities and resources in support of NGSS Earth's system, weather and climate, and engineering design.

A University Course and Middle School Teacher Professional Learning Promoting Climate and Data Literacy, plus Effective Teaching and Learning Practices

(Grades 6–8, College) *Kentia Hall Q, Convention Center*
Science Focus: ESS2.D, CCC, SEP

Catherine Halversen (chalver@berkeley.edu) and **Emily Weiss** (weisse@berkeley.edu), The Lawrence Hall of Science, University of California, Berkeley

The preservice and university course, Climate and Data Literacy, provides materials to learn about climate change and effective teaching and learning practices, while building data skills. We will engage in a three-dimensional climate science activity from the course.

Stimulate Student Learning with Food!

(Grades 7–12) *Kentia Hall R, Convention Center*
Science Focus: GEN

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

Susan Hartley (susan.mumford.hartley@hotmail.com), Hinkley High School, Aurora, Colo.

Join us in a hands-on learning experience, using food to teach science standards and integrate CCSS principles. Handouts and door prizes included!

NESTA Earth System Science Share-a-Thon

(Grades K–12) *Petree Hall D, Convention Center*
Science Focus: ESS, ETS2

Michael Passow (michael@earth2class.org), Dwight Morrow High School, Englewood, N.J.

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

Inclusion Through Active Engagement in the Science Classroom

(Grades 6–12) *West Hall B-3, Convention Center*
Science Focus: GEN

Dennis Kearney (denniskearneyjr@gmail.com), Upper Darby High School, Drexel Hill, Pa.

Through the use of appropriate technology, classroom systems, and the stratification of lessons, all students have the opportunity to feel engaged without losing content. We will share how to include all students utilizing best strategies from research and practice for inclusion in the middle school and high school science classroom.

12:30–1:30 PM Exhibitor Workshops**True Colors: Spectrometry to Investigate Lights and Colors**

(Grades 9–12) 405, Convention Center
 Science Focus: LS1.C, PS1.A, PS1.B, PS4.A, CCC1, CCC2, SEP2, SEP4, SEP5

Sponsor: PASCO scientific

Tom Loschiavo (loschiavo@pasco.com), PASCO scientific, Roseville, Calif.

Jason Lee (mrlee3@att.blackberry.net), East Georgia State College–Statesboro

What can light emissions tell you about atomic structure? How can a solution's color teach you about concentration and reaction rates? In this hands-on workshop with the Wireless Spectrometer, you will perform spectrometry experiments, including light-source emission studies and colored solutions analysis.

STEM Activities: The Science of Musical Sound

(Grades 6–12) 407, Convention Center
 Science Focus: PS4, CCC1, CCC6, SEP2, SEP3, SEP4, SEP5, SEP6

Sponsor: PASCO scientific

Brett Sackett, PASCO scientific, Roseville, Calif.

Thomas Hsu, Ergopedia, Inc., Cambridge, Mass.

How do musical instruments work? Why are some sounds musical and others are just noise? We will use both real and recorded instruments to investigate resonance, wavelength, interference, and all aspects of sound waves. Use the interactive *Essential Physics* curriculum to engage and excite your students about the physics of sound!

12:45–1:30 PM Special Session**“Meet and Greet” the NSTA Presidents and Board/Council**

(General) Entrance to Hall H, Convention Center
 Be sure to stop by for this special session. Come “meet and greet” with your elected NSTA officers on your way to the exhibits. The President, President-Elect, and Retiring President along with your Board and Council members are looking forward to talking with you at the conference!

1:00–1:30 PM Presentations**Relating Instructional Sequences and Learning Progressions Toward Effective Implementation of NGSS**

(Grades K–12) Atrium 2, JW Marriott
 Science Focus: GEN, NGSS

Xiaoxin Lyu (x12502@tc.columbia.edu) and **Ann Rivet** (@arivet6; ribbit216@yahoo.com), Teachers College, Columbia University, New York, N.Y.

Explore the similarities and differences of learning progressions and teaching sequences, their relationships with three-dimensional learning, and their implications in science classrooms.

Meet Me in the Middle Session: Earworms and Melodies: Teaching Science Through Songs

(Grades 6–8) Diamond Ballroom Salon 6, JW Marriott
 Science Focus: GEN

Donna Governor (donna.governor@ung.edu), University of North Georgia, Dahlonega

Find out how content-rich science songs can stimulate learning and engage students through novelty, while building conceptual knowledge and activating multiple neural pathways for learning.

Meet Me in the Middle Session: Strategies to Support ELLs in the Science Classroom

(Grades 5–8) Diamond Ballroom Salon 8, JW Marriott
 Science Focus: GEN

Melissa Sleeper (@sciczry; onewhosleeps3@aol.com), Gifford Middle School, Vero Beach, Fla.

Learning the vocabulary and language of science can be challenging for English language learners. Leave with strategies to support and engage all students, regardless of their English proficiency.

Meet Me in the Middle Session: Calling All Middle Level Teachers!

(Grades 4–9) Diamond Ballroom Salon 9, JW Marriott
 Science Focus: GEN

Mary Lou Lipscomb (mllscience@aol.com), National Middle Level Science Teachers Association, Naperville, Ill.

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

National Middle Level Science Teachers Association (NMLSTA) is an organization devoted to middle level science education. Join us to find out about NMLSTA and membership opportunities.

Transforming Local STEM Questions into Global STEM Journeys

(Grades K–12) *Gold Ballroom Salon 1, JW Marriott*

Science Focus: GEN, NGSS

Michelle Forsythe (*mforsythe@txstate.edu*), Texas State University, San Marcos

Looking for ways to engage students with global STEM issues AND connect them to meaningful questions in their backyard? Then this session is for you!

NGSS Project-Based Learning and Assessment Unit Plans

(Grades 1–12) *Platinum Ballroom Salon I, JW Marriott*

Science Focus: GEN, SEP

Carol Cao (*@carolannecao; carolannecao@gmail.com*), Summit View Valley School, North Hollywood, Calif.

Shannon Sahabi (*@shannonsahabi; shannon.sahabi@nisd.net*), Tom C. Clark High School, San Antonio, Tex.

These unit plans for PBL and assessments will transform your NGSS curriculum. Pragmatic examples will be provided and presenters will help transform one of your units!

NGSS Three-Dimensional Learning: Using Student-Developed Games to Explore Ecosystem Relationships

(Grades 5–College) *Platinum Ballroom Salon J, JW Marriott*

Science Focus: LS2, CCC, SEP

Raymond Francis (*@RW_Francis; franc1rw@cmich.edu*), Central Michigan University, Mount Pleasant

Shelby Goward (*@GowardScience*), Ashley (Mich.) Community Schools

Predator or Prey? Come play some student-developed interactive games that provide an outstanding and powerful strategy to explore NGSS three-dimensional learning in ecosystem relationships and population dynamics.

When Curiosity Did Not Kill the Cat: Using Creative Language Arts Strategies to Cultivate Authentic Scientific Learning

(Grades 3–6) *Kentia Hall B, Convention Center*

Science Focus: LS2, SEP1, SEP4, SEP7, SEP8

Jaime Robbins (*jaime.robbins@chca-oh.org*), Cincinnati Hills Christian Academy, Cincinnati, Ohio

Explore the roles of curiosity, passion, and creativity in guiding students toward authentic, dynamic, and collaborative research in science.

1:00–1:30 PM Hands-On Workshop

Meet Me in the Middle Session: Engineering Practice in Middle School Chemistry

(Grades 6–8) *Diamond Ballroom Salon 7, JW Marriott*

Science Focus: PS, SEP

James Kessler, American Chemical Society, Washington, D.C.

Try a new engineering design lesson based on chemical reactions featured in the free teaching resource *www.middle-schoolchemistry.com*.

1:00–1:30 PM Exhibitor Workshop

Now You See It, Now You Don't

(Grades 5–8) *Booth #748, Exhibit Hall, Convention Center*

Science Focus: ESS

Sponsor: Science First, LLC

Helmut Albrecht (*helmut@sciencefirst.com*), Science First, LLC, Yulee, Fla.

In this in-dome workshop from StarLab, you will learn about solar and lunar eclipses.

1:30–3:00 PM Exhibitor Workshop

What's the Problem? Integrating Engineering into the Science Classroom Without Bridges and Rockets

(Grades 6–9) *150 AB, Convention Center*

Science Focus: ETS, SEP

Sponsor: AEOP eCYBERMISSION

Matthew Hartman, eCYBERMISSION Content Manager, NSTA, Arlington, Va.

Problem solving is a skill that all science students must have, and it can be learned through engineering. Come learn some new ways to bring engineering ideas and problem solving into your grades 6–9 science classroom beyond the old and stale examples of building bridges or rockets. Discussion includes the online STEM competition eCYBERMISSION and how you and your students can participate at no cost.

1:45–2:15 PM Presentations**Meet Me in the Middle Session: Analytical Thinking***(Grades 6–8) Diamond Ballroom Salon 6, JW Marriott*

Science Focus: GEN, SEP4, SEP6

Susan German (@susan_german; *susangermanscience-teacher@gmail.com*), Hallsville Middle School, Hallsville, Mo. Many students have trouble analyzing data they have collected. Structures will be presented to assist students with analysis and its use in constructing an argument.

Meet Me in the Middle Session: Photosynthesis Fun*(Grades 6–9) Diamond Ballroom Salon 7, JW Marriott*

Science Focus: LS, MS, B

Melyssa Ferro, Syringa Middle School, Caldwell, Idaho. Students will use Skittles® to understand the law of conservation of mass, the process of photosynthesis, and balancing equations.

1:45–2:15 PM Hands-On Workshop**Meet Me in the Middle Session: Using the 5E Model of Instruction to Engage Middle Schoolers***(Grades 5–9) Diamond Ballroom Salon 9, JW Marriott*

Science Focus: GEN

Vicki Massey (*vickimassey@cox.net*), Higley Unified School District #60, Gilbert, Ariz.

Learn how using the 5E (Engage, Explore, Explain, Elaborate, and Evaluate) model of instruction engages middle schoolers in science while developing critical-thinking skills. This session will reinforce cooperative learning strategies.



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2:00–2:30 PM Presentations

College Science Specific to the Needs of Elementary Teachers: A Look at the First Year of Implementation

(Grades K–6, College)

Georgia 2, JW Marriott

Science Focus: GEN

Madelon McCall (*madelon_mccall@baylor.edu*), Baylor University, Waco, Tex.

Review findings from the first year of a laboratory-embedded integrated science course for elementary teachers. We will address confidence and attitudes in science and content knowledge weaknesses.

Science Is a Core Subject: District Stories for Achieving Vision and Coherence with NGSS

(Grades P–12)

Platinum Ballroom Salon H, JW Marriott

Science Focus: GEN, NGSS

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

Hear case studies (and share your story!) on what it takes to elevate the priority of science and support a coherent NGSS program.

Science for All: Promoting Challenging Science Instruction for Special Needs Learners

(Grades K–12)

Platinum Ballroom Salon I, JW Marriott

Science Focus: GEN

Rhonda Kerr (@kaec_science; *rhonda.kerr@knoxschools.org*), Knoxville Adaptive Education Center, Knoxville, Tenn. Students in special day school programs typically lack access to the types of rigorous and challenging science instruction received by their peers in a general education program. Come hear how one science teacher is working to change that by incorporating meaningful science inquiry into a special education science program.

Blended Learning in the Lab Science

(Grades 4–College)

Platinum Ballroom Salon J, JW Marriott

Science Focus: GEN

Teresa Dobler (*tedobler@gmail.com*), Washington Latin Public Charter School, Washington, D.C.

Transform your classroom using free web-based tools. Learn to incorporate collaboration, critical argumentation, and inquiry while allowing students to work at their own level and pace.

Using NGSS Three-Dimensional Learning in Standards-Based Teaching

(Grades 6–12)

505, Convention Center

Science Focus: GEN, NGSS

Sarah Moonier (@Sarah_Moonier; *mooniersarah@rsdmo.org*), Rockwood Summit High School, Fenton, Mo.

Meghan Bray (*braymeghan@rsdmo.org*), Rockwood School District, Eureka, Mo.

Learn how to transform traditional lessons to reflect the three-dimensions of NGSS. Gain insight on how to create balanced and focused assessments that align standards based teaching with crosscutting concepts to increase student reflection and learning.

Create a Literacy Ritual in the Middle School Classroom with Real Scientists!

(Grades 6–8)

Kentia Hall A, Convention Center

Science Focus: GEN, SEP1, SEP3, SEP6, SEP7

Ariel Zych (*azych@sciencefriday.com*) and **Xochitl Garcia** (@msxgarcia; *xgarcia@sciencefriday.com*), Science Friday, New York, N.Y.

Learn to select and use engaging video as the basis for an informational text ritual rich in speaking and listening that prompts further inquiry and exploration!

Using Competency-Based Assessments to Prepare Students for Internships in the Biotechnology Industry

(Grades 9–College)

Kentia Hall O, Convention Center

Science Focus: GEN, SEP

Alyssa Wallace (@msnschem), Del Lago Academy, Escondido, Calif.

Alec Barron (@alecbarron; *abarron@euhsd.org*), Escondido (Calif.) Union High School District

Hear how we are implementing a personalized assessment system for science and engineering practices that was co-developed by our industry partners for internships.

Eliciting Learner Knowledge

(Grades 6–12)

West Hall B-4, Convention Center

Science Focus: GEN, NGSS

Meredith Thompson (@Meredith_M_T; *meredith@mit.edu*), Harvard University, Cambridge, Mass.

Eliciting learner knowledge (ELK) is an engaging learning activity that allows teachers to develop the important and often underused skill of understanding what their students know about a science topic. Students are given beliefs, personalities, and can improvise during the game.

2:00–3:00 PM American Geophysical Union (AGU) Lecture

The Fault Lies Not in Our Stars

(General)

Petree Hall C, Convention Center

Science Focus: ESS, ESS2.B



Lucy Jones (@DrLucyJones), Seismologist, Pasadena, Calif.

Seismology shows us that on human time scales, the time of big earthquakes is random and the best way to manage the risk is to consider it probabilistically. Most people do not really believe in randomness—trying to find patterns even when they don't

exist and then expecting scientists to find the real cause and remove randomness from the equation. Lucy will probe how science education can do a better job of empowering everyone to understand and use hazards information.

Known globally as an expert in earthquakes and resilience, Lucy Jones has dedicated her life to helping communities and leaders prepare for the inevitable. She retired from federal service in March 2016 after serving as a seismologist with the U.S. Geological Survey since 1983. Lucy continues as a Visiting Research Associate at the Seismological Laboratory of Caltech and is developing programs to connect policy makers with scientists while supporting the use of science in community decision-making.

In 2014, she led a partnership between the USGS and the City of Los Angeles to create solutions to four of the most significant seismic vulnerabilities in the city. Author of over 100 papers on research seismology, Lucy's primary interest is in earthquake statistics and integrated disaster scenarios, especially in southern California.



2:00–3:00 PM Featured Panel

Enhancing Teachers' Voices and Roles in Education Policy Making

(General)

Theatre (411), Convention Center

Science Focus: GEN, NGSS



Jay Labov



Donna Migdol



Margo Murphy



K. Renae Pullen



Jose Rivas



Bruce Wellman

Panelists:

Jay Labov (*jlabov@nas.edu*), Senior Advisor for Education and Communication, The National Academies of Sciences, Engineering, and Medicine, Washington, D.C.

Donna Migdol (*@dmigdol123*; *donnamigdol@aol.com*), Elementary STEM Teacher, Oceanside (N.Y.) School District

Mary (Margo) Murphy (*@marymargmurphy*; *margo.murphy@fivetowns.net*), Science Teacher, Camden Hills Regional High School, Rockport, Maine

K. Renae Pullen (*@krenaep*; *renaepullen@outlook.com*), Science Teacher, Caddo Parish Public Schools, Shreveport, La.

Jose Rivas (*jrivas@lennoxacademy.org*), Physics and Engineering Teacher, Lennox Academy, Inglewood, Calif.

Bruce Wellman (*@BruceWellmanKS*; *bwellmanow@olatheschools.org*), Engineering Teacher, Olathe Northwest High School, Olathe, Kans.

Moderator: **Al Byers**, Associate Executive Director, Strategic Development & Research Division, NSTA, Arlington, Va.

Classroom teachers are used to having educational “innovations” thrust upon them, but rarely are they given opportunities to bring their wisdom of practice to inform decision making about these changes, especially outside of their own classrooms or schools. However, given the current importance of STEM education, these kinds of opportunities may be possible. For example, a focus of reform is the *Next Generation Science Standards*, which set forth an ambitious model of three-dimensional learning and include a significant engineering component. Because the role of engineering in K–12 education is still unsettled, teachers of STEM may have unparalleled opportunities to have a voice in its development and implementation along with the education policies that will support such efforts. In this session, a panel of teacher leaders will discuss the challenges and rewards associated with being an effective leader outside the classroom, including at the district, state, and national levels. Staff from the National Academies of Sciences, Engineering, and Medicine also will report on efforts at the Academies to bring attention to value of teacher involvement in STEM education leadership and policy. Organized by Greg Pearson, Scholar, K–12 Engineering Education and Public Understanding and Engineering, National Academy of Engineering, Washington, D.C.

2:00–3:00 PM Presentations**NARST-Sponsored Session: Making Sense of STEM Education in K–12 Contexts and the Implications for Professional Development***(Grades 3–College)**Atrium 2, JW Marriott*

Science Focus: GEN

Tamara Nelson, Washington State University Vancouver
Learn how school and district leadership teams selected attributes of STEM education to develop their implementation and professional learning plans.

NSELA-Sponsored Session: Making Sense of Science: A System for Systems Thinking*(Grades K–12)**Diamond Ballroom Salon 2, JW Marriott*

Science Focus: GEN, NGSS

Kirsten Daehler (*kdaehle@wested.org*), Making Sense of SCIENCE at WestEd, Los Alamitos, Calif.

Make systems accessible—explore a variety of system boundaries, components, interactions, and inputs/outputs. Then make sense of the world through systems thinking.

SCST-Sponsored Session: Outstanding Undergraduate Science Teacher Award 2016 Presentation (The Challenge to Improve Student Understanding)*(College)**Georgia 1, JW Marriott*

Science Focus: GEN

Vickie Williamson, Texas A&M University, College Station

Join us as for a presentation by Vickie Williamson, the Outstanding Undergraduate Science Teacher Awardee for 2016. An instructional associate professor at Texas A&M, she will share conceptual teaching strategies to help students understand science phenomena at various different levels, including macroscopic, imperceptible (what is not detectible to our senses), symbolic, and mathematical.

Where Art and Science Meet*(Grades 6–12)**Gold Ballroom Salon 2, JW Marriott*

Science Focus: GEN, CCC

Anne Artz (*@anneartz; aartz@ucsd.edu*), The Preuss School UCSD, La Jolla, Calif.

Come learn how to incorporate creative and artistic activities into your science classroom to promote student engagement across curricular subjects. Help your students see careers that incorporate scientific principles with artistic expression.

AMSE-Sponsored Session: Science Teachers Promoting Culturally Relevant Education: A Panel Discussion*(General)**Platinum Ballroom Salon A, JW Marriott*

Science Focus: GEN, NGSS

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

Teachers are not imbued as culturally relevant educators. It requires purposeful instruction and reflection. This panel features teachers learning to enact a culturally relevant education.

**NSTA Press® Session: Flowers to Fruit: Putting Botany Back into Your Curriculum***(Grades K–8, College)**Platinum Ballroom Salon B, JW Marriott*

Science Focus: LS

Richard Konicek-Moran (*rkonicek@gmail.com*), Professor Emeritus, UMass Amherst, Mass.

Kathleen Konicek-Moran, Botanical Illustrator and Nature Artist, Palmetto, Fla.

Botany missing from your curriculum? Find out how to use Flowers to Fruit to restore this valuable topic.

STEM Grant Writing 101*(Grades P–12)**Platinum Ballroom Salon D, JW Marriott*

Science Focus: GEN

Jennifer Janzen (*@jenniferj4242; jennifer_janzen@scooe.org*), Santa Clara County Office of Education, San Jose, Calif.

Answers to the all-important question: How am I going to pay for that? Learn about the procedures and processes necessary for STEM grant writing!

Building NGSS Models in Microsoft Office and Google Drive*(Grades 1–12)**Platinum Ballroom Salon E, JW Marriott*

Science Focus: ESS1.B, ESS2.A, ESS2.D, CCC4, SEP2

Lyle Tavernier (*@NASAJPL_edu; lyle.tavernier@jpl.nasa.gov*), NASA Jet Propulsion Laboratory, Pasadena, Calif.

Learn how students can use spreadsheet and presentation software to build and manipulate models to meet and exceed NGSS performance expectations.

Hey, You Got Your Algebra in My Plate Tectonics! Developing an Integrated STEM Unit for High School

(Grades 9–12) Plaza 1, JW Marriott

Science Focus: ESS, SEP

Susan Gran (*sgran@lsc.k12.in.us*), Lafayette (Ind.) School Corp.

Earth science and algebra teachers collaborated to build and implement a STEM unit! Join us as we share our experiences and the unit plan.

Empowering Teachers and Students for Next Generation STEM

(Grades 9–10) Plaza 2, JW Marriott

Science Focus: GEN, NGSS

Ann Strozyk (@AnnStrozyk; *ann_strozyk@hcpss.org*) and **Nate Hall** (@ItsHallAboutSci; *nate_hall@hcpss.org*), Howard County Public School System, Ellicott City, Md.

Mary Weller (*mary_weller@hcpss.org*), NSTA Director, District III, and Howard County Public School System, Ellicott City, Md.

The “Watershed Report Card” program engages students in scientific inquiry alongside their teachers to measure, evaluate, and advocate on behalf of Maryland sub-watersheds and the Chesapeake Bay.

NGSS@NSTA **NGSS@NSTA Forum Session: Developing a Coherent Assessments System from the Classroom to the Year-End Exam**

(Grades K–12) 151, Convention Center

Science Focus: GEN, NGSS

Stephen Pruitt, Kentucky Dept. of Education, Frankfort Kentucky was one of the first states to adopt NGSS and is now developing an assessment system to serve the needs of many different stakeholders in order to improve teaching and learning. Stephen Pruitt, who formally oversaw the development of NGSS, will share his perspectives on this process in his current role as the commissioner of education for Kentucky.

Building STEM Partnerships for Elementary Science Classrooms

(Grades K–5) 501C, Convention Center

Science Focus: GEN

Jennifer Williams (@ScienceJennifer; *jenniferwilliams@newmanschool.org*), Isidore Newman School, New Orleans, La. Hear how one school built partnerships with local universities and museums to enhance and transform their STEM program for their youngest students. Leave with a strong sense of how STEM partnerships can be formed and how they benefit the young child and their community.



Screencasting in Science

(General) 502A, Convention Center

Science Focus: GEN, SEP8

Kim Calderon (@CrazySciTeach; *crazysciteach@gmail.com*), John Sutter Middle School, Fowler, Calif.

Get students talking about science, while they’re doing the science. Screencasting allows students to demonstrate their learning in a whole new way and it’s fun.



Interactive Science Notebooks: Low-Tech Creations for Higher-Level Thinking

(Grades 4–12) 502B, Convention Center

Science Focus: GEN, SEP

Marielle Venturino, Mar Vista Academy, San Diego, Calif.

Interactive notebooks are excellent tools for all ages and abilities. This structured notebooking strategy focuses on input and output, maximizing analytical and creative thinking processes.

NSTA’s Exemplary Science Programs (ESP) Meeting Current Reform Efforts

(General) 504, Convention Center

Science Focus: GEN, NGSS

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

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

President: Herb Brunkhorst (*hkbrunkh@csusb.edu*), California State University, San Bernardino

The ESP monographs are ways of recognizing teacher and student successes while also encouraging more to try!

The NSTA Learning Center: Free Professional Development Resources and Opportunities for Educators

(General) 507, Convention Center

Science Focus: GEN

Flavio Mendez, Assistant Executive Director, Learning Center, NSTA, Arlington, Va.

Lost when it comes to finding online professional learning resources to enhance your content knowledge and skills? With more than 12,000 resources (25% of which are free) and quality PD opportunities to assist educators with core subject content, the Learning Center has the answers! Get free resources and ICE CREAM!

Charting an NGSS Course Within the 3-E Instructional Model to Enhance Science Experiences for Students with Special Needs

(Grades P–5) *Kentia Hall B, Convention Center*
 Science Focus: GEN

Derek Ramdass (*dramdas@schools.nyc.gov*), P.S. K004, Brooklyn, N.Y.

Deborah Charles (*dcharles2@schools.nyc.gov*), P4K@P843K, Brooklyn, N.Y.

Special educators have modified the 5Es (Engage, Explore, Explain, Elaborate, and Evaluate) to provide effective science experiences for students with special needs through an interdisciplinary center-based learning approach.

Picture Perfect Poetry? Connecting Science, Picture Books, and Poetry

(Grades P–5) *Kentia Hall E, Convention Center*
 Science Focus: GEN, NGSS

Sylvia Vardell (@SylviaVardell; *swardell@twu.edu*), Texas Woman’s University, Denton

Janet Wong (@janetwongauthor; *janet@janetwong.com*), Pomelo Books, Princeton, N.J.

Linking *Picture-Perfect Science* picture books with science poetry offers opportunities to develop literacy and science with an interdisciplinary approach integrating NGSS and CCSS skills.

DOROTHY K. CULBERT CHAPTER AND ASSOCIATED GROUPS ROUNDTABLE

Are you a Chapter or Associated Group leader with a proven track record of moving your organization forward?

Or do you struggle with issues like membership, board relations, and conference planning?

Join us for this networking opportunity to share your experience and learn from other leaders who are “in the trenches” just like you. NSTA’s Chapter Relations staff will be available to offer their expertise, and Chapters and Associated Groups celebrating special anniversaries will be recognized.

Refreshments provided.

Friday, March 31
3:00–4:00 PM
 JW Marriott Hotel
 Atrium 3

**STEM Road Map Curriculum Series for Grades 3–5:
Transportation of the Future**

(Grades 3–5) *Kentia Hall G, Convention Center*
Science Focus: GEN, NGSS

Janet Walton and **Carla Johnson** (@drcarlaj; carlacjohnson@purdue.edu), Purdue University, West Lafayette, Ind.

Receive an overview of the upcoming NSTA Press® curriculum book series *STEM Road Map for Middle School* as we take a deep dive exploring one of the eight elementary school modules: Transportation of the Future.

**Tools and Resources to Take You and Your Students
from Novice to Expert in 3-D Learning**

(Grades K–8) *Kentia Hall L, Convention Center*
Science Focus: GEN, NGSS

Kimberly Weaver (kweaver@oesd114.org), Olympic Educational Service District 114, Bremerton, Wash.

Jeanne Norris (@JMNorrisISP), Washington University in St. Louis, Mo.

Learn about our free resources (rubrics, visual aids, hand-outs) to grow your students' mastery of the crosscutting concepts and science and engineering practices.

**Keeping It Real: Connecting Students to a NASA
Ground Validation Campaign!**

(Grades 7–12) *Kentia Hall P, Convention Center*
Science Focus: ESS2.C, ESS2.D, ESS3.A, ESS3.B, ESS3.C, ESS3.D, ETS2.A, ETS2.B, CCC2, CCC3, CCC4, SEP1, SEP2, SEP3, SEP4, SEP5, SEP6, SEP8

Dorian Janney (@JanneyDorian; dorian.w.janney@nasa.gov), NASA Goddard Space Flight Center, Greenbelt, Md. Come learn how students in Washington State were able to work with scientists from a NASA Earth-observing mission to help with ground validation campaign!

NESTA and NOAA Share: Climate Change Is Elementary

(Grades K–5) *Petree Hall D, Convention Center*
Science Focus: ESS2, ESS3, ETS1, CCC2, CCC4, SEP8

Molly Harrison (molly.harrison@noaa.gov), NOAA Fisheries, Silver Spring, Md.

Research, resources, and tested activities can help K–5 teachers understand and teach young learners about climate change in a nonthreatening and empowering way.

2:00–3:00 PM Hands-On Workshops

**DuPont Presents: Global Food Security—Getting
Students Excited About Sustainability**

(Grades 9–12) *Diamond Ballroom Salon 1, JW Marriott*
Science Focus: ESS

David Black (@davidablack77; dblack3@murraystate.edu), Racer Academy Coordinator, Murray, Ky.

Come experience an inquiry activity to get students excited about sustainability and their role to feed the nine billion people that will need nourishment by 2050.



**NSTA Press® Session: Learning to Read the Earth and
Sky, Explorations Supporting the NGSS**

(Grades 6–College) *Diamond Ballroom Salon 3, JW Marriott*
Science Focus: ESS, SEP

Russell Colson (colson@mnstate.edu), Minnesota State University Moorhead

Mary Colson (@MnMColson; mcolson@moorheadschoools.org), Horizon Middle School, Moorhead, Minn.

Earth scientists read stories written in Earth. Join us in some investigative classroom lessons through which you and your students can apply the practices of science to reading Earth.

Engineering in Action Using Picture Books!

(Grades P–6) *Diamond Ballroom Salon 10, JW Marriott*
Science Focus: ETS, CCC2, CCC4, SEP

Douglas Hunnings (@ETHOS_Douglas; dhunnings@elkhart.k12.in.us), Riverview Elementary School, Elkhart, Ind.

Holly O'Connell (hoconnell@elkhart.k12.in.us), Pinewood Elementary School, Elkhart, Ind.

Join us for an engaging experience to learn how you can provide engineering opportunities in the classroom using various picture books!

I Made an APP!

(Grades 5–12) *Gold Ballroom Salon 1, JW Marriott*
Science Focus: GEN, INF, NGSS

Michael Zito, Yorktown High School, Arlington, Va.

The free MIT APP inventor is an easy way to introduce students to writing Android APPS. Bring your Android phone to see how it works.

“E”ngineering in the STEM Classroom

(Grades P–12) *Platinum Ballroom Salon C, JW Marriott*
Science Focus: ETS1

Jen Gutierrez (@jengutierrez18; jengutierrez@cox.net), NSTA Director, District XIV, and integratedSTEMk12, LLC, Chandler, Ariz.

Examine how engineering design challenges immerse students

in the practices to learn how science and engineering work together while building deeper conceptual understanding.

Mobilize: Capturing Student Attention with Computational Thinking

(Grades 9–12)

Plaza 3, JW Marriott

Science Focus: ETS1.B, LS, CCC2, CCC3, CCC5, SEP4, SEP5

Leticia Perez (leticiazperezhuuff@gmail.com) and **Lynn Kim John** (@UCLAScienceProj; ljohn@gseis.ucla.edu), UCLA Center X, Los Angeles, Calif.

Computational and Mathematical Thinking, a science and engineering practice, can serve as a vehicle for students to engage in learning aligned to the vision of the *Framework*. Join us and experience a portion of a school ecology unit that engages students in participatory sensing to collect data and explore statistical questions.

NGSS Using Phenomena to Level the Playing Field in the Elementary Classroom

(Grades K–6)

515A, Convention Center

Science Focus: GEN, NGSS

Heather Toothaker (@htoothaker13; heather.toothaker@new-haven.k12.ct.us), Engineering and Science University Magnet School, Hamden, Conn.

Cindy Kern (@CindyLKern; cindy.kern@quinnipiac.edu), Quinnipiac University, Hamden, Conn.

Experience K–6 phenomena and engage students in NGSS performance expectations. Create equity and provide a common experience, prompting students to ask questions and engage in scientific discussions.

Good Vibrations: Investigating Properties of Sound Using an Inquiry-Based STEM Activity

(Grades 3–5)

Kentia Hall C, Convention Center

Science Focus: PS

Glenda Ogletree and **Mary Rebecca Wells** (rebecca.wells@armstrong.edu), Armstrong State University, Savannah, Ga.

Investigate properties of sound using inquiry-based STEM practices. We will construct a telephone using variables of cups/strings to explain why vibrating matter makes sound.

Catch the Wave!

(Grades P–2)

Kentia Hall D, Convention Center

Science Focus: PS4.A

Shari Templeton, Maine Dept. of Education, Newcastle
Melissa Vallieres, ECE Science Consultant, Pittston, Maine

Engage in phenomena to understand light and sound waves and see the benefits of teaching literacy through science. Tap the “born investigator” in children.

Thinking, Tinkering, and Talking in the Primary Grades

(Grades K–3)

Kentia Hall F, Convention Center

Science Focus: PS2.A, SEP2, SEP6, SEP7

Patricia Paulson (@Pattipaulson1; patricia-paulson@bethel.edu), Bethel University, Saint Paul, Minn.

Engage in thinking, tinkering, and talking to determine the best materials and patterns to create the *Three Little Pigs* houses.

Strategies to Help Our Girls Find Their Voice and Their Way in Science

(Grades K–8)

Kentia Hall H, Convention Center

Science Focus: GEN

Jennifer Trochez-MacLean (jentrochez@gmail.com), Gates Street Elementary School, Los Angeles, Calif.

Angela Chavez (BMagnetic30; amc6691@lausd.net), Vena Elementary School, Pacoima, Calif.

Lupe Torres (gmt5293@lausd.net), Marvin Avenue Elementary School, Los Angeles, Calif.

Learn how we encourage our girls to enjoy doing science while nurturing their perception that they too can grow up to be scientists or engineers.

Connecting the Skills of Literacy and Science Through Children’s Literature and STEM Topics

(Grades 3–7)

Kentia Hall J, Convention Center

Science Focus: ESS, ETS, SEP2, SEP6

Christine Anne Royce (@caroyce; caroyce@aol.com), NSTA President-Elect-Elect, and Shippensburg University, Shippensburg, Pa.

We will investigate a series of activities that help to integrate science and literacy skills with a STEM focus through the use of children’s literature.

Building Circuits!

(Grades 3–6) *Kentia Hall K, Convention Center*

Science Focus: PS3

David Crowther (*crowther@unr.edu*), NSTA President-Elect, and University of Nevada, Reno

Plug in new learning in your classroom by having your students engage in a hands-on inquiry 5E (Engage, Explore, Explain, Elaborate, and Evaluate) lesson on circuits! Discover how electricity flows by building circuits and creating paper circuits that can be taken home!

Build an Anemometer!

(Grades 5–9) *Kentia Hall M, Convention Center*

Science Focus: ETS, SEP

Donna Markey (*@dmarkey4; donnamarkey@vistausd.org*), Vista Visions Academy, Vista, Calif.

Design and create an anemometer to measure wind speed using common household materials and have your students build one next week!

Science By Design: Addressing Science Concepts Through Engineering

(Grades 5–9) *Kentia Hall N, Convention Center*

Science Focus: ETS, SEP

Julie Alexander, Smithton Middle School, Columbia, Mo. Want to incorporate engineering? Worried about promoting an activity-mania classroom void of scientific content? Come learn ways to meaningfully incorporate engineering in your classroom.

Using a River Ecology Teaching Case to Engage Students in Developing and Using Models, plus Engaging in Argument from Evidence

(Grades 6–8) *Kentia Hall Q, Convention Center*

Science Focus: LS2.A, LS2.C, CCC2, SEP2, SEP4, SEP6

Jay Holmes (*@jholmesjay; jholmes@amnh.org*), American Museum of Natural History, New York, N.Y.

Engage your students in science practices using a teaching case with readings, videos, and online data sets around the impact of zebra mussels on an ecosystem.

Rethinking Biology in 3D

(Grades 6–10) *Kentia Hall R, Convention Center*

Science Focus: LS, CCC, SEP

Nikelle Miller, Centennial High School, Champaign, Ill. Join us as we design and test a model seed, revise our designs, and retest. Increase student learning and engagement by incorporating the three dimensions of the NGSS. Teach from the natural phenomenon of seed dispersal and incorporate practices, crosscutting concepts, and core ideas.

Manipulatives in Teaching Basic Chemistry Concepts

(Grades 9–College) *Kentia Hall S, Convention Center*

Science Focus: PS1, PS3, CCC, SEP

Umadevi Garimella (*ugarimel@uca.edu*), University of Central Arkansas, Conway

In this module, participants will use manipulatives to demonstrate the concept of physical change and the relationship to size of the molecule and intermolecular attractions.

CESI-Sponsored Session: Classifying Objects: How Scientists and Other People Classify Things

(Grades 1–8) *West Hall B-2, Convention Center*

Science Focus: ESS, CCC1, CCC4, SEP2

Larry Lebofsky (*lebofsky@lpl.arizona.edu*), Planetary Science Institute, Tucson, Ariz.

Explore how people classify things in our everyday world and how scientists classify solar system objects. With this knowledge, design your own world.

Investing in Language Skills: An Unlikely Symbiosis—Science and Literacy in the News

(Grades 6–12) *West Hall B-3, Convention Center*

Science Focus: GEN

Billy McClune, Queen's University Belfast, U.K.

Teachers in Belfast developed reading resources and teaching strategies using science in the news to support basic, intermediate, and higher-level critical reading. Join in to engage with these resources and evaluate student responses from classroom contexts.



NSTA Press® Session: The Power of Investigating: Guiding Authentic Assessments

(Grades P–6) *West Hall B-5, Convention Center*

Science Focus: LS2.A, SEP3

Julie McGough (*mrmagojulie2@att.net*), University of Nebraska–Lincoln

Lisa Nyberg (*@docnyberg; lnyberg@csufresno.edu*), California State University, Fresno

Bring science to life as we transform two-dimensional lessons into three-dimensional learning experiences! Learn hands-on strategies to launch investigations and fuel student thinking and learning.

2:00–3:00 PM Exhibitor Workshops**Essential Chemistry: Meaningful Titration of Everyday Antacids**

(Grades 9–12) 405, Convention Center
 Science Focus: PS1.A, PS1.B, CCC1, CCC5, SEP4, SEP5
 Sponsor: PASCO scientific

Tom Loschiavo (loschiavo@pasco.com), PASCO scientific, Roseville, Calif.

Paul Werner (pwerner@rocklin.k12.ca.us), Rocklin High School, Rocklin, Calif.

Do your students get lost in the procedure of an acid-base titration? Help them understand that the moles of acid equals moles of base and keep the content engaging and relevant by performing a titration of household antacids using the Wireless pH sensor!

Introducing Statistics in Biology to Improve Scientific Reasoning

(Grades 8–12) 407, Convention Center
 Science Focus: LS, SEP4, SEP5, SEP7
 Sponsor: PASCO scientific

Michael Blasberg (blasberg@pasco.com), PASCO scientific, Roseville, Calif.

Ryan Reardon (rreardon71@gmail.com), Shades Valley High School, Irondale, Ala.

How can students elicit meaning from thousands of data points to make evidence-based arguments? We will collect quality data, process and aggregate the results, and analyze data sets using descriptive statistics so you can help students apply math and scientific reasoning to make data-driven arguments and conduct inquiry.

Machine Technology and Engineering with K’NEX Machines: Using STEM to Make Work Easier

(Grades 5–9) 510, Convention Center
 Science Focus: ETS1, PS2, PS3, CCC
 Sponsor: K’NEX Education

Robert Jesberg (rjesberg@knex.com), K’NEX Education, Hatfield, Pa.

Machines are not so simple after all! Build and explore STEM concepts with fully functioning models from K’NEX Exploring Machines. Test, evaluate, re-engineer, and optimize models to find how each “makes work easier.” A great way to have your program address NGSS crosscutting concepts. A hands-on workshop for hands-on science educators.

2:00–3:30 PM Meeting**Society of Elementary Presidential Awardees (SEPA) Meeting**

(By Invitation Only) Studio 2, JW Marriott
 For more information, please visit www.sepamembers.weebly.com.

2:00–3:30 PM Hands-On Workshop**Engage Your Students in Workforce Skills with a Hack-a-Thon!**

(Grades 5–9) Platinum Ballroom Salon F, JW Marriott
 Science Focus: ETS1

Wendy Binder, SPIR Project Director, NSTA, Arlington, Va.

Tracy Tegtmeier (tracy_tegtmeier@lawndalesd.net), Will Rogers Middle School, Lawndale, Calif.

Charles “Andy” De Seriere ([@adeseriere](https://twitter.com/adeseriere); adeseriere@wiseburn.k12.ca.us), R.H. Dana Middle School, Hawthorne, Calif.

Northrop Grumman Foundation Teachers Academy Fellows were inspired by Northrop Grumman’s teams of engineers to solve challenges in their own version of a FAB LAB. Come learn how we adapted this format for students to reinforce workforce skills!



—Photo courtesy of Jacob Slaton

2:00–3:30 PM Exhibitor Workshops

Making Three-Dimensional Learning Meaningful for Students using Science Story Lines

(Grades K–12) 150C, Convention Center

Science Focus: GEN, CCC2, CCC5, SEP1, SEP2

Sponsor: Activate Learning

Ellen Mintz, Charleston County School District, Charleston, S.C.

Heather Milo, Activate Learning, Greenwich, Conn.

What if K–12 lessons could both meet the standards and leverage student curiosity about the natural world? Join us for an engaging workshop on three-dimensional learning and storyline coherence as a means to not only have pedagogy meet the NGSS, but also build on student ideas and questions about natural phenomena. One such unit from IQWST will be raffled off at the end!

Three-Dimensional Learning in the Elementary Classroom

(Grades K–5) 153A, Convention Center

Science Focus: GEN, NGSS

Sponsor: TCI

Nathan Wellborne, TCI, Mountain View, Calif.

Join TCI as we explore three-dimensional learning in the NGSS. Participants will be immersed in a Bring Science Alive! investigation and learn ways to implement project-based science in the classroom. Examine how to actively engage your students in science and engineering practices and apply crosscutting concepts with fun and exciting investigations.

Break It Down, Build It Up! Modeling Enzymes in Action

(Grades 9–College) 153B, Convention Center

Science Focus: ETS1, LS1.A, PS1, CCC1, CCC2, CCC4, CCC6, CCC7, SEP1, SEP2, SEP6

Sponsor: 3D Molecular Designs

Gina Vogt (gina.vogt@3dmoleculardesigns.com), MSOE Center for BioMolecular Modeling, Milwaukee, Wis.

Explore enzyme structure, function, and regulation through hands-on modeling! Investigate how the arrangement of amino acids, secondary structures, and mutations all govern protein form and function. Simulate enzyme action through modeling active site/substrate specificity, competitive/non-competitive inhibition, and allostery. Conclude with a 3-D demonstration of enzyme-inhibiting insecticides and their unintended consequences.

Hands-On Anatomy: Building Body Systems in Clay

(Grades 6–College) 153C, Convention Center

Science Focus: LS

Sponsor: ANATOMY IN CLAY® Learning System

Debbi Warren, Medford (Ore.) School District 549c

Explore a kinesthetic approach of building human anatomy in clay on a handheld skeletal model. This interactive experience promotes innovation, values different learning styles, and motivates students to achieve high academic standards. Using this approach can help prepare your students for post-secondary education and careers, including health-related professions. Come to this amazing workshop to learn how to engage your students with immediate hands-on learning!

Teaching Geoscience in an NGSS-Focused Curriculum

(Grades 6–12) 301 AB, Convention Center

Science Focus: ESS

Sponsor: Pearson

Michael Wyession, Washington University in St. Louis, Mo.

A member of the NGSS writing team, Michael Wyession will discuss the challenges and solutions to teaching Earth and space science (ESS) that meets the NGSS.

Developing Models for Sensory Receptors

(Grades 6–8) 303 AB, Convention Center

Science Focus: LS, CCC, SEP

Sponsor: Delta Education/School Specialty Science–FOSS

Virginia Reid and **Ann Moriarty**, The Lawrence Hall of Science, University of California, Berkeley

Why don't people with visual impairments use their knuckles to read Braille? Use hands-on activities from the new FOSS Next Generation Human Systems Interactions Course for middle school to explore how touch receptors in the nervous system respond to mechanical inputs. Identify connections to the three dimensions of NGSS.

CPO Science's Link™ Learning Module: Chemistry and the Periodic Table

(Grades 6–12) 304 AB, Convention Center

Science Focus: PS1

Sponsor: CPO Science/School Specialty Science

Erik Benton, CPO Science/School Specialty Science, Nashua, N.H.

Kat Mills, School Specialty Science, Rosharon, Tex.

CPO Science's new Link Chemistry learning module is an NGSS approach that lets students experience innovative activities to learn about atomic structure and the periodic

table. Use a digital learning environment with hands-on equipment to study bonding, isotopes, subatomic particles, ions, balancing equations, energy levels, and periodicity. Door prizes!

Make Science Come to Life Through Modeling with LEGO® Education

(Grades 1–4) 304C, Convention Center

Science Focus: ETS

Sponsor: LEGO Education

Kelly Reddin, LEGO Education, Billund, Jylland, Denmark
Looking for engaging ways to model sciences and teach computational thinking? See how programming can bring modeling to life in your science classroom, while teaching NGSS requirements including engineering. During this session, you will build a science model using LEGO bricks, motors, and sensors, and program that model to complete tasks.

More than Robots...FIRST® Tech Challenge “Drives” STEM Learning Beyond the Classroom

(Grades 7–12) 305, Convention Center

Science Focus: ETS, SEP1, SEP2, SEP3, SEP5, SEP6

Sponsor: FIRST

Thomas Eng (teng@firstinspires.org), FIRST, Manchester, N.H.

Your robot driver’s license awaits! Hands-on robot activity and intro to the popular FIRST Tech Challenge program will leave you wanting more. Understand why middle school/high school students worldwide call this hands-on, project-based robotics program a Sport for the Mind™. This is a building block to “You CAN Program a Robot” workshop.

Hands-On Science with Classroom Critters

(Grades K–12) 306 AB, Convention Center

Science Focus: LS

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 with pill/sow bugs, termites, bessbugs, and butterflies that you can use in your labs. Learn about care and handling, as well as easy ways to introduce inquiry. Additional resources available online.

Protein Necklace: Harnessing the Glow of Jellyfish

(Grades 6–12) 308 AB, Convention Center

Science Focus: LS, CCC, SEP

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Illuminate the dark corners of your students’ curiosity by teaching them about proteins. This simple classroom exercise allows your students to isolate the green fluorescent protein (GFP) found in jellyfish. Show them that protein science can be tangible and engaging but not overwhelming with this beginner’s activity.

Science + Engineering = New Elementary Program from the Smithsonian

(Grades K–5) 309, Convention Center

Science Focus: ETS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Be among the first to experience the exciting new Smithsonian elementary science program written from the ground up for NGSS. Engage in lesson examples to see how the program truly integrates science content with engineering and the nature of science.

Integrating Chromebook with Vernier Technology

(Grades 3–College) 402A, Convention Center

Science Focus: ETS2, PS1, PS2

Sponsor: Vernier Software & Technology

Nüsret Hisim (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

Use Vernier sensors with Chromebooks to conduct hands-on experiments such as “Graphing Your Motion” and “Grip Strength Comparison.” See a demonstration of our new Go Direct wireless and USB sensors that connect directly to Chromebooks—no interface needed. Explore our wide range of digital tools that promote understanding of science concepts.

Integrating iPad with Vernier Technology

(Grades 3–College) 402B, Convention Center

Science Focus: ETS2, PS1, PS2

Sponsor: Vernier Software & Technology

Verle Walters (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

Use Vernier sensors with iPad to conduct hands-on experiments such as “Graphing Your Motion” and “Grip Strength Comparison.” See a demonstration of our new Go Direct sensors that connect wirelessly to iPad—no interface needed. Explore our wide range of digital tools that promote student understanding of science concepts.

Green Chemistry Experiments for General and AP Chemistry

(Grades 9–College)

403A, Convention Center

Science Focus: PS

Sponsor: Flinn Scientific, Inc.

Mike Marvel (mMarvel@flinnsci.com) and **Joan Berry** (jberry@flinnsci.com), Flinn Scientific, Inc., Batavia, Ill.

The Green Chemistry Program was initiated by the EPA in the 1990s with the goal of applying chemical principles to prevent pollution. Join us as we present several experiments demonstrating the 12 principles of green chemistry. You will learn how to build a functional solar cell using fruit, make a household surface cleaner from a plastic cup, use leftover wood ash to run an acid-base titration, and use lettuce seeds to study the ecotoxicity of road deicers. Handouts. This workshop is in collaboration with Beyond Benign. *AP is a trademark of the College Board.*

Extinctions: Understanding the Past, Informing the Present, Guiding the Future

(Grades 9–12)

403B, Convention Center

Science Focus: ESS3, LS2, LS4, CCC

Sponsor: HHMI BioInteractive

Nicoline Chambers, West High School, Torrance, Calif.

Mary Colvard (mpcolvard@icloud.com), Retired Educator, Deposit, N.Y.

HHMI's rich, robust, and free resources help students investigate and develop an understanding of extinction events. Attendees will participate in a 5E lesson and engage in discussion, hands-on inquiry activities, a video, and other media forms to compare past events that resulted in extinctions and compare them to the present.

Project-Based Learning for High School: Sequencing Plant Species

(Grades 9–College)

404 AB, Convention Center

Science Focus: LS

Sponsor: Bio-Rad Laboratories

Damon Tighe, Bio-Rad Laboratories, Hercules, Calif.

Tyler Zarubin, Sage Hill School, Newport Coast, Calif.

See how Tyler Zarubin from Sage Hill adapted a commercial plant-based cloning and sequencing kit to engage high school students in original research. Some of his students even had their novel plant sequences published. With the right scaffolding and support, his students gained valuable biotechnology research skills and experience.

Lab Skills: The Escape Room!

(Grades 9–College)

406 AB, Convention Center

Science Focus: LS

Sponsor: Bio-Rad Laboratories

Sherri Andrews, Bio-Rad Laboratories, Hercules, Calif.

A mysterious illness renders patients incoherent, a group of field scientists is missing, and you've been quarantined—find the cure and solve the mystery to break out of Bio-Rad's lab skills escape room for high school and college life science. Workshop space is limited. Get tickets at the Bio-Rad booth.

Elementary Teacher Survival Kit

(Grades 1–8)

408A, Convention Center

Science Focus: PS2, PS3.A, PS3.B, PS3.C, SEP1

Sponsor: Educational Innovations, Inc.

Ken Byrne, Educational Innovations, Inc., Bethel, Conn.

Cathy Byrne, Hamilton Avenue School, Greenwich, Conn.

Chock-full of easy-to-do science inquiry lessons, this hands-on workshop enables new and veteran teachers to expand their bag of tricks. Using discrepant events, these activities give students a sense of mystery and awe. Topics include energy, air pressure, scientific investigations, data collection, and graphing. Door prizes and giveaways!

Science Vocabulary Has Kinetic Energy When It's Moving

(Grades K–12)

408B, Convention Center

Science Focus: GEN, SEP2, SEP8

Sponsor: McGraw-Hill Education

Dinah Zike, Dinah.com, San Antonio, Tex.

Make science terms, phrases, formulas, and key concepts kinesthetic and memorable. In this fast-paced hands-on workshop, participants view and make multiple evidence-based and standards-focused Notebook Foldables® and vocabulary manipulatives. Constructed materials can be used immediately to enhance daily instruction and organize notebooking activities while providing formative assessment study guides and evaluation tools.

Puppet Theater Engineering: Phenomena, 3D Instruction, and Amplify Science for Grades K–1

(Grades K–1)

409 AB, Convention Center

Science Focus: PS, CCC, SEP

Sponsor: Amplify

Rebecca Abbott (amplifyscience@berkeley.edu) and **Sophia**

Lambertsen (amplifyscience@berkeley.edu), The Lawrence Hall of Science, University of California, Berkeley

Experience how students design shadow scenery and sound effects while figuring out principles of light and sound and engaging in three-dimensional learning. Participants will

get a hands-on dive into Amplify Science for grades K–1, engaging with this new K–8 NGSS-designed curriculum from The Lawrence Hall of Science.

Different Isn't Bad: Using Arthropods to Teach About Science, Society, and Being a Teen

(Grades 6–8) 410, Convention Center

Science Focus: LS

Sponsor: Celestron

Kristie Reddick, The Bug Chicks, College Station, Tex. Entomologist and educator Kristie Reddick of The Bug Chicks teaches about the structure and function of “bug” body parts. Learn morphological features and how to approach social topics like bullying, racism, and self-acceptance using arthropods as a model. This workshop is for teachers who want to empower their students with the skills of science inquiry and compassion for living things. Turn “ewwww” to “cool”!

Guide to Piloting Your Own STEM Lab

(Grades 9–College) 501 AB, Convention Center

Science Focus: LS1.D, SEP

Sponsor: Fisher Science Education

Ellyn Daugherty (ellyn@biotech.com), Biotechnology Educator, San Francisco, Calif.

Implementing a modern lab space might seem daunting when you are at the helm. Ellyn Daugherty, educator and author of *Biotechnology: Science for the New Millennium*, is here to help. Learn practical ideas and strategies for transforming your classroom into a 21st-century laboratory and leave feeling confident that you can set up your own bioscience environment.

Engineering Sustainable Tools: Environmental Science in AGtion

(Grades 6–College) 503, Convention Center

Science Focus: ETS, CCC, SEP

Sponsor: Monsanto Co.

Valerie Bayes, Jarrett Ceglinski, and Chelsea Coley, Monsanto Co., Saint Louis, Mo.

Engineering is an interdisciplinary study that helps bring many people, ideas, and skill sets together to solve big challenges. Join Monsanto Company engineers as they pose a real-world challenge. You and your team will work to solve this challenge, explore different career fields in engineering, and learn about creative (and free) tools to incorporate into your classroom.

Using Maggots, Flies, and Flesh to Solve a Mystery!

(Grades 6–12) 511 AB, Convention Center

Science Focus: GEN

Sponsor: Texas Instruments

Jeffrey Lukens, Sioux Falls (S.Dak.) School District

A decomposing corpse is found in a field. Four possible missing persons fit the description. But who is it? Using clues near the scene will help determine identity. Forensic anthropologist and director of the human ID lab of Colorado, Dr. Diane France helped to develop this free middle school and high school forensic science lesson.

Incorporating Standards-Based Nanotechnology Lessons in the Secondary Science Classroom

(Grades 6–12) 511C, Convention Center

Science Focus: LS, PS

Sponsor: National Nanotechnology Initiative

Joyce Allen (joyce.allen@wheelercountyschools.onmicrosoft.com), Wheeler County Schools, Alamo, Ga.

Nancy Healy (nancy.healy@ien.gatech.edu), Georgia Institute of Technology, Atlanta

Lisa Friedersdorf (lfriedersdorf@nnco.nano.gov), National Nanotechnology Coordination Office, Arlington, Va.

The National Nanotechnology Coordinated Infrastructure (NNCI) is an NSF-sponsored program, which has as one of its goals to provide educational materials and training for middle school and high school teachers. This session will demonstrate how nanotechnology can fit into secondary science classrooms (physical science, physics, chemistry, and biology) by using standards-based hands-on activities. All of the lessons have been tested in classrooms and use relatively inexpensive materials. Handouts!

Studying Genetic Variation in the Classroom

(Grades 6–College) 512, Convention Center

Science Focus: LS

Sponsor: miniPCR

Sebastian Kraves, miniPCR, Cambridge, Mass.

Just 0.1% of our DNA makes us genetically unique. Come use the miniPCR DNA Discovery System to explore genetic variation through PCR and gel electrophoresis. The PTC taster lab will demonstrate how a single DNA base can make you a supertaster, and we will also conduct a DNA fingerprinting investigation.

Cell Differentiation and Gene Expression

(Grades 9–12)

518, Convention Center

Science Focus: LS1.A, LS1.B, LS3.A, CCC1, CCC2, SEP6

Sponsor: Lab-Aids, Inc.

Virginia Rehberg, Wilson High School, Tacoma, Wash. Students often have trouble conceptualizing how selective gene expression works. In this workshop, we will use manipulatives to teach this concept and explain how it is connected to the issue of genetic engineering. This innovative activity is selected from *Science and Global Issues: Biology*, developed by SEPUP at The Lawrence Hall of Science.

2:00–4:00 PM Presentation

CSSS-Sponsored Session: NGSS for State Science Supervisors

(Grades P–12)

Olympic 1, JW Marriott

Science Focus: GEN, NGSS

Ellen Ebert, Office of Superintendent of Public Instruction, Olympia, Wash.

This session is for state science supervisors whose states have adopted NGSS. States will have the opportunity to discuss strategies and challenges of adoption.

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NSTA National Science Teachers Association

2:00–4:00 PM Hands-On Workshop**INF Science in the Community Share-a-Thon***(General)* 152, Convention Center

Science Focus: INF, NGSS

Elsa Bailey (*ebbaily@earthlink.net*), Elsa Bailey Consulting, San Francisco, Calif.**Julie Anderson** (*outreach@omahazoo.com*) and **Emily Brown** (*educate@omahazoo.com*), Omaha's Henry Doorly Zoo and Aquarium, Omaha, Neb.**Niki Angleton** (*angleton@usc.edu*), Los Angeles Memorial Coliseum, University of Southern California, Los Angeles**Lily Arendt** (*lily@sciencebuddies.org*), Science Buddies, Milpitas, Calif.**Yongmi (Christina) Argo** and **Chris Schaben** (*chris.schaben@ops.org*), Omaha (Neb.) Public Schools**Andrea Aust** (*aaust@kqed.org*), KQED, San Francisco, Calif.**Sheri Klug Boonstra** (*jlswann@asu.edu*), ASU School of Earth and Space Exploration, Arizona State University, Tempe**Sarah Carter** (*scarter@tpt.org*), Twin Cities Public Television, St. Paul, Minn.**Amelia Chapman** (*amelia.j.chapman@jpl.nasa.gov*), NASA Jet Propulsion Laboratory, Pasadena, Calif.**Sharon Cooper** (*scooper@ldeo.columbia.edu*), Lamont-Doherty Earth Observatory, Palisades, N.Y.**Mary Deming** (*demingmb@hotmail.com*), Museum of Teaching and Learning, Fullerton, Calif.**Eric Hamilton** (*ehamilton@amnh.org*), American Museum of Natural History, New York, N.Y.**Janice Harvey** (*jharvey@gemini.edu*), Gemini Observatory, Hilo, Hawaii**Ann Hernandez** (*ahernandez@astc.org*), Association of Science-Technology Centers, Washington, D.C.**Jennifer Jovanovic** (*jennifer@growinggreat.org*), GrowingGreat, Manhattan Beach, Calif.**Brian Kruse** (*bkruse@astrosociety.org*), Astronomical Society of the Pacific, San Francisco, Calif.**Kimberly Kutina** (*teacherworkshops@sandiegozoo.org*), San Diego Zoo Institute for Conservation Research, San Diego, Calif.**Eric Muller** (*emuller@exploratorium.edu*), Exploratorium, San Francisco, Calif.**Carolyn Ng** (*carolyn.y.ng@nasa.gov*), NASA Goddard Space Flight Center, Greenbelt, Md.**Deb Novak** and **Kelly White** (*kellyj.white@state.nm.us*), New Mexico Museum of Natural History and Science, Albuquerque**Maria Parisi** (*maria_paris@fws.gov*), U.S. Fish and Wildlife Service, Falls Church, Va.**Madlyn Runburg** (*mrungburg@nhmu.utah.edu*), Natural History Museum of Utah, Salt Lake City**Dennis Schatz** (*schatz@pacsci.org*), NSTA Director, Informal Science, and Pacific Science Center, Seattle, Wash.**Mike Simmons** (*mikes@astronomerswithoutborders.org*), Astronomers Without Borders, Calabasas, Calif.**Brad Tanner** (*bradtanner@mote.org*), Mote Marine Laboratory & Aquarium, Sarasota, Fla.

Come meet and engage with folks who bring you exciting resources, programs, and opportunities available to you from museums, after school, media, and other science providers!

2:30–3:00 PM Presentations**School-Based Science Methods Courses That Provide Professional Development to Inservice Teachers***(Grades K–8, College)* Georgia 2, JW Marriott

Science Focus: GEN, CCC2, SEP3

Matthew Vick, University of Wisconsin–Whitewater
Hear how a collaboratively taught preservice science methods class taught in an elementary school can serve as professional development for inservice teachers.**Strategies to Incorporate Crosscutting Concepts in Your Science Instruction***(Grades K–12)* Platinum Ballroom Salon H, JW Marriott
Science Focus: ESS, LS, CCC**Ann Rivet** (*@arivet6; ribbit216@yahoo.com*), **Xiaoxin Lyu** (*x12502@tc.columbia.edu*) and **Yi Li** (*@YiLi_SciEdu; yl2857@tc.columbia.edu*), Teachers College, Columbia University, New York, N.Y.

Learn more about the NGSS crosscutting concepts, how they relate to disciplinary core ideas and science practices, and ways of incorporating them into your instruction.

Adapting Instruction: Meeting the Needs of Diverse Learners

(Grades 2–12) *Platinum Ballroom Salon I, JW Marriott*
Science Focus: GEN

Eva Cwynar (@evacwynar; *eva.cwynar@palmbeachschools.org*), Palm Beach County School District, West Palm Beach, Fla.

Identify ways to address the needs of today's increasingly diverse learners and create a template for the flow of instruction in a differentiated classroom.

Make a Splash with Engaging Anchoring Phenomena

(Grades 6–12) *505, Convention Center*
Science Focus: GEN, NGSS

Daniel Coburn (*dcoburn56@gmail.com*), Trumbull High School, Trumbull, Conn.

Using applicable and thought-provoking anchoring phenomena is an effective way to engage students in the application of NGSS engineering practices and a mechanism to promote conceptualization of scientific concepts. A methodology of sequencing lessons to engage students, promote three-dimensional learning, and address performance goals will be presented.

Advanced Chemical Research: Training Future Scientists

(Grades 9–College) *Kentia Hall O, Convention Center*
Science Focus: PS, SEP

Steven Sogo (*ssogo@lbusd.org*), Laguna Beach High School, Laguna Beach, Calif.

The Advanced Chemical Research (ACR) program at Laguna Beach High School engages students in authentic research projects, producing scientists and engineers who become leaders in their fields of study. This presentation discusses the benefits and challenges of creating a project-based capstone science course in a public high school.

Game Design: A Classroom Strategy for the Science Classroom

(General) *West Hall B-4, Convention Center*
Science Focus: GEN, SEP

Peg Steffen (@pegsteffen; *peg.steffen@noaa.gov*), NOAA National Ocean Service, Silver Spring, Md.

Game design provides an engaging way for students to learn science content and to be creative.

2:30–4:30 PM Presentation

Meet Me in the Middle Session: Meet Me in the Middle Share-a-Thon

(Grades 4–8) *Diamond Ballroom Salon 4/5, JW Marriott*
Science Focus: GEN, NGSS

Organizer: **Todd Hoover** (@DrToddHoover; *thoove2@bloomu.edu*), Bloomsburg University of Pennsylvania, Bloomsburg

Visit bit.ly/2m5gcDU for a complete list of participants.

Join us to engage in hands-on activities, collect information/resources from national/international organizations, network with NSTA Middle Level and NMSLTA leaders, review recommended middle level science materials and resources, and more—all in a single location. Discover invaluable resources that will engage your middle level students in exciting and inspiring science learning!

Please join us at 2:30 for a short welcome and the presentation of the Paul DeHart Hurd Award for Exemplary Middle Level Science Teaching and Leadership to this year's recipient.

3:00–4:00 PM Meeting

Chapter and Associated Group Leader Roundtable

Atrium 3, JW Marriott

Are you a volunteer leader or staff of an NSTA chapter or associated group? Attend this networking session to learn more about what NSTA is doing to support your organization, share information, and network with other stakeholders. Refreshments provided.

3:00–6:00 PM Short Courses**NGSS** **NGSS: Three Dimensions in Action in a California Early Implementer Classroom (SC-9)**

(Grades 3–5) Tickets Required; \$55 Santa Anita A, Westin
Science Focus: GEN, NGSS

Karen Cerwin (kcerwin@wested.org), K–12 Alliance/
WestEd, Los Alamitos, Calif.

Christina Miramontes (ciramontes@psusd.us) and
Alyssa Nemecekova Fairfield, Palm Springs (Calif.)
Unified School District

For description, see Volume 1, page 58.

**Reaching Extremes! Blending Climate Science and Mathematics to Reach All Learners (SC-10)**

(Grades 3–8) Tickets Required; \$98 Santa Anita C, Westin
Science Focus: ESS2.D

Teri Cox, eStem Middle Public Charter School, Little
Rock, Ark.

Dennis Pevey, eStem Elementary Public Charter School,
Little Rock, Ark.

For description, see Volume 1, page 59.

3:30–4:00 PM Presentations**Using Technology to Differentiate Instruction**

(Grades 7–College) Platinum Ballroom Salon D, JW Marriott
Science Focus: ETS, CCC1, CCC2, SEP1, SEP2, SEP4,
SEP5, SEP6, SEP7, SEP8

Jessica Ross (jecross@rossfoundation.org), Midwood High
School at Brooklyn College, Brooklyn, N.Y.

Gear up your classroom with different technological tools
freely available to differentiate instruction, such as kahoot,
nearpod, plickers, socrative, and QR codes.

INF Reflecting on SciGirls Seven: Research-Based Gender Equitable Strategies for Engaging Diverse Learners in STEM

(Grades 3–12) Platinum Ballroom Salon H, JW Marriott
Science Focus: INF, SEP1, SEP3, SEP8

Brenda Britsch (bbritsch@ngcproject.org), National Girls
Collaborative Project, Seattle, Wash.

Rita Karl (@SciGirls; rkarl@tpt.org), Twin Cities Public
Television, St. Paul, Minn.

Discover and reflect on ways that educators can use specific
research-based strategies for engaging girls in STEM. Strate-
gies are based on interviews with 50 *SciGirls* informal educators.

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NSTA National
Science
Teachers
Association

Moving to Authentic Assessments

(Grades 9–12)

Plaza 1, JW Marriott

Science Focus: GEN, SEP

Elizabeth Potter-Nelson, Stevens Point Area Senior High School, Stevens Point, Wis.

Join a team of high school teachers who are ready to share their experiences enhancing multiple choice exams with authentic assessments.

Building Scientific Literacy by Using Science News Reported in the Popular Media

(Grades 9–12)

Plaza 2, JW Marriott

Science Focus: GEN

Mark Powers (mpowers@anwsu.org), Vergennes Union High School, Vergennes, Vt.

Students in science courses select, summarize, and report on science news articles in the media, and then reflect on the veracity of the source.

Next Generation Science Classrooms: A Survey for Examining the Experiences of Students in Science Classrooms

(Grades 7–12)

505, Convention Center

Science Focus: GEN, NGSS

Todd Campbell (@dtcampbe; todd.campbell@uconn.edu), University of Connecticut, Storrs Mansfield

Hyunju Lee (hyunju.lee@aggiemail.usu.edu) and **Max Longhurst** (max.longhurst@usu.edu), Utah State University, Logan

Thomas McKenna (tjmckenna01@gmail.com), Connecticut Science Center, Hartford

Get introduced to a survey for examining student-reported experiences in science classrooms, especially related to learning experiences envisioned in the NGSS.

INF The American Astronomical Society's Resources for Educators, Students, and the Public

(Grades 7–College)

Kentia Hall P, Convention Center

Science Focus: INF, ESS

Gina Brissenden (gina.brissenden@aaas.org), American Astronomical Society, Washington, D.C.

Find out about educational resources and opportunities from the American Astronomical Society for educators, students, and others interested in learning about the universe and/or astronomy-related careers!

Analysis and Incorporation of NGSS into Existing Science Curricula

(Grades 6–12)

West Hall B-4, Convention Center

Science Focus: GEN, NGSS

Heather Holm (heather_holm@universitylaboratoryschool.org), **Betty Skiles** (betty_skiles@universitylaboratoryschool.org),

Jennifer Seki (jennifer_seki@universitylaboratoryschool.org),

and **Sherry Alam** (sherry_alam@universitylaboratoryschool.org), University Laboratory School, Honolulu, Hawaii

We will outline the process of understanding NGSS, analyzing existing curricula as it relates to NGSS, and incorporating new content, including insights and challenges faced.



3:30–4:30 PM Robert H. Carleton Lecture
STEM-ing from the Box: Planning, Designing, and
Constructing Safe, Sustainable Science Facilities
Through STEM-Based Teaching and Learning
 (General) Theatre (411), Convention Center
 Science Focus: GEN



LaMoine Motz (*llmotz@comcast.net*), 1988–1989 NSTA President, and Managing Partner, The Motz Consulting Group, White Lake, Mich.

Come join in... as we discuss how the best science facilities can transform our ways of teaching and learning. Without active, effective, and safe science labs, our students become “science soldiers without arms.” Learn about top-of-the-line science classrooms and labs that can transform mediocre student work into outstanding outcomes!

Lead author of NSTA’s Guide to Planning School Science Facilities, LaMoine Motz has served NSTA for over 40 years, notably as its president and as chair or team member of numerous committees, advisory boards, and task forces. Concern about the state of safe and efficient science facilities—and how to use them to strengthen science teaching and learning—prompted LaMoine, a former science teacher of over 44 years, to form The Motz Consulting Group.

The Motz Consulting Group, L.L.C., provides specialized facility planning and design services with a concentration in the science facilities and school markets.

3:30–4:30 PM Presentations
NSELA-Sponsored Session: Teaching a Culturally
Responsive Pedagogy in Science

(Grades P–12) Diamond Ballroom Salon 2, JW Marriott
 Science Focus: GEN, NGSS

Vicki Massey (*vickimassey@cox.net*), Higley Unified School District #60, Gilbert, Ariz.

Pradeep Dass (*@PradeepMDass; pradeep.dass@nau.edu*), Northern Arizona University, Flagstaff

Fran Hess (*fran Hess@gmail.com*), Catskill Regional Teacher Center, Naples, Fla.

Gary Nakagiri (*gnakagiri@gmail.com*), Alameda County Office of Education, Hayward, Calif.

Janice Mak (*@jmakaz; mak@pd.code.org*), Wildfire Elementary School, Phoenix, Ariz.

Join the NSELA Diversity Committee as we take a look at the knowledge, skills, and predispositions to teach children from diverse racial, language, ethnic, and social class backgrounds.

Uncovering Student and Teacher Ideas in Science
Using Probes

(General) Diamond Ballroom Salon 2, JW Marriott
 Science Focus: GEN, SEP1, SEP2

Douglas Hunnings (*@HUNNINGS_Douglas; dhunnings@elkhart.k12.in.us*), Pinewood Elementary School, Elkhart, Ind.

Holly O’Connell (*hollyoconnell@elkhart.k12.in.us*), Pinewood Elementary School, Elkhart, Ind.

Hear how teachers and professional developers have used the *Uncovering Student Ideas* series to help improve instruction, in and out of the classroom.

 **NSTA Press® Session: Big Data, Small Devices**
 (Grades 4–12) Diamond Ballroom Salon 6, JW Marriott

Science Focus: ESS2, CCC1, CCC3, CCC4, SEP3, SEP4

Donna Governor (*donna.governor@ung.edu*), University of North Georgia, Dahlonega

G. Michael Bowen (*gmbowen@yahoo.com*), NSTA Director, District XVIII, and Mount Saint Vincent University, Halifax, N.S., Canada

Find out how to use smartphone apps and real-time data to have students engage in scientific investigations and explore concepts in Earth and environmental science.

RESCHEDULED TO
 THURSDAY, 12:30 PM
 (see program changes)

Recruiting Underrepresented and Low-Income Students into STEM Research Programs

(Grades 6–12) *Diamond Ballroom Salon 7, JW Marriott*
Science Focus: ETS

Filomena Vine (*fvine10@gmail.com*), Ed W. Clark High School, Las Vegas, Nev.

Anna Rhymes (*@Society4Science*; *arhymes@societyforscience.org*), Society of Science & the Public, Washington, D.C.

Scientific research, participation in STEM competitions, and ongoing community support can be used for maximizing student achievement and for overcoming socioeconomic or ethnic barriers.

The Nation's Report Card: Do United States Students Make the Grade?

(Grades 6–8) *Diamond Ballroom Salon 10, JW Marriott*
Science Focus: GEN

Dolly Maiah (*@NAEP_NCES*), National Assessment of Educational Progress, Washington, D.C.

Grady Wilburn (*grady.wilburn@ed.gov*), National Center for Education Statistics, Washington, D.C.

Did U.S. students make the grade in recent science, technology, and engineering literacy assessments? The National Assessment of Educational Progress (NAEP) will share results.

Safety Advisory Board Roundtable: Listening and Addressing Your Safety Issues, Featuring NGSS and STEM Safety

(General) *Platinum Ballroom Salon A, JW Marriott*
Science Focus: GEN, NGSS

Mary Loesing (*@mloesing*; *mloesing@ccsdl.org*), NSTA Director, District IV, and Connetquot Central School District, Bohemia, N.Y.

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

Edward McGrath (*@eddiesciguy*; *edward.mcgrath@redclay.k12.de.us*), Red Clay Consolidated School District, Wilmington, Del.

NSTA Safety Advisory Board (SAB) members will be on hand to offer guidance and answer your safety questions during this roundtable discussion. Information from the participants will be used to refine the SAB's goals for the coming year. The presentation will include safety information for NGSS- and STEM-focused labs, activities, and projects.



NSTA Press® Session: How Scientific Learning Communities Promote Equity and Access Through Whole-Class Inquiry

(Grades 6–12) *Platinum Ballroom Salon B, JW Marriott*
Science Focus: GEN, SEP6, SEP7, SEP8

Michael Nocella (*micnoc@d219.org*) and **Jason Foster** (*jayfos@d219.org*), Niles West High School, Skokie, Ill.

Learn how community building via Whole-Class Inquiry supports students in a safe space that actively addresses access to curriculum and microaggressions to promote classroom equity.

NOAA in Your Backyard: Free Professional Development and Local Educator Resources Are Closer Than You Think!

(General) *Platinum Ballroom Salon E, JW Marriott*
Science Focus: GEN, SEP

June Teisan, NOAA Office of Education, Washington, D.C. The National Oceanic and Atmospheric Administration (NOAA) has hundreds of facilities and professional communicators across the nation. Get connected to guest speakers, field trips, and local and national professional development opportunities.



NGSS@NSTA Forum Session: The Next Generation of Statewide Assessments

(Grades K–12) *151, Convention Center*
Science Focus: GEN, NGSS

Michelle Center, California Dept. of Education, Sacramento

Stephen Pruitt, Kentucky Dept. of Education, Frankfort
Peter McLaren (*@PeterJMcLaren*; *mclarenpeterj@gmail.com*), Council of Chief State School Officers, Washington, D.C.

States across the country have adopted three-dimensional science standards and are now developing statewide assessments aligned to these new standards. This session will offer perspectives on what the promises and challenges of that process have been and some glimpses of what those new assessments may look like.

Every Day STEM for Every First Grader

(Grades P–3) *501C, Convention Center*
Science Focus: ETS1.B, PS2.A, SEP

Marcy Seavey (*seavey@uni.edu*) and **Beth Van Meeteren** (*beth.vanmeeteren@uni.edu*), University of Northern Iowa, Cedar Falls

Lisa Chizek, North Tama Elementary School, Traer, Iowa
Find out how a first-grade teacher redesigned and engineered her classroom to enable ALL of her students to engage in STEM alongside literacy centers.

Bridging the Divide: Using Informal Science Learning Approaches In and Out of the Classroom

(Grades 7–12) 504, Convention Center

Science Focus: INF, SEP1, SEP2

Jennifer Adams and **Theila Smith** (*theila.smith@baruch-mail.cuny.edu*), Brooklyn College, Brooklyn, N.Y.

Pablo Garcia (*g.pablo2012@gmail.com*), New York Harbor School, New York, N.Y.

Elizabeth Baker (*erbaker_5@msn.com*), Academy for College Preparation and Career Exploration, Brooklyn, N.Y.

Learn how teachers from a large urban district are adapting and using informal science resources and approaches to support equitable science teaching in their classrooms.

Integrating E-Books into the K–5 Classroom

(Grades P–5) 507, Convention Center

Science Focus: GEN

Leisa Clark, Assistant Executive Director, e-Products, NSTA, Arlington, Va.

Kara Pantalena, Senior Instructional Designer, e-Products, NSTA, Arlington, Va.

Eleonore Dixon-Roche, e-Learning Multimedia Specialist, e-Products, NSTA, Arlington, Va.

Engage in science and literacy—learn how interactive multimedia elements and accompanying text can enhance science learning and literacy for elementary students. While using NSTA's eBooks+ Kids for examples, these concepts can be applied to other digital content.

Full STEAM Ahead

(Grades P–5) Kentia Hall A, Convention Center

Science Focus: ETS

Jennifer Toledo (*@ToledoJToledo*; *jtoledo@dusd.net*), Downey (Calif.) Unified School District

Naomi Griswold (*ngriswold@dusd.net*), Teacher, Downey, Calif.

Learn about Downey Unified's STEAM program: 15 teacher specialists bring hands-on, technology-rich curricula to the district's elementary students and provide many parent involvement opportunities.

Science and Literacy: A Successful Connection

(Grades 4–8) Kentia Hall L, Convention Center

Science Focus: GEN

Linda Linnen, Retired Teacher, Aurora, Colo.

Leveled materials are used to demonstrate simultaneously teaching science and literacy. Participants are given sample lessons as well as hands-on activity ideas and materials for immediate classroom utilization.



Sweet Math: How Much Corn Did I Drink?

(Grades 4–9) Kentia Hall M, Convention Center

Science Focus: LS, PS, CCC3

Suzanne Cunningham, Purdue University, West Lafayette, Ind.

Reading a label on that can of soda, bottle of pop, or sport drink...or a carton of juice is NOT enough. Math is required.



Engaging At-Risk Students Through Voice and Choice

(Grades 6–12) Kentia Hall O, Convention Center

Science Focus: GEN, INF, NGSS

Colleen Zenner (*czenner@barrington220.org*) and **Lauren Pennock** (*lpennock@barrington220.org*), Barrington High School, Barrington, Ill.

We will demonstrate how to confidently engage at-risk students with inquiry experiences. Resources and assessments will be shared that are easily adaptable for your classroom.

NESTA and NOAA Share: Game Jams: Instructional Strategy for the Science Classroom

(General) Petree Hall D, Convention Center

Science Focus: ESS3.C, SEP2

Peg Steffen (*peg.steffen@noaa.gov*), NOAA National Ocean Service, Silver Spring, Md.

Game Jams offer immersion in science content and help inspire curiosity, creativity, collaboration, and problem-solving skills. Find out about this innovative classroom strategy.

3:30–4:30 PM Hands-On Workshops

Life Science on the International Space Station

(Grades 7–10) *Diamond Ballroom Salon 8, JW Marriott*

Science Focus: LS, CCC, SEP

Crystal Del Rosso (@mrsdelrosso; u_cre8_f8@yahoo.com), Paragon TEC, Houston, Tex.

Brandon Hargis (@brandon_hargis; brandon.m.hargis@nasa.gov), NASA Johnson Space Center/Texas State University, Houston

NASA Education Specialists demonstrate how to integrate research from the International Space Station into the biology classroom.

AMSE-Sponsored Session: The NGSS and Student Collaboration—Structures and Supports for Equitable Access to Academic Conversations

(Grades 6–12) *Diamond Ballroom Salon 9, JW Marriott*

Science Focus: GEN, NGSS

Melissa Campanella, Noel Community Arts School, Denver, Colo.

Join us as we model structures and supports that build on social knowledge to create access to rigorous academic science discourse for all students.

NSTA Press® Session: Outdoor Science with Birds, Books, and Butterflies

(Grades P–8) *Platinum Ballroom Salon C, JW Marriott*

Science Focus: GEN, CCC

Steve Rich (@bflyguy; bflywriter@comcast.net), University of West Georgia, Carrollton

Outdoors or in, discover engaging lesson ideas with natural materials, children’s books, and citizen science. Join me for outdoor classroom basics, funding ideas, crosscutting concepts, and free seeds.

Controversy in Three Dimensions: Should the HPV Vaccine Be Mandatory?

(Grades 9–12) *Plaza 3, JW Marriott*

Science Focus: ETS1, LS4, CCC2, CCC4, SEP1, SEP4, SEP6, SEP7

Dawnne LePretré (dlepretr@hawk.iit.edu) and **Norman Lederman** (ledermann@iit.edu), Illinois Institute of Technology, Chicago

Affecting 79 million Americans, HPV is a socioscientific issue! Engage students in a debate to produce arguments supported by evidence during a scenario role-play and discussion.



Using Lab Notebooks in the Preschool and Elementary Classroom

(Grades P–5)

502A, Convention Center

Science Focus: GEN, SEP8

Katie Morrison (@UCDS_Seattle; katiem@ucds.org) and **Deb Chickadel** (@UCDS_Seattle; debc@ucds.org), University Child Development School, Seattle, Wash.

Come learn how to teach data collection, analysis, and recording to preschool and elementary-aged children. Take away tools to design and implement lab notebooks in your classroom.



Bilingual Engineering Adventures for the Whole Family

(Grades K–6)

502B, Convention Center

Science Focus: ETS, CCC4, CCC6, CCC7, SEP1, SEP6, SEP8

Maria Cieslak (myciesla@interact.ccsd.net), Clark County School District, Las Vegas, Nev.

Share the wonder and excitement of engineering adventures in this hands-on workshop for the whole family. Learn how to engage culturally and linguistically diverse families as they build a water tower for a refugee camp in Kenya and a parking garage for a University in Japan. Handouts in English and Spanish.

Modeling the Earth-Sun System—More than the Seasons

(Grades 3–9)

515A, Convention Center

Science Focus: ESS1.B, ETS1, CCC2, CCC4, SEP2

Jennifer Mendenhall (@mss_wested; jmenden@wested.org), Making Sense of SCIENCE at WestEd, San Francisco, Calif. Learn about a practice integral to the work of scientists—modeling. Explore different types of models that help us understand features of our Earth-Sun system.



NASA Is with You When You Fly: Flying with Bernoulli

(Grades K–12)

515B, Convention Center

Science Focus: ETS1, PS2, PS3.A, CCC1, CCC2, CCC4, CCC7, SEP1, SEP3, SEP4, SEP5, SEP6, SEP7

Barbara Buckner (@bbuckner; barbie.buckner@nasa.gov), NASA Armstrong Flight Research Center, Palmdale, Calif. Come learn about energy, motion, and forces as you engage in hands-on, standards-focused STEM activities demonstrating Bernoulli’s principle. Make real-world connections with NASA research.

Force, Motion, Literacy, and Language!*(Grades P–1)**Kentia Hall B, Convention Center*

Science Focus: ETS, PS2.A

Pamela Nolan-Beasley, Waitsburg (Wash.) School District

Join me for lively force and motion activities for kindergarten, preschool, and early elementary learners. Lessons align with NGSS/ELA and will give you ready-to-use ideas that accelerate students' language and science learning. Excite young learners, encourage curiosity, have fun, and participate in challenging science investigations that you can use with our amazing young scientists!

Farm to Kitchen: Planning a Three-Dimensional Unit with a Focus on Engineering*(Grades K–3)**Kentia Hall C, Convention Center*

Science Focus: ETS1, LS

Jennifer Munoz (@pettalluma; jmunoz@dmusd.org), Carmel Del Mar School, San Diego, Calif.**Stacie Waters** (swaters@dmusd.org), Ocean Air School, San Diego, Calif.

Serve up new learning in your classroom with a project “Farm to Kitchen.” Engage your primary students in the question “What is our place on the planet and where do the resources we use come from?” Using the engineering design process, build an animal enclosure. Materials and constraints provided; ideas and thinking caps needed!

Catch a Wave: The Science of Sound*(Grades P–2)**Kentia Hall E, Convention Center*

Science Focus: PS

Jennifer Lee (jlee@smhall.org), Saint Mary's Hall, San Antonio, Tex.

Catch a wave as I pitch you new ideas using active exploration to pump up the volume of your K–2 sound energy lessons.

Read Like a Scientist: Learning to See the Crosscutting Concepts in Children's Literature*(Grades K–5)**Kentia Hall F, Convention Center*

Science Focus: GEN, CCC

Mark Lubkowitz (@Prof_mlubkowitz; mlubkowitz@smcvt.edu) and **Valerie Bang-Jensen** (@valeriebangjensen; vbang-jensen@smcvt.edu), Saint Michael's College, Colchester, Vt. Explore how to find and use the seven crosscutting concepts in your classroom, daily discourse, and children's literature.

Coasting Through Physics: Bring the Thrill of Roller Coasters to Your Classroom!*(Grades 4–10)**Kentia Hall G, Convention Center*

Science Focus: PS, SEP1, SEP3, SEP4, SEP5, SEP7, SEP8

Shanna Hall-David (shanna.david@hsv-k12.org), Hampton Cove Middle School, Owens Cross Roads, Ala.

Hold on for the ride of your life! Make a marble roller coaster using everyday supplies that can be found in any classroom. Have your class rolling and coasting through physics as we examine roller coaster design and how Newton's laws affect riders.

Using Discrepant Events to Jump-Start Inquiry*(Grades 3–8)**Kentia Hall H, Convention Center*

Science Focus: PS1, SEP1, SEP7

Perihan Fidan (@PerihanFidan1; pfidan21@students.tntech.edu), **Stephanie Wendt** (@StephanieWendt1; swendr@tntech.edu), and **Amber Spears**, Tennessee Tech University, Cookeville

Discrepant events puzzle and startle the learner because the results are different from what one expects. Join us to learn how to jump-start scientific inquiry!

Forensics Fun for All*(Grades 2–9)**Kentia Hall J, Convention Center*

Science Focus: GEN, NGSS

Beth Guzzetta (@bethguzzetta; bguzzetta@allendalecolumbia.org), Allendale Columbia School, Rochester, N.Y.

Involve your school members in an engaging forensics unit that can be adapted to elementary and middle school classrooms. Hands-on activities + materials = fun.

STEM in the Primary Classroom*(Grades P–2)**Kentia Hall K, Convention Center*

Science Focus: GEN, SEP1, SEP2, SEP3, SEP6

Jen Gutierrez (@jengutierrez18; jen@cox.net), NSTA Director, District XIV, and integratedSTEMk12, LLC, Chandler, Ariz.

Jennifer Thompson (@jenjuneau; jenjuneauak@gmail.com), NSTA Director, Preschool/Elementary Science Teaching, and Harborview Elementary School, Juneau, Alaska Supporting young children's instinctive desire to explore STEM ideas and phenomena has lasting benefits. Come investigate how interdisciplinary STEM teaching and learning supports all students.

Designing a STEM Lesson

(Grades 6–12) *Kentia Hall N, Convention Center*

Science Focus: ETS1

Heather Wygant (*geofaultline@gmail.com*), Santa Clara District Resource Center, Sunnyvale, Calif.

Experience the engineering design process in a STEM lesson for secondary science classes, with a template for creating one.

Representing Cell Membrane Transport with Polystyrene Foam Cups and Lentils

(Grades 7–12) *Kentia Hall R, Convention Center*

Science Focus: LS1.A, CCC1, CCC6, SEP2

Lucia Chacon Diaz (*lbchacon@nmsu.edu*) and **Cecilia Hernandez** (*@DrCeci2011*; *cecimh@nmsu.edu*), New Mexico State University, Las Cruces

Engage students in learning about cell membrane transport through a critical thinking and active learning activity.

Using Issues as a Context to Enhance Students' Three-Dimensional Learning

(Grades 6–10) *Kentia Hall S, Convention Center*

Science Focus: LS2, CCC7, SEP4, SEP6

Maia Willcox (*@sepup_ucb*; *mwillcox@berkeley.edu*), The Lawrence Hall of Science, University of California, Berkeley

Dora Kastel (*@Dora_AMNH*; *dkastel@amnh.org*), American Museum of Natural History, New York, N.Y.

Participate in hands-on middle school ecology activities that use biotic and abiotic ecological disruptions to engage students in the three dimensions of the NGSS.

CESI-Sponsored Session: Web 2.0 Tools for Science Teaching

(Grades K–8)

West Hall B-2, Convention Center

Science Focus: ETS

Jim McDonald (*@jimscienceguy*; *jim.mcdonald@cmich.edu*) and **Jason Artero**, Central Michigan University, Mount Pleasant

We will demonstrate Web 2.0 technology tools to create projects for K–8 science teaching and learning. Come explore the tools with your laptops or smartphones.

Using the Science Writing Heuristic as a Method for Implementing Three-Dimensional Learning

(Grades 6–12)

West Hall B-3, Convention Center

Science Focus: GEN, CCC, SEP4, SEP7

Jennifer Panczyszyn and **Heather Witt** (*@tortugahiker*), K.O. Knudson Middle School, Las Vegas, Nev.

Incorporate three-dimensional learning using the Science Writing Heuristic, a research-based method of teaching science through inquiry. SWH lessons allow students to develop their initial thoughts, build on them through lab experiences, and challenge them through expert readings. Engage in an SWH lesson, view student work, and begin to develop your own SWH.

Project ReCharge! Energy Efficiency Through Inquiry and Real-Time Data

(Grades 6–12)

West Hall B-5, Convention Center

Science Focus: GEN

Catherine Pozarski-Connolly, University of Nevada, Reno

David Crowther (*@Dtcrowther*; *crowther@unr.edu*), NSTA President-Elect, and University of Nevada, Reno

Project ReCharge is a NSF-funded project for energy education through the University of Nevada, Reno and Envirovolution. Engage in an energy-efficiency inquiry curriculum while learning about web-based technology that allows students to monitor electricity usage at their school site.



3:30–4:30 PM Exhibitor Workshops**Understanding Photosynthesis: A Lab-Based Approach***(Grades 7–11)* 405, Convention Center

Science Focus: LS1.C, LS2.B, PS3.D

Sponsor: PASCO scientific

Michael Blasberg (*blasberg@pasco.com*), PASCO scientific, Roseville, Calif.**Ryan Reardon** (*rreardon71@gmail.com*), Shades Valley High School, Irondale, Ala.

How can you clear up student misconceptions about respiration only occurring in the dark, or that only green light is used for photosynthesis? With data! Collect data on plant pigments, light reactions, and carbon cycling to create a better conceptual model that students can synthesize for a complete understanding of photosynthesis.

STEM Activities: Fascinating Forces and Simple Machines*(Grades 6–12)* 407, Convention Center

Science Focus: PS2.A, PS3.C, CCC1, CCC2, CCC3, CCC4, SEP2, SEP3, SEP4, SEP5, SEP6

Sponsor: PASCO scientific

Brett Sackett (*sackett@pasco.com*), PASCO scientific, Roseville, Calif.**Thomas Hsu** (*thsu@pasco.com*), Ergopedia, Inc., Cambridge, Mass.

How were the pyramids built? How do gears work? Simple machines are an effective way to learn about forces in this hands-on exploration guaranteed to engage students. We will build several machines using pulleys, levers, and gears as we develop the principles of forces, work, energy, and machines.

Beginning Explorations in Planned and Creative Building Activities with Kid K’NEX*(Grades K–2)* 510, Convention Center

Science Focus: PS

Sponsor: K’NEX Education

Robert Jesberg (*rjesberg@knex.com*), K’NEX Education, Hatfield, Pa.

Build and explore STEAM concepts with Kid K’NEX models “firsthand!” Young learners can develop a new vocabulary (spin, push, pull, machine, roll, tentacles, fins, etc.) they will use to explain forces, motion, plants, and animals in their own words. Learners can build models from 1:1 instructions or design and create machines, creatures, and moveable models on their own.

3:30–5:00 PM Meeting**SCST Business Meeting***Georgia 1, JW Marriott***4:00–4:30 PM Presentations****Transforming the T in STEM: Using Technology in All Aspects of the 5E Instructional Model***(Grades 5–12)* Platinum Ballroom Salon D, JW Marriott

Science Focus: ETS2

Amanda Solarsh (*@STEMsuccessEdu; amandasolarsh@gmail.com*), Simon Baruch MS104, New York, N.Y.**Gina Tesoriero** (*ginatesoriero@gmail.com*), M.S. 319 Maria Teresa Mirabal School, New York, N.Y.**Jeannie Gargiulo** (*jeanniegargiulo@gmail.com*), Fieldston Lower, Middle, and Upper School, Bronx, N.Y.

Meet the needs of all learners by embedding technology into all stages of science instruction and preparing students for 21st-century learning.

Making Advanced Science Classes More Accessible to Girls: Westridge School’s Recent Accomplishments*(Grades 7–College)* Platinum Ballroom Salon H, JW Marriott

Science Focus: PS1, PS3, PS4, SEP4, SEP8

Edye Udell (*eudell@westridge.org*), Westridge School for Girls, Pasadena, Calif.

Flipped chemistry courses (video lectures as homework) correlated with an increased AP Chemistry enrollment at an all girls school—come learn how and why it worked.

Using Project-Based Learning to Teach Climate Change*(Grades 6–College)* Platinum Ballroom Salon I, JW Marriott

Science Focus: ESS3.D, CCC2, CCC5, SEP2, SEP6, SEP7, SEP8

Jessica Guccione (*@msguccione; jessguccione@gmail.com*), Venado Middle School, Irvine, Calif.

Hear how to implement a Project-Based Learning unit on climate change that will get your students analyzing the link between science and society.

Digital Peer Review as a Scientific Practice and Formative Assessment*(Grades 9–12)* Plaza 1, JW Marriott

Science Focus: GEN, SEP

Jaime Lynch (*jaimexan@gmail.com*), Grace Wilday Junior High School, Roselle, N.J.

Learn how to use online tools like Google Forms and Slides to help students engage in peer review and for your use as a formative assessment.

Making the Leap to a Digital Course

(Grades 9–12)

Plaza 2, JW Marriott

Science Focus: GEN

Mary Chuboff (@mchuboff; mchuboff@athensacademy.org), Athens Academy, Athens, Ga.

Join me for a demonstration on how to gather resources into a single, easily updated electronic space that can make students, teachers, and parents willing to toss the textbook!

Explanations Across the Curricula: Integrating CCSS in Literacy with the NGSS

(Grades 5–12)

505, Convention Center

Science Focus: GEN, NGSS

Ann Novak (anovak@greenhillsschool.org), Greenhills School, Ann Arbor, Mich.

Connect with colleagues to use claim, evidence, and reasoning to promote literacy and deeper learning in science, English, history, and public speaking—I'll share examples.

NGSS Now What? Help Navigate Your District Post NGSS Adoption

(Grades 7–12)

West Hall B-4, Convention Center

Science Focus: GEN, NGSS

Kristen Williams (krwilliams@rjuhsd.us), Antelope High School, Antelope, Calif.

Once your district decides to move forward with NGSS, what are the next steps to planning, training, and implementing? Hear step by step how to effectively enlighten others while lowering the anxiety and hesitation that can sometimes accompany change! Listen to how one large Northern California District is uniting six high schools and how a small group of teachers is leading the charge.

4:00–5:30 PM Exhibitor Workshops

Gauging Students' Three-Dimensional Thinking Using ONPAR Formative Assessment Tools

(Grades 6–8)

150C, Convention Center

Science Focus: GEN

Sponsor: Activate Learning

Linda Malkin, University of Wisconsin–Madison

Are you struggling to assess three-dimensional learning in diverse classrooms? Come experience how ONPAR digital tools can inform teaching and learning for your middle school students. This workshop will demo recent developments in standards-based assessment from Wisconsin Center for Education Research. All participants will qualify to pilot this digital product!

Integrating Literacy Skills in Elementary Science Investigations

(Grades K–5)

153A, Convention Center

Science Focus: GEN, NGSS

Sponsor: TCI

Nathan Wellborne, TCI, Mountain View, Calif.

Essential to good scientific practice is the ability to communicate an argument effectively. Join TCI for an interactive science investigation using Bring Science Alive! We will demonstrate how to integrate reading, writing, speaking, listening, and language skills while guiding students in developing their science knowledge.

Modeling a Protein Story: Hemoglobin from Structure to Function

(Grades 9–12)

153B, Convention Center

Science Focus: LS1.A, LS4.A, LS4.B, CCC6, SEP1, SEP2, SEP4

Sponsor: MSOE Center for BioMolecular Modeling

Diane Munzenmaier (munzenmaier@msoe.edu), MSOE Center for BioMolecular Modeling, Milwaukee, Wis.

Explore interactive materials and hands-on models that connect gene sequence to protein structure to function in a research program that can be used inside or outside your classroom. Students investigate betaglobin and hemoglobin and apply their questions to a research project of their design, encouraging development of higher-order thinking.

Civilization Exists by Geological Consent*(Grades 6–12)**301 AB, Convention Center*

Science Focus: ESS3

Sponsor: Pearson

Michael Wyession, Washington University in St. Louis, Mo.

Climate change is one of the most fascinating and complex fields of Earth science, combining aspects of physics, chemistry, biology, geology, and even astronomy. We will examine the many different natural factors that control Earth's climate and how the history of climate change has been a driving factor for the course of human history, causing famines, droughts, floods, wars, plagues, and the rise and fall of human civilizations.

Identifying Energy Transfers in Motors and Generators*(Grades 6–8)**303 AB, Convention Center*

Science Focus: ETS, PS3.B, CCC, SEP

Sponsor: Delta Education/School Specialty Science—FOSS
Virginia Reid and **Jessica Penchos**, The Lawrence Hall of Science, University of California, Berkeley

Dissect a motor to identify its components and make claims about energy transfers in the new FOSS Next Generation Electromagnetic Force Course for middle school. Compare the motor components to those of a generator and consider sustainability of energy sources. Identify connections to the three dimensions of NGSS.

“Don’t simply retire from something; have something to retire to.” —Harry Emerson Fosdick

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 1

9:30–10:30 AM

Los Angeles Convention Center, 507

For more information on the Retired Members Advisory Board, contact Lloyd Barrow, Chair, at barrowl@missouri.edu.



NSTA National
Science
Teachers
Association

Solving the Mystery of STEM Using Forensic Science

(Grades 6–12) 304 AB, Convention Center

Science Focus: GEN

Sponsor: Frey Scientific/School Specialty Science

Erik Benton, CPO Science/School Specialty Science, Nashua, N.H.

Kat Mills, School Specialty Science, Rosharon, Tex.

Conduct STEM-focused beginning forensic activities that connect scientific investigations to analysis and investigative skills. Solve “cases” involving fingerprinting, blood spatter, and document and fabric analysis. Use a digital learning platform with simple supplies to apply basic mathematic principles. Integrate reading and writing strategies. Door prizes. Free STEM resources provided.

Tackle Renewable Energy with LEGO® Education

(Grades 6–8) 304C, Convention Center

Science Focus: PS3

Sponsor: LEGO Education

Kelly Reddin, LEGO Education, Billund, Jylland, Denmark

This workshop is designed for educators looking to teach renewable energy in a new and interactive way. Discover how to use LEGO Education models to teach your students about renewable energy sources such as solar, wind, and hydro energy.

Comparative Mammalian Organ Dissection with Carolina’s Perfect Solution® Specimens

(Grades 6–12) 306 AB, Convention Center

Science Focus: LS, CCC, SEP

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Come show us your surgical skills while you experience the superior quality of Carolina’s Perfect Solution specimens! Participants dissect a sheep brain, cow eye, pig heart, or pig kidney and observe internal and external structures. Use this excellent comparative dissection to gain a better understanding of these mammalian organs.

Hands-On Activities to Model Sampling, Habitat Degradation, and Animal Choice

(Grades K–12) 308 AB, Convention Center

Science Focus: LS, CCC, SEP

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Nurture students’ curiosity! Investigate methods used by scientists to estimate population sizes and then create a terrestrial model to observe how pill bugs respond to habitat degradation. Use inquiry to develop experiments to observe the habitat preference of bess beetles and millipedes. Let the excitement in your classroom begin!

Dissecting the NGSS

(Grades K–5)

309, Convention Center

Science Focus: LS, CCC, SEP

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Did you know that a squid has three hearts...or that it uses a beak to break down its prey? Join us in constructing an argument that plants and animals have internal and external structures to support survival, growth, and reproduction. Leave with a dissection lesson from Building Blocks of Science®.

Biology with Vernier

(Grades 7–College)

402A, Convention Center

Science Focus: ETS2, LS1, LS2

Sponsor: Vernier Software & Technology

Colleen McDaniel (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

Use Vernier sensors to conduct biology experiments from our lab books in this engaging hands-on workshop. Collect and analyze data on LabQuest 2 and computers. Data sharing with mobile devices will be demonstrated. Explore our wide range of digital tools that promote student understanding of biology concepts.

Renewable Energy with KidWind and Vernier

(Grades 7–College)

402B, Convention Center

Science Focus: ESS3, ETS2, PS3

Sponsor: Vernier Software & Technology

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

Explore renewable energy and engineering design with KidWind kits and Vernier technology. In this engaging hands-on workshop, you will design, test, and refine a wind turbine to maximize its energy output. Activities such as this from our book, *Renewable Energy with Vernier*, embody the spirit of STEM education.

Enhance Your Science Course with POGIL™ Activities

(Grades 6–College)

403A, Convention Center

Science Focus: LS, PS

Sponsor: Flinn Scientific, Inc.

Meg Griffith (mgriffith@flinnsci.com) and **Jillian Saddler** (jsaddler@flinnsci.com), Flinn Scientific, Inc., Batavia, Ill.

Come check out how POGIL activities can help you create a more student-centered science classroom! This workshop presents strategies for incorporating POGIL activities into your biology and chemistry courses, and includes free sample activities. Process-Oriented Guided Inquiry Learn-

ing (POGIL) activities guide students to construct new understandings while encouraging critical thinking, problem solving, and collaboration.

Saving Elephants: Using Molecular Tools to Solve Ecological Problems

(Grades 9–College) *403B, Convention Center*
Science Focus: LS, CCC1, SEP4, SEP7

Sponsor: HHMI BioInteractive

Mark Eberhard (*meberhard@ecsd.us*), St. Clair High School, Saint Clair, Mich.

Cindy Gay (*cindyjgay@gmail.com*), BSCS, Colorado Springs, Colo.

African elephant populations are shrinking at alarming rates (100 per day). Using interactive activities, we will scrutinize evidence that supports this rate of decline, demonstrate how DNA sequencing is employed in tracking the poaching of elephants for their ivory, and consider how molecular tools may be key to stabilizing populations.

Get That Grant Money!

(Grades 9–College) *404 AB, Convention Center*
Science Focus: GEN

Sponsor: Bio-Rad Laboratories

Damon Tighe (*damon_tighe@bio-rad.com*), Bio-Rad Laboratories, Hercules, Calif.

Successful grant writing isn't rocket science, but it can take your teaching to new heights. We will show you how to get organized and find resources. Experienced grant writers will share their powerful tips to get you to the next level.

Lab Skills: The Escape Room!

(Grades 9–College) *406 AB, Convention Center*
Science Focus: LS

Sponsor: Bio-Rad Laboratories

Sherri Andrews, Bio-Rad Laboratories, Hercules, Calif.

A mysterious illness renders patients incoherent, a group of field scientists is missing, and you've been quarantined—find the cure and solve the mystery to break out of Bio-Rad's lab skills escape room for high school and college life science. Workshop space is limited. Get tickets at the Bio-Rad booth.

Magnify Your Mind!...Science, Writing, Art, and The Private Eye®

(Grades K–12) *408A, Convention Center*
Science Focus: ESS2.A, ESS2.D, ETS1, ETS2.A, LS1.A, LS1.B, LS2.A, LS2.B, LS2.C, LS3, LS4.B, LS4.C, PS1.A, PS1.B

Sponsor: Educational Innovations, Inc.

David Melody and **Kerry Ruef**, The Private Eye Project, Lyle, Wash.

Give your students a wallop of wonder and mystery—using a jeweler's loupe, everyday objects, and a powerful inquiry process. Students investigate science topics with fresh perspective and surprise themselves as they write, draw, and theorize at sophisticated levels. Habits of close observation bloom, critical thinking soars, and NGSS and CCSS come to life. Take away this easy hands-on method—and magnify minds! Free starter kit.

Why Seasons Are Tough to Teach and What to Do About It

(Grades 6–8) *408B, Convention Center*
Science Focus: ESS1, CCC1, SEP2

Sponsor: Houghton Mifflin Harcourt

Cary Snieder (*carysnieder@gmail.com*), Portland State University, Portland, Ore.

Join Cary Snieder, a masterful teacher who will share with you what he has learned about teaching patterns to create enduring understanding of the seasons with your grades 6–8 students. The first mistake most middle school teachers make is starting with “the tilt”—which creates more problems than it solves.

Assess the NGSS: Formative Assessment Strategies for Grades K–8

(Grades K–8) *409 AB, Convention Center*
Science Focus: GEN, NGSS

Sponsor: Measured Progress

Justine Hargreaves (*info@measuredprogress.org*), Measured Progress, Dover, N.H.

Learn how STEM Gauge® formative assessment resources engage students and support three-dimensional teaching and learning during the transition to the NGSS. This interactive workshop provides classroom strategies that you can implement immediately, plus assessment questions, rubrics, and formative support tools. Get a free STEM Gauge item set!

Visualizing Data and Teaching Climate Change at the Middle School

(Grades 6–9)

410, Convention Center

Science Focus: ESS, CCC1, CCC4, CCC5, CCC7, SEP4, SEP7, SEP8

Sponsor: Tumblehome Learning

Pendred Noyce (info@tumblehomelearning.com), Tumblehome Learning, Inc., Boston, Mass.

Explore an approach to teaching climate change using data visualization tools from tables to bar and line graphs to multi-colored maps and more. We will build a temperature contour map together. Bring your laptop/tablet and leave with an interactive iBook (beta version) to help you lead student investigation of climate change.

A Complete Guide to the 2017 Total Solar Eclipse

(General)

501 AB, Convention Center

Science Focus: ESS

Sponsor: Fisher Science Education

Robert Marshall (robert.marshall@thermofisher.com), Fisher Science Education, Pittsburgh, Pa.

Prepare your students for safe solar observing during this year's spectacular astronomical event. Whether you are looking forward to totality or even just a partial eclipse, become familiar with the necessary hands-on learning tools you can implement beforehand in the classroom, as well as during this event. First 50 attendees will receive a complimentary EclipSmart kit courtesy of Celestron!

Viruses, Bacteria, and a Party: Teaching Elementary Students About Germs

(Grades 3–6)

503, Convention Center

Science Focus: LS, CCC, SEP

Sponsor: Vaccine Education Center

Donald Mitchell (donald@medicalhistorypictures.com), Eye-line Pictures, LLC, Flourtown, Pa.

Charlotte Moser (moser@email.chop.edu), Vaccine Education Center at Children's Hospital of Philadelphia, Pa.

Elementary students know that germs make them sick. We will introduce new free modules that help them learn about

different kinds of germs and introduce them to scientists instrumental in understanding these differences. Modules include engaging animations and fun activities, like party planning. Come find out more!

Top Three Things You Can Do with Calculators in STEM!

(Grades 6–12)

511 AB, Convention Center

Science Focus: ETS1, CCC, SEP

Sponsor: Texas Instruments

Fred Fotsch, Texas Instruments, Dallas

This hands-on workshop will show three incredible things you can do with calculators in your science/STEM classroom. We will start with learning how to program (no coding experience needed) and then move to input/output control. Finally, we will explore the creation of real-world projects that are controlled by calculators! Designed for teachers who have never programmed and have no idea what a microcontroller is, this workshop will get newbies up to speed in no time!

Photosynthesis and Cellular Respiration

(Grades 9–12)

518, Convention Center

Science Focus: LS, CCC3, SEP1, SEP3, SEP4, SEP5

Sponsor: Lab-Aids, Inc.

Virginia Rehberg, Wilson High School, Tacoma, Wash.

Students have major misconceptions about photosynthesis and cellular respiration, but this content is essential for understanding foundational biology concepts. Using a computer simulation, a hands-on activity, and notebooking strategies, we can expose student thinking and provide structure for them to self-correct. All from *Science and Global Issues: Biology*, developed by SEPUP at The Lawrence Hall of Science.

4:00–6:00 PM Meeting

APAST Members Social

(By Invitation Only)

Georgia 2, JW Marriott

4:30–5:30 PM Meeting

NSTA Recommends Meeting

Studio 1, JW Marriott

5:00–5:30 PM Presentations**Using Discussion Techniques on Current Scientific Events to Engage Students in Scientific Literacy***(Grades 9–12)**Plaza 1, JW Marriott*

Science Focus: LS

Barbara Smith, Teacher, Brooklyn, N.Y.

Learn a variety of discussion techniques to get students engaged in reading scientific articles related to current debate topics such as genetic engineering and using natural gas as a bridge fuel.

Using Case Studies in the High School Classroom*(Grades 9–12)**Plaza 2, JW Marriott*

Science Focus: GEN

Mary Chuboff, Athens Academy, Athens, Ga.

Case studies are a great tool for teaching science. Cases can be used to teach scientific concepts and content, process skills, and critical thinking.

Family Learning Opportunities and Research in Engineering and Science (FLORES) Education*(Grades K–3)**Kentia Hall A, Convention Center*

Science Focus: GEN

Amanda Gunning (@AMandaMGunning; *agunning@mercy.edu*), Mercy College, Dobbs Ferry, N.Y.**Karla Purcell** (*kpurcell@portchesterschools.org*), John F. Kennedy Magnet School, Port Chester, N.Y.

Join us as we illustrate the success of the FLORES model and discuss how to conduct such a program in your own school district.

Infusing Reading Strategies in the Science Classroom*(Grades 2–6)**Kentia Hall B, Convention Center*

Science Focus: GEN

Elizabeth Barrett-Zahn (*ezahn@nredlearn.org*), Columbus Elementary School, New Rochelle, N.Y.

Learn how to effectively implement the close reading strategy in your science classroom to improve reading comprehension and science literacy, from elementary level to high school.

Creating an Interactive Periodic Table with the Augmented Reality App: Aurasma*(Grades 7–9)**Kentia Hall M, Convention Center*

Science Focus: PS

Samantha Koehler (*samantha.koehler@adelsoncampus.org*), The Dr. Miriam and Sheldon G. Adelson Educational Campus, Las Vegas, Nev.**Paula Garrett** (*paula.jacoby.garrett@gmail.com*), Research Scientist and Educator, Henderson, Nev.

Find out how students create an interactive periodic table with the Aurasma app to learn about the elements through an interactive multimedia platform.

Empower ALL Students with Neuroscience*(Grades 4–College)**Kentia Hall R, Convention Center*

Science Focus: LS1.A, LS1.D, CCC2, CCC6

Katrina Scherben, Harlem Children's Zone Promise Academy Schools, New York, N.Y.

Incorporating neuroscience can enrich the classroom culture, make differentiation easy, and increase student motivation. Walk away with resources and strategies for a diverse classroom.

Writing Argumentation in Science? No Problem*(Grades 7–12)**West Hall B-4, Convention Center*

Science Focus: GEN, SEP7

Kristen Williams (*krwilliams@rjuhsd.us*), Antelope High School, Antelope, Calif.

Think you can't teach your students to write in science? Get some help from people in your own building. Hear how one science teacher and an English teacher united to dissect and sort out what kids need to be successful at writing argumentation. You won't believe the results you get!

5:00–5:45 PM Networking Opportunity**Shell Reception***(By Invitation Only)**Gold Ballroom Salon 1, JW Marriott*

5:00–6:00 PM Presentations

INF Beinprosone (Be INnovative and PROduce SOMething NEw): An Open Innovation Event Made For and By High School Students

(Grades 6–College) *Diamond Ballroom Salon 9, JW Marriott*
Science Focus: ETS, INF, SEP1, SEP6

Marina Schor (mari.schor@gmail.com), University of British Columbia, Vancouver, Canada

Franco Ramunno (franco.ramunno@colband.com.br) and **José Lemes de Almeida** (almeidaj@colband.com.br), College Bandeirantes, São Paulo, Brazil

Come learn more about our open innovation event, where high school students solve real-world problems by the time-constrained development of a functional and user-centered prototype.

ASTE-Sponsored session: Science Investigations with Read Alouds

(Grades 3–8, College) *Olympic 1, JW Marriott*
Science Focus: LS1.A, LS1.B

Cecilia Hernandez (@DrCeci2011; cecimh@nmsu.edu) and **Mary Fahrenbruck** (mfahren@nmsu.edu), New Mexico State University, Las Cruces

Learn how preservice teacher candidates integrated hands-on science with engaging read-alouds that resulted in effective, meaningful lessons for young scientists in classroom settings.

Science for All: Inclusion Students in Science

(Grades 3–12) *Platinum Ballroom Salon H, JW Marriott*
Science Focus: GEN

Vicki Massey (vickimassey@cox.net), Higley Unified School District #60, Gilbert, Ariz.

Sephali Thakkar (@SephaliThakkar; thakkarS@lisd.net), Lewisville (Tex.) ISD

This presentation is designed for science leaders who need to communicate how to work with special needs inclusion students in science. The PowerPoint will be made available to use in department or district trainings.

Transdisciplinary Instruction: Building a STEM-tastic Program Using Project/Problem-Based Learning and Engineering Design Process

(Grades K–6) *501C, Convention Center*
Science Focus: GEN, NGSS

Veronica Wilson-Seville (@vseville44), M. Agnes Jones Elementary School, Atlanta, Ga.

Bobby Allen (@bobby_allen1; ballen@atlanta.k12.ga.us; dr.bobby@allen1@gmail.com) and **Katrina Hardin** (@DrFolami10; katrina.hardin@atlanta.k12.ga.us; hardinkatrina@gmail.com), Atlanta (Ga.) Public Schools
Hear how STEM practices directly support *Common Core State Standards* and employ transdisciplinary learning using real-world engineering design challenges and Project/Problem-Based Learning.

Redesign Your Lessons for NGSS: Engage Students Using Phenomena

(Grades 6–12) *505, Convention Center*
Science Focus: PS, SEP

Kathy Mirakovits (@kmirakovits; kmirakovits@portageps.org) and **Michelle Mason** (mmason@portageps.org), Portage Northern High School, Portage, Mich.

Don't start a unit with vocabulary and reading! Entice curiosity and interest from day one using phenomena. Ideas to jump start every lesson!

NGSS Designing Classroom Assessments to Address NGSS Performance Expectations

(Grades 5–9) *515A, Convention Center*
Science Focus: GEN, NGSS

Tracy Bratzke (clownfish39@yahoo.com) and **Nicole McRee** (mcee.nicole@d46.org), Grayslake Middle School, Grayslake, Ill.

We will share how to use NGSS performance expectations to design classroom assessments. Sample assessments will be provided that require students to incorporate models and use evidence to support their responses.

Social Studies, ELA, and STEM, Oh My! Integrating It All

(Grades 3–6) 515B, Convention Center

Science Focus: GEN, NGSS

Karen Wilson (@kwilson_klw; kwilson@lasdschools.org), Los Altos (Calif.) School District

Kelly Rafferty (@kelly_rafferty; krafferty@lasdschools.org), Santa Rita Elementary School, Los Altos, Calif.

Use STEM as a vehicle to integrating all subjects through project learning and design challenges that focus on curriculum and the NGSS.

INF A New Kind of Experiment: NOS and How We Took a Leap in the Lab

(Grades 3–8) Kentia Hall L, Convention Center

Science Focus: PS, INF, CCC1, CCC2, CCC3, CCC4, CCC6, CCC7, SEP

Sophia Shrand (sophia.shrand@msichicago.org), **Julie Boyk** (julie.boyk@msichicago.org), and **Abigail Diaz** (@AbsLovesMuseums; abigail.diaz@msichicago.org), Museum of Science and Industry, Chicago, Ill.

The goal: create a one-hour NOS lab for elementary students. The challenges: many. The result: students engaged in collaboration, ingenuity, and argumentation all while experiencing the nonlinear nature that is true science.

Earth Science Explorations Using Airborne and Ground-Based Sensors

(Grades 6–12) Kentia Hall P, Convention Center

Science Focus: ESS, ETS

David Bydlowski (@k12science; davidbydlowski@me.com), Wayne RESA, Wayne, Mich.

You and your students can design and use low-cost sensors to collect, process, and share data about Earth's atmosphere, biosphere, hydrosphere, and cryosphere.

5:00–6:00 PM Hands-On Workshops

Using Phenomena to Teach Phenomenal Science

(Grades K–12) Diamond Ballroom Salon 2, JW Marriott

Science Focus: GEN, SEP

Chelsea Cochrane (@cjcochrane21; chelsea.cochrane@sdcoe.net) and **John Spiegel** (@sdngss; john.spiegel@sdcoe.net), San Diego County Office of Education, San Diego, Calif. Connect student learning across the three dimensions of NGSS through phenomena-driven instruction. Leave the session with resources and planning tools to connect phenomena to grade-level NGSS.

Finding Common Ground: Using Student Discourse to Address Controversy in the Classroom

(Grades 6–College) Diamond Ballroom Salon 8, JW Marriott

Science Focus: GEN, NGSS

Ben Graves (@MrGravesScience; ben.graves@kstf.org), Delta High School, Delta, Colo.

James Clark (jclark@slzUSD.org), San Lorenzo (Calif.) Unified School District

No need to shy away from tough conversations! Come see how the NGSS discourse practices can facilitate conversations around controversial science topics in your classroom.

Communicating Sciences University Courses: Opportunities to Learn Effective Teaching and Learning Practices and Engage in Outreach

(College) Plaza 3, JW Marriott

Science Focus: ESS, SEP

Catherine Halversen, The Lawrence Hall of Science, University of California, Berkeley

The Communicating Ocean Sciences and Communicating Climate Sciences courses provide students in science-related fields with outreach in informal science environments and experience with exemplary teaching and learning practices. We will engage in an active learning session from the course.



Support Students Who Receive Special Education Services in STEM Education Through Engagement in Engineering Challenges

(Grades 1–5) 502B, Convention Center

Science Focus: ETS, SEP

Kathryn (Katy) Hutchinson (@eie_org) and **Nia Keith** (niakeith@mos.org), Museum of Science, Boston, Mass.

Experience a hands-on engineering activity as a means to engage students who receive special education services in elementary classrooms.

INF Starting Family STEAM Night with Stories: Take a Journey with the “Three Little Pigs”

(Grades P–6) *Kentia Hall C, Convention Center*
Science Focus: ETS1, PS2, INF

Lea McConnell (*lmcconnell@rpds.com*), **Julie Springer** (*jspringer@rpds.com*), and **Jamie Roberts** (*jroberts@rpds.com*), Riverside Presbyterian Day School, Jacksonville, Fla. Curious how to integrate fairy tales into STEAM? Be challenged by a fairy tale to design, build, and test a structure to withstand natural disasters.

Let’s Get Physical! Integrating Physical Science and Literacy

(Grades 3–5) *Kentia Hall D, Convention Center*
Science Focus: PS, CCC, SEP

Stacy Cohen, Southern Nevada Regional Professional Development Program, North Las Vegas
Are you looking for ways to integrate science into your elementary curriculum? This hands-on session will showcase NGSS-based lessons that integrate science and literacy through the lens of claims, evidence, and reasoning. Engage in activities and lessons that you can take back and use with your students.

Looking to Nature to Solve Human Problems

(Grades K–3) *Kentia Hall E, Convention Center*
Science Focus: CCC2, CCC6, ETS1, LS1, SEP

Rebecca McDowell (*@BeTheChnge; beckymmcdowell@gmail.com*), Barrington (Ill.) 220 School District
Get up close and personal with animal feet to bioengineer new hiking shoes that don’t slip. Analyze data from testing multiple solutions to inform redesign.

From Soil to Food

(Grades 4–6) *Kentia Hall F, Convention Center*
Science Focus: GEN, CCC5

Carole Lee (*yuen111222@hotmail.com*), University of Maine at Farmington
The growth of food depends on the nutrients in the soil. Participants will gain hands-on experience in doing food and soil tests. Literature books are used to arouse students’ understanding of food sources.

Learning the Atomic Theory Through Classroom Interactions, from First Grade and Beyond

(Grades 1–6) *Kentia Hall G, Convention Center*
Science Focus: PS1.A

Martin Periard (*martin.periard@bdeb.qc.ca*), Collège de Bois-de-Boulogne, Montreal, Que., Canada
Act like a particle and move through the environment interacting with the other participants in this body-on activity developed for elementary classrooms to understand the atomic theory.

CESI-Sponsored Session: Modeling Evidence Circles and Formative Assessment to Develop Three-Dimensional Learning

(Grades K–8) *Kentia Hall H, Convention Center*
Science Focus: GEN, NGSS

Jim McDonald (*@jimscienceguy; jim.mcdonald@cmich.edu*) and **Jason Artero**, Central Michigan University, Mount Pleasant
Using moon phases, learn how to use evidence circles, formative assessment, and the claim, evidence, and reasoning framework to get students to think critically.

Real-World and Real Simple Engineering Activities for the Elementary Classroom

(Grades 3–8) *Kentia Hall J, Convention Center*
Science Focus: ETS, SEP6

Kassandra Harmon, STARBASE Great Falls, Mont.
Have you ever heard, “when will we ever use this”? Receive the resources and tools to tackle real-world engineering problems in the elementary classroom.

Analyzing Supernova Remnants Using Spectroscopy, NASA Data, and STEM

(Grades 9–College) *Kentia Hall K, Convention Center*
Science Focus: ESS1.B, ETS2.A, PS1.C, PS4.B, PS4.C, SEP4

Pamela Perry (*pperry@lewistonpublicschools.org*), Lewiston High School, Lewiston, Maine
Donna Young (*dlyoung.nso@gmail.com*), NASA/CXC/NSO, Bullhead City, Ariz.
Identify elements in the spectra of supernova remnants to determine the properties of collapsed and exploded stars using NASA X-ray archived data and analysis tools.

Biofuels, Batteries, or Gasoline: What's the Most Sustainable Way to Power Vehicles?

(Grades 6–College) *Kentia Hall N, Convention Center*
Science Focus: ESS3

Leith Nye (@leithnye; *leith.nye@wisc.edu*), University of Wisconsin–Madison

John Greenler (@johngreenler; *john.greenler@wisc.edu*), Great Lakes Bioenergy Research Center, Madison, Wis.

In a series of crosscutting, problem-based STEM lessons, students investigate and evaluate the sustainability of using different vehicle fuels and analyze data from current research.

LEGO® Stoichiometry: Addressing Student Misconceptions with Manipulatives

(Grades 9–12) *Kentia Hall O, Convention Center*
Science Focus: PS1.B, CCC5, SEP2, SEP5

Michelle Trimble (*trimblem@sfsd.edu*), Lowell High School, San Francisco, Calif.

Explore activities to engage students in challenging chemistry concepts. Leave with ideas for classroom activities that can be used throughout the year.

INF Invasive Species Biodiversity Investigation: Developing Data-Rich Ecosystem Understandings Through Citizen Science

(Grades 6–8) *Kentia Hall Q, Convention Center*
Science Focus: LS2.C, LS4.D, INF, CCC1, CCC2, CCC7, SEP1, SEP3, SEP4, SEP6, SEP7

Christine Voyer (@cev4; @VitalSignsME; *christine@gmri.org*) and **Margaret Auclair** (@VitalSignsME; *mauclair@gmri.org*), Gulf of Maine Research Institute, Portland

Experience how you can develop students' understandings of statistical questions, variability, investigation design, invasive species, and biodiversity through authentic fieldwork and real-world investigations.

Evolution in Action

(Grades 10–College) *Kentia Hall S, Convention Center*
Science Focus: LS4

Ellen Parchen and **Robert Boyles** (*rlboyles@mcp.k12.mt.us*), Hellgate High School, Missoula, Mont.

It can be very difficult to teach evolution in a high school classroom through hands-on experiments. Using a harmless bacteria *P.flourescens*, we will practice techniques that are key to the exploration and introduce discussion topics related to the protocol: sterile microbiology practices; series dilutions to plating; and observe potential class results to identify colony morphology.

The Energy Budget: A Critical Lesson Review Using NGSS and CLEAN

(Grades 6–College) *Petree Hall D, Convention Center*
Science Focus: ESS2.D, ESS3.D, LS1.C, LS2.B, PS3.D, PS4.B, CCC2, CCC3, CCC4, CCC5, SEP2

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

Cheryl Manning (@clbmanning; *clbmanning@mac.com*), Evergreen High School, Evergreen, Colo.

Actively engage in a lesson review and creation using NGSS to guide the process and Climate Literacy and Energy Awareness Network (CLEAN) resources.

Bringing the NGSS and CCSS Together: Literacy in the Science Classroom

(Grades 6–12) *West Hall B-3, Convention Center*
Science Focus: GEN, SEP7, SEP8

Lesley Shapiro (*lesley.shapiro@ppsd.org*), Classical High School, Providence, R.I.

Audrey Miguel (*alarmstrong35@gmail.com*), Woonsocket Senior High School, Woonsocket, R.I.

Discover some exciting ways to bring literacy into your science classroom to enhance your students' achievement with the NGSS and CCSS.

5:30–6:00 PM Presentations

NARST-Sponsored Session: Opportunities to Learn Science: A Case Study of Science Classrooms in Successful/Diverse Texas High Schools

(Grades 9–10)

Georgia 1, JW Marriott

Science Focus: GEN

Jennifer LeBlanc, Texas A&M University, College Station
We will present research from successful diverse schools and engage participants in activities based on metacognition and culturally responsive teaching.

Implementation of an NSF-Funded Elementary Science Program in a Large Urban District: Lessons Learned

(Grades 1–5)

Kentia Hall A, Convention Center

Science Focus: GEN

Katya Denisova, Baltimore (Md.) City Public Schools
Hear about STEM Achievement in Baltimore Elementary Schools (SABES), a five-year NSF-funded collaboration between Baltimore City Public Schools and Johns Hopkins University to improve science educational outcomes in grades 3–5.

INF Space Explorers: 25 Years of Inner-City Students' Out-of-School-Time Explorations

(Grades 7–12)

Kentia Hall R, Convention Center

Science Focus: ESS1.A, ETS1.A, ETS1.B, ETS2.A, LS1.A, LS1.D, PS4.A, PS4.B, INF

Randall Landsberg (*randy@oddjob.uchicago.edu*), Kavli Institute for Cosmological Physics, Chicago, Ill.

Discover how to measure the universe with a digital camera and a Godzilla model, how fast your rods are compared to your cones in your eyes, and what happens when you connect astronomers and inner-city high school students.

STEAMing the Science Classroom

(Grades 6–12)

West Hall B-4, Convention Center

Science Focus: GEN, SEP

Katherine Willet (*ktawillet@gmail.com*), Williamsburg Middle School, Arlington, Va.

Emily Perry (*emily_perry@hcpss.org*), Thomas Viaduct Middle School, Hanover, Md.

Link common areas of NGSS, CCSS, NCTE, NCA, deeper learning competencies, and 21st-century skills to design effective STEAM lessons.

5:30–6:30 PM Meeting

Teaming Up for STEM Sharing Session

(By Invitation Only) *Platinum Ballroom Salon F, JW Marriott*

5:30–7:00 PM Networking Opportunity

Learning Center Reception

(By Invitation Only)

Gold Ballroom Salon 4, JW Marriott

6:00–8:45 PM NSTA Teacher Awards Gala

(Tickets Required; \$80) #M-2 *Gold Salon 2/3, JW Marriott*

Come enjoy a fabulous evening celebrating with this year's teacher award recipients! ALL of the teacher awards will be presented in one grand evening. Join your colleagues in recognition of this year's winners. Evening attire is requested to honor our teacher award recipients. A limited number of tickets are available for this social event.

6:30–8:00 PM Networking Opportunity

NESTA Friends of Earth Science Reception

Platinum Ballroom Salon C, JW Marriott

7:00–9:00 PM Networking Opportunity

SCST Poster Session and Dessert Social

Platinum Ballroom Salon I/J, JW Marriott

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NSTA National
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Meetings and Social Functions Index

Friday, March 31

AMSE Alice J. Moses Annual Breakfast

By Invitation Only, visit www.amsek16.org,

Platinum Blrm. Salon C, JW Marriott..... 7:30–9:30 AM

Development Advisory Board Meeting

By Invitation Only

Olympic 2, JW Marriott.....9:30–10:30 AM

NSTA International Lounge

Atrium 1, JW Marriott.....9:00 AM–5:00 PM

Urban Science Education Advisory Board Meeting

Studio 2, JW Marriott.....10:30 AM–12 Noon

AMSE General Membership Meeting

Visit amsek16.org for additional information.

Platinum Blrm. Salon C, JW Marriott 10:30 AM–12:30 PM

NMLSTA Board and Membership Meeting

By Invitation Only

Diamond Blrm. Salon 8, JW Marriott.... 11:45 AM–12:15 PM

Society of Elementary Presidential Awardees (SEPA) Luncheon

By Invitation Only, visit www.sepamembers.weebly.com.

Atrium 3, JW Marriott..... 12 Noon–2:00 PM

“Meet and Greet” the NSTA Presidents and Board/Council

Entrance to Exhibit Hall, Hall H 12:45–1:30 PM

Society of Elementary Presidential Awardees (SEPA) Meeting

By Invitation Only, visit www.sepamembers.weebly.com.

Studio 2, JW Marriott..... 2:00–3:30 PM

Chapter and Associated Group Leader Roundtable

Atrium 3, JW Marriott 3:00–4:00 PM

SCST Business Meeting

Georgia 1, JW Marriott..... 3:30–5:00 PM

APAST Members Social

By Invitation Only

Georgia 2, JW Marriott..... 4:00–6:00 PM

NSTA Recommends Meeting

Studio 1, JW Marriott.....4:30–5:30 PM

Shell Reception

By Invitation Only

Gold Blrm. Salon 1, JW Marriott 5:00–5:45 PM

Teaming Up for STEM Sharing Session

By Invitation Only

Platinum Blrm. Salon F, JW Marriott..... 5:30–6:30 PM

Learning Center Reception

By Invitation Only

Gold Blrm. Salon 4, JW Marriott 5:30–7:00 PM

NSTA Teacher Awards Gala

(Ticket required: M-2)

Gold Blrm. Salon 2/3, JW Marriott..... 6:00–8:45 PM

NESTA Friends of Earth Science Reception

Platinum Blrm. Salon C, JW Marriott 6:30–8:00 PM

SCST Poster Session and Dessert Social

Platinum Blrm. Salon I/J, JW Marriott..... 7:00–9:00 PM

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11/30-12/2

**CELEBRATE SCIENCE:
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INNOVATE**

PROFESSIONAL DEVELOPMENT STRANDS

**ANCHORING OUR NATURAL
TREASURES THROUGH
ENVIRONMENTAL LITERACY**

**CHARTING THE COURSE
FOR INNOVATION**

**TYING THE KNOT: COHERENCE
IN 3D SCIENCE LEARNING**

**PREPARING ALL STUDENTS
FOR THE VOYAGE**

**NAVIGATING STEM
THROUGH THE NGSS**

**BUOYING UP LITERACY
WITH SCIENCE**

**INSPIRE OUR
YOUNG LEARNERS**

**INTEGRATE SCIENCE
EDUCATION FOR ALL**

**INNOVATE SCIENCE
EDUCATION FOR TOMORROW**

FOR MORE INFORMATION AND UPDATES,
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Index of Exhibitor Workshops

3D Molecular Designs (Booth #1035)

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Activate Learning (Booth #916)

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Amplify (Booth #1225)

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ANATOMY IN CLAY® Learning System (Booth #2329)

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Arbor Scientific (Booth #1548)

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Friday, Mar 31	4:00–5:30 PM	518, Conv. Center	Photosynthesis and Cellular Respiration (p. 104)

LaMotte Co. (Booth #2142)

Friday, Mar 31	8:00–9:30 AM	511 AB, Conv. Center	Stream Ecology: Slimy Leaves for Healthy Streams (p. 27)
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LEGO® Education (Booth #1836)

Friday, Mar 31	10:00–11:30 AM	304C, Conv. Center	Bring Robotics to Your Science Classroom with LEGO® MINDSTORMS® Education EV3 (p. 42)
Friday, Mar 31	2:00–3:30 PM	304C, Conv. Center	Make Science Come to Life Through Modeling with LEGO® Education (p. 85)
Friday, Mar 31	4:00–5:30 PM	304C, Conv. Center	Tackle Renewable Energy with LEGO® Education (p. 102)

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LEGO® Education (Booth #1836) and FIRST® (Booth #2143)

Friday, Mar 31	12 Noon–1:30 PM	304C, Conv. Center	Imaginative Thinking, Teamwork, AND Robots: <i>FIRST</i> ® LEGO® League Builds More than Robots (p. 59)
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McGraw-Hill Education (Booth #2343)

Friday, Mar 31	2:00–3:30 PM	408B, Conv. Center	Science Vocabulary Has Kinetic Energy When It's Moving (p. 86)
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Measured Progress (Booth #1338)

Friday, Mar 31	4:00–5:30 PM	409 AB, Conv. Center	Assess the NGSS: Formative Assessment Strategies for Grades K–8 (p. 103)
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The MiniOne Systems (Booth #1135)

Friday, Mar 31	10:00–11:30 AM	305, Conv. Center	Foodborne Outbreak Investigation Using Gel Electrophoresis (p. 42)
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miniPCR (Booth #828)

Friday, Mar 31	2:00–3:30 PM	512, Conv. Center	Studying Genetic Variation in the Classroom (p. 87)
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Monsanto Co. (Booth #935)

Friday, Mar 31	10:00–11:30 AM	514, Conv. Center	Grow GMO Seeds in Your Classroom and Conduct Protein and DNA Analyses Using Lateral Flow Strips and PCR (p. 46)
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MSOE Center for BioMolecular Modeling (Booth #1037)

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National Coalition for Aviation & Space Education (Booth #1361)

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National Nanotechnology Initiative (Booth #1460)

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PASCO scientific (Booth #1639)

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Friday, Mar 31	11:00 AM–12 Noon	405, Conv. Center	Essential Chemistry: Stoichiometry and Limiting Reactants with Gas Laws (p. 56)
Friday, Mar 31	11:00 AM–12 Noon	407, Conv. Center	Light and Optics (p. 56)
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Pearson Education (Booth #1141)

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Perimeter Institute for Theoretical Physics (Booth #1254)

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Friday, Mar 31	12 Noon–1:30 PM	512, Conv. Center	Quantum in the Classroom: Wave-Particle Duality (p. 62)

PlayMada Games (Booth #2117)

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Science First, LLC (Booths #748 and #749)

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Simulation Curriculum Corp. (Booth #728)

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Slooh—Space for Everyone! (Booth #1965)

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Springbay Studio, Ltd. (Booth #636)

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STEMscopes™ from Accelerate Learning (Booth #834)

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TCI (Booth #942)

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Texas Instruments (Booth #1633)

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Tumblehome Learning (Booth #2231)

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Van Andel Education Institute (Booth #716)

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Vernier Software & Technology (Booth #1625)

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WhiteBox Learning (Booth #1048)

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Earth and Space Science

8:00–8:30 AM	9–C	501C, Conv. Center	Global Climate Change: Engaging in Argument from Evidence (p. 15)
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8:00–9:00 AM	9–C	504, Conv. Center	Analyzing and Interpreting Data to Determine Earthquake Hazards (p. 18)
8:00–9:00 AM	7–12	Kentia Hall J, Conv. Center	Decoding Starlight—From Photons to Pixels to Images, Using Math and Art (p. 22)
8:00–9:00 AM	5–12	Kentia Hall P, Conv. Center	NASA’s “Eyes on the Solar System”: Bringing the Planets to Your Classroom (p. 20)
8:00–9:00 AM	6–C	Kentia Hall E, Conv. Center	Beyond Cycles: Teaching Earth as an Evolving System (p. 21)
8:00–9:00 AM	4–C	Kentia Hall F, Conv. Center	JetStream: An Online School for Weather (p. 22)
8:00–9:00 AM	4–12	Diamond Blrm. Salon 6, JW Marriott	Soils and NGSS—Perfect Together: Let’s Dig In! (p. 20)
8:00–9:00 AM	6–8	Kentia Hall Q, Conv. Center	Let’s Talk Tides (p. 22)
8:00–9:30 AM	7–C	402A, Conv. Center	Water Quality with Vernier (p. 26)
8:00–9:30 AM	P–C	503, Conv. Center	STEAM Education: The National Coalition for Aviation and Space Education Is Here for You! (p. 27)
8:00–9:30 AM	4–C	511 AB, Conv. Center	Stream Ecology: Slimy Leaves for Healthy Streams (p. 27)
8:00–11:00 AM	6–8	Santa Anita A, Westin Bonaventure	SC-5: Ocean Plastic Pollution: Issues and Solutions (p. 29)
8:30–9:00 AM	9–10	501C, Conv. Center	Using Weather Data Collection and Analysis to Promote Data Literacy (p. 29)
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9:30–10:00 AM	C	Georgia 1, JW Marriott	SCST-Sponsored Session: Can the History of Science Facilitate Climate Change Education and Climate Literacy? Lessons from Glacial Theory (p. 30)
9:30–10:30 AM	5–9	Kentia Hall L, Conv. Center	Sustainability in the Three Cs: Curriculum, Campus, and Community (p. 35)
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9:30–10:30 AM	6–8	Atrium 2, JW Marriott	NARST-Sponsored Session: Making Science Real—Supporting English Language Learners in Argumentation and Explanation through Authentic Tasks (p. 32)
9:30–10:30 AM	9–C	Platinum Blrm. Salon H, JW Marriott	Communicating Contemporary Earth Issues Through “Press Kit” Construction (p. 33)
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9:30–10:30 AM	P–C	502B, Conv. Center	Environmental Literacy: All About Access! (p. 36)
9:30–10:30 AM	9–C	Platinum Blrm. Salon D, JW Marriott	NASA Astrobiology: The Search for Life Beyond Earth (p. 33)
9:30–10:30 AM	5–12	501C, Conv. Center	Coral Reefs: Fragile Wonders Under Threat: Bring Vibrant Environmental Stewardship Lessons to Your Students with Free NOAA Resources (p. 34)
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11:30 AM–12 Noon	C	Georgia 1, JW Marriott	SCST-Sponsored Session: Introducing STEAM into the College Science Curriculum (p. 57)
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Schedule at a Glance Earth and Space Science

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12:30–1:30 PM	6–C	Platinum Blrm. Salon H, JW Marriott	LiMPESTS: Sandy Beach and Rocky Intertidal Monitoring in Your National Marine Sanctuaries (p. 66)
12:30–1:30 PM	6–8,C	Kentia Hall Q, Conv. Center	A University Course and Middle School Teacher Professional Learning Promoting Climate and Data Literacy, plus Effective Teaching and Learning Practices (p. 70)
12:30–1:30 PM	1–8	502A, Conv. Center	Get Energized: Problem-Based Learning EQUALS Success in Science and Literacy (p. 68)
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12:30–1:30 PM	2–12	515A, Conv. Center	Phenomena-Questions-Model (p. 67)
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12:30–1:30 PM	9–12	Plaza 3, JW Marriott	Thinking Small: Nanotechnology in the High School Classroom (p. 68)
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2:00–3:00 PM	P–C	Petree Hall C, Conv. Center	American Geophysical Union (AGU) Lecture: The Fault Lies Not in Our Stars (p. 75)
2:00–3:30 PM	6–12	301 AB, Conv. Center	Teaching Geoscience in an NGSS-Focused Curriculum (p. 84)
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Engineering, Technology, and the Application of Science

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11:00 AM–12 Noon	6–12	Kentia Hall N, Conv. Center	Charge Up Your NGSS Classroom by Building a Battery of Batteries (p. 55)
11:00 AM–12 Noon	8–C	Diamond Blrm. Salon 9, JW Marriott	Rocket Science and Engineering in High School: A STEM Approach (p. 53)
11:00 AM–12 Noon	K–3	Kentia Hall B, Conv. Center	Laser Cutters + 3D Printers + Vinyl Cutters = Bolstered K–3 Math Curriculum (p. 52)
11:00 AM–12 Noon	7–C	504, Conv. Center	Catch the Wave: Using Seismometers to Measure and Model Earthquakes (p. 52)
11:00 AM–12 Noon	K–5	501C, Conv. Center	Mobilize STEM for Greater Impact (p. 52)
11:00 AM–12 Noon	P–3	515B, Conv. Center	Engineering and Literacy: A Path to Integrated STEM (p. 54)
11:00 AM–12 Noon	5–9	510, Conv. Center	Explore Solar Energy STEM Concepts with K’NEX Models: Engineering for a Sustainable Future (p. 56)
11:30 AM–12 Noon	C	Georgia 1, JW Marriott	SCST-Sponsored Session: Introducing STEAM into the College Science Curriculum (p. 57)
11:30 AM–12 Noon	6–8	Kentia Hall Q, Conv. Center	Float Your Boat: An Engineering Challenge (p. 58)
12 Noon–1:30 PM	7–C	402B, Conv. Center	Thermal Analysis (p. 60)
12 Noon–1:30 PM	4–8	304C, Conv. Center	Imaginative Thinking, Teamwork, AND Robots: <i>FIRST</i> LEGO® League Builds More than Robots (p. 59)
12 Noon–1:30 PM	6–8	408B, Conv. Center	Engineering for the NGSS Middle School Science Classroom (p. 60)
12 Noon–1:30 PM	2–6	410, Conv. Center	Beauty and the Beak: How STEM/3D Printing Rescued a Bald Eagle (p. 61)
12 Noon–1:30 PM	6–12	304 AB, Conv. Center	Wind Turbine: An NGSS Approach to Understanding Renewable Energy (p. 59)
12 Noon–1:30 PM	7–C	402A, Conv. Center	Biology with Vernier Using Chromebook (p. 60)
12:30–1:00 PM	3–12	Platinum Blrm. Salon E, JW Marriott	Digital Science Notebooking: iMovie and Apps Smashing Meet Science and Engineering (p. 62)
12:30–1:30 PM	6–12	Kentia Hall P, Conv. Center	NASA Earth Science: Real-World Connections to Data and Online Tools (p. 70)
12:30–1:30 PM	8–11	505, Conv. Center	Veni, Vidi, Vici: Design, STEM, and Makerspaces (p. 67)
12:30–1:30 PM	9–12	Platinum Blrm. Salon B, JW Marriott	STEM Road Map Curriculum Series for Grades 9–12: Construction Materials (p. 66)
12:30–1:30 PM	7–12	Kentia Hall N, Conv. Center	Cars: Science Lessons That DRIVE Science Concepts (p. 67)
1:30–3:00 PM	6–9	150 AB, Conv. Center	What’s the Problem? Integrating Engineering into the Science Classroom Without Bridges and Rockets (p. 72)
2:00–3:00 PM	9–12	Plaza 3, JW Marriott	Mobilize: Capturing Student Attention with Computational Thinking (p. 81)
2:00–3:00 PM	P–6	Diamond Blrm. Salon 3, JW Marriott	Engineering in Action Using Picture Books (p. 80)
2:00–3:00 PM	7–12	Kentia Hall P, Conv. Center	Keeping It Real: Connecting Students to a NASA Ground Validation Campaign! (p. 80)
2:00–3:00 PM	P–12	Platinum Blrm. Salon C, JW Marriott	“E”ngineering in the STEM Classroom (p. 80)
2:00–3:00 PM	3–7	Kentia Hall J, Conv. Center	Connecting the Skills of Literacy and Science Through Children’s Literature and STEM Topics (p. 81)
2:00–3:00 PM	5–9	510, Conv. Center	Machine Technology and Engineering with K’NEX Machines: Using STEM to Make Work Easier (p. 83)

Schedule at a Glance Engineering, Technology, and the Application of Science

2:00–3:00 PM	5–9	Kentia Hall N, Conv. Center	Science By Design: Addressing Science Concepts Through Engineering (p. 82)
2:00–3:00 PM	K–5	Petree Hall D, Conv. Center	NESTA and NOAA Share: Climate Change Is Elementary (p. 80)
2:00–3:00 PM	5–9	Kentia Hall M, Conv. Center	Build an Anemometer! (p. 82)
2:00–3:30 PM	3–C	402B, Conv. Center	Integrating iPad with Vernier Technology (p. 85)
2:00–3:30 PM	5–9	Platinum Blrm. Salon F, JW Marriott	Engage Your Students in Workforce Skills with a Hack-a-Thon! (p. 83)
2:00–3:30 PM	3–C	402A, Conv. Center	Integrating Chromebook with Vernier Technology (p. 85)
2:00–3:30 PM	K–5	309, Conv. Center	Science + Engineering = New Elementary Program from the Smithsonian (p. 85)
2:00–3:30 PM	9–C	153B, Conv. Center	Break It Down, Build It Up! Modeling Enzymes in Action (p. 84)
2:00–3:30 PM	1–4	304C, Conv. Center	Make Science Come to Life Through Modeling with LEGO® Education (p. 85)
2:00–3:30 PM	7–12	305, Conv. Center	More than Robots... <i>FIRST</i> ® Tech Challenge “Drives” STEM Learning Beyond the Classroom (p. 85)
2:00–3:30 PM	6–C	503, Conv. Center	Engineering Sustainable Tools: Environmental Science in AGtion (p. 87)
3:30–4:00 PM	7–C	Platinum Blrm. Salon D, JW Marriott	Using Technology to Differentiate Instruction (p. 91)
3:30–4:30 PM	P–3	501C, Conv. Center	Every Day STEM For Every First Grader (p. 94)
3:30–4:30 PM	9–12	Plaza 3, JW Marriott	Controversy in Three Dimensions: Should the HPV Vaccine Be Mandatory? (p. 96)
3:30–4:30 PM	6–12	Kentia Hall N, Conv. Center	Designing a STEM Lesson (p. 98)
3:30–4:30 PM	P–1	Kentia Hall B, Conv. Center	Force, Motion, Literacy, and Language! (p. 97)
3:30–4:30 PM	K–12	515B, Conv. Center	NASA Is with You When You Fly: Flying with Bernoulli (p. 96)
3:30–4:30 PM	K–8	West Hall B-2, Conv. Center	CESI-Sponsored Session: Web 2.0 Tools for Science Teaching (p. 98)
3:30–4:30 PM	P–5	Kentia Hall A, Conv. Center	Full STEAM Ahead (p. 95)
3:30–4:30 PM	6–12	Diamond Blrm. Salon 7, JW Marriott	Recruiting Underrepresented and Low-Income Students into STEM Research Programs (p. 94)
3:30–4:30 PM	K–3	Kentia Hall C, Conv. Center	Farm to Kitchen: Planning a Three-Dimensional Unit with a Focus on Engineering (p. 97)
3:30–4:30 PM	K–6	502B, Conv. Center	Bilingual Engineering Adventures for the Whole Family (p. 96)
4:00–4:30 PM	5–12	Platinum Blrm. Salon D, JW Marriott	Transforming the T in STEM: Using Technology in All Aspects of the 5E Instructional Model (p. 99)
4:00–5:30 PM	6–12	511 AB, Conv. Center	Top Three Things You Can Do with Calculators in STEM! (p. 104)
4:00–5:30 PM	6–8	303 AB, Conv. Center	Identifying Energy Transfers in Motors and Generators (p. 101)
4:00–5:30 PM	K–12	408A, Conv. Center	Magnify Your Mind!... Science, Writing, Art, and The Private Eye® (p. 103)
4:00–5:30 PM	7–C	402A, Conv. Center	Biology with Vernier (p. 102)
4:00–5:30 PM	7–C	402B, Conv. Center	Renewable Energy with KidWind and Vernier (p. 102)
5:00–6:00 PM	6–12	Kentia Hall P, Conv. Center	Earth Science Explorations Using Airborne and Ground-Based Sensors (p. 107)
5:00–6:00 PM	6–C	Diamond Blrm. Salon 9, JW Marriott	Beinprosome (Be INnovative and PROduce SOMething NEw): An Open Innovation Event Made For and By High School Students (p. 106)
5:00–6:00 PM	P–6	Kentia Hall C, Conv. Center	Starting Family STEAM Night with Stories: Take a Journey with the “Three Little Pigs”(p. 108)
5:00–6:00 PM	1–5	502B, Conv. Center	Support Students Who Receive Special Education Services in STEM Education Through Engagement in Engineering Challenges (p. 107)
5:00–6:00 PM	K–3	Kentia Hall E, Conv. Center	Looking to Nature to Solve Human Problems (p. 108)
5:00–6:00 PM	9–C	Kentia Hall K, Conv. Center	Analyzing Supernova Remnants Using Spectroscopy, NASA Data, and STEM (p. 108)
5:00–6:00 PM	3–8	Kentia Hall J, Conv. Center	Real-World and Real Simple Engineering Activities for the Elementary Classroom (p. 108)

Life Science

8:00–9:00 AM	6–8	Platinum Blrm. Salon F, JW Marriott	NSTA Press® Session: Argument-Driven Inquiry in Life Science and Physical Science—Lab Investigations for Grades 6–8 (p. 21)
8:00–9:00 AM	10–C	Platinum Blrm. Salon I, JW Marriott	Evolutionary Medicine: Medicine Without Evolution Is Like Engineering Without Physics (p. 17)
8:00–9:00 AM	K–12	Platinum Blrm. Salon H, JW Marriott	EcoTech (p. 17)
8:00–9:00 AM	9–12	Kentia Hall S, Conv. Center	Biomagnification in Ocean Food Webs: You Are What You Eat (p. 22)
8:00–9:00 AM	6–8	Kentia Hall R, Conv. Center	Bioengineering Challenges and Middle School Life Science (p. 22)
8:00–9:00 AM	5–10	Kentia Hall C, Conv. Center	Implement Coding into Your Curriculum with Project GUTS (p. 21)
8:00–9:00 AM	4–12	Diamond Blrm. Salon 6, JW Marriott	Soils and NGSS—Perfect Together: Let’s Dig In! (p. 20)
8:00–9:00 AM	9–12	Diamond Blrm. Salon 1, JW Marriott	DuPont Presents: Tracking the Spread of Infectious Diseases—Human and Animal (p. 20)
8:00–9:00 AM	8–12	407, Conv. Center	From DNA to Protein—A Modeling Approach (p. 23)
8:00–9:00 AM	9–12	510, Conv. Center	K’NEX DNA Structure, Replication, and Transcription: An Expertly Engineered Molecule in Living Things (p. 23)
8:00–9:30 AM	7–C	402A, Conv. Center	Water Quality with Vernier (p. 26)
8:00–9:30 AM	9–12	306 AB, Conv. Center	Shark Dissection: A Jawsome Experience! (p. 24)
8:00–9:30 AM	9–12	403B, Conv. Center	Measuring Species Diversity Using Wildlife Data from Africa’s Rift Valley (p. 26)
8:00–9:30 AM	4–C	511 AB, Conv. Center	Stream Ecology: Slimy Leaves for Healthy Streams (p. 27)
8:00–9:30 AM	9–C	404 AB, Conv. Center	Conserving Panda Population: One Hormone Test Design at a Time! (p. 26)
8:00–9:30 AM	9–C	406 AB, Conv. Center	DNA Detectives: Who Killed Jose? (AP Big Ideas 3, 4) (p. 26)
8:00–10:00 AM	6–12	Platinum Blrm. Salon G, JW Marriott	NGSS Toolkit Pathway Session: Using the 5E Instructional Model to Develop a Conceptual Flow (p. 28)
9:30–10:30 AM	K–12	Petree Hall D, Conv. Center	NESTA and NOAA Climate and Weather Share-a-Thon (p. 38)
9:30–10:30 AM	9–12	Diamond Blrm. Salon 1, JW Marriott	DuPont Presents: Photosynthesis and Respiration—It’s a Plant’s Life! (p. 36)
9:30–10:30 AM	5–7	Kentia Hall M, Conv. Center	The Power of the Atom (p. 38)
9:30–10:30 AM	9–C	Platinum Blrm. Salon D, JW Marriott	NASA Astrobiology: The Search for Life Beyond Earth (p. 33)
9:30–10:30 AM	9–12	Kentia Hall S, Conv. Center	Using Modeling as a Curriculum Anchor: Learn an Instructional Approach for Uniting the NGSS Practices in High School Biology (p. 38)
9:30–10:30 AM	5–8	Kentia Hall R, Conv. Center	Making Sense of Gene-Environmental Interactions in a 3D Science Classroom (p. 38)
9:30–10:30 AM	P–C	502B, Conv. Center	Environmental Literacy: All About Access! (p. 36)
9:30–10:30 AM	5–9	Kentia Hall L, Conv. Center	Sustainability in the Three Cs: Curriculum, Campus, and Community (p. 35)
9:45 AM–5:45 PM	4–8	Madrona Marsh Preserve, Off-site	SC-7: Stretch Your Legs for Science: An Outdoor STEM Adventure (p. 40)
10:00–11:30 AM	9–12	308 AB, Conv. Center	Genetics Brought to Life: Gene-ius Model Organisms (p. 42)
10:00–11:30 AM	2–5	409 AB, Conv. Center	Disappearing Jaguars and Sloths: Phenomena, 3D Instruction, and Amplify Science for Grades 2–5 (p. 43)
10:00–11:30 AM	6–12	304 AB, Conv. Center	CPO Science’s Link™ Learning Module Crazy Traits: Pedigrees and Sex-Linked Traits (p. 41)
10:00–11:30 AM	7–C	153C, Conv. Center	Leap Forward into a Frog-Friendly Science Class (p. 41)
10:00–11:30 AM	9–12	503, Conv. Center	BIOZONE’s AP Biology: New Editions of This Popular Resource (p. 44)
10:00–11:30 AM	9–C	404 AB, Conv. Center	Upgrade Your Chemotaxis Lab! (Aligns with AP Biology Big Ideas 1–4) (p. 43)
10:00–11:30 AM	9–C	403A, Conv. Center	Flipping AP Biology with FlinnPREP™ (p. 42)
10:00–11:30 AM	K–12	306 AB, Conv. Center	Introduction to Plants® (p. 42)
10:00–11:30 AM	6–C	514, Conv. Center	Grow GMO Seeds in Your Classroom and Conduct Protein and DNA Analyses Using Lateral Flow Strips and PCR (p. 46)
10:00–11:30 AM	10–C	305, Conv. Center	Foodborne Outbreak Investigation Using Gel Electrophoresis (p. 42)
10:00–11:30 AM	9–C	403B, Conv. Center	New from BioInteractive: Explore Infectious Diseases and Viruses (p. 43)
11:00–11:30 AM	4–12	505, Conv. Center	Giving Life to Life Science Design Challenges (p. 48)
11:00 AM–12 Noon	3–8	Kentia Hall R, Conv. Center	Plants and the Three Dimensions of the NGSS (p. 55)

11:00AM–12 Noon	9–12	Plaza 3, JW Marriott	An NGSS Twist on the Hands-On Classic Enzyme Catalase Lab (p. 54)
11:00AM–12 Noon	9–12	Diamond Blrm. Salon 1, JW Marriott	DuPont Presents: Adding Some Color to Science (p. 53)
11:00AM–12 Noon	7–12	West Hall B-5, Conv. Center	Are You MoBILiSE'd Yet? Modeling Biology Instruction: Leaders in Science and Engineering (p. 56)
11:00AM–12 Noon	9–12	Kentia Hall S, Conv. Center	Bring the Three Dimensions to Life with Yeast (p. 55)
11:30AM–12 Noon	C	Georgia 1, JW Marriott	SCST-Sponsored Session: Introducing STEAM into the College Science Curriculum (p. 57)
12 Noon–1:30 PM	4–7	503, Conv. Center	Teach Biodiversity By Building Interactive Virtual Bio Domes! (p. 61)
12 Noon–1:30 PM	9–12	308 AB, Conv. Center	Keep Calm and Chemistry On: Successful Lab Activities for the New Chemistry Teacher (p. 59)
12 Noon–1:30 PM	6–8	409 AB, Conv. Center	The Mystery of Poisonous Newts: Phenomena, 3D Instruction, and Amplify Science for Grades 6–8 (p. 61)
12 Noon–1:30 PM	9–12	306 AB, Conv. Center	Comparative Vertebrate Anatomy with Carolina's Perfect Solution® Specimens (p. 59)
12 Noon–1:30 PM	2–6	410, Conv. Center	Beauty and the Beak: How STEM/3D Printing Rescued a Bald Eagle (p. 61)
12 Noon–1:30 PM	7–12	403B, Conv. Center	Telling Stories and Using Statistics to Understand Selection (p. 60)
12 Noon–1:30 PM	7–C	402A, Conv. Center	Biology with Vernier Using Chromebook (p. 60)
12:30–1:30 PM	6–C	Platinum Blrm. Salon H, JW Marriott	LiMPETS: Sandy Beach and Rocky Intertidal Monitoring in Your National Marine Sanctuaries (p. 66)
12:30–1:30 PM	1–5	West Hall B-2, Conv. Center	CESI-Sponsored Session: Using Fictional Picture Books to Do Science: How Is It Possible? (p. 67)
12:30–1:30 PM	9–12	Plaza 3, JW Marriott	Thinking Small: Nanotechnology in the High School Classroom (p. 68)
12:30–1:30 PM	P–8	Kentia Hall K, Conv. Center	Science Learning at Your Window! (p. 67)
12:30–1:30 PM	2–12	515A, Conv. Center	Phenomena-Questions-Model (p. 67)
12:30–1:30 PM	9–12	405, Conv. Center	True Colors: Spectrometry to Investigate Lights and Colors (p. 71)
1:00–1:30 PM	5–C	Platinum Blrm. Salon J, JW Marriott	NGSS Three-Dimensional Learning: Using Student-Developed Games to Explore Ecosystem Relationships (p. 72)
1:00–1:30 PM	3–6	Kentia Hall B, Conv. Center	When Curiosity Did Not Kill the Cat: Using Creative Language Arts Strategies to Cultivate Authentic Scientific Learning (p. 72)
1:45–2:15 PM	6–9	Diamond Blrm. Salon 7, JW Marriott	Meet Me in the Middle Session: Photosynthesis Fun (p. 73)
2:00–3:00 PM	6–8	Kentia Hall Q, Conv. Center	Using a River Ecology Teaching Case to Engage Students in Developing and Using Models, plus Engaging in Argument from Evidence (p. 82)
2:00–3:00 PM	6–10	Kentia Hall R, Conv. Center	Rethinking Biology in 3D (p. 82)
2:00–3:00 PM	P–6	West Hall B-5, Conv. Center	NSTA Press® Session: <i>The Power of Investigating: Guiding Authentic Assessments</i> (p. 82)
2:00–3:00 PM	9–12	Plaza 3, JW Marriott	Mobilize: Capturing Student Attention with Computational Thinking (p. 81)
2:00–3:00 PM	K–8, C	Platinum Blrm. Salon B, JW Marriott	NSTA Press® Session: Flowers to Fruit: Putting Botany Back into Your Curriculum (p. 77)
2:00–3:00 PM	8–12	407, Conv. Center	Introducing Statistics in Biology to Improve Scientific Reasoning (p. 83)
2:00–3:30 PM	9–12	518, Conv. Center	Cell Differentiation and Gene Expression (p. 88)
2:00–3:30 PM	1–4	304C, Conv. Center	Make Science Come to Life Through Modeling with LEGO Education
2:00–3:30 PM	6–12	308 AB, Conv. Center	Protein Necklace: Harnessing the Glow of Jellyfish (p. 85)
2:00–3:30 PM	9–C	404 AB, Conv. Center	Project-Based Learning for High School: Sequencing Plant Species (p. 86)
2:00–3:30 PM	6–8	303 AB, Conv. Center	Developing Models for Sensory Receptors (p. 84)
2:00–3:30 PM	K–12	306 AB, Conv. Center	Hands-On Science with Classroom Critters (p. 85)
2:00–3:30 PM	6–C	512, Conv. Center	Studying Genetic Variation in the Classroom (p. 87)
2:00–3:30 PM	9–C	406 AB, Conv. Center	Lab Skills: The Escape Room! (p. 86)
2:00–3:30 PM	6–8	410, Conv. Center	Different Isn't Bad: Using Arthropods to Teach about Science, Society, and Being a Teen (p. 87)
2:00–3:30 PM	9–C	501 AB, Conv. Center	Guide to Piloting Your Own STEM Lab (p. 87)
2:00–3:30 PM	9–C	153B, Conv. Center	Break It Down, Build It Up! Modeling Enzymes in Action (p. 84)

Schedule at a Glance Life Science

2:00–3:30 PM	6–C	153C, Conv. Center	Hands-On Anatomy: Building Body Systems in Clay (p. 84)
2:00–3:30 PM	6–12	511C, Conv. Center	Incorporating Standards-Based Nanotechnology Lessons in the Secondary Science Classroom (p. 87)
2:00–3:30 PM	9–12	403B, Conv. Center	Extinctions: Understanding the Past, Informing the Present, Guiding the Future (p. 86)
2:30–3:00 PM	K–12	Platinum Blrm. Salon H, JW Marriott	Strategies to Incorporate Crosscutting Concepts in Your Science Instruction (p. 89)
3:30–4:30 PM	9–12	Plaza 3, JW Marriott	Controversy in Three Dimensions: Should the HPV Vaccine Be Mandatory? (p. 96)
3:30–4:30 PM	4–9	Kentia Hall M, Conv. Center	Sweet Math: How Much Corn Did I Drink? (p. 95)
3:30–4:30 PM	7–11	405, Conv. Center	Understanding Photosynthesis: A Lab-Based Approach (p. 99)
3:30–4:30 PM	7–12	Kentia Hall R, Conv. Center	Representing Cell Membrane Transport with Polystyrene Foam Cups and Lentils (p. 98)
3:30–4:30 PM	6–10	Kentia Hall S, Conv. Center	Using Issues as a Context to Enhance Students' Three-Dimensional Learning (p. 98)
3:30–4:30 PM	7,9–10	Diamond Blrm. Salon 8, JW Marriott	Life Science on the International Space Station (p. 96)
3:30–4:30 PM	K–3	Kentia Hall C, Conv. Center	Farm to Kitchen: Planning a Three-Dimensional Unit with a Focus on Engineering (p. 97)
4:00–5:30 PM	K–12	408A, Conv. Center	Magnify Your Mind!...Science, Writing, Art, and The Private Eye® (p. 103)
4:00–5:30 PM	9–C	403B, Conv. Center	Saving Elephants: Using Molecular Tools to Solve Ecological Problems (p. 103)
4:00–5:30 PM	9–12	153B, Conv. Center	Modeling a Protein Story: Hemoglobin from Structure to Function (p. 100)
4:00–5:30 PM	9–C	406 AB, Conv. Center	Lab Skills: The Escape Room! (p. 103)
4:00–5:30 PM	6–C	403A, Conv. Center	Enhance Your Science Course with POGIL™ Activities (p. 102)
4:00–5:30 PM	3–6	503, Conv. Center	Viruses, Bacteria, and a Party: Teaching Elementary Students about Germs (p. 104)
4:00–5:30 PM	K–5	309, Conv. Center	Dissecting the NGSS (p. 102)
4:00–5:30 PM	7–C	402A, Conv. Center	Biology with Vernier (p. 102)
4:00–5:30 PM	9–12	518, Conv. Center	Photosynthesis and Cellular Respiration (p. 104)
4:00–5:30 PM	6–12	306 AB, Conv. Center	Comparative Mammalian Organ Dissection with Carolina's Perfect Solution® Specimens (p. 102)
4:00–5:30 PM	K–12	308 AB, Conv. Center	Hands-On Activities to Model Sampling, Habitat Degradation, and Animal Choice (p. 102)
5:00–5:30 PM	9–12	Plaza 1, JW Marriott	Using Discussion Techniques on Current Scientific Events to Engage Students in Scientific Literacy (p. 105)
5:00–5:30 PM	4–C	Kentia Hall R, Conv. Center	Empower ALL Students with Neuroscience (p. 105)
5:00–6:00 PM	3–8,C	Olympic 1, JW Marriott	ASTE-Sponsored session: Science Investigations with Read Alouds (p. 106)
5:00–6:00 PM	10–C	Kentia Hall S, Conv. Center	Evolution in Action (p. 109)
5:00–6:00 PM	K–3	Kentia Hall E, Conv. Center	Looking to Nature to Solve Human Problems (p. 108)
5:00–6:00 PM	6–C	Petree Hall D, Conv. Center	The Energy Budget: A Critical Lesson Review Using NGSS and CLEAN (p. 109)
5:00–6:00 PM	6–8	Kentia Hall Q, Conv. Center	Invasive Species Biodiversity Investigation: Developing Data-Rich Ecosystem Understandings through Citizen Science (p. 109)
5:30–6:00 PM	7–12	Kentia Hall R, Conv. Center	Space Explorers: 25 Years of Inner-City Students Out-of-School-Time Explorations (p. 110)

Physical Science

8:00–9:00 AM	6–8	Platinum Blrm. Salon F, JW Marriott	NSTA Press® Session: Argument-Driven Inquiry in Life Science and Physical Science—Lab Investigations for Grades 6–8 (p. 21)
8:00–9:00 AM	4–10	Olympic 1, JW Marriott	Rolling Down the NGSS Highway (p. 17)
8:00–9:00 AM	6–8	Kentia Hall M, Conv. Center	Are We Losing It? (p. 22)
8:00–9:00 AM	7–12	Kentia Hall J, Conv. Center	Decoding Starlight—From Photons to Pixels to Images, Using Math and Art (p. 22)
8:00–9:00 AM	9–12	Kentia Hall O, Conv. Center	Beyond the Lab Report: Using Student-Generated Lab Data to Construct Claim, Evidence, and Reasoning Written Explanations as Assessment of Content Objectives (p. 19)
8:00–9:00 AM	9–12	Atrium 2, JW Marriott	ASTE-Sponsored Session: Introducing Nanotechnology into the Chemistry Classroom (p. 16)
8:00–9:00 AM	9–12	Plaza 2, JW Marriott	Supporting Student Independence and Metacognition in Problem-Solving (p. 18)
8:00–9:00 AM	4–12	Diamond Blrm. Salon 6, JW Marriott	Soils and NGSS—Perfect Together: Let’s Dig In! (p. 20)
8:00–9:00 AM	5–10	Kentia Hall C, Conv. Center	Implement Coding into Your Curriculum with Project GUTS (p. 21)
8:00–9:00 AM	8–12	Kentia Hall N, Conv. Center	Safer Chemistry: Green Chemistry Replacement Labs (p. 22)
8:00–9:30 AM	10–C	512, Conv. Center	Black Holes for High School (p. 28)
8:00–9:30 AM	P–C	503, Conv. Center	STEAM Education: The National Coalition for Aviation and Space Education Is Here for You! (p. 27)
8:00–9:30 AM	2–9	408A, Conv. Center	What the Heck Happened?! (p. 26)
8:00–9:30 AM	K–5	303 AB, Conv. Center	What to Look For: Physical Science Learning Progressions (p. 24)
8:00–9:30 AM	8–12	408B, Conv. Center	Cool Tools for Electricity and Magnetism (p. 27)
8:00–9:30 AM	6–C	403A, Conv. Center	Fantastic Physical Science Demonstrations from Flinn Scientific (p. 26)
8:00–9:30 AM	9–C	402B, Conv. Center	Advanced Physics with Vernier (p. 26)
8:00–9:30 AM	6–12	304 AB, Conv. Center	NGSS and the Energy Car: Collisions and Restraints (p. 24)
8:00–11:00 AM	6–8	Santa Anita A, Westin Bonaventure	SC-5: Ocean Plastic Pollution: Issues and Solutions (p. 29)
9:30–10:30 AM	5–C	505, Conv. Center	Chemical Engineering for Middle School (p. 34)
9:30–10:30 AM	K–12	Petree Hall D, Conv. Center	NESTA and NOAA Climate and Weather Share-a-Thon (p. 38)
9:30–10:30 AM	9–12	Kentia Hall O, Conv. Center	Beyond the Egg Drop: Infusing Engineering Design into the Physics/Science Classroom (p. 35)
9:30–10:30 AM	6–12	407, Conv. Center	STEM Activities: Easy-to-Teach Robotics (p. 39)
9:30–10:30 AM	6–12	405, Conv. Center	Exploring Misconceptions: Heat and Temperature (p. 39)
9:30–10:30 AM	5–9	510, Conv. Center	Forces, Energy, Motion, and Engineering with K’NEX Machines: Using STEM to Make Work Easier (p. 40)
10:00–11:30 AM	2–9	408A, Conv. Center	Cool! Can We Do That Again?! (p. 43)
10:00–11:30 AM	8–12	408B, Conv. Center	Cool Tools for Sound and Waves (p. 43)
10:00–11:30 AM	9–12	512, Conv. Center	GPS and Relativity (p. 44)
10:00–11:30 AM	7–C	511C, Conv. Center	Molecular-Level Visualization: Engage Your Students and Fight Misconceptions! (p. 44)
10:00–11:30 AM	9–C	402A, Conv. Center	Chemistry with Vernier (p. 42)
10:00–11:30 AM	6–C	Petree Hall C, Conv. Center	Morning of Chemistry: An Epic Adventure in Science (p. 46)
10:00–11:30 AM	9–12	153B, Conv. Center	Living by Chemistry: What Shape Is that Smell? (p. 41)
10:00–11:30 AM	10–C	305, Conv. Center	Foodborne Outbreak Investigation Using Gel Electrophoresis (p. 42)
10:00–11:30 AM	7–C	402B, Conv. Center	Explore Motion with Vernier Video Physics for iOS (p. 42)
10:30 AM–4:00 PM	3–12	Santa Anita B, Westin Bonaventure	SC-8: NSTA Press® Short Course: Phenomenon-Based Learning: Fun, Hands-On, Cooperative Learning of Both Science and Language Arts (p. 47)
11:00–11:30 AM	6–8	Diamond Blrm. Salon 8, JW Marriott	Meet Me in the Middle Session: Bringing STEAM and Literacy to the Periodic Table (p. 47)
11:00–11:30 AM	6–9	Kentia Hall M, Conv. Center	Using Simulations to Engage Middle School Learners in Physical Science (p. 48)
11:00 AM–12 Noon	10–12	Kentia Hall O, Conv. Center	Building a Unit Plan Using American Association of Chemistry Teachers (AACT) Member Benefits and Resources (p. 55)

Schedule at a Glance Physical Science

11:00 AM–12 Noon	9–12	407, Conv. Center	Light and Optics (p. 56)
11:00 AM–12 Noon	6–12	Kentia Hall P, Conv. Center	Engineering for Earthquakes! (p. 55)
11:00 AM–12 Noon	9–12	405, Conv. Center	Essential Chemistry: Stoichiometry and Limiting Reactants with Gas Laws (p. 56)
11:00 AM–12 Noon	6–12	Gold Blrm. Salon 2, JW Marriott	Powerful, Free Simulations for Three-Dimensional NGSS Teaching (p. 50)
11:00 AM–12 Noon	7–C	504, Conv. Center	Catch the Wave: Using Seismometers to Measure and Model Earthquakes (p. 52)
11:00 AM–12 Noon	P–3	515B, Conv. Center	Engineering and Literacy: A Path to Integrated STEM (p. 54)
11:00 AM–12 Noon	6–12	Kentia Hall L, Conv. Center	NSTA Press® Session: Integrating Engineering Practices into Whole-Class Inquiry Challenges (p. 53)
11:00 AM–12 Noon	K–5	Kentia Hall D, Conv. Center	Elementary Engineers: Build a Balloon-Powered Car (p. 54)
11:00 AM–12 Noon	6–12	Kentia Hall N, Conv. Center	Charge Up Your NGSS Classroom by Building a Battery of Batteries (p. 55)
11:00 AM–12 Noon	5–9	510, Conv. Center	Explore Solar Energy STEM Concepts with K’NEX Models: Engineering for a Sustainable Future (p. 56)
11:30 AM–12 Noon	6–8	Kentia Hall Q, Conv. Center	Float Your Boat: An Engineering Challenge (p. 58)
11:30 AM–12 Noon	5–8	Kentia Hall M, Conv. Center	Build a Balloon-Powered Car to Discover Newton’s Laws and the Effect of Friction (p. 57)
12 Noon–1:30 PM	10–C	512, Conv. Center	Quantum in the Classroom: Wave-Particle Duality (p. 62)
12 Noon–1:30 PM	6–8	408B, Conv. Center	Engineering for the NGSS Middle School Science Classroom (p. 60)
12 Noon–1:30 PM	7–C	408A, Conv. Center	Fantastical Chemistry Demos for All Classrooms (p. 60)
12 Noon–1:30 PM	7–C	402B, Conv. Center	Thermal Analysis (p. 60)
12 Noon–1:30 PM	K–5	303 AB, Conv. Center	What Does Conceptual Modeling Look Like in Grades K–5 Classrooms? (p. 59)
12 Noon–1:30 PM	K–12	150C, Conv. Center	Structuring Discussion to Be Equitable and Rigorous (p. 58)
12 Noon–1:30 PM	7–C	402B, Conv. Center	Thermal Analysis (p. 60)
12 Noon–1:30 PM	7–12	153C, Conv. Center	Reconceptualizing Chemistry Through Play: Ionic Bonding (p. 59)
12 Noon–1:30 PM	9–C	403A, Conv. Center	New Inquiry Investigations for AP Physics 1 and 2 from Flinn Scientific (p. 60)
12:30–1:30 PM	9–12	Platinum Blrm. Salon B, JW Marriott	STEM Road Map Curriculum Series for Grades 9–12: Construction Materials (p. 66)
12:30–1:30 PM	6–12	407, Conv. Center	STEM Activities: The Science of Musical Sound (p. 71)
12:30–1:30 PM	7–12	Kentia Hall N, Conv. Center	Cars: Science Lessons That DRIVE Science Concepts (p. 67)
12:30–1:30 PM	9–12	Diamond Blrm. Salon 1, JW Marriott	DuPont Presents: The Science of Keeping Food Fresh (p. 68)
12:30–1:30 PM	5–12	507, Conv. Center	Chemistry Concepts STEAM-ified (p. 67)
12:30–1:30 PM	6–8	Theatre (411), Conv. Center	Classroom-Based Assessment Tasks and Rubrics: Using Student Responses as Evidence of Three-Dimensional Learning (p. 67)
12:30–1:30 PM	9–12	405, Conv. Center	True Colors: Spectrometry to Investigate Lights and Colors (p. 71)
12:30–1:30 PM	9–12	Plaza 3, JW Marriott	Thinking Small: Nanotechnology in the High School Classroom (p. 68)
12:30–1:30 PM	4–6	Kentia Hall E, Conv. Center	Computers Unwrapped: Demystifying Computer Hardware by Making a Logic Circuit and Learning How It Can Be Used to Add Numbers (p. 69)
12:30–1:30 PM	2–12	515A, Conv. Center	Phenomena-Questions-Model (p. 67)
12:30–1:30 PM	1–8	502A, Conv. Center	Get Energized: Problem-Based Learning EQUALS Success in Science and Literacy (p. 68)
12:30–1:30 PM	6–8	Kentia Hall M, Conv. Center	Bring Back the Magic with Harry Potter (p. 70)
1:00–1:30 PM	6–8	Diamond Blrm. Salon 7, JW Marriott	Meet Me in the Middle Session: Engineering Practice in Middle School Chemistry (p. 72)
2:00–3:00 PM	9–12	405, Conv. Center	Essential Chemistry: Meaningful Titration of Everyday Antacids (p. 83)
2:00–3:00 PM	3–5	Kentia Hall C, Conv. Center	Good Vibrations: Investigating Properties of Sound Using an Inquiry-Based STEM Activity (p. 81)
2:00–3:00 PM	P–2	Kentia Hall D, Conv. Center	Catch the Wave! (p. 81)
2:00–3:00 PM	3–6	Kentia Hall K, Conv. Center	Building Circuits! (p. 82)
2:00–3:00 PM	K–3	Kentia Hall F, Conv. Center	Thinking, Tinkering, and Talking in the Primary Grades (p. 81)
2:00–3:00 PM	5–9	510, Conv. Center	Machine Technology and Engineering with K’NEX Machines: Using STEM to Make Work Easier (p. 83)
2:00–3:00 PM	9–C	Kentia Hall S, Conv. Center	Manipulatives in Teaching Basic Chemistry Concepts (p. 82)
2:00–3:30 PM	3–C	402A, Conv. Center	Integrating Chromebook with Vernier Technology (p. 85)

2:00–3:30 PM	6–12	304AB, Conv. Center	CPO Science’s Link™ Learning Module: Chemistry and the Periodic Table (p. 84)
2:00–3:30 PM	1–8	408A, Conv. Center	Elementary Teacher Survival Kit (p. 86)
2:00–3:30 PM	9–C	403A, Conv. Center	Green Chemistry Experiments for General and AP Chemistry (p. 86)
2:00–3:30 PM	K–1	409 AB, Conv. Center	Puppet Theater Engineering: Phenomena, 3D Instruction, and Amplify Science for Grades K–1 (p. 86)
2:00–3:30 PM	3–C	402B, Conv. Center	Integrating iPad with Vernier Technology (p. 85)
2:00–3:30 PM	6–12	511C, Conv. Center	Incorporating Standards-Based Nanotechnology Lessons in the Secondary Science Classroom (p. 87)
2:00–3:30 PM	9–C	153B, Conv. Center	Break It Down, Build It Up! Modeling Enzymes in Action (p. 84)
2:30–3:00 PM	9–C	Kentia Hall O, Conv. Center	Advanced Chemical Research: Training Future Scientists (p. 90)
3:30–4:30 PM	6–12	407, Conv. Center	STEM Activities: Fascinating Forces and Simple Machines (p. 99)
3:30–4:30 PM	7–11	405, Conv. Center	Understanding Photosynthesis: A Lab-Based Approach (p. 99)
3:30–4:30 PM	P–1	Kentia Hall B, Conv. Center	Force, Motion, Literacy, and Language! (p. 97)
3:30–4:30 PM	P–3	501C, Conv. Center	Every Day STEM For Every First Grader (p. 94)
3:30–4:30 PM	4–9	Kentia Hall M, Conv. Center	Sweet Math: How Much Corn Did I Drink? (p. 95)
3:30–4:30 PM	3–8	Kentia Hall H, Conv. Center	Using Discrepant Events to Jump-Start Inquiry (p. 97)
3:30–4:30 PM	P–2	Kentia Hall E, Conv. Center	Catch a Wave: The Science of Sound (p. 97)
3:30–4:30 PM	K–12	515B, Conv. Center	NASA Is with You When You Fly: Flying with Bernoulli (p. 96)
3:30–4:30 PM	4–10	Kentia Hall G, Conv. Center	Coasting Through Physics: Bring the Thrill of Roller Coasters to Your Classroom! (p. 97)
3:30–4:30 PM	K–2	510, Conv. Center	Beginning Explorations in Planned and Creative Building Activities with Kid K’NEX (p. 99)
4:00–4:30 PM	7–C	Platinum Blrm. Salon H, JW Marriott	Making Advanced Science Classes More Accessible to Girls: Westridge School’s Recent Accomplishments (p. 99)
4:00–5:30 PM	7–C	402B, Conv. Center	Renewable Energy with KidWind and Vernier (p. 102)
4:00–5:30 PM	K–12	408A, Conv. Center	Magnify Your Mind!...Science, Writing, Art, and The Private Eye® (p. 103)
4:00–5:30 PM	6–8	304 C, Conv. Center	Tackle Renewable Energy with LEGO® Education (p. 102)
4:00–5:30 PM	6–8	303 AB, Conv. Center	Identifying Energy Transfers in Motors and Generators (p. 101)
4:00–5:30 PM	6–C	403A, Conv. Center	Enhance Your Science Course with POGIL™ Activities (p. 102)
5:00–5:30 PM	7–9	Kentia Hall M, Conv. Center	Creating an Interactive Periodic Table with the Augmented Reality App: Aurasma (p. 105)
5:00–6:00 PM	9–12	Kentia Hall O, Conv. Center	LEGO® Stoichiometry: Addressing Student Misconceptions with Manipulatives (p. 109)
5:00–6:00 PM	6–C	Petree Hall D, Conv. Center	The Energy Budget: A Critical Lesson Review Using NGSS and CLEAN (p. 109)
5:00–6:00 PM	1–6	Kentia Hall G, Conv. Center	Learning the Atomic Theory through Classroom Interactions, from First Grade and Beyond (p. 108)
5:00–6:00 PM	6–C	Kentia Hall N, Conv. Center	Biofuels, Batteries, or Gasoline: What’s the Most Sustainable Way to Power Vehicles? (p. 109)
5:00–6:00 PM	3–8	Kentia Hall L, Conv. Center	A New Kind of Experiment: NOS and How We Took a Leap in the Lab (p. 107)
5:00–6:00 PM	9–C	Kentia Hall K, Conv. Center	Analyzing Supernova Remnants Using Spectroscopy, NASA Data, and STEM (p. 108)
5:00–6:00 PM	P–6	Kentia Hall C, Conv. Center	Starting Family STEAM Night with Stories: Take a Journey with the “Three Little Pigs” (p. 108)
5:00–6:00 PM	3–5	Kentia Hall D, Conv. Center	Let’s Get Physical! Integrating Physical Science and Literacy (p. 108)
5:00–6:00 PM	6–12	505, Conv. Center	Redesign Your Lessons for NGSS: Engage Students Using Phenomena (p. 106)
5:30–6:00 PM	7–12	Kentia Hall R, Conv. Center	Space Explorers: 25 Years of Inner-City Students Out-of-School-Time Explorations (p. 110)

General Science Education

8:00–8:30 AM	C	Georgia 1, JW Marriott	SCST-Sponsored Session: Go Online to Teach College Science! (p. 15)
8:00–8:30 AM	8–C	Kentia Hall L, Conv. Center	STEM Will Not Grow Among Our Youth Unless We Give Them the Tools to Do So (p. 16)
8:00–8:30 AM	6–10	Kentia Hall K, Conv. Center	Science Current Events Journals: Real Science and Media Literacy (p. 15)
8:00–9:00 AM	7–12	Kentia Hall G, Conv. Center	Engaging Students with Literacy Strategies (p. 19)
8:00–9:00 AM	6–C	Platinum Blrm. Salon J, JW Marriott	Reframing Professional Development for NGSS: Are We Considering All Dimensions to Support Learning (p. 17)
8:00–9:00 AM	6–12	Kentia Hall H, Conv. Center	Engaging Students through the SAMR Model and Digital Assessments (p. 19)
8:00–9:00 AM	9–12	Plaza 1, JW Marriott	Collaboration in a Cross-Curricular PBL World (p. 18)
8:00–9:00 AM	1–12	Platinum Blrm. Salon E, JW Marriott	Tablet Invasion in the Middle School Science Classroom (p. 17)
8:00–9:00 AM	3–10	Platinum Blrm. Salon D, JW Marriott	Serious Learning with Science Comics (p. 17)
8:00–9:00 AM	9–12	Plaza 3, JW Marriott	Giving Diverse Learners Access, Choice, and Voice: Performance-Based Assessment Tasks (PBATs) as a Tool for Three-Dimensional Learning (p. 21)
8:00–9:00 AM	K–12	Gold Blrm. Salon 1, JW Marriott	Ignite Student Passion Through STEM (p. 21)
8:00–9:00 AM	5–11	Diamond Blrm. Salon 7, JW Marriott	Becoming Teacher Leaders in a Turnaround School System (p. 20)
8:00–9:00 AM	1–12	Diamond Blrm. Salon 9, JW Marriott	How Do Your Activities Measure Up? (p. 21)
8:00–9:00 AM	P–12	502A, Conv. Center	Interactive Word Walls: Enhancing Students' Ability to Speak, Read, and Write About Science Experiences (p. 18)
8:00–9:00 AM	5–12	515A, Conv. Center	Scaffolding to Support Complex Student-Created Explanations of Real-World Phenomena (Secondary Science Classrooms) (p. 18)
8:00–9:00 AM	K–12	Diamond Blrm. Salon 2, JW Marriott	NSELA-Sponsored Session: STEM Lesson Guideposts: Mapping STEM Lessons into Your Curriculum (p. 16)
8:00–9:00 AM	K–12	151, Conv. Center	NGSS@NSTA Forum Session: Designing and Using Classroom Assessments to Support Meaningful NGSS Investigations (p. 18)
8:00–9:00 AM	K–6	Kentia Hall D, Conv. Center	Advancing Science Literacy while Meeting CCSS: Enable Students to Read Science Content, Organize and Communicate Information Effectively, and Increase Achievement (p. 18)
8:00–9:00 AM	K–12	Atrium 3, JW Marriott	NSTA Press® Session: Learn Strategies to Help You Implement the NGSS Practices! (p. 20)
8:00–9:00 AM	1–C	Diamond Blrm. Salon 3, JW Marriott	NSTA Press® Session: <i>Teaching for Conceptual Understanding in Science: Building a Bridge Between Student Ideas and Scientific Knowledge</i> (p. 16)
8:00–9:00 AM	6–9	Platinum Blrm. Salon B, JW Marriott	NSTA Press® Session: <i>Doing Good Science in Middle School</i> (p. 17)
8:00–9:00 AM	K–12	Theatre (411), Conv. Center	NGSS Instruction that Makes Thinking Visible (p. 20)
8:00–9:00 AM	5–12	150 AB, Conv. Center	Gains in the Education of Mathematics and Science: What Can GEMS Do for You? (p. 23)
8:00–9:00 AM	6–12	West Hall B-3, Conv. Center	Asking Questions and Defining Problems: The Foundation for Three-Dimensional Science Learning (p. 22)
8:00–9:00 AM	6–9	405, Conv. Center	Extraordinary Earth Science Activity: Modeling Watersheds and Human Impacts (p. 23)
8:00–9:30 AM	9–12	308 AB, Conv. Center	Arriving on the Scene: Collect and Analyze Evidence Like the Pros (p. 24)
8:00–9:30 AM	K–8	309, Conv. Center	NGSS: How Do We Know It When We See It? (p. 24)
8:00–9:30 AM	P–C	153A, Conv. Center	Empower Student Voice with Flipgrid (p. 23)
8:00–9:30 AM	K–12	153B, Conv. Center	Phenomena and Storylines: What's the Big Deal? (p. 24)
8:00–9:30 AM	3–8	501 AB, Conv. Center	The STEM Design Challenge (p. 27)
8:00–9:30 AM	K–12	410, Conv. Center	Stop Creating Lesson Plans: Start Creating Learning Experiences (p. 27)
8:00–9:30 AM	6–8	301 AB, Conv. Center	The Next Generation of Middle Grades Scope and Sequence (p. 24)

Schedule at a Glance General Science Education

8:00–9:30 AM	K–2	150C, Conv. Center	Discourse Strategies for Three-Dimensional Learning in the K–2 Classroom (p. 23)
8:00–9:30 AM	1–12	511C, Conv. Center	Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) (see program changes)
8:00–9:30 AM	K–8	409 AB, Conv. Center	The Power of Modeling in K–8 Classrooms (p. 27)
8:00–10:00 AM	P–6	West Hall B-1, Conv. Center	Elementary Extravaganza (p. 28)
8:00–11:00 AM	K–12	San Gabriel A, Westin Bonaventure	SC-4: A PEEC into Evaluating NGSS Instructional Materials Programs (p. 29)
8:00–11:00 AM	K–6	Santa Anita C, Westin Bonaventure	SC-6: Writing in Science: A Research-Based Approach That Enhances Learning in Both Domains (p. 29)
8:30–9:00 AM	C	Georgia 1, JW Marriott	SCST-Sponsored Session: The Merit Fellows Program: Lessons Learned from an NSF S-STEM Project (p. 29)
8:30–9:00 AM	6–12	507, Conv. Center	Don't Take the Bait: Teaching Students to Discern Science News from Modern Sensationalist Media (p. 29)
9:30–10:00 AM	6–12	West Hall B-4, Conv. Center	How to Write the Reasoning Part of a C-E-R (p. 30)
9:30–10:00 AM	6–12	Kentia Hall K, Conv. Center	Flipping the Classroom: Going Beyond Teacher-Made Videos (p. 30)
9:30–10:00 AM	9–12	Plaza 1, JW Marriott	My Students Have Mastered What?! A Method of Assessment and Grading to Determine Student Knowledge and Understanding (p. 30)
9:30–10:30 AM	P–C	Atrium 3, JW Marriott	Alliance of Affiliates—Sponsored Session: Becoming a Science Teacher Leader (p. 32)
9:30–10:30 AM	1–12	Diamond Blrm. Salon 2, JW Marriott	NSELA-Sponsored Session: Introducing Teachers and Administrators to the NGSS (p. 32)
9:30–10:30 AM	K–12	151, Conv. Center	NGSS@NSTA Forum Session: Next Generation Science Assessments (NGSA) Project (p. 34)
9:30–10:30 AM	K–12	Platinum Blrm. Salon A, JW Marriott	AMSE-Sponsored Session: Creating Positive School-Home Partnerships Using Culturally Responsive Practices (p. 33)
9:30–10:30 AM	6–8	Kentia Hall N, Conv. Center	The Power of Short Stories in History of Science for Teaching NOS in Middle School (p. 38)
9:30–10:30 AM	P–C	Olympic 1, JW Marriott	ASTE-Sponsored Session: What Can I Do and How Do I Get There? Trajectories of Science Teacher Learning (p. 33)
9:30–10:30 AM	5–C	Diamond Blrm. Salon 3, JW Marriott	NSTA Press® Session: Formative Assessment Classroom Techniques for Uncovering ALL Students' (and Teachers') Ideas (p. 32)
9:30–10:30 AM	P–12	Platinum Blrm. Salon E, JW Marriott	Science at the Dollar Store: New and Revised! (p. 33)
9:30–10:30 AM	P–C	Platinum Blrm. Salon J, JW Marriott	What's App, Doc: Using Technology in Professional Development (p. 33)
9:30–10:30 AM	9–C	Plaza 2, JW Marriott	Powerful Media-Based Lab Reports (p. 34)
9:30–10:30 AM	6–12	Kentia Hall H, Conv. Center	The Scientific Method: Is That Still a Thing? (p. 35)
9:30–10:30 AM	7–C	Gold Blrm. Salon 3, JW Marriott	What Do You Mean I Have to Write in Science? LAWS: Literacy and Writing in Science (p. 32)
9:30–10:30 AM	7–10	Kentia Hall A, Conv. Center	The Big Good Wolf: A Science-English Collaboration About Yellowstone Park Wolves (p. 34)
9:30–10:30 AM	P–12	515B, Conv. Center	STEM in the Real World: Hands On with NASA Aeronautics (p. 36)
9:30–10:30 AM	6–12	Kentia Hall D, Conv. Center	The Power of Productive Peer-to-Peer Interactions (p. 36)
9:30–10:30 AM	4–8	Kentia Hall G, Conv. Center	National Parks and NGSS: A Natural Fit (p. 36)
9:30–10:30 AM	5–7	Kentia Hall M, Conv. Center	The Power of the Atom
9:30–10:30 AM	7–12	Kentia Hall C, Conv. Center	Evaluating the Quality of Models in Science (p. 36)
9:30–10:30 AM	6–12	Kentia Hall E, Conv. Center	Developing Model-Based Inquiry (p. 36)
9:30–10:30 AM	5–10	Georgia 2, JW Marriott	Warming Up to Innovative Modeling (p. 36)
9:30–10:30 AM	K–12	515A, Conv. Center	Starting with the End in Mind: Building an Instructional Unit from NGSS Performance Expectations (p. 34)

Schedule at a Glance General Science Education

9:30–10:30 AM	P–C	Platinum Blrm. Salon B, JW Marriott	Grey Matter: Learning and Teaching Science with the Brain in Mind (p. 33)
9:30–10:30 AM	4–C	Theatre (411), Conv. Center	How Will the New Federal Education Law...ESSA...Affect You? (p. 35)
9:30–10:30 AM	1–8	West Hall B-2, Conv. Center	Equity Through STEM (p. 35)
9:30–10:30 AM	K–12	Gold Blrm. Salon 4, JW Marriott	How to Implement STEM and NGSS into Your Classroom Through the Use of NSTA Competitions (p. 33)
9:30–11:00 AM	P–12	150 AB, Conv. Center	AEOP RESET: Learning Through the Legacy Cycle (p. 40)
10:00–10:30 AM	C	Georgia 1, JW Marriott	SCST-Sponsored Session: How Do We Know What to Teach? Working Backward to Build a Stronger Curriculum (p. 40)
10:00–10:30 AM	6–12	Kentia Hall K, Conv. Center	Supporting Lesson Planning Around Everyday Observable Phenomena in the NGSS (p. 40)
10:00–10:30 AM	6–12	West Hall B-4, Conv. Center	Navigating Lab Reports (p. 40)
10:00–11:30 AM	K–5	150C, Conv. Center	Integrated Science Strategies that Make Three-Dimensional Learning Meaningful (p. 41)
10:00–11:30 AM	6–8	309, Conv. Center	Shifting to the Five Innovations: How Do We Transform Instruction? (p. 42)
10:00–11:30 AM	9–C	406 AB, Conv. Center	Communicating Science Through Lab Notebooking (p. 43)
10:00–11:30 AM	K–5	303 AB, Conv. Center	What Does Argumentation Look Like in an Elementary Classroom? (p. 41)
10:15–10:45 AM	4–9	Diamond Blrm. Salon 8, JW Marriott	Meet Me in the Middle Session: Making Diagrams Interactive and Relevant (p. 47)
10:15–10:45 AM	5–8	Diamond Blrm. Salon 6, JW Marriott	Meet Me in the Middle Session: What the NGSS Mean to a Middle Level Teacher: Thoughts from a Member of the Writing Team (p. 47)
10:15–10:45 AM	5–9	Diamond Blrm. Salon 4/5, JW Marriott	Meet Me in the Middle Session: NMLSTA/NSTA Roundtable Conversations, Session 1 (p. 46)
10:15–10:45 AM	4–8	Diamond Blrm. Salon 7, JW Marriott	Meet Me in the Middle Session: Safety: The Route to Successful STEM Activities! (p. 47)
11:00–11:30 AM	5–8	Diamond Blrm. Salon 6, JW Marriott	Meet Me in the Middle Session: Science and Special Education: How to Make It Work (p. 47)
11:00–11:30 AM	5–9	Diamond Blrm. Salon 4/5, JW Marriott	Meet Me in the Middle Session: NMLSTA/NSTA Roundtable Conversations, Session 2 (p. 47)
11:00–11:30 AM	6–12	West Hall B-4, Conv. Center	How to Make Data Accessible to ALL Learners (p. 48)
11:00AM–12 Noon	4–12	Gold Blrm. Salon 3, JW Marriott	Intertwining an A into STEM to support ELL and Dyslexic Students (p. 53)
11:00AM–12 Noon	5–12	Platinum Blrm. Salon D, JW Marriott	:Yes, Even More Vocabulary Strategies to Enhance Engagement and Learning! (p. 50)
11:00AM–12 Noon	K–5	Kentia Hall G, Conv. Center	Thinking Creatively to Collaborate Across Districts in STEM Education (p. 53)
11:00AM–12 Noon	8–12	West Hall B-3, Conv. Center	Teachers' Use of Mobile Technology Platform to Promote Scientific Inquiry Skills Among Incarcerated Youth with Special Needs (p. 56)
11:00AM–12 Noon	9–C	Plaza 2, JW Marriott	Developing Teacher Leadership through Action Research (p. 52)
11:00AM–12 Noon	3–C	Platinum Blrm. Salon E, JW Marriott	Formative Assessments with Google Apps for Education (p. 50)
11:00AM–12 Noon	K–5	Kentia Hall E, Conv. Center	Effective Use of Science Talks in the Elementary School Classroom (p. 54)
11:00AM–12 Noon	10–12	Plaza 1, JW Marriott	Teaching Students to DO Science (p. 52)
11:00AM–12 Noon	K–5	Kentia Hall F, Conv. Center	Using Children's Books to Introduce Science Process Skills (p. 55)
11:00AM–12 Noon	1–8	Kentia Hall H, Conv. Center	Helping Students Make Sense of the Science Texts that Include Prose and Graphics (p. 55)
11:00AM–12 Noon	P–C	Platinum Blrm. Salon H, JW Marriott	Science for ALL Cultures and Climate: Constructing, Contextualizing, Conceptualizing a Framework for Teaching Diverse Learners (p. 50)
11:00AM–12 Noon	K–4	Kentia Hall C, Conv. Center	Creating Teachable Moments for Elementary Science Through Literacy (p. 54)
11:00AM–12 Noon	K–12	Platinum Blrm. Salon I, JW Marriott	Connecting Universities with K–12 Teachers to Develop NGSS Curriculum (p. 50)
11:00AM–12 Noon	C	507, Conv. Center	The NSTA Learning Center: A Tool to Develop Preservice Teachers (p. 52)
11:00AM–12 Noon	K–6	515A, Conv. Center	NGSS and 3D Implementation: Tools for Elementary Teachers (p. 54)
11:00AM–12 Noon	K–12	502A, Conv. Center	Developing Graphing Skills for All (p. 54)

Schedule at a Glance General Science Education

11:00AM–12 Noon	3–C	Atrium 2, JW Marriott	NARST-Sponsored Session: Promoting Student Participation in Science Practices: Strategies for Formative Assessment and Science Classroom Talk (p. 49)
11:00AM–12 Noon	9–C	502B, Conv. Center	Incorporating Global STEM Collaboration into Your Classroom! (p. 52)
11:00AM–12 Noon	P–C	Kentia Hall K, Conv. Center	Eureka! Science Trade Books: Good as Gold! (p. 53)
11:00AM–12 Noon	K–5	Diamond Blrm. Salon 3, JW Marriott	NSTA Press® Session: <i>Picture-Perfect STEM Lessons</i> : Using Children’s Books to Inspire STEM Learning (p. 53)
11:00AM–12 Noon	1–12	Diamond Blrm. Salon 2, JW Marriott	NSELA-Sponsored Session: Professional Development Tips and Strategies to Optimize Student STEM Learning (p. 49)
11:00AM–12 Noon	K–12	151, Conv. Center	NGSS@NSTA Forum Session: How Do You Know If an Assessment Is Measuring Three-Dimensional Reasoning? (p. 52)
11:00AM–12 Noon	K–6	West Hall B-2, Conv. Center	CESI-Sponsored Session: Write to Do It: Jazzing Up Literacy with Science Olympiad (p. 55)
11:00AM–12 Noon	6–12	Platinum Blrm. Salon G, JW Marriott	NGSS Toolkit Pathway Session: Using the 5E Instructional Model to Design Learning Sequences (p. 54)
11:00AM–12 Noon	P–C	Theatre (411), Conv. Center	Featured Presentation: NGSS... Now What? (p. 49)
11:00AM–12 Noon	P–C	Olympic 1, JW Marriott	ASTE-Sponsored Session: Bridging Policy and Practice—Science Teacher Education for the Next Generation (p. 50)
11:00AM–12:30 PM	5–9	Platinum Blrm. Salon F, JW Marriott	Igniting Student Interest and Learning in Engineering: Classroom Applications/Tools/Resources from the 2016 Northrop Grumman Foundation Teachers Academy Fellows (p. 57)
11:30 AM–12 Noon	6–C	West Hall B-4, Conv. Center	Using Real-Life Data to Augment Science Teaching (p. 58)
11:30 AM–1:00 PM	6–9	150 AB, Conv. Center	Group Work: Using Student Collaboration in the Middle School Science Classroom (p. 58)
12 Noon–1:30 PM	K–5	309, Conv. Center	Bring Visual Science into K–5 Classrooms: It’s a Game Changer! (p. 60)
12 Noon–1:30 PM	6–12	511 AB, Conv. Center	Zombie Apocalypse! (p. 61)
12 Noon–1:30 PM	P–C	153B, Conv. Center	Supporting Excellence in STEM Programs and Teaching Through STEM Certification (p. 58)
12 Noon–1:30 PM	K–5	153A, Conv. Center	Science and Engineering Practices in the NGSS (p. 58)
12 Noon–1:30 PM	5–10	511C, Conv. Center	Engaging Next-Generation Labs You Can Conduct and Grade in Under an Hour (p. 61)
12 Noon–1:30 PM	K–12	301 AB, Conv. Center	Using Problem-Based Learning to Up Your NGSS Game (p. 59)
12:30–1:00 PM	P–C	Platinum Blrm. Salon I, JW Marriott	Portfolio-Based Assessments in Place of Exams (p. 63)
12:30–1:00 PM	K–C	Atrium 2, JW Marriott	NGSS as a Boundary Object for Constituting a Community of Practice (p. 62)
12:30–1:00 PM	2–6	Kentia Hall B, Conv. Center	Teaching Elementary Forensic Science Through Fairy Tales (p. 63)
12:30–1:00 PM	P	Kentia Hall A, Conv. Center	PEEP-ing into Prekindergarten Science Instruction (p. 63)
12:30–1:30 PM	K–5	Kentia Hall D, Conv. Center	Children’s Books as Hooks to Teach NGSS Science Practices (p. 69)
12:30–1:30 PM	K–6	501C, Conv. Center	Differentiating K–6 Science Instruction to Make Science Accessible to ALL Children (p. 66)
12:30–1:30 PM	9–12	Plaza 2, JW Marriott	Cross-Curricular Projects: Thinking Big and Making It Happen (p. 66)
12:30–1:30 PM	6–12	West Hall B-3, Conv. Center	Inclusion Through Active Engagement in the Science Classroom (p. 70)
12:30–1:30 PM	7–12	Kentia Hall R, Conv. Center	Stimulate Student Learning with Food! (p. 70)
12:30–1:30 PM	K–8	Kentia Hall J, Conv. Center	Incorporating Sensational, Tantalizing, Engaging, Mesmerizing (STEM) Books into Your Classroom (p. 69)
12:30–1:30 PM	K–6	Kentia Hall G, Conv. Center	Linking Science and Literacy for Improved Student Outcomes (p. 69)
12:30–1:30 PM	K–5	Kentia Hall F, Conv. Center	The Benefits of Anticipatory Training in Developing Elementary Teachers to Promote Acquisition of Scientific Thinking through Content Learning (p. 69)
12:30–1:30 PM	7–12	Gold Blrm. Salon 2, JW Marriott	Making Connections to Crosscutting Concepts by Developing Powerful Essential Questions (p. 64)

Schedule at a Glance General Science Education

12:30–1:30 PM	6–12	West Hall B-4, Conv. Center	Modeling for Complex, Student-Created Explanations of Real-World Phenomena (Secondary Science Classrooms) (p. 67)
12:30–1:30 PM	5–12	Platinum Blrm. Salon D, JW Marriott	Academic Language: It's More than Vocabulary... Teaching Language Function, Discourse, and Syntax in the Sciences (p. 66)
12:30–1:30 PM	9–12	Plaza 1, JW Marriott	Common Learning Experiences in High School Science (p. 66)
12:30–1:30 PM	P–12	Olympic 1, JW Marriott	Science Leaders Roundtable (p. 64)
12:30–1:30 PM	5–8	Kentia Hall H, Conv. Center	Introduction to Argumentation, Using Evidence in a Card Sort (p. 69)
12:30–1:30 PM	K–5	Kentia Hall C, Conv. Center	Elementary Students Doing Science! NGSS and CCSS: Perfect Together! (p. 69)
12:30–1:30 PM	2–8	504, Conv. Center	3D Derby: Engineering the Future (p. 66)
12:30–1:30 PM	6–12	151, Conv. Center	NGSS@NSTA Forum Session: How Do We Grade Students in a Three-Dimensional Classroom? (p. 68)
12:30–1:30 PM	6–12	Platinum Blrm. Salon G, JW Marriott	NGSS Toolkit Pathway Session: Using Evidence of Learning Specifications to Develop Performance Tasks (p. 68)
12:30–1:30 PM	C	Georgia 1, JW Marriott	SCST-Sponsored Session: Outstanding Undergraduate Science Teacher Award 2015 Presentation (Making Education in the Sciences Accessible and Successful for Students with Disabilities) (p. 64)
12:30–1:30 PM	P–5	Diamond Blrm. Salon 3, JW Marriott	NSTA Press® Session: <i>Next Time You See...</i> (p. 68)
12:30–1:30 PM	P–C	152, Conv. Center	Science in the Community Featured Presentation (Panel): The Development of a Positive STEM Identity (p. 63)
12:30–1:30 PM	P–C	Petree Hall C, Conv. Center	Featured Presentation: A New Era: Beyond Science and Literacy Integration (p. 64)
1:00–1:30 PM	4–9	Diamond Blrm. Salon 9, JW Marriott	Meet Me in the Middle Session: Calling All Middle Level Teachers! (p. 71)
1:00–1:30 PM	5–8	Diamond Blrm. Salon 8, JW Marriott	Meet Me in the Middle Session: Strategies to Support ELLs in the Science Classroom (p. 71)
1:00–1:30 PM	6–8	Diamond Blrm. Salon 6, JW Marriott	Meet Me in the Middle Session: Earworms and Melodies: Teaching Science Through Songs (p. 71)
1:00–1:30 PM	K–12	Gold Blrm. Salon 1, JW Marriott	Transforming Local STEM Questions into Global STEM Journeys (p. 72)
1:00–1:30 PM	1–12	Platinum Blrm. Salon I, JW Marriott	NGSS Project-Based Learning and Assessment Unit Plans (p. 72)
1:00–1:30 PM	K–12	Atrium 2, JW Marriott	Relating Instructional Sequences and Learning Progressions Toward Effective Implementation of NGSS (p. 71)
1:45–2:15 PM	5–9	Diamond Blrm. Salon 9, JW Marriott	Meet Me in the Middle Session: Using the 5E Model of Instruction to Engage Middle Schoolers (p. 73)
1:45–2:15 PM	6–8	Diamond Blrm. Salon 6, JW Marriott	Meet Me in the Middle Session: Analytical Thinking (p. 73)
2:00–2:30 PM	P–12	Platinum Blrm. Salon H, JW Marriott	Science Is a Core Subject: District Stories for Achieving Vision and Coherence with NGSS (p. 74)
2:00–2:30 PM	4–C	Platinum Blrm. Salon J, JW Marriott	Blended Learning in the Lab Science (p. 74)
2:00–2:30 PM	K–6, C	Georgia 2, JW Marriott	College Science Specific to the Needs of Elementary Teachers: A Look at the First Year of Implementation (p. 74)
2:00–2:30 PM	6–12	505, Conv. Center	Using NGSS Three-Dimensional Learning in Standards-Based Teaching (p. 74)
2:00–2:30 PM	9–C	Kentia Hall O, Conv. Center	Using Competency-Based Assessments to Prepare Students for Internships in the Biotechnology Industry (p. 74)
2:00–2:30 PM	K–12	Platinum Blrm. Salon I, JW Marriott	Science for All: Promoting Challenging Science Instruction for Special Needs Learners (p. 74)
2:00–2:30 PM	6–12	West Hall B-4, Conv. Center	Eliciting Learner Knowledge (p. 74)
2:00–2:30 PM	2–5	Kentia Hall A, Conv. Center	Create a Literacy Ritual in the Middle School Classroom with Real Scientists! (p. 74)
2:00–3:00 PM	9–10	Plaza 2, JW Marriott	Empowering Teachers and Students for Next Generation STEM (p. 78)
2:00–3:00 PM	P–C	507, Conv. Center	The NSTA Learning Center—Free Professional Development Resources and Opportunities for Educators (p. 78)

Schedule at a Glance General Science Education

2:00–3:00 PM	3–5	Kentia Hall G, Conv. Center	STEM Road Map Curriculum Series for Grades 3–5: Transportation of the Future (p. 80)
2:00–3:00 PM	K–5	501C, Conv. Center	Building STEM Partnerships for Elementary Science Classrooms (p. 78)
2:00–3:00 PM	K–8	Kentia Hall H, Conv. Center	Strategies to Help Our Girls Find Their Voice and Their Way in Science (p. 81)
2:00–3:00 PM	5–12	Gold Blrm. Salon 1, JW Marriott	I Made an APP! (p. 80)
2:00–3:00 PM	P–5	Kentia Hall B, Conv. Center	Charting an NGSS Course within the 3-E Instructional Model to Enhance Science Experiences for Students with Special Needs (p. 79)
2:00–3:00 PM	P–12	Platinum Blrm. Salon D, JW Marriott	STEM Grant Writing 101 (p. 77)
2:00–3:00 PM	K–8	Kentia Hall L, Conv. Center	Tools and Resources to Take You and Your Students from Novice to Expert in 3-D Learning (p. 80)
2:00–3:00 PM	5–9	Kentia Hall N, Conv. Center	Science By Design: Addressing Science Concepts Through Engineering
2:00–3:00 PM	6–12	West Hall B-3, Conv. Center	Investing in Language Skills: An Unlikely Symbiosis Science and Literacy in the News (p. 82)
2:00–3:00 PM	6–12	Gold Blrm. Salon 2, JW Marriott	Where Art and Science Meet (p. 77)
2:00–3:00 PM	P–C	504, Conv. Center	NSTA’s Exemplary Science Programs (ESP) Meeting Current Reform Efforts (p. 78)
2:00–3:00 PM	3–C	Atrium 2, JW Marriott	NARST-Sponsored Session: Making Sense of STEM Education in K–12 Contexts and the Implications for Professional Development (p. 77)
2:00–3:00 PM	4–12	502B, Conv. Center	Interactive Science Notebooks: Low-Tech Creations for Higher Level Thinking (p. 78)
2:00–3:00 PM	K–C	502A, Conv. Center	Screencasting in Science (p. 78)
2:00–3:00 PM	P–5	Kentia Hall E, Conv. Center	Picture Perfect Poetry? Connecting Science, Picture Books, and Poetry (p. 79)
2:00–3:00 PM	K–12	151, Conv. Center	NGSS@NSTA Forum Session: Developing a Coherent Assessments System from the Classroom to the Year-End Exam (p. 78)
2:00–3:00 PM	K–12	Diamond Blrm. Salon 2, JW Marriott	NSELA-Sponsored Session: Making Sense of Science: A System for Systems Thinking (p. 77)
2:00–3:00 PM	P–C	Platinum Blrm. Salon A, JW Marriott	AMSE-Sponsored Session: Science Teachers Promoting Culturally Relevant Education: A Panel Discussion (p. 77)
2:00–3:00 PM	C	Georgia 1, JW Marriott	SCST-Sponsored Session: Outstanding Undergraduate Science Teacher Award 2016 Presentation (p. 77)
2:00–3:00 PM	K–6	515A, Conv. Center	Using Phenomena to Level the Playing Field in the Elementary Classroom (p. 81)
2:00–3:00 PM	P–C	Theatre (411), Conv. Center	Featured Panel: Enhancing Teachers’ Voices and Roles in Education Policy Making (p. 76)
2:00–3:30 PM	6–12	511 AB, Conv. Center	Using Maggots, Flies, and Flesh to Solve a Mystery! (p. 87)
2:00–3:30 PM	K–5	153A, Conv. Center	Three-Dimensional Learning in the Elementary Classroom (p. 84)
2:00–3:30 PM	K–12	408B, Conv. Center	Science Vocabulary Has Kinetic Energy When It’s Moving (p. 86)
2:00–3:30 PM	K–12	150C, Conv. Center	Making Three-Dimensional Learning Meaningful for Students using Science Story Lines (p. 84)
2:00–4:00 PM	P–12	Olympic 1, JW Marriott	CSSS-Sponsored Session: NGSS for State Science Supervisors (p. 88)
2:30–3:00 PM	P–C	West Hall B-4, Conv. Center	Game Design: A Classroom Strategy for the Science Classroom (p. 90)
2:30–3:00 PM	2–12	Platinum Blrm. Salon I, JW Marriott	Adapting Instruction: Meeting the Needs of Diverse Learners (p. 90)
2:30–3:00 PM	K–8, C	Georgia 2, JW Marriott	School-Based Science Methods Courses that Provide Professional Development to Inservice Teachers (p. 89)
2:30–3:00 PM	6–12	505, Conv. Center	Make a Splash with Engaging Anchoring Phenomena (p. 90)
2:30–4:30 PM	4–8	Diamond Blrm. Salon 4/5, JW Marriott	Meet Me in the Middle Session: Meet Me in the Middle Share-a-Thon (p. 90)
3:00–6:00 PM	3–5	Santa Anita A, Westin Bonaventure	SC-9: NGSS : Three Dimensions in Action in a California Early Implementer Classroom (p. 91)
3:30–4:00 PM	7–12	505, Conv. Center	Next Generation Science Classrooms: A Survey for Examining the Experiences of Students in Science Classrooms (p. 92)

Schedule at a Glance General Science Education

3:30–4:00 PM	9–12	Plaza 2, JW Marriott	Building Scientific Literacy by Using Science News Reported in the Popular Media (p. 92)
3:30–4:00 PM	6–12	West Hall B-4, Conv. Center	Analysis and Incorporation of NGSS into Existing Science Curricula (p. 92)
3:30–4:00 PM	9–12	Plaza 1, JW Marriott	Moving to Authentic Assessments (p. 92)
3:30–4:30 PM	K–5	Kentia Hall F, Conv. Center	Read Like a Scientist: Learning to See the Crosscutting Concepts in Children’s Literature (p. 97)
3:30–4:30 PM	P–5	507, Conv. Center	Integrating E-Books into the K–5 Classroom (p. 95)
3:30–4:30 PM	6–12	West Hall B-3, Conv. Center	Using the Science Writing Heuristic as a Method for Implementing Three Dimensional Learning (p. 98)
3:30–4:30 PM	P–C	Platinum Blrm. Salon A, JW Marriott	Safety Advisory Board Roundtable: Listening and Addressing Your Safety Issues, Featuring NGSS and STEM Safety (p. 94)
3:30–4:30 PM	P–5	502A, Conv. Center	Using Lab Notebooks in the Preschool and Elementary Classroom (p. 96)
3:30–4:30 PM	1–C	Platinum Blrm. Salon E, JW Marriott	NOAA in Your Backyard: Free Professional Development and Local Educator Resources Are Closer Than You Think! (p. 94)
3:30–4:30 PM	4–8	Kentia Hall L, Conv. Center	Science and Literacy: A Successful Connection (p. 95)
3:30–4:30 PM	P–8	Platinum Blrm. Salon C, JW Marriott	NSTA Press® Session: Outdoor Science with Birds, Books, and Butterflies (p. 96)
3:30–4:30 PM	6–12	Platinum Blrm. Salon B, JW Marriott	NSTA Press® Session: How Scientific Learning Communities Promote Equity and Access Through Whole-Class Inquiry (p. 94)
3:30–4:30 PM	P–2	Kentia Hall K, Conv. Center	STEM in the Primary Classroom (p. 97)
3:30–4:30 PM	6–12	Kentia Hall O, Conv. Center	Engaging At-Risk Students Through Voice and Choice (p. 95)
3:30–4:30 PM	6–8	Diamond Blrm. Salon 10, JW Marriott	The Nation’s Report Card: Do United States Students Make the Grade? (p. 94)
3:30–4:30 PM	P–12	Diamond Blrm. Salon 2, JW Marriott	NSELA-Sponsored Session: Teaching a Culturally Responsive Pedagogy in Science (p. 93)
3:30–4:30 PM	K–12	151, Conv. Center	NGSS@NSTA Forum Session: The Next Generation of Statewide Assessments (p. 94)
3:30–4:30 PM	6–12	Diamond Blrm. Salon 9, JW Marriott	AMSE-Sponsored Session: The NGSS and Student Collaboration—Structures and Supports for Equitable Access to Academic Conversations (p. 96)
3:30–4:30 PM	6–12	West Hall B-5, Conv. Center	Project ReCharge! Energy Efficiency through Inquiry and Real Time Data (p. 98)
3:30–4:30 PM	P–C	Theatre (411), Conv. Center	Robert H. Carleton Lecture: STEM-ing from the Box: Planning, Designing, and Constructing Safe, Sustainable Science Facilities Through STEM-Based Teaching and Learning (p. 93)
4:00–4:30 PM	7–12	West Hall B-4, Conv. Center	NGSS Now What? Help Navigate Your District Post NGSS Adoption (p. 100)
4:00–4:30 PM	5–12	505, Conv. Center	Explanations Across the Curricula: Integrating CCSS in Literacy with the NGSS (p. 100)
4:00–4:30 PM	9–12	Plaza 2, JW Marriott	Making the Leap to a Digital Course (p. 100)
4:00–4:30 PM	9–12	Plaza 1, JW Marriott	Digital Peer Review as a Scientific Practice and Formative Assessment (p. 99)
4:00–5:30 PM	9–C	404 AB, Conv. Center	Get That Grant Money! (p. 103)
4:00–5:30 PM	K–8	409 AB, Conv. Center	Assess the NGSS: Formative Assessment Strategies for Grades K–8 (p. 103)
4:00–5:30 PM	K–5	153A, Conv. Center	Integrating Literacy Skills in Elementary Science Investigations (p. 100)
4:00–5:30 PM	6–12	304 AB, Conv. Center	Solving the Mystery of STEM Using Forensic Science (p. 102)
4:00–5:30 PM	6–8	150C, Conv. Center	Gauging Students’ Three-Dimensional Thinking Using ONPAR Formative Assessment Tools (p. 100)
5:00–5:30 PM	7–12	West Hall B-4, Conv. Center	Writing Argumentation in Science? No Problem (p. 105)
5:00–5:30 PM	9–12	Plaza 2, JW Marriott	Using Case Studies in the High School Classroom (p. 105)
5:00–5:30 PM	2–6	Kentia Hall B, Conv. Center	Infusing Reading Strategies in the Science Classroom (p. 105)

Schedule at a Glance General Science Education

5:00–5:30 PM	K–3	Kentia Hall A, Conv. Center	Family Learning Opportunities and Research in Engineering and Science (FLORES) Education (p. 105)
5:00–6:00 PM	6–C	Diamond Blrm. Salon 8, JW Marriott	Finding Common Ground: Using Student Discourse to Address Controversy in the Classroom (p. 107)
5:00–6:00 PM	K–6	501C, Conv. Center	Transdisciplinary Instruction: Building a STEM-tastic Program Using Project-/Problem-Based Learning and Engineering Design Process (p. 106)
5:00–6:00 PM	3–12	Platinum Blrm. Salon H, JW Marriott	Science for All: Inclusion Students in Science (p. 106)
5:00–6:00 PM	4–6	Kentia Hall F, Conv. Center	From Soil to Food (p. 108)
5:00–6:00 PM	K–12	Diamond Blrm. Salon 2, JW Marriott	Using Phenomena to Teach Phenomenal Science (p. 107)
5:00–6:00 PM	K–8	Kentia Hall H, Conv. Center	CESI-Sponsored Session: Modeling Evidence Circles and Formative Assessment to Develop Three-Dimensional Learning (p. 108)
5:00–6:00 PM	6–12	West Hall B-3, Conv. Center	Bringing the NGSS and CCSS Together: Literacy in the Science Classroom (p. 109)
5:00–6:00 PM	5–9	515A, Conv. Center	Designing Classroom Assessments to Address NGSS Performance Expectations (p. 106)
5:00–6:00 PM	3–6	515B, Conv. Center	Social Studies, ELA, and STEM: Oh My, Integrating It All! (p. 107)
5:30–6:00 PM	9–10	Georgia 1, JW Marriott	NARST-Sponsored Session: Opportunities to Learn Science: A Case Study of Science Classrooms in Successful/Diverse Texas High Schools (p. 110)
5:30–6:00 PM	1–5	Kentia Hall A, Conv. Center	Implementation of an NSF-Funded Elementary Science Program in a Large Urban District: Lessons Learned (p. 109)
5:30–6:00 PM	6–12	West Hall B-4, Conv. Center	STEAMing the Science Classroom (p. 110)

Informal Science Education

8:00–9:00 AM	P–12	Diamond Blrm. Salon 8, JW Marriott	I Am a Scientist! (p. 20)
8:00–9:30 AM	P–C	503, Conv. Center	STEAM Education: The National Coalition for Aviation and Space Education Is Here for You! (p. 27)
8:00–10:00 AM	P–12	152, Conv. Center	Science in the Community Session: Models of Intersections That Connect Informal Institutions with Schools, Students, and Teachers to Support STEM Learning Outside the Classroom (p. 28)
9:45 AM–5:45 PM	4–8	Madrona Marsh Preserve, Off-site	SC-7: Stretch Your Legs for Science: An Outdoor STEM Adventure (p. 40)
10:00–11:30 AM	5–12	153A, Conv. Center	Technovation: App Inventor and Engaging Girls in Computer Science (p. 41)
11:00 AM–12 Noon	K–12	Platinum Blrm. Salon I, JW Marriott	Connecting Universities with K–12 Teachers to Develop NGSS Curriculum (p. 50)
11:00 AM–12 Noon	K–5	Kentia Hall D, Conv. Center	Elementary Engineers: Build a Balloon-Powered Car (p. 54)
12 Noon–1:30 PM	4–8	304C, Conv. Center	Imaginative Thinking, Teamwork, AND Robots: <i>FIRST</i> ® LEGO® League Builds More than Robots (p. 59)
12:30–1:00 PM	K–12	Gold Blrm. Salon 1, JW Marriott	School-Business Partnership United and Ignited through STEM: NGSS in Action! (p. 62)
12:30–1:00 PM	9–C	Platinum Blrm. Salon J, JW Marriott	Exploring Time-Series Data in Lakes (p. 63)
12:30–1:30 PM	P–8	Kentia Hall K, Conv. Center	Science Learning at Your Window! (p. 67)
12:30–1:30 PM	K–12	502B, Conv. Center	Shifting Toward Student-Designed Experiments (p. 68)
2:00–3:00 PM	P–5	Kentia Hall E, Conv. Center	Picture Perfect Poetry? Connecting Science, Picture Books, and Poetry
2:00–3:00 PM	5–12	Gold Blrm. Salon 1, JW Marriott	I Made an APP! (p. 80)
2:00–4:00 PM	P–C	152, Conv. Center	Science in the Community Share-a-Thon (p. 89)
3:30–4:00 PM	3–12	Platinum Blrm. Salon H, JW Marriott	Reflecting on <i>SciGirls</i> Seven: Research-Based Gender Equitable Strategies for Engaging Diverse Learners in STEM (p. 91)
3:30–4:00 PM	7–C	Kentia Hall P, Conv. Center	The American Astronomical Society’s Resources for Educators, Students, and the Public (p. 92)
3:30–4:30 PM	7–12	504, Conv. Center	Bridging the Divide: Using Informal Science Learning Approaches In and Out of the Classroom (p. 95)
3:30–4:30 PM	6–12	Kentia Hall O, Conv. Center	Engaging At-Risk Students Through Voice and Choice (p. 95)
5:00–6:00 PM	6–C	Diamond Blrm. Salon 9, JW Marriott	Beinprosone (Be INnovative and PROduce SOMething NEw): An Open Innovation Event Made For and By High School Students (p. 106)
5:00–6:00 PM	3–8	Kentia Hall L, Conv. Center	A New Kind of Experiment: NOS and How We Took a Leap in the Lab (p. 107)
5:00–6:00 PM	P–6	Kentia Hall C, Conv. Center	Starting Family STEAM Night with Stories: Take a Journey with the “Three Little Pigs” (p. 108)
5:00–6:00 PM	6–8	Kentia Hall Q, Conv. Center	Invasive Species Biodiversity Investigation: Developing Data-Rich Ecosystem Understandings through Citizen Science (p. 109)
5:30–6:00 PM	7–12	Kentia Hall R, Conv. Center	Space Explorers: 25 Years of Inner-City Students Out-of-School-Time Explorations (p. 110)



—Photo courtesy of Griffith Observatory

*Located in the Gunther Depths of Space Hall of the Griffith Observatory is a bronze statue of Albert Einstein sitting on a bench. He is holding his index finger about a foot in front of his eyes to illustrate the visual area of space that is captured in *The Big Picture*. Above is the unfinished statue prior to its installation.*

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THURSDAY 3/30	8:00–9:30 a.m.	Integrating Chromebook™ with Vernier Technology	Renewable Energy with KidWind and Vernier
	10:00–11:30	Biology with Vernier	Integrating iPad® with Vernier Technology
	12:00–1:30 p.m.	Chemistry with Vernier Using Chromebook	Physics with Vernier
	2:00–3:30	Environmental Science with Vernier	Middle School Science with Vernier
	4:00–5:30	Chemistry with Vernier	STEM / Engineering Activities using Vernier Sensors with Arduino™
FRIDAY 3/31	8:00–9:30 a.m.	Water Quality with Vernier	Advanced Physics with Vernier
	10:00–11:30	Chemistry with Vernier	Explore Motion with Vernier Video Physics™ for iOS
	12:00–1:30 p.m.	Biology with Vernier Using Chromebook	Thermal Analysis
	2:00–3:30	Integrating Chromebook with Vernier Technology	Integrating iPad with Vernier Technology
	4:00–5:30	Biology with Vernier	Renewable Energy with KidWind and Vernier
SATURDAY 4/1	8:00–9:30 a.m.	Biology with Vernier	Wind and Solar Energy Basics with Vernier
	10:00–11:30	Integrating Chromebook with Vernier Technology	Elementary Science with Vernier
	12:00–1:30 p.m.	Chemistry with Vernier	Physics with Vernier
	2:00–3:30	Human Physiology with Vernier	Introductory Engineering-Design Projects with Vernier



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