

NSTA NATIONAL CONFERENCE



S T. L O U I S

M I S S O U R I

APRIL 11-14, 2019

CHAMPIONS FOR SCIENCE EDUCATION

CONFERENCE PREVIEW

#NSTA19



NORTHROP GRUMMAN

Foundation

Building partnerships for students and teachers.

Northrop Grumman and the Northrop Grumman Foundation are committed to supporting students and teachers focused on increasing STEM awareness, interest, & engagement

northropgrumman.com



“I want to geek out with my science teacher friends from around the country!”

“As a department chair and coordinator of a medical STEM program at an urban girls school, I am always searching for resources on a budget. The NSTA conference is a treasure trove of ideas, resources, and contacts.”

“I love the exhibit hall swag but mostly I need more confidence with *NGSS*.”

“I am the only science teacher in my district attending this year. It’s my responsibility to bring back great ideas and best practices to share with my district.”

“I am really excited to learn about flipped classrooms, STEM, and implementing *NGSS* in my classroom!”



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

— PAST NSTA CONFERENCE ATTENDEES

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SPONSORS



Speakers

Keynote Speaker



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The Sky Is Not the Limit: Lessons from a Year in Space

—Photo courtesy of NASA/Bill Ingalls



Scott Kelly /// @StationCDRKelly

Retired Astronaut and Retired U.S. Navy Captain
New York, NY

During his record-breaking Year in Space, U.S. astronaut Scott Kelly captivated the world while laying the groundwork for the future of space travel and exploration. And while science was at the core of his groundbreaking expedition—it is his life lessons and personal stories from 229 miles above Earth and the path that led him there that provide such unique and valuable perspective on embracing risk and discovering one's true potential to achieve the impossible.

NSTA wishes to thank
Knopf Doubleday
and Random House
Children's Books for
sponsoring this speaker.

A veteran of four space flights, Scott was mission commander on several expeditions to the International Space Station and was a member of the almost yearlong mission aboard the ISS from 2015 to 2016. During the 11-month space mission, he set records for the single longest space mission by an American astronaut...before returning to terra firma with fellow crew member Mikhail Korniyenko of Roscosmos. The goal of the mission was to better understand how the human body is affected by long-term spaceflight. He has written books chronicling his 342 days in space, including *Endurance: A Year in Space, A Lifetime of Discovery* and for children, *My Journey to the Stars*.

WEDNESDAY EVENING SPECIAL SESSION

The Many Worlds of Quantum Mechanics



Sean M. Carroll /// @seanmcarroll

Research Professor of Physics, California Institute
of Technology

One of the great intellectual achievements of the 20th century was the theory of quantum mechanics, according to which observational results can only be predicted probabilistically rather than with certainty. Yet, after decades in which the theory has been successfully used on an everyday basis, most physicists would agree that we still don't truly understand what it means. Join Sean as he discusses the source of this puzzlement, and explains why an increasing number of physicists are led to an apparently astonishing conclusion: that the world we experience is constantly branching into different versions, representing the different possible outcome of quantum measurements. Sean's research has focused on issues of dark matter, dark energy, spacetime symmetries, and the origin of the universe. He has now shifted to examining

NSTA wishes to thank
Penguin Random House
for sponsoring this speaker.

the foundations of quantum mechanics, the emergence of spacetime, and the evolution of entropy and complexity. Author of several books, his most recent is *The Big Picture: On the Origins of Life, Meaning, and the Universe Itself*.

FEATURED PRESENTATION

Equity: The Power of Understanding the Impacts of Equity and Science Instruction



Joseph Davis

[@FFSDSupDavis](#)

Superintendent

Ferguson-Florissant School
District, Hazelwood, MO



Tiffany Besse

[@MrsBesse2016](#)

Chief Academic Officer

Ferguson-Florissant School
District, Hazelwood, MO

Join Joseph Davis and Tiffany Besse as they focus on the importance of serving all children with the high-quality education they deserve, particularly those who statistically are predicted to fail in the current model. Discussion centers on how partnering with NGSS-focused curricula leads to equitable instruction in the science classroom and improvement in overall quality of education for students, teachers, and the community.

After receiving his teaching license through East Carolina University, Joseph Davis continued at ECU earning a Master of School Administration degree and an Educational Specialist degree. Afterward, he earned a second Master's degree in education and a PhD in administration, planning, and social policy, both from the Harvard University Graduate School of Education. He began serving the Ferguson-Florissant School District as superintendent July 2015.

Tiffany Besse is in her second year serving the Ferguson-Florissant School District. Previously, she served the Pattonville School District as the director of Secondary Education and associate principal at Pattonville High School, as well as an assistant principal in the Rockwood School District. She began her teaching career as an AP chemistry and biology teacher in 2000 and holds an Educational Specialist degree in educational leadership and Master of Arts in education administration and teaching from Lindenwood University.

STRAND

Confluence of Equity and Education

"Arguably, the most pressing challenge facing U.S. education is to provide all students with a fair opportunity to learn" (Framework; NRC 2012, p. 282). This challenge is of great importance as we continue to embrace changing demographics in our classrooms, communities, and country. Our imperative is to maintain high expectations and broaden access and opportunities in STEM education to increase the likelihood of student success and to prepare them to compete globally. This strand will be targeted by level: novice, intermediate, or advanced attendees.

Place-Based Phenomena for Extraordinary Learning



Leslie Cook
@lesliecook04

Senior Director
Teacher Learning Center
Teton Science Schools
Jackson, WY



Kevin Krasnow
@kevkrasz

Graduate Faculty and
Research Specialist
Teton Science Schools
Jackson, WY



Joe Petrick
Vice President
of Field Education
Teton Science Schools
Jackson, WY

Teton Science Schools (TSS) has practiced place-based science learning in the Greater Yellowstone Geo-ecosystem for the past 51 years. TSS's commitment to place-based education is rooted in the philosophy that connecting learning to community increases engagement, learning, and community impacts. Using place-based, relevant, interdisciplinary phenomena as the basis of science learning can serve these same goals. Hear how TSS is practicing place-based education and leave with new ideas to take back to your classroom.

After completing her Master's degree in environmental education at Prescott College, Leslie Cook joined the Teton Science Schools, facilitating training for inservice teachers, as well as working with the graduate program's preservice teachers. In addition, she attended the Wolf Ridge Environmental Learning Center's graduate program.

Kevin Krasnow currently teaches ecology courses at the TSS graduate program. His research focuses on understanding effective science education, fire ecology, global change, ecological restoration, and ecosystem resilience. He has instructed for Outward Bound, taught high school biology and chemistry, and directed an outdoor leadership and science program in San Francisco public schools. He holds a PhD in environmental science, policy, and management from the University of California, Berkeley.

Joe Petrick leads a team of passionate educators who customize field science adventures for groups of all ages. Prior to Teton Science Schools, Joe worked as an administrator, classroom teacher, and outdoor educator in Washington, California, Virginia, Maryland, and South Africa. He holds a MEd from the University of Washington and a graduate certificate in education for environment and community from IslandWood.

STRAND

Phenomena: Gateway to Learning

Using phenomena in science experiences expands learning. Inclusion of multiple disciplines or subject areas in three-dimensional learning aids in deepening student thinking, learning, and reflecting. This strand will show how teachers can use structures such as the 5E instructional model, Claims-Evidence-Reasoning (CER), Problem-Based Learning, Place-Based Learning, or Project-Based Learning as viable approaches to facilitate student understanding. This strand will be targeted by level: novice, intermediate, or advanced attendees.

FEATURED PRESENTATION

Hulahula and Learn Something...Expressing Science Through Culture and Dance



Kiana L. Frank /// @labhuiofrank

Assistant Professor, Pacific Bioscience Research Center
University of Hawaii at Mānoa

Weaving stories from traditional and contemporary scientific observations to explain the world around her—from micro to macro scales—Kiana hopes to advance our understanding of how we fit into and influence our place. The expression of these stories through movement, as was done traditionally in Hawaii through the art of hula (dance), enables the expression of emotion and spirituality that is vital to perpetuating indigenous science and increasing comprehension, engagement, and enthusiasm of science in our students and communities. Expressing science in a cultural context through dance, not only better connects us to a concept or a place, but also engages the imagination by developing connections to that which we cannot see—the multiple layers of meaning and levels of knowledge that cross disciplines to achieve deeper learning.

STRAND

Jazzing Up Science with Cross-Curricular Connections

In the past, science and engineering were often taught in isolation. Using best practices has proven that integrating science and engineering with other content areas or other science disciplines promotes students' mastery of disciplinary core ideas and crosscutting concepts. This strand will focus on ways that science and other subject areas can be integrated, including the best way to bundle disciplinary core ideas. This strand will be targeted by level: novice, intermediate, or advanced attendees.

FEATURED PRESENTATION

Unlocking the Power of the NGSS



Paul Andersen /// @paulandersen

Educational Consultant and YouTube Creator, Bozeman, MT

The NGSS represents the largest conceptual shift in teaching science in decades. This revolution will only occur if teachers implement the standards with fidelity and make pedagogical changes in their classrooms. Join Paul Andersen of Bozeman Science as he shares three-dimensional strategies and resources that have been tested in schools around the world. A 2011 Montana Teacher of the Year, Paul taught high school science in Montana for 20 years using technology and guided inquiry to differentiate instruction for his students. Podcasts of his lectures on biology, chemistry, physics, and Earth science have been viewed millions of times by students around the world. In 2012, Paul was selected by YouTube as one of 10 YouTube Edu Gurus.

STRAND

Three-Dimensional Grand Slam

Shifting science educators' focus from simply teaching science ideas to helping students figure out solutions is exciting. Classrooms incorporating three-dimensional learning have students build models, design investigations, develop explanations, and argue using evidence, all of which allow students to develop important 21st-century skills such as problem solving, critical thinking, communication, collaboration, and self-management. This strand will focus on implementing three-dimensional learning to increase student understanding and will be targeted by level: novice, intermediate, or advanced attendees.

Exploring Nature's Beauty and Teachings



Michael Weiss

Nature Photographer and Photojournalist, Silver Spring, MD

A self-taught award-winning photographer, Mike will share some of his stunning photographs from around the world and tell the background stories of each one. His images and accompanying narrative will provide visually stunning examples of the beauty that surrounds us along with some very important lessons. He will also provide you with some classroom photography exercises that you can share with your students and colleagues.

During his 40-year career as an aerospace engineer and program manager for NASA, he helped train the space-walking crew of NASA's first on-orbit satellite repair mission in 1984. Much of that training occurred underwater, and he, as a support diver, would photograph the training. Mike carried his love for water and photography to the open water—photographing marine wildlife and ecosystems from Hawaii to the Bahamas, Mexico, the Caribbean, and shipwrecks off the eastern United States' coast. Waterproofing a camera costs more than the actual camera, Mike explains. "Underwater photography has a huge learning curve. Every photo you take is a learning experience. In photographing a subject, you learn a lot about that subject and its environment." His photography portfolio includes award-winning images of birds in flight, landscapes, night sky, and marine life. He is also an avid supporter of environmental, wildlife, and natural resources protection.

Elementary Extravaganza

Friday, April 12, 2019

8:00–10:00 AM • Hall 2, America's Center

JOIN THE FUN

- 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
- 100+ presenters

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

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Learning A-Z

NSTA National Science Teachers Association

ROBERT H. CARLETON LECTURE

Connecting the Dots: The Critical Role of Crosscutting Concepts



Cary Snider

Visiting Scholar, Portland State University

Join Cary as he shares how an activity in reverse engineering will open a door to the crosscutting concepts, illustrating how these important ideas can help K–12 students bring the big picture of science and engineering into focus—just as a dot-to-dot picture is a jumble of numbers until the dots are connected and an image emerges. After teaching middle school and high school science in Maine, California, Costa Rica, and Micronesia, Cary settled for nearly three decades at The Lawrence Hall of Science in Berkeley, California, where he developed skills in curriculum development and teacher education. He also spent 10 years as vice president for Programs at the Museum of Science, Boston. Currently, Cary is a visiting scholar at Portland State University and a consultant for two foundations that support STEM education and environmental causes. He holds a BA degree in astronomy from Harvard College—and a California secondary teaching credential, MA degree, and a PhD in science education from the University of California, Berkeley.

MARY C. MCCURDY LECTURE

Facing Challenges, Making Changes, Changing Lives



Linda Froschauer

2006–2007 NSTA President, and 2009–2018 Field Editor, *Science and Children*, Pasadena, CA

Recent changes brought about by the creation of the NGSS and new state science standards bring challenges that require significant changes in the way we teach science in the primary and intermediate grades. By meeting these challenges and addressing the shift, we can change the lives of our students by supporting the development of STEM concepts and attitudes. For many of us, this will be a major change and require risk taking, creativity, personal development, and time. But the payoff is great. In this talk, we will look back to what brought us to this point in the evolution of elementary science teaching, the challenges of today, and how to make the changes necessary for creating opportunities that will impact student understanding. Linda K. Froschauer has been a devoted teacher and dedicated leader in science education since 1972. Outside public schools, she has worked as an instructor for Chicago's Museum of Science and Industry; writer/consultant for many publications and numerous organizations; president of several organizations; and as the field editor for the NSTA journal *Science and Children*.

Finding Our Way: The Science Behind Today's GPS Revolution



Theresa Damiani /// @noaaoocean

Chief of the Spatial Reference System Division at NOAA's National Geodetic Survey (NGS), Silver Spring, MD

Theresa's talk explores the science of GPS and mapping, how it allows us to quickly and easily find our way through the world, and the sometimes unexpected ways in which it is revolutionizing our society. And, as positioning science and technology continues to evolve, how it enables a not-too-distant future of autonomous vehicles and smart cities. Her scientific specialty is geodesy and geophysics as well as being a subject matter expert on airborne gravimetry and time-varying gravity, which includes research into kinematic GPS/GNSS and inertial positioning, gravimetric geodesy, tectonics, and crustal structure. Theresa has been a geodesist with NGS since 2009, when she was recruited out of graduate school to start up field operations for the Gravity for the Redefinition of the American Vertical Datum (GRAV-D) project. In addition, she was one of 120 finalists in 2016 (out of 18,000 applicants) selected for in-person interviews with NASA for the next class of astronauts. She holds a PhD in geophysics and seismology from The University of Texas at Austin.

PAUL F-BRANDWEIN LECTURE

Saving Life, Saving Ourselves



Peter H. Raven

President Emeritus, Missouri Botanical Garden and George Engelmann Professor Emeritus of Botany at Washington University in St. Louis

More than three times as many people (7.6 billion) inhabit the world now as they did when I was born (1936), and the demand we are placing on the productivity of our planet is approaching twice what it can sustain (www.footprintnetwork.org). Our numbers are growing at about 200,000 net per day toward a predicted 9.9 billion 30 years from now. In consequence of these pressures, a fifth of all kinds of living organisms could be extinct within the next two or three decades, and as many as half, most of which are unknown scientifically, by the end of the century. We have a unique opportunity to make matters better by limiting our numbers; adopting moderate, fair consumption standards; empowering women and children everywhere; spreading love for all people everywhere in the world; slowing and ultimately halting climate change; and acting sustainably in our own lives, learning about change, and voting for people who are committed to understand and address the worst challenge humanity has ever faced. We cannot all be "the greatest" on a limited planet whose capacity we are already exceeding—we manage the planet and its resources together. We need to seize this opportunity now before through neglect and selfishness, it is gone. In addition to heading the Missouri Botanical Garden for more than 39 years, Peter is a trustee of the National Geographic Society and chair of Committee for Research and Exploration.

NSTA wishes to thank Brandwein Institute for sponsoring this speaker.

NSTA/ASE HONORS EXCHANGE LECTURE

The Role of Assessment in Developing a New Science Curriculum



Mary Whitehouse /// @MaryUYSEG

Chair of The Association for Science Education and Honorary Fellow at the University of York Science Education Group, UK

When thinking about developing a new curriculum, the assessment of that curriculum should be at the front of the developers' minds. There are important reasons for this. Firstly, writing assessment items at the same time as writing the intended outcomes helps to clarify those outcomes for the developer. And secondly, the assessment of the curriculum will signal to teachers what they need to teach. In this talk, Mary Whitehouse will use examples to show how the development of assessment alongside the curriculum content can be used to support the teaching and learning of science. Mary began teaching physics in 1974 in a large 11–18 high school in Cambridge, UK. After teaching in both schools and college, she became a leading member of the University of York Science Education Group where she led the 21st-Century Science and York Science projects. She is a Chartered Science Teacher and a Fellow of the Institute of Physics.

NSTA wishes to thank The Association for Science Education (ASE) for sponsoring this speaker.

PRE-K K 1 2 3 4 5 6 7 8 9 10 11 12 COLLEGE

Meet Me in the Middle

Friday, April 12, 2019 | 10:15 AM – 4:30 PM
Marriott St. Louis Grand | Majestic Rooms: A/B, C, D/E, F/G, H

NSTA *Must be registered for the conference to attend* NMLSTA

Join us for a special **"Meet Me in the Middle Day,"** designed just for middle school educators, at **NSTA's 2019 National Conference in St. Louis!**

The day's events include fifteen workshops/presentations, two Roundtable Conversation networking sessions featuring a variety of topics, and an afternoon Share-a-thon with up to 100 presenters sharing their ideas.

All specifically designed for middle level educators.

You'll walk away with ideas you can use in your classroom next week!

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

Sponsored by



Attend for a chance to win a variety of incredible door prizes!

#NSTA19

www.nsta.org/stlouis



The Best Place to Explore Three-Dimensional Teaching and Learning

NGSS@NSTA Forum

Friday, April 12 • 226, America's Center

This year's NGSS@NSTA Forum focuses on instructional materials. The opening session describes tools you can use to evaluate resources and then five additional sessions highlight instructional units designed to address three-dimensional standards. Visit bit.ly/2RSFh0T for a list of the sessions.

NGSS@NSTA Share-a-Thon

Saturday, April 13 • 9:30–10:30 AM
Hall 1, America's Center

At the NGSS@NSTA Share-a-Thon, meet education experts from around the country, and get tips and tools to help implement three-dimensional instruction. Leave with plenty of handouts and ideas you can use in your classroom right away!



Linking Literacy Event

Friday and Saturday, April 12–13, 2019

Join science teachers from across the globe for a special event focusing on science and children's literature! All are invited; however the event is especially geared toward elementary teachers looking for strategies to increase science instruction while meeting ELA standards as well.

Highlights of the event include:

- Hearing directly from great authors of trade books as they celebrate their work, discuss their books, and suggest how to use them in the classroom.
- Engaging in small group “Conversations with Authors” about how their books can help bring forth equity, promote three-dimensional science, and offer phenomena to engage readers and make cross-curricular connections.

Come join us for a conference feature that is sure to be a hit as we link literacy with science.

Friday, April 12

1:00–2:30 PM Panel Discussion
and Reception
2:45–3:15 PM Sessions
3:30–4:00 PM Sessions

Saturday, April 13

10:00–11:00 AM Author Book Signings,
Meet and Greet

Sponsored by Amplify

Professional Learning Institutes

Professional Learning Institutes (PLIs) are focused, content-based programs that explore key topics in science and STEM education in depth. Presented by experts in science and STEM education, professional learning, standards implementation, assessment, curriculum, and resources development, PLIs are scheduled on Wednesday, April 10, 9:00 AM to 4:00 PM. For complete descriptions, a list of presenters, and to purchase tickets, visit www.nsta.org/conferences/PLI. (Tickets Required)

Designing Meaningful STEM Lessons (PLI-1)

Ticket Price: \$125, with conference registration

The question, “What does STEM look like in the classroom?” typically prompts a wide variety of responses. In their book, *Designing Meaningful STEM Lessons*, Dr. Huling and Dr. Speake propose a solution to this question: StEMTify your lessons! Science standards in all states have consistent big ideas—it is how we teach and frame the content that makes a significant difference in student learning and retention of important science concepts. The authors’ goal is to help teachers increase the efficacy of their current science lessons by substituting the StEMT process into already existing lessons to ensure real-world application using mathematics and engineering design.



—Photo courtesy of Wendy Binder

Becoming a Practitioner of Science: Engaging Students in Solving Real Earth Science Problems in Earth, Physical, or Environmental Science Classrooms (PLI-2)

Ticket Price: \$125, with conference registration

Students engaged in authentic three-dimensional learning benefit from teachers who are practitioners of science—curious and reflective individuals participating in their own sense-making as they guide students in doing science. This PLI engages participants in the role of true practitioner, experiencing the feeling of “not-yet-understanding” during the investigation of three Earth systems problems. Participants will leave with a deeper understanding of how to integrate Earth science into an interdisciplinary curriculum and how to mentor students during authentic investigations.

Next Generation Analyzing Instructional Materials (Next Gen AIM) (PLI-3)

Ticket Price: \$125, with conference registration

Are you planning to adopt new science instructional materials for your district or school? If so, you know this is an important, but challenging process. Claims about the standards alignment are common in materials, but which ones will really help teachers hone their craft? With new science standards, limited resources, and diverse student needs to consider—where do you even begin?

NextGen TIME includes a suite of tools and processes designed to guide your deep dive into next generation science and to support you in the evaluation, selection, and implementation of new materials. The full process of NextGen TIME is often spread out over an extended period of time, but this professional learning experience will ground you in the core processes while helping you see through alignment claims. You will learn to identify important qualities necessary in instructional materials that are designed for the NGSS or other standards rooted in *A Framework for K–12 Science Education*.

Selecting Anchoring Phenomena for Equitable 3D Teaching (PLI-4)

Ticket Price: \$125, with conference registration

Selecting an anchoring phenomenon that meets standards and is compelling to all students is one of the most challenging aspects of three-dimensional science curriculum and assessment. In this PLI, participants engage in a systematic process of analyzing the standards, brainstorming candidate phenomena, soliciting student input, and developing explanatory models of phenomena in order to select an anchoring phenomenon for a sequence of instruction.

High School Share-a-Thon

Set Your Sights Higher!

April 13, 2019, 9:30–11:00 AM

Grand Ballroom D/E, Hyatt Regency St. Louis at the Arch

Looking for new lessons for your classroom?

Join your fellow high school science educators to:

- Network with other secondary science teachers and share ideas.
- Hear about different activities in an informal manner, talk with the presenters one on one.
- Walk away with ideas to use tomorrow.
- Learn about award and grant programs.
- Enter to win door prizes!

Interested in being a presenter?

Contact Carrie Jones (High School Division Director)
at ncscienceteacher@yahoo.com.



Networking Event

Join your colleagues at this networking event. To purchase tickets, visit www.nsta.org/stlouisbrowser. (Tickets Required)

NSTA Teacher Awards Gala (M-1)

Date: **Friday, April 12, 6:00–9:00 PM**

Registration Fee: **\$68 advance; \$73 on-site**

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.



SAVE THE DATE

8TH ANNUAL STEM

SCIENCE TECHNOLOGY ENGINEERING MATHEMATICS

Forum & Expo

HOSTED BY NSTA

San Francisco, CA

July 24–26, 2019

This dynamic event brings together educators and organizations who are actively implementing STEM programs in their schools or districts.

Come prepared to learn tactics that work, build your professional learning network, connect with effective outreach programs and partnerships, discover new resources, and build a strong curriculum.

For information and to register, visit
www.nsta.org/stemforum

#STEMforum

NSTA National
Science
Teachers
Association

GRADUATE-LEVEL CREDIT/ TRANSCRIPTS

Graduate-Level Credits/Units

Earn one (1) or two (2) graduate-level credit/units in professional development through Dominican University of California (dominicancaonline.com). To obtain credit/units, you must be registered for the NSTA St. Louis National Conference, complete the required assignments, and pay a fee. Check back at www.nsta.org/stlouis for complete details.

Transcripts

NSTA offers professional development certification (based on clock hours) for its conferences. The transcript, which lists the sessions attended, also serves as proof of attendance at the conference. NSTA acknowledges up to 26 hours of credit for a national conference. Please note that these hours are not graduate/continuing education units. It is attendees’ responsibility to forward their transcript to the school administration in accordance to their state’s qualifications. NSTA does not send this information to the school administration. Most administrations recognize NSTA conference attendance as professional development credits toward enhancing teachers’ skills and education.

All conference attendees will be e-mailed instructions for accessing their respective transcripts. All information in these transcripts will be maintained (and can be accessed) indefinitely as part of an attendee’s individual profile.

ONE-DAY LIVESTREAM EVENT!

Saturday, April 13, 8:00 AM–1:30 PM

NSTA is offering a one-day live streaming program on Saturday, April 13, during the St. Louis National Conference. This livestream is geared toward elementary educators who are not able to attend the full conference but are interested in taking advantage of some of the professional development opportunities that are available to this specific audience. This program is being offered at a special introductory rate of \$75 for NSTA members; and \$99 for nonmembers. A copy of the preliminary agenda is included below. For registration details, please visit www.nsta.org/stlouis after January 15, 2019.

8:00–9:00 AM	Kickoff: Featured Presentation by Sean Carroll (<i>California Institute of Technology</i>), “ <i>The Many Worlds of Quantum Mechanics</i> ”
9:00–9:30 AM	Prerecorded conference footage/interviews from WebsEdge
9:30–10:30 AM	Breakout Session #1: Emily Morgan and Karen Ansberry , “ <i>Picture-Perfect STEM Lessons: Using Children’s Books to Inspire STEM Learning, K–5.</i> ”
10:30–11:00 AM	Prerecorded conference footage/interviews from WebsEdge
11:00 AM–12 Noon	Breakout Session #2: Carla Zembal-Saul , “ <i>Bringing English Learners into Focus Through Next Generation Science.</i> ”
12 Noon–12:30 PM	Prerecorded conference footage/interviews from WebsEdge
12:30–1:30 PM	Breakout Session #3: Mary McCurdy Presentation by Linda Froschauer , “ <i>Facing Challenges, Making Changes, Changing Lives</i> ”

Sample Conference Schedule

Make your own conference schedule using the St. Louis Session Browser (www.nsta.org/stlouisbrowser). Browse events by day, format, subject, grade level, conference strand, sponsor, or keyword.

		Life Science	Physical Science	Earth and Space Science	Engineering and Technology	General Science Education	Informal Science Education	PRESENTATION	WORKSHOP
Elementary	Thu., 8:00–9:00 AM—Yikes! You Want Me to Teach Engineering?				•				•
	Thu., 12:30–1:30 PM—CSI Mammoth: Using Social Studies to Teach Science Investigations	•							•
	Thu., 3:30–4:30 PM—Climate Change, Making Connections to Kids			•					•
	Fri., 11:00 AM–12 Noon—Big Data, Small Devices			•				•	
	Fri., 1:00–1:30 PM—How to Pick the Right Science Camp/Outdoor Education Provider						•	•	
	Fri., 2:00–3:00 PM— Making It Happen!				•				•
	Sat., 12:30–1:30 PM—Animal Architects: Using Nature’s Builders to Teach STEAM in the Early Childhood Classroom						•		•
	Sat., 3:30–4:00 PM—“BEE” and Engineer: A Grade 2 Integrated STEM Lesson	•						•	
	Sat., 4:00–4:30 PM—Awesome Ideas to Incorporate Tic-Tac-Toe Menus to Teach Science		•					•	
	Sun., 8:00–9:00 AM—Assessing 3-D Learning: You Can Do It!		•						•
	Sun., 9:30–10:30 AM— Using Nonfiction Historical Trade Books to Teach About Scientists and Social Studies					•			•
Middle Level	Thu., 8:00–8:30 AM—Integrated Meteorology and Ecology			•				•	
	Thu., 12:30–1:30 PM—Forensics Fun with Bones and Algebra	•							•
	Thu., 2:00–3:00 PM—Using Virtual Field Trips to Gather Inquiry-Based Evidence			•					•
	Fri., 8:00–9:00 AM—Anchoring Engineering with ELA in the Elementary Classroom				•				•
	Fri., 9:30–10:30 AM—Science Fair of Optimization				•			•	
	Sat., 8:00–9:00 AM—Making the Atomic World Accessible for Middle Schoolers		•					•	
	Sat., 11:00 AM–12 Noon—“Dealing” with the Periodic Table of Elements		•						•
	Sat., 3:30–4:00 PM—Connecting Biodiversity, Literacy, and Culturally Responsive Pedagogy	•						•	
	Sun., 8:00–9:00 AM— Jurassic Mystery: Using Real Research to Teach Critical-Thinking Skills						•		•
	Sun., 9:30–10:30 AM—Makerspace and You!					•		•	
High School–College	Thu., 8:00–9:00 AM—Wheat Takes a Walk on the Wild Side	•						•	
	Thu., 12:30–1:30 PM—Using Mitotic Division to Introduce Statistical Hypothesis Testing in AP and IB Biology	•							•
	Thu., 2:00–3:00 PM—NASA Citizen Science: How Your Students Can Help			•				•	
	Thu., 5:00–6:00 PM—Fact or Phony? Successful Strategies to Promote Media Literacy			•					•
	Fri., 8:00–9:00 AM—Rejuvenating Egg Drop				•				•
	Fri., 12:30–1:30 PM—Increasing Gender Diversity: A Girls in STEAM Conference						•	•	
	Sat., 8:00–9:00 AM—Leveraging NASA Programs to Support STEM				•			•	
	Sat., 9:30–10:30 AM—Zombie Apocalypse! Argument-Driven Inquiry Lab		•						•
	Sat., 11:00 AM–12 Noon—Stoichiometry: A Multi-Tiered Approach to Learning		•					•	
	Sun., 8:00–9:00 AM—Darwin’s Response to His Objectors and Its Relevance for Today					•		•	

Educational Trips

Discover what St. Louis has to offer on one of our ticketed educational trips. For complete descriptions (including departure locations and additional notes) and to purchase tickets, visit www.nsta.org/stlouisbrowser. (Tickets Required)

Global Conversations: Welcome to My Elementary Classroom (W-1)

Date: **Wednesday, April 10, 7:20–11:45 AM**

Global Conversations: Welcome to My High School Classroom (W-2)

Date: **Wednesday, April 10, 7:20–11:45 AM**

Ticket Price: **\$30; by preregistration only**

Welcome to My Classroom is a program sponsored by NSTA's International Advisory Board and is intended primarily for international participants to view science classrooms. This year, trip participants will visit Maple Richmond Heights Elementary School or the Collegiate School of Medicine and Bioscience. Participants will be split into groups where half will visit the elementary school, and the other half will visit the high school. Time has been set aside for participants to observe and interact with teachers and students at their selected location.

Those with W-1 tickets will visit Maple Richmond Heights Elementary School, a grades 3–6 elementary school in which teaching and learning are focused by using the “School As Museum” metaphor to organize classroom projects. For more information, visit www.mrhschools.net/elementary-school/about-us.

Those with W-2 tickets will visit the Collegiate School of Medicine and Bioscience, an innovative college preparatory grades 9–12 high school with high expectations for its academic team and student body. For more information, visit www.slps.org/collegiate.



—Photo courtesy of Maple Richmond Heights Communications Department



—Photo of FOOD ROOF Farm courtesy of Kyle Ramey

A Living Laboratory: FOOD ROOF Farm Tour (T-1)

Date: **Thursday, April 11, 8:15–10:30 AM**

Ticket Price: **\$11 advance; \$16 on-site**

Get a glimpse into rooftop farming in downtown St. Louis at FOOD ROOF Farm! Not your typical farm, Urban Harvest STL led the collaboration of architects, landscape architects, green roof experts, horticulturalists, structural engineers, agronomists, and urban farmers to create this internationally recognized project. This hour-long tour includes a brief overview of Urban Harvest STL and the history of the FOOD ROOF Farm, followed by a farm walk with in-depth explanations of each component of the farm, from hydroponic towers to the agricultural green roof system to chickens to an edible wall. For more information, visit www.urbanharveststl.org/food-roof-farm-1.

Note: Participants must be able to walk up flights of stairs. The rooftop is only accessible by two flights of stairs.

Space Mission and “Stellar” Elementary Workshop at the Challenger Learning Center (T-2)

Date: **Thursday, April 11, 9:00 AM–2:45 PM**

Ticket Price: **\$82; by preregistration only**

Become a “Jr. Astronaut” by going on a simulated space mission and making compressed-air rockets. Then engage in a hands-on workshop that integrates reading, writing, and math into astronomy by doing standards-based activities that take the unreachable and make it hands on. Junior Astronauts programs are geared toward students ages 6 to 11. Strategies will be shared for embedding STEM throughout the curriculum. Leave with at least three classroom-ready lesson plans and a renewed excitement for the wonders of space exploration. Box lunch is included.

Uncover the Marvels of Botanical Engineering at Missouri Botanical Garden (T-3)

Date: **Thursday, April 11, 9:30 AM–12:15 PM**

Ticket Price: **\$41 advance; \$46 on-site**

Join us for a guided tour at the Missouri Botanical Garden focusing on botanical engineering. Survival for plants often means finding innovative ways to overcome challenges in the environment! Explore the adaptations that plants have devised that enable them to survive. This tour includes the Climatron, Temperate House, and Linnaean House. Be sure to bring your NSTA conference badge as this will serve as your entrance credentials.



Special Offer for St. Louis conference registrants

Show your NSTA St. Louis Conference Badge and receive complimentary admission to the **Butterfly House** for a self-guided tour, *courtesy of the Missouri Botanical Garden*. Great care was taken in the design and engineering of the 8,000-square-foot glass conservatory garden to assure a natural and safe habitat for the butterflies. As many as 80 butterfly species and 150 tropical plant species are exhibited.

*The Butterfly House is located at Faust Park, 15193 Olive Blvd., Chesterfield, MO 63017 (a 40-minute drive from America's Center). The Butterfly Garden is open Tuesday–Sunday 10:00 AM to 4:00 PM (*closed Mondays) Last admission is at 3:30 PM. Visit bit.ly/2yf2kud for more information.*

The SCIENCE of Modern Agriculture (T-4)

Date: **Thursday, April 11, 12:15–5:00 PM**

Ticket Price: **\$36; by preregistration only**

As a global enterprise in the life science fields of health care and agriculture, Bayer is committed to improving people's lives—with its defining purpose: Science for a better life. Bayer extends a special invite to science teachers to tour their world-class Crop Science research facility in Chesterfield, Missouri. A visit to a Growth Chamber and Greenhouses will show how researchers test variables in controlled and semi-controlled environments to ensure we are creating safe and improved products. The Technical Discovery Center, staffed by a team specializing in machine technology, metrology, and instrumentation, will feature some of the innovative creations designed in-house in collaboration with researchers. You will also learn about Climate FieldView, an integrated digital platform that helps farmers optimize resources and maximize yield with simple data collection and storage, easy-to-use digital tools, and science-driven insights.

A Trip Back in Time: Cahokia Mounds (F-1)

Date: **Friday, April 12, 8:45 AM–12 Noon**

A Trip Back in Time: Cahokia Mounds (S-1)

Date: **Saturday, April 13, 8:45 AM–12 Noon**

Ticket Price: **\$39 advance; \$44 on-site**

Travel back in time on this visit to the Cahokia Mounds State Historic Site. This sophisticated prehistoric civilization occupied the Cahokia area from A.D. 700 to A.D. 500, vanishing before the Europeans arrived. We'll begin our self-guided visit at the Interpretative Center where we'll see a short orientation movie, *City of the Sun*; a reproduction of a Mississippian village; and an exhibit gallery that incorporates genuine artifacts found in Cahokia. Weather permitting, we'll enjoy a walking tour of the Plaza, climb the 100-foot-high Monk Mound, and see a wooden Sun calendar. Comfortable clothing and shoes are recommended, as well as hats, sunscreen, bottled water, and insect repellent.

Discovering Shaw Nature Reserve Tour (F-2)

Date: **Friday, April 12, 9:00 AM–1:00 PM**

Ticket Price: **\$35 advance; \$40 on-site**

Learn about Missouri's native plants, wildlife, and landscapes at Shaw Nature Reserve, a division of the Missouri Botanical Garden. The Nature Reserve is a premier educational, research, and habitat restoration and reconstruction site. Explore prairies, woodlands, and wetlands with the Nature Reserve's team of environmental educators as they share hands-on, inquiry-based activities and information. Be sure to bring your NSTA conference badge as this will serve as your entrance credentials. Travel time is roughly one hour each way.

Space Mission and Engineering Workshop at the Challenger Learning Center (F-3)

Date: **Friday, April 12, 9:00 AM–2:45 PM**

Ticket Price: **\$82; by preregistration only**

Launch new learning with a trip to Challenger Learning Center. Participants will spend two hours taking on the roles of scientists, astronauts, and engineers in a simulated space mission, and then engage in a two-hour hands-on workshop exploring ways to implement engineering design concepts into middle school and high school classrooms. After learning how to make several projects, they will discuss how to move students along the continuum from doing activities to actively carrying out projects. Box lunch is included.

Effective Outdoor Learning (F-4)

Date: **Friday, April 12, 1:00–5:00 PM**

Ticket Price: **\$41 advance; \$46 on-site**

Come spend a few hours immersed in Missouri prairie and woodland spaces as you learn about a proven model for engaging students in outdoor investigations. The Litzsinger Road Ecology Center is a 34-acre natural space in the middle of suburban St. Louis devoted to place-based education programs that promote environmental citizenship. After a brief welcome, you'll work in small groups with colleagues who teach similar ages as you gain hands-on experience with a variety of ways to make your field investigations come alive. As you work, we'll share everything from high-level planning frameworks down to our favorite low-cost tools that have proven useful as teachers strive to meet curriculum expectations through dynamic inquiry. We'll also share tips for how to use technology in ways that extend students' inquiry.

Note: Come dressed for the weather, and bring a water bottle and a small notebook if you'd like. Snacks and coffee will be provided.

COMMUNITY CONNECTIONS SHARE-A-THON

WHEN?

Saturday, April 13 • 12:30–2:30 PM

WHERE?

Hall 1, America's Center

Come **engage** with organizations that bring you exciting resources, programs, and opportunities available to you from museums, after-school, media, and other informal science education providers!

- **Interactive** hands-on activities
- **Explore** new and engaging ways to connect with your students
- **Learn** about **FREE** programs and resources



Exhibitors

The NSTA Exhibit Hall, with more than 350 of the leading science education companies and organizations in the world, has the newest products to show and share with educators.

THIS IS A PARTIAL LIST OF EXHIBITORS.

3B Scientific	BIOZONE International Ltd.	FDA Food Safety & Nutrition Education
3D Molecular Designs	Bone Clones, Inc.	Firefly Books
ABRAMS	Booksource	FIRST
ACIS Educational Tours	Bozemanscience.com, Inc.	Fisher Science Education
Activate Learning	Buzz Aldrin's ShareSpace Foundation	Flinn Scientific, Inc.
Adam Equipment, Inc	Capstone	Forestry Suppliers Inc.
Adventure 360 .LLC	Carolina Biological Supply Co.	Frey Scientific, School Specialty
Albert Einstein Distinguished Educator Fellowship Program	Catalyst Learning Curricula	Friends of the Rainforest
Aldon Corporation	Catalyst Planner	Generation Genius
American Association for Cancer Research	Cedar Fair Entertainment	Getting Nerdy, LLC
American Association for Laboratory Animal Science	Celestron	Grand Classroom
American Association of Colleges or Pharmacy	Centripetal Press	Great Minds
American College of Education	The Ceramic and Glass Industry Foundation	GrowNextGen.org
American Farm Bureau Foundation for Agriculture	Chemglass Life Sciences	Hanna Instruments
American Geosciences Institute	Civil Air Patrol, National Headquarters	Hayden-McNeil Publishing
American Lab Design	Claire Lynn Designs	HHMI BioInteractive
American Meteorological Society	Clemson University	Houghton Mifflin Harcourt
American Museum of Natural History	Code for Teens	Impact Science Education, Inc.
American Physical Society	Cognitive Surplus	Inq-ITS by Apprendis
American Society of Plant Biologists	Conceptual Academy	Insect Lore
Amplify	The Cornell Lab of Ornithology	Insurance Institute for Highway Safety
Amy Brown Science	CreositySpace LLC	International Ocean Discovery Program
Analytik Jena US LLC	Crosscutting Concepts, LLC	IRIS
Anatontage	Delta Education, School Specialty	K-5 Kaplan
ANATOMY IN CLAY® Learning System	Digitalis Education Solutions, Inc.	Kendall Hunt Publishing Co.
Animal Welfare Institute	Dinah.com	Knopf Doubleday
Animalearn	Disney Youth Programs	Knowles Teacher Initiative
AquaPhoenix Scientific	Diversified Woodcrafts, Inc.	Lab-Aids, Inc.
Arbor Scientific	DroneCurriculum.net	LaMotte Co.
Army Educational Outreach Program	Dynalon Labware	Learn Engines
Association of Water Technologies	Earth Vision Film	Learning A-Z
Bedford, Freeman & Worth	Educational Innovations, Inc.	Learning Bits
Beyond Benign	Edvotek Inc.	Legends of Learning
Bio Corporation	EF Explore America	LEGO® Education
Bio-Rad Laboratories	Elenco Electronics, Inc.	Lockheed Martin
	Encyclopedia of Life	LulzBot 3D Printers
	Engineering Is Elementary	Macmillan Adult
	Estes Industries	Macmillan Children's Publishing Group
	ETA hand2mind	The Markerboard People, Inc.
	e-Tech CloudLabs	Math for America
	ExploreLearning	McGraw-Hill Education



—Photo courtesy of Mike Weiss

EXHIBIT HOURS

THU., APRIL 11 11:00 AM–6:00 PM*

FRI., APRIL 12 9:00 AM–5:00 PM

SAT., APRIL 13 9:00 AM–3:00 PM

EXHIBIT LOCATION

The exhibits are located in Halls 3–5 of America's Center.

www.nsta.org/stlouisvirtualshow

Preview and create your own list of St. Louis exhibitors before the conference using this link.

*Exclusive Exhibit Hall and Exhibitor Workshop Hours • Thu., 11:00 AM–12:30 PM

Measured Progress

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MiniOne Systems

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Mississippi State University
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Molymod Models - Spiring
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Nasco

The National Academies of
Sciences, Engineering, and
Medicine

National Agriculture in the
Classroom

National Association for the
Education of Young Children

National Center for Science
Education

National Energy Education
Development Project

National Flight Academy

National Geographic

National Geographic Learning |
Cengage Learning

National Institute for STEM
Education

National Institute of
Neurological Disorders &
Stroke

National Integrated Cyber
Education Research Center

National Inventors Hall of
Fame/Camp Invention

National Library of Medicine

National Nanotechnology
Coordination Office

NewPath Learning

NIDCD

NOAA Office of Education

Nomad Press

Nova Education

Nutrients for Life Foundation

Ohaus Corporation

Otto Trading, Inc.

Pandia Press

PASCO

PBS Learning Media/WGBH

Peachtree Publishers

Pearson Learning Services

Penguin Academic

People for the Ethical
Treatment of Animals

Pepco

Perimeter Institute

The Pet Care Trust

PhET Interactive Simulations

Pitsco Education

PlayMada Games

Population Connection

Project Lead The Way

Project Learning Tree

Publisher Spotlight

Quest Institute for Quality
Education

Quinnipiac University Online
Programs

Random House Academic

Rosen Publishing

SAE International

Safari Club International
Foundation

Scholastic Inc.

School Specialty Science

Science Take-Out, LLC

Science Wiz

Search Associates -
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Opportunities
Sheldon Laboratory Systems
Shell Science Lab Challenge
Simulation Curriculum Corp.
Skulls Unlimited International,
Inc.
Smithsonian Science
Education Center
Society for Neuroscience
Society for Science & The
Public
Soil Science Society of
America
Southern Science Supply
Space Station Explorers/
CASIS
St. Louis College of Pharmacy

STEM Education Works
STEMscopes
Stratostar
Swift Optical Instruments, Inc.
TCI
TeacherGeek, Inc.
TERC
TerraCycle
Texas Instruments
Thames & Kosmos
Toshiba/NSTA Exploravision
Touch of Life Technologies
TPS Publishing Inc.
trees for little people
Tumblehome, Inc.
The University of Southern
Mississippi - Marine Education
Center

Vaccine Education Center
at Children's Hospital of
Philadelphia
Van Andel Education Institute
Vernier Software & Technology
Vizitech USA
Ward's Science
Webster University
WestEd
Wikki Stix
Wiley
Wisconsin Fast Plants
Program
Work Training Center, Inc.
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WorldStrides
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—Photo courtesy of Jacob Slaton



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Short Courses

All short courses are filled on a first-come, first-served basis, so act now! For complete descriptions and to purchase tickets, visit www.nsta.org/stlouisbrowser. (Tickets Required)

Ramps and Pathways: Integrative STEM and Literacy Experiences That Occur Daily Within the Literacy Block (SC-1)

Date: **Thursday, April 11, 3:00–6:00 PM**

Ticket Price: **\$41 advance; \$46 on-site**

Many primary grade educators are comfortable teaching literacy, yet uncomfortable teaching science. In this short course, participants will experience and discuss the crosscutting concept of cause and effect as they participate in an NSF-funded experience and design and build marble runs using wooden unit blocks, tracks, and objects to move. In the process of building marble runs, participants will begin to identify with children's fascination with force and motion phenomena and how to control it. In addition, presenters will model how this STEM learning can be a meaningful part of the literacy instructional block.

Ocean Plastic Pollution: Issues and Solutions (SC-2)

Date: **Thursday, April 11, 3:00–6:00 PM**

Ticket Price: **\$34 advance; \$39 on-site**

Enrich your classroom with NGSS-focused activities surrounding plastic pollution issues and solutions. Activities will highlight plastic's physical and chemical properties, including density and buoyancy. Not only will we emphasize looking at the impacts of prolific plastic use, but we will also explore solutions to plastic pollution, alternatives to single-use plastics, and empowering students to tackle environmental problems without experiencing ecofatigue. This short course will include strategies to encourage critical thinking about environmental issues and methods to help students gain awareness and examination of everyday resources and uses. Empower your students to become part of the plastic pollution solution! Door prizes and resources!

Turning Cookie Cutter Labs into Cutting-Edge Inquiry Experiments (SC-3)

Date: **Thursday, April 11, 3:00–6:00 PM**

Ticket Price: **\$18 advance; \$23 on-site**

Have tons of cookie cutter labs that aren't student-centered? Let's work on shifting the traditional labs into 3-D inquiry-based experimentation, projects, and investigations. Leave with resources to launch your own exploration at your school. Participants are encouraged to bring their tablet/laptop.

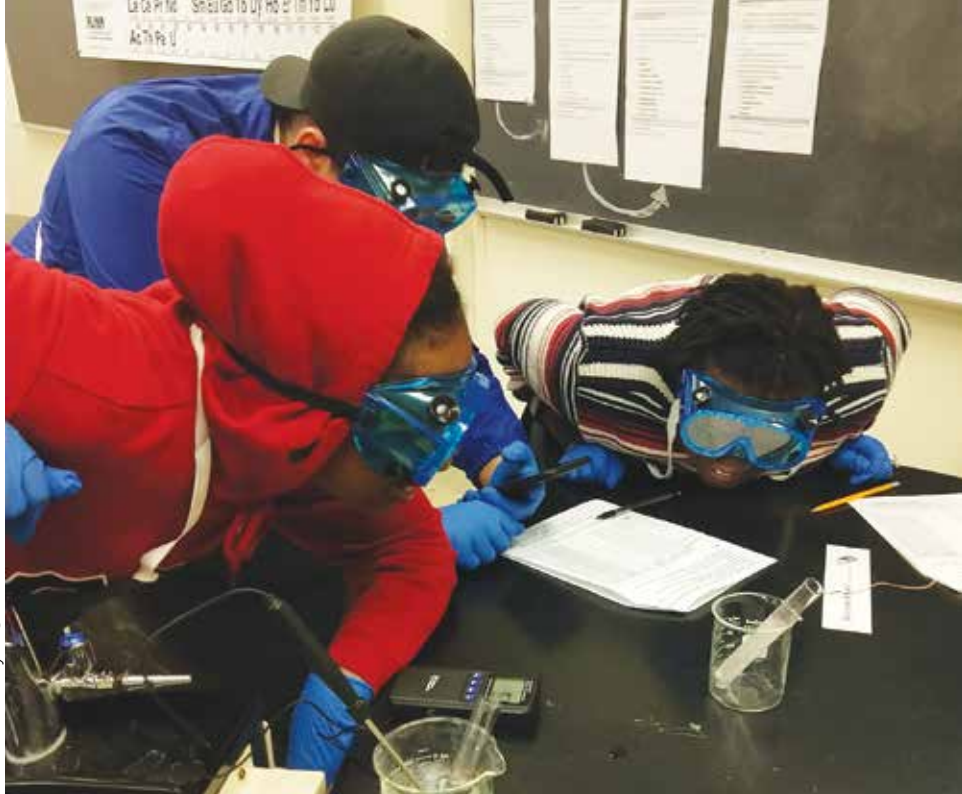
Developing and Using Models for Better Conceptual Understanding (SC-4)

Date: **Friday, April 12, 8:00–11:00 AM**

Ticket Price: **\$38 advance; \$43 on-site**

Strand: Three-Dimensional Grand Slam

This short course will engage participants in unpacking the second NGSS practice: developing and using models. Having students develop models contributes to their understanding of phenomena and serves as reliable assessment of conceptual understanding. Participants will examine a variety of ways to represent a phenomena and discuss the ways that scientists, engineers, and mathematicians use



Short Course SC-3: Turning Cookie Cutter Labs into Cutting-Edge Inquiry Experiments

models in their daily work. Participants will then engage in two hands-on tasks—the mystery tube activity, adapted to emphasize the predictive nature and adaptability of models, and a second modeling activity will be chosen from: the solar system, habitats, or natural hazards. Bring a modeling activity you have conducted in your classroom, if available. For more information, visit bit.ly/2rd1159.

Blending the E and the S in STEM (SC-5)

Date: Friday, April 12, 10:30 AM–4:30 PM

Ticket Price: \$18 advance; \$23 on-site

Strand: Jazzing Up Science with Cross-Curricular Connections

In this short course, we will explore the integration of engineering into science classrooms in ways that motivate deep learning of science and engineering via doable instructional shifts. This research-based and reality-driven approach is based on tested resources built on a research foundation for layering the *NGSS* engineering design process into elementary classrooms and secondary science courses. A 30-minute break for lunch on own is included.

Introducing ML-PBL: *NGSS*- and *CCSS*-Focused Elementary Project-Based Learning Unit(s) (SC-6)

Date: Friday, April 12, 10:30 AM–5:00 PM

Ticket Price: \$68 advance; \$73 on-site

Experience middle level project-based *NGSS*-focused curriculum/instructional units, vetted by Achieve, that engage students in making sense of phenomena and solving problems. Shared units include designing fun moving toys and an activity on squirrel adaptation. Bring a laptop or other device for accessing electronic resources, as well as a pencil or pen. Leave with handouts; access to electronic resources, and materials for experiencing two sample units. A 30-minute break for lunch on own is included.

Promoting Children’s Science Inquiry and Thinking About Living Things in Preschool and Kindergarten (SC-7)

Date: **Friday, April 12, 1:00–4:00 PM**

Ticket Price: **\$25 advance; \$30 on-site**

Strand: Phenomena: Gateway to Learning

For preservice and inservice early childhood/elementary educators—experience life science inquiry and build your knowledge of core ideas and concepts related to living things. Participants will investigate a variety of plants and “mini-beasts,” make claims, construct explanations, and reason about organisms’ characteristics, needs, habitats, and life cycles. Learn strategies for propagating plants and maintaining “mini beasts” in the early childhood/elementary setting. For more information, visit www.nsta.org/earlyyears and www.edc.org/cindy-hoisington.

Designing and Using Three-Dimensional Assessments in Your Classroom (SC-8)

Date: **Friday, April 12, 1:00–5:00 PM**

Ticket Price: **\$31 advance; \$36 on-site**

Strand: Three-Dimensional Grand Slam

Join us to learn a systematic way to design three-dimensional assessments you can use to inform your teaching and improve learning! We will guide participants through a process of adapting existing tasks or generating new tasks to assess a bundle of performance expectations. Participants will be supported in planning a cycle of implementation, analysis, feedback, and revision to refine their tasks and in planning how they will incorporate tasks into instruction.

GREAT Projects: A Scaffolded Approach to Phenomenon-, Problem- and Project-Based Learning (SC-9)

Date: **Saturday, April 13, 8:00 AM–2:30 PM**

Ticket Price: **\$28 advance; \$33 on-site**

Join us to explore engaging students in real-world problem-solving, making STEM meaningful for girls and children of color, and empowering kids to make a difference, while integrating PBL with three-dimensional science. Take home ecoSTEM water and citizen science kits. Bring a laptop/tablet. *Note:* Participants should also dress for outdoor activities and bring a water bottle as we will go off-site to Gateway Arch Park for a portion of the short course. A 30-minute break for lunch on own is included.

Equity Through STEM (SC-10)

Date: **Saturday, April 13, 9:00 AM–2:00 PM**

Ticket Price: **\$56 advance; \$61 on-site**

Strand: Confluence of Equity and Education

Several key issues of equity and diversity in STEM education will be addressed, including aspects of NGSS, Appendix D, All Standards, All Students: Making the NGSS Accessible to All Students. Participants will experience several unique “tools” as they reflect upon, and discuss, many of the assumptions, values, and practices that hinder the STEM education of students of color. They will expand their own cultural competency, diversity awareness, and perspectives on racism, bias, and social justice. Participants should be prepared to meet, share, and learn with/ from other “equity-minded” colleagues to develop supportive alliances and collaboratively work to provide a more equitable—and effective—STEM educational system for ALL students. Take home a copy of *Ripples of Hope*. Bring materials to take notes. For more information, visit www.cvsamacademy.org. A 30-minute break for lunch on own is included.



Short Course SC-5: Blending the E and the S in STEM

The World Ender: A NASA Cross-Disciplinary PBL Unit (SC-11)

Date: **Saturday, April 13, 9:00 AM–2:00 PM**

Ticket Price: **\$71 advance; \$76 on-site**

Strand: Phenomena: Gateway to Learning

What would you do if an asteroid were headed toward Earth? Come explore a NASA PBL/Engineering Design curriculum, touching on a plethora of cross-disciplinary standards. The World Ender curriculum includes multiple lessons covering both Earth and space sciences and physical sciences—particularly on an engineering design challenge in which students must develop a process for redirecting an asteroid, including harvesting or mining it. Bring your laptop/tablet. A 30-minute break for lunch on own is included.



GLOBE Weather: A New NGSS-Based Middle School Unit (SC-12)

Date: **Saturday, April 13, 9:00 AM–2:00 PM**

Ticket Price: **\$18 advance; \$23 on-site**

We will share a new free unit about the science of weather that combines activities, data analysis, modeling, and weather measurements using GLOBE Program protocols. The curriculum helps students understand NGSS-based weather concepts such as the uneven heating of Earth, local and global atmospheric circulation, and air mass formation and collision as they investigate weather patterns and extreme weather events that we experience. *Note:* Bring clothing appropriate for being outdoors for about 30 minutes during this short course. A 30-minute break for lunch on own is included.

Registration & Travel

1

REGISTER



The fastest way to register 24 hours a day—register online at www.nsta.org/stlouisreg with a credit card.



Fax your registration form* with purchase order information to 703-243-3924.



Mail your registration form* and payment to:

NSTA
Conference Department
PO Box 90214
Washington, DC 20090-0214

* Registration form is available as a PDF at www.nsta.org/stlouisreg.

2

HOUSING

St. Louis Housing Deadline: March 13, 2019

Make your hotel reservations now and save! NSTA has negotiated special discounted room rates with 15 hotels near America's Center (the convention center).



Visit: www.nsta.org/stlouishousing and have your credit card and arrival/departure information ready.



Call 877-352-6710 (toll free) or 801-505-4611 (international) between 7:00 AM and 6:00 PM Mountain Time, Monday–Friday. Be prepared to provide all the information on the housing form**.



Mail CHECKS ONLY—Download housing form** and mail with check (one form per room request) to:

Orchid.Events–NSTA/St. Louis
175 South West Temple, Suite 30
Salt Lake City, UT 84101

Do not mail to NSTA.

**Housing form is available as a PDF at www.nsta.org/stlouishousing.

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Arrangements



NSTA has made arrangements with several major airlines to offer discounted fares to NSTA conference attendees. For complete details on these discounts as well as the best way to get around town, visit:

www.nsta.org/stlouistravel

PRICE LIST

	EARLYBIRD	ADVANCE	ON-SITE
	FEB. 1	MARCH 1	After MARCH 1
FULL REGISTRATION (TWO TO FOUR DAYS)			
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ONE DAY ONLY (SUN)**			
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Full-time Student	\$60	\$65	\$70
NONTEACHING SPOUSE/GUEST	\$120	\$145	\$165

* *Science Teachers of Missouri (STOM)*

** *No exhibit hall hours on Sunday*

REGISTRATION CATEGORIES

The **Member rate** applies to the following:

- Current NSTA members
- Nonmembers who submit an NSTA membership application and membership fee along with the registration form
- STOM members (Science Teachers of Missouri)—*STOM members receive the NSTA member rate for the 2019 St. Louis National Conference only*

NSTA members who are fully retired and have been an NSTA member for at least five years may register at the **Retired rate**.

Full-time students 18 years of age or older may register at the **Student rate** if the registration form is accompanied by a copy of a current university ID or a letter from the university indicating full-time enrollment.

Your nonteaching spouse/guest and children must be registered in order to visit the Exhibit Hall but do not need to submit separate registration forms. Please provide their names on your own registration form. Children of high school age and younger can be registered for free. **A fee is required for your spouse/guest.** College students and teaching spouses must submit separate registration forms and payment.

Visit the NSTA Store

Wednesday	4:00–7:00 PM
Thursday	7:30 AM–6:00 PM
Friday	7:30 AM–5:30 PM
Saturday	7:30 AM–3:00 PM
Sunday	8:00 AM–12 Noon

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Join HHMI BioInteractive

**for Workshops and Movie Night
at the 2019 NSTA National Conference
on Science Education in St. Louis**

Thursday, April 11

8–9:30

A Salt Marsh Die-off to Mass Extinction:
What Evidence Reveals

10–11:30

Promoting Conversations about Race and
Gender Using HHMI BioInteractive Resources

12–1:30

Class Ethos and Equity with BioInteractive:
The NGSS 4th Dimension

2–3:30

VIDA Natural Selection Explanation Tool +
BioInteractive Resources = Awesome!!!

4–5:30

The Story of Ecological Regulation with
HHMI BioInteractive

HHMI Night at the Movies

Thursday, April 11, 6:00 PM

Ferrara Theatre
America's Center Convention Complex

Admission is free!
Complimentary refreshments
before the show.

Friday, April 12

8–9:30

From the Top Down: Exploring Trophic
Cascades Around the World

10–11:30

Phenomenon-Anchored Lessons with HHMI
BioInteractive Resources

12–1:30

CRISPR-Cas9: The Mechanism,
Applications, and New HHMI BioInteractive
Resources

2–3:30

Exploring Dog Genomics with HHMI
BioInteractive Resources

4–5:30

Demonstrating How Science Works Using
HHMI BioInteractive Resources

Saturday, April 13

8–9:30

Exploring Human Evolution with HHMI
BioInteractive

10–11:30

The Scientific Method Then and Now with
HHMI BioInteractive

12–1:30

HHMI BioInteractive Presents “Mass
Extinctions and What Happens Next?”

2–3:30

The Amazing Origin Story of Maize: Models,
Mutants, and More!



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