

CONFERENCE
PREVIEW

RENO

AREA CONFERENCE ON
SCIENCE EDUCATION

OCTOBER 22-24, 2015

SCIENCE AND LITERACY:
CREATING CONNECTIONS!



#NSTA15

REGISTER EARLY AND SAVE \$\$
WWW.NSTA.ORG/RENO

NSTA National
Science
Teachers
Association

NSTA

NATIONAL
CONFERENCE
ON
SCIENCE
EDUCATION

BE PART OF
EDUCATION'S

PREMIER EVENT!

SAVE THE DATE

NASHVILLE

MARCH 31 - APRIL 3
2016

OVER **1,200**
SESSIONS

NETWORK
WITH OVER
10,000
EDUCATORS

350+
EXHIBITORS WITH
CUTTING-EDGE
RESOURCES

(PLIs)
PROFESSIONAL
LEARNING
INSTITUTES

GRADUATE
CREDIT
FOR SESSIONS

MUCH MORE!

SCIENCE: EMPOWERING PERFORMANCE

**Setting
the Stage:**
Scientific
Literacy

Building the Band:
Involving
Community
Stakeholders

**Harmonizing
Concepts:**
Integrating
Instruction

**Stringing It
All Together:**
Three-Dimensional
Learning

FOR INFORMATION AND UPDATES, VISIT,
www.nsta.org/nashville

NSTA National
Science
Teachers
Association

“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

TABLE OF CONTENTS

RENO

Speakers.....	3
Special Session on Children’s Literature.....	5
Special Events.....	6
Sample Conference Schedule.....	7
Educational Trips.....	8
Graduate Credit Opportunity and Committee Leaders.....	9
NSTA’s Science Store and NSTA Press® Sessiions.....	10
Exhibitors.....	11
Registration and Travel.....	12

Cover photos courtesy of Jacob Slaton.

SPONSORS



—Photo courtesy of VisitRenoTahoe.com

RENO SPEAKERS

Follow your favorite speaker on Twitter! See our featured speakers' Twitter handles on these pages or search on #NSTA15.

KEYNOTE SPEAKER

Engineering Freshwater Habitat Conservation



Zeb Hogan @ZebHogan

Aquatic Ecologist/Photographer, National Geographic Fellow/Emerging Explorer, and Research Assistant Professor of Biology, University of Nevada, Reno

National Geographic Fellow/Emerging Explorer Zeb Hogan is an aquatic ecologist and photographer as well as a research assistant professor of Biology at the University of Nevada, Reno. The unprecedented use of freshwater has led to the declining populations of many aquatic species. Perhaps nowhere is this pattern more apparent than among the largest freshwater fish, or Monster Fish. Cooperation, research, and ingenuity can help freshwater ecosystems and their critical inhabitants rebound. Zeb believes new approaches, investment, and research offer real hope to both fish and fishing communities. In Cambodia, Zeb buys live fish, which he studies, tags, and then releases downstream from the fishermen's nets. This practice keeps more endangered fish alive and allows scientists to gain insight on fish migration patterns, habitat use, and mortality rates—knowledge, Zeb hopes, that will lead to the creation of no-fishing zones and more sustainable management of Cambodia's fisheries.

Speaker is sponsored by National Geographic Learning/Cengage Learning.

FEATURED PRESENTATION

Implementing NGSS: Opening the Black Box



Stephen L. Pruitt @DrSPruitt

Senior Vice President for Content, Research and Development, Achieve, Inc., Washington, D.C.

Join Stephen as he shares ideas regarding the development of instruction using all the different components and tools of NGSS. There will be a focus on using phenomena as a method to plan instruction on how knowledge from all disciplines helps students to fully understand that phenomena and apply it to new phenomena. For the past four years, Stephen has been leading the development of the NGSS. Between 2003 and 2010, he held various roles at the Georgia Department of Education, culminating with him being named chief of staff to the state school superintendent. He also served on the National Academies of Science's Committee on Conceptual Framework for New Science Education Standards, which developed the *Framework*.

Check out more than 300 sessions and other events with the Reno Session Browser/Personal Scheduler (www.nsta.org/renobrowser).

FEATURED PRESENTATION

Connections of *NGSS* to *CCSS* for All Students, Including English Language Learners



Okhee Lee @Lee0116

Professor in the Steinhardt School of Culture, Education, and Human Development, New York University

Okhee will address connections of the *NGSS* to the *Common Core State Standards*, in English language arts and mathematics for all students...and English language learners in particular. She'll highlight relationships and convergences between the *NGSS* and *CCSS* from both a content perspective and a language perspective.

As a professor in the Steinhardt School of Culture, Education, and Human Development at New York University, Okhee's research areas include science education, language and culture, and teacher education. She was a member of the writing team to develop the *NGSS* and leader for the *NGSS* Diversity and Equity Team through Achieve, Inc.

STRAND Bundling the *NGSS* and *CCSS*

Now that states have adopted and implemented the *Common Core State Standards*, there is a need to connect the *Next Generation Science Standards* to the *CCSS*. Science learning includes the content areas of mathematics, English language arts, and English language development. Bundling instruction allows teachers to incorporate multiple standards at the same time for purposeful learning and real-world applications. This strand increases participants' understanding and ability to simultaneously teach science, the *CCSS*, and beyond.

FEATURED PRESENTATION

Saturn to Smartphone Cameras: A Story of Science and Technology Innovation



Eric Fossum

Professor, Thayer School of Engineering at Dartmouth, Hanover, N.H.

Join Eric as he discusses the story of his invention of the CMOS image sensor and how that technology went from a NASA laboratory, through an entrepreneurial startup company, and into your smartphone. Used in billions of cameras each year, his technology has launched a worldwide explosion in digital imaging and visual communications. Following the invention of the CMOS image sensor, Eric cofounded and led Photobit Corporation to further develop and commercialize the technology. He subsequently led a second startup, Siimpel, to

develop MEMS devices for autofocus in cell phone cameras.

STRAND Creatively Engineering Future Resources

Defining, optimizing, and developing solutions to problems help students of all ages address the challenges that confront modern society. By considering sustainability, alternatives, and conservation, Earth's natural resources can be utilized in a positive way for future generations. By creatively designing solutions to real-world concerns, learners gain an understanding and appreciation for available limited and limitless resources. This strand will increase participants' understanding and abilities to apply real-life engineering and problem solving, in both nonformal and formal learning environments, as it relates to Earth's resources.

FEATURED PRESENTATION

The What and Why of 3-D Science Learning



Helen Quinn

Professor Emerita of Particle Physics and Astrophysics,
SLAC National Accelerator Laboratory, Menlo Park, Calif.

Helen will discuss the vision of three-dimensional science learning developed in the *Framework* that underlies *NGSS* and other recently adopted state science standards. She will present a view of how teachers can use and integrate the crosscutting concepts as questioning tools that students can use to tackle problems.

Helen chaired the committee for the *Framework for K–12 Science Education*, which is the basis of the *Next Generation Science Standards (NGSS)* that have now been adopted by multiple states in the U.S.

She also served on the committee that developed the report “Developing Assessments for the *Next Generation Science Standards*.”

STRAND *NGSS: Connecting Standards to Practice*

The three dimensions of the *NGSS* are science and engineering practices, disciplinary core ideas, and crosscutting concepts. These dimensions should be integrated into curricula, instruction, and assessment to support meaningful learning in science and engineering. With the new structure comes the need for honing teaching methodologies that use three-dimensional learning and involve literacy. This strand is intended to provide educators and stakeholders with guidance to help teachers shift from content-focused lessons to three-dimensional learning and assessment.

CHILDREN’S LITERATURE—FROM STORIES TO CREATING SCIENCE ENGAGEMENT



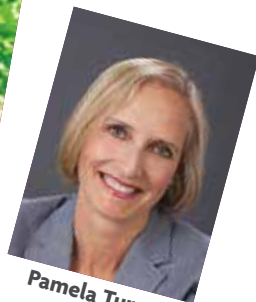
Vicki Cobb



Connie Goldsmith



Emily Morgan



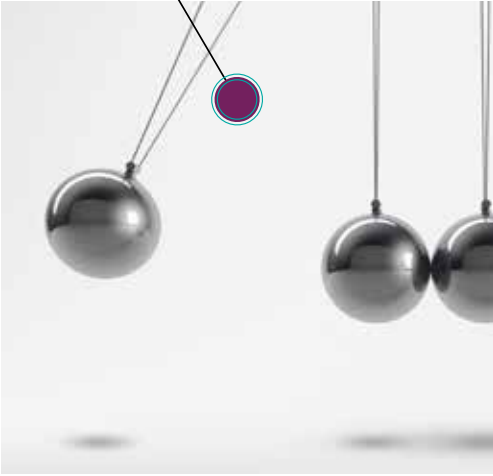
Pamela Turner

Moderator: Christine Anne Royce, Shippensburg University, Shippensburg, Pa.

Come to this innovative session and see the connections among children’s literature and science activities, experiments, and practices. During this special session, children’s authors and teachers can interact in an informal manner. Learn how children’s literature can assist you in making concepts more real and receive guidance in what to look for in good literature and ideas for activities for certain types of books. Walk away with ideas that can be used in the science classroom. Other invited authors include Joy Hakim.

RENO SPECIAL EVENTS

PHYSICS DAY FRIDAY, OCTOBER 23



CHILDREN'S LITERATURE FROM STORIES TO CREATING SCIENCE ENGAGEMENT FRIDAY, OCTOBER 23

CHEMISTRY DAY FRIDAY, OCTOBER 23



the Reno conference...

STARTS THURSDAY
OCTOBER 22
@ 8:00 AM

ENDS SATURDAY
OCTOBER 24
@ 1:30 PM

SAMPLE CONFERENCE SCHEDULE

Make your own conference schedule using the Reno Session Browser/Personal Scheduler (www.nsta.org/renobrowser). Browse events by day, format, subject, grade level, conference strand, sponsor, or keyword. Please note that the conference runs Thursday through Saturday, October 22–24.

		Life Science	Physical Science	Earth and Space Science	Engineering and Technology	Informal Science Education	PRESENTATION	WORKSHOP
Elementary	Thu., 8:00–9:00 AM—Leveling the Playing Field: After-School STEM Coaching Model					•	•	
	Thu., 12:30–1:30 PM—Spark Students' Curiosity with Chemistry!		•				•	
	Thu., 2:00–3:00 PM—Students' Cloud Observations Online: Hands-On Science for Your Students			•				•
	Thu., 3:30–4:30 PM—Feeding Our Feathered Friends					•		•
	Thu., 5:00–6:00 PM—Using PBL to Integrate Our School Garden and Properties to Solve a Pest Problem				•			•
	Fri., 8:00–9:00 AM—Let's Keep It Cool—Design/Build a Cooler		•					•
	Fri., 9:30–10:30 AM—A Look at Engineering in the Real World: A System of Systems				•			•
	Fri., 11:00 AM–12 Noon—Create Your Own NASA Portal to the NGSS with NASA Wavelength			•				•
	Fri., 5:00–6:00 PM—Schoolyard Quadrats	•						•
Sat., 9:30–10:00 AM—Matter, Matters: An Innovative Collaboration on Informal Science Learning					•	•		
Middle Level	Thu., 8:00–9:00 AM—Explore Volcanoes			•				•
	Thu., 12:30–1:30 PM—The Use of Storyboarding in Genetics: An NGSS Assessment Tool	•						•
	Thu., 3:30–4:30 PM—JetStream: An Online School for Weather			•				•
	Fri., 9:30–10:30 AM—Evolution for Middle School Life Science Students	•						•
	Fri., 12:30–1:00 PM—Edible Labs	•						•
	Fri., 3:30–4:30 PM—Take Chemistry into the Art Room				•			•
	Fri., 5:00–6:00 PM—ACS Middle Level Session: Chemical Change—Breaking and Making Bonds		•					•
	Sat., 8:00–9:00 AM—Taking STEM Outside					•		•
	Sat., 9:30–10:30 AM—We're Made of Stars? Explore the Elements with NASA!		•					•
Sat., 12:30–1:30 PM—Putting Students' Schoolyard Habitat Improvements on the Map					•	•		
High School—College	Thu., 8:00–9:00 AM—Genes, the Environment, and Me: Glucose Balance and Type 2 Diabetes	•						•
	Thu., 12:30–1:30 PM—Bringing Space Science Down to Earth			•				•
	Thu., 2:00–3:00 PM—"Seeing" the Invisible: Making the EMS Spectrum Concrete		•					•
	Thu., 3:30–4:30 PM—The 6th Mass Extinction: Student Inquiry-based Lessons on the Decline of Earth's Biodiversity	•						•
	Thu., 5:00–6:00 PM—NOAA in Your Backyard: Free Professional Development and Local Educator Resources Are Closer Than You Think!			•				•
	Fri., 8:00–10:00 AM—ACS Session One: Energy in Chemistry: A Macroscopic View		•					•
	Fri., 12:30–1:30 PM—Healthy Land, Healthy Us! Informal/Formal Education Partnership					•	•	
	Fri., 5:00–6:00 PM—Biomass: Taking It to Your Classroom				•		•	•
	Sat., 9:30–10:30 AM—From Food to Fuel: Recycling the Molecules of Life					•		•
Sat., 12:30–1:30 PM—Teach Engineering Principles on the Cheap with Concrete				•		•		

EDUCATIONAL TRIPS

Discover what Reno has to offer on one of our ticketed educational trips. For complete descriptions and to purchase tickets, visit www.nsta.org/renobrowser. (Tickets Required)

Inside the Institute: Where Global Environmental Research Happens Daily (T-1)

Date: Thursday, October 22, 8:40 AM-12 Noon

Ticket Price: \$17 advance; \$22 on-site

Join us as we explore the Desert Research Institute (DRI) where environmental research on a global scale happens every day. Participants on this tour will engage with DRI scientists and learn about the research they are conducting, visit dynamic DRI labs, and interact with DRI GreenPower's innovative hands-on science curriculum. All participants must be U.S. citizens. Please wear comfortable shoes for a walking tour.

Lake Tahoe in Depth at the UC Davis Tahoe Science Center (F-1)

Date: Friday, October 23, 7:30 AM-2:45 PM

Ticket Price: \$55 advance; \$60 on-site

Tour the UC Davis Tahoe Science Center and discover what makes Lake Tahoe so unique. Guided tour includes a virtual ride aboard the UC Davis research vessel; a visit to a virtual laboratory; 3-D films, including the award-winning 3-D movie *Lake Tahoe in Depth* (15 minutes); and hands-on science activities focused on the unique and fragile ecosystem of Lake Tahoe. A buffet lunch at the Sierra Nevada College dining area is included. *Note:* This trip will run rain or shine.



—Photo courtesy of Desert Research Institute



—Photo courtesy of VisitRenoTahoe.com

GRADUATE CREDIT OPPORTUNITY

Graduate Credit Sponsored by Framingham State University

Earn one graduate-level credit in professional development through Framingham State University at the Reno conference. To obtain credit, you must be registered for the conference, complete a Framingham State University Registration Form, attend a minimum of 12 hours of programs, submit a written report, and pay a fee of \$129. The registration form is available from the Framingham State University website (www.framingham.edu/nsta). An NSTA transcript is also required. *Note:* Credit is by pass/fail option only.

For complete information, visit www.framingham.edu/nsta.

RENO CONFERENCE COMMITTEE LEADERS

David T. Crowther

Conference Chairperson
Professor of Science Education
Director of the Raggio Research
Center for STEM Education
University of Nevada, Reno
crowther@unr.edu

Camille Stegman

Program Coordinator
STEM/Science Coordinator and
Acting Administrator
Storey County School District
Virginia City, Nev.
cstegman@storey.k12.nv.us

Kelly Cannon

Local Arrangements Coordinator
K–12 Science Program Coordinator
Washoe County School District
Reno, Nev.
kcannon@washoeschools.net

VISIT NSTA'S SCIENCE STORE

STORE HOURS:

Wednesday	4:00-7:00 PM
Thursday	7:30 AM-5:30 PM
Friday	7:30 AM-5:30 PM
Saturday	8:00 AM-12:30 PM

- ◆ Award-winning books filled with best practices, science content, teaching tips, and lesson plans.
- ◆ T-shirts, totes, and other science gifts to take back to your classroom.
- ◆ All attendees get member pricing—20% off all NSTA Press® products.



NSTA PRESS SESSIONS IN RENO

NSTA Press® books offer new classroom ideas and standards-based strategies, from Earth science to nanoscience and from preK to college. Join NSTA Press authors for these sessions linked to the topics of their books. For details, visit us online at www.nsta.org/renobrowser.



RENO EXHIBITORS

Exhibitors as of press date.

3D Molecular Designs	It's About Time
Accelerate Learning—STEMscopes	MakerBot
Activate Learning	The Markerboard People, Inc.
American Chemical Society	Minerals Education Coalition
Amplify	The MiniOne™ Electrophoresis Nasco
ANATOMY IN CLAY® Learning System	National Geographic Learning/Cengage Learning
Arbor Scientific	NGSS@NSTA
Bio-Rad Laboratories, Inc.	NOAA Office of Education
Carolina Biological Supply Co.	Nutrients for Life Foundation
Carolina Curriculum	OHAUS Corp.
The Cornell Lab of Ornithology	PASCO scientific
CPO Science/School Specialty	Pearson Education
Creative Discovery Museum	Project Learning Tree
Davidson Institute for Talent Development	RoboRobo Co., Ltd.
Delta Education/School Specialty	SAE International School Specialty
Dinah-Might Adventures, LP	SeaWorld Parks & Entertainment, Inc.
Educational Innovations, Inc.	Shell Science Lab Challenge
Edvotek Inc.	Southern Science Supply
ExploreLearning	Texas Instruments
Flinn Scientific, Inc.	Toshiba/NSTA ExploraVision
Forestry Suppliers, Inc.	U.S. National Library of Medicine
Frey Scientific/School Specialty	Vernier Software & Technology
Howard Hughes Medical Institute	Western Governors University

With more than 150 of the leading science education companies and organizations in the world, the NSTA Exhibit Hall has the newest products to show and share with educators.

EXHIBIT HOURS

THU., OCT. 22 11:00 AM–5:00 PM

FRI., OCT. 23 9:00 AM–3:00 PM

SAT., OCT. 24 9:00 AM–12 NOON

EXCLUSIVE EXHIBIT HALL HOURS:

THU. 11:00 AM–12:30 PM

FRI. 1:30–3:00 PM

SAT. 10:30 AM–12 NOON

EXHIBIT LOCATION

The exhibits are located in Hall 2 of the Reno-Sparks Convention Center.

www.nsta.org/renovirtualshow

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



—Photo courtesy of Jacob Slaton

REGISTRATION AND TRAVEL

1 REGISTER



The fastest way to register 24 hours a day—register online at www.nsta.org/confreg with a credit card (see rates on next page).



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

*The registration form is available as a PDF at www.nsta.org/confreg.

2 HOUSING

Reno Housing Deadline:
Sept. 24, 2015
www.nsta.org/renohousing

Make your hotel reservations now and save! NSTA has negotiated special discounted room rates with hotels near the Reno-Sparks Convention Center.



Visit www.nsta.org/renohousing 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:

**Do not
mail form
to NSTA.**

Orchid Event Solutions–NSTA/Reno
175 South West Temple, Suite 30
Salt Lake City, UT 84101

**The housing form is available as a PDF at www.nsta.org/renohousing.

3 TRAVEL



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/renotravel

RENO PRICE LIST

	EARLYBIRD	ADVANCE	ON-SITE
	SEPT. 11	OCT. 2	After OCT. 2
FULL REGISTRATION			
NSTA Member	\$180	\$190	\$225
Affiliate members***	\$180	\$190	\$225
Nonmember	\$275	\$285	\$315
Retired NSTA Member	\$125	\$125	\$150
Full-time Student	\$90	\$100	\$120
ONE DAY ONLY (THU OR FRI)			
Nonstudent (member or nonmember)	\$160	\$165	\$185
Full-time Student	\$65	\$70	\$85
ONE DAY ONLY (SAT)			
Nonstudent (member or nonmember)	\$95	\$100	\$110
Full-time Student	\$35	\$45	\$65
NONTEACHING SPOUSE/GUEST	\$85	\$90	\$110

Save on your registration fees by taking advantage of special earlybird and advance rates! Also, become an NSTA member and save \$90-\$95 on your registration fees!

For a description of the categories listed above, please visit www.nsta.org/confreg.

*****Affiliate members include:**

- AAPT Members (American Association of Physics Teachers)
- ACS Members (American Chemical Society)
- NSSTA Members (Nevada State Science Teachers Association)

JOIN US

5TH ANNUAL

STEM

SCIENCE TECHNOLOGY ENGINEERING MATHEMATICS

— **Forum & Expo** —

HOSTED BY NSTA

Denver, CO

July 27–29, 2016

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