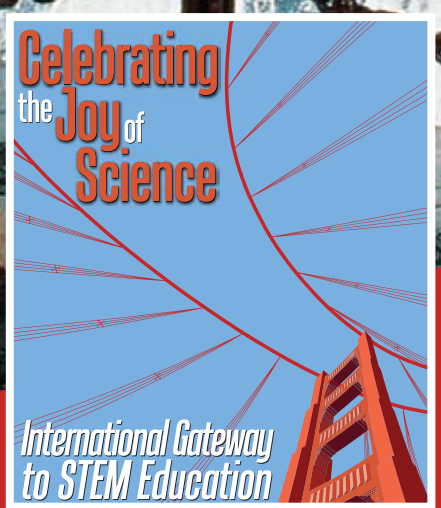
C O N F E R E N C E • P R E V I E W

SAN FRANCISCO

National Conference on Science Education

MARCH 10–13, 2011

Keynote Speaker Jeff Goldstein, astrophysicist and director of the National Center for Earth and Space Science Education (NCESSE)



NSTA National Science Teachers Association

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NSTA Conferences on Science Education

Who Should Attend and Why?

It's simple. This conference is the premier event that brings together science education leaders and experts with educators who are interested in personal and professional growth. Our sessions and workshops are designed to provide you with concepts and skills that will pay off back in your classroom, your school, or your district.

We provide the forum to start discussions about science education from the broadest perspective of national standards to the very specifics of strategies and techniques that work well in the classroom. We encourage teachers from every grade band and discipline—preservice to the most experienced curriculum administrator—to attend. We offer compelling and relevant information, techniques, and resources to invigorate your career.

Who should attend this conference?

- PreK–12 Science Teachers
- Science Coordinators
- Curriculum Specialists
- Administrators
- Principals
- College Education Methods Professors
- College Science Educators
- Policymakers
- Industry Advocates
- International Educators
- College Science Education Students

We invite you to think big and expand your mind. You'll experience new ideas, network with your peers, gather educational materials, view the newest products, and get inspired by an extraordinary group of science educators. Share your passion as you continue on your journey to becoming the best educator you can be.

President's Invitation

Imagine and Invent: Create a Great Future!

Imagine becoming inspired, equipped with an arsenal of new science activities, and feeling on top of the burgeoning world of science education. Create a more exciting scientific universe for your students—join us in San Francisco for a great adventure—the 2011 NSTA National Conference on Science Education. You'll be glad you did as you immerse yourself in the best of cutting-edge science.

The conference committee has organized the event around four strands: Embracing Technology in the 21st-Century Classroom; Accessing Language Through Science and Mathematics Content; Exploring Earth, Wind, and Fire; and Building Scientific Minds: Inspiring Teaching and Effective Learning.

Each strand includes exciting and informative events designed to equip educators with the best teaching and learning practices currently available. Enjoy the keynote speaker, featured speakers, and exhibits of the latest science teaching equipment and curricular materials. Capitalize on a wealth of presentations and workshops you can use to make your classroom science program sparkle.

Enjoy some of our ticketed events if you have time, and you'll find great opportunities for networking with colleagues and meeting NSTA council and board members.

After the conference, return to your workplace renewed in spirit and ready with newfound ideas you can put to immediate use in your classroom. See you in San Francisco.

Alan McCormack
2010–2011 NSTA President

Meeting Location/Times

The conference headquarters hotels are the Hilton San Francisco Union Square and the Marriott San Francisco Marquis. Conference registration, exhibits, and the NSTA Science Bookstore will be at the Moscone Center. Most sessions and events have been scheduled at the Moscone Center as well as the Hilton and Marriott.

The conference will begin with concurrent sessions on Thursday, March 10, at 8:00 AM, and end on Sunday, March 13, at 12 Noon.

— Photo courtesy of Philip H. Coblentz, San Francisco Convention & Visitors Bureau

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

NSTA and the San Francisco Planning Committee are extremely grateful to the following companies and associations for their generous contributions to the NSTA San Francisco National Conference on Science Education.

Association for Science Education
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Paul F-Brandwein Institute, Inc.
Pearson
San Diego Science Educators Association

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Cover Photo: Courtesy of David Weintraub, San Francisco Convention & Visitors Bureau

Conference Committee Leaders

We hope you can join us at the NSTA San Francisco National Conference on Science Education. San Francisco is a unique and breathtaking metropolis with a rich history and geological location surrounded on three sides by water. Make plans to come to one of the world's most modern and romantic cities *Celebrating the Joy of Science*!

As a first-timer or veteran conference attendee, you are sure to find everything you need to help you grow both professionally and personally. We are working hard to provide a series of sessions and presentations that will highlight emerging issues, link resources to your needs, build advocacy, and renew our professional learning community within the context of high-quality science education.

The conference strands this year will focus on Embracing Technology in the 21st-Century Classroom; Accessing Language Through Science and Mathematics Content; Exploring Earth, Wind, and Fire; and Building Scientific Minds: Inspiring Teaching and Effective Learning.

We believe you will not find such a unique and rich collection of experts and practitioners in one place for a very long time.

For me, it is also returning to my roots in a sense—the very first NSTA conference I ever attended was in San Francisco in 1986. The experience catapulted me into state and national involvement that found me never looking back.

The opportunities are here again for you, in what may be considered the "crossroads" for the future of science education in America. Thank you.

2011 San Francisco Conference Committee Leaders

Jerry Valadez along with
Natalie Yakushiji and Lisa Ernst

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Program Section: Major Speakers

For complete descriptions and biographical information, visit *www.nsta.org/sanfranciscospeakers.* Additional featured speakers are listed in this preview in the individual strand sections (pages 10–13).

General Session

Science—It's Not a Book of Knowledge… It's a Journey

Thursday, March 10 • 11:00 AM–12:30 PM

Jeff Goldstein, Director, National Center for Earth and Space Science Education, Capitol Heights, Md.

All parents remembers that magical time when their children first began to speak, that moment marking the beginning of an unending flow of questions. In our children we see our humanity—our innate curiosity—and recognize the obvious…that we are born to explore! Science, in all its seeming complexity, is nothing but a means to organize curiosity. Science education is no different. It is the means by which we immerse our students in the journey by letting them do science. As teachers, our sweet reward is seeing the joys of learning wash over them. And as teachers, we are charged with nothing less than patiently and gently launching the explorations of an entire generation.

Dr. Jeff Goldstein is director of the National Center for Earth and Space Science Education (NCESSE), where he is responsible for overseeing the creation and delivery of national science education initiatives with a focus on Earth and space. These include programs for schools, families, and the public; professional development for grades K–12 educators; and exhibitions for museums and science centers. Dr. Goldstein oversees the Voyage *National Program, which installs replicas of the* Voyage *Model Solar System in communities around the world.*

Mary C. McCurdy Lecture

The Total STEM Learning Ecology: How to Use All of a Child's Waking Hours to Activate the Science Learner in Every Student Before Adolescence

Thursday, March 10 • 12:30–1:30 PM

Dennis M. Bartels, Executive Director, Exploratorium, San Francisco, Calif.

He will make the case that rebuilding elementary science is the cornerstone to developing the next generation of scientists and engineers. Recent syntheses studies from the National Academies of Science on both formal and informal science learning and research from scholars such as Robert Tai show the importance of "turning on" interest in science in every student before the end of the elementary grades. He advocates for a national strategy for increasing participation rates of underrepresented groups in advanced STEM studies.

In addition to directing the Exploratorium, Dennis M. Bartels is a nationally known science education and policy expert. His leadership in science education extends to numerous positions, including fellow for the American Association for the Advancement of Science, appointee to the President's Council of Advisors on Science and Technology and the NSF Education and Human Resources Directorate Advisory Committee as well as former TERC president (2001–2006). In June 2010, he was one of two educators named to the Oceans Research and Resources Advisory Panel (ORRAP), which provides independent advice and guidance to the more than 20 federal agencies of the National Oceanographic Partnership Program.

Major Speakers

Special Programs

The following special events have also been scheduled during this conference. Please visit *www.nsta.org/sanfrancisco* for details.

- **COSEE Program**
- **Global Conversations for Science Education Conference** (ticketed event, see page 27)
- **Informal Science Day**
- **NSTA Exemplary Science Program**
- **Teacher Researcher Day**

Robert H. Carleton Lecture

Four Essential Questions

Friday, March 11 • 12:30–1:30 PM

Arthur Eisenkraft, Distinguished Professor of Science Education, and Director, Center of Science and Math in Context (COSMIC), University of Massachusetts, Boston

Using a teaching guide that focuses on a few elements, he will show how to make all sciences more relevant and interesting for students. The questions—(1) What does it mean? (2) How do we know? (3) Why do we believe? and (4) Why should I care?—provide a means by which you can teach better, assess better, and help your students perform better.

A past president of NSTA, Arthur Eisenkraft began his career as a high school physics teacher for 25 years. His work has won numerous awards, including the Presidential Award for Excellence in Science Teaching and the Robert A. Millikan Medal from the American Association of Physics Teachers. He is project director for the NSF-supported Active Physics Curriculum Project, aimed at introducing physics to all students. Engaging K–12 students' imaginations toward future technology has been a driving force behind his leadership and co-creation of the Toshiba/NSTA ExploraVision Awards, involving 15,000 students annually.

Science Matters in San Francisco!

SCIENCE Matters
National Science Teachers Association

National Town Hall on Science Education

Thursday, March 10 • 8:15–9:45 AM

So what has happened to the science education in YOUR school this past year?

Californians are still reeling from the worse budget crisis ever, a crisis that has hit K–12 education—and teachers—particularly hard. During this special national town hall meeting, sponsored by NSTA Science Matters, education, policy, and industry leaders will discuss science education in California and compare its present state to trends nationwide.

During this interactive forum, speakers will highlight critical issues, address some of the unique challenges facing science teachers and students this year, and respond to your questions about what to expect in the future.

Science Matters is NSTA's public awareness campaign to bring content, news, and information that supports quality science education to parents and teachers nationwide. The Science Matters network of more than 45,000 teachers and parents is now in 34 states and the District of Columbia.

Special Evening Sessions

A Video Showcase of Legendary Icons, Inspiring Teachers, Memorable Performances, and Stimulating, Engaging Courses

Part 1: Thursday, March 10 • 6:00 PM–12 Midnight

Part 2: Friday, March 11 • 6:00 PM–12 Midnight

Part 3: Saturday, March 12 • 6:00 PM–12 Midnight

Screenings will be interspersed with commentary, discussion, and some live demonstrations. There will be humor and perplexities combined with much information on a wide range of topics. Pick up ideas and content that will broaden your knowledge and that you can use in your own teaching. The audience will help select from an extensive menu of course excerpts. For complete descriptions of these events, visit our website at *www.nsta.org/sanfranciscobrowser* and select "Special Session."

Major Speakers

Next Generation of Science Education Standards

Thursday, March 10 • 2:00–3:00 PM

Featured Panel Participants

- Francis Q. Eberle, Executive Director, NSTA, Arlington, Va.
- Stephen L. Pruitt, Vice President for Content, Research, and Development, Achieve, Inc., Washington, D.C.
- Helen R. Quinn, Chair, Board on Science Education, The National Academies, Menlo Park, Calif.

This session will provide an overview and update on the efforts to create a framework for new K–12 science education standards, including a timeline for the remaining work, and how science teachers are involved in the process.

Late last summer, the National Research Council's Board on Science Education (BOSE) released for public input a draft conceptual framework that will lay the foundation for the next generation of science education standards. More than 2,000 people submitted feedback by responding to an online survey, and hundreds more participated in feedback groups, including those held by NSTA. The BOSE committee is working to develop the final report to be released in early 2011. Following the release, Achieve, Inc., will oversee the development of K–12 science education standards based on the framework, with the dissemination of new standards expected in December 2011. The framework and new science education standards that will follow have huge implications for science educators.

Featured Presentation

The Educational Forum: Listening to America

Saturday, March 12 • 8:30–10:00 AM

Bernard A. Harris, Jr., President, The Harris Foundation, Houston, Tex.

The Harris Foundation has been touring the nation since 2008 "Listening to America." Through dialogue with teachers, superintendents, parents, community leaders, elected officials, and industry leaders from more than 20 cities, the foundation has learned about the issues, barriers, and successes of education. STEM education is critical for the success of today's students. Join the partnership in this national call for change!

A NASA astronaut, physician, and businessman, Dr. Bernard Harris founded The Harris Foundation in 1998 to develop math and science education and crime prevention programs for America's youth. After receiving his doctorate of medicine from Texas Tech University, he became an aerospace flight surgeon. In 1990, he was selected as a NASA astronaut and became the first African-American to complete a space walk. He retired from NASA in 1996 after logging 438 hours in space. Currently, he is CEO of Vesalius Ventures, a venture capital firm.

Featured Presentation

How to Cure Safety Stress and Legal Sweats!

Saturday, March 12 • 9:30–10:30 AM

Ken Roy, Director of Environmental Health & Safety, Glastonbury Public Schools, Glastonbury, Conn.

Whether preparing for the next class lab activity or presenting at a professional conference, high anxiety relative to safety and liability often comes into play. Roy will provide basic standard operating procedures and related issues every science teacher should know based on legal standards and best professional practices to help relieve "safety stress and legal sweats!"

An accomplished educator, author, and safety consultant, Ken Roy has 42 years of experience in teaching physics, biology, and chemistry at the high school and college levels. Roy is a strong advocate for fostering the Physics First approach to secondary science education. He is also a safety consultant for several publishers, science laboratory equipment suppliers, insurance companies, state departments of education, school districts, professional associations, and other industry entities.

Major Speakers

Paul F-Brandwein Lecture

Dr. Art's Planet Earth Show

Saturday, March 12 • 11:00 AM–12 Noon

Art Sussman, Senior Project Director, WestEd, Richmond, Calif.

Dr. Art's Planet Earth Show combines exciting scientific demonstrations on key principles with audience participation. If you come to the show, you will find out why Dr. Jane Goodall said, "Art Sussman joyfully explains science we all need to know. His presentation captures the imagination of people of all ages and invokes a sense of wonder."

Art Sussman is a scientist who has playfully labored the past 30 years in developing innovative methods to teach science in ways that are meaningful, effective, and fun. He has authored books, including Dr. Art's Guide to Planet Earth *and* Dr. Art's Guide to Science: Connecting Atoms, Galaxies, and Everything in Between. *Sussman has also led NSTA's Building a Presence for Science project in California. His recent work uses creative computer simulation environments to enhance learning of science content.*

Superintendents' Symposium

Friday, March 11 • 2:00–3:30 PM

Improving STEM Teaching and Education

Moderator: Elizabeth K. Stage, Director of Lawrence Hall of Science, University of California, Berkeley

Featured Panelists:

- Carlos Garcia, Superintendent, San Francisco Unified School District, San Francisco, Calif.
- Kevin Harrigan, Superintendent, Newark Unified School District, Newark, Calif.
- William M. Habermehl, Superintendent, Orange County Dept. of Education, Costa Mesa, Calif.
- Tony Smith, Superintendent, Oakland Unified School District, Oakland, Calif.
- Steve Stavis, Superintendent, Santa Clara Unified School District, Santa Clara, Calif.

An expert panel of school superintendents will discuss and recommend how to improve STEM teaching and learning, as well as associated challenges. Please visit www.nsta.org/sanfrancisco for further updates.

NSTA/ASE Honors Exchange Lecture

The Common Core Standards: A Rationale for Practices

Saturday, March 12 • 2:00–3:00 PM

Jonathan Osborne, Shriram Family Professor of Science Endowed Chair, Stanford University, Palo Alto, Calif.

Does the focus on "scientific practices" in the new framework for the common core standards offer any advancement in our understanding of how science should be taught? Hear why engaging in criticism is essential to building science understanding. Knowing why the wrong answer is wrong matters as much for learning as knowing why the right answer is right.

Prior to his Stanford professorship, Jonathan Osborne was the chair of Science Education at King's College London and head of the Department of Education and Professional Studies from 2005 to 2008. His current research expands on ideas from his 1998 work Beyond 2000: Science Education for the Future *and looks into how argument and discussion can be promoted and developed.*

Robert Karplus Lecture

INSIDE AND OUTSIDE OF THE SCIENCE CLASSROOM: Exploring the Challenges of Science Education in the Next Decade

Saturday, March 12 • 3:30–4:30 PM

Gerry Wheeler, Emeritus Executive Director, NSTA, and Senior Scientist, Sangari Global Education, Bozeman, Mont.

Outside the classroom, students are busy typing with their thumbs while inside they're twiddling them. From smart phones to twitter, today's youth are plugged into an informal community in sharp contrast to their school community. This new generation has a radically different learning style and our challenge will be providing science education to these wired students.

Gerry Wheeler is currently consulting on science education and nonprofit association management. A key focus of his has been developing mass media projects that showcase science for students, such as his creation of 3-2-1 Contact *for the Children's Television Workshop. He also co-directed the National Teachers Enhancement Network, an NSF-funded distance learning project offering science and math courses nationwide.*

Strand: Embracing Technology in the 21st-Century Classroom

Effective classrooms require the tools and resources necessary to be technologically rich environments. Professional development is required to maintain educators' awareness and understanding of available and appropriate technology and its effective use for student learning. The understanding and use of technology are critical components of STEM education. This strand will promote the awareness, understanding, and appropriate use of technology in preK–12 and community college classrooms, vocational schools, and informal science programs to support the development of workplace skills.

Featured Presentation

Deeply Digital Science Teaching: Looking into the Future of Educational Technology

Thursday, March 10, 9:30–10:30 AM

Chad Dorsey, President and CEO, The Concord Consortium, Concord, Mass.

Computers and technology are finally becoming available in science classrooms across the country. Yet we still tap into only a fraction of the potential they offer. Get a sneak peek of what lies just ahead in educational technology and learn about cutting-edge software you can use today for free. Come start yourself on the road to a "deeply digital" classroom.

Prior to his position at the Consortium, Chad Dorsey was a science and educational technology specialist at the Maine Mathematics and Science Alliance (MMSA), a nonprofit organization supporting education in Maine and the nation. He has taught high school physics in Maine, worked at the Munich International School in Germany, and served in school leadership roles for several high school reform initiatives. He is also co-author of the NSTA Press book, Uncovering Student Ideas in Science, 25 Formative Assessment Probes. *Dorsey first met computers when his family hooked an Apple II to their fancy new color TV set. He's been a shameless geek ever since.*

Short Courses

See pages 24–26 for details.

Telescopes and Optics: Build a Galileoscope (SC-2)

Exploring Birds and Citizen Science at the California Academy of Sciences (SC-12)

Bringing Nanotechnology into the Classroom (SC-15)

Create Your Own Interactive Whiteboard (SC-21)

Field Trips

See pages 30–32 for details.

An In-depth Tour of Bio-Rad Laboratories (T-1)

The Center for Probing the Nanoscale, Stanford Linear Accelerator Center (SLAC), and the Stanford University Campus (F-2)

More sessions on technology in the classroom

Mobile Learning in Science
Thurs., March 10, 8:00–9:00 AM

Technology + Science: Making IT Work
Thurs., March 10, 9:30–11:00 AM

More Than Just Probes
Thurs., March 10, 12:30–1:30 PM

Podcasting for Students and Teachers in Science
Thurs., March 10, 2:00–3:00 PM

Google Me This—How to Make Collaboration Work in a Wiki World
Thurs., March 10, 3:30–5:00 PM

Fun, Free, and Easy: Great Free Web 2.0 and Open-Source Resources
Fri., March 11, 9:30–10:30 AM

Bringing Together STEM, Language Arts, and Global Awareness
Fri., March 11, 11:00 AM–12 Noon

Science Teaching in Second Life
Fri., March 11, 3:30–4:30 PM

Cyber-Enabled Earth Exploration (CE^3) Science Curriculum Project
Sat., March 12, 12:30–1:30 PM

Investigating Supernova Remnants
Sat., March 12, 2:00–3:00 PM

Probing, Clicking, Compiling, Discussing, Learning
Sat., March 12, 5:00–6:00 PM

Explore the Chemistry Education Digital Library
Sun., March 13, 9:30–10:30 AM

Visit the San Francisco Session Browser/Personal Scheduler (www.nsta.org/sanfranciscobrowser) *for a complete list of events.*

Strand: Accessing Language Through Science and Mathematics Content

This strand will feature expert practitioners, researchers, informal science educators, and educational leaders who will share successful practices, conceptual and practical frameworks, and proven models for improving literacy achievement through science and mathematics. Sessions will focus on the contextualized use of academic language and include strategies for improving reading comprehension, writing, and scientific discourse. Strategies should be inclusive of all students, including advanced learners, English language learners, special needs students, and students that are economically disadvantaged. Accessing language through science and mathematics can also occur outside classrooms through informal settings such as science museums and after-school, Saturday, and summer enrichment and recreation programs.

Featured Presentation

Practical Tools to Support English Language Learners Reading Science Texts

Thursday, March 10, 3:30–4:30 PM

Kenji Hakuta, Lee L. Jacks Professor of Education, Stanford University, Stanford, Calif.

He will highlight tools that aid the teaching of science to English language learners. Specifically, he will describe and demonstrate WordSift, a free web-based tool developed by middle level science teachers from the San Francisco Unified School District. WordSift uses visualization and vocabulary exploration to support teachers and students in the reading of complex text.

At Stanford, Kenji Hakuta teaches courses for graduate students and teacher credential candidates, concentrating on the education of English language learners. Active in education policy, he has testified to Congress and other public bodies on language policy, the education of ELL students, and affirmative action in higher education. Hakuta received his doctorate in experimental psychology from Harvard University.

Short Courses

See pages 24–26 for details.

The Role of Discourse and Writing in Inquiry Science at the Upper Elementary Level (SC-4)

Science Notebooking and Academic Language Development for Upper Elementary Students (SC-14)

Accessing Science Through Language, Reading, and Writing (SC-16)

Field Trips

See pages 30–32 for details.

Space Science: A Visit to NASA Ames (T-2)

Lawrence Hall of Science (F-4)

Hands On at Its Finest: The Tech Museum and Resource Area for Teachers (RAFT) (F-5)

Educator's Evening Under the Stars at Chabot Space & Science Center (F-8)

More sessions on accessing language through science and math…

Fab Vocab Strategies You Can Use Today!
Thurs., March 10, 8:00–9:00 AM

Unpacking Science Content with Cueing Systems to Promote Academic Success for English Language Learners
Thurs., March 10, 9:30–10:30 AM

Dissecting Word Problems
Fri., March 11, 8:00–9:00 AM

Applying Algebra to Pendulums: Language Acquisition Using Manipulatives
Fri., March 11, 9:30–10:30 AM

Science Notebooking for the Early Grades
Fri., March 11, 2:00–3:00 PM

On the Prairie: Ecological Approaches to Language and Mathematics
Sat., March 12, 8:00–9:00 AM

Integrating Science Literacy and English Literacy in the K–12 Science Classroom: Benefits for Deaf, Hard of Hearing, and Hearing Students
Sat., March 12, 11:00 AM–12 Noon

Nature Books: The Natural Way to Link Science, Math, and Literacy
Sat., March 12, 3:30–4:30 PM

Writing in Science: Documented Success in Increasing Achievement in Both Domains
Sun., March 13, 8:00–9:00 AM

Visit the San Francisco Session Browser/Personal Scheduler (www.nsta.org/sanfranciscobrowser) *for a complete list of events.*

Strand: Exploring Earth, Wind, and Fire

Educators must have substantial content knowledge in order to teach Earth system sciences effectively. In order to examine their own misconceptions and ways of thinking, educators need concrete examples that support their understanding of Earth science content. This strand will focus on providing science educators with the knowledge and understanding to effectively teach Earth system science within the context of the following: geology, astronomy, meteorology, global climate change, ecology, space, geophysics, and sustainability.

Featured Presentation

Bridging Scientific Research and Education Through the Research Learning Centers of the National Park Service

Friday, March 11, 12:30–1:30 PM

Joy Marburger, Research Coordinator, Great Lakes Research and Education Center, Indiana Dunes National Lakeshore, National Park Service, Porter, Ind.

Engaging students in STEM subjects can be accomplished in both formal and informal educational environments. This presentation will demonstrate examples of how STEM education is conducted in the National Park Service.

In her current position as research coordinator for the Great Lakes Research and Education Center, Dr. Joy Marburger facilitates university and government research in the Great Lakes national parks. Prior to the National Park Service, she conducted large-scale wetland restoration with the St. Johns River Water Management District in Florida. Her areas of research include tropical botany, plant breeding and genetics, and wetland ecology.

Marburger taught biology, general science, and art during Peace Corps service in Sierra Leone, West Africa, in the early 1970s. She was a consultant to the Illinois Department of Education and developed inquiry-based science modules for elementary teachers. She taught biology and botany as an adjunct professor at the University of Wisconsin and at St. Johns River Community College in Florida.

She received her BS degree (Allegheny College) and MS degree (Bowling Green State University) in biology and her PhD in agronomy (University of Maryland).

Short Courses

See pages 24–26 for details.

NOAA Ship *Okeanos Explorer*: Why Do We Explore?...and How Do We Explore? (SC-13)

2011: NASA's Year of the Solar System (SC-18)

Field Trips

See pages 30–32 for details.

San Francisco Green Schoolyard Alliance (T-4)

Written in Stone: Lessons from the Field for the Earth Science Classroom (T-5)

How Geologic Events Shape Our Lives (F-1)

Berkeley's Bounty: The Edible Schoolyard and the Center for Ecoliteracy in the David Brower Center (F-6)

Hands-On Outdoor Experience Makes Science Come Alive (S-2)

More sessions on Earth, wind, and fire...

Eating Your Way Through the Earth Science Standards
Thurs., March 10, 9:30–10:30 AM

The Geometry of Earth Science
Thurs., March 10, 2:00–3:00 PM

ART/Science
Thurs., March 10, 3:30–4:30 PM

I Feel the Earth Move Under My Feet!
Fri., March 11, 8:00–9:00 AM

Visualizing the Unviewable: Simple Models to Activate Your Earthquake Instruction
Fri., March 11, 9:30–10:30 AM

Making the Water Cycle Real: A Journey from the School Yard to the Ocean
Fri., March 11, 11:00 AM–12 Noon

Under Pressure!
Fri., March 11, 12:30–1:30 PM

Meteorites CSI: The Sky Has Fallen...Now What?
Fri., March 11, 5:00–6:00 PM

Fun with Flames: A Safe Way to Teach Fire Sciences
Sat., March 12, 8:00–9:00 AM

Taking Earth Science One Step Further: Harnessing Sun and Wind Energy
Sat., March 12, 12:30–1:30 PM

Basic Weather
Sat., March 12, 3:30–4:30 PM

The Ups and Downs of Convection
Sat., March 12, 5:00–6:00 PM

Visit the San Francisco Session Browser/Personal Scheduler (www.nsta.org/sanfranciscobrowser) *for a complete list of events.*

Strand: Building Scientific Minds: Inspiring Teaching and Effective Learning

Science classroom practice and informal science experiences should be grounded in research in science education and cognitive psychology. Key developments, such as national and state science standards, Science Anchors, and workplace skills for the 21st century, deserve wide-scale application in science programs. Teachers and science education leaders need model approaches to implementing research findings in science programs and teaching/learning strategies.

Featured Presentation

Effective Teaching for Effective Learning

Friday, March 11, 8:30–9:30 AM

Lawrence Lowery, Professor, Graduate School of Education and Lawrence Hall of Science, University of California, Berkeley

Dr. Lowery's presentation will focus on current research to improve teaching strategies. Participants will engage in activities that relate research to the new National Core Standards. He will share his wealth of knowledge on how to become a more "thought-full" teacher. Bring your brains and come ready to reinvigorate your attention on students' capacities to think.

A professor emeritus at the Lawrence Hall of Science, University of California at Berkeley, Lawrence Lowery began his career at the university in 1965. At the Lawrence Hall of Science, Lowery was the principal investigator for both the EQUALS math program and FAMILY MATH. He remains active as the principal investigator for the Full Option Science System (FOSS), a K–8 science program funded by the National Science Foundation and developed at the university. His authorship is extensive, ranging from children's books to numerous research papers and publications, including NSTA Pathways—Guidelines to the Science Standards (Elementary).

Short Courses

See pages 24–26 for details.

Science as Inquiry: Using Language Processes to Understand Physical Processes (SC-5)

Inspire Middle and High School Girls Toward Careers in Science (SC-7)

Physics on the Subway (SC-11)

Young Investigators in Environmental Health Science: Challenging and Exciting Your Students with Novel, Inquiry-based Environmental Activities (SC-17)

Field Trips

See pages 30–32 for details.

The USS *Pampanito*—Where History Meets Science (T-3, T-7, and T-9)

Explore the Exploratorium (T-8 and S-3)

Dynamic Nature: The Ebb and Flow of the Bay Area Watershed and Creating Opportunity for Local Community Involvement (F-3 and F-7)

Scientist for a Day on the R*obert G. Brownlee* (S-1 and S-5)

More sessions on building scientific minds…

Chemistry Is Elementary! Giving Elementary Science Teachers the Confidence, Skills, and Experience to Teach Chemistry
Thurs., March 10, 8:00–9:00 AM

How to Host an Inquiry Symposium at Your School
Thurs., March 10, 2:00–3:00 PM

Independent Investigations for Young Scientists
Thurs., March 10, 3:30–4:30 PM

Creating a Community of Science Learners
Fri., March 11, 9:30–10:30 AM

Creating Scientific Drawings and Recordings with Kindergartners
Fri., March 11, 11:00 AM–12 Noon

Simple Machines Made Simple!
Fri., March 11, 2:00–3:00 PM

How We Know What We Know: The Most Important Tools for Teaching Earth Science
Sat.., March 12, 8:00–9:00 AM

Scientific Literacy: More Than Just the Facts
Sat., March 12, 12:30–1:30 PM

Slingshot Physics: Authentic Application of Work, Energy, Friction, and Newton's First Law of Motion
Sat., March 12, 2:00–3:00 PM

Rigor *vs.* Rhetoric: Teaching Scientific Skepticism
Sun., March 13, 11:00 AM–12 Noon

Visit the San Francisco Session Browser/Personal Scheduler (www.nsta.org/sanfranciscobrowser) *for a complete list of events.*

Professional Development Institutes

NSTA professional development institutes (PDIs) are focused, content-based programs conducted by well-known professional development providers and NSTA partners. PDIs are ticketed events available by preregistration only and require San Francisco conference registration. Space is limited, so register early. To learn more about San Francisco PDIs, visit NSTA's professional development website at *www.nsta.org/pd/pdi.*

Each PDI at the San Francisco conference begins with a full-day (9:00 AM–4:00 PM) pre-conference session on Wednesday, March 9, followed by two days of pathway sessions during the conference that offer further exploration of the topics covered. The two work sessions are one-day sessions at a reduced fee because they do not include pathway sessions. Check-in opens at 8:30 AM.

Tickets for the PDIs are $150, and tickets for the one-day work sessions are $100. There is no group discount available. Please contact Wendy Binder at wbinder@nsta.org *if you have any questions.*

Tickets are available by preregistration only. In order to keep the costs of Professional Development down, meals are not included.

Advance Registration Deadline: February 4, 2011

PDI-1: Using Mathematical Representations to Talk About, Model, and Explain Scientific Phenomena

Provider: TERC

Level: Middle Level

Learn strategies for working with data to deepen all students' scientific understanding, habits of mind, and ability to reason critically and flexibly.

PDI-2: Inquiring into Inquiry: Creating an Inquiry-based Classroom

Provider: BSCS

Level: Elementary–High School

Experience the role inquiry plays in student learning and teacher professional development. Learn how to apply these experiences to engage students in your classroom.

Professional Development Institutes

PDI-3: Deepening Science Thinking and Reasoning Through Discussion and Writing in K–5 Inquiry-based Science

Provider: Education Development Center, Inc.

Level: Elementary

Learn how to use multiple forms of representation, writing, and discussion to enhance students' conceptual understanding, along with in-depth exploration of the roles of oral and written language.

PDI-4: Science in Context: Helping Students Develop 21st-Century Skills Through Issue-oriented Science

Provider: SEPUP

Level: Middle Level–High School

Learn the ways issue-oriented science units can provide rigorous science content and process, and what are the characteristics of high-quality issue-oriented science.

PDI-5: Going with the Conceptual Flow: Bridging the Gap Between Your State Standards, Curriculum Materials, and Student Learning

Provider: WestEd

Level: Elementary–High School

Explore how instructional materials can be analyzed for their instructional design, coherence of activities to build student understanding, and usefulness as assessments of measuring students' understanding.

PDI-6: Improving Student Learning Through Formative Assessment

Provider: Lawrence Hall of Science

Level: Grades 3–8

Learn about the design and use of formative assessments in science classrooms (grades 3–8). The assessment triangle from the National Research Council report *Knowing What Students Know* (Cognition—Observation—Interpretation) provides the framework.

PDI-7: Science for English Language Learners: Adaptations for Inquiry Science Teaching While Building Language Skills

Provider: University of Nevada, Reno/David T. Crowther

Level: Elementary–High School

Discover strategies for teaching science and increasing content vocabulary modeled through both scaffolding content and tiered vocabulary.

One-Day Work Sessions

Explore topics in-depth with these all-day programs. Tickets for PDI-8 and PDI-9 are $100.

PDI-8: One-Day Work Session on Learning Progressions: Moving Up in the World of Educational Effectiveness

Provider: The Center of Science and Mathematics in Context (COSMIC), University of Massachusetts, Boston

Level: K–16

Explore vertical articulation of K–12 science curricula through vertical teaming, vertical collaborative coaching, and learning in science. Participants will map science concepts from elementary to high school curricula including AP.
**No linked pathway sessions.*

PDI-9: One-Day Work Session on Designing Effective Science Instruction: Developing Student Understanding Through Classroom Inquiry, Discourse, and Sense-Making

Provider: McREL

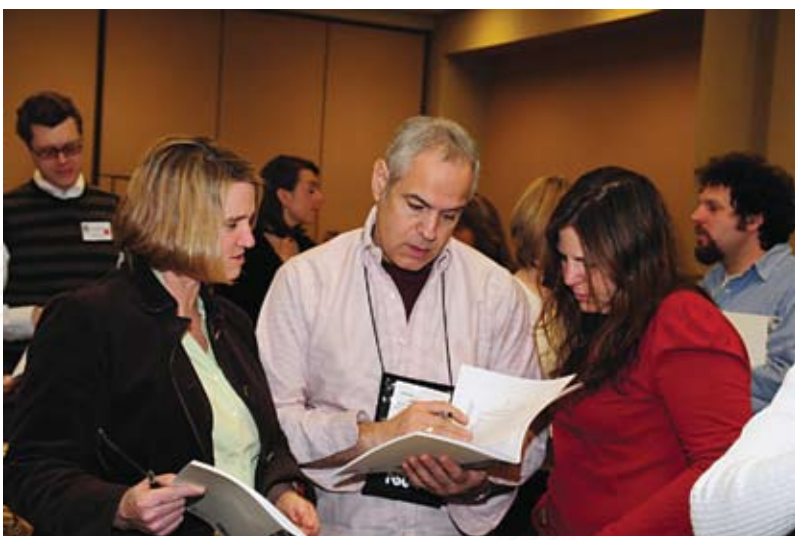
Level: Grades K–16

Improve your ability to plan and deliver effective lessons to diverse student populations using a three-part framework of content, understanding, and environment.
**No linked pathway sessions.*

Research Dissemination Conference

Research on science teaching and learning plays an important role in improving science literacy, a goal called for in the National Science Education Standards (NRC 1996) and supported by the National Science Teachers Association (NSTA 2003). NSTA promotes a research agenda that is focused on the goal of enhancing student learning through effective teaching practices that connect research and practice. NSTA encourages ALL participants in science education, including K–16 teachers of science and administrators, to recognize the importance of research and assume active roles in research practices.

NSTA Position Statement: The Role of Research on Science Teaching and Learning (adopted September 2010)



www.nsta.org/pd/rdc

Highly Effective Science Education: Integrating Science and Emerging Educational Technology in the Science Classroom (Ticket C-1)

For K–12 Teachers, Administrators, Professional Development Providers, University Faculty, and Curriculum Specialists

Saturday, March 12, 7:45 AM–3:00 PM
(Breakfast begins at 7:00 AM)

Registration Fee: $95, plus conference registration

Advance Registration Deadline: February 4, 2011

In response to current interest in science education strategies, the National Science Teachers Association developed Research Dissemination Conferences (RDCs) to highlight research topics and NSTA's expanding commitment to bring specific, meaningful, and practical professional development to science educators.

The overall objective of this daylong event is to:

- Disseminate current research on K–12 science education to practitioners and policy makers in order to promote its wide application to improve science teaching and student learning;
- Emphasize results that address key issues and concerns: student achievement, teacher retention, scalability, and sustainability;
- Provide a forum for discussing issues and fostering ongoing collaboration in support of improving professional development for K–12 teachers of science; and
- Allow teachers and administrators at school and district levels, as well as professional development providers, to learn about the implications of researchers' work for classroom practice and professional development.

This conference will emphasize projects that:

- More effectively provide access to certain science concepts and pedagogy when appropriate tools are incorporated for scientific observation, measurements, and investigations (NRC 1996);
- Give science educators opportunities to experience firsthand the appropriate use of technology in teaching and learning, and increase their confidence in using these tools in their own practice;

- Meet the needs of students who have learning styles conducive to and preferences for learning and interacting in an online environment (Dede 2005);
- Reduce the isolation of science educators—especially those in rural areas or teaching specialized science subjects—by providing and expanding access to colleagues and experts;
- Provide remote access via computers and networks to scientific instruments that allows students and teachers to conduct scientific investigations that might otherwise be unavailable to them (NACOL 2008);
- Provide future workers with strong skills and fluency in the convergence of media, which are critical to succeed in the 21st-century workplace (BHEF 2005); and
- identify innovative and research-based professional development that increase science teacher knowledge of both content and pedagogy

The conference format includes plenary sessions that address issues of general interest and multiple concurrent small-group sessions that are relevant to needs of the practitioner audience. Breakout session topics will include but are not limited to:

- Immersive Environments and Multiplayer Online Games
- Virtual and Remote Labs
- Simulations
- Social Networks Structured for Learning
- Cyberlearning Tools (formative assessments, recommendations, feedback loops)

When registering for the conference, participants select breakout sessions that best match their needs and interests. Each breakout session targets the interests of specific groups, such as elementary teachers, secondary teachers, principals, curriculum coordinators, and professional development providers. The RDC is designed to encourage greater dialogue among researchers, practitioners, and policy makers to bring about a better understanding of science education strategies.

Shell Science Seminars

These popular presentations are sponsored by Shell Oil Company. Hear the latest in cutting-edge research in science and technology.

Science, Evolution, and Creationism

Friday, March 11
10:30 AM–12 Noon

Eugenie C. Scott, Executive Director, National Center for Science Education, Oakland, Calif.

Claims are made that the various forms of creationism (creation science and intelligent design) are scientific, and that evolution is not. Similar claims are made that the evidence for evolution is poor, whereas the evidence for creationism is strong. What do scientists say about these claims? What should we teach when students, parents, or administrators make these contentions?

In addition to her position at the National Center for Science Education, Eugenie C. Scott is an internationally known expert on the creationism and evolution controversy and is called upon by the press and other media to explain science and evolution to the general public. The author of Evolution vs. Creationism: An Introduction *and co-editor with Glenn Branch of* Not in Our Classrooms: Why Intelligent Design Is Wrong for Our Schools, *she is the recipient of numerous awards from scientists and educators.*

Teaching Scientific Inquiry—Sorting Out the Particulars to Harmonize the Practices

Friday, March 11
10:30 AM–12 Noon

Richard A. Duschl, NARST Past President and Waterbury Chair Professor, Penn State, University Park, Pa.

Research on science and mathematics learning along with new "naturalized" views about the nature of science suggest the need to consider different models of curricula, instruction, and assessment. This talk will examine some of these models and will make the case that close collaborative efforts between teachers and researchers will be needed to advance a research and development agenda around core science and math standards that align with diagnostic learning performance assessments.

Named Waterbury Chair in 2008, Richard A. Duschl focuses his research efforts on advancing teacher education programs and on the design of learning environments that seek and promote collaborations among STEM education. Prior to joining Penn State, he was the Chair of Science Education at King's College London. He has also held academic appointments at Rutgers, the State University of New Jersey, Vanderbilt University, and the University of Pittsburgh. Duschl was editor of the research journal Science Education *and of the TC Press* Ways of Knowing in Science and Math *book series.*

Shell Science Seminars

From the Inside Out: What Research Says About Teaching and Learning in STEM

Friday, March 11
1:30–3:00 PM

Celeste Pea, Program Director, Research on Learning in Formal and Informal Settings, National Science Foundation, Arlington, Va.

Now that we are a decade into the 21st century, increasingly there are calls to rely on evidence-based research to help develop practices, models, and modes of thinking that are relevant to science education. Receive an overview of the types of research that promote innovation and discovery and are critical to advancing STEM education preK–20.

Celeste Pea manages awards for interdisciplinary STEM research in current and emerging contexts and serves on the GK–12 Advisory Committee. Prior to NSF, she was the science coordinator for a Louisiana reform initiative and a middle school science teacher. Her service extends to involvement with the National Research Council, Quality Education for Minorities Network, the National Association of Biology Teachers, and the National Science Teachers Association.

Learning in the Classroom: Minds, Brains, and Science

Friday, March 11
3:30–5:00 PM

Kenneth Wesson, Educational Consultant: Neuroscience, and Vice President, Western Division and International Divisions, Delta Education/School Specialty Science, San Jose, Calif.

Incredible advances and stunning discoveries in the cognitive sciences have expanded our knowledge about student learning and brain development. Recent findings about the human brain suggest that education can be better supported by including some aspects of this new knowledge base in our homes and schools on a consistent basis.

Kenneth Wesson works as an educational consultant for preschool through university institutions. An expert on the neuroscience of learning and methods for creating classrooms and learning environments that are "brain-considerate," he regularly addresses psychological, medical, and educational associations, as well as parenting organizations, on establishing "brain-considerate" learning environments.

Science Is Sexy!

Saturday, March 12
10:30 AM–12 Noon

Ira Flatow, President and Executive Producer, NPR's *Science Friday,* Stamford, Conn.

After many years of efforts by scientists and educators to make science interesting to children and young adults, the popular culture has "discovered" science. New and very popular television programs like *The Big Bang Theory* and new popular books about science and math have made science "sexy" once again. There is even a new Barbie™ doll—an engineer geek! This presentation will look at some of these cultural advances as educational opportunities, as well as others afforded by social communities on the internet.

Veteran NPR science correspondent and award-winning TV journalist Ira Flatow is the host of NPR's Science Friday®, *bringing radio and internet listeners worldwide a lively, informative discussion on science, technology, health, space, and the environment. Ira is also founder and president of the Science Friday Initiative, a 501(c)(3) nonprofit company dedicated to creating radio, TV, and internet projects that make science "user friendly."*

Roaming Planets, Falling Apples, Bending Light, Whirling Galaxies

Saturday, March 12
10:30 AM–12 Noon

Helen R. Quinn, Professor Emerita of Physics, Stanford Linear Accelerator Center, and Chair, Board on Science Education, The National Academies, Menlo Park, Calif.

Roam back and look into a history of ideas about gravity and how they developed as a model for the kinds of questions that are productive to ask in science.

Dr. Helen R. Quinn is an internationally recognized theoretical physicist who holds both the Dirac Medal (from Italy) and the Klein Medal (from Sweden) for her contributions to the field. In addition to her scholarship in physics, she is currently leading a committee working to develop a new framework for Science Education Standards. Her involvement in science education extends to being a contributor to the California State Science Standards development process and co-chair of Stanford's K–12 Initiative.

Shell Science Seminars

What Goes Around, Comes Around Better

Saturday, March 12
1:30–3:00 PM

Elizabeth K. Stage, Director, Lawrence Hall of Science, University of California, Berkeley

"The Learning Cycle" in science education goes from exploration and investigation to analysis and refinement, and then goes around again. The newer idea of science education "standards" may have a similar trajectory. After looking at the evolution of the learning cycle over four decades, we'll look at the new framework, as the two are more closely related than meets the eye. Some may say, "Same old; how will it help me as a teacher?" Find out reasons to be optimistic!

As director for the Lawrence Hall of Science, Elizabeth K. Stage works to fulfill its mission of inspiring and fostering learning of science and mathematics for all. She began her career as a middle school science and mathematics teacher before earning her PhD in science education from Harvard University. She has been a leader in the development of state, national, and international standards in mathematics and science and is a former director of critique and consensus at the National Research Council.

ELL Students' Access to High-Quality Science Instruction

Saturday, March 12
1:30–3:00 PM

Eugene García, Vice President for Education Partnerships, Arizona State University at the Phoenix Downtown Campus

Recent research and analysis of best practices regarding the education of English language learners emphasize the interaction between "language learning" and "content learning." He will present an overview of research that focuses on this interaction in elementary science classrooms with English language learners.

Since 2002, Dr. Eugene García has been on the faculty at Arizona State University. Previously, he served as professor and dean of the Graduate School of Education at the University of California, Berkeley. His research involves areas of effective schooling for linguistically and culturally diverse student populations. He chaired the National Task Force on Early Education for Hispanics. His books include Hispanic Education in the United States: Raíces y Alas; Student Cultural Diversity: Understanding and Meeting the Challenge; *and* Teaching and Learning in Two Languages.

Buy a Brick… Build a Legacy

Help Build the Future of Science Education One Brick at a Time

NSTA is mounting a campaign to create the John Glenn Center for Science Education to promote leadership, learning, and advocacy in science education. You have the opportunity to put your mark on this effort by supporting the Buy a Brick… Build a Legacy program. With your gift, your name or the name of someone you would like to honor will be inscribed on a brick placed in a prominent location at the Glenn Center. A form with more information will be included in your registration packet. To participate, visit the Glenn Center booth on the NSTA Avenue or online at *www.nsta.org/buyabrick*.

the JOHN GLENN CENTER for SCIENCE EDUCATION
National Science Teachers Association

Sample Schedules

		Biology / Life Science	Chemistry / Physical Science	Earth / Space Science	Environmental Science	Integrated / General	Physics / Physical Science	PRESENTATION	WORKSHOP
Elementary	Thurs., 8:00–9:00 AM—Science Is Magic, Magic Is Not Science		•						•
	Thurs., 12:30–1:30 PM—Evolution Readiness: The Modeling Approach	•						•	
	Thurs., 5:00–6:00 PM—Sea Turtle Survivor	•							•
	Fri., 8:00–9:00 AM—Structured Exploration of the Outdoors				•				•
	Fri., 2:00–3:00 PM—Science and Web 2.0			•				•	
	Fri., 5:00–6:00 PM—Wings, Strings, and Flying Things			•					•
	Sat., 9:30–10:30 AM—Plants: From Seed to Seed				•			•	
	Sat., 11:00 AM–12 Noon—Changes in States of Matter: Pre-service Bilingual Teachers' Challenges and Understandings						•	•	
	Sat., 2:00–3:00 PM—Concept Mapping with Young Learners					•			•
	Sat., 5:00–6:00 PM—Science Discourse Through Inquiry Conferences		•						•
	Sun., 8:00–9:00 AM—Writing in Science: Documented Success in Increasing Achievement in Both Domains					•			•
	Sun., 11:00 AM–12 Noon—Flutter and Float						•		•
Middle Level	Thurs., 8:00–9:00 AM—Bike Gears: It's All in the Teeth						•		•
	Thurs., 9:30–10:30 AM—Energy in Motion						•	•	
	Thurs., 3:30–4:30 PM—Solar Energy: Sneaking Project-Based Learning into a Scripted Curriculum				•			•	
	Fri., 9:30–10:30 AM—Student-created Video Weather Reports			•				•	
	Fri., 11:00 AM–12 Noon—One Week Until the Test: Time to CRAM the SMART Way					•		•	
	Fri., 12:30–1:30 PM—Let Loose! Lecuture-free Teaching in the Middle School Classroom					•			•
	Fri., 3:30–4:30 PM—EarthKAM: Looking at Our Earth from Space				•				•
	Sat., 9:30–10:30 AM—Bring the Science of Cars into the Classroom		•					•	
	Sat., 2:00–3:00 PM—Food Chains: Using Field Surveys That Give Real Numbers	•							•
	Sat., 5:00–6:00 PM—A Green Clock Reaction: Assessing Eighth-Grade Students' Understanding of Variables		•					•	
	Sun., 8:00–9:00 AM—Welcome to Earthquake Country: California as a Natural Laboratory			•				•	
	Sun., 9:30–10:30 AM—Diabetes Technology	•							•

Sample Schedules

		Biology / Life Science	Chemistry / Physical Science	Earth / Space Science	Environmental Science	Integrated / General	Physics / Physical Science	PRESENTATION	WORKSHOP
High School–College	Thurs., 8:00–9:00 AM—Using Online Data for Investigations in Ecology and Animal Behavior				•			•	
	Thurs., 9:30–10:30 AM—PBLs in the Classroom			•				•	
	Thurs., 12:30–1:30 PM—Enhancing Scientific Literacy in a Senior-Level Ecology Classroom	•						•	
	Fri., 8:00–9:00 AM—SCST Session: Transforming Laboratory Experiments Using Sensor Technology					•		•	
	Fri., 2:00–3:00 PM—How to Make Sense with Unit Conversion and Dimensional Analysis		•					•	
	Fri., 5:00–6:00 PM—Exploring Earth Science Concepts Through the Writings of Simon Winchester			•				•	
	Sat., 9:30–10:30 AM—Making a Connection: Scientific Research and K–12 Students					•		•	
	Sat., 12:30–1:30 PM—The Amazing Analysis of Bloodstain Patterns for Physicists and Forensic Scientists						•		•
	Sat., 2:00–3:00 PM—Alternative Energy for Transportation: Hydrogen and Fuel Cells				•				•
	Sat., 5:00–6:00 PM—The Physics of Supernovae						•		•
	Sun., 9:30–10:30 AM—Explore the Chemistry Education Digital Library		•					•	
	Sun., 11:00 AM–12 Noon—Personalized Medicine and Pharmacogenomics	•							•

Personal Scheduler

Make your own conference schedule using the San Francisco Session Browser/Personal Scheduler (www.nsta.org/sanfranciscobrowser). *Browse events by day, format, subject, grade level, conference strand, sponsor, or keyword. When you see an event you like, simply click the button to add it to your schedule. View and revise your personal schedule as often as you like—plan ahead!*

NSTA Symposia

Presented by FDA, NOAA, EPA, NSF, and U.S. Forest Service scientists and educators, these half-day symposia include after-conference web seminars, a discussion forum on the NSTA Communities site, and the opportunity to take part in related conference sessions. Walk away with a wealth of materials and lists of electronically available resources. All activities presented address National Science Education Standards. For more information, visit the NSTA Learning Center website *(http://learningcenter.nsta.org/symposia)*. (Tickets Required.)

NOAA Symposium: Climate Change Here and Now: Impacts on Western Coasts, Ocean, and Atmosphere (SYM-1)

Level: Middle Level–High School
Thursday, March 10, 8:00 AM–12:30 PM
$47 advance; $54 on-site

During this half-day climate symposium, scientists and education specialists from the National Oceanic and Atmospheric Administration (NOAA) will discuss the latest findings about the impacts of climate change on west coast ecosystems, coastlines, water resources, and species. Participants will learn about regional efforts to monitor and understand climate changes and provide ideas and resources that translate climate science for the classroom. Participants will be provided with educational materials, including classroom activities that aim to create ocean- and climate-literate students who can make informed decisions in the future. Each participant will receive a $60 stipend for attendance.

NOAA/USFS/EPA Symposium: Climate Change Here and Now: Communicating and Teaching About Climate Change (SYM-2)

Level: General
Thursday, March 10, 1:30–6:00 PM
$47 advance; $54 on-site

During this half-day symposium, scientists and education specialists from EPA, NOAA, and the U.S. Forest Service will present information about how to address climate science and impacts, common misconceptions about climate, the processes of science, and controversial issues in the classroom. Participants will be provided with resources and classroom activities that highlight the choices we face in response to climate change and the development of climate-literate citizens. Each participant will receive a $60 stipend for attendance.

FDA/NSTA Symposium: Teaching Nutrition Science and the Food Label (SYM-3)

Level: Grades 5–12
Friday, March 11, 8:00 AM–12:30 PM
$47 advance; $54 on-site

Learn the basics of nutrition science, nutrition-related health trends in the U.S., the scientific basis for the percent daily values (% DVs) on the Nutrition Facts Label, what teaching resources FDA has developed, and much more. FDA scientists and master teachers will lead participants in hands-on, inquiry-oriented activities that enable students to experience several National Science Education Standards, including those for Science in Personal Health and Social Perspectives. FDA is pleased to provide a stipend of $60 to all symposium participants upon completion.

NSF Symposium: Clues to the Cryosphere: Lessons from the Ice (SYM-4)

Level: Grades 7–12
Friday, March 11, 1:30–6:00 PM
$47 advance; $54 on-site

Rapid change coupled with new discoveries make the polar regions an exciting area to study and explore. Sponsored by the National Science Foundation's Polar Program Office, this interactive half-day symposium will feature scientists working in the Arctic and Antarctic. Join us to learn more about the latest in polar science research and participate in hands-on classroom activities on polar science. All participants will receive educational materials and information about resources from a variety of NSF-funded polar projects.

NSTA Press Sessions

NSTA Press® offers new classroom ideas and standards-based strategies, from Earth science to nanoscience and from preK to college. Visit us online at *www.nsta.org/sanfranciscobrowser* for details (search for NSTA Press Session).

Thursday, March 10

8:00–9:00 AM
Reflective Questions for Educators: Keeping Yourself Thoughtful

Successfully Integrating Science, Math, and Art Instruction

9:30–10:30 AM
Constructive Class Climate: Building a Self-Sufficient, Collaborative Community of Scientists

9:30–11:00 AM
Inside-Out: Grades 3–8 Environmental Science in the Field and the Classroom

12:30–1:30 PM
Outdoor Science

A Head Start on Science

2:00–3:00 PM
Brain-powered Science: Teaching and Learning with Discrepant Events

Planning and Designing Safe, Sustainable, and Flexible Facilities for Inquiry/Project-based Science (Science Facilities 101)

3:30–5:00 PM
The Architects Have Started Without Me: What Do I Do Now? (Science Facilities 102)

Friday, March 11

8:00–9:00 AM
This Is Not a Tech-Talk: A Discussion on 21st-Century Science Education

Out in the Field. Showcasing Elementary Preservice Interns Teaching Inside Out

9:30–10:30 AM
SAFER Science: Laboratory Hazards You Must Deal With!

Developing Formative Assessment Probes Based on Learning Research

11:00 AM–12 Noon
SAFETY and LIABILITY: Is the Jury Out on Your Class?

Teaching for Conceptual Change

Picture-Perfect Science, K–4

12:30–1:30 PM
Using Science Notebooks in Elementary Classrooms

Explicitly Teaching Students How to Take Collective Action During a Whole-Class Inquiry

2:00–3:00 PM
Spotlighting Books Co-Published by NSTA and NSELA and How to Use Them to Build Stronger Science Programs, K–16

Uncovering Student Ideas in Physical Science: Electricity and Magnetism

Picture-Perfect Science, Grades 3–6

3:30–4:30 PM
Using Science Notebooks in Middle School

3:30–5:00 PM
A Framework and Tools to Make Tough Science Topics Approachable for Grades 3–5

5:00–6:00 PM
Using Notebooks with Earth Science Success!

Saturday, March 12

8:00–9:00 AM
Predict, Observe, Explain: Activities Enhancing Scientific Understanding

Stop Faking It! Finally Understand FORCE and MOTION So You Can Teach It

9:30–10:30 AM
Stop Faking It! Finally Understand CHEMISTRY BASICS So You Can Teach It

Girls in Science—A Framework for Action

11:00 AM–12 Noon
Using the National Science Facilities Standards to Plan and Design Your School Science Classroom/Laboratory

Stop Faking It! Finally Understand AIR, WATER, and WEATHER So You Can Teach It

12:30–1:30 PM
Putting the Science into Your PLC: Tools for Professional Learning

Designing Effective Science Instruction

2:00–3:00 PM
Get the FACTs: Formative Assessment Classroom Techniques

Developing Visual Literacy in Science, K–8

3:30–4:30 PM
Uncovering Student Ideas with Everyday Science Mysteries

Uncovering Student Ideas in Physical Science: Force and Motion

Short Courses

These intensive workshops explore topics from using science notebooks to building a Galileoscope™ to learning how to do citizen science bird counts. All short courses are filled on a first-come, first-served basis, so act now! Visit our website *(www.nsta.org/sanfranciscobrowser)* for complete descriptions and to purchase tickets. (Tickets Required.)

Communicating Science PD: Practicing What You Preach (SC-1)

Date: Thursday, March 10, 8:00–11:00 AM
Registration Fee: $16 advance; $21 on-site
Level: General

Learn how to lead professional development for science educators where we practice what we preach. We now know much about how people learn. Engage in hands-on activities and small-group discussions. Professional development modules are accessible for free online and cover many pedagogical topics.

Telescopes and Optics: Build a Galileoscope (SC-2)

Date: Thursday, March 10, 8:00–11:00 AM
Registration Fee: $38 advance; $43 on-site
Level: Elementary–High School
Strand: Embracing Technology in the 21st-Century Classroom

Explore hands-on optics activities and build an easy-to-assemble telescope. Learn about how Galileo's astronomical discoveries revolutionized science. Developed for the International Year of Astronomy 2009, this telescope enables users to see the celestial wonders that Galileo first glimpsed 400 years ago.

An Ocean Sciences Curriculum Sequence for Grades 3–5 (SC-3)

Date: Thursday, March 10, 8:00–11:00 AM
Registration Fee: $53 advance; $58 on-site
Level: Elementary

Immerse yourself in inquiry-based activities designed to bring ocean sciences to life. The Lawrence Hall of Science, University of California, Berkeley; Rutgers University; and NOAA have collaborated to develop an innovative new ocean sciences curriculum called the Ocean Sciences Sequence for Grades 3–5.

Photo courtesy of Chabot Space & Science Center

Teachers from Oakland Unified School District assemble Galileoscopes at a workshop in October 2009 (SC-2).

The Role of Discourse and Writing in Inquiry Science at the Upper Elementary Level (SC-4)

Date: Thursday, March 10, 8:00–11 AM
Registration Fee: $36 advance; $41 on-site
Level: Grades 3–6
Strand: Accessing Language Through Science and Mathematics Content

Attention will be paid to the development of student scientific reasoning and conceptual understanding. Explore connections between literacy and science in classrooms in which students plan investigations, document work in science notebooks, develop written reports, and discuss in small and large groups.

Science as Inquiry: Using Language Processes to Understand Physical Processes (SC-5)

Date: Thursday, March 10, 8:00–11:00 AM
Registration Fee: $36 advance; $41 on-site
Level: Elementary–Middle Level
Strand: Building Scientific Minds: Inspiring Teaching and Effective Learning

Explore ways to use oral discourse and writing strategies, protocols for analyzing student work, and next-step strategies to develop science thinking, reasoning, and understanding. Participants will engage in a hands-on physical science lesson.

Short Courses

Engaging Students in Model-based Reasoning (SC-6)

Date: Thursday, March 10, 1:00–5:00 PM
Registration Fee: $29 advance; $34 on-site
Level: Secondary Level

Come explore an innovative pedagogical approach that engages students in reasoning like scientists and takes advantage of what is known about how students learn. Participants will engage in a series of short activities that highlight different aspects of this powerful approach.

Inspire Middle and High School Girls Toward Careers in Science (SC-7)

Date: Thursday, March 10, 2:00–5:00 PM
Registration Fee: $18 advance; $23 on-site
Level: Middle Level–High School
Strand: Building Scientific Minds: Inspiring Teaching and Effective Learning

Learn about research-based multimedia resources. Speakers include Stefanie Chang, an electrical engineer and computer scientist who leads disaster relief efforts around the globe, and Judy Lee, a mechanical engineer who designs everything from children's toys to pet products. Take home a DVD with profiles of young, inspiring female scientists and engineers.

English Language Learner Strategies for Success in Secondary Science (SC-8)

Date: Friday, March 11, 8:00–11:00 AM
Registration Fee: $53 advance; $58 on-site
Level: Secondary Level

This session incorporates the work of the Texas Regional Collaboratives for Excellence in Science and Mathematics Education, an organization of more than 60 grant programs from across Texas. Experience the frustration of being an English language learner and then learn how to structure your lessons to help students develop their academic language skills.

Building a Classroom Planetarium (SC-9)

Date: Friday, March 11, 8:00–11:00 AM
Registration Fee: $30 advance; $35 on-site
Level: General

Learn how to build a geodesic dome in your classroom and turn it into a working planetarium—at minimal cost! Discover resources for using commercial small planetaria and creating your own projector. Take home a CD-ROM with instructions and the open-source planetarium program Stellarium.

The Young Scientist: Engaging Three- to Five-Year-Old Children in Science (SC-10)

Date: Friday, March 11, 8:00–11:00 AM
Registration Fee: $38 advance; $43 on-site
Level: Preschool–Early Elementary

Learn how to provide rich and challenging early childhood experiences that engage children in in-depth exploration of science concepts. View classroom videos and analyze student work that stress the potential of science experiences to support learning and lay a foundation for later science instruction.

Physics on the Subway (SC-11)

Date: Friday, March 11, 8:00 AM–12 Noon
Registration Fee: $35 advance; $40 on-site
Level: Middle Level–College
Strand: Building Scientific Minds: Inspiring Teaching and Effective Learning

Ride the San Francisco subway and conduct experiments you can use with your students on your local subway or bus. After a short time in the classroom constructing simple tools, we will walk to BART and spend an hour taking measurements and making calculations.

Exploring Birds and Citizen Science at the California Academy of Sciences (SC-12)

Date: Friday, March 11, 8:00 AM–12:30 PM
Registration Fee: $96 advance; $101 on-site
Level: Elementary–High School
Strand: Embracing Technology in the 21st-Century Classroom

Take part in an indoor and outdoor adventure that will arm you with tools to conduct citizen science counts and guide your students through all aspects of their investigations—from carefully observing birds to asking questions to collecting data. Take home a BirdSleuth: Most Wanted Birds curriculum kit.

NOAA Ship Okeanos Explorer: *Why Do We Explore?…and How Do We Explore? (SC-13)*

Date: Friday, March 11, 8:00 AM–3:00 PM
Registration Fee: $18 advance; $23 on-site
Level: Grades 5–12
Strand: Exploring Earth, Wind, and Fire

This short course focuses around NOAA's new ship, the *Okeanos Explorer*, and the themes: Why Do We Explore? How Do We Explore? What Do We Expect to Find? Delve into the benefits of ocean exploration targeting climate change, energy, human health, and ocean health.

Short Courses

Science Notebooking and Academic Language Development for Upper Elementary Students (SC-14)

Date: Friday, March 11, 1:00–4:00 PM
Registration Fee: $28 advance; $33 on-site
Level: Grades 3–5
Strand: Accessing Language Through Science and Mathematics Content

We will use science notebooks as an instructional strategy to support students in making sense of their hands-on experiences. Explore science concepts while making academic language explicit and accessible to English language learners.

Bringing Nanotechnology into the Classroom (SC-15)

Date: Saturday, March 12, 8:00–11:00 AM
Registration Fee: $45 advance; $50 on-site
Level: Middle Level–High School
Strand: Embracing Technology in the 21st-Century Classroom

Nanotechnology is accessible in the classroom! Make a nanofilm and explore the effects of decreasing the size of materials to 1/100,000th of the width of a hair. At this scale, macroscopic and quantum concepts overlap.

Accessing Science Through Language, Reading, and Writing (SC-16)

Date: Saturday, March 12, 8:00–11:00 AM
Registration Fee: $42 advance; $47 on-site
Level: Grades 6–12
Strand: Accessing Language Through Science and Mathematics Content

The opportunity for students to talk about their ideas and understanding of science must be present for students to build the academic vocabulary and discourse patterns of science. Experience a science literacy framework that increases engagement, understanding, achievement, and academic literacy.

Young Investigators in Environmental Health Science: Challenging and Exciting Your Students with Novel, Inquiry-based Environmental Activities (SC-17)

Date: Saturday, March 12, 8:00 AM–12 Noon
Registration Fee: $28 advance; $33 on-site
Level: Elementary
Strand: Building Scientific Minds: Inspiring Teaching and Effective Learning

Discover new and exciting ways to use environmental health and science as an integral concept in elementary school classrooms. This short course will include hands-on, inquiry-based activities. During the course, teachers will set up a mock crime scene to solve an environmental mystery.

2011: NASA's Year of the Solar System (SC-18)

Date: Saturday, March 12, 8:00 AM–3:00 PM
Registration Fee: $18 advance; $23 on-site
Level: Elementary–High School
Strand: Exploring Earth, Wind, and Fire

Follow NASA missions to reveal new worlds and discoveries during NASA's Year of the Solar System, which began in October 2010 and continues for one Martian year (687 Earth days) ending in late summer 2012.

Science Notebooks: Developing a Deeper Understanding (SC-19)

Date: Saturday, March 12, 8:00 AM–3:00 PM
Registration Fee: $22 advance; $27 on-site
Level: Elementary–High School

Encourage students' scientific discourse through the use of science notebooks. Based on modeling formats developed by the Anchorage School District in Alaska and El Centro School District in California, the course covers structuring science lessons, examining student work, summarizing conceptual understanding, and using self-assessment.

Outdoor Biology Instructional Strategies—Revitalizing OBIS (SC-20)

Date: Saturday, March 12, 12:30–3:30 PM
Registration Fee: $21 advance; $26 on-site
Level: Grades 3–8

Learn how to strengthen your students' connection to the natural world by using Outdoor Biology Instructional Standards (OBIS). OBIS is an outdoor program with a set of strategies and tools to help teachers engage young people in thinking about ecological principles in their local area.

Create Your Own Interactive Whiteboard (SC-21)

Date: Saturday, March 12, 1:00–4:00 PM
Registration Fee: $83 advance; $88 on-site
Level: Grades K–12
Strand: Embracing Technology in the 21st-Century Classroom

Assemble and use inexpensive, interactive technology with functionality nearly identical to a SMART Board. Receive a Wiimote and free software for your classroom. Make an infrared pen, using $15 worth of materials. For educators without access to a projector, we'll demonstrate how to build your own.

Networking Events

In addition to these ticketed events, many NSTA affiliated groups sponsor meetings and social events that do not require a ticket. For complete details, visit *www.nsta.org/sanfranciscobrowser.*

Preservice and New Teachers Breakfast

Sponsored by Kendall Hunt Publishing Company

Thursday, March 10
9:00–10:30 AM
Ticket M-1
$10 advance; $12 on-site

As someone new to the profession, join us as experienced discussion leaders tell you how to get the most out of your conference experience.

Note: Tickets will be provided only to preservice teachers or teachers with up to five years of teaching experience.

Global Conversations for Science Education Conference

Cultural Influences on Science Education

Thursday, March 10
8:30 AM–2:00 PM
Ticket M-2
No cost; by preregistration only

NSTA has planned this special day dedicated to science education from an international perspective. The day commences with a plenary talk by Dr. Glen Aikenhead, Professor Emeritus, Aboriginal Education Research Centre, University of Saskatchewan, Canada. This plenary session will be followed by concurrent sessions and a poster session, followed by a luncheon plenary speaker, Ian Milne, Senior Lecturer Primary Science (retired), University of Auckland, New Zealand, and a panel discussion. The day will conclude with short presentations from participants on current trends, issues, and best practices from around the world. For more information, please visit *www.nsta.org/portals/international.aspx.*

A Broad Spectrum for Science Learning Breakfast

Are Trees Alive? Roles for Experts and Novices in Informal Science Education

Friday, March 11
7:00–8:00 AM
Ticket M-3
$10 advance; $15 on-site

Gretchen Walker, Director of Community and Visitor Programs, Lawrence Hall of Science, University of California, Berkeley

NSTA Dorothy K. Culbert CAG Breakfast

Friday, March 11
7:00–8:30 AM
Ticket M-4
$45 advance; $50 on-site

This event is a great way for NSTA Chapter and Associated Group leaders to kickoff their conference experience.

High School Breakfast

The Forgotten Champion in Urban Schools: The Science Research Student!

Friday, March 11
7:00–8:30 AM
Ticket M-5
$45 advance; $50 on-site

Tamica A. Stubbs, Biology and Research Instructor, E.E. Waddell High School, Charlotte, N.C.

Networking Events

NSELA/ASTE Luncheon

Reforming a Science Curriculum PK–12: A Case Study from The Blake School

Friday, March 11
12 Noon–2:00 PM
Ticket M-6
$60 advance; $65 on-site

Randal Harrington, PK–12 Science Dept. Chair and Curriculum Coordinator, Blake School, and Visiting Assistant Professor, University of Minnesota, Hopkins

NSTA/NMLSTA Middle Level Luncheon

Alternative Teaching Strategies to Engage Middle School Students

Friday, March 11
12 Noon–2:00 PM
Ticket M-7
$60 advance; $65 on-site

Tory Brady and **Sandra Robins,** Science Educators, Exploratorium Teacher Institute, San Francisco, Calif.

AESP	Aerospace Education Services Project
ASTE	Association for Science Teacher Education
CAG	Chapters and Associated Groups
CESI	Council for Elementary Science International
NMLSTA	National Middle Level Science Teachers Association
NSELA	National Science Education Leadership Association
SCST	Society for College Science Teachers

NSTA Teacher Awards Gala

Friday, March 11
6:00–8:30 PM
Ticket M-8
$60 advance; $65 on-site

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 at the NSTA Teacher Awards Gala. Evening attire is requested to honor our teacher award recipients. A limited number of tickets are available for this social event.

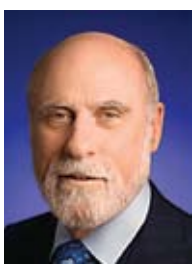
NSTA/SCST College Luncheon

Chemistry, Life, the Universe, and Everything

Saturday, March 12
12 Noon–1:30 PM
Ticket M-9
$60 advance; $65 on-site

Melanie M. Cooper, Alumni Distinguished Professor of Chemistry, Clemson University, Clemson, S.C.

Aerospace Educators Luncheon: NASA AESP 50th Anniversary



Transforming Learning Through Online Resource Collaboration

Saturday, March 12
12 Noon–2:00 PM
Ticket M-10
$25 advance; $30 on-site

Vinton G. Cerf, Vice President and Chief Internet Evangelist, Google, Reston, Va.

Networking Events

CESI/NSTA Elementary Science Luncheon

From the Private Eye to a Magnified Mind

Saturday, March 12
12 Noon–2:00 PM
Ticket M-11
$60 advance; $65 on-site

Kerry Ruef, Director and Founder, The Private Eye® Project, Lyle, Wash.

President's Annual Banquet

Investing in America's Future: An Astronaut's Perspective

Saturday, March 12
7:00–9:30 PM
Ticket M-12
$80 advance; $85 on-site

Bernard A. Harris, Jr., President, The Harris Foundation, Houston, Tex.

Life Members' Buffet Breakfast

Celebrate Your Lifetime Dedication

Sunday, March 13
7:00–9:00 AM
Ticket M-13
$50 advance; $55 on-site

Join your fellow NSTA Life Members for a breakfast filled with memories as well as meaning. Catch up with old friends, make new ones, trade war stories, and discuss ways to share your talents and vitality with the science education community. Activities and door prizes, too!

Is This Your First NSTA Conference?

All "first-timers" are invited to attend one of two sessions that are specifically designed to help you decide on a personal agenda that will meet your individual needs and make this NSTA conference the very best professional development science experience you can have. Learn how to get the most from an NSTA conference while having fun and meeting new colleagues! Refreshments courtesy of Carolina Biological Supply Company.

Thursday, March 10, 8:00–9:00 AM
Thursday, March 10, 3:30–4:30 PM

Concurrent Sessions

Teacher Sessions

More than 1,300 presentations and workshops have been scheduled. Sessions are classified by subject matter—Biology/Life Science, Chemistry/Physical Science, Earth/Space Science, Environmental Science, Integrated/General, or Physics/Physical Science. Sessions are further identified by audience level (Preschool, Elementary, Middle Level, High School, College, Supervision/Administration, Informal Education, or some combination of levels). Generally one hour in length, all are open to registrants at no additional cost. Popular sessions fill quickly, however, and it is recommended that you arrive early to ensure a seat. Visit us online at *www.nsta.org/sanfranciscobrowser* for details (search for session type presentation or workshop).

Exhibitor Workshops

Jump in and take part—exhibitors sponsor workshops for you to try out the newest equipment and teaching materials in breakout rooms where you can actually use the products. You'll take home lesson plans to bring fresh ideas into your classroom, and you'll learn how new curricula will enhance your instruction and send your students' test scores soaring! Workshops are conducted on a continuous basis throughout the conference, so make sure to take time to attend. Visit us online at *www.nsta.org/sanfranciscobrowser* for details (search for session type exhibitor workshop).

Field Trips

Discover what San Francisco has to offer on one of our ticketed field trips. Visit our website *(www.nsta.org/sanfranciscobrowser)* for complete descriptions and to purchase tickets.

The following venues have extended special offers for San Francisco conference attendees. Visit *www.nsta.org/sanfrancisco* for details.

- California Academy of Sciences
- Exploratorium
- USS *Pampanito*

Science Classroom Visits: San Francisco Area (W-1)

Date: Wednesday, March 9, 7:00 AM–4:00 PM
Registration Fee: $75; by preregistration only

Join us as we visit several schools in the San Francisco area—Lowell High School, Abraham Lincoln High School, Alice Fong Yu School, and The Hamlin School. Lunch included in the ticket price.

An In-depth Tour of Bio-Rad Laboratories (T-1)

Date: Thursday, March 10, 8:00 AM–2:15 PM
Registration Fee: $59 advance; $64 on-site
Strand: Embracing Technology in the 21st-Century Classroom

Bio-Rad ranks among the top five life science companies in the world and maintains a solid reputation for quality and innovation. Attendees will participate in the Genes in a Bottle activity and discover how to fit a person in a bottle! Lunch included in the ticket price.

Space Science: A Visit to NASA Ames (T-2)

Date: Thursday, March 10, 8:00 AM–4:30 PM
Registration Fee: $55 advance; $60 on-site
Strand: Accessing Language Through Science and Mathematics Content

Start off your day with a VIP Tour of NASA Ames Research Center. Next, we'll tour NASA's Exploration Center, a science museum and education center. Finally, we'll experience NASA Ames Exploration Encounter (AEE), a unique educational program designed to inspire positive attitudes about science, technology, engineering, and math (STEM) for grades 4–6 students. Box lunch included.

The USS Pampanito*—Where History Meets Science (T-3, T-7, and T-9)*

Date: Thursday, March 10, 8:35–11:15 AM (T-3)
Thursday, March 10, 11:35 AM–2:15 PM (T-7)
Thursday, March 10, 2:35–5:15 PM (T-9)
Registration Fee: $31 advance; $36 on-site
Strand: Building Scientific Minds: Inspiring Teaching and Effective Learning

Join the crew of the USS *Pampanito* and explore and experiment with the basic scientific principles that submarines use, as well as how builders use science to address virtually every design challenge faced with building a submarine. Participate in five hands-on science stations and receive individual notebooks for recording notes and ideas.

San Francisco Green Schoolyard Alliance (T-4)

Date: Thursday, March 10, 8:45 AM–3:20 PM
Registration Fee: $45 advance; $50 on-site
Strand: Exploring Earth, Wind, and Fire

Join San Francisco Green Schoolyard Alliance (SFGSA) and the Lawrence Hall of Science for a collaborative workshop/field trip that will allow you to investigate SFGSA's green school yards, see how the school yards have been transformed into inspirational gardens where children connect with nature daily, and learn from the lessons gleaned during this ambitious project. Box lunch included.

Written in Stone: Lessons from the Field for the Earth Science Classroom (T-5)

Date: Thursday, March 10, 9:00 AM–3:00 PM
Registration Fee: $44 advance; $49 on-site
Strand: Exploring Earth, Wind, and Fire

Be a "Geo-detective" in this hands-on field workshop in the Marin Headlands, which provides a natural laboratory showing how simple observations can be made to determine the tectonic evolution of California. Take back lessons from the field to use in your Earth science classroom. Box lunch included.

Environmental Epicenter Tour (T-6)

Date: Thursday, March 10, 9:00 AM–5:00 PM
Registration Fee: $98 advance; $103 on-site

There's no better place to get an exciting firsthand look at pioneering innovators in sustainability than San Francisco, the nation's environmental epicenter. On this engaging and entertaining adventure through the hub of one of the nation's greenest metropolitan areas, we'll meet inspired local leaders of sustainability who are driving the global green agenda. Lunch on own at a local restuarant.

Field Trips

Explore the Exploratorium (T-8 and S-3)

Date: Thursday, March 10, 1:45–5:15 PM (T-8)
Saturday, March 12, 9:45 AM–2:15 PM (S-3)
Registration Fee: $35 advance; $40 on-site
Strand: Building Scientific Minds: Inspiring Teaching and Effective Learning

Come explore the Exploratorium, a San Francisco museum of science, art, and human perception. The Exploratorium creates tools and experiences that help people become active explorers—visit hundreds of explore-for-yourself exhibits and learn about professional development programs for educators. This field trip is sponsored by Exploratorium's Teacher Institute. Lunch on own during S-3.

How Geologic Events Shape Our Lives (F-1)

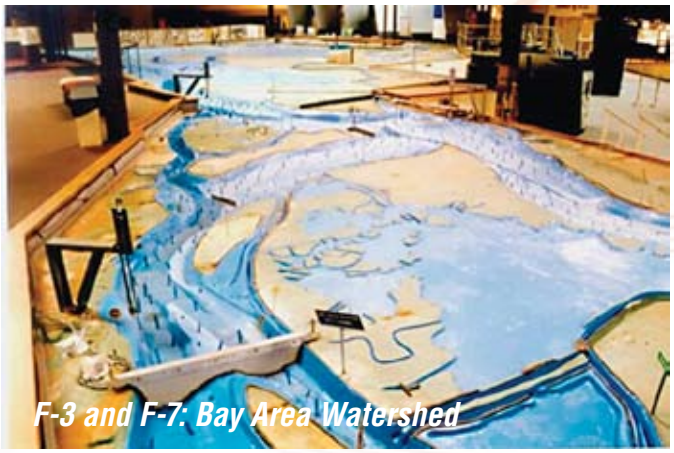
Date: Friday, March 11, 8:00 AM–5:00 PM
Registration Fee: $55 advance; $60 on-site
Strand: Exploring Earth, Wind, and Fire

This three-part field trip begins with the U. S. Geological Survey, which provides scientific information to help educate the public about natural resources, natural hazards, geospatial data, and issues that affect our quality of life. We'll then travel to Tule Ponds at Tyson Lagoon to walk the Hayward Fault, one of approximately 10 faults in the world that constantly "creeps," and see how it shapes the landscape. Our final stop will be Math Science Nucleus and the Wes Gordon Fossil Hall where we'll uncover the past. Ice Age fossils were discovered in Fremont in the 1940s by "The Boy Paleontologists." Two of the original group will share their experience at the Children's Natural History Museum where participants will go back through time by touching and viewing the fossils. Box lunch included.

The Center for Probing the Nanoscale, Stanford Linear Accelerator Center (SLAC), and the Stanford University Campus (F-2)

Date: Friday, March 11, 8:00 AM–5:00 PM
Registration Fee: $41 advance; $46 on-site
Strand: Embracing Technology in the 21st-Century Classroom

Join Stanford researchers in exploring the exciting field of nanotechnology. We'll explore how properties of matter change at the nanoscale as we fabricate and study nanoscale objects and devices. Next, we'll take a fascinating tour of the Stanford Linear Accelerator Center to find out what accelerators are and how they are used. Finally, we'll take a walking tour of Stanford's beautiful campus followed by a breathtaking view of the surrounding area from atop the 285-foot Hoover Tower Observation Platform (optional). Lunch on own at Tressider Student Union.



F-3 and F-7: Bay Area Watershed

Dynamic Nature: The Ebb and Flow of the Bay Area Watershed and Creating Opportunity for Local Community Involvement (F-3 and F-7)

Date: Friday, March 11, 8:30–11:30 AM (F-3)
Friday, March 11, 12:30–4:30 PM (F-7)
Registration Fee: $45 advance; $50 on-site
Strand: Building Scientific Minds: Inspiring Teaching and Effective Learning

Have you ever walked from the Golden Gate Bridge to Stockton? You don't have to in order to gain an understanding of the San Francisco Bay and Delta system! Join a Park Ranger for a tour of the Bay Model, a 1 1/2-acre operating, 3-D, hydraulic model of the San Francisco, San Pablo, and Suisun bays and a portion of the Sacramento-San Joaquin Delta. We'll also visit the Bay Model Visitor Center, which offers a unique opportunity to view the complete bay-delta system at a glance and learn about its geography, topography, and ecology. Finally, we'll visit the Bay Area Discovery Museum, a one-of-a-kind indoor/outdoor children's museum located at the foot of the Golden Gate Bridge.

Lawrence Hall of Science (F-4)

Date: Friday, March 11, 9:00 AM–2:45 PM
Registration Fee: $53 advance; $58 on-site
Strand: Accessing Language Through Science and Mathematics Content

Visit the Lawrence Hall of Science, UC Berkeley's Public Science Center and a leader in innovative science curriculum and teacher training. Start your morning watching students present ocean science activities that they created for school groups (and you). Take a tour of our exhibit floor and see how Lawrence Hall of Science incorporates inquiry-based science learning in all our programs…and get the best view of the bay! Lunch on own at the Bay Café.

Field Trips

Hands On at Its Finest: The Tech Museum and Resource Area for Teachers (RAFT) (F-5)

Date: Friday, March 11, 9:00 AM–4:05 PM
Registration Fee: $42 advance; $47 on-site
Strand: Accessing Language Through Science and Mathematics Content

Experience a truly memorable day at The Tech Museum, which is singularly focused on inspiring the innovator in everyone. You'll be "wow'd" by The Tech's hands-on/interactive exhibits, divided among themed galleries. Spend your afternoon shopping for ideas and materials at the Resource Area for Teachers (RAFT), a thriving nonprofit organization that helps educators transform the learning experience through hands-on education. Lunch on own at the Tech Café.

Berkeley's Bounty: The Edible Schoolyard and the Center for Ecoliteracy in the David Brower Center (F-6)

Date: Friday, March 11, 9:15 AM–4:15 PM
Registration Fee: $51 advance; $56 on-site
Strand: Exploring Earth, Wind, and Fire

We'll first vist the Center for Ecoliteracy, which has developed a framework for sustainability education called Smart by Nature™. Allied with The Edible Schoolyard on many projects, the Center for Ecoliteracy is located in the David Brower Center, a LEED Platinum–certified green building, boasting many innovative design elements. After lunch, we'll experience The Edible Schoolyard, a Chez Panisse Foundation program whose mission is to create and sustain an organic garden and landscape wholly integrated into the school's curriculum, culture, and food program. Lunch on own in downtown Berkeley.

Educator's Evening Under the Stars at Chabot Space & Science Center (F-8)

Date: Friday, March 11, 4:15–9:45 PM
Registration Fee: $61 advance; $66 on-site
Strand: Accessing Language Through Science and Mathematics Content

Join us at Chabot Space & Science Center for a one-of-a-kind "evening of exploration" as we investigate the new Bill Nye Climate Lab. This solutions-based exhibit allows you to continue your search for solutions via our website *(www.chabotspace.org/teachers.htm)* long after your visit. We'll also explore the night sky while gazing through one of three observatory telescopes. (An optional astronomy activity will be prepared in case of weather limitations.) Box dinner included.

Scientist for a Day on the Robert G. Brownlee *(S-1 and S-5)*

Date: Saturday, March 12, 8:30 AM–12:30 PM (S-1)
Saturday, March 12, 12:30–4:30 PM (S-3)
Registration Fee: $68 advance; $73 on-site
Strand: Building Scientific Minds: Inspiring Teaching and Effective Learning

Join the Marine Science Institute (MSI) crew for an expedition of the San Francisco Estuary aboard the 90-foot research vessel, the *Robert G. Brownlee.* Spend a half day as a scientist, discovering the estuary's ecosystem and discussing our own roles within it. Collect and examine plankton, run hydrology tests, help volunteers measure fish for MSI's monitoring program, and identify the fish with a dichotomous key before releasing them. Dress in layers and according to the weather…and remember a hat and sunscreen. Be prepared to get a little dirty—NO OPEN-TOED SHOES ALLOWED!

Hands-On Outdoor Experience Makes Science Come Alive (S-2)

Date: Saturday, March 12, 9:15 AM–4:45 PM
Registration Fee: $66 advance; $71 on-site
Strand: Exploring Earth, Wind, and Fire

Join us at the Presidio of San Francisco, an inspiring urban outdoor classroom. During this once-in-a-lifetime event, we'll participate in the natural history of San Francisco with a hands-on environmental service learning project, get up close and personal with the fascinating geologic formations of the Bay Area, slip into a pair of waders and slosh into the Crissy Field tidal marsh to learn what makes this bayfront ecosystem exceptional, and experience a unique watershed at the intersection of the urban and natural environment. Box lunch included.

Note: This field trip will include approximately two miles of hiking. Please dress in layers, wear sturdy walking shoes, and bring sunscreen. Because of the hands-on nature of this trip, your clothes and shoes may get dirty.

Dine and Discover at Bay Area Science Centers (S-4)

Date: Saturday, March 12, 11:15 AM–6:00 PM
Registration Fee: $48 advance; $53 on-site

Enjoy a delicious lunch and decadent dessert while you visit two science centers on the San Francisco Peninsula—Coyote Point Museum for Environmental Education and Hiller Aviation Museum. During this professional development and social opportunity, participants can choose to develop their own content knowledge by exploring the museums' physical and natural science exhibits.

NSTA Exhibit Hall

www.nsta.org/sanfranciscoresources

The NSTA Exhibit Hall, with more than 400 of the leading science education companies and organizations in the world, has the newest products to show and share with educators. Check out the latest textbooks, microscopes, manipulatives, kits, and more as you explore the hall. Bring a friend and an extra tote to help carry all the giveaways you can take back to your classroom!

Exhibit Location

Exhibit Halls A–C, Moscone Center

Exhibit Hours

Thurs., March 10	10:00 AM–6:00 PM
Fri., March 11	9:00 AM–5:00 PM
Sat., March 12	9:00 AM–5:00 PM
Sun., March 13	No exhibits

Virtual Exhibitor Show

Plan your trip online with our interactive floorplan tool. Visit our website at *www.nsta.org/sanfranciscoresources* and select "Virtual Show."

—Photo courtesy of Anthony Sinagoga Photography.

3D Molecular Designs and MSOE
A.D.A.M., Inc.
Academy of Model Aeronautics
Adam Equipment
Adaptive Curriculum
Advanced Technological Education Television (ATETV)
Aerospace Industries Association: Team America Rocketry Challenge
AIMS Education Foundation
Aldon Corp.
Alien Earths: NASA's Kepler Mission Seeks Evidence of Other Worlds
American 3B Scientific
American Chemical Society
American Meteorological Society
American Museum of Natural History
American Physical Society
American Society of Plant Biologists
American Veterinary Medical Association
Animalearn
Aquatic Eco-Systems, Inc.
ARTEC Co., Ltd.
Bedford, Freeman & Worth Publishers and W.H. Freeman & Co.
Benchmark Education Co.
BigC: Dino-Lite Scopes
Bio-Rad Laboratories
BIOZONE International Ltd.
BrainPOP
Brightspark
California Academy of Sciences
Carolina Biological Supply Co.
Catalyst Learning Curricula: AP* Science Daily Lesson Plans
Civil Air Patrol
Classroom Components
Corwin Press
COSEE
CPO/School Speciality Science
Dancing Helix/Dopamine Jewelry
Davis Instruments
Dawn Publications
Delight's Earthly Delights
Delta Education/School Specialty Science
Digitalis Education Solutions, Inc.
Digital Frog International
Dinah-Might Adventures
Discovery Dome
Discovery Education
Discovery Student Adventures
Disneyland® Resort Youth Programs
Diversified Woodcrafts, Inc.
Duncan Toys Co.
EcoTeach
Edufy, LLC
EF Education
EPA National Service Center for Environmental Publications
ESRI
ETA/Cuisenaire
Evogeneao
Exploratorium
ExploreLearning
FDA Professional Development Program in Food Science
FDA: The Center for Veterinary Medicine
Fisher
Foundation for Family Science
Frey/School Specialty Science
Gale®, Cengage Learning
Gardening with Kids
GASTEC Corp.
GEICO
GetBioTechSmart.com
The GLOBE Program
Google
Grand Classroom
Hampden Engineering Corp.
Hands & Minds
HANNA Instruments®, Inc.
Hayden-McNeil
Heinemann
Houghton Mifflin Harcourt

This is a partial list of exhibitors.

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NSTA Exhibit Hall

Innergy Power Corp./
The Fuel Cell Store
International Schools Services
It's About Time
The JASON Project
JHU: Center for Talented Youth
Ken-A-Vision, Inc.
Kendall Hunt Publishing Co.
Key Curriculum Press
KidWind Project
Kinetic® Books
Kingfisher
LAB-AIDS, Inc.
Labo America, Inc.
Lakeshore Learning Materials
LaMotte Co.
Learning Resources
LEGO Education
LJ Create
Lone Star Learning
Macmillan
The Markerboard People
Marshall Cavendish International
McGraw-Hill School Education
Group
Millmark Education Corp.
mimio
Mississippi State University
Molymod™ Models, Spiring
Enterprises, Ltd.
MTPE, Inc. dba e-Planetarium®
NADA Scientific, Ltd.
NanoProfessor
NASA High Energy Astronomy
Missions
NASA's SOFIA
Nasco
The National Academies
National Assessment of Educational
Progress (NAEP)
National Association for Research in
Science Teaching
National Earth Science Teachers
Association (aka Windows to
the Universe)
National Geographic School
Publishing
National Institute of Neurological
Disorders and Stroke
National Library of Medicine
National Science Digital Library
The National Space Biomedical
Research Institute
National Youth Leadership Forum

The New York Times
NIEHS/Environmental Health
Perspectives
NOAA
The Nuclear Energy Institute/NA-YGN
Ohaus Corp.
PASCO Scientific
PBS Educational Media
Pearson Education
Penn State University World Campus
PhET Interactive Simulations
Pitsco Education
Planting Science: Botanical Society
of America
Population Connection
Promoting Students with
Disabilities in Science
Qwizdom, Inc.
Rosen Classroom
SAE International
Safari Club International Foundation
Sables
Sally Ride Science
Sangari Active Science
Sargent-Welch
Sartorius Mechatronics Corp.
SaveNature.org
Scholastic, Inc.
Science/AAAS
Science Cut Ups by Supporting
Science, Inc.
Science Kit & Boreal Laboratories
Science, Naturally!
ScienceWiz
SETI Institute
Sheldon Laboratory Systems
Shell Education
Siemens "We Can Change the World"
Challenge
Simulation Curriculum Corp.
SMART Technologies
STR—School Technology Resources
Stratasys Dimension 3D Printers
Study Island
Swift Optical Instruments, Inc.
Teacher Created Materials Publishing
Terminix
Texas Instruments
TOPS Learning Systems
Toshiba America, Inc.
TPS Publishing Inc. with AB
Curriculum
Triangle Coalition for Science
and Technology Education
UCAR: Digital Learning Sciences
UCAR: Education and Outreach
USDA: Forest Service
U.S. EPA SunWise Program
USA Today
Vandalia Research
Vernier Software & Technology
VWR Education
WARD'S Natural Science
Water Environment Federation
Wavefunction, Inc.
WeatherBug Schools
WeatherHawk
WebAssign
Wikki Stix Co.
Wiley & Cliffnotes, an imprint of
Wiley
WorldStrides
Yuyao Shenma Teaching
Instrument Whole Set Co.
Zhejiang Huamao International Co.

NSTA Avenue

Stop by and visit the NSTA Avenue to learn about member benefits, products and services, programs, and partners, all created for you! For more details, go to *www.nsta.org*. Here, you'll be able to…

Share with Others

NSTA Membership. Access high-quality educational materials and professional development opportunities. Pick up a sample journal, your district ribbon, a lapel pin, and join NSTA Communities, a social networking site just for science educators.

NSTA Student Chapters. If you're a student, ask about our student chapters.

Enhance Your Skills

NSTA Learning Center. Select high-quality online learning opportunities to build content knowledge. Use our suite of tools for self-assessment and documenting your PD progress.

NSTA Science Teacher Academy. This initiative helps promote quality science teaching, enhance teacher confidence and classroom excellence, and improve teacher content knowledge. Using mentoring and other professional development resources, science teachers are supported during those initial teaching years and encouraged to stay in the profession.

Web Seminars. Update your content knowledge with these free, 90-minute, live online presentations. Voice questions and share in rich conversations with the presenters and other educators.

SciGuides. Explore online resources and lessons organized by grade level and specific content themes. All are pre-evaluated and aligned with the National Science Education Standards.

Add Your Voice

Science Matters. Learn about this major public awareness and engagement campaign designed to rekindle a national sense of urgency and action among schools and families about the importance of science education and science literacy.

The John Glenn Center for Science Education Campaign. NSTA's five-year, $43 million national campaign to make excellence in science teaching and learning a reality for all will fund a series of forward-thinking programs and a state-of-the-art facility designed to promote leadership, learning, and advocacy in science education.

Enrich Your Mind

SciLinks®. Link to science resources on the internet. Expert science educators recommend sites with accurate information and effective pedagogy—the best content available online.

Distinguish Yourself

NSTA Awards. NSTA offers 19 awards programs for preK–16 teachers to compete for money prizes.

Toyota TAPESTRY Grants Each year Toyota TAPESTRY Grants for Science Teachers award $550,000 in grants to K–12 science teachers who have developed innovative community-based projects. Learn how to participate in this competition.

NSTA Avenue

Toshiba/NSTA ExploraVision® Awards. This K–12 competition challenges students to envision a future technology. Up to $240,000 in savings bonds is awarded annually. This competition challenges student teams to create and explore a vision of future technology by combining their imaginations with the tools of science.

The DuPont Challenge©. As one of the foremost student science and technology awards programs in North America, the challenge asks competing students to write a 700- to 1,000-word essay discussing a scientific discovery, theory, event, or technological application that has captured their interest. The Science Essay Competition for students (grades 7–12) promotes scientific literacy and includes cash prizes and an expenses-paid trip to the Walt Disney World® Resort and the Kennedy Space Center for winners.

Siemens We Can Change the World Challenge. This challenge—sponsored by Siemens, Discovery Education, the College Board, and NSTA—offers a unique opportunity to engage K–12 students in a sustainability competition. Students must develop actionable local solutions for a "greener" world to win more than $100,000 in exciting prizes.

Disney Planet Challenge. This project-based, environmental competition for grades 4–6 classrooms asks competitors to make a difference in their homes, schools, or communities. Prizes include a three-day trip to Disneyland® Resort and other prizes and grants.

Pete Conrad Spirit of Innovation. Teams of high school students must solve real-world problems by creating products using science, technology, and entrepreneurship to participate in this competition. This year, students are required to create ideas in the areas of green schools, aerospace exploration, renewable energy, and space nutrition.

2010 Toshiba/NSTA ExploraVision Showcase

2009 Siemens We Can Change the World Winners

2010 Disney Planet Challenge Winners

NSTA Avenue Sessions

Don't miss these NSTA Avenue sessions. Visit us online at *www.nsta.org/sanfranciscobrowser* for details (search for NSTA Avenue Session).

Thursday, March 10

2:00–3:00 PM

An Update on the Elementary and Secondary Act (No Child Left Behind)

Friday, March 11

9:30–10:30 AM

NSTA Teacher and Principal Awards and Recognitions

11:00 AM–12 Noon

Online Professional Development: Research on Teacher Perceptions, Learning Preferences, and Learning Outcomes for Self-directed NSTA Web Courses

12:30–1:30 PM

The Shell Science Teaching Award—Learn More, Be Successful

2:00–3:00 PM

Using the Online Quiz Manager Tool

3:30–4:30 PM

The NSTA Learning Center: Free Professional Development Resources and Opportunities for Educators

NSTA Science Bookstore

Attendees are invited to browse the newly redesigned NSTA Science Bookstore, where you're sure to find hundreds of professional development titles for science educators of all grade bands and disciplines. Not only do we offer a wide range of books to sharpen your content knowledge and expand your teaching strategies; we also offer dozens of wonderful NSTA Gear items as reminders of your conference experience or as gifts for your family, colleagues, and students.

—Photo courtesy of Anthony Sinagoga Photography

- Examine our new spring titles: Thomas O'Brien's *More Brain-Powered Science* and *Uncovering Student Ideas in Life Science, Volume 1* by Page Keeley
- Show your love of science and pride in teaching with shirts, hats, and more from our "Science Matters" and "I Love Science" NSTA Gear product lines.
- Meet NSTA Press® authors and have your books signed.
- REMEMBER—All attendees enjoy discounts of 20% on NSTA Press items and 10% on books from other publishers.
- Don't want to carry all your purchases around? The NSTA Science Bookstore offers free shipping when you place your order online for both books and gear.

Online Session Evaluations/Transcripts

All attendees can now evaluate sessions while simultaneously tracking their professional development certification (based on clock hours).

After the conference, an attendee can visit *www.nsta.org/transcripts* to access a transcript of his or her attendance at specific sessions and to document credit for activities that are not being evaluated (e.g., field trips, short courses, NSTA Symposia, Exhibit Hall visits, featured speakers, and meetings). Each attendee is responsible for tracking his or her own attendance at such events. The transcript can be printed at the conference and presented to an administrator who requires documentation of participation in the conference. All information in these transcripts will be maintained (and can be accessed) indefinitely as part of an attendee's individual profile.

Help NSTA's GREEN efforts by completing session evaluations online. Online session evaluations can be completed on the computers at the Presenters/Presiders booth in the Registration Area or on the e-mail stations in both the Exhibit Hall and the Registration Area at the conference.

Registration and Travel Arrangements

Registration Information

How to Register

Online

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

Fax

Fax your registration form (available at *www.nsta.org/sanfrancisco* as a PDF) with credit card or purchase order information to 703-243-3924.

Mail

Mail your registration form (available at *www.nsta.org/sanfrancisco* as a PDF) and payment to:

National Science Teachers Association
Conference Department
PO Box 90214
Washington, DC 20090-0214

Membership Information

NSTA members enjoy significantly lower registration rates than nonmembers. Become a member at *www.nsta.org/membership* or by completing the membership application online (part of the registration form packet at *www.nsta.org/sanfrancisco).*

Joint NSTA/SDSEA (San Diego Science Educators Association) memberships are available on the membership application online (part of the registration form packet at *www.nsta.org/sanfrancisco).*

Discounted Airfares

NSTA has made arrangements with several major airlines to offer discounted fares to NSTA conference attendees. For complete details, visit *www.nsta.org/sanfranciscotravel.* Taxi fare to downtown from San Francisco International Airport *(www.flysfo.com)* is approximately $37.

Save on your registration fees by taking advantage of special earlybird and advance rates! Also—save $90 on your registration fees when you become an NSTA member!

Category	Earlybird (Jan. 14)	Advance (Feb. 4)	Full Rate (after Feb. 4)
Current NSTA member or applicant	$205	$230	$250
CSTA or SDSEA member	$205	$230	$250
Nonmember	$295	$320	$340
Retired NSTA Member	$110	$125	$150
International (except Canada)	$110	$125	$150
Full-time Student	$80	$95	$120
Nonteaching Spouse/Guest	$75	$95	$115
One Day Only Nonstudent	$155	$175	$195
One Day Only Full-time Student	$50	$55	$70
Last Day–Sunday Nonstudent*	$95	$100	$110
Last Day–Sunday Full-time Student*	$45	$50	$60

** No exhibit hall hours on Sunday (last day of conference)*
For a description of the categories listed above, please visit www.nsta.org/sanfrancisco.

Housing Information

Housing Deadline: Feb. 4, 2011

Make your hotel reservations now and save! NSTA has negotiated special discounted room rates with 12 hotels near the Moscone Center. Visit *www.nsta.org/sanfranciscohousing* for complete details. Housing reservations can be made in one of the following ways:

Online

Visit *www.nsta.org/sanfranciscohousing* and have your credit card and arrival/departure information ready.

Phone

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 (available at *www.nsta.org/sanfranciscohousing* as a PDF).

Fax

Fax one housing form per room request to 801-355-0250. Housing forms are available online at *www.nsta.org/sanfranciscohousing* as a PDF).

Mail

Mail one form per room request to:

The Housing Connection–NSTA/San Francisco
175 South West Temple, Suite 140
Salt Lake City, UT 84101

Housing forms are available online at *www.nsta.org/sanfranciscohousing* as a PDF. **Do not mail to NSTA.**

Visit *www.nsta.org/sanfranciscotravel* for complete travel information.

interactive SCIENCE

For Grades K-8

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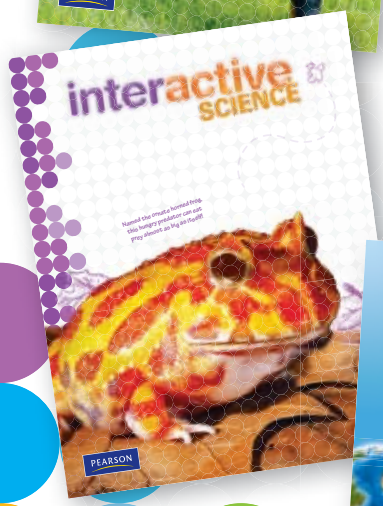

Pearson's next-generation science program for Grades K-8 is now available! Featuring three pathways for learning (reading, inquiry, and digital), *Interactive Science* is the only program that features the *Understanding by Design* instructional model that makes learning science personal and relevant for students. The write-in student editions (Grades 1-8) and Interactive Journal (Grade K) provide a sense of ownership as students "engage with the page."

Visit InteractiveScience.com to learn more!

Teachers are saying:

"The students are actually DOING the science instead of just reading about it."

Students are saying:

"The best thing about *Interactive Science* is that we actually get to apply what we learn."

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