September 21-23, 2014
San Diego Convention Center

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California STEM Learning Network

SCIENCE | TECHNOLOGY | ENGINEERING | MATHEMATICS

CALIFORNIA COMMISSION ON THE STATUS OF WOMEN & GIRLS
September 21, 2014

Dear Symposium Attendee:

It is my sincere pleasure to welcome you to the 2014 California STEM Symposium.

This one-of-a-kind gathering is a showcase of science, technology, engineering, and mathematics (STEM) programs, curriculum, strategies, resources, partnerships, Common Core, Next Generation Science Standards, and career technical education. It is an opportunity for more than 200 presenters to share their best practices and for more than 2,000 attendees to develop new ideas and network with colleagues.

STEM jobs are expected to grow 21.4 percent over the next five years, versus a 10.4 percent growth in jobs overall, and business leaders say they do not have enough skilled workers to fill these jobs. Even students who work outside the STEM fields will need to navigate complex issues that require strong science, math, and technological competence. For California to maintain its leadership in high-tech innovation, the state must emphasize literacy for students in science, technology, engineering, and mathematics.

This year our STEM Task Force issued a report titled INNOVATE: A Blueprint for Science, Technology, Engineering, and Mathematics in California Public Education. This document examines the status of STEM learning in the state and provides recommendations for the future of STEM education in California.

Based on the STEM Task Force recommendations, the STEM Symposium has been organized around the following strands: Integrated Science; Integrated Technology; Integrated Engineering; Integrated Math; Women and Girls in STEM; Diversity, Equity, and Opportunity; Expanded STEM Learning; and Partnerships, Policy, Leadership, and Research in STEM.

We hope that you will enjoy the second annual STEM Symposium and that you will bring back ideas, strategies, and tools to enhance and support STEM education in your schools and expanded learning programs.

Thank you for your work in preparing California’s students to become our country’s future STEM innovators, workforce, and inspiration.

Sincerely,

Tom Torlakson
State Superintendent of Public Instruction
Welcome to the 2nd Annual California STEM Symposium!

We are thrilled you have joined the Californians Dedicated to Education Foundation and our partners, the California Department of Education and the California Commission on the Status of Women and Girls as we work together to ensure that all students have access to high-quality STEM Education as part of a well-balanced education.

It is a time of great change for public education in California. We are remodeling our current system and updating it to better meet the needs of our students – tomorrow’s workforce. We are implementing Common Core State Standards and planning for Next Generation Science Standards. We are funding our schools differently and looking at how we can use that funding to better prepare our children for the jobs of the future – STEM learning is a critical piece of this work.

We know that STEM skills require complex and critical thinking; developing them is like weaving strands into ropes. As we learn new skills, our brains weave them together into ropes, which we use to do all the things that we need to be able to do — solve problems, work with others, formulate and express our ideas, and learn new things. No single strand can do all the work of the rope. Instead, for a rope to be strong and useful, each strand needs to be woven tightly together. STEM skills are vital strands in all different kinds of skill ropes.

Students need chances to learn how to weave and reweave them into different ropes, and to get practice using them. When kids have strong STEM strands, they can use them for all kinds of things that they will need to be able to do — in school, but also more generally in life.

As educators, you make this weaving happen in your classrooms, your afterschool and summer programs, and in your communities. We encourage you to take these two days to learn new ways of bringing STEM alive for kids, make new contacts, and share what you know and do with all of us.

Because of you, our students are forging paths to their future. We don’t know what that future holds, but we know because of you, we’ll be ready when it comes.

Thank you for joining us and for all you do for kids every day.

With admiration,

Shelly Masur, CEO
The California Commission on the Status of Women and Girls enthusiastically welcomes you to the 2014 California STEM Symposium designed to explore ways to engage students, families, schools, libraries, educators, businesses, and communities to build a science, technology, education, and mathematics workforce.

By 2018, it is estimated that there will be 1.2 million U.S. job openings in science, technology, engineering, and mathematics (STEM) fields, with a shortage of qualified applicants to fill them.

By current estimates, women hold less than 25% of our country’s STEM jobs.

To fill the gap, it seems quite obvious: We need more women in STEM!

Connect with innovative ideas and programs aimed at inspiring girls and women to be creatively brave and explore science and technology. Learn about constructing things and making technology more approachable to girls. Discover exciting resources available to increase interest, encourage, and motivate our girls and young women.

There are tremendous opportunities to create change – and a lot to gain.

Geena Davis, Chair

Commissioners Lupita Cortez Alcala, Kafi Blumenfield, Assemblymember Nora Campos, Lauri Damrell, Senator (ret.) Martha M. Escutia, Senator Noreen Evans, Assemblymember Cristina Garcia, Marina Illich, Senator Hannah-Beth Jackson, Senator Carol Liu, Assemblymember Bonnie Lowenthal, Karen Nelson, Julie Su, Alisha Wilkins, and Major Ofelia Alvarez-Willis, M.D.

Nancy Kirshner-Rodriguez, Executive Director 900 N Street, #390, Sacramento, CA 95814 www.women.ca.gov 916-651-5405

The Commission’s logo was designed by Amber Jones, a 17-year-old career technical education student at CATCH High School in Los Angeles

The Commission on the Status of Women and Girls partnered with the California Department of Education in 2013 to reach out to talented students.
2014 California STEM Symposium
San Diego Convention Center
September 21-23, 2014

Welcome to the 2014 California STEM Symposium. The California STEM Learning Network is pleased to be a partner in this second annual convening during this exciting and historic time for Science, Technology, Engineering, and Mathematics (STEM) education in California. Over the next five years there will be numerous changes to California’s education system in STEM as schools continue implementation of Common Core Standards, begin to implement exciting new science standards, and explore new ways to bring computer science education into classrooms.

Opportunities like the California STEM Symposium are valuable to ensuring that these changes not only influence discussions at district offices or in state government, but provide opportunities that directly impact the way students learn and to prepare them for further education, to be lifelong learners, and successful and rewarding careers. When we talk to business leaders in STEM fields across our great state, we often hear that there is not enough STEM talent available to fill workforce demands. We also hear exciting stories about students who experience renewed excitement about their education because of the way that STEM is bringing real-world relevance to their learning through its project-based focus and by bridging disciplines in ways that students have never experienced before. This symposium is our chance to help more students feel that sense of awe and wonder and prepare them for the demands of the 21st century workforce.

You will find at this year’s STEM Symposium an inspiring range of speakers and numerous opportunities to interact with those teachers and students in the vanguard of STEM education. We are confident that you will enjoy this opportunity and leave with a newfound sense of purpose and camaraderie as well as useful resources and new partners that will move the mission of providing a high-quality STEM education for all students forward.

Sincerely,

Chris Roe, President and CEO
Thank You to the 2014 California STEM Symposium Sponsors

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Name Badges, obtained at registration, are required for entrance to all keynotes, sessions, meals, and events.
Schedule of Events

All listed events are at the San Diego Convention Center

Preconference and Early Registration: Sunday, September 21
11:30 a.m. - 4:00 p.m.   Early Registration
12:00 – 5:00 p.m.   Vendor and Share Fair Set-up
12:00 – 5:00 p.m.   Preconference NGSS Workshop
1:00 – 5:00 p.m.   Preconference Intensive Workshops

Day 1: Monday, September 22
6:00 – 8:00 a.m.   Vendor and Share Fair Set-up
7:00 a.m. – 4:00 p.m.   Registration
7:30 - 8:15 a.m.   Continental Breakfast in Vendor Hall E
7:30 a.m. - 6:00 p.m.   Vendor Marketplace
8:15 - 9:30 a.m.   Opening General Session
9:30 a.m. - 7:00 p.m.   Teacher/Student Share Fair and Demonstrations
9:45 - 10:45 a.m.   Breakout Session I: Presentations and Workshops
10:55 - 11:55 a.m.   Breakout Session II: Presentations and Workshops
12:00 - 1:15 p.m.   Luncheon and Keynote Speaker
1:25 - 2:25 p.m.   Breakout Session III: Presentations and Workshops
2:35 - 3:35 p.m.   Breakout Session IV: Presentations and Workshops
3:45 - 4:15 p.m.   Refreshments in Vendor Hall E
4:15 - 5:15 p.m.   Afternoon Session
5:15 - 7:00 p.m.   Networking Reception

Day 2: Tuesday, September 23
7:00 a.m. - 12:00 p.m.   Registration
7:00 - 8:30 a.m.   Continental Breakfast in Vendor Hall E
7:00 a.m. - 1:00 p.m.   Vendor Marketplace
8:30 - 9:30 a.m.   Morning Session
9:40 - 10:40 a.m.   Breakout Session V: Presentations and Workshops
10:50 - 11:50 a.m.   Breakout Session VI: Presentations and Workshops
12:00 - 1:15 p.m.   Closing Session: Luncheon, Keynote Speaker, Raffle Winners Announced, and Closing Announcements
Sunday, September 21

Preconference Workshop: ___________________ Room ________

Monday, September 22

Session I: ___________________ Room ________
  first choice

_________________________ Room ________
  second choice

Session II: ___________________ Room ________
  first choice

_________________________ Room ________
  second choice

Session III: ___________________ Room ________
  first choice

_________________________ Room ________
  second choice

Session IV: ___________________ Room ________
  first choice

_________________________ Room ________
  second choice

Tuesday, September 23

Session V: ___________________ Room ________
  first choice

_________________________ Room ________
  second choice

Session VI: ___________________ Room ________
  first choice

_________________________ Room ________
  second choice
Next Generation Science Standards (NGSS) Preconference Intensive Workshop & Follow-up Sessions

Facilitated by: The California Science Project, the California Science Teachers Association, the K-12 Alliance/WestEd, the California Department of Education, and representatives from the California County Offices of Education

In Sunday’s Preconference Intensive Workshop, participants will journey through an introduction to NGSS in “NGSS 101” or “NGSS 102” to “Performance Expectations” to the “NGSS Implementation Tool”. Administrators will attend “NGSS for Administrators” in lieu of learning to use the implementation tool.

On Monday, participants will continue with the “NGSS Implementation Tool” for a two-hour session in the morning. On Monday and Tuesday, teachers and administrators can elect to participate in three other roll-out sessions: 1) Understanding the NGSS Middle Grades Learning Progressions; 2) Linking NGSS and CCSS; and 3) Experiencing the NGSS Instructional Shift for the Classroom.

Sunday, September 21, 12:00 to 5:00 p.m.
Preconference Intensive Workshop Welcome and Orientation (Ballroom 20 A). Participants will be given room assignments for subsequent NGSS workshops.

Attendees, including administrators, will choose either NGSS 101 or NGSS 102 based upon their familiarity with the new science standards.

NGSS 101: 12:00 to 1:00 p.m.
Become aware of the National Research Council’s A Framework for K-12 Science Education and the development, intent, and design of the Next Generation Science Standards adopted by California. Learn how to read the architecture of the NGSS and example key components.

Or

NGSS 102: 12:00 to 1:00 p.m.
Delve deeper into the intent and design of NGSS and some of its supporting appendices, analyze key instructional shifts, and reflect on how to adapt available resources to assist in planning for instructional changes.

Performance Expectations: 1:00 to 2:00 p.m.
Understand the shift in the NGSS from content knowledge to a focus on performance expectations (PE). Analyze a learning progression for success during classroom formative assessments or district benchmark assessments of the PE.

NGSS for Administrators: 2:00 to 5:00 p.m.
Attend a session specifically designed for administrators to learn how to support the implementation of NGSS at their school sites and within the district.

NGSS Implementation Tool: 2:00 to 5:00 p.m.
Learn how to use a tool for developing a unit of instruction that creates a conceptual flow for building student understanding and identifies Performance Expectations, Disciplinary Core Ideas, Science and Engineering Practices, and Cross-Cutting Concepts that support that understanding.

Monday, September 22:
NGSS Awareness Follow-up Sessions

NGSS Implementation Tool (continued): Sessions 1 and 2, 9:45 to 11:55 a.m.
This session is a continuation of Sunday’s Preconference NGSS Awareness Workshop. Attendees will continue to learn how to use a tool for developing a unit of instruction that creates a conceptual flow for building student understanding and identifies Performance Expectations, Disciplinary Core Ideas, Science and Engineering Practices, and Cross-Cutting Concepts that support that understanding.

The following sessions are recommended for preconference Intensive NGSS Workshop attendees and are open to all Symposium participants:

Understanding the NGSS Middle Grades Learning Progressions: Sessions 3 and 4, 1:25 to 3:35 p.m. (Rooms 12, 13, 18, 19, and 23 A)
Explore the State Board of Education’s preferred integrated standards for middle school and the alternative discipline specific model. Discuss possible implementation strategies for the integrated model.

Tuesday, September 23:
NGSS Awareness Follow-up Sessions

Linking NGSS and CCSS: Sessions 5 and 6, 9:40 to 11:50 a.m. (Rooms 12 and 13)
Learn how to use the Science Literacy Professional Learning Module as a resource to help K-12 teachers better understand how literacy (speaking, listening, writing and reading) deepens student understanding of science.

Experiencing the NGSS Instructional Shift for the Classroom: Sessions 5 and 6, 9:40 to 11:50 a.m. (Rooms 18, 19, and 23 A)
Create an Action Plan: An opportunity for the district teams to share their learning from the conference and decide next steps for themselves as district leaders and for their teachers and other stakeholders; and Lesson Exploration: Experience a sample lesson that demonstrates the NGSS “shift” with examples at primary, upper elementary, and secondary (middle school and high school) schools.
Preconference Intensive Workshops

Sunday, September 21, 12:00 to 5:00 p.m.

Exploring the Next Generation Science Standards (NGSS)  
Ballroom 20 A
Join science leaders at the first of a series of statewide professional learning symposia exploring the philosophy, design, and initial implementation of the Next Generation Science Standards (NGSS). Designed for district teams as well as individual teacher leaders, there are sessions that will range from an introduction to the new standards to their implication on classroom instruction. In addition, participants will learn a planning tool that will help translate the performance expectations, science and engineering practices, disciplinary core ideas, and cross-cutting concepts into classroom practice.

The Sunday sessions provide a choice for the introductory session: beginners with NGSS and those who have dabbled with NGSS. Teachers will next engage in a deeper understanding of the performance expectations and the planning tool for implementation. Administrators will attend a session that emphasizes the shifts in curriculum, instruction, and assessment; this session will link the NGSS implementation to lessons learned in implementing CCSS, and explore ways to assist staff through the awareness phase of implementation.

On Monday, teachers will continue with the tool for a two-hour session. On Monday and Tuesday, teachers and administrators can participate in three other roll-out sessions: 1) Understanding the Middle Grades Learning Progressions; 2) Linking NGSS and CCSS; and 3) Experiencing the Instructional Shift for Classroom.

The California Science Project, the California Science Teachers Association, the K-12 Alliance/WestEd, the California Department of Education, and representatives from the California County Offices of Education

Sunday, September 21, 1:00 to 5:00 p.m.

Mathematical Progressions in Common Core State Standards and STEM Integration  
Room #14 A
During this four-hour workshop, participants will:

• Learn about the Progressions documents’ role in the development of Common Core State Standards in Mathematics (CCSS-M), with specific examples from the Progression on Number and Operations - Fractions in Grades 3-5 and the Progression on Expressions and Equations in Grades 6-8.

• Experience elements of best practice lessons incorporating important mathematics content based on CCSS-M, with instructional strategies including side-by-side comparison of multiple approaches to teaching and learning the mathematics content.

• Learn about a model for STEM integration that begins with mathematics content learning and incorporates this mathematics content into engaging engineering and science activities, such as designing the lighting for the San Francisco Christmas Tree at Union Square.

Philip Gonsalves and Drew Kravin, West Contra Costa Unified School District

Room #14 B
SciGirls (pbskids.org/scigirls) is an Emmy award-winning television program and outreach program that draws on cutting-edge research about what engages girls in science, technology, engineering, and mathematics (STEM) learning and careers. SciGirls features groups of middle school girls modeling authentic, girl-focused approaches to inquiry-based science and engineering projects. The PBS television show, kids’ website, and educational outreach program have reached over 14 million girls, educators, and families, making it the most widely accessed girls’ STEM program available nationally. SciGirls’ videos, interactive website, and hands-on activities work together to address a singular but powerful goal: to inspire, enable, and maximize STEM learning and participation for all girls, with an eye toward future STEM careers. The goal of SciGirls is to change how millions of girls think about STEM. SciGirls CONNECT is a broad national outreach effort to encourage educators to adopt new, research-based strategies to engage girls in STEM. (continued)
Preconference Intensive Workshops

(continued from page 11)

Many STEM programs and advanced science classes still have low numbers of girls and other underrepresented populations. SciGirls will share research-based strategies and techniques proven to increase girls’ engagement in STEM, the SciGirls Seven. These strategies include: allowing extended communication and collaboration; finding real-life contexts for science; promoting open-ended investigations; placing value on diverse ways of knowing, viewing, and describing the world; providing specific, positive feedback on things girls can control; offering opportunities to think critically about science and engineering; and forming relationships with role models and mentors. This session will demonstrate these strategies and have participants practice activities using the SciGirls Seven as a guide in a hands-on, minds-on introduction to the engineering process. We will be building neutrally buoyant devices and exploring ways to remove plastics from the ocean, talking about strategies for engaging girls in STEM. All participants will receive our Gender Equity Handout that outlines strategies, tips for implementation, and extensive research emphasizing the importance of encouraging girls at a young age to consider a STEM career to help fill a critical need in our future workforce. Educators will be encouraged to share their own experiences teaching in mixed gender or all-female environments and discuss best practices for engaging girls.

Rita Karl, Director of STEM Outreach and Education, tpt Twin Cities Public Television
Christie Pearce, Eureka! STEM Development Coordinator, Girls Incorporated of Orange County

Engineering is Elementary Room #15 A

Engineering is Elementary (EiE), developed by the Museum of Science in Boston, provides timely engineering challenges for elementary students. Each of 20 units begins with a story that sets the context for the engineering challenge by identifying the engineering problem and providing information about the work of an engineer meeting the challenge. Through a series of activities, students learn about how engineers solve problems through a cycle of brainstorming, designing solutions, collecting data, and developing a model to solve the problem. EiE aligns with the CCSS Literacy in Science Standards and with the science and engineering practices and standards in the Next Generation Science Standards.

In this session, participants will engage in background activities to understand technology and engineering. Through questioning, participants will discover that technology is the body of knowledge, systems, processes, and artifacts that result from engineering. In an engineering activity, they will come to understand that engineering uses a process--the engineering design process--to produce solutions and technologies seeking solutions for societal problems and needs while aiming to produce the best solution given specific resources and constraints. Participants will then have an opportunity to experience one of the EiE units of instruction.

Jody Skidmore Sherriff and Rita Starnes, K-12 Alliance Regional Directors

Project Based Learning (PBL) as a ‘SYSTEMS’ Approach to Instruction Room #15 B

Project Based Learning is a dynamic approach to teaching in which students investigate and respond to real problems, questions, and challenges. PBL allows students to learn and practice skills such as problem solving, collaboration, communication, critical thinking, and innovation. Student inquiry and work is focused through driving, intriguing, and open-ended questions that connect to the real world and relate to the content area students are studying at the time. Authentic problems, collaborating with others, and finding real solutions in Science, Technology, Engineering, and Mathematics fields are the focus of this integrated approach to learning.

Come and experience a PBL- type activity that demonstrates the Core Elements of PBL and see how engaging and fun this type of instructional approach can be for YOU and YOUR students.

Dean Gilbert, Christie Baird, and Maureen Allen, Orange County Department of Education
Integrating Computing and Robotics into Mathematics and CTE  
Room #16 A

This interactive workshop will provide teachers with hands-on experience on how to use the UC Davis C-STEM integrated curriculum with computing and robotics that aligns with the Common Core, Mathematics, and ICT Sector standards to help close the achievement gap and better prepare students for college and careers. The workshop is targeted at grades six to community college and is intended for classroom STEM teachers and mathematics/CTE coordinators who are interested in:

- Integrating computing and robotics into mathematics and career technical education
- Developing students’ critical thinking and problem-solving skills
- Providing computing education
- Implementing new teaching strategies and opportunities for collaboration
- Adopting common core compliant curricula using computer programming

Each participant will receive a one-year C/C++ interpreter Ch license. Barobo Linkbots will be provided for participants to use during the workshop.

Participants must bring their own Windows laptop with XP or higher. Implementation at school sites requires access to a Windows computer lab at least two to three times per week.

This workshop is intended for teachers and schools who are considering implementing an integrated robotics-computing-mathematics program.

Harry H. Cheng, Professor and Director, UC Davis Center for Integrated Computing and STEM Education (C-STEM)  
Heidi Espindola, Program Manager, UC Davis Center for Integrated Computing and STEM Education (C-STEM)  
Ryan Mangan, Engineering/Physics Teacher, School of Engineering and Sciences, Sacramento City Unified School District

Brain-STEM: Merging the Goals of STEM, the NGSS and CCSS Made Easy (and fun)!  
Room #16 B

For the first time in recent educational history, we have three major reform initiatives to implement simultaneously. Although many educators are approaching this task by “cherry-picking” a given standard and teaching it well, but in isolation, our instructional goal should be to merge these required standards into engaging and meaningful learning contexts. The human brain naturally looks for these relevant connections that open the doors to rich and memorable learning experiences. STEM should be the acronym for “Students and Teachers Enjoying every Minute” of the school day, because the content is connected and learning makes sense!

Countless millennia before the acronym STEM—science, technology, engineering, and mathematics—entered our modern lexicon, early mankind was already engaged in STEM endeavors. Our ancestors spent significant portions of their days experimenting, tinkering, and thinking their way through myriad problems and challenges. During those prehistoric periods, the dreamers, the designers, and the builders identified the urgent problems and subsequently crafted tools, crude instruments, and strategies to resolve them, working collaboratively for both survival and human progress.

Contrary to popular belief, the evolution of memory was not governed by a need to recall the world of the past. Instead, memory evolved to assist us in predicting and navigating the future based on intelligent forecasts substantiated by our prior knowledge. Problem-solving in the “real world” requires integrated solutions, in which science, language, mathematics, engineering, visualization, scientific reasoning, and technology are regularly intermingled in various combinations, sequences, proportions, and durations.

This interactive workshop will introduce attendees to the complex wonder of the human brain and why STEM is best delivered in contexts where Science, Technology, and Thematic instruction, Reading/LA, Engineering, Art, and Mathematics join together into a “ST2REAM” model for easy student learning and enhanced memory formation.

Dr. Kenneth Wesson, Educational Consultant, Neuroscience
Teaching Energy Efficiency Concepts in a STEM Classroom

Using Green STEM principles, participants will take part in hands-on Green activities to calculate and measure heat flow, air flow, energy consumption, and other sustainable principles. Participants will see how these concepts can be taught and experienced in a classroom using everyday household materials, self-made apparatus, or commercially available items to learn energy efficiency, building concepts, and green engineering concepts. Attendees will receive sample lesson plans and instructional materials to use in their classrooms. This workshop is applicable to teachers of middle and high school students. The activities can be integrated into mathematics, science, engineering, technology, energy, and construction instruction.

Tom Vessella, Associate Professor, Los Angeles Trade-Technical College

Get Coding, with Peanut Butter and Jelly!

The Exploring Computer Science professional development program is based on three major pillars: computer science content/concepts, inquiry, and equity. These pillars are the foundation of well-rounded, effective computer science instruction.

In this workshop, participants will first learn how making a PB&J connects to programming, discovering the importance of clear and precise communication skills. They will then apply this learning to another activity, using a simple programming tool called: “Scratch” http://scratch.mit.edu/ and finish by creating a team project. The outcome, clear evidence that EVERYONE can code!

You, and your students, can code! In this workshop attendees will:

• Learn how to embed the three pillars of computer science education into their lessons to ensure equitable, effective, rigorous, and active learning for all students.

• Learn how to program in code using Scratch to create stories, games, and animations. Working in a team, participants will build and present their team project.

• Learn why coding and computer science are subjects which are fun, exciting, and popular with students. Understand how outside-the-classroom events like summer camps and hack-a-thons are effective strategies for engaging girls and students who come from under-resourced communities.

Participant Information:
Bring a laptop or tablet that can connect to the Internet.
Focus is on Grades 7-12.

Gary Page, Education Programs Consultant, California Department of Education
Alexis Martin, Ph.D., Senior Research Associate, Level Playing Field Institute
John Landa, Computer Science Coach, Exploring Computer Science
Julie Flapan, Executive Director, Alliance for California Computing Education for Students and Schools
### Sessions at a Glance

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**Tuesday, September 23, 2014 • Session V – 9:40 to 10:40 a.m.**

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<td>Digital Art Projects for Self-Absorbed Teenagers</td>
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<td>Blending Computer Programming with Geoscience Curriculum to Engage and Motivate</td>
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<td>Proven Strategies to Recruit and Retain Women in STEM (Lecture)</td>
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<td>Inquiry Labs That Launch Students into Science and Engineering</td>
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## Sessions at a Glance

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<td>After-School Science and Mathematics Integration Adapting the Hands-On Universe Curriculum</td>
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<td>How Two Moms Created a Successful After-School Science Class for Girls</td>
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<td>Create or Recreate? That Is So “STEMie”</td>
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<td>iPad Invasion in the Middle School Science Classroom</td>
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<td>Integrating Professional Partnerships to Enhance STEM Learning Experiences</td>
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<td>Increasing AP CS Participation in California: An Out-of-School Intervention</td>
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<td>Revealing Student Thinking: Assessing Student Understanding in the NGSS Classroom</td>
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<td>Let the iPad Tell a Science (Digital) Story!</td>
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<td>Science and Engineering Practices in the Middle School Science Classroom</td>
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<td>Who Did It? Cross-Curricular STEM, Social Studies, Arts Collaborations</td>
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<td>Bold Partnerships: The Key to Advancing and Sustaining World-Class STEM</td>
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<td>Coaching Teachers in STEM: CCSS Mathematics + Technology</td>
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<td>Biology Lab Practicum Transformed: Use of Online Assessments in Blackboard</td>
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Vendor Marketplace Participants

Exhibit Hall E
Monday, September 22 from 7:30 a.m. to 6:00 p.m. and
Tuesday, September 23 from 7:00 a.m. to 1:00 p.m.

Airwolf 3D
American Printing House for the Blind
Apollo Education
Autodesk
Blackboard
California Science Teachers Association (CSTA)
California State University, San Bernardino
California Subject Matter Projects
Carnegie Learning, Inc.
Carolina Biological Supply Co.
Certification Partners/CIW
Certiport
CPM Educational Program
CPO Science/Frey Scientific
DataWORKS Educational Research
Development Studies Center
eInstruction by Turning Technologies
EcoCAD
ETA hand2mind
ExploreLearning
Farm Academy Live
FOSS
Google
iDesign
Intelitek, Stratasys & ecoCAD Design Group
Invent/Camp Invention
It’s About Time
K16 Bridge/Lewis Center for Educational Research
Klein Educational Systems
KQED
Learning A-Z

Lego
Magnitude.io, Inc.
Meeleis Modular Buildings, Inc.
MiniOne Electrophoresis
NASCO
National Geographic Learning
National Math + Science Initiative (NMSI)
PASCO Scientific
Paton Group
Paxton Patterson
PreFast Buildings
Project Lead The Way
Rainforest Art Project
RobotsLAB US, Inc.
Roland
Sally Ride Science, Inc.
San Diego Festival of Science
School Technology Resources
Silicon Valley Educational Foundation (SVEF)
Smith Systems
SolidProfessor
STAR Education, Inc.
Start Engineering
Studica, Inc.
TPS Publishing, Inc.
Universal Technical Institute
U.S. News STEM Solutions
Vernier Software & Technology
WARDS Science
zSpace STEM Solutions
Zyante
Public Safety Career Exploration / Juvenile Justice
ReadyNation and Fight Crime: Invest in Kids engages law enforcement leaders in work-based learning opportunities for middle to high school students. ReadyNation will demonstrate “Juvenile Justice Jeopardy” and will introduce “The Good Behavior Game” for younger students as fun technological tools for learning about behavioral norms policy and youth law.

Barrie Becker, State Director ReadyNation
Kimberley Shapiro, Crime Scene Specialist 2, San Bernardino County Sheriff’s Department

FIRST Robotics Team 1538 – The Holy Cows
The Holy Cows, from High Tech High in San Diego, are a Hall of Fame team within the FIRST Robotics organization for their work in spreading the FIRST mission and goals—designing and building 120 lb. competitive robots and striving to create excitement around STEM within their team, school, and community.

David Berggren, Engineering Instructor/Robotics Team Lead, High Tech High - FIRST (For Inspiration and Recognition of Science and Technology)

Learn to Code; Code to Learn
Computational Thinking is taking an approach to solving problems, designing systems, and understanding human behavior that draws on concepts fundamental to computer science. MIT’s Scratch Language supports the development of personal connections to computing by drawing upon creativity, imagination, and interests.

Gregory Beutler, Director Techscool

Drought in San Diego County
A world without water is a world without life; our nation is in great danger. Over the years we have crept into a severe water crisis. Students at Kearny High School have partnered with the SIM Center to analyze water availability and devise a resolution to end this crisis.

Corri-Anne Burgess, GIS and AP Biology Teacher, Kearny Science Connections and Technology

Engineer Your World: An Innovative, Year-Long High School Engineering Curriculum
Engineer Your World is a research-based, computationally rigorous high school engineering program with a focus on broadening participation. Hear about the program from an experienced teacher, learn how Engineer Your World addresses relevant NGSS and AP Standards, and discover funding opportunities that can help bring this program to your campus.

Cheryl Farmer, Project Director UTeachEngineering, The University of Texas at Austin

WAMPBAT: The Assistive Baseball Practice Machine
The WAMPBAT is a robot that acts as a baseball bat. It can distribute grounders and flyballs anywhere on the field in fully autonomous mode or by joystick control.

Eric Fischer, Engineering Instructor Project Lead The Way Engineering Design and Development, Mira Mesa High School
Presidential Awards for Excellence in Mathematics and Science Teaching
The Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) are the nation’s highest honors for teachers of mathematics and science (including computer science). Awardees serve as models for their colleagues, inspiration to their communities, and leaders in the improvement of mathematics and science education.

Donna Goldenstein, CA Mathematics PAEMST Coordinator, Presidential Awards for Excellence in Mathematics and Science Teaching

MOUSE Squad Student Tech Leadership
MOUSE Squad is the award-winning nonprofit STEM Innovation in Technology program that empowers students in grades four through twelve to learn 21st century technology, leadership, and workplace skills, while participating in technology projects that serve the school community. It can be an after-school program or an in-school elective.

Jan Half, Program Director, MOUSE Squad Student Tech

HS Pirates Plus STEM Programs
This includes our: SHPE Jr. Chapter; Robotics; Computer Programming and Electricity-Microcontrollers; and our STEM Enrichment and Mentoring Outreach Programs, which demonstrate an overall outreach to underrepresented student populations, such as the girl’s STEM Robotic team, The Society for Hispanic Professional Engineers (SHPE) Jr. Chapter, and STEM Pathway Intern outreach and early intervention.

Linda Headrick, Robotics Advisor and STEM Liaison, Oceanside High School

Arduino and Scratch Can Play Together
Come see how the popular and easy-to-use programming language, Scratch, can be used to program an Arduino robot. Using a modified version of Scratch called Scratch for Arduino (S4A), students demonstrate how “sprites” are used to program motors and sensors that guide their robot through an obstacle course.

Carol Kinnard, Computer Science Teacher, Granada High School

UW ITA Tribal Technology Institute
The UW-Madison ITA Tribal Technology Institute is an innovative program for American Indian students in the state of Wisconsin. Through its triple focus on academic preparation, leadership development, and technological literacy, the academy serves as a national model for preparing promising students for IT careers and competitive university admissions.

Erica Laughlin, Executive Director, UW-Madison Information Technology Academy

MakeHERSpace in STEM
MakeHERSpaces live at libraries in robotics workshops, 3D printing labs, and afterschool programming—some funded by federal grants through our State Library. California’s Commission on the Status of Women and Girls, State Library, and Research Bureau are collaborating to provide information and promote opportunities for girls to pursue STEM learning.

Tonya Lindsey, Senior Researcher, California Research Bureau | California State Library
Using STEAM to Inspire Deep Learning
Bullis Charter’s STEAM program makes innovative, rigorous education available to all students and facilitates a deeper conceptual understanding of content. STEAM, delivered through methods like Project Based Learning and Design Thinking, allows students to create solutions for real-world situations, using information from different disciplines in one inquiry-based project.

Jessica Lura, Director of Strategic Innovatives, Bullis Charter School

MAVEN: Mars Atmospheric Volatile Evolution
Western Center Academy students will share their projects and understanding of what happened to the Martian Mars Atmosphere through the MAVEN project. MAVEN is the first mission devoted to understanding the Martian upper atmosphere, helping scientists unlock the mysteries of Mars.

Shelly Muñoz, Science and STEM Teacher, Western Center Academy

Kearny High School Aquafarm
AP environmental science students are learning about aquaponics gardening in collaboration with graduates and undergraduates from UC San Diego.

Jennifer Ogo, Teacher, Kearny High School

VALT: Vertical Accelerator Launch Tower
VALT is a vertically-oriented catapult for launching model rockets. It acts as a reusable first stage that never leaves the ground. The purpose of VALT is to reduce the amount of propellant that a rocket needs to achieve orbit, thus allowing the rocket to carry a larger payload.

Eagle Sarmont, Aerospace Engineering Mentor

Moreno Valley Math League—Engendering Excellence
Projects demonstrate how Common Core Standards for Mathematical Practice have been incorporated in mathematics content standards so that mathematics can be experienced as “fun and creative” as opposed to being perceived as “inflexible and formulaic” with the aid of technology by capturing the creativity of Moreno Valley Math League students.

Deepika Srivastava, Coordinator-Moreno Valley Math League, Moreno Valley Unified School District

Sneak Peak: Engineering in Elementary Classrooms
Take a sneak peak into classrooms around the country to see how design challenges invite students to gain experience with NGSS Science and Engineering Practices. Spoiler alert: Watching kids use the engineering design process to solve challenges is fun! Footage from Engineering is Elementary (EiE.org), Museum of Science, Boston.

Cindy Sweetser, Director of Dissemination
Engineering is Elementary/Museum of Science, Boston

California Career Technical Student Organizations (CTSOs)
Student leaders from California CTSOs will share their experiences and answer questions related to the value of their participation in their respective Career Technical Student Organizations. Handout information will be available for conference participants at the booth as well.

Clay Mitchell, Education Programs Consultant, California Department of Education
Share Fair Participants

Ballroom 20 Foyer
Monday, September 22 from 9:30 a.m. to 7:00 p.m.

Game Programming and Computational Thinking
Middle school students from sixth through eighth grades learn how to apply computational thinking skills such as sequencing, selection, and iteration to program games on the computer using the friendly SCRATCH interface.

Visa Thiagarajan, Teacher of Computer Science, Magnolia Science Academy

Sizzle Students with Science-Rich Starter
New cutting-edge curriculum gets kids excited about STEM! Developed from the science-rich novel middle schoolers LOVE to read, Circle starts discussions in genetic engineering, conservation, consumption, astronomy, and petroleum. In the backdrop of chasing drones, attack helicopters, and fighter jets, the gripping, nonstop adventure engages even the most reticent student.

Tracy Tokunaga, Literacy and STEM, Big Bear Middle School

Making at Central Library with FabLab San Diego
The San Diego Public Library and FabLab San Diego partnered to bring hands-on STEAM activities for kids and adults with all skill levels. Programs included how to create paper circuits, build a robot, program an Arduino Board, and more!

Uyen Tran, Emerging Technologies Librarian, San Diego Public Library

Sanger Community Science Workshop
The Sanger Community Science Workshop provides a free drop-in workshop for kids after school and on Saturdays. They also have a mobile science workshop that travels to schools and communities to bring their “Maker Revolution” program to underserved kids in rural areas of Central San Joaquin Valley of California.

Jerry Valadez, Sanger Community Science Workshop, SAM Academy

Fish Farming for St. Joseph's Secondary School in Uganda
A grant proposal was written by students at University City High School to create a sustainable fish farming system at St. Joseph’s Secondary School in Uganda. The purpose of the grant is to acquire funds to assist the school in the education of their youth.

Ellie Vandiver, Director of School Engagement, Project Lead The Way

ACE Mentors: Business and Education Partnerships
The ACE Mentor Program includes Educators, Architects, Engineers, and Contractors working together to encourage high school students to pursue design, construction, and other STEM careers through after school tours, projects, and hands-on learning activities. ACE also offers scholarships and grants to support continued student success. ACE supports over 8,000 students across the country.

Kevin Wilkeson, Principal, HMC Architects
Opening General Session  
Monday, September 22 • 8:15 a.m. - 9:30 a.m.  
Exhibit Hall F/G

Presentation of Colors and Pledge of Allegiance

Coronado High School - Navy Junior Reserve Officers Training Corps (NJROTC)  
Color Guard: Cadet Lieutenant Commander Adam Espe

National Anthem

Caroline Carlson, Coronado School of the Arts

Welcome and Keynote Introduction

**Tom Torlakson, State Superintendent of Public Instruction**
As elected chief of schools for all of California, Tom Torlakson oversees the education of 6.3 million children attending more than 10,000 schools in 1,100 districts across the state. Every day, he applies his experiences as a science teacher, high school coach, and state lawmaker to fight for our students and improve our state’s public education system.

**Trish Boyd Williams, California State Board of Education Member**
Trish Williams was appointed by Governor Brown to the California State Board of Education in January 2011, and served as the board’s Vice President in 2011 and 2012. She currently serves as a lead liaison on the adoption and implementation of Next Generation Science Standards, and has a strong interest in promoting broader K-12 student access in California to coding and computer science. Williams has a Master’s degree in Public Policy. Before joining the California State Board of Education, she served 19 years as the Executive Director of EdSource, overseeing a high-quality program of applied research and analysis across a broad range of California K-14 policy issues.

**KEYNOTE SPEAKER: Hadi Partovi, Co-founder and CEO, Code.org**
Bio: Hadi is an entrepreneur, investor, and co-founder of Code.org, an education non-profit dedicated to growing computer science education. A graduate of Harvard University, Hadi began his career during the browser wars in the 1990s, when he was Microsoft’s Group Program Manager for Internet Explorer. Hadi was also General Manager of MSN.com where he helped deliver 30 percent annual growth and MSN’s only year of profit. As an entrepreneur, he was on the founding teams of Tellme (acquired by Microsoft) and iLike (acquired by MySpace). As an angel investor and startup advisor, Hadi’s portfolio includes Facebook, Zappos, Dropbox, airbnb, OPOWER, Flixster, Bluekai, TASER, and many others.

**Keynote Topic: Computer Science: America’s Untapped Opportunity**
Description: Software and computers are everywhere, revolutionizing every field around us. But 90 percent of schools don’t teach computer science. Code.org believes every student should have the opportunity to shape the 21st century and wants to turn this problem around. Since last year, Code.org has already helped 40 million students try computer science for the first time with one Hour of Code, partnered with 30 school districts to bring courses to schools, released a free online learning platform with over one million students enrolled, and influenced policy changes in 13 states to make computer science count toward high school graduation. This is just the beginning of a bold vision to bring this foundational field to every K-12 public school by 2020.
Session I Presentations and Workshops
Monday, September 22 • 9:45 a.m. - 10:45 a.m.

Your choices in this session include: 1) distinguished speakers, 2) presentations and workshops, or 3) round table room.

DISTINGUISHED SPEAKER
Ballroom 20 A

Pamela Clute, Special Assistant to the Chancellor and a Mathematics Instructor, UC Riverside

Bio: Dr. Pamela S. Clute prides herself on being a mathematics motivator by making that subject interesting and relevant to all learners. She is the Special Assistant to the Chancellor and a mathematics instructor at the University of California, Riverside, where she serves as principal investigator for grants seeking innovative solutions to student underachievement in mathematics. Pamela has been honored by the State of California and the California STEM Learning Network as a Leading Woman in STEM Education; received the National Science Foundation’s Presidential Award of Excellence in Science, Mathematics, and Engineering Mentoring from then President George W. Bush; was selected as Girl Scouts STEM Woman of the Year; has been inducted into the Riverside County Education Hall of Fame; and received lifetime recognition from the California Mathematics Council.

Topic: Why STEM!....Why WOMEN!

Description: We have a gender gap in discovery and innovation! Each year we squander the curious, talented minds of young women. We send messages telling them they cannot succeed in STEM and the consequence is the loss of social, technological, and economic progress. This high-energy presentation with opportunity for audience interaction presents STEM as the vehicle for maximizing Quality of Life and suggests strategies for engaging women of all ages in creative, inventive, and relevant learning that inspires STEM exploration!

DISTINGUISHED SPEAKER
Ballroom 20 D

Presentation by Apple, Inc.

PRESENTATIONS AND WORKSHOPS

The Power of Community: Building Real-World STEM Experiences
Room #14 A
Participants will learn about the importance of providing students and teachers opportunities to experience real-world applications of STEM inside and outside of the traditional classroom. Examples of successful STEM events will be provided, as well as strategies for building successful partnerships.

Kim Terry, STEM Coordinator, San Bernardino County Superintendent of Schools
Linda Braatz-Brown, San Bernardino County Superintendent of Schools

Emerging Best Practices of Creative STEM Learning
Room #14 B
Many teachers and non-profits have found creative ways to integrate arts into STEM curricula, and collectively STEAM has become a grass roots movement in California. This session will dive into what’s working in STEAM and why, and how schools and districts across the state can start moving in this direction.

Kim Richards, Founder/Co-Founder, KDR PR/STEAMConnect
Jason Rogalski, JCS, San Diego Academy of Art and Science; and Sarah Esper, ThoughtSTEM
Session I Presentations and Workshops
Monday, September 22 • 9:45 a.m. - 10:45 a.m.

Bring Creative Computer Science into STEM to Engage All Students
In this interactive session, learn key strategies from a district-wide STEM program that teaches coding and building circuits with microcontrollers. Los Altos School district will share three-plus years of successful lessons that engage and retain interest in STEM fields for all students, especially girls.

Sheena Vaidyanathan, CSTEM Teacher/Computer Science Integration Specialist, Los Altos School District

How High Can Your Career Fly?
Discover three stellar reasons to go into STEM fields, three grounding myths that may keep you out, and what STEM really means. In this workshop-lecture by pilot/entrepreneur Syd Blue, participants will uncover their biggest dreams, learn how to evade their obstacles, and make a flight plan for their lives.

Syd Blue, Pilot/STEM Author, Blue Blaze Productions, Inc.

Making ELA Rigorous and Relevant with Meaningful Technology Integrations
Attendees will experience how to create a Project-Based Learning Model to design a rigorous implementation of the CCSS ELA anchor standards using meaningful technology integrations to make learning engaging and relevant for upper grade and middle school students.

Katelyn Gilliard, Teacher, Vineyard STEM Magnet School, Ontario-Montclair School District
Philip Swartz and Jennifer Gateley, Vineyard STEM Magnet School

Teaching About California Water with EEI and Project WET
Attendees will explore the science of California water issues using the Education and the Environment Initiative Curriculum and a hands-on Project WET activity. Presenters will demonstrate lessons that support NGSS with a focus on water supply and uses, engineered solutions for moving water, and the resulting effects on natural systems.

Bryan Ehlers, Program Director, CalRecycle’s Office of Education and the Environment
Brian Brown, Project WET

Cultivating Creativity in the Mathematics Classroom
Innovation is fueled by the creative application of STEM subjects. In mathematics, students develop problem-solving approaches and reasoning skills by engaging in exciting, authentic learning experiences. Amy Lin will share her inclusive teaching strategies that empower students to recognize the potential that a deeper understanding of mathematics enriches their current lives as learners and their future lives as citizens in a world that values ingenuity, insight, and confidence.

Amy Lin, Coach, Teacher, Consultant, Halton District School Board

MARS Metropolis: A High School Design Challenge
Join the MARS Metropolis Project, a real design challenge that scientists around the world are seeking to solve, and answers will be incorporated in the first human landing on Mars in less than 20 years. Rooted in STEM subjects, high school students engage with NASA’s Jet Propulsion Laboratory scientists to produce professional results.

Alan Sandler, Executive Director, Architectural Foundation of San Francisco
Session I Presentations and Workshops
Monday, September 22  •  9:45 a.m. - 10:45 a.m.

OC Maker Challenge: How to Use “Making” as a Vehicle for Delivering STEM Competencies  Room #22
Excite and engage your students while delivering STEM competencies, 21st century skills, NGSS, and Common Core standards! The ocMaker Challenge prompts students to design and build a product that will solve a problem. Teams from middle school through college compete using 3D modeling, 3D printers, and microcontrollers to create original prototypes.

Jillian Johnson-Sharp, Coordinator, Curriculum and Instruction, OCDE/CTEp
Chrissy Cherry, OCDE/CTEp; Jack Gupton, Anaheim Union High School District

Lego Mindstorms Stirring up Curiosity and Creativity  Room #23 B
Learn how Lego Mindstorms are used in classrooms to engage students in critical thinking and collaborative problem solving. Participants will have the opportunity to work in pairs and program Lego Mindstorms robots. Participants must bring their own laptops. No prior robotics experience needed. Limited to 30 participants.

Tonya Hendrix, Science and Technology Teacher, Rio Seco Elementary School

Real-World Integration to Understanding Graphs  Room #23 C
Do students truly understand what the graphs of their data mean? The presenters will model a teacher-created STEM lesson that builds student understanding on what the slope of a line means. This mathematics-science lesson will highlight distance/time and speed/time graphs.

Ma Bernadette Salgarino, Mathematics Coordinator, Santa Clara County Office of Education
Sandra Yellenberg, Santa Clara County Office of Education

YES! Project-Based Learning Spells SUCCESS for Pre-K to Second Graders!  Room #24 A
Even the youngest of learners benefit from exposure to Project-Based Learning experiences that integrate the STEM curricular areas. Participants will be active learners in this hands-on workshop and will leave inspired and ready to offer practical, affordable Project-Based Learning activities in which every student will experience SUCCESS!

Stephanie Lester, Director: Early Childhood Education/author, Lancaster School District

Managing Your Program Growth: Getting and Staying On Track  Room #24 B
In this workshop, participants will examine a “sustainable approach” to assess, plan, and implement high-quality STEM in expanded-learning programming. A model for managing transitions in funding, staff, and program models will be introduced. They will also discuss how to stay on track with program development, field trends, and capacity-building.

Andrea Broxton, Director of Technical Assistance, Partnership for Children and Youth
Ann Ngo, East Oakland PRIDE; Khariyah Shabaz-Wade, Higher Ground; 
Na’dra Hennington, Bay Area Community Resources
Girls' Gateway to STEM: The Importance of Identity, Motivation, and Role Models

How do we get and keep girls interested in STEM professions? The Expanding Your Horizons Network has been inspiring girls to recognize their potential and pursue opportunities in STEM for 40 years. Join the presenter for an interactive discussion on applying what has been learned into the classroom.

Heather Gibbons, CEO, Expanding Your Horizons

Engaging Minds Through Technology Integration

Learn about an innovative cross-curriculum strategy for enabling teachers to infuse the use of technology into their subject area, to engage students with specific and appropriate technologies, and to empower their students with technological skills necessary for either educational or career pursuits.

Duane Hume, Senior Vice President of Strategic Initiatives, CIW - Certification Partners

Why Compartmentalize? Ubiquitous Technology to Create PLC

This presentation will provide an overview on using technology as a tool with endless possibilities. This includes planning, creating lessons, and collaborating with peers to form PLCs. It will also highlight specific strategies to communicate and collaborate with students and educators across the world. If possible, participants should bring their own devices.

Seema Khan, Instructional Technology Educator, Resource Area For Teachers (RAFT)

The Alignment of STEM: Common Core and Early Childhood Education

School districts and child development programs can ease the transition for young children entering kindergarten by addressing readiness goals while gaining an understanding of STEM and the Common Core State Standards for preschool and kindergarten. This workshop will demonstrate play-based strategies effectively by addressing curriculum foundations in preparation for Common Core implementation.

John Holanda, College Instructor MJC-ECE Consultant, purpleiam.com
Maria Teresa Ruiz, purpleiam.com

PLTW 101: A Solution to the Common Core and NGSS

Participants will learn how PLTW helps schools address the Four C’s of Common Core, 21st century learning, and NGSS. Hear how it is working and how the model is now being replicated across the nation. Meet and talk to students and teachers making a difference.

Duane Crum, PLTW California State Leader, Project Lead The Way
Ellie Vandiver, Project Lead The Way; Omar Garcia, San Diego Unified School District
Session I Presentations and Workshops
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Creating STEM Partnerships That Support Teachers in Science and Engineering Room #27 A
The presenters will share a partnership model in which graduate student scientists and science educators present content and engage teachers in the practices of science, engineering, and literacy. Teachers generate questions, design, and conduct their own research, which increases confidence and ability to make science accessible to ELLs in the classroom.

Joanna Totino, Director, Bay Area Science Project, UC Berkeley
Ardice Hartry and Betsy J. Mitchell, UC Berkeley

Engineering with Legos Room #27 B
Through hands-on activities, students can see engineering and applied mathematics come to life! Participants will have the opportunity to experience an activity for themselves and see how they can incorporate engineering, technology, and the arts together while teaching Common Core Mathematics Standards and Next Generation Science Standards.

Aileen Rizo, Math Education Consultant, Fresno County Office of Education

Integrating Engineering and Science Learning in the Elementary Classroom Room #29 A
Engage in a hands-on challenge from the Engineering is Elementary (EiE) curriculum and collaborate with peers to identify and discuss the science knowledge and skills needed to successfully engineer a solution. Long Beach partners will share their experiences implementing EiE with their students and in preparing teachers for the NGSS.

Kristin Sargianis, Director of Professional Development, Engineering is Elementary, Museum of Science, Boston

STEM Learning Opportunities Providing Equity: Algebra, College, Careers, and Success! Room #29 B
Using an innovative approach that integrates project-based mathematics, culturally and geographically relevant college and career curriculum, and ongoing coaching, the SLOPE Project has improved student achievement, transformed teacher practices, and helped students prepare for CCSS. Participants will experience activities that show how students were able to dream, do, and achieve!

Sharon Twitty, SLOPE i3 Project Director, Alliance for Regional Collaboration to Heighten Educational Success (ARCHES)
Ivan Cheng, CSU, Northridge; Robyn Fisher, R.T. Fisher Educational Enterprise; Kentaro Iwasaki, ConnectEd

Enhancing Underrepresented Students’ STEM Opportunities and Success with Federal Funding Room #29 C
The National Science Foundation funds STEM education projects! This session will help those new to NSF funding, especially in community colleges and universities; kindergarten through grade twelve administrators are also welcome. Specific NSF programs and proposal strategies will be explored. The proposer has written/collaborated on 11 funded STEM education proposals, seven from NSF.

Deidre Sessoms, Professor, CSU, Sacramento
**21st Century Accessibility Skills**

Students with disabilities need a level playing field to enter the current job market. This presentation on assistive technology (AT) is key to their success. Four skills: computer literacy, search engine efficiency, use of software and apps, and knowledge of AT will support their choice of science occupations.

*Jonn Paris-Salb, Assistive Technology Consultant, California Department of Education*

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**STEM Careers Exploration: Connecting Fundamentals to Practice with Multimedia**

Free media can be used to introduce, reinforce, or review topics covered in class and demonstrate real-world application of essential concepts within the STEM fields. Find out about new PBS resources to help engage diverse learners, promote careers, and teach STEM.

*Almetria Vaba, Project Supervisor, Education and Media Distribution, KQED*

*Andrea Aust, KQED*

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**Engaging Elementary Teacher Candidates in Learning NGSS Ideas and Practices**

Participants will learn about a suite of physical science curricula that engage elementary teacher candidates in practices of science as they develop core NGSS ideas and make connections with children’s learning. Classroom videos will be used as a context for discussions about the teaching and learning of science.

*Fred Goldberg, Professor, San Diego State University*

*Edward Price, CSU, San Marcos*

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**Putting the Engineering into Secondary Science with Project Prototype**

Project Prototype is a three-year project to partner science teachers with engineering professors and professionals to design test classroom units that bring engineering into the science class. This will be a hands-on workshop where participants will engage in engineering challenges and see how they fit into the NGSS science curriculum.

*Peter A’Hearn, K-12 Science Specialist, Palm Springs Unified School District*

*Sherri Stanbury, Palm Springs Unified School District*

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**Speedology as an Elementary Model NGSS-Aligned Curriculum**

This presentation will share the speedology curriculum that was developed through collaboration between Mattel, the USC Rossier School of Education, and current elementary teachers.

*Frederick Freking, Associate Professor of Clinical Education, USC Rossier School of Education*
Constructing Computational Models of Science with Scratch

Scratch (scratch.mit.edu) is programming language software that is simple for students to learn. Scratch is used as a tool to enable students to create their own computer simulations of science. Students learn valuable coding skills as they create visual models to illustrate key topics in science.

Brian Foley, Associate Professor, CSU, Northridge
Marschal Fazio, University High School

#BionergizeMe BETO’s First Semi-Annual Bioenergy Social Media Challenge

In 2014, the Department of Energy Bioenergy Technologies Office (BETO) will sponsor a high school challenge that engages students in learning about bioenergy. The panel will discuss ways for teachers to integrate the challenge into existing courses and offer instructional strategies for designing an online infographic.

Jennie Lyons, Einstein Fellow, Triangle Coalition
Anne Artz and Zovig Minassian, Triangle Coalition

Early Learning and STEM Integration: Bridge to the Common Core

Participants will explore how developmentally appropriate practices and the alignment of California Preschool Learning Foundations (a.k.a. standards), CCSS-Mathematics, and NGSS provide opportunities to integrate STEM in preschool through early elementary grades. Participants will also discover how research-based activities and classroom practices develop rich experiences to promote and support early STEM thinking.

Hilary Dito, STEAM Coordinator, Contra Costa County Office of Education
Debbie Supple, Contra Costa County Office of Education

Supporting Coherent and Rigorous Mathematics Learning Through the Common Core State Standards

This workshop aims to help participants understand the nature of the content and practice standards of the Common Core State Standards in Mathematics (CCSSM) through activities that follow the recommended learning progressions for each conceptual strand in the CCSSM.

Ferdinand Rivera, Professor and Chair, San Jose State University

Beyond Getting It “Right”: Deepening Mathematics Understanding Using Student Voice

This session will focus on how to create meaningful discourse opportunities to strengthen the connection between real-world context and mathematical content using “math talk.”

Cecilio Dimas, Director, STEAM Program, Santa Clara County Office of Education
Bernadette Andres-Salgarino, Santa Clara County Office of Education
ACCESS: Computer Science for All Students  
Room #32 B
The Alliance for California Computing Education for Students and Schools (ACCESS) will discuss critical issues of access and equity for underrepresented students in STEM - girls and students of color - and policy changes that will ensure all students and teachers have equal opportunities for teaching and learning computer science.

Julie Flapan, Executive Director, Alliance for California Computing Education for Students and Schools (ACCESS)
Debra J. Richardson, UC Irvine

Creating Integrated STEM Communities of Practice in High Schools  
Room #33 A
Join the presenters in discussing how successfully integrating STEM in CTE and academic core classes, including implementation of UCCI courses, maker spaces, and construction in engineering pathways, can lead to best practices in breaking down siloes and rigorous, relevant application of the Common Core and Next Generation Science Standards.

Betsy McKinstry, Director, College and Career Readiness, Antelope Valley Union High School District
James Stockdale and Ruben Rodriguez, Antelope Valley Union High School District

STEM Facilities and Their Contribution to a Successful STEM Instructional Program  
Room #33 B
PreFast manufactures and installs the only DSA Pre-Approved STEM buildings which incorporate multiple wet chemistry/hazardous chemical laboratories. This presentation will explore the contribution that installation of these STEM buildings at Leuzinger High School has made in Centinela Valley UHSD’s successful effort to transform STEM instruction within the district.

Brian Gaunce, Founder and CEO, PreFast Buildings
Dr. Allan Mucerino, Centinela Valley Union High School District

Growing a STEM Magnet School: From Seedling to Blossom  
Room #33 C
Educators from Notre Dame de Namur University and El Crystal Elementary in the San Francisco Bay Area partnered to grow El Crystal into a successful STEM Magnet program using project-based learning that incorporates Common Core State and Next Generation Science Standards. All aspects of this journey will be detailed.

Skip Johnson, Principal, El Crystal STEM Magnet School/San Bruno Park School District
Adrienne Hwee and Pam Mooers, El Crystal STEM Magnet School
Robert Ferrera and Stephanie Demaree, Notre Dame de Namur University
Join facilitated conversations led by STEM educators and experts. Each round will last 15 minutes. Attendees can participate in three different discussions during this session.

**Building Better Blends**

How are the goals of CCSS achieved and the bar for STEM performance raised in the US while integrating technology into the classroom successfully? With specific examples and best practices, this session will unpack how teachers can implement blended and competency-based learning from the ground up using ST mathematics.

*Debra Stacker, Engagement Specialist, MIND Research Institute*
*Erich Zeller, MIND Research Institute*

**Building Bridges Between Engineering and Science to Improve NGSS Practices**

The wide scope of design thinking — used for engineering (broadly defined) and science, whenever critical evaluation guides creativity in iterative problem-solving cycles of design — lets us build two useful educational bridges (engineering/science, life/school). This helps students improve their engineering and science practices, transfer of learning, and motivation to learn.

*Craig Rusbult, Teacher and Curriculum Developer, University of Wisconsin-Madison (retired)*

**From Enrichment to Innovation: Developing a STEM Learning Focus**

The journey for developing a STEM magnet learning focus that anchors to a school-wide vision for an integrated and innovative STEM learning model that meets the needs of all students from intervention to acceleration by making the transition from beyond the day enrichment to core instruction innovation will be shared.

*Jennifer Gateley, Principal, Vineyard STEM Magnet School, Ontario-Montclair School District*
*Elizabeth Flores and Adriana Melgoza, Vineyard STEM Magnet School*

**How to TEACH the CONTENT of NGSS and SMP**

There’s a big difference between pedagogy and content – especially concerning TEACHING the CONTENT of STEM effectively in light of Next Generation Science Standards and Standards for Mathematical Practice. This discussion focuses on recognizing crucial adaptation necessary in classroom instruction and how to prepare students for assessment, college, and careers more effectively.

*John Hollingsworth, Co-Founder, DataWORKS Educational Research*

**Infusing Literacy Strategies in STEM Learning**

In the era of the Common Core and the advancement of STEM fields, a constructivist mindset that favors investigation and an inquiry-based approach is re-emerging. This presentation will discuss literacy strategies that will allow all students to build their understanding of vocabulary and writing through the investigative approach.

*Tony Alteparmakian, Assistant Professor, CSU, Bakersfield*
*Bree Gage, CSU, Bakersfield*
NGSS and SBG: The Perfect Match!  
Table #6

The discussion will focus on the best ways to assess student understanding under the guidelines of NGSS and engineering practices. Using standards-based grading allows students to revise their thinking throughout the unit. Come and discuss ways to reach more students more often.

James M. Clark, Teacher/Curriculum Coordinator, Arroyo High School  
Samantha Johnson, Arroyo High School

San Diego Zoo Summer Teacher Workshops in Conservation Science  
Table #7

Teacher workshops in conservation science offer replicable and relevant conservation science activities for formal and informal education settings, connect science educators to wildlife conservation through relevant laboratory and field experiences, and provide a forum for science educators to share ideas for weaving conservation themes into their communities.

Maggie Reinbold, Associate Director of Conservation Education, San Diego Zoo Institute for Conservation Research

Soaring Across Curriculum with Project-Based Learning  
Table #8

Soaring Across Curriculum with Project Based Learning was conducted to infuse cross-curriculum within the local community. The cross-curricular rocket project uses the scientific method, geometry, and engineering principles in a manner that is very engaging for and applicable to students and can be implemented on any campus.

Jason Fletcher, Math Teacher, Freedom High School  
Sean Clarke, Freedom High School; David Ringler, Patriots Jet Team

Supporting Teachers and Students for Eighth Grade Math  
Table #9

Algebra in eighth grade has long been considered a “gateway” for higher learning. In the Common Core era, this challenge has even more dimensions. This session will focus on “Elevate [Math]” a holistic solution for supporting teachers and students through math-specific PD, innovative curriculum, education technology, mentorship, and college awareness.

Mike Welch, Director of Operations, Silicon Valley Education Foundation

What About Computer Science?  
Table #10

The Next Generation Science Standards left out computer science. This omission is especially unfortunate in California, where Silicon Valley companies struggle to recruit qualified talent crucial for innovation and economic growth. Computer science supports computational thinking, enriching other disciplines in the process. Efforts to expand K-12 computer science opportunities will be described.

Mark Miller, Executive Director, Learningtech.org  
Len Erickson, Learningtech.org
Chevron is proud to sponsor the 2014 California STEM Symposium.
Today’s students go on to become tomorrow’s employees – including ours. At Chevron, we support science, technology, engineering and math education to help students develop real-world problem-solving and critical-thinking skills. We’re preparing them for the opportunities ahead. It’s good for the future of our community. And our company.
Learn more at chevron.com
Session II Presentations
Monday, September 22 • 10:55 a.m. - 11:55 a.m.

Your choices in this session include: 1) distinguished speakers, 2) presentations and workshops, or 3) round table room.

DISTINGUISHED SPEAKER
Ballroom 20 A

Michael Funk, Director, After School Division, CDE

Bio: Michael Funk, Director of the After School Division for the CDE, has been charged with the development and implementation of a strategic plan to create expanded learning systems and programs that maximize outcomes for children, youth, families, school, and communities. Prior to this role, Michael was the Founder and Executive Director of the Sunset Neighborhood Beacon Center (www.snbc.org) in San Francisco which is regarded as a national model for community and after-school programming rooted in Youth Development.

Topic: STEM in Expanded Learning – How the High-Quality Elements of STEM and Expanded Learning Are Two Sides of the Same Coin

Description: California has adopted a bold vision for scaling quality across the largest Expanded Learning initiative in the nation. Learn how the elements of high-quality STEM and Expanded Learning programs share the same DNA and how promoting STEM in after-school and summer programs will increase the quality of programs across the state.

DISTINGUISHED SPEAKER
Ballroom 20 D

Van Ton-Quinlivan, Vice Chancellor of the Workforce and Economic Development Program, California Community Colleges

Bio: Van Ton-Quinlivan was named a ‘White House Champion of Change’ in her capacity as Vice Chancellor of Workforce and Economic Development of California’s Community Colleges. This Division administers state and federal funding applied to the career education mission across the system’s 112 community colleges. Appointed by Governor Jerry Brown in 2011, her leadership focus is on Doing What Matters for Jobs and the Economy (http://doingwhatmatters.cccco.edu). Ton-Quinlivan came to this position as a recognized thought leader in the energy and utility industry on the issue of workforce development.

Topic: Workforce, Job Creation, and a Strong California Economy

Description: Van Ton-Quinlivan was named White House Champion of Change in her role as Vice Chancellor of Workforce and Economic Development with the 112 California Community Colleges. Ton-Quinlivan will speak to the linkage between workforce, job creation, and a strong California economy -- and the importance of STEM-skills in positioning regional economies to compete with other states and around the globe.
Mathematics Intensive Summer Session (MISS) Model for the CSU
MISS is a program serving high school female students who may be the first in their families to aspire to attend college. A supportive environment prepares students to be successful in the math course they will take in the fall. The model can be replicated at other CSU campuses.

David Pagni, Professor, CSU, Fullerton

Computational Thinking in STEM Through Scratch
STEM teachers in Los Altos School District will demonstrate how they integrate Scratch programming in their third through fifth grade STEM curriculum using additional tools, including MaKey MaKey and Lego WeDo.

Amy Shelley, STEM Teacher, Los Altos School District

Using Paper Airplanes to Teach Science and Engineering Practices
Participants will explore two paper airplane labs designed to clarify the differences between science and engineering practices. One lab will explore changing only one variable at a time. One lab will include an analysis of how to build the most cost-effective way to deliver President Lincoln (a penny) the farthest distance.

Karen Bowers, Science Teacher, Grossmont Union High School District

STEM on a Shoestring Budget
Expensive equipment or sophisticated labs are not necessary to have highly-engaging STEM experiences in the classroom. Ten STEM projects that integrate physics, mathematics, chemistry, and biology, but cost pennies per student, will be presented. Projects include building fruit juice solar cells, batteries, motors, Mentos-powered dragsters, and robots.

Donald Mackay, STEM teacher, High Tech High

To Question or Not: Latino Student Attitudes in STEM Subjects
This presentation will address the issue of disproportionate Latino student interest and achievement in STEM subjects at the secondary level. The primary focus will be on changing Latino student attitudes during their high school years in STEM subjects (primarily mathematics). This research is based on results of a recent NCES longitudinal study which gathered data from over 28,000 high school students across the United States.

James Martinez, Lecturer, CSU, Channel Islands
Exploring Light and Waves Through an NGSS Lens  
Room #16 B
NGSS challenges educators to approach teaching science differently. Explore the shifts required by NGSS in relation to elementary concepts of light and waves. This session will address the 3D aspects of waves as presented in NGSS.

Laura Henriques, Professor, CSU, Long Beach; President, California Science Teachers Association

Turning Routine Questions into Probing Assessment Prompts  
Room #17 A
Assessment is a major driver in implementing Common Core practices in mathematics. In reality, daily and periodic assessment is continuous in mathematics classrooms. Strategies for converting routine exercises and procedural questions into prompts that require problem solving, reasoning, and explanation will be discussed, along with examples and resources.

Judith Kysh, Professor, Mathematics Education, San Francisco State University

Chevron REVS UP and CSUB  
Room #17 B
Chevron REVS UP Summer Research Program at CSUB is designed to rejuvenate kindergarten through grade twelve science and mathematics teachers, and intends to increase interest of high school students in careers in science and mathematics by offering hands-on research experiences for teams in biology, chemistry, computer science, geology, and physics.

Andrea Medina, Director of Grants and Outreach, CSU, Bakersfield

Free Online Tools for Exploring STEM Occupations  
Room #22
This workshop will provide an overview of California Career Resource Network (CalCRN) resources. CalCRN's online and mobile career exploration resources can assist students in discovering and exploring STEM-related occupations. Participants will take away a broad understanding of CalCRN resources and how to begin using them with students immediately.

John Merris-Coots, Education Programs Consultant, California Department of Education

Literacy and Engineering  
Room #23 B
Integrate engineering activities into literacy units for kindergarten through grade five. This workshop will provide hands-on learning experiences for a variety of engineering challenges that directly correlate to grade-level literature.

Joanie Craddock, STEM Teacher, Los Altos School District
**Session II Presentations and Workshops**

**Monday, September 22 • 10:55 a.m. - 11:55 a.m.**

**What’s the Connection? Integrating Mathematics, Common Core, and Content Areas**
Room #23 C

Participants will see examples of how to connect mathematics to Common Core literacy standards, mathematics standards, and Next Generation Science Standards using student interests and current events. Participants will learn how to create meaningful Common Core mathematics problem-solving activities driven by student questions and curiosity.

*Kristen Beck, Curriculum Coordinator, Auburn Union School District*

**The Common Core Instructional Shift: Empowering Student-Driven Learning**
Room #24 A

Participants will experience lessons from all levels that engage students in the exploration of Next Generation Science Standards and will learn the research behind, and strategies for, implementing the instructional shift necessary for student-driven education.

*Karen Patino, Resource Teacher, Kern High School District*

**From “Disadvantaged” to “Advantaged”: STEM as an Agent for Change**
Room #24 B

For disadvantaged students, STEM is more than just a different and engaging way to learn - it is their ticket to a better life for themselves and their families. Come learn about successful strategies that can empower educators to use STEM to impact today's present and growing populations of underrepresented students.

*Carlos Gonzalez, Director, UC Riverside MESA Schools Program*  
*Henri De Roule, The Science Experience; Wendy Zinn, San Bernardino Community College District*

**Incorporating the Arts into STEM for Early Childhood Education**
Room #24 C

By implementing STEM in early childhood settings, children are being exposed to these various approaches and can continue to engage in STEM throughout their education. Come experience a hands-on workshop where the importance of STEM in early childhood education will be investigated. Ways to approach art through STEM experiences will also be highlighted.

*Nada Ghaneian, Educator, UCLA Early Care and Education*  
*Tajmaya Anders, UCLA Early Care and Education*

**Data as Art: Visualizing Concepts, Phenomena, and Numbers**
Room #25 A

Drawing on scientific and mathematical data, students create art projects that support mathematics standards and NGSS performance expectations. The Armory Center for the Arts has been working with educators, scientists, and teaching artists creating lessons that offer new ways of processing information and interpreting data in a visual form.

*Doris Hausmann, Director of Schools and Developing Programs, Armory Center for the Arts*
Session II Presentations and Workshops
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Common Core for Science: Integrating Literacy in Science Classrooms
Room #25 B
This session will tackle the question: What does Common Core look like in science classrooms? Two tools used by science teachers in a NSF project will be presented: 1) Claim-Evidence-Reasoning Graphic Organizers and 2) Formative Assessment Probes. The strengths and limitations of these tools will be illustrated through student writing examples.

Christine Lee, Researcher, CSU, East Bay
Dawn O’Connor, Alameda County Office of Education

Bringing Together Successful Women in STEM to Inspire Girls
Room #25 C
The San Diego Science Alliance’s Better Education for Women in Science and Engineering program (BE WiSE) brings together the region’s assets and expertise in STEM - teachers and volunteers to inspire middle through high school girls who express an interest in STEM to change the future for women in STEM.

Karen Overklift, Program Director, SDSA BE WiSE Program

Integrating Filmmaking and Mathematics
Room #26 A
Participants will explore a new approach to developing mathematical fluency through the art of filmmaking. They will investigate ways of analyzing mathematical concepts by integrating filmmaking and mathematics, while learning the steps to successfully produce a student film.

Rogelio Villasano, Jr., District Consultant, South Whittier School District

Building the STEAM Shop: Makerspaces in Public Schools
Room #26 B
PCHS has built one of the few public school makerspaces in Southern California. The presenters have tackled the challenges of fundraising, tool safety, curriculum innovation, and UC requirements, while working directly with local institutions of higher education to bridge the gap between curiosity and career. Come learn how our STEAM Shop story can support change at your school.

Donna Mandosa, Technology Director, Palisades Charter High School

How To Expand STEM Opportunities for All: An Elementary Start
Room #27 A
Future elementary teachers learn to integrate STEM subjects into the kindergarten through grade six curriculum through the Hands-on Lab Internship in Science Teaching course for undergraduates at CSU, Chico. Mini lessons illustrating the scientific and engineering practices and serving as starting points and teaching models for deeper investigations will be presented.

Bev Marcum, Professor/Director, Department of Biology CSU, Chico/Inland Northern Science Project
Tanya Heaston, Department of Science Education, CSU, Chico
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**Engineering with Legos**  Room #27 B
Through hands-on activities, students can see engineering and applied mathematics come to life! Participants will have the opportunity to experience an activity for themselves and see how they can incorporate engineering, technology, and the arts together while teaching Common Core Mathematics Standards and Next Generation Science Standards.

*Aileen Rizo, Math Education Consultant, Fresno County Office of Education*

**STEM: Making Connections to Curriculum and the World's Connected Learning**  Room #29 A
Most state standards and the Common Core demand that students learn to connect and collaborate globally. How are these connections made? How are they done safely? Participants will see how students are motivated to more deeply engage in reading, writing, speaking, and mathematics because they are doing compelling, inquiry-based work.

*Brian Crosby, STEM Learning Facilitator, Nevada’s Northwest Regional Professional Development Program*

**Teaching the Engineering of STEM in the Classroom**  Room #29 B
Phil Jelinek, a retired, award-winning high school automotive instructor for over 25 years, developed and implemented the first UC-approved automotive physics (d-Lab Science) class and automotive engineering (g-Elective) class in California. Both classes incorporate STEM characteristics. Phil will demonstrate how to use/implement STEM principles in the classroom.

*Phillip Jelinek, Past President, California Automotive Teachers*

**Engaging Students with Place-Based Learning and Teach Engineering**  Room #29 C
Using place-based learning engages students to use STEM to solve local problems and plan for the future. The Teach Engineering curriculum uses field-tested, relevant engineering lessons to help students become problem solvers. Learn how place-based learning, using the Teach Engineering curriculum, can be incorporated into any discipline to support STEM learning.

*Cathy Parker, Director of School and District Support, Tuolumne County Superintendent of Schools
Glen White, Tuolumne County Superintendent of Schools*

**STEM and Autism: The Strong Potential of Students with ASD**  Room #29 D
Graduates in STEM subjects are highly prized in industry, commerce, and education. Students with autism often possess excellent visual discrimination, pattern recognition, and attention to detail - all skills that support success in STEM careers. Model programs to engage and advance students with ASD in STEM curricula will be discussed.

*Ellis Crasnow, High School Principal, Village Glen School*
Creating the K-16 STEM Pipeline Toward Success
Room #30 A
West Contra Costa Unified School District has designed an innovative, multi-leveled approach to integrating full service community schools, Project Lead The Way (PLTW) STEM pipeline from elementary, middle, and high school. This multi-leveled approach is a kindergarten through college (PLTW) STEM initiative, including adult training and apprentices programs.

Cecilia Mendoza, Executive Director of College and Career Readiness, West Contra Costa Unified School District

Middle School STEM Academies: A Successful District Model
Room #30 B
The Lancaster School District offers three middle school STEM academies as schools of choice, in addition to offering STEM electives at its comprehensive middle schools. School principals will share how these successful and popular schools were uniquely structured with the support of the local community.

Andy Glatfelter, Principal, Discovery School
David Denning, Endeaver Middle School; Mark Gross, Lincoln Elementary School

Collaborative Concept Generation Techniques: C-Sketching Engineering Design Ideas
Room #30 C
Participate in the authentic engineering practice and collaborative concept generation technique called C-sketching. Learn how the technique is used effectively in high school engineering classrooms through the research-based Engineer Your World program. Explore opportunities for incorporating structured creativity methods - and other engineering techniques - into the classroom.

Cheryl Farmer, Project Director, UTeachEngineering, The University of Texas at Austin
Pius Wong and Miguel Alanis, University of Texas; Pete Matus, Murrieta Mesa High School

AP Insight: A Strategic Focus
Room #30 D
AP teachers, higher education professors, and the College Board developed a suite of classroom tools called AP Insight to help more students succeed via a strategic focus on foundational areas of the course. Participants will review strategies for connecting critical concepts in their AP Biology syllabus to improve student learning.

Elaine Silverstone, Senior Director, AP Online Strategy, College Board

GLOBE CAP: At the Nexus of NGSS, WBL, and PBL
Room #30 E
Strategies to use Work-Based and Project-Based Learning to address the practices called for in the Next Generation Science Standards will be presented with GLOBE (Global Learning and Observation to Benefit the Environment) California Academy Program (CAP) as an example. A project framework, rubric, and WBL critical elements will be provided.

Erin Fender, Project Manager, UC Berkeley
Svetlana Darche, WestEd; Josh Bradley, Benicia High School
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“Farm Academy Live”: Bringing Mathematics and Science to Life Room #31 A
Farm Academy Live is an interactive video conferencing program that teaches students from where their food and fiber comes. Farm Academy Live provides students with an innovative and engaging virtual field trip to an agricultural destination. Courses offered are FREE and meet the Common Core State Standards.

Diane Friend, Executive Director, PLANT Foundation
Haley Hanse, PLANT Foundation

Sally Ride EarthKAM Room #31 B
Sally Ride EarthKAM (Earth Knowledge Acquired by Middle School Students) is a NASA-sponsored STEM engagement program that engages middle school students nationwide in exploring Earth from space. Students have the opportunity to photograph specific locations on Earth from a digital camera on board the International Space Station.

Karen Flammer, Senior Science Advisor/Director of EarthKAM, Sally Ride Science/UC San Diego
Chelsea Cochrane, Sally Ride Science

Flipping Your Mathematics Classroom: Three Years of Experience Room #31 C
Participants will discuss current research on flipping their classrooms. Learn from an experienced mathematics teacher who has utilized this process for three years. Learn from her triumphs and hurdles. The presentation will include an example of a video lecture, in-class activity, student feedback, and classroom assessment data.

Jennifer Oloff-Lewis, Assistant Professor, CSU, Chico
Danielle Reynolds, Inspire High School

Teaching the Why and the Where Before the How Room #32 A
To align to the Common Core Mathematics, help students retain their mathematics learning, and provide an opportunity for a productive disposition in mathematics, students need to learn WHY the mathematics works while connecting it to WHERE the mathematics is applied before just memorizing HOW to do the mathematics.

Chris Dell, Director of STEM Education, Shasta County Office of Education

Using Video Clips as Anticipatory Sets in Mathematics Classes Room #32 B
The Common Core and STEM initiatives increase the need for mathematics teachers to use interesting video clips to engage students in the learning process. Teachers can utilize video clips to help students learn mathematical/STEM concepts, apply literacy skills, and make relevant connections to real-world issues.

Donna Andrews, Associate Professor, CSU, Stanislaus
Re-imagining STEM Teacher Education
Room #33 A
For kindergarten through grade twelve education to align with effective, research-based STEM practices, universities need to re-imagine STEM teacher education. This presentation will highlight a partnership among local schools, a Noyce Master Teacher Fellowship program, the CSU Digital Ambassador project, and a new mathematics and science credential cohort at San Diego State University.

Donna Ross, Associate Professor, San Diego State University

Engage Students with Polar Science to Teach Climate History, Inquiry
Room #33 B
Climate studies, data collection and analysis, collaboration, and science communication are features of both CCSS and NGSS. Regina Brinker participated in an Arctic summer research program and will discuss how participants may use polar science to engage students in science and technology, and connect with scientists in the field.

Regina Brinker, Science Teacher, Livermore Valley Joint Unified School District and PolarTREC

Bringing STEM to Life Through a Linked Learning Approach
Room #33 C
Linked Learning is a high school transformation approach that brings STEM to life. Come learn about how Linked Learning integrates science, technology, engineering, and mathematics with work-based learning experiences to engage students and improve student achievement. Participants will hear and see Linked Learning in action through testimony and video examples.

Paul Hirsch, Principal, STEM Academy of Hollywood, Los Angeles Unified School District
Rob Atterbury, Director, Regional Support, ConnectEd: The California Center for College and Career

Session II Round Table Presentations

Join facilitated conversations led by STEM educators and experts. Each round will last 15 minutes. Attendees can participate in three different discussions during this session.

ACE Mentoring Student Engagement with Professionals in Architecture, Construction, and Engineering   Table #1
Learn about the ACE Mentoring Program and how architects, contractors, and engineers work to encourage and excite high school students to pursue design, construction, and other STEM careers. ACE also offers scholarships and grants to support continued student success. ACE supports over 8,000 students annually across the country.

Adrienne Luce, President, HMC Designing Futures Foundation
Sandy Kate, HMC Architects
An NGSS High School Chemistry Innovation Curriculum Introducing Engineering Principles Table #2
A new high school chemistry curriculum has been developed in collaboration with Cascade Designs that engages students in the engineering of a water purification device. This session will describe the project-based curriculum where students research and develop a prototype and compare it with Cascade Designs’ SE-200 water purifier.

Philip Hampton, Professor of Chemistry, CSU, Channel Islands
Carla Davis, Camarillo High School

Infecting Your Science Classroom With Mathematics, and Vice Versa! Table #3
Teachers of mathematics and science can help remove some common stumbling blocks for their students by teaching in context. Bringing mathematics into the science classroom and science into the mathematics classroom allows wholeness, reality, and meaning to student learning. This session is hands-on and discussion-based.

Jeff Lukens, Teacher, Sioux Falls School District

Institutional Agency for the Future of Mathematics/Science Education Table #4
Recruiting, supporting, and guiding diverse mathematics and science majors into education is a critical priority for the state. Learn how the Mathematics/Science Teacher Initiative is enriching the teaching force with intellectual and cultural assets in South San Diego.

Katrine Czajkowski, Resource Teacher (Curriculum and Professional Development), Sweetwater Union High School District

LabZone: Undergraduate General Education Opportunities for Service Learning in Middle School Table #6
Undergraduates need field-based, service-learning opportunities, especially if they are considering teaching. LabZone is a middle school field experience that is associated with a university general-education, service-learning course. This presentation will describe the course and associated field experience where undergraduates participate in and design mathematics and science games, then have opportunities to share them with middle school students.

Alexander Chizhik, Professor, San Diego State University

Learning to Mentor Preservice Mathematics Teachers Table #7
Experienced mathematics teachers served as co-teachers for preservice teachers engaged in a year-long program to develop their mentoring and co-teaching skills. The presenters will share program activities, self-assessment scales developed in collaboration with the teachers, and the perceived impact of the program on the teachers’ growth as mentors.

Ruth Yopp, Professor, CSU, Fullerton
Mark Ellis, CSU, Fullerton; Susie Min, Anaheim Union High School District
Mind the Gender Gap: Supporting Young Women in STEM  
Participate in an interactive round table on designing and building an education community that supports the engagement, success, and retention of K-12 students (particularly young women and girls) in STEM-based fields of study.

Brooke Lipson, Teacher/Curriculum Coordinator, Pasadena Independent School District

Roll Up Your Sleeves with Hands-on Science After School  
Experience how fun and easy science can be for students. Participants will roll up their sleeves and have fun with science while learning strategies for implementing it with their kids, all while supporting the NGSS.

Courtney Rudd, Afterschool Consultant, Developmental Studies Center

Thinking Creatively to Collaborate Across Districts in STEM Education  
With limited resources and staff for STEM education, how do all teachers in a district receive training, provide and replenish hands-on science kits, and integrate NGSS and CCSS? Participants will learn how to share resources, training materials, and increase community partnerships with informal organizations.

Elisa Slee, Beckman@Science Coordinator, TOSA, Capistrano Unified School District  
Julie Roney, Orange Unified School District

Youth STEM Network: Scaling a Successful OST Program  
This presentation will outline outcomes to date resulting from Youth STEM Network, a rigorous, year-round, out-of-school STEM academic enrichment program for youth that brings service learning opportunities for university students to the local community. Module content areas include computer science/cybersecurity, physics of sound, alternative energy technology, and plants and people.

K. Virginia Lehmkuhl-Dakhwe, Director, Jay Pinson STEM Education Program, San Jose State University

21st Century Classrooms  
How do you transform underutilized schools in West Oakland into high-quality, 21st century learning environments through the development of a STEM corridor? Come learn more from Allan Donnelly, Senior Strategist at MKThink, a leading design thinking, strategy and architecture firm in San Francisco.

Allan Donnelly, Senior Strategist, MKThink

Bridging the Gap Between Proficiencies and Concepts for CCSS Mathematics  
Attendees will experience how to design a meaningful STEM mathematics lesson that supports the Standards for Mathematical Practice to provide students with an understanding of the deeper concepts of CCSS mathematics anchor standards using real-world scenarios, while still providing opportunities to master essential grade-level proficiencies.

Elizabeth Flores, Teacher, Vineyard STEM Magnet School, Ontario-Montclair School District  
Jennifer Gateley and Sam Sanchez, Vineyard STEM Magnet School
Proud sponsor of the 2014 STEM Symposium

Join our esteemed CA STEM presenters:

**Julie Evans**  
*CEO, Project Tomorrow*  
**The Power of Data: Stats That Can Bolster Support for Your STEM Program**  
Monday, September 22  
2:35-3:35 pm  
Session 4, Room 20 BC

**Mark Shin**  
*Teacher on Special Assignment*  
*Hacienda La Puente Unified School District*  
**Biology Lab Practicum Transformed: Use of Online Assessments in Blackboard**  
Tuesday, September 23  
10:50-11:50 am  
Session 6, Room 33 B

And sign up to view a series of free Bb K-12 Live digital sessions presented by fellow educators and Blackboard customers. Get inspired to reimagine STEM education. [bbworldk12live.com](http://bbworldk12live.com)
INTRODUCTION

Lupita Cortez Alcalá

Deputy Superintendent, Instruction and Learning Support Branch
Office of State Superintendent of Public Instruction, Tom Torlakson

Ms. Alcalá represents the Superintendent in the program areas of English/language arts, English language development (ELD), history, visual and performing arts, physical education, teacher support, support for English learners and migrant students, curriculum and instructional resources, early childhood programs, science, technology, engineering, and mathematics, high school initiatives, and career technical education. She is also a commissioner on the California Commission on the Status of Women and Girls.

Q&A WITH MYTHBUSTERS JAMIE HYNEMAN

Hosted by Richard Zeiger

Chief Deputy Superintendent to California State Superintendent of Public Instruction, Tom Torlakson

Richard Zeiger serves as the Chief Deputy Superintendent to California State Superintendent of Public Instruction (SSPI) Tom Torlakson. Zeiger is responsible for providing direction for the development and implementation of statewide educational strategies and oversees all California Department of Education (CDE) program and policy operations. Prior to joining CDE, he worked for the state Legislature for 14 years, and before entering state service Zeiger was a journalist, serving as editor of the California Journal and the Sacramento correspondent for the Riverside Press Enterprise.

KEYNOTE SPEAKER

Jamie Hyneman, Mythbusters

Bio: Jamie Hyneman has worked at jobs ranging from librarian at the UN in Geneva, to cook, construction worker, and sailing and diving in the Caribbean. He had worked on special effects for hundreds of commercials and movies by the time he started hosting and producing Mythbusters on the Discovery Channel. As of 2014, Mythbusters has been on television worldwide for 12 years and has become the gold standard for STEM-based television. Jamie has produced a steady flow of innovative products at his FX facility, M5 Industries, as well as in collaboration with the Office of Naval Research, the U.S. Army, and several universities. He holds numerous honorary doctorates, degrees, and awards, and several patents in areas ranging from electro-mechanical products to solar energy collection and ultra-efficient armor.

Keynote Topic: You Can Bring the Horse to Water.....

Description: Jamie talks about Mythbusters’ unintentional success in popularizing science and opens the floor to discussion about how to show how deeply creative and fun STEM can be and why it needs to be.
Your choices in this session include: 1) distinguished speaker, 2) presentations and workshops, or 3) round table rooms.

DISTINGUISHED SPEAKER
Ballroom 20 A

Robert Twiggs, Professor, Morehead State University
Bio: Robert Twiggs has been a professor of Astronautical engineering at Morehead State University in Morehead, KY since July 2009. Prior to his time at MSU, Twiggs was a consulting professor in the aeronautics and astronautics at Stanford University for 14 years. He is responsible for developing the curriculum for students interested in designing, building, and operating small space experiments. He helped develop the original concepts for the Jiggy, CricketSat, CanSat, PocketQube, and the CubeSat for educational applications for use in space.

Topic: STEM, Making Education Stimulating and Fun

Description: STEM is the combination of stimulus and ability to make learning exciting and fun (it is serious, but FUN doing it). If we want to explore, to question, to wonder, or to just observe, we need to develop tools that allow us to see, to measure, to record, to compare, to explain, and to understand. One of my favorite areas of study is space. Space to me is anything higher than a house. I have tools to explore the atmosphere with party balloons, near space balloons, rockets, and now even earth orbiting satellites. I have even made small satellites that were launched into orbit on big rockets that orbit the earth. Do you know what it feels like to have a satellite with your finger prints that is orbiting high above the earth? Now, if you are going to design your own or teach students about space systems design, what should you know? Don’t panic, it is not rocket science.

PRESENTATIONS AND WORKSHOPS

Understanding the NGSS Middle Grades Learning Progressions:
Sessions 3 and 4, 1:25 to 3:35 p.m. Room #12, 13, 18, 19, and 23 A
Explore the State Board of Education’s preferred integrated standards for middle school and the alternative discipline specific model. Discuss possible implementation strategies for the integrated model.

Facilitated by: The California Science Project, the California Science Teachers Association, the K-12 Alliance/WestEd, the California Department of Education, and representatives from the California County Offices of Education

Engineering in Out-of-School Time Room #14 A
Participants will explore engineering incorporated into out-of-school time settings by engaging in short, hands-on challenges from Engineering Adventures and Engineering Everywhere. These free-to-download curricula are designed for third through eighth grade students. Children are encouraged to collaborate, communicate, and think critically in order to design successful solutions to engineering problems.

Kristin Sargianis, Director of Professional Development, Engineering is Elementary, Museum of Science, Boston
Bring Maker Projects to Your Classroom to Design the Future  
Room #14 B
Educators will learn how to use 3D design software to bring making to the classroom through free access to software provided by Autodesk’s Design the Future program. Peer educators will lead the workshop to share how the use of Autodesk software can engage students through maker projects.

*John Herridge, Education Program Manager, Autodesk, Inc.*

The Silent “T” in STEM: Classroom Technology Integration  
Room #15 A
The pen and paper of the 20th century is the stylus and tablet in the 21st century. Curriculum integration, creativity, critical thinking, collaboration, and the intentional use of technology is the new currency in STEM education. This session will discuss identification and thoughtful integration of classroom technology in STEM education.

*Shannon Tabaldo, Professor, Loyola Marymount University*  
*Dr. Anita Kreide, Loyola Marymount University*

Solar Cup: The Largest Solar-Powered Boat Race in the Nation  
Room #15 B
Solar Cup—the nation’s largest solar-powered boat race—is a seven-month program in which high school teams, totaling about 800 students, build and race solar-powered boats at Lake Skinner in Temecula Valley. They learn about conservation of natural resources, electrical and mechanical engineering, problem solving, and much more.

*Clay Elliott, Science Teacher, Metropolitan Water District/Anaheim Union High School District*  
*Adrian Hightower, Harvey Mudd College; Julie Miller, Metropolitan Water District*

California Central Valley Collaboration in Creating New Dreams and Traditions in STEM  
Room #16 A
California Central Valley is known for its wonderful fruits and harvest, but where are the rest of the STEM industrial partners sharing the wonders of STEM? Come see how 1,200 predominately low-income, first-generation Hispanic students and parents from across Central California attended the largest STEM conference in Central California.

*Diana Tapia-Wright, Director of Grant Funded Programs, Reedley College*  
*Maria Byrd-Harris, Reedley College*

Engineering in Elementary Science: Designing with FOSS  
Room #16 B
The FOSS program from the Lawrence Hall of Science has new resources for elementary teachers that incorporate science concepts and engineering design. Using FOSS modules, every teacher can provide students with rich experiences to collaborate in groups, develop solutions to problems, construct and evaluate models, and use systems thinking.

*Linda De Lucchi, Project Director, FOSS, Lawrence Hall of Science, UC Berkeley*  
*Larry Malone and Brian Campbell, Lawrence Hall of Science*
“Common Core” Your Textbook When It’s Not “Common Cored” Room #17 A
This workshop will engage participants in practical activities that will help them adapt existing textbooks to align with Common Core Standards for mathematical practice. Participants will receive ready-to-use materials as well as tips and resources for “Common Coring” their own materials.

Ivan Cheng, Associate Professor, CSU, Northridge

Feaster and Qualcomm Prepare Students for Careers in STEAM Room #17 B
Feaster Charter has partnered with Qualcomm’s Thinkabit Lab to teach students how to combine skills in mathematics, engineering, technology, and art to create products that can solve real-world problems and connect to grade-level curriculum. Students work to revise prototypes, code, and produce innovative projects that fix worldwide issues.

Heather Galyen, Teacher, Feaster Charter School
Sarah Motsinger, Feaster Charter School

Youth/Girls STEM Network: Developing STEM Pipeline in San Jose Room #22
Implementing and scaling the Youth/Girls STEM Network (Y/GSN) program in the San Jose area will be described. Y/GSN is a year-round, STEM academic enrichment program for youth that is instructed by community-based instructors and university students in service-learning projects. The presentation will discuss approaches to program management and instructor training.

K. Virginia Lehmkuhl-Dakhwe, Director, Jay Pinson STEM Education Program, San Jose State University

STEM in Action: Powerful Integrated STEM to Support Student Learning Room #23 B
Help every child see a pathway to a STEM career through early STEM instruction. Integrated STEM experiences make the most of instructional time by efficiently incorporating multiple domains and helping students make real-world connections. Learn how engineering design can provide rich, integrated STEM experiences that support NGSS and CCSS.

Sara Delano Moore, Director of Mathematics and Science, ETA hand2mind

Students with Learning Disabilities and Applied STEM Coursework Room #24 A
The Perkins IV Act (2006) seeks to increase STEM participation through applied STEM courses to the high school curriculum to include students with varied learning styles. This NSF-funded study asks: 1) Do learning disabled students take applied STEM coursework? and 2) Is there is an influence of this on STEM outcomes?

Michael Gottfried, Professor, UC Santa Barbara
Session III Presentations and Workshops
Monday, September 22 • 1:25 p.m. - 2:25 p.m.

Science and Mathematics: The Bookends of STEM
Room #24 B
In this session, participants will get authentic, hands-on training in how to effectively and appropriately blend science and mathematics instruction in the middle and high school classrooms. Real-time data will be collected by all participants, and the data will then be analyzed and discussed.

Jeff Lukens, Teacher, Sioux Falls School District

Supporting Common Core Math and NGSS in Expanded Learning Time
Room #24 C
Out-of-School Time offers tremendous opportunities for fun, hands-on mathematics and science activities. In this workshop, Oakland Unified School District’s After-School Programs Office will share promising practices for supporting non-credentialed, after-school staff and lead Common Core and NGSS-aligned mathematics and science activities through a learning community model focused on high-leverage facilitation strategies.

Kasey Blackburn-Jiron, Manager, After School Programs Office

Girl Power and STEM Learning: A Winning Combination
Room #25 A
Attendees will experience how to create meaningful STEM experiences that use brain-based research strategies to support a STEM learning model that is accessible and inviting to girls and empowers their participation and interest in STEM learning, both in the classroom and beyond.

Elizabeth Flores, Teacher, Vineyard STEM Magnet School, Ontario-Montclair School District
Carol Steel and Jennifer Gateley, Vineyard STEM Magnet School

Hack a Watercolor Bot! Ideas for Enticing Girls to Join and Lead STEM Exploration
Room #25 B
Hack a Watercolor Bot! Adventures in enticing girls to join (and lead) STEM technology clubs. Field-tested elementary school ideas to encourage girls to join (and lead) STEM clubs, classes, and groups will be discussed.

Kim Kern, Principal, Wade Thomas School

Charting Effective STEM Multi-Disciplinary Curriculum
Room #25 C
Beyond the rhetoric of STEM, Linked Learning, and enriched CTE Pathways, most educators lack a path to re-envision, revise, and re-align their daily instruction. Navigation North has partnered with a large statewide project to create the online tools and training to implement these research-based models for real classrooms across California.

Brian Ausland, Director of Education, Navigation North Learning
Jodi Halligan, Navigation North Learning
Interactive Stories, Games, and Animations Using Scratch  
Room #26 A
Create a first animation in 10 minutes and explore how Scratch makes it fun and engaging for students to work with open-ended, problem-solving activities. No programming experience? No problem! This workshop will share many resources available for educators and students. Scratch does not work on iPad or Android tablets.

Debbie DeLucia, Science and Technology Teacher, Escondido Christian School

STEM: What Does That Look Like in the Classroom?  
Room #26 B
STEM is the new buzzword, but what does a STEM classroom really look like? Participants in this session will experience examples of award-winning online student projects. See how students are motivated to more deeply engage in reading, writing, speaking, and mathematics because they are doing exciting, inquiry-based work.

Brian Crosby, STEM Learning Facilitator, Nevada’s Northwest Regional Professional Development Program

Plan Your Future: Let’s Backmap!  
Room #27 A
This workshop will provide a detailed unit to include lessons, resources, strategies, and support for teachers on how to implement a career education unit with minimal effort and time to enhance student preparedness for their chosen careers. This unit is supportive for post-secondary education of underrepresented students in STEM.

Kellie Williams, Business Teacher, Snowline Joint Unified School District/Serrano High School
Susan Morris, Snowline Joint Unified School District

Using Advertisements to Explore STEM Academic Language and Content  
Room #27 B
The presenter will: 1) share sources and types of advertisements for exploring STEM academic language and content, 2) analyze STEM academic language and content from sample advertisements, and 3) offer strategies for incorporating advertisements into teaching STEM academic language and content. The workshop attendees will participate in instructional activities.

Shelley Xu, Professor, CSU, Long Beach

Teach your K-5 Students to Write Code  
Room #29 A
Participants will learn how they can teach their elementary students to write code, along with engineering design concepts, using the Elementary Botball Challenge Program. Robots are a motivating way to teach STEM with a focus on computational thinking, problem solving, and teamwork.

Steve Goodgame, Executive Director, KISS Institute for Practical Robotics
Session III Presentations and Workshops
Monday, September 22 • 1:25 p.m. - 2:25 p.m.

A New Approach and a New AP Course: CS Principles
Room #29 B
Learn about the new CS Principles course called computer science and software engineering. Developed by CS educators and organized by the College Board and the National Science Foundation, its goal is to broaden participation in CS. Learn about course content, plans for a CS pathway, and participate in a hands-on lesson.

Carol Kinnard, Computer Science Teacher, Granada High School

Project Lead The Way and Common Core
Room #29 C
This presentation will show how Project Lead The Way (PLTW), the nation’s largest STEM-education system, is aligned with Common Core standards. Specific examples of PLTW curriculum will be presented with application of Common Core standards. The relation of PLTW to other CTE pathways will also be discussed.

Michael Martin, PLTW Lead Teacher/Coordinator, Martin Luther King High School

Promoting Equity and Access for STEM
Room #29 D
In this workshop, participants will examine LAUSD’s Advanced Placement Boost Program (APBP). The program’s focus is to increase AP STEM participation and performance in 20 low-income high schools. The presenters will share best practices which lead to an overall district increase of 8.1 percent in AP participation and 11.2 percent in AP performance.

Michael Lovelady, Coordinator, Los Angeles Unified School District

Developing and Implementing a STEM Quality Criteria Rubric
Room #30 A
The San Diego region has been collaboratively developing a STEM Quality Criteria Rubric to define what quality STEM programs and schools looks like. Participants will learn about the development process and how to use the tool in their own programs and schools.

John Spiegel, Science Coordinator, San Diego County Office of Education
Nancy Taylor and Ellen Peneski, San Diego Science Alliance

Planning and Implementing Integrated, Standards-Based Instruction for Diverse Learners
Room #30 B
Participants will experience an integrated mathematics-science lesson that will be mapped back to a process for planning integrated content in the middle grades. The process includes connecting content, practices, and context to maximize the intent of CCSS and NGSS. Strategies for alignment to standards and differentiated instruction will be shared.

Susan Gomez Zwiep, Associate Professor, CSU, Long Beach
David Harris, Escondido Unified School District
Using the iPad for Science Field Work

Mobility in the field is one of an iPad’s greatest features. Learn strategies for using iPads to make and collect observations both inside and outside the K-8 classroom. Learn how to turn those observations into digital presentations to share with peers and parents. Download Educreations, Explain Everything, Notability, and Gyro Compass from the App Store.

Mike Milanesi, Science Curriculum Specialist, Tulare City School District
Martha Thomas and Aubree Short, Tulare City School District

Open Minds: Seeing How Your Students Are Thinking

Assessing NGSS performance expectations requires students to have multiple assessment opportunities to demonstrate their understanding of these expectations. This session will show how SBG and its emphasis on the understanding of concepts, coupled with multiple and varied formative assessment opportunities, are the perfect fit for the depth of understanding required by NGSS performance expectations.

Samantha Johnson, Teacher, Arroyo High School, San Lorenzo Unified School District
Jim Clark, Arroyo High School

Engaging Learners in Science Through Visualizations, Simulations, and Digital Resources

Science teachers participating in National Science Foundation projects will present lessons aligned with Common Core and Next Generation Science Standards. These lessons will utilize free digital resources, visualization tools, and simulations to support student learning by engaging in inquiry-based activities. Teachers will share lessons and strategies, and describe how students were impacted.

Katherine Hayden, Educational Technology Professor, CSU, San Marcos
Nancy Cotter, June Richards, Gilly Ryan, CSU, San Marcos

A Roadmap for After-School Science in California

Based on research findings from the most comprehensive study to date of after school science offerings in publicly-funded after school programs, SRI Education will present a roadmap of recommendations for the future of after-school science in California. This roadmap will address program quality, instructional materials, and networks of support.

Patrik Lundh, Education Researcher, SRI International
Ann House and Carlin Llorente, SRI International
Critical Thinking to Support CCSS in STEM

This presentation will consist of a variety of short, five to ten (5-10) minute mathematics/science/engineering-based activities that promote critical thinking skills. Topics addressed will include surface tension, density, and chemical and physical reactions.

*Tami Hocker, Curriculum Coordinator, SIATech
Dave Meyer, SIATech*

Implementing Real-World, Problem-Based Mathematics Lessons

Students are excited to learn mathematics when they see it as trying to find the answer to a real-world problem they care about. Attendees will work through a problem-based lesson, discuss how it supports the Common Core, address potential implementation issues, and leave with access to hundreds of problems.

*Robert Kaplinsky, Math Teacher Specialist, Downey Unified School District*

Moving to the Music of Mathematics

This interactive workshop will provide participants with a variety of activities to reinforce and support mathematics concepts for pre-kindergarten students. Shapes, sizes, numbers, patterns, and spatial relationships will be key components of the workshop. Participants will interact in groups, move to music, use instruments, create songs and chants, and learn ways to enhance their children's mathematics learning experience.

*Roxanne Kilbourne, Program Specialist, neighborhoodhouse.org*

Multiplicative Structures in the K-12 Common Core State Standards in Mathematics: It's Algebra All the Way Down

This presentation will provide an overview of the Common Core State Standards in Mathematics from the point of view of multiplicative structures. Concerned stakeholders will learn how arithmetic and algebra are conceptually linked in the content standards within and across the grades that help all students develop a unified understanding of school mathematics.

*Ferdinand Rivera, Professor and Chair, San Jose State University*
Building Teacher Leaders’ Capacity to Implement Reform Efforts in Science Education  
Room #33 A
The session will describe the distributed leadership model developed by the NSF-funded Integrated Middle School Science project at CSU, East Bay. It will then focus on the structures and processes implemented for building teacher leaders that have the capacity to transform science education in alignment with NGSS and Common Core State Standards.

Dawn O’Connor, Science Director, Alameda County Office Of Education
Jeffery Seitz, CSU, East Bay

Inspiring the Next Generation of Innovators: Supporting Regional STEM Networks  
Room #33 B
Power of Discovery: STEM2 Initiative is a statewide effort to increase high-quality STEM learning experiences for youth in expanded learning programs. In this workshop, participants will learn about promising practices, challenges, and strategies related to building the capacity of organizations intending to support quality STEM learning opportunities across their region.

Jeff Davis, Director of STEM in OST, California AfterSchool Network

Developing the STEM Teacher Pipeline: Recruiting STEM Professionals as Second-Career Teachers  
Room #33 C
Learn how the EnCorps STEM Teachers Program recruits and supports professionals and veterans as they transition to becoming STEM teachers. EnCorps program includes professional development, early teaching experiences, and coaching from EnCorps staff. The presenters will share successful strategies that school and district leaders can use to help second-career teachers succeed.

Katherine Wilcox, Executive Director, EnCorps STEM Teachers Program
Join facilitated conversations led by STEM educators and experts. Each round will last 15 minutes. Attendees can participate in three different discussions during this session.

### Bringing Language and Science Together in Tulare (BLASTT) Table #1

This four-year CPEC-ITQ grant involves an innovative partnership between Tulare Schools, Fresno Pacific University, and K-12 Alliance to provide long-term improvement in science content and professional development for elementary school teachers. A cohort model will be provided to integrate language and science together using hands-on activities within the STEM field.

*Steve Pauls, Associate Professor of Chemistry and Physics, Fresno Pacific University*

### Building Academic Language in Science Classrooms Table #2

This presentation will connect NGSS and CCSS with an emphasis on academic language. Activities and examples to help teachers identify academic language demands in the science classroom will be provided. The presentation will also discuss strategies that allow students to practice language skills to become scientifically literate.

*Hui-Ju Huang, Professor, CSU, Sacramento*

### Does Single Sex Matter in Computer Science? Table #3

SRI International will share preliminary results from an NSF-funded study, Gender Equity in After-school Computer Science: An Impact Study of Single-Sex and Coeducational Settings. The study used a computer science (CS) curriculum designed to encourage youth from underrepresented populations in CS (e.g., girls, Latinos, African-Americans) to consider CS careers.

*Melissa Koch, Senior Educational Developer, SRI International*

### Engaging in NGSS Science Practices with Computer Supported Collaborative Science Table #4

Computer Supported Collaborative Science (CSCS) is a methodology that uses collaborative, cloud-based resources to engage all learners in the collection, analysis, and interpretation of individual data in the context of whole-class data. CSCS turns hands-on classroom activities into more authentic scientific experiences required by the Next Generation Science Standards (NGSS).

*Norman Herr, Professor of Science Education, CSU, Northridge*

### Initiating a Grass Roots Educational Outreach Movement in the Corporate World Table #5

Currently, interest in educational outreach has reached record highs, but building enthusiasm within a company can be a challenge. This presentation will address cost-effective strategies to develop a grass roots community dedicated to starting, sustaining, and expanding educational outreach efforts within a corporation.

*Brian Castello, STEM Outreach Coordinator, SSL*
Session III Round Table Presentations
Monday, September 22 • 1:25 p.m. - 2:25 p.m. • Ballroom 20 BC

Integrating 3D Printing into Robotics and Computer Programming Classes Table #6
In this presentation, a C-STEM teacher will explain how 3D modeling and 3D printing is used by students in robotics and computer programming classes to explore their creativity by turning ideas into 3D printed parts, building custom robotic systems for participation in statewide RoboPlay Video Competition, as an end-of-term project.

Ryan Mangan, Physics/Engineering Teacher, Sacramento City Unified School District

K-12 STEM Partnerships: Students as STEM Instructors and Mentors Table #7
Piner High School teachers initiated a STEM outreach program for elementary schools. Piner students prepare and teach STEM lessons in elementary classrooms. Elementary students also participate in STEM events hosted by Piner students and local professional agencies. This workshop will provide a model for fostering similar partnerships in your community!

Steve Carpenter, Teacher, Piner High School
Kristi Erickson, Piner High School

Project SWELL Environmental Education Curriculum and STEM Table #8
Project SWELL (Stewardship: Water Education for Lifelong Leadership) curriculum provides standards-based, structured inquiry-based, and real-world problem-based learning that interconnects STEM subjects. Project SWELL is a kindergarten through grade six teacher curriculum with hands-on lessons focusing on San Diego habitats, water science, solutions to pollution, and the importance of protecting the area’s waterways.

Sandra Lebron, Education Coordinator, San Diego Coastkeeper

STEM and Literacy Table #9
A summer enrichment program called “STEM and Literacy” was introduced at Raymond Villa Fundamental Intermediate in Santa Ana Unified School District for incoming eighth grade students. Students designed, built, and raced a model electric-powered car. They also used AVID strategies including WICOR (Writing, Inquiry, Collaboration, Organize, and Reading) to learn.

Grace You, Teacher, Raymond Villa Fundamental Intermediate

Sustainable Fish Farming for St. Joseph’s Secondary School in Uganda Table #10
University City High School’s Project Lead the Way Biomedical Sciences Course, in collaboration with a nonprofit organization, Quench and Connect, wrote a grant proposal for a rural school in Uganda to provide funding to maintain a marketable tilapia fish farm for teachers and supplies.

Ellie Vandiver, Director of School Engagement, Project Lead The Way

Google for Education Vision and Solutions Table #11
Join Google to discuss how schools are transforming their classrooms to increase student engagement, prepare students for their future careers, and prepare for common core. Instead of just making 10 percent improvements, we’ll discuss ‘moonshot’ thinking and some ideas gleaned from other districts on how they’re structuring their curriculum for 10X improvements in their classrooms using Google for Education solutions.

Angela Mecca, Regional Manager, Google for Education
A-MAN STEM Integrated Learning

This session will focus on utilizing space sciences and technology, along with blended STEM methodologies involving astronomy, geology, communications, propulsion, and sensory systems, to motivate middle and high school students. By providing quality mentorship and tutoring, as well as exposing students and their parents to role models in the fields of space science and technology, participation leading to career pathways of STEM professions is enhanced.

Bettye D. Walker, President/CEO, A-MAN, Inc. Intl. STEM Science Center

Building the Pipeline for STEM Leaders

The 49er STEM Leadership Institute is a six-year program for students to complete rigorous college preparatory curriculum and engage in engineering projects in a digital fabrication lab. The goal is to encourage students to pursue STEM majors at top-tier universities and become the future leaders in STEM fields.

Mike Welch, Director of Operations, Silicon Valley Education Foundation
Jennifer Lee, Silicon Valley Education Foundation

Developing Computer Skills By Mastering the CyberPatriot National Competition

Participants will learn how to recruit, train, and advance teams in the Air Force Association-sponsored CyberPatriot program. Program requirements, infrastructure demands, and coaching needs will be explained; sources of coaching staff will be presented; and a model budget will be shared so that educators can determine if this popular and affordable computer competition is practical at their schools.

Carey Peck, Program Coordinator, Los Angeles Unified School District
Harry Talbot, Los Angeles Unified School District

Digging Deep with PBS LearningMedia: Video Use for Teaching and Learning

Students’ fascination with videos is motivating educators to explore ways to leverage videos for all kinds of purposes. In this session, participants will explore a range of resources, including PBS LearningMedia videos, and get ideas on how to inspire students to use videos as a conduit to dig in and learn.

Almetria Vaba, Project Supervisor, Education and Media Distribution, KQED

Easy Tips and Techniques: Bring NGSS to Life Through Inquiry

Students are natural designers and engineers. Come experience some of USC’s project-based model curriculum for middle school students. Experience how new concepts from NGSS can be fun and easy to implement in the classroom tomorrow. Participants will see how to get the same amazing results the presenters’ students are showing.

Stacy Sinclair, Professor, University of Southern California
Frederick Freking, University of Southern California
Findings of the Power of Discovery: STEM2 Initiative Evaluation

UC Irvine will present findings using multiple sources of data from over 100 sites spanning 2013 to 2014. Staff reported that beliefs are associated with student interest and future plans in STEM, and that STEM-related training and professional development characterize support. Documentation and observation of STEM activities are linked with student outcomes.

Pilar O’Cadiz, Project Scientist, UC Irvine
Rahila Simzar, UC Irvine

LA’s BEST Celebrate Science

Participants will hear about a successful STEM-expanded learning model from LA’s BEST After-School Enrichment Program titled Celebrate Science. Ideas on developing an inquiry science model and building strong partnerships will be shared.

Stela Oliveira, Director of Education, LA’s BEST After School Program

Supporting Out-of-School Time Staff in Leading STEM Programs

Out-of-school time (OST) presents a unique opportunity to engage youth in hands-on STEM. To do this effectively, OST staff need training and support that helps them implement innovative STEM projects. Participants will explore best practices for supporting staff and will be given resources to develop their own training plans.

Jen Joyce, Director of Professional Development, Techbridge

Tinker Lunch Clubs

Increase student creativity, confidence, and collaboration by providing opportunities and materials to join the Maker’s Movement!

Beth Leach, STEM Teacher, Los Altos School District
Grace Choi, Los Altos School District

Strengthening STEM in Expanded Learning Programs

This discussion will engage participants in conversation about key changes that can help programs offer strong, engaging, and exciting science and STEM experiences. With staff PD and materials budget already on the list, we will generate and discuss a creative list of other supports, practices, and policies that could help sites strengthen their science offerings.

Carlin Llorente, Senior Researcher, SRI International
STEM LIVES AT YOUR LIBRARY

HERE ARE JUST SOME OF THE PROGRAMS YOU’LL FIND AT PUBLIC LIBRARIES:

- Afterschool STEM Programming
- Maker Spaces
- Robotics Workshops
- Teen Digital Literacy
- Homework Help
- 3-D Printers
- Books that support Common Core homework assignments

Programs are funded by federal grants managed by the Institute of Museum and Library Services and administered by the California State Library.
DISTINGUISHED SPEAKER

Hans Meeder, President, National Center for College and Career Transitions

Bio: Hans Meeder is co-founder and President of the National Center for College and Career Transitions (www.NC3T.com). The NC3T is a mission-driven organization with the purpose of fostering regional college-career pathway systems that are supported and led by alliances of educators, employers, and civic organizations. Prior to forming his work with NC3T and the Meeder Consulting Group, Meeder served as Deputy Assistant Secretary for Education in the U.S. Department of Education Office of Vocational and Adult Education.

Topic: The STEM Leadership Playbook

Description: At this presentation, Hans Meeder of NC3T will share findings from his new book, The STEM Leader Guide. You will discover how you can use a high-quality STEM curriculum to begin building a broader approach for STEM education that touches more students and links individual components of STEM education into a unified approach. The presentation and book are based on findings from The STEM Schools Project, a research project that identified components of well-performing STEM schools.

PRESENTATIONS AND WORKSHOPS

Incorporating Hands-on STEM Experiences with Your Students

This informative workshop will make it easy for all educators to incorporate STEM activities into their existing lessons. Using RAFT idea sheets and activity kits that directly support STEM learning, participants will create multiple sample activities and walk away ready to implement STEM activities the following day!

Selina Martinez, Product/Production Manager, Resource Area for Teaching

Into the Deep: The Seaperch Underwater Robot

Through the relatively inexpensive Seaperch underwater ROV platform, powerful and engaging STEM learning can occur. Come hear from teachers, informal educators, and participants in the National Seaperch challenge regarding the many uses of these devices inside and outside of the classroom, and their relevant engineering applications.

Carlos Gonzalez, Director, UC Riverside MESA Schools Program

Innovative Partnerships Preparing K-8 Teachers for Excellence in the NGSS

The CSU Science and Engineering Education Community involves faculty, kindergarten through grade twelve teachers, and community college partners in pioneering approaches preparing future and current elementary teachers for NGSS reforms. This presentation will describe the CSU systemwide and campus initiatives preparing kindergarten through grade eight teachers with STEM expertise to lead California’s new standards implementation.

Joan Bissell, Director, Teacher Education and Public School Programs, CSU Chancellor’s Office
Larry Horvath, San Francisco State University; John Keller, Cal Poly San Luis Obispo;
Deidre Sessoms, CSU, Sacramento; Fred Nelson, CSU, Fresno
Curriculum, Competition, and Certification in Robotics Education  
Room #15 B
Participants will have an opportunity to learn about the curriculum, competitions, and industry certifications that are available to students from elementary school through the university level from the Robotics Education and Competition Foundation. Participants will also be able to build and drive VEX VRC and IQ robots.

Nancy McIntyre, Staff, Robotics Education and Competition Foundation

Empowering Underserved Students to Address the Growing STEM Workforce Demands  
Room #16 A
Discover how experiential learning opportunities can increase retention of underrepresented and underserved students in STEM. Utilizing the NASA OSSI and NASA MUST projects as case studies, this workshop will identify strategies to better prepare and retain these student populations to address the growing STEM workforce shortage.

Engie Merino, NASA OSSI Project Manager, Hispanic Scholarship Fund Institute  
Cathalina Juarez, Hispanic Scholarship Fund Institute

Modeling the Universe with Mobile Devices  
Room #16 B
Come discover new and innovative ways to engage students with the use of iPads and other smart devices. Participants will learn how to make 3-D models of cosmic phenomena (e.g., moon phases, sun spots, etc.) and present these examples through the use of a variety of apps.

Jenifer Perazzo, Educator, Pleasanton/Hayward Unified School District and Lawrence Berkeley National Laboratory  
Stacey Holder, Pleasanton Unified School District

Introduction to Computer Science Using Alice  
Room #17 A
This program is an ideal introductory high school computer science course useful for recruiting female students into computer science. Alice is a 3D programming environment that creates animation; it is a freely-available teaching tool designed to be a student’s first exposure to object-oriented programming.

Erik Amerikaner, Oak Park High School, Oak Park Union School District

Zero to STEM in 180 Days!  
Room #17 B
Emblem Academy, a TK-6 public school, re-opened its doors in 2013 with an Ethics, Science, Technology, Engineering, Entrepreneurship, and Mathematics (ESTEEM) focus. From STEMinars to Flight Suit Fridays, come hear how Emblem STEMulates student learning! Participation is highly encouraged. Be ready to share with others blazing the elementary STEM trail.

Jon Baker, Principal, Emblem Academy  
Maria Blue, Emblem Academy
Science and Mathematics: The Anchors of the STEM Bridge
Room #22
Although technology and engineering are essential for a solid STEM effort, science and mathematics provide the structural support. In this hands-on, interactive session, participants will use state-of-the-art technology to collect and analyze data, just as they would with students in a classroom. Come and inspire your STEM program!

Jeff Lukens, Teacher, Sioux Falls School District

What Do 100+ REAL STEM Classroom Lessons Look Like? Room #23 B
Find out what “REAL” integrated STEM curriculum looks like designed by 50 REAL CA teachers...then get free access to all! Grab hundreds of ready-to-use lessons and resources linked to the new CTE standards, CCSS, and NGSS on topics like crime scene science.

MaryRose Lovgren, Project Coordinator, CTE Online
Susan Steward, Butte County Office of Education

Building Confident Mathematics Learners After School! Room #23 C
Giving kids fun and engaging experiences after school with mathematics can build their confidence and change their lives. Participants will learn about and experience cooperative mathematics games and activities that support the Common Core while helping children learn how to authentically work together.

Courtney Rudd, Afterschool Consultant, Developmental Studies Center

URL Before HTML: Digital Literacy Skills for Students Room #24 A
Many students lack basic Internet skills. Digital literacy skills are part of the foundation kids need to be successful in the 21st century economy. In this workshop, the link between Internet skills and career readiness beyond teaching kids to code will be discussed.

Stephanie Margossian, Chief Operating Officer, TRAIL and the LINK Americas Foundation

The Power of Discovery: STEM2 Tools and Resources Room #24 B
The Power of Discovery: STEM2 seeks to increase the quantity and quality of STEM learning experiences in the expanded learning field by providing resources to support STEM program quality. This workshop will highlight resources and tools to support programs as they plan, implement, and improve overall STEM learning opportunities for youth.

Uyen Do, Program Coordinator, California AfterSchool Network
How School Libraries Help Girls Engage in STEM
Room #24 C
Middle school is the pivotal time for girls to engage OR disengage in STEM. This session will show how school libraries can optimize successful STEM experiences through interactive technologies and social connections.

Lesley Farmer, Professor, CSU, Long Beach

Engaging Girls in Mathematical Problem Solving
Room #25 A
For girls to learn mathematics, they must be engaged and connected. Mathematics problems need to be presented in an inquiry-based, cooperative environment. The presenter will engage attendees in hands-on problem solving. Participants will be encouraged to work in groups and share their mathematical processes in a whole-group strategy session.

Dana Chohlis, Educator, Lafayette School District

Bee Bots Buzz: CS in Kindergarten to Second Grade
Room #25 B
STEM teachers in Los Altos School District use Bee Bots, programmable robots, to integrate computer programming into classroom curriculum. Attendees will learn successful lessons, as well as receive a hands-on experience with a Bee Bot.

Amy Shelley, STEM Teacher, Los Altos School District
Kelly Rafferty, Los Altos School District

Computer Science Engineering: The Prisoner’s Dilemma
Room #25 C
According to the Conference Board and the National Science Foundation, as of December 2013 there were 77,309 open computing jobs in California but only 4,324 computer science graduates. With the passage of AB 1764, learn what that means and how PLTW CSE implements the College Board’s 2013 CS Principles framework.

Karen Latuner, Director of School Engagement, West Region - California, Project Lead The Way
Lenny Perez, Da Vinci Science; Scott Lukesh, Fremont Academy; Carol Kinnard, Granada High School

Activate Computational Thinking Through Technology-Based Inquiry Room
Room #26 A
Teachers participating in a National Science Foundation project will present lessons that develop computational thinking skills and knowledge through science. Lessons involve middle school students in activities aligned with Common Core and Next Generation Science Standards. Teachers will share lesson strategies and describe student engagement in inquiry and problem solving.

Youwen Ouyang, Professor, CSU, San Marcos
PLTW, the Proven Paradigm for Preparing a STEM Workforce

Room #26 B

PLTW, the Proven Paradigm for Preparing a STEM Workforce

Traditional methods of recruiting youth and high school students into community college technical programs are no longer effective. This interactive workshop will demonstrate how a growing number of community colleges leverage grants and industry support to partner with PLTW high schools and provide college credit through articulation and concurrent enrollment.

Ron Way, Dean Emeritus, El Camino College
Lucas Pacheco, Hawthorne High School

Creating a Scaffold for English Language Learners and STEM Learning

Room #27 A

Creating a Scaffold for English Language Learners and STEM Learning

Attendees will experience how to create a STEM instructional model that supports English Language Learners through the integration of CCSS ELA and ELD standards to provide students with the support they need to access the rigor of grade-level STEM learning targets while closing the achievement gap for at-risk learners.

Adriana Melgoza, Instructional Coach, Ontario-Montclair School District
Jennifer Gateley and Amy Zoque, Vineyard STEM Magnet School

STEM Integrating Curriculum

Room #27 B

STEM Integrating Curriculum

This presentation will include a series of examples for integrating STEM curriculum across the core curriculum.

Kevin English, Instructional Manager, National Academy Foundation

6-12th STEM Using the Botball Educational Robotics Program

Room #29 A

6-12th STEM Using the Botball Educational Robotics Program

Participants will learn how to cover engineering standards using exciting and motivating robots that students design, build, and write code to program. Emphasis will be given to best practices to start, manage, and sustain a program. Impact in California, program implementation timelines, hardware, software, and supporting curriculum will be provided.

Steve Goodgame, Executive Director, KISS Institute for Practical Robotics

Selecting the Right Engineering Professional Development: A Standards-Based Approach

Room #29 B

Selecting the Right Engineering Professional Development: A Standards-Based Approach

Schools face a growing need to identify appropriate professional development opportunities for teachers of engineering. Learn how a matrix, based on Standards for Professional Development for K-12 Teachers of Engineering, can help participants decide which programs will meet their needs. This work is supported by the American Society for Engineering Education.

Cheryl Farmer, Project Director, UTeachEngineering, The University of Texas at Austin
The CA ELD Standards within STEM: Language Development in Action

This interactive presentation will engage participants in critical conversations regarding simple steps to integrate the CA ELD Standards into science, technology, engineering, and mathematics courses.

Gustavo Gonzalez, Educational Programs Consultant, California Department of Education

Teaching STEM to Diverse Students with Cloud Computing

STEM teachers shouldn’t just teach about technology, they should be using technology effectively in their teaching. Cloud computing provides tools to make classes more inclusive and engaging for ALL students. Teachers can learn to use online discussion and instant polling to ensure that all students are participating and sharing ideas.

Virginia Vandergon, Professor, CSU, Northridge
Brian Foley and Norm Herr, CSU, Northridge

STEM Skillbuilding with MOUSE Squad Student Tech Leadership

Learn how MOUSE Squad students participate in STEM activities such as “Computer-in-a-Box” and “UMCHS” while they learn 21st century and workplace skills. Aligned to Common Core State Standards, this nonprofit program uses an online curriculum and hands-on activities to provide students with tech leadership opportunities at schools and in their communities.

Jan Half, Program Director, MOUSE Squad Student Tech

STEM Launching to Success: The Three C’s (Community, College, and Corporate)

Allan Hancock College, HSI STEM, and Articulation Grant provide a unique opportunity to design, implement, and oversee activities, events, and resources that provide STEM students a chance to succeed. AHC focuses on recruitment, retention, and transfer rates when engaging the three C’s through programs such as the STEM transfer program, internship program, and outreach.

Ashley Brackett, STEM Counselor, Allan Hancock College
Emily Smith and Siboney Guardado, Allan Hancock College

Making Connections in Science for Future Teachers

Participants will engage in activities where they can make sense of new ideas in science through understanding the cross-cutting concepts of the Next Generation Science Standards. These activities were developed to improve the science learning experiences of future elementary teachers in the STEM Concentration at Fresno State University.

Frederick Nelson, Assistant Professor of Science Education, Fresno State University
Mary Brody and Carol Fry Bohlin, Fresno State University
**Session IV Presentations and Workshops**  
Monday, September 22 • 2:35 p.m. - 3:35 p.m.

**Hands-on Science Center in Your Neighborhood: Community Science Workshop Network**  
Room #30 D
Create the science projects of your imagination with the Community Science Workshop Network. Youth attend these programs to tinker with, make, and explore their world through science in under-represented communities across California. Explore a re-creation of a CSW space and build something to take home!

*Emilyn Green, Executive Director, Community Science Workshop Network*

**Vector Control: STEM in the Classroom and Beyond**  
Room #30 E
Mosquitoes, rats, and ticks, oh my! Vector control can be a bridge between the classroom and the real world. Attendees will utilize STEM concepts to solve real-life vector problems in activities that apply Common Core and NGSS standards and practices. STEM career accessibility in vector control will also be highlighted.

*Jennifer Ralph, Environmental Health Specialist I, County of San Diego Vector Control*

**NGSS and CCSS: Embracing the Reciprocity**  
Room #31 A
Participants will explore how NGSS and CCSS support a reciprocal environment for curriculum integration. Science and engineering practices provide a vehicle to engage students in authentic, purposeful opportunities to speak, listen, read, and write. Conversely, when students successfully navigate spoken and written language, they have greater accessibility in content areas.

*Jared Marr, Staff Development and Curriculum Specialist-STEM and CCR, Tulare County Office of Education  
Michelle French, Tulare County Office of Education*

**Implementing the NGSS in Your Classroom**  
Room #31 B
This workshop will provide participants with hands-on training and lively discussion centered on implementing the NGSS into their own classrooms. Participants will learn more about the NGSS by engaging in activities and discussions. The training will be facilitated by a NGSS curator from the National Science Teachers Association.

*Rodney Olson, NGSS@NSTA Curator and High School Physics Teacher, National Science Teachers Association and Crespi Carmelite High School  
Melanie Brown, Sweetwater Union High School District and National Science Teachers Association*

**Effective Strategies for Designing and Teaching Project-Based and Problem-Based Mathematics**  
Room #31 C
Explore effective strategies for designing and teaching engaging and relevant project-based and problem-based mathematics in this interactive, hands-on session. ConnectEd has developed approaches to mathematics that link concept development to workplace learning through project-based and problem-based mathematics in support of Linked Learning pathways. Come ready to discuss, question, and share!

*Kentaro Iwasaki, Associate Director of Learning, Teaching and Pathway Development, ConnectEd: The California Center for College and Career*
Aquaponics: Implement and Fund an Interdisciplinary STEAM Program within Master Schedule  Room #32 A
An aquaponics program incorporates a vertical master schedule strategy organized by class period and course discipline. This model was instrumental in the presenters’ school being named the 2013 CSBA Golden Bell Award winner for their Aquaponics: Applied Science Program, where the motto is, “The fish will save the world!”

Lou Randall, Assistant Principal, Val Verde Unified School District
Michael R. McCormick and Michael Towne, Val Verde Unified School District

STEM Through Project WET 2.0  Room #32 B
Participants will be engaged with hands-on P-WET activities that promote water education and are aligned with the NGSS and CCSS for mathematics and ELA.

Lou Loftin, K-12 Science/STEM Learning Facilitator, Nevada’s Northwest Regional Professional Development Program
Brian Crosby, Nevada’s Northwest Regional Professional Development Program

Advanced Placement and STEM for All Students  Room #33 A
Promoting advanced placement STEM courses will greatly enhance the students’ chances of entering and becoming successful in college, and in the careers of their choice. This session will share current research, best practices, and school models which promote AP and STEM for all students.

Donald Mitchell, Senior Educational Manager, College Board

Experience STEM Careers Through NASA’s Stratospheric Observatory for Infrared Astronomy  Room #33 B
Airborne Astronomy Ambassador and STEM teacher, Kathleen Fredette, will discuss SOFIA’S science and mission. Exploring STEM careers through the stories of people involved in a mission often inspires students to see themselves in those roles, lending a purpose and drive to pursue their own education in STEM.

Kathleen Fredette, NASA/SOFIA Airborne Astronomy Ambassador/STEM teacher, NASA/SOFIA and Palmdale School District

BLAST! CSUB and Lamont Adventures in STEM Thinking!  Room #33 C
CSUB and Lamont Adventures in STEM Thinking (BLAST) provide a STEM program to 500 underserved fourth to eighth grade students. It is a free summer STEM program with an emphasis on robotics, rocketry, and engineering. CSUB’s MSTI undergraduate and credential students and Lamont teachers work together using the CSUB co-teaching model.

Robin Valente, Educational Coordinator, CSU, Bakersfield
Andrea Medina, CSU, Bakersfield
Join facilitated conversations led by STEM educators and experts. Each round will last 15 minutes. Attendees can participate in three different discussions during this session.

**Controlling Airplanes Can Change Your Life**  
Table #1  
Women still only comprise six percent of the pilot population and continue to face specific obstacles that can be overcome. As Chief Pilot, the presenter flies aerial surveillance and lives a life in the skies. But whatever career is desired, learning to fly is a course in self-empowerment alone. Let your wings soar, FlyGirls!

Syd Blue, Pilot/STEM Author, Blue Blaze Productions, Inc.

**Creating a Rigorous, Hands-on Science Lab Learning Model**  
Table #2  
Attendees will experience how to design an engaging STEM instructional lesson plan model that creates a bridge from rigorous best first instruction in the classroom to a hands-on science lab experience to support the implementation of the NGSS with content integrations for the CCSS in ELA, mathematics, and ELD.

Anne Schreiner, Teacher, Vineyard STEM, Ontario-Montclair School District  
Mary Timassy-Nelson, Vineyard STEM

**Engineering in the Elementary**  
Table #3  
Participants will be exposed to the impact of introducing engineering through problem-based learning in the elementary school classroom. Not only will they have the opportunity to experience the engineering design process hands-on, but they will address its applicability to the Common Core State Standards and the Framework for 21st Century Learning.

John Gaines, Site Coordinator, South Whittier School District  
Rogelio Villasano, Jr., South Whittier School District

**Engineering Is Elementary: NGSS in the Classroom**  
Table #4  
Learn about Engineering is Elementary (EiE), the award-winning, research-driven, and classroom-tested engineering curriculum for first through fifth grade students. EiE includes engaging, project-based activities that integrate with science, literacy, mathematics, and social studies. Explore the connections between EiE and the Next Generation Science Standards, and see EiE in action through classroom video footage.

Kristin Sargianis, Director of Professional Development, Engineering Is Elementary, Museum of Science, Boston

**Great Initial First Instruction (GIFT) - All Students Need It**  
Table #5  
No more debate! Research shows explicit instruction is the best method to teach new skills/content. Discussion about Great Initial First Teaching (GIFT) and American Educator “Putting Students on the Path to Learning: The Case for Fully Guided Instruction” by USC’s Richard Clark, Paul Kirschner, and Melbourne University’s John Sweller will occur.

Gordon Carlson, Senior Consultant, DataWORKS Educational Research
Session IV Round Table Presentations
Monday, September 22 • 2:35 p.m. - 3:35 p.m. • Ballroom 20 BC

Moving from STEM to STEAM: Lessons Learned in High School
Table #6
In 2014, the Academy of Science implemented STEAM curriculum and activities. The presenter will share her STEM College Readiness program and describe opportunities and challenges associated with STEAM. Female high school students easily embraced STEAM curriculum and activities, unlike male students who had difficulty appreciating how “the arts” foster creativity in science.

Suzanne Till, Director, Academy of Science, Mater Dei Catholic High School

Planning Science Facilities to Support Next Generation Science Standards and Beyond
Table #7
New high school science lab designs will be presented, and planning tips shared, for those planning new and remodeled science facilities. Design features that support NGSS and technology integration will be highlighted. Participants are encouraged to share their ideas and experiences and learn what others are doing.

Kevin Wilkeson, Principal, HMC Architects
Sandy Kate, HMC Architects

Students, Science, and Social Media
Table #8
Learn how to bring social media into the classroom with KQED’s Do Now project to excite students about current science topics. With more than 150 schools participating, this project allows students to share their thoughts, respond to each others’ ideas, and gather evidence to engage in discussion.

Andrea Aust, Science Education Manager, KQED
Robin Meneher and Almetria Vaba, KQED

Teaching and Exploring Careers in Law and Justice
Table #9
Barrie Becker of ReadyNation will present interactive technological games and tools for educators to engage students in learning about youth law while promoting socially positive behaviors featuring “Juvenile Justice Jeopardy” and “The Good Behavior Game.”

Barrie Becker, State Director, ReadyNation
Kimberley Shapiro, Crime Scene Specialist 2, San Bernardino County Sheriff’s Department

The Importance of Content for Integrating NGSS and Common Core
Table #10
This session will focus on the role of university science faculty in supporting the shifts needed in middle school classrooms. Examples of how faculty in a NSF-funded project support the deepening teacher and student understanding of science content and tackle common misconceptions through NGSS and Common Core classroom activities will be highlighted.

Jeffery Seitz, Professor, CSU, East Bay
Rachelle DiStefano and Christine Lee, CSU, East Bay
Afternoon Session
Monday, September 22 • 4:15 p.m. - 5:15 p.m.
Exhibit Hall F/G

KEYNOTE SPEAKER: Laura Gouillon, 2013-14 SkillsUSA National High School Vice President
Bio: Laura Gouillon is a freshman attending the University of Southern California. A member of the USC Undergraduate Fellows program and the WVT. Rusch Undergraduate Engineering Honors Program, Gouillon is majoring in Computer Engineering and Computer Science. As a past SkillsUSA National Officer, she has served as a student representative of Career and Technical Education (CTE). Fascinated by the concepts of design and technology, Gouillon continuously recognizes the immeasurable impacts that STEM and CTE have had in cultivating her interests in engineering, filmmaking, sound design, business, and leadership.

Keynote Topic: Solve for E: STEM and CTE from a Student’s Perspective
Description: In this talk, college freshman Laura Gouillon shares her experiences with STEM and CTE education, and delves into the important subject upon every educator’s mind: How do we prepare STEM students for success in the future? Through her engineering and leadership involvement in the organization SkillsUSA, coupled with her STEM hobbies and school courses, Gouillon has explored the benefits of becoming a skilled individual for the workforce. She now details how educators can guide their students by having them complete a unique mission: Solve for E.

KEYNOTE SPEAKER: Thomas Suarez, Teen Programmer and Entrepreneur
Bio: At 12, Thomas gave a TEDx talk on the subject of kids teaching kids in the world of programming. His talk has been viewed over 3 million times, making it one of the most viewed TED talks of all time. Thomas started his company, CarrotCorp, when he was 8 years old and incorporated the company, CarrotCorp, Inc., at age 13. Thomas recently developed a new 3D printer technology and obtained a provisional patent. He has developed over 20 iOS apps, 9 Android apps, and 3 Google Glass apps.

Keynote Topic: Technology in Education and Beyond: A Student’s Perspective
Description: Thomas will discuss his experiences in technology, including his work to date and the interesting opportunities of the future. He will talk about his latest ideas, particularly in 3D printing and the sharing of his programming curriculum, AppCity, through partnerships with non-profit organizations. In addition, he will comment on the progress and challenges of current technology education reform.

KEYNOTE SPEAKER: Alex Kajitani, 2009 Teacher of the Year
Bio: Alex Kajitani is the 2009 California Teacher of the Year and a Top-4 Finalist for National Teacher of the Year. He is known around the country as “The Rappin’ Mathematician,” and his CDs and workbooks are being used in classrooms and homes around the world to engage students in math. A highly sought-after speaker, he is also the author of the acclaimed book, Owning It: Proven Strategies for Success in ALL of Your Roles as a Teacher Today, recently named “Recommended Reading” by the United States Department of Education. He has been honored at the White House, has a popular TED Talk, and has been featured in many media outlets, including the CBS Evening News with Katie Couric. Visit www.AlexKajitani.com for all he does (and raps!)

Keynote Topic: Making Math Cool: From Desperate and Demoralized to California Teacher of the Year
Description: Twelve years ago, Alex Kajitani was a struggling new teacher in one of California’s poorest neighborhoods. His middle school students were unmotivated, unengaged, and uninterested in the math he was teaching. Demoralized and desperate, he set out on a journey to turn his class, and his life, around. Alex’s journey -- from frustrated new teacher to being honored at The White House as the 2009 California Teacher of the Year -- is one he now shares across the country with educators, community leaders, and the corporate world, to inspire them to new heights and fresh ways of thinking.
The California State University Salutes the 2014 California STEM Symposium

We proudly support your outstanding work advancing the Common Core and Next Generation Science Standards. Throughout our 23 campuses, the CSU is preparing education leaders whose talent, creativity, and drive will build and sustain California’s future.

SAVE THE DATE!

Home to a thriving innovation economy and a community of dedicated educators and activists, San Diego offers the perfect backdrop for the 4th annual U.S. News STEM Solutions National Leadership Conference. Please make your plans now to join fellow leaders from business, education and government to maintain our hard-won momentum and forge the STEM workforce of tomorrow.

For sponsorship opportunities, email SponsorSTEMSolutions@usnews.com
INTRODUCTION

Blair Blackwell, Chevron

Bio: As the Manager of Education and Corporate Programs at Chevron Corporation, Blair Blackwell is responsible for leading Chevron’s education-focused social investment initiatives in the United States. She has over 15 years of experience with the private sector, nonprofit organizations, and international organizations in Africa, the Balkans, Central Asia, and the United States. Previously, she served as director of private sector initiatives for the International Crisis Group and executive director of Princeton in Africa. She earned a bachelor's degree in Slavic Languages and Literature from Princeton University, and is a Term Member of the Council on Foreign Relations.

KEYNOTE SPEAKER: Mae Jemison, M.D. and Astronaut

Bio: Dr. Mae C. Jemison, the first woman of color in the world to go into space, served six years as a NASA astronaut. She flew aboard the Space Shuttle Endeavour, STS-47 Spacelab (Japan) mission in September 1992 and was NASA’s first Science Mission Specialist performing experiments in material science, life science, and human adaptation to weightlessness. Dr. Jemison is currently leading 100 Year Starship (100YSS), an initiative seed funded by DOD’s Defense Advanced Research Project Agency (DARPA), to assure the capability for human interstellar space travel to another star is possible within the next 100 years. She also is founder of the technology consulting firm The Jemison Group, Inc. that integrates the critical impact of socio-cultural issues when designing and implementing technologies, such as their projects on using satellite technology for health care delivery in West Africa and solar dish Stirling engines for electricity generation in developing countries.

Keynote Topic: STEM, Diversity, and Its Importance to a Successful Future
DISTINGUISHED SPEAKER

Christopher Roe, President and Chief Executive Officer, California STEM Learning Network

Bio: Christopher Roe is the president and chief executive officer of the California STEM Learning Network (CSLNet), a nonprofit organization founded in 2010 to ensure that California is a national leader in preparing STEM-capable students. Roe is in charge of overseeing the creation of strategic relationships and collaborating with regional, state, and national partners to rapidly scale innovative STEM teaching and learning. Roe received a Master’s in public policy from the University of California, Berkeley Goldman School of Public Policy, and a Bachelor of Science degree from the University of Wisconsin, Madison.

Topic: The State of STEM at a Time of Transition

Description: Chris Roe will share his perspectives on how to strengthen STEM education in California during the unprecedented transformation of the state’s education system that includes implementation of Common Core State Standards, new science standards that incorporate engineering design, and increased emphasis on career technical education and computer science. Participants will leave with a call to action to make this STEM education a reality for all students in the state.

PRESENTATIONS AND WORKSHOPS

Linking NGSS and CCSS: Sessions 5 and 6

Learn how to use the Science Literacy Professional Learning Module as a resource to help K-12 teachers better understand how literacy (speaking, listening, writing and reading) deepens student understanding of science.

Facilitated by: The California Science Project, the California Science Teachers Association, the K-12 Alliance/WestEd, the California Department of Education, and representatives from the California County Offices of Education

Experiencing the NGSS Instructional Shift for the Classroom: Sessions 5 and 6

Create an Action Plan: An opportunity for the district teams to share their learning from the conference and decide next steps for themselves as district leaders and for their teachers and other stakeholders; and Lesson Exploration: Experience a sample lesson that demonstrates the NGSS “shift” with examples at primary, upper elementary, and secondary (middle school and high school) schools.

Facilitated by: The California Science Project, the California Science Teachers Association, the K-12 Alliance/WestEd, the California Department of Education, and representatives from the California County Offices of Education

Women Who Choose Computer Science: What Really Matters

To guide Google’s outreach and investments in promoting computer science education and encouraging women to pursue CS, the company conducted a study to identify and understand the factors influencing young women’s decisions to pursue degrees in CS. It identified encouragement and exposure as the leading factors influencing this critical choice.

Hai Hong, K-12 Education Program Manager, Google
A Network of Programs and Effective Strategies for Promoting Girls in STEM  
Room #14 B
The California Girls Collaborative in STEM (CalGirlS) is a network of programs and organizations that actively supports learning opportunities for girls in STEM. Panelists will share specific equity resources, program strategies, and research-informed approaches drawn from work across innovative programs that effectively support girls.

Sherry Hsi, Research Director, Lawrence Hall of Science, UC Berkeley; Melissa Koch, SRI International; Jen Joyce, Techbridge; Annie Averitt, UC Berkeley; Heather Gibbons, Expanding Your Horizons

Engineering Technology: Project Based Learning for ALL Students!  
Room #15 A
Want to learn about a course in which students of *ALL LEVELS* work together to design and create amazing projects like a hovercraft, smart house, or solar-powered vehicle? This class incorporates multiple facets of engineering, including robotics, machining, pneumatics, and welding, while promoting soft skills like teamwork and communication, so students go through the full spectrum of the design process from idea generation to working prototype!

Joseph Russo, Teacher, Beaumont High School

P21 Sustainability Showcase  
Room #15 B
The Sustainability Showcase features student presentations from elementary, middle, and high school students that address solutions to global issues. Students are given a platform to advocate for issues they believe in and highlight the good work they are doing in their communities to create a sustainable future.

Clay Elliott, Science Curriculum Specialist, Anaheim Union High School District  
Jamie Clapper and Bev Berekian, Anaheim Union High School District

Electronic Music: Introduction to Algorithmic Thinking Using Arduino Microcontrollers  
Room #16 A
Students love music, but has it ever been used to introduce algorithmic thinking? In this interactive session, participants will work in teams to build and program a simple electronic instrument and explore its potential for teaching algorithmic thinking. Participants will leave with flowcharts, pseudocode, and implementation ideas.

Pius Wong, Project Director, UTeachEngineering, The University of Texas at Austin  
Cheryl Farmer and Miguel Alanis, University of Texas; Pete Matus, Murrieta Mesa High School

Connecting STEM Content to Real Life Using Multimedia  
Room #16 B
Use free multimedia resources from KQED to engage diverse learners, promote STEM careers, and connect science and engineering concepts to the real world. Participants will learn strategies to easily and effectively integrate video, audio, interactives and more into classroom curriculum to ignite students’ curiosity.

Andrea Aust, Science Education Manager, KQED
Mathematics at the Core: PBS Middle School Resources for Diverse Learners  Room #17 A
Discover a collection of middle school math resources from public television station contributors. Designed for middle school students of diverse learning styles and backgrounds, explore innovative media resources that reflect a wide range of culturally responsive perspectives. Participants will receive strategies for incorporating activities that accompany resources.

*Almetria Vaba, Project Supervisor, Education and Media Distribution, KQED*

Engineering with Origami  Room #17 B
What do heart stents, air bags, the Cassini Rover, museum exhibitions, robots, and peace cranes have in common? Origami - the ancient art of paper folding. Participants will explore first-hand how origami reveals a rich geometric structure to solve complex industrial problems in the automotive, space exploration, and medical fields.

*Christi Wilkins, Executive Director, Dramatic Results*
*Raquel Lira, Steven Urubek, and Lucina Rudolph, Dramatic Results*

STEM Expo: An Exhibition of Innovation  Room #22
If science fairs are dreaded and assistance is needed in getting students excited about STEM, come learn about an innovative alternative involving seven categories. Participants will learn how to start their own STEM Expo and benefit from free resources.

*Eric Bull, Chief Instigator and Executive Director, STEM Expo*

Teaching Mathematics in High-Impact Schools with the Common Core Standards  Room #23 B
A panel of National Science Foundation Noyce scholars will share their experiences from their first two years of teaching mathematics at the middle school and high school levels, with particular emphasis on implementing the Common Core Standards.

*Marty Bonsangue, Prof. of Mathematics, CSU, Fullerton*
*Sohayla Lajehardi, Sarah Yang, Xuan Mai Dang, and Susanna Meza, CSU, Fullerton*

Lessons Learned/Future Directions for Teaching Integrated Computing and STEM  Room #23 C
This lecture presents the UC Davis C-STEM program with innovative Common Core standard-compliant courseware and teaching strategies for integrating computing in C/C++ and robotics into formal K-14 STEM education, with a focus on Algebra. The program culminates with the annual C-STEM Day with RoboPlay Competition and Math Programming Competition.

*Harry Cheng, Professor and Director, UC Davis C-STEM Center; Dr. Ronda Adams, Yolo County Office of Education; Heidi Espindola, UC Davis C-STEM Center; Merry Kim, Coastline ROP*
Connecting NGSS to Epic Engineering Curriculum in Middle School

This presentation will connect the NGSS to engineering curriculum by having the audience participate in two cross-curricular activities using the Engineering Design Process. Included in this presentation will be an overview of a year’s worth of curriculum tying engineering to NGSS and Common Core.

Sherri Stansbury, Science and Engineering Teacher, Palm Springs Unified School District
Peter A’Hearn, Palm Springs Unified School District

Students as Science Illustrators: Using Art to Communicate Science Concepts

Focusing on drawing as an effective way to understand and communicate science concepts, this workshop will aim to: 1) provide examples of student learning through a science illustration program, 2) take the fear out of incorporating the arts into science activities, and 3) give participants a hands-on art/science experience.

Stacey Vigallon, Director of Environmental Education, Los Angeles Audubon Society

Strategies for Teaching with Complex STEM Text

Participants will explore how to effectively integrate language and literacy instruction in STEM content areas. They will examine instructional strategies to help make complex text in STEM disciplines more accessible to students. In addition, they will discover how to use their local California Reading and Literacy Project as a resource for STEM instruction.

Bradley Schleder, Science Project Director, Kings Canyon Science Demo Center
Jean Brletic, California Reading and Literature Project, Region 7

Lasers, Fire, and Robots! Igniting Interest in STEAM

What if it was possible to leverage kids’ interest in games, fashion, and music to engage them in more mathematics and science? Participants will be introduced to STEAM Carnival, an entertainment showcase that combines hands-on social games with project-based learning to inspire kids of all ages to pursue STEAM: science, technology, engineering, art, and mathematics.

Brent Bushnell, CEO, Two Bit Circus

Technology for Tots: Digital Literacy in the Early Childhood Classroom

Exposure to technological learning in the early childhood classroom is vital to later scholastic success. Unfortunately, many programs avoid incorporating it due to limited understanding of what technology is. This lecture will explore different types and approaches to technology that are socially responsible, as well as developmentally and culturally appropriate.

Julia Childs Andrews, President Elect, San Diego Association for the Education of Young Children
Digital Art Projects for Self-Absorbed Teenagers  Room #25 C
Teenagers are biologically more self-centered than adults. This presentation will show how to achieve 100 percent participation with this challenging age group. These digital media (Photoshop, Illustrator, or even Paint) projects are rigorous and high-interest. Most include a writing component.

Connie Mitchell, Digital Media Instructor, Nellie Coffman Middle School

Blending Computer Programming with Geoscience Curriculum to Engage and Motivate  Room #26 A
How are students motivated? This presentation will describe how two high school classes (geoscience and computer programming) have been blended into a unique project-based cohort in an effort to answer that question. NGSS-themed projects and examples will be shared, specifically the semester two (2) project using VEX robots.

Rhonda Frohn, Science Teacher, Thousand Oaks High School

Teaching in Depth: Implementing Virtual STEM Labs in the Classroom  Room #26 B
Join STEM teachers who have recently piloted virtual reality in the classroom for a hands-on workshop with the zSpace STEM Lab. Through creating individual interactive activities in zSpace and learning about the best practices discovered through the pilot, participants will understand the impact of virtual reality in the classroom.

Kelly Rafferty, STEM Teacher, Santa Rita School, Los Altos School District
Elizabeth Lytle, Los Altos School District

Creative Circuits  Room #27 A
Using everyday objects, participants will explore circuitry and create free standing and self-propelled bots. Come learn to integrate hands-on experiences with Foss and NGSS!

Grace Choi, STEM Teacher, Los Altos School District
Beth Leach, Los Altos School District

Let's Get REAL (Renewable Energy Academy of Learning)  Room #27 B
Get first-hand accounts from teachers of Desert Hot Springs High School’s REAL Academy. Hear about what it is like being in a California Partnership Academy, see some of the awesome projects students are doing in renewable energy, and see how staff members plan cross-curricular activities for the classroom.

Mike Phelan, Career and Technical Education Teacher, Palm Springs Unified School District
STEM Materials Management Systems  
Room #29 A
The STEM Materials Management Workshop will “introduce” K-8 educators to the use of recycled materials for implementing hands-on student learning activities in support of the Engineering Design standards. Participants will experience dynamic STEM activities that engage learners with sustainable materials - leading to scalable STEM that is economically and environmentally responsible.

Russ Billings, STEM Programs Consultant, Trash for Teaching
Leah Hanes, Trash for Teaching

Proven Strategies to Recruit and Retain Women in STEM (Lecture)  
Room #29 B
Despite girls’ math successes, many lose interest. This lecture will present strategies that have effectively built and maintained women’s confidence and interests in STEM careers. Learn how to protect girls from outdated stereotypes and build a culture of respect for all. (Panel discussion is the next session.)

Debra Kimberling, Director of Advocacy, Society of Women Engineers

Inquiry Labs that Launch Students into Science and Engineering  
Room #29 D
Come experience some of USC’s project-based model curriculum. Experience how the new focus on engineering and design from NGSS enhances science and AP lessons, engaging students and re-energizing teachers. Participants will see how to get the same amazing results the presenter’s students are showing.

Frederick Freking, Associate Professor of Clinical Education, USC Rossier School of Education

STEM Jobs #DoWhatYouLove  
Room #30 A
With 1,500 majors and thousands more job types, making college and career decisions is challenging. STEM Jobs has developed a pioneering new technology platform that connects students to STEM careers, schools, scholarships, and internships. Students can access the platform at STEMjobs.com and sign up for free digital magazine subscriptions.

Daniel Nichols, President, STEM Jobs

National Geographic Explorers: From the World to Your Classroom!  
Room #30 B
National Geographic provides exciting examples of an integration of disciplines without the traditional barriers between science, technology, engineering, and mathematics, focusing on innovation, addressing questions, and designing solutions to complex problems. NG Explorers provide ideal role models of STEM in the real world and how to integrate STEM into teaching.

Tom Hinojosa, National Science Engagement Consultant, National Geographic Learning
Session V Presentations and Workshops
Tuesday, September 23 • 9:40 a.m. – 10:40 a.m.

Using Free Live Webcams to Develop the Scientific Practices
Room #30 C
Live webcams give a unique view of animals at zoos, aquariums, and even in the wild. Participants will discover how to use this technology as a compelling way to engage students in scientific practices. Example activities will demonstrate ways to scaffold this inquiry for grades four through eight.

Rochelle Urban, Manager of Student Education, California Academy of Sciences

Converting Labs to Meet Engineering Standards
Room #30 D
This workshop will demonstrate how to convert traditional science labs into engineering experiments under NGSS.

Heather Wygant, Science Educator, Ann Sobrato High School

STEM in the Elementary Grades: An Integrated Approach to Scientific Discovery
Room #30 E
Learning in the 21st century requires a rigorous, application-based approach, combining literacy instruction with a laser-like focus on relevant STEM topics. This presentation will highlight the use of the Sci-5 instructional model to master NGSS performance expectations and accelerate literacy. Students will provide hands-on demonstrations and showcase opportunities for integrated digital media presentations.

Caryn Lewis, Principal, Victoriano Elementary School, Val Verde Unified School District
Michael McCormick, Val Verde Unified School District

Building Capacity of STEM and Common Core in Elementary
Room #31 A
Teachers and administrators will describe how their elementary schools began a STEM program in fifth grade, including topics of flexible scheduling, student achievement, teacher growth, and administrative goals of building capacity throughout the school. They will provide examples of their STEM units and a hands-on activity.

Manda Sias, Teacher, Menifee Union School District
Kristina Lyman, Mikie Jones, Bernadette Seiler, and Sally Longan, Menifee Union School District

Expanding All Students’ STEM Career Opportunities: Summer Health Sciences Academies
Room #31 B
“Exploring Health Careers” is a summer academy offered at CSU, Sacramento that assists high school students in determining whether careers in the health professions are suitable to their interests, talents, and skills. This academy may serve as a model for collaboration between high schools and post-secondary institutions.

Christina Strandgaard, Lecturer/ Advisor, CSU, Sacramento
### Dream It, Do it, Achieve It: A Program That Really Works!  
Room #31 C

This unique approach integrates problem-based mathematics lessons, a college awareness curriculum, and ongoing coaching for teachers to help students envision themselves in STEM futures, experience STEM activities, and excel in mathematics to provide equity, opportunity, and motivation in pursuing STEM fields. This session will share the strategies, activities, and lessons learned.

*Sharon Twitty, SLOPE i3 Project Director, Alliance for Regional Collaboration to Heighten Educational Success (ARCHES)*  
*Ivan Cheng, CSU, Northridge; Robyn Fisher, R.T. Fisher Educational Enterprise; Kentaro Iwasaki, ConnectEd*

### The Language of Mathematics  
Room #32 A

Participants will explore a linguistic approach to solving word problems. They will address concepts of semantics and syntax as they analyze a number of sample word problems and discuss strategies for developing their students’ mathematical fluency.

*John Gaines, Site Coordinator, South Whittier School District*  
*Rogelio Villasano, Jr., South Whittier School District*

### Designing Student Success  
Room #32 B

The Architectural Foundation of San Francisco has pioneered innovative ways to engage students through STEM challenges. The Foundation has a strong relationship with the San Francisco Unified School District and has a great partnership between schools and their organization. The session will focus on using STEM challenges to benefit students.

*Alan Sandler, Executive Director, Architectural Foundation of San Francisco*  
*Glenn Katz, Autodesk*

### Breaking Down Barriers: Collaboration Across District Boundaries  
Room #33 A

This session will focus on how seven kindergarten through grade eight school districts engaged in professional learning communities (PLC) to work toward a shared vision of mathematics curriculum, instruction, and assessment tied to their respective districts and SVEF’s East Side Alliance. Participants will gain access to an outline of this process.

*Cecilio Dimas, Director, STEAM Program, Santa Clara County Office of Education*  
*Manny Barbara, Silicon Valley Education Foundation; Bernadette Andres-Salgarino, Santa Clara County Office of Education*

### The Development of a High School STEM Research Program  
Room #33 B

San Diego Jewish Academy created the High School STEM Research Program, ensuring students developed creative and intellectual skills to become confident innovators equipped to address global problems and advance the boundaries of science. Students develop “blue sky research projects” whose selection, execution, and implementation involves significant outreach into the community.

*Jane Willoughby, Director K-12 STEM, San Diego Jewish Academy*

### The Power of Data: Stats That Can Bolster Support for Your STEM Program Implementation  
Room #33 C

Need support for STEM program implementation? Project Tomorrow can help. Since 2003, the national education nonprofit has collected the viewpoints of over three million students, educators, and parents through its annual Speak Up Survey - a dataset representing the largest collection of authentic feedback from key educational stakeholders. Learn about Speak Up and other free resources from the CA-based Project Tomorrow.

*Julie Evans, Chief Executive Officer, Project Tomorrow*
Join facilitated conversations led by STEM educators and experts. Each round will last 15 minutes. Attendees can participate in three different discussions during this session.

Assessing the iPad in the High School Classroom  Table #1
PCHS implemented a 1:1 iPad program with the aim of bridging the digital divide and bringing tech innovation to ninth grade classrooms. Formal evaluation provides statistical evidence of success and lays clear the changes needed to implement and build upon these successes.

Donna Mandosa, Technology Director, Palisades Charter High School
Jordan Landers, Palisades Charter High School

Career Coaching for Students: Profiling to Uncover Potential STEM Talent  Table #2
Career Coaching for Students™ uses three science-specific assessment tools to provide authentic insight into a student’s skill set and potential. Understanding a student’s skill set early on has a direct correlation to identifying high-potential career choices, including those in the STEM field. This allows them to develop a plan to achieve their goals.

Damaris Lopez-Connors, Community Catalyst, DLC Services, LLC

Flying with Geometry  Table #3
Drive math lessons through hands-on, engaging activities. During this session, Green Enterprise Academy teachers will present a cross-curricular project that incorporates three core subjects: geometry, physics, and English with a design element that students will enjoy.

Nykole Kent, Coordinator/Teacher, Green Enterprise Academy/Antelope Valley High School
Jamie VanNorman, Antelope Valley High School

iLessons: Lesson Plans Using 4C’s  Table #4
This presentation will provide attendees with a brief overview of tablet technology and how to create lesson plans using the four C’s (communication, collaboration, critical thinking, and creativity). It will also highlight practical strategies that teachers can use to engage learners. If possible, participants should bring their own devices.

Seema Khan, Instructional Technology Creator, Resource Area for Teachers (RAFT)

Infusing STEM Projects and Common Core  Table #5
This presentation will focus on infusing STEM projects with the Common Core across the curriculum. STEM project examples will be presented and a template to build these projects with academy teams will be the focus.

Kevin English, Instructional Manager, National Academy Foundation

Key Factors in Sustaining Instructional Change after Science Professional Development  Table #6
Professional development opportunities, especially in science, are limited and typically expensive. In this interactive session, researchers will gather participants’ perspectives and discuss findings from a longitudinal study focused on identifying factors that maximize districts’ investments in professional development and promoting lasting instructional change.

Judith Sandholtz, Professor, UC Irvine
Cathy Ringstaff, WestEd
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<th>Table #7</th>
<th>Planning an Effective STEM Lab</th>
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<tr>
<td>Description</td>
<td>Recent trends in planning for effective and efficient STEM labs for middle and high schools will be discussed. New design concepts and recently remodeled facilities will be addressed. Participants are encouraged to share their ideas. Technology, flexibility, furniture selection, and many other topics will be explored.</td>
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</tbody>
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| Participants     | Sandy Kate, Principal, HMC Architects  
|                  | Kevin Wilkerson, HMC Architects |

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<th>Table #8</th>
<th>Science and Mathematics Instructional Units: Looking at CCSS and NGSS Together</th>
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<td>Description</td>
<td>Attendees will engage in an instructional unit that exhibits the overlap in the mathematical, science, and engineering practices present in STEM education. These inquiry-based lessons allow educators to see both CCSS and NGSS as a cohesive unit. The unit guides students toward deeper understanding of science though the mathematics application.</td>
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<tr>
<td>Participants</td>
<td>Leena Bakshi, Science Coordinator, Integrated Middle School Science Project</td>
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<th>Table #9</th>
<th>What is Missing in STEM Education?</th>
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<td>Description</td>
<td>Why is traditional 20th century industrial-based pedagogy being utilized to access 21st century STEM skills? This session will focus on a teaching pedagogy developed by the Center for Math and Science Teaching to make the outcomes of Common Core Mathematics and Next Generation Science Standards accessible for all students.</td>
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| Participants      | Anita Kreide, Professor, Center for Math and Science Teaching, Loyola Marymount University  
|                  | Michael Castiglione, Loyola Marymount University |

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<th>Table #10</th>
<th>“Worth the Net-work:” Partnerships that Bring Engineering Curriculum to K-12 Schools</th>
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<td>Description</td>
<td>The Santa Clarita Valley ESTEME (Enhancing the T and E in STEM Education) Network began with a university, elementary school, and new STEM elementary academy. Learn how shared vision, collaboration, and persistence helped to build a PLTW school support network from kindergarten to community college and university grade levels.</td>
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<tr>
<td>Participants</td>
<td>Susan Belgrad, Professor of Education, CSU, Northridge</td>
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<td>Description</td>
<td>Panasonic Eco Solutions delivers an end-to-end solution to remove barriers that once impeded projects enabling educational institutions to go solar. The one-stop shop platform is extending to the development of a strategic initiative to offer an innovative, model approach to transforming how we bring together Energy, Education, and Environment in the 21st century.</td>
</tr>
<tr>
<td>Participants</td>
<td>Doug Payne, Sr. Business Development Manager, U.S. Commercial/Industrial Eco Solutions, Panasonic Eco Solutions</td>
</tr>
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DISTINGUISHED SPEAKER

Ballroom 20 A

Sandra Tsing Loh, American Writer, Actress, and Radio Personality

Bio: Named by Variety as one of America’s 50 most influential comedians, Sandra Tsing Loh’s work ranges from off-Broadway solo shows to radio commentaries on NPR’s “Morning Edition” and on Ira Glass’ “This American Life.” Her weekly “Loh Life” and syndicated “Loh Down on Science” are broadcast on KPCC. A contributing editor for The Atlantic Monthly, her new book *The Madwoman in the Volvo: My Year of Raging Hormones*, based on her Best American Essay 2012 on menopause, was published by W.W. Norton in May 2014. Her five previous books include the New York Times Notable book *Mother on Fire*.

**Topic: Ionic and Covalent Bonding with Suzy**

**Description:** As professional science educators and communicators, all our best theories fly out the window when sitting down to help our children struggle through their homework. Sandra Tsing Loh’s vexing—if lively—sessions with her 12-year-old daughter Suzy lend surprising insights into how we tell the stories of science.

PRESENTATIONS AND WORKSHOPS

**Explorations on Planet X**  
Room #14 A  
Explorers in this workshop will learn and experience how future teachers plan and engage students in this problem-based, after-school unit, based on NASA’s BEST activities. University, school district, and CBO collaboration provides training for future teachers while enriching STEM education with elementary students.

*Steve Price*, Director, Community Based Learning, Fresno State University  
*Mike Snell*, California Teaching Fellows Foundation

**Leading CA Women Address Gender Equity in STEM**  
Room #14 B  
Girls’ perceptions that school-based engineering (and coding) curriculum is for boys persists. Join the conversation to address how women and men in science and engineering may work together with educators to identify and implement strategies to promote girls’ career awareness and support in achieving a lifelong STEM “sense of belonging.”

*Susan Belgrad*, Professor of Education, CSU, Northridge
Session VI Presentations and Workshops
Tuesday, September 23 • 10:50 a.m. – 11:50 a.m.

Eco-Engineering Academy: Structure and STEM Support for Careers and HE  
Room #15 A
The organizational structure and functions of a California Partnership Academy: Eco-Engineering Academy will be presented. This presentation will include the following topics: recruitment process, academic program/STEM/Common Core interaction, human and material resources, business and academic partners, and program sustainability strategies.

*Hector Arias, Coach/Teacher, Southwest High School*

Finding Nature: Engaging and Connecting Underrepresented Students with Science and Community  
Room #15 B
This presentation will include an overview and panel discussion presenting strategies to engage high school and post-secondary students from a variety of scholastic backgrounds in meaningful environmental science research projects and community stewardship activities. The panel will include student representatives describing their experiences in the program, current science-based conservation activities, and opportunities for the future.

*Margot Griswold, Education Chair, Los Angeles Audubon Society  
Stacey Vigallon, Joyce Realegeno, Emily Cobar, Brian Young, and Bryan Payse, Los Angeles Audubon Society*

Meeting Them Where They Are At: Making Science Culturally Relevant  
Room #16 A
Explore several ways to rekindle the inner scientist in your students by meeting them where they are at. Learn several strategies to rebuild student interest and investment in science. This workshop will explore literacy skills, study tools, and project-based learning through a lens of youth development and cultural relevance.

*Cheyenne Pronga, STEM Coordinator/Biology Teacher, Teach Tomorrow in Oakland-Oakland Unified School District  
Josette Neal-de-Stanton, TTO/Arise High School*

Corps for Education Outside: A New Paradigm in Science Education  
Room #16 B
The Corps for Education Outside is the first service program in the US dedicated to transforming urban public elementary schools into centers of science activation and sustainability through hands-on outdoor instruction in the schoolyard garden. At 26 SFUSD schools, the Corps is currently transforming in-school-based science and sustainability efforts.

*Rachel Pringle, Senior Director of Programs, Education Outside  
Sheila Lee and Joyce Lin-Conrad, Education Outside*

Hazards from Space: Space Debris and Asteroids  
Room #17 A
In this presentation, space debris and asteroids will be discussed, and concern with space junk will be addressed. Information on recent asteroid impact events and basic planetary defense elements will be shared. An interactive physics-based asteroid deflection simulator developed for NASA by The Aerospace Corporation will be demonstrated. Space debris and meteorite samples will be passed around among the participants.

*Nahum Melamed, Aerospace Engineer, The Aerospace Corporation*
Session VI Presentations and Workshops  
Tuesday, September 23 • 10:50 a.m. – 11:50 a.m.

**STE(A)M and Service Learning for Middle School Girls**  
Room #17 B  
How does NGSS’s call for “knowledge in action” look, sound, and feel in STE(A)M classrooms? See how to deploy partnerships and place-based-learning (PBL) to increase the number of girls actively pursuing STEM projects. The presentation will conclude by considering the importance of providing girls with a “pathway to leadership.”

*Kurt Holland, Science Teacher, Heal the Bay*

**Help Shape the Future of Environmental Education in California!**  
Ballroom #20 D  
The upcoming implementation of the NGSS in California provides a rare opportunity to integrate environmental literacy and science education. Join us for an interactive session that will give you the chance to provide feedback on the emerging work of the California Department of Education’s Environmental Literacy Task Force (ELTF).

*Elizabeth C. Babcock, Ph.D., Chief Public Engagement Officer and Roberts Dean of Education, California Academy of Sciences  
Glen Price, President, The Glen Price Group*

**Effective STEM Education: Project Envisioning with Young Makers**  
Room #22  
Learn how to provide a program that fosters creativity, innovation, and experimentation while successfully instilling a “science learner identity” with underserved children. Participants will engage with scientific and engineering practices while tinkering, envisioning project designs, and building working models from simple materials.

*Jerry Valadez, Sanger Community Science Workshop, SAM Academy  
Ana Lopez, California Science Project*

**First Grade Students Claim, Argue, and Defend Through Integrated STEM Lessons!**  
Room #23 B  
During this past school year, Lincoln Acres Elementary School has explored becoming a STEM-focused school. See how reading and writing have soared by engaging first grade students in hands-on, integrated lessons!

*Melissa Kruse, Teacher, Lincoln Acres Elementary School  
Lynn Stacey, Jackie Ma, and Jessica Newkirk, Lincoln Acres Elementary School*

**Tinker.Make.Innovate.: Pathway to the Innovator Mindset**  
Room #23 C  
In May 2013, the White House announced that the US must invest resources encouraging students to enter STEM fields in order to ensure a sustainable future. Making became a national conversation as educators, parents, and other youth-serving adults recognized the power of making to develop deep, meaningful STEM engagements.

*Jean Kaneko, Founder/Chief Tinkerer, The Exploratory*
STEM: Fueling the Future Room #24 A
Join the presenters as they demonstrate how easy and fun it is to build the crosswalk between STEM classes and careers. See the power of partnering with industry to develop engaging, problem-solving activities to include in high school lessons. The industry partner is NASCAR, participants are the “pit crew.”

Jerry Ellner, National Director, Universal Technical Institute
Janice Tkaczyk, Universal Technical Institute

After-School Science and Mathematics Integration Adapting the Hands-On Universe Curriculum Room #24 B
The Hands-On Universe (HOU) curriculum has 12 to 14 year-old students doing investigations of astronomy. HOU activities involving ratios and proportions have been selected for a new innovative after school program that teaches mathematics skills while the students enjoy discovering the universe. This new program has been piloted and evaluated in Hayward, CA.

David Stronck, Professor, CSU, East Bay
Jenifer Perazzo, Pleasanton Unified School District

How Two Moms Created a Successful After-School Science Class for Girls Room #24 C
After attending the inspirational 1st STEM Symposium, two moms created “Scientific Adventures for Girls” (www.scientificadventures.org), whose mission is to provide uniquely-tailored, after-school STEM programming for girls, especially those populations historically underrepresented in STEM careers. They will share this experience and hope to motivate other parents to do the same.

Courtenay Carr Heuer, Co-Founder, Scientific Adventures for Girls
Tiffany Sprague and Anne Mayoral, Scientific Adventures for Girls

Create or Recreate? That Is So “STEMie” Room #25 A
In this “hands-on” session, participants will create and/or recreate a safe place for plants to grow and learn how to build an effective skateboard ramp that will satisfy the novice to the pro skateboarder. Focus will also be given on helping the ELL student achieve success with STEM and correlation to the standards.

Judy Williams, Professor/Teacher/ Educational Consultant, Azusa Pacific University, Westcliff University, Semita School; Robert Williams, ETA

iPad Invasion in the Middle School Science Classroom Room #25 B
iPads are invading science classrooms. In this workshop, participants will experience innovative lessons that incorporate the iPads into science curriculum. The presenters will provide a list of apps and lessons on a variety of science topics that have been used in their classrooms.

Maggie Mabery, Middle School Science Teacher, Manhattan Beach Middle School
James Locke, Manhattan Beach Middle School
Session VI Presentations and Workshops
Tuesday, September 23 • 10:50 a.m. – 11:50 a.m.

STEM in K-5: Beebots to WeDo! Room #25 C
Computational thinking is an essential part of the Los Altos STEM program. Learn how computer programming is one way to deliver content in a meaningful way to engage students.

Karen Wilson, Instructional STEM Coach, Los Altos School District

Robotics Curriculum + Competition = Winning Students Room #26 A
Workshop participants will review online curriculum and competition material. They will also build a robot using simple instructions.

Nancy McIntyre, Staff, Robotics Education and Competition Foundation

Khan Academy Spout Bot: Building a Robot Room #26 B
Using the construction model of Khan Academy’s spout bot, this interactive demonstration will provide an introduction on how to bring robotics into the classroom. Learn how to teach robotics while integrating it into a science unit on electricity and magnetism.

Alexandra Schroeder, STEM Teacher, Los Altos School District
Katie Farley, Los Altos School District

STEM Academies and Pathways: Choosing a Model That Works Room #27 A
Participants will explore the most common models of career academies and pathways, understanding their pros and cons. Research data about program effectiveness will be presented, as will STEM examples. This presentation will provide great information for teachers or administrators looking to create or modify career pathways in STEM or related fields.

Dan Hanel, Principal - Student Programs, Contra Costa County Office of Education

Integrating Professional Partnerships to Enhance STEM Learning Experiences Room #27 B
This presentation will include professionals from outside education and offers opportunities for students and instructors to gain insight beyond the constraints of school buildings. Numerous resources are willing to send personnel into classrooms and/or have students visit work sites to demonstrate fundamental STEM skills and how STEM is utilized in real-life workplace scenarios.

Dave Massey, Project Director ESCI, San Diego Science Alliance/San Diego State University

Engineering and Mathematics, Inspiring Thinking and Solutions Room #29 A
This presentation will include an overview of the STEM grant’s design - Engineering and Mathematics, Inspiring Thinking and Solutions (EMITS). The development process for performance tasks and lesson modules where engineering is used to deepen understanding of mathematical concepts will be a focus of this presentation, as well as building capacity implementation of the Common Core Mathematics and Next Generation Science Standards through coaching and lesson study.

Christine Poulsen, EMITS STEM Grant Project Director, Sacramento County Office of Education
Phil Romig, Sacramento County Office of Education
Panel Discussion on Proven Strategies to Recruit and Retain Women in STEM  
**Room #29 B**
Learn from educators how they have effectively increased gender diversity in their STEM classrooms. Bring ideas and success stories as participants collectively identify recruiting and retention techniques and resources that can be implemented now. (Precursor lecture is the previous session.)

*Debra Kimberling, Director of Advocacy, Society of Women Engineers*

Developing Next Generation Student Literacy: Sharing Responsibility Across STEM Disciplines  
**Room #29 C**
New classrooms of hands-on learning and critical thinking require establishing new habits of minds in all students that prioritize active engagement and mastery of literacy skills shared across academic fields. In this session, STEM teachers will experience research-based literacy strategies to improve student comprehension and disciplinary understanding overlapping CCSS and NGSS.

*Maria Simani, Executive Director, California Science Project*  
*Kristine Alexander, The California Arts Project*

Strategies That Turn Traditionally Underrepresented Teens Toward Science and Engineering  
**Room #29 D**
Three years can make a world of difference! USC’s Neighborhood Academic Initiative uses NGSS-aligned, hands-on, inquiry-based science to prepare students for success in STEM college majors. Results show substantial gains in learning and teacher practice. Come learn how this was accomplished and how to implement it into the classroom! Example curriculum will be available.

*Stacy Sinclair, Professor, University of Southern California*  
*Frederick Freking, University of Southern California*

Increasing AP CS Participation in California: An Out-of-School Intervention  
**Room #30 A**
This presentation will: 1) Describe a sequence of computer science courses designed to increase the number of high school students of color completing AP CS and 2) Examine the impact of course participation on students’ CS attitudes, knowledge, and aspirations. This project has implications for broadening participation in CS statewide.

*Alexis Martin, Senior Research Associate, Level Playing Field Institute*  
*Allison Scott, Level Playing Field Institute*

Advance STEM Learning Through Building Background Knowledge  
**Room #30 B**
Experience the integration of science, technology, and mathematics in an engaging lesson that can be recreated for many different content areas. Discuss ways to use this type of lesson, designed to build upon the background knowledge of students and promote critical thinking, and integrate it seamlessly with Common Core Standards.

*Sandra Yellenberg, Science Coordinator, Santa Clara County Office of Education*
Revealing Student Thinking: Assessing Student Understanding in the NGSS Classroom  
Room #30 C
Participants will learn how to measure student progress toward three-dimensional mastery of NGSS and receive examples and tools to create their own assessments. The presenters will review how the three dimensions of NGSS are interwoven during instruction and describe why the same must be true during assessment.

Sara Dozier, Science Coordinator, Integrated Middle School Science Partnership, Alameda County Office of Education
Dawn O’Connor, Integrated Middle School Science Partnership

Let the iPad Tell a Science (Digital) Story!  
Room #30 D
Attendees will learn to use the iPad for crafting science digital stories with popular videoediting apps while promoting science writing and visual literacy skills. Samples, live demonstration, and resources will be provided.

Roger Pence, Science Teacher, Benicia Unified School District

Science and Engineering Practices in the Middle School Science Classroom  
Room #30 E
Engaging and relevant lessons begin with inquiry! Help students become “citizen scientists” by improving skills through the use of the science and engineering practices. Hook the interest of students and keep them wanting more. Learn what one district has done as they get ready for full NGSS implementation.

Katie Schenkelberg, Assistant Principal/District Science PD, Torrance Unified School District
Chad Mabery, Richardson Middle School

Pier into STEM and EEI in Your Backyard  
Room #31 A
Teachers will learn about STE(A)M activities available at the Santa Monica Pier as well as Heal the Bay’s teacher trainings and student opportunities in regards to the Education and the Environment Initiative Curriculum. Both topics will touch on CCSS and NGSS integration.

Heather Doyle, Director of the Santa Monica Pier Aquarium, Heal the Bay; Rosa Serratore, Santa Monica-Malibu Unified School District; Nick Fash, Santa Monica Pier Aquarium; Edward Murphy, Heal the Bay

Mapping Your Campus: A Middle School STEM Project  
Room #31 B
Learn how sixth graders were able to help their school update the school map while integrating California mathematics and science standards! Students learned how to find the area and perimeter, implementing a compass and protractor, and created a scaled map of their school. Participants will leave with ideas and materials for a fun STEM project!

Christina Miller, Sixth Grade Mathematics/Science Teacher, The Children’s School
The Advanced Teaching Certificate in Common Core Mathematics
Room #31 C
This presentation describes San Jose State University’s Advanced Teaching Certificate in Common Core Mathematics (K-8), a certificate program centered on the mathematical knowledge for teaching (K-8) Common Core Standards and mathematical practices. Designed for practicing teachers, the certificate includes an emphasis on pedagogical strategies to foster productive disposition and academic language.

Patricia Swanson, The Advanced Teaching Certificate in Common Core Mathematics, San Jose State University

Who Did It? Cross-Curricular STEM, Social Studies, Arts Collaborations
Room #32 A
Expand STEM learning into social studies, English, and arts through forensics and mock trials. This presentation will provide a step-by-step process to connect content disciplines and engage students. Sample strategies and mock trial cases will be provided along with forensic evidence to “collect,” in addition to a ready-made forensic/STEM/social studies collaborative unit.

Kelly Skon, Teacher, Laguna Beach Unified School District
Michelle Martinez, Laguna Beach Unified School District

Bold Partnerships: The Key to Advancing and Sustaining World-Class STEM
Room #32 B
CSU and education, philanthropic, and business partners have joined hands in ambitious efforts transforming recruitment and preparation of elementary and secondary educators expert in and excited about advancing bold STEM reforms. This presentation will describe initiatives spanning from transitional kindergarten through high school career academies that are transforming California’s schools.

Beverly Young, Assistant Vice Chancellor, Academic Affairs, CSU Chancellor’s Office
Mark Ellis and Kim Norman, CSU, Fullerton; Fred Goldberg and Nancy Farnan, San Diego State University

Coaching Teachers in STEM: CCSS Mathematics + Technology
Room #33 A
Come listen to how teachers were coached and encouraged to create integrated lessons into their classrooms. Fresno County Office of Education has been working with local districts on infusing technology into their mathematics content with great success.

Jonathan Dueck, Director, STEM Education, Fresno County Office of Education

Biology Lab Practicum Transformed: Use of Online Assessments in Blackboard
Room #33 B
Dissection labs can be some of the most rewarding learning experiences. But preparing a quality lab practicum to assess students at the end of a course is not easy. Moving the practicum to an online format through Blackboard saves time and offers a new model of teaching and learning that can be applied to other STEM disciplines. Come learn how!

Mark Shin, Teacher on Special Assignment, Hacienda La Puente Unified School District and Blackboard, Inc.
Session VI Round Table Presentations
Tuesday, September 23 • 10:50 a.m. – 11:50 a.m. • Ballroom 20 BC

Join facilitated conversations led by STEM educators and experts. Each round will last 15 minutes. Attendees can participate in three different discussions during this session.

**AIMS Educational Foundation/Center for Mathematics and Science Education**  
Table #1
Hands-on STEM activities in the classroom are the foundation upon which AIMS created its reputation. This focus is changing into one concentrated on research into STEM learning; building on the tradition focused on understanding in students, the presenters have undertaken a change in structure and connection to the Academy. Come see what this could mean for you.

*Christopher Brownell, Program Director Graduate Math and Science Education, Fresno Pacific University*

**An Exploration of Teaching a Master's-Integrated STEM Methods Course**  
Table #2
This round table presentation will discuss a science educator’s and mathematics educator’s collaborative effort in teaching a Master’s-integrated STEM methods course. The presenters will highlight the course syllabus, discuss student learning outcomes, and share the challenges encountered. Participants are encouraged to provide feedback.

*Xinying Yin, Assistant Professor, CSU, San Bernardino*  
*Catherine Spencer, CSU, San Bernardino*

**Encouraging Girls in STEM**  
Table #3
This presentation centers around tips and strategies to increase the confidence and commitment of girls in STEM education and STEM career choices.

*Nancy Brown, Teacher, CAMS*

**From Science Student to Scientist**  
Table #4
While there is a push to improve STEM instruction in schools, students still are not always presented with information about STEM careers. This session will allow participants to come up with ways to incorporate STEM career education into classes, bridging the gap from school to the workforce.

*Dean Zrucky, Science Teacher, Port of Los Angeles High School*

**Increasing High School Student Motivation in STEM**  
Table #5
This workshop will share the analysis of a NSF-funded research project to determine the factors that increase high school student motivation in science. This informative data can assist organizations in formal and informal education to determine a strategic approach to improve STEM education for students.

*Nathan Inouye, Science Content Specialist, Oxnard Union High School District*
### Preparing Teachers to Integrate STEM in the K-6 Classroom

This workshop will provide a framework to introduce STEM concepts into the K-6 classroom. The framework, built around the work of Tina Cheuk at Stanford University, addresses the commonalities among the practices in science, mathematics, and English-Language Arts. Attendees will leave today with practical tools to apply what they learned tomorrow.

*Christine McCormick, Project Director- iSTEM grant, Butte County Office of Education*
*Brian Lindamen and Bev Marcum, CSU, Chico*

### The Einstein Fellowship Experience: Lessons Learned, Lessons Shared

The Einstein Fellowship is a year-long professional development program for distinguished STEM teachers who are assigned to federal agencies or an office on Capitol Hill to share their expertise as educators and STEM leaders. This presentation will share the daily activities, job expectations, and hints on submitting a quality application.

*Anne Artz, Einstein Fellow/Teacher, The Preuss School UC San Diego*

### The STEM Integration Conundrum: Thrusts and Threats

STEM integration is a key education enabler for college and career readiness, innovation, and global competitiveness. But while an array of entities is busily developing curricula and deploying programs, many fundamentals of STEM integration are still evolving. This provocative presentation will detail exciting thrusts and possible threats to this crucial initiative.

*Allyson Yarbrough, CEO, STEM Coach*
*Shelly Yarbrough, El Cerrito Middle School*

### Tools, Toys, and Techniques: Creativity in the Engineering Process

Do students ever look at an object and wonder “How does this work?” Participants can leverage this curiosity to introduce their students to engineering concepts and techniques through reverse engineering. Learn the process, reflect on the related skills, and plan ways to integrate engineering concepts and methodologies into the classroom.

*Miguel Alanis, Project Director, UTeachEngineering, The University of Texas at Austin*
*Cheryl Farmer and Pius Wong, University of Texas; Pete Matus, Murrieta Mesa High School*

### Transforming Mathematics Classrooms into Learning Laboratories

This presentation will demonstrate how STEM themes are intertwined in mathematics content standards utilizing exploration, discovery, and creativity, thereby transforming mathematics classrooms into learning laboratories. Leave this presentation empowered to provide opportunities to students to explore ideas, reflect on ideas, and analyze results in order to develop competent and enterprising students.

*Deepika Srivastava, Moreno Valley Math League- Coordinator, Moreno Valley Unified School District*
INTRODUCTION

Shelly Masur, Chief Executive Officer, The Californians Dedicated to Education Foundation

Bio: Shelly Masur is the CEO of Californians Dedicated to Education Foundation. She brings almost twenty years of successful experience working as an educational leader with youth-serving non-companies and in 2013 was named as one of the “100 Women of Influence” by the Silicon Valley Business Journal. She is currently a school board member in the Redwood City School District in San Mateo County.

KEYNOTE SPEAKER:

Bill Nye, American Science Educator, Comedian, Television Host, Actor, Writer, and Scientist

Bio: Bill Nye grew up in Washington, D.C. where he discovered that he had a talent for tutoring and de-mystifying math for his fellow students. His fascination with how things work led him to Cornell University and a degree in Mechanical Engineering and then to work as an engineer at Boeing in Seattle. While in Seattle, Bill began to combine his love of science with his flair for comedy, when he won the Steve Martin look-alike contest and developed dual careers as an engineer by day and a stand-up comic by night. This is where “Bill Nye the Science Guy®” was born, a TV show that won 18 Emmys in five years. Bill has also written five children’s books about science, serves as Vice President of The Planetary Society, the world’s largest space-interest group, and is currently hosting several television series, including a show on Planet Green called “Stuff Happens” about environmentally responsible choices.

Keynote Topic: A Man with a Mission

Description: Bill Nye, scientist, engineer, comedian, author, and inventor, is a man with a mission: to help foster a scientifically literate society, to help people everywhere understand and appreciate the science that makes our world work. Making science entertaining and accessible is something Bill has been doing most of his life.

Closing Announcements

Don’t Forget...

Please complete the STEM Symposium evaluation. The link is located on the STEM California home page at http://www.stemsurvey.cteonline.org. Your feedback is important in the planning of the 2015 conference.
Acknowledgments

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Thank you to all of the presenters, exhibitors, volunteers, and participants of the STEM Symposium. Your work defines California STEM education, and sharing benefits us all.
THE CALIFORNIA TEACHERS ASSOCIATION

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SEPTEMBER 21—23, 2014

SAN DIEGO CONVENTION CENTER
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IN PARTNERSHIP WITH
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The Internet has the potential to level the playing field in American life, especially when it comes to access to education – but only for those who can afford it.

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