



# STEM Smart: Lessons Learned From Successful Schools

September 19, 2012 | University of Nevada | Las Vegas, NV



## Goals of the meeting:

- Inform and promote dialogue in states, districts, and schools about the recommendations and implications for schools from the NRC report, *Successful K-12 STEM Education*\*
- Identify and highlight a group of promising practices and resources relevant to effective STEM schools and programs
- Emphasize the *importance of technology* in improving STEM teaching and learning
- Encourage reflection on how to integrate the information provided in the report and other experiences at the workshop into practice

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## Agenda

- 8:00 **Registration and Team Meetings** (Continental breakfast served) **PAVILION**
- 8:45 **Welcome by National Science Foundation** **PAVILION**  
**Opening Addresses** with introductions by *Presidential Awardee Gary Mayers*
- **Carl Reiber**, Vice Provost for Academic Affairs, University of Nevada, Las Vegas
  - **Pamela O’Neil**, Deputy Assistant Director, Directorate for Education and Human Resources, National Science Foundation
  - **Honorable Senator Harry Reid**, video address
  - **Subra Suresh**, Director, National Science Foundation, video address
- 9:15 **What Everyone Should Know About the Successful K–12 STEM Education Report\***: **PAVILION**  
*Jerry Valadez*, Director, Central Valley Science Project, California State University, Fresno;  
Member of NRC Steering Committee
- 9:45 **Planning for Change: Issues of Implementation and Scale**: **PAVILION**  
*Bill Penuel*, Professor, University of Colorado, Boulder
- 10:30 **Break**
- 10:45 **Elements of Successful STEM Education—Breakout Sessions**  
**Effective Instruction**: The *Successful K–12 STEM Education* report notes that “effective instruction capitalizes on students’ early interest and experiences, identifies and builds on what they know, and provides them with experiences to engage them in the practices of science and

sustain their interest.” This session highlights programs in which teachers use what they know about students’ understanding to actively engage students in science, mathematics, and engineering practices. As stated in the report, “in this way, students successively deepen their understanding both of core ideas in the STEM fields and of concepts that are shared across areas of science, mathematics, and engineering.”

- ***Deeply Digital Student Engagement and STEM Learning with Models and Probes:*** Chad Dorsey, The Concord Consortium **ROOM 2**
- ***Framework Vision for Science Education and Implications for Next Generation Science Standards:*** Brett Moulding, Utah Partnership for Effective Science Teaching and Learning **ROOM 1**
- ***Illustrative Mathematics:*** Kristin Umland, University of New Mexico **ROOM B**
- ***SimScientists: Effective Instruction and Assessment:*** Edys Quellmalz, WestEd **ROOM D**
- ***Using Learning Trajectories to Unpack and Interpret the Common Core Math Standards:*** Alan Maloney, North Carolina State University **ROOM A**
- ***Video-rich, Web-based Professional Development to Improve Science Discussions:*** Sue Doubler, TERC, Inc. **ROOM C**

12:00 **Team Meetings** (Lunch served) **PAVILION**

12:30 **Online Inquiry Learning: Making Inquiry Easy with Online Units Featuring Visualizations, Debates, and More:** **PAVILION**  
*Marcia Linn, Professor, University of California, Berkeley*

1:10 **Elements of Successful STEM Education—Breakout Sessions**

***Equal Access to Quality STEM Experiences:*** The *Successful K–12 STEM Education* report discusses findings that draw a direct line between a nation’s competitiveness and K–12 STEM education to support the next generation of scientists and innovators. Thus, a goal for K–12 STEM education is a focus on the flow of students into STEM courses, majors, and careers. An important dimension of this goal is to increase the participation of groups that are underrepresented while ensuring equal access to quality STEM learning experiences for all students. Therefore, this session will highlight practices that lead to opportunities for all students to become engaged in strong STEM learning.

- ***Connecting Mathematics Education Research and Practice: Ensuring English Language Learners Achieve:*** Cathy Kinzer, New Mexico State University; Maricela Rincon, Las Cruces Public Schools; Ricardo Rincon, Las Cruces Public Schools **ROOM 1**
- ***Cultural Ways of Knowing as Intellectual Strengths in Robust Science Learning:*** Megan Bang, University of Washington **ROOM 2**
- ***Engineering Pathways Anchored by Rural Arizona Community Colleges:*** Caroline VanIngen-Dunn, Science Foundation Arizona; Verlyn Fick, Cochise College **ROOM A**
- ***Math, Engineering, Science Achievement (MESA) Program:*** Chandra Austin, Auburn University **ROOM C**

- ***Mathematics, the Common Core, and Language: Recommendations for Effective Mathematics Instruction for ELs Aligned with the Common Core:*** Judit Moschkovich, University of California, Santa Cruz **ROOM B**
- ***Seeds of Science/Roots of Reading: An Integrated Approach to Science and Literacy Instruction:*** Traci Wierman, Lawrence Hall of Science **ROOM D**

2:25 **Break**

2:35 **Elements of Successful STEM Education—Breakout Sessions**

***Supportive Infrastructure for STEM Learning:*** The *Successful K–12 STEM Education* report highlights that “research suggests that although teacher qualifications matter, the school context matters just as much [including]. . . multiple factors that strengthen and sustain those learning communities (e.g., school and district leaders, parents, and community).” This session highlights programs that have proven strategies to develop the essential infrastructure required to support teachers and students.

- ***Career and Technical Academy Innovations in Teaching and Learning:*** Felicia Nemcek, Southwest Career and Technology Academy (SWCTA); Craig Statucki, Southwest Career and Technology Academy (SWCTA); Angelo Pappano, Southwest Career and Technology Academy (SWCTA) **ROOM A**
- ***Creating a High Performing STEM School Culture:*** Mark Heffron, Denver School of Science and Technology (DSST); Kate Dresher, Denver School of Science and Technology (DSST) **ROOM 2**
- ***e-Mentoring for Student Success (eMSS):*** Alyson Mike, New Teacher Center; Lynn Kepp, New Teacher Center **ROOM B**
- ***Implementing STEM Programs that Capture and Nurture Imaginations and Talents:*** Carole Greenes, Arizona State University; Nancy Foote, Higley Unified School District **ROOM C**
- ***Learning Studios: Team Up for Deeper Learning:*** Thomas Carroll, National Commission on Teaching and America’s Future **ROOM 1**
- ***PD that Makes a Difference for Students: Science Teachers Learning from Lesson Analysis (STeLLA):*** Kathleen Roth, Biological Sciences Curriculum Study (BSCS) **ROOM D**

3:50 **Break**

4:00 **Team and Whole Group Discussion PAVILION**

4:30 **Adjourn**

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\* National Research Council. (2011). *Successful K–12 STEM education: Identifying effective approaches in science, technology, engineering, and mathematics*. Committee on Highly Successful Schools or Programs for K–12 STEM Education. Board on Science Education and Board on Testing and Assessment, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press.