



A California Innovation Corridor
WIRED Initiative:
Science, Technology, Engineering and Math
Collaborative Action Plan
STEMCAP

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Heightened Education Success (ARCHES)





Nation's Critical Need for STEM Talent

U.S. Dept. of Labor: "STEM Workforce Challenge", 2007

- ❑ Scientific innovation has produced roughly half of all U.S. economic growth in past 50 years
- ❑ While only 5% of U.S. workforce employed in STEM fields, STEM workforce accounts for more than 50% of nation's sustained economic growth
- ❑ If current trends continue, more than 90% of all scientists and engineers in the world will live in Asia
- ❑ Technical job increases are projected at 4x rate of overall job growth. By 2008, 6 million job openings will exist for scientists, engineers and technicians





Nation's Critical Need for STEM Talent – cont'd

- ❑ Two thirds of high-growth, high-wage jobs will require at least a bachelor's level (technical) degree – US Dept of Labor/ETA
- ❑ 86% of US voters believe US must increase number of S&T workers or America's ability to compete globally will be diminished – Business Roundtable, 2006
- ❑ “Where once nations measured their strength by the size of their armies and arsenals, in the world of the future, knowledge will matter most” – President Bill Clinton
- ❑ “Science and technology have never been more essential to the defense of the nation and the health of our country” – President George W. Bush



STEMCAP in Context

- 2005: California Space Authority submits an education/workforce/economic development proposal to the State of California for a US Department of Labor “Workforce Innovation in Regional Economic Development – WIRED” grant. Proposal includes 25 projects, most drawn from objectives in its strategic plans 1998-2004. The STEM Collaborative Action Plan is one of the 25 projects. Governor is required to forward three projects to DOL, submits CSA’s proposal: the “California Innovation Corridor” WIRED Initiative
- 2006: US Department of Labor funds Corridor initiative





Science, Technology, Engineering, Math Collaborative Action Plan

STEMCAP Goal:

Develop a collaboration and a strategic action plan to increase the number and support the development of science, technology, engineering and math (STEM) students, teachers, professors and mentors within the California Innovation Corridor and the State of California, leveraging the resources and efforts not only of education and academia (K-20, public and private), but of industry and the informal science network.





Science, Technology, Engineering, Math Collaborative Action Plan

- ❑ STEMCAP Program Mgmt: California Space Education & Workforce Institute (CSEWI)
- ❑ 2006: Formation of broad-ranging statewide Steering Committee
 - Representatives of all CA education systems K-20
 - Industry/Employers (e.g. NASA)
 - Informal science
 - Government
 - ❑ Office of Governor's Secretary of Education
 - ❑ Office of Public Instruction
- ❑ STEM Inventory
 - <http://www.csewi.org/STEMInventory/>



STEMCAP -continued-

- 2006 STEMCAP activity
 - Establishment of three working groups
 - Retention/Recruitment
 - Industry Relevance
 - Curriculum
 - STEMCAP Forum #1
 - Orientation – STEM activities of each educational system, of informal science, STEM perspective of employers
 - Working Group break-outs
 - STEMCAP Forum #2
 - Introduction of NASA/DOD, other gov't STEM activity
 - Working Group break-outs



STEMCAP -continued-

- ❑ 2007 STEMCAP activity completed
 - Engagement of the Alliance of Regional Collaboratives for Heightened Education Success (ARCHES) to draft the STEMCAP
 - STEMCAP Forum #3:
 - ❑ Jack O'Connell, Supt. of Public Instruction, State of California
 - ❑ Rick Stephens, Sr. Vice President, The Boeing Company
 - ❑ Warren J. Baker, President, California Polytechnic Institute, San Luis Obispo (Cal Poly)
 - ❑ Working Group Breakouts



ARCHES

www.arches-cal.org

The Alliance for Regional Collaboration for Heightened Education Success (ARCHES) is a voluntary association of collaboratives which share a common goal of increasing student achievement. An initiative of the *California Education Roundtable* – the chief executives of all the state’s education Sectors – and the *California Academic Partnership Program (CAPP)*, the organization was founded in 2005. ARCHES facilitates collaboratives and cooperation among public Schools, community colleges, baccalaureate-granting institutions, the private sector and community organizations in a geographic region. Currently 23 regional collaboratives are part of this statewide effort, with eight having been in operation several years, fifteen newly-seeded by ARCHES through planning and implementation grants.





STEMCAP -continued-

- ❑ 2007 STEMCAP activity completed (cont.)
 - Advisory Council formed
 - ❑ 17 statewide STEM stakeholders from education and academia, industry, employer community, informal science
 - ❑ 22 national and state reports reviewed and culled for recommendations most relevant to California
 - ❑ Individual focus group and interview targets identified



STEMCAP Advisory Group

Mike Gallo, Pres/COO, Kelly Space & Technology, Chairman

Joe Adams, Discovery Science Center, Santa Ana

Michael Aldaco, University of California Office of the President, Oakland

Joan Bissell, California State University Chancellor's Office, Long Beach

Steve Bruckman, California Community College Chancellor's Office, Sacramento

Keith Brush, Future Scientists and Engineers of America, Stanton

Angela Philips Diaz, NASA Ames Research Center, Moffett Field

Peter Freiss, Tech Museum of Innovation, San Jose

Javier Gonzales, Pioneer High School, Whittier

Penni Hansen, Intersegmental Relations, CA Dept. of Education, Sacramento

Don Iglesias, San Jose Unified School District, San Jose

Joyce Justus, University of California Office of the President, Oakland

Lee Angela Reid, Senate Office of Research, Sacramento

Donna Riordan, CA Council on Science & Technology, Capitola

Todd Shimada, Hyde Middle School, Cupertino

Edward Taylor, Google, Mountain View





Why STEMCAP is Different

- Comprehensive perspective; NASA typology
 - Inspire
 - Engage
 - Educate
 - Employ
- Directly actionable by practitioners
- Piloted by 6 regional collabs to test success
- Pull from industry vs push from education





STEMCAP

Current Activities

- Focus group protocols, agendas in place
- Focus group meetings in progress or completed, e.g. California Math Council, California Science Teachers Assn., industry etc.
- Dissemination planning for industry, as well as others, in progress



STEMCAP Next Steps

- ❑ Dec/07: Final Advisory Group meeting
- ❑ Jan/08: Draft to Steering Committee
- ❑ Feb/08: Finalize STEMCAP
- ❑ Mar/08: Begin dissemination of STEMCAP
Begin pilots with at least six
Regional Collaboratives
- ❑ Nov/08: Report from pilots to enhance
STEMCAP