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**Recap: STEM Partnership-Building Forum
June 28, 2006
Renaissance Montura LAX Hotel Los Angeles**

On June 28th, 2006, the California Space Education and Workforce Institute (CSEWI), in cooperation with the California Space Authority (CSA) and a committed group of STEM (Science, Technology, Engineering and Mathematics) stakeholders representing industry, the informal science community, the K-12 system, California Community College system, California State University and the University of California held a forum to begin development of a broad-based collaboration. CSEWI is facilitating the collaboration through a Department of Labor grant award to CSA under the WIRED (Workforce Innovation through Regional Economic Development) Initiative. Purpose of the collaboration is to develop a collaborative STEM Action Plan “to increase the number and support the development of science, technology, engineering and math (STEM) students, graduates, teachers, professors and mentors (Kindergarten through University) within the California Innovation Corridor and the State of California, leveraging the resources and efforts not only of education and academia, but of industry and the informal science network.”

*To view Forum agenda and powerpoint briefings by presenters, see
www.californiaspaceauthority.org/html/wired/k-u_forum.html*

**Break-Outs
Session I**

Effective Recruitment: Strategies and Outcomes

1. Outreach to parents
 - Bring scientists to open house or PTA meetings
 - Bridging programs
 - Policy/Culture interactions (e.g. absenteeism)
 - Hosting tours for K-6 parents
 - Focus on church or other community-based organizations
2. Address issues/opportunities
 - Policy/Culture interactions
 - a. State funding/absenteeism
 - Video/DVD/CSI effect
 - Assist teachers in teaching in a more interesting way – NSTA Comets program
 - a. Classroom experience in first year – improve retention
 - b. Enable tutoring for CSU teacher programs
 - c. Paid tutoring in local schools; enable tutoring funding stream
 - d. Integrate teachers into science community to enhance prestige
 - State Policy support
 - a. Provide classroom time to teach science
 - b. Provide materials, equipment to teach science
 - c. Provide professional development opportunities, funding for science, math
3. Teacher recruitment
 - Facilitate transition from 4-year engineering degree to teacher credentialing

- Provide scholarships, faculty support for those going into math/science
 - Address disconnect between research and education departments, tenure issues
4. Provide role models
- Globe program – brings scientists and students together
 - Develop industry speaker's bureau accessible to schools
 - Develop workshops to train industry volunteers to work with teachers
 - Focus on entrepreneurial interest

Session I

Access and Equity

1. Access defined:
 - Assumption: Educational process is for all children
 - Relationship to minority/majority
 - Sailer(Seiler?) study (black male youth)
 - a. Education is key to labor/workforce and economic competency
 - Assumption that Information, opportunity, courses, etc. will be available and accessible to all at the exact time necessary
 - Everyone will be ready (financially, academically) for the next step along education continuum
 - Everyone can navigate the system
 - Everyone is given early awareness of college and careers (including technical careers)
2. Access: issues
 - Need inter-segmental communication, analysis, metrics around access
 - Strategies need to be scaleable – to be implemented on a large scale – across systems
 - The access “problem” needs to be defined, a common vision needs to be articulated
 - Agreement needs to be reached on a definition of “STEM” – is it just K-12? K-20? What does this mean to access?
 - What role does student option play in access?
 - Rigor must be seen as an issue, a requirement, as a necessary element of opportunity
 1. Are we talking access or are we really talking success? (Community colleges have open access, but not everyone is successful)
3. Access: Ideas
 - Is Education Trust West a possible answer?
 - California Community College CO has an Access component in its Strategic Plan – six months of dialogue already taken place – use as foundation? Use existing Access working group as also STEM access working group?
4. Equity
 - Cannot use race/gender eligibility
 - Equity wraps around access
 - Continuum: equal opportunity vis a vis achievement gaps
 - Recommendation: unequal investments to create equity

Session II

Transition Points and Strategies

1. What investments need to be made to improve retention?
 - Support network/Unified action
 - a. Need improved partnership to present a joint plan at State/Federal levels
 - b. Need to address ITAR as university policy issue
 - c. Community outreach
 - i. Explain benefits of “opting in” to education and guidance process

- ii. Special parent conferences on STEM careers/support
- iii. Hands-on experiences (parents/kids?)
- iv. Share culture, benefits of theoretical physics
- v. Frame recruiting events as social affairs (family science nights – “bring siblings!”)
- vi. MESA is very effective
- vii. Mentorship for initial steps to STEM parents
- viii. Connection/accessibility to first generation
- ix. Leverage federal funding for student tuition support
- Middle school is a key point where attrition occurs, especially for girls
 - a. Girls do better in non-STEM areas, need additional encouragement in minority communities – seek support from AAUW, whose mission is in alignment
 - b. Girls do not choose STEM because image not positive, need to see as a field that helps society
 - c. Pre-high school orientation with graduating STEM students to start on “right foot”
- High school to community college - another important transition
- University recruiting
 - a. engineering image being projected not always appealing to girls and others interested in fields helping society – address by reviewing university websites
 - b. Difficult/complex application process
 - c. Financial aid process
 - d. Financial aid access
- University undergraduate program “sink or swim” attitude (66% flunk out rate) forces students out, students who could be fine engineers or math/science teachers, even though not perhaps PhD or Nobel laureate researchers
- Transition to educator program
 - a. Need support to avoid first year burnout
 - b. Teacher to teacher mentoring
 - c. Need programs with longevity
 - d. TRPs have successful model
 - e. State budget has “rollercoaster” effect
 - f. Compensation differential; loan burden

Session II

A Successful STEM Partnership: Barriers, Opportunities & Outcomes

1. Success Factors
 - Faculty led, faculty-driven (one perspective – how to keep industry, informal science engaged if everything is education system-focused? What is “faculty” – teachers?)
 - Trust and commitment
 - Champions and benefactors
 - Lack of “control agenda”
 - Sharing of information, responsibility, resources, leadership
 - 100% Engagement
 - Effective leadership
 - Understanding and leveraging each other’s strengths
 - Respectful disagreement
 - Understanding of joint, collaborative opportunities
 - Understanding of successful models
 - Institutionalization/sustainability
 - Broad-based, not just in one discipline
 - Adaptable solutions (across disciplines, systems, levels, etc.)

- Common values
 - Results measured/ROI
 - Common vision
 - Define end state, goal
 - Common language
 - Agreed upon problem definition
 - Right/inclusive group
 - Effective communication
 - a. individual
 - b. group
 - c. systems
 - d. external partners/education system
2. Issues
- Participation of adjunct professors
 - State Public Policy
3. Others to include
- CSTA, equivalent math organizations, engineering, etc.
 - STEM faculty
 - What K-12 entities?
 - Need industry/informal science involved in the working groups, not just as presenters

Closing Session
Next Steps

1. Next Steps
- Get California STEM inventory started (CSEWI)
 - With industry
 - With informal science
 - With K-12
 - With higher education
 - Get input from Forum invitees on key STEM stakeholders not yet engaged (CSEWI)
 - Plan next STEM Collaboration session
 - Working, not presentation session
 - Creation of joint “vision” to be included as outcome
 - Key collaborative areas of work, working groups set up