

## **Meeting California's Challenge**

### **California State University**

#### **Mathematics and Science Teacher Recruitment and Preparation Summit**

**March 2, 2006**

#### ***Panel #2: Challenges and Opportunities in California***

***James Rosser – “Challenges and opportunities in recruiting significantly more underrepresented students into math and science teaching.”***

#### **James Rosser Remarks begin here:**

- Opening remarks: The reality is that there is not even a modest pool of underrepresented students with demonstrated proficiency in math and science who view teaching as a viable career. As a matter of fact, as you have heard, the problem is even more grave for the nation in the STEM fields and disciplines so critical to our economic well being and national survival.

Let me share a few facts with you:

- Nationwide, low-income students are less likely to be enrolled in a college preparatory track: 28.3%
- Students requiring extensive remediation graduate at lower rates, 45% needing one remedial course; 18% needing three; only 9% who need more than 2 semesters of reading.

- In California, only 1 in 4 high school students complete the A-G requirements; only 1 in 10 can start college without remediation and, astonishingly only 1 in 20 Latino students –ergo, 95% of those who graduate need remediation. California needs to adopt A-G as a state mandate. May be essential to college readiness and workforce readiness given the proficiency grade level of the EXIT EXAM.
- Recent estimates indicate that approximately 80% of the growth in the traditional college population will be non-white by 2015, the majority of whom will be Latino and black.
- *Challenges:* Some of the challenges we face regarding teaching as a career are obvious:
  - Competing demands for high achieving underrepresented students. Because of this intense competition, our best efforts may rest on identifying, nurturing and developing underrepresented students who have an interest and potential. Low-hanging fruit!
  - Dearth of scholarships targeting math and science majors interested in teaching K-12.
  - Relatively low compensation for teachers.
  - Low professional status of teaching as a career.
  - Difficult working conditions, especially in the schools where talented teachers are needed the most.

- Lack of meaningful incentives to compensate for these other deficiencies. How do we manage the limitations of targeting these groups, given Prop 209?
- *CSU Systemic Challenges*
  - Critical challenge of multi-subject teachers and their preparedness to teach math and science effectively, especially for grades PreK-3.
  - Need teachers in preK-3 who are competent in the subjects and confident of their ability to communicate material in an age sensitive way – making the classroom experience for children engaging, rigorous, and fun. A critical benchmark would be that every child will be at, or above the learning outcomes expectations for the third grade as they enter the fourth grade, i.e., no child really is left behind!! Perhaps that most important factor being the ability to read and write with contextual comprehension.
  - In addition, there must be a distinct focus on teaching math and science at both the middle and high school levels – again with an emphasis on programs being, engaging, rigorous and fun.
  - We must address the rather poor articulation between multi-subject credentials and single subject credentials – especially as it pertains to middle school teachers of math and science. Middle school teachers are often caught in a “gray zone” where they wind up teaching with a

multi-subject credential even though the curriculum content, especially in grades 7 and 8, often calls for a single subject credential. Moreover, how do we get the teachers who need in-service training the most to participate?

- *Opportunities to Recruit and Develop underrepresented students as math and science teachers. We need to focus here on both “best processes” and “best practices.”*
  - Mining EAP data for early identification and recruitment of potential teachers with career development programs commencing in grade 12. Given where the majority of underrepresented students enroll past high school, we must partner with the community colleges. In designing these programs, we have to remember that these are more like path ways, not pipelines.
  - Mining the “transfer ready” 2 year college population (estimated to be 250,000 statewide) who are not transferring: this must be done in collaboration with the community colleges.
  - Provide incentives for:
    - Matriculation in credential programs – incentives may need to be different for multi-subject vs. single-subject credential students.
    - Demonstrated proficiency in the following:

- Expository reading and writing;
  - Content;
  - In pedagogy is appropriate to the school segment, e.g., pre K-5, 6-8, 9-12.
- Retention
    - Beyond five years, e.g., bonuses, SUF waivers for graduate study, etc...

This benchmark may be informed by data regarding the year beyond which the majority of teachers remain in the profession.
  - Obtaining advanced degrees in content with appropriate further pedagogical training.
  - Demonstrated cultural competency.
- *The CSU is central to the future of math and science education in the State, and, in terms of underrepresented students, given our demographics and share of teacher education enrollments. Are we willing to push the envelope with our teacher training programs and develop solid, rigorous programs, using evidence-based “best processes” and “best practices” that ensure effective math and science teaching for all our school children? Are we willing to step up to the plate and partner with local school districts to develop high quality/effective professional development and in-service programs targeting*

*teachers in the schools where children are struggling the most with math and science education?*

- *Are we willing to be “branded” by the following characteristics?*
  - *No student will be recommended for graduation or a credential who does not meet proficiency benchmarks in at least the following:*
    - *Contextual reading and writing;*
    - *Math and science content knowledge;*
    - *Pedagogy appropriate to the school segment, e.g., preK-3-5, 6-8, and 9-12;*
    - *Cultural competency.*
  - *Solid “clinical” experience for student, beginning in their first year, with an emphasis on the specific needs of teaching math and science to diverse populations..*
  - *Summer internships and workshops dealing with content and pedagogy in appropriate practice/application settings, e.g., partnerships with business, JPL, etc.*
  - *Comprehensive use of technology as a learning tool workshops.*

- *Use of video feedback so teachers in training and teachers in professional development programs can observe their own teaching practices and reflect on them.*
- *Pre-service and in-service seminars on the use of data and information for ongoing improvements.*
- *Seminars on evidence-based accountability and performance assessment.*
- *Seminars on best practices for the teaching of math and science, targeting age-appropriate and grade appropriate methods for all levels -- preK-5, 6-8, and 9-12.*
- *Completion of pre-service program in 4 yrs., even if starting at a community college. With appropriate commitment and collaboration, I am sure that we can address effectively these challenges and opportunities.*
- *As a final comment, I would urge consideration of the development of a CSU approach to meeting this critical need.*