

Planning for a Math and Science Partnership for the San Joaquin Valley of California



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Brief Project Description

The *Great Valley Math and Science Partnership* is a two-year *NSF-MSP Start Partnership* between California State University, Bakersfield (CSUB) and the Kern High School District (KHSD) as the core partners with the support of a broad and strong coalition of community partners, including the Kern County Superintendent of Schools, science museums, industry, and non-profits. The partnership will serve a region with high incidence of poverty, diverse demographics, generally low levels of education, and limited English language skills, as well as a mixture of urban and rural schools. Figure 1, below, shows the structure of the partnership and its core and supporting partners.

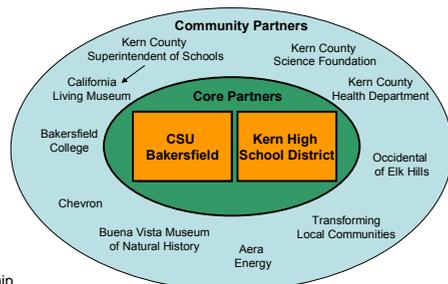


Figure 1. The Great Valley Math and Science Partnership

Goals The goal of the planning effort is an *MSP Institute Partnership* that will develop a group of master teachers through a multi-year program of study in math and science content, pedagogy, and leadership. Teachers completing the program will receive a post-baccalaureate certificate or a Masters of Arts degree in Teaching of Science or Math.

The full *Institute Partnership* will have a strong emphasis on authentic research participation opportunities and other hands-on experiences for teachers, in addition to more traditional classes and workshops. The research experiences will be accompanied by opportunities for reflection and structured activities designed to translate the experiences into high school classrooms. This approach builds on existing strengths and research participation programs at CSUB (e.g. Stockton et al., 2008; Baron et al., 2004 and 2006; Baron, 2004). The partnership will create a group of teachers with a strong commitment to investigation and experimentation. The evaluation plan will focus on collection of data to document the effect of this approach, compared to typical book learning. The full partnership will also collect data to test the hypothesis that by teaching science and doing measurements and experiments, reading and writing and math skills are also improved, counteracting the common lament that schools cannot teach science because they have to focus on reading and writing, and math because of standardized testing. The partnership will add to the limited existing evidence that research participation by teachers can lead to improved student learning (e.g. Silverstein et al., 2009)

Progress to Date In the six months since the grant award, we have assembled the *Core Planning Team* consisting of CSUB disciplinary faculty in the sciences, math, and education, CSUB administrators, KHSD teachers and key administrators, as well as representatives from the County Office of Education. We have also begun to assemble the *Community Advisory Panel* with community partners committed to improving science education in the region and to creating a successful science partnership that is sustainable in the long term.

The Core Planning Team has been working on the *Needs Assessment* for the project. In November 2009, KHSD disseminated a teacher survey to all math and science teachers at their 22 school sites. A total of 532 teacher surveys were disseminated (300 math surveys and 232 science surveys), based on the number of teachers in the district as of October 2009. A total of 340 teachers (184 math and 156 science) responded to the survey. In some cases where teachers taught both math and science, teachers completed two surveys. The surveys have now been analyzed and indicate strong interest in the programs that would be offered by the Institute Partnership.

Aside from teacher input, district administrators and site level administrators from the Kern High School District are participating in telephone interviews regarding the grant. To date, 10 interviews have been completed. Preliminary findings suggest that administrators are highly in support of the proposed project. Administrators agree that support for math and science teachers is crucial and agree that the creation of the proposed program would offer great potential for improving student performance in math and sciences.

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Indicators of Success

The goal of the planning process is to create a strong partnership that will develop a successful proposal for an implementation grant to create an MSP Institute Partnership. The indicators of success will therefore be:

- A strong partnership that is committed to the goals and objectives of the MSP program
- A funded proposal that will create an MSP Institute Partnership for the San Joaquin Valley of California and adjacent regions.

Successes To-Date

- Assembling the planning team and community partners at very short notice
- Considerable progress with the needs assessment for the project
- Drawing in new community partners into the project
- Drawing in additional school districts into the project
- Progress at exploring possible synergies with existing programs at the Kern County Superintendent of Schools office and at CSUB including the new Teacher Quality Program funded by the Department of Education and the Noyce Program.

Challenges

Clearly, our greatest challenge up to now has been to implement an accelerated schedule for the project. We had originally proposed to start the project at the beginning of 2010 to be completed at the end of 2011. We were going to complete much of the planning work during the summers of 2010 and 2011. However, the award started in June 2009, right after the school year ended and many key players were away or had already other commitments for the summer. The project will end in May 2011 and we will therefore only have one summer available. Despite these challenges, the project is now well under way and much progress has already been made. We are on schedule to submit a proposal for an MSP Institute Partnership in 2011.

What We Would Like to Learn from Other Projects

- We want to learn what existing, successful MSP Institute Partnerships are doing.
- We want feedback on our idea of creating a partnership with a strong emphasis on authentic research participation opportunities and other hands-on experiences for teachers.
- We are interested in strategies for making projects sustainable beyond NSF funding.



The Core Planning Team for the Great Valley MSP Partnership

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