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.

Acknowledgements

The following individuals have supported our planning effort: Violet Kemnitz, Pam Knight, John McCormick, Kim Woolf, Leah Shields, Linda Stewart, Kern High School District; Carl Kloock, Andreas Gehaver, David Gove, Nathalie Tran,-cutts Guaglianone, CSUB Bakersfield; Kathleen Hill, John Lindsay, Tania Schaltburg-Dykes, Kern County Superintendent of Schools; Dixie King, Transforming Local Communities, Inc.; Koral Hanchank, Buena Vista Museum of Natural History; John Hester, Kern County Science Foundation.

References


