

Negrini R., Wang JJ., and Baron D. (2013) Experiences from a decade of geology summer research participation programs for high school students and K-12 teachers. 2013 Annual Meeting of the Geological Society of America, October 27-30, 2013, Denver, Colorado

The lack of geoscience expertise in most K-12 teachers and the lack of exposure of students to the geosciences are key reasons for the well-documented challenges in recruiting students into university geoscience programs. To address this problem, faculty from the Department of Geological Sciences at California State University, Bakersfield (CSUB) invites high school students and K-12 teachers to work on geoscience research with them and university students. The four-week summer research participation programs were initiated in 2004 and are now in their 10th year. The programs were originally funded by the National Science Foundation and since 2007 by Chevron. The Chevron funding allowed expansion to all science and engineering programs as well as math. Geoscience research is on paleoclimate research with lake sediment cores, geological carbon sequestration, sedimentary petrology, and forecasting of water supplies from the Sierra Nevada. Research teams typically consist of a STEM faculty leader, one or two college students, one high school teacher and two or three high school students. The program has created a new community of learners. It supports CSUB faculty to advance their research agendas, gives high school students an experience in scientific research, gives CSUB students research and mentoring experience, and develops teachers' STEM subject competency.

An evaluation of the expanded programs since 2007 shows the following: (1) The program is very popular, the number of applications has grown from 38 in 2007 to 386 in 2013. (2) A total of 26 STEM faculty, 90 CSUB students, 84 K-12 teachers and 384 high school students participated. (3) Over 70% of participating high school students who have since graduated and could be tracked are attending college, more than twice the state-reported 33.2% rate for the region. (4) Of the students attending college, 18% attend CSUB. Almost 50% attend a University of California campus, compared to only 3.5% of all high school graduates from the region.