

Supplemental Instruction Improves STEM Success

June 21, 2013



More than 60 student leaders led study sessions through the College of Natural Sciences and Mathematics' Supplemental Instruction program during the 2012-13 academic year for more than 1,500 student participants. A peer-led study program offered through the College of Natural Sciences and Mathematics is making a dramatic difference in paving the way for student success in STEM majors.

New data shows that students who participate in the [Supplemental Instruction](#) program are one-third less likely to drop out of a STEM (science, technology, engineering and math) major and also less likely to have to repeat a gateway course in math or science.

Over the past six years since the college began offering the extra academic support, the program has been helping STEM majors improve their grades in historically difficult gateway courses, resulting in increasing retention and graduation rates, said Marty V. Bonsangue, professor of mathematics.

"The latest data shows that the dropout rate for Supplemental Instruction students is 12 percent, compared to 18 percent for non-SI students," said Bonsangue, who compiled the data with the help of graduate math majors.

"Although the program targets difficult courses, rather than particular groups of students, the impact has been especially great for our underrepresented minority students and for transfer

STEM students," he said. "Student success is directly linked to Supplemental Instruction participation."

During the 2012-13 academic year, more than 60 student leaders — all accomplished students in gateway math and science courses — conducted approximately 100 Supplemental Instruction study sessions for more than 1,500 student participants, Bonsangue said. The peer-assisted study sessions complement key math, physics, biology, chemistry and biochemistry courses required for the major, in which a passing grade is needed to progress in the degree program.

The newly gathered data also shows Supplemental Instruction students pass their basic STEM courses at a rate of about 85 percent, compared with 55 percent for their non-SI counterparts, and achieve, on average, a grade nearly one grade point higher, Bonsangue said.

For example, program participants in first-semester calculus scored more than half a grade point higher, passed the course at a higher level, needed fewer attempts to pass their mathematics course, and dropped out from the university at a lower rate, Bonsangue noted.

The positive outcomes of the program have also been documented in the peer-reviewed article "The Effect of Supplemental Instruction on Transfer Student Success in First Semester Calculus," published in the spring issue of the Learning Assistance Review. The article was co-authored by a team of nine CSUF faculty and staff members and administrators who have been involved with the project. Bonsangue, CSUF's 2010-11 Outstanding Professor, and Rochelle Woods, director of student academic services, also presented the data this spring at a conference in Indianapolis.

The Supplemental Instruction program, Bonsangue added, is "effectively and directly addressing CSUF's newly adopted strategic plan goal No. 2," which is to improve student persistence, increase graduation rates Universitywide and narrow the achievement gap for underrepresented students.