

TEST-UP: Talent Expansion in Science and Technology - An Urban Partnership

NSF Project #0757113 funded under the NSF STEP Program

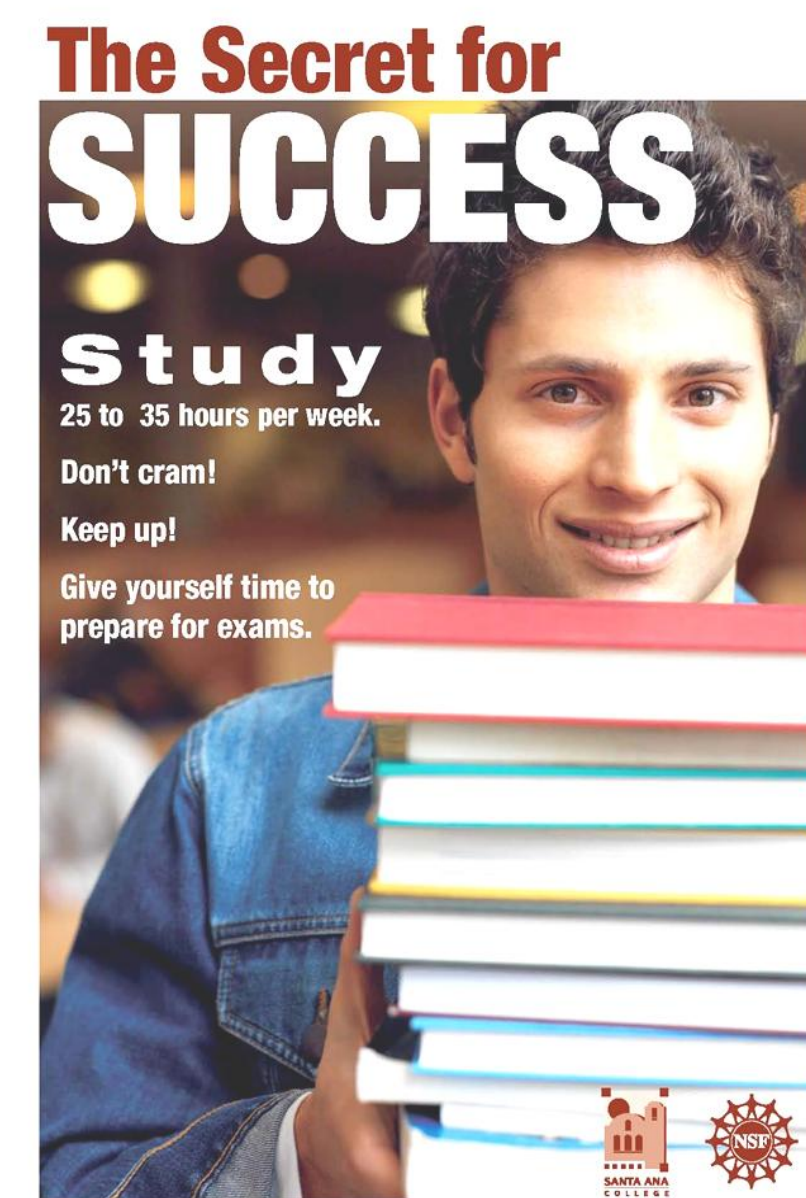
Cathy Fernandez-Weston¹, Steve Murray¹, Carol Comeau², Larry Redinger³, Martin Bonsangue¹, and Rochelle Woods¹.
California State University Fullerton¹, Santa Ana College², and Mount San Antonio College³

Project Background

TEST-UP is a National Science Foundation (NSF) funded collaborative, initiated in fall 2008, among three large Hispanic Serving institutions (HSIs): California State University Fullerton (CSUF), Mt. San Antonio College (Mt. SAC) and Santa Ana College (SAC). CSUF is a four-year comprehensive university and Mt. SAC and SAC are two-year community colleges. All campuses are located within 20 miles of each other and have diverse student bodies with enrollments ranging from ca. 27,000 to 37,000 students.

TEST-UP Goals

TEST-UP has two overall goals: to increase the number of STEM transfer students to four-year universities and colleges and to increase the numbers of STEM AA degrees and baccalaureates attained. Through TEST-UP we plan to recruit and retain more STEM students.



Study 25-35 Campaign: Posters to get students with a full-time course load to understand the need to study at least 25-35 hours per week to achieve success as a STEM major. Modeled after a Cal Poly San Luis Obispo program.

Strategies and Progress

Strategy 1. Improve advisement, guidance, and mentoring opportunities

Full-time Coordinator: STEM Transfer Student Services:

- CSUF-based position; travels to SAC and Mt. SAC
- Collaborates with half-time community college advisers
- Recruits and advises STEM students
- Plans and organizes TEST-UP programs and activities including: peer advising, early warning, social events, educational workshops, academic coaching, CSUF STEM transfer book Scholarships (\$500) and transfer orientations

Progress to Date: Established presence and initiated programs and activities on each campus; awarded CSUF book scholarships at CSUF and has also established advisement opportunities at SAC and Mt. SAC.

Half-time STEM Advisers (SAC and Mt. SAC):

- New positions on each campus
- Encourage student involvement in TEST-UP
- Recruit and advise STEM students
- Develop educational roadmap for transferring in STEM fields
- Coordinate STEM faculty mentoring program
- Collaborate with existing student clubs and programs



Progress to Date Recruited >100 students on each campus to TEST-UP; advising students; developed transfer roadmaps for advisee's, supported STEM week incentives. Assisted in developing STEM planning group.

Strategy 2. Improve support facilities, develop faculty mentoring and peer advising programs and create STEM learning communities

Peer Advisor Program (CSUF)

- Successful STEM student peers provide advisement and support for incoming STEM transfers
- Peer advisers organize social, educational, and awareness events

Faculty Mentoring Programs (SAC and Mt. SAC)

- Links STEM and potential STEM Students with STEM faculty
- Encourage and mentor STEM and potential STEM students

Science Resource/Study Centers (SAC and Mt. SAC)

- Provide STEM students with new and improved study facilities and resources

Progress to Date: Peer advisors have contacted >350 CSUF STEM students; Peers advised 40 CSUF STEM transfers; social events held; new STEM students recruited into mentoring program.



Strategy 3. Improve student learning in key mathematics and science courses

Establish STEM Tutoring Programs (SAC and Mt. SAC):

- Improve tutoring services to better service STEM students (Biology study center & Natural Sciences Division Resources Center.)
- Offer targeted tutoring/support for selected STEM courses

Develop and Implement Supplementary Instruction (SI) Workshops (CSUF, SAC, and Mt. SAC):

- Recruit/educate faculty to design and deliver SI workshops
- Recruit/train SI leaders to lead SI sessions
- Expand and Launch new SI offerings in key STEM courses
- Form a regional SI collaborative among campus faculty

Progress to Date: The SI program at CSUF in Mathematics includes courses in College Algebra, Precalculus, Calculus I, and Calculus II. More than 180 mathematics students participated in Fall 2009, more than double the number from the semester before. SI students in mathematics achieved on average one full grade point above that of non-SI students and a 90 % course completion rate.

The SI program at CSUF in Biology covers a courses in Evolution and Biodiversity . About 42% of the class attend Biology SI (~ 96 students) these students have a much higher completion rate than students not attending (78% compared to 48%). The students attending SI are also scoring 7 % points higher on exams compared to non-SI students. The courses for SI were selected because they have been identified as historically difficult for students and the college wanted to provide students with additional support in these courses.

SI at SAC include courses in Fundamentals of Biology, Cellular and Molecular Biology, Intermediate Algebra & General Chemistry. An increase in SI participation was also seen at SAC, thus SI has been extended to three more courses. SI participants received higher grade point averages compared to overall class averages.

Mt.SAC is working on training SI leaders as well as restructuring it's STEM SI workshops.

Challenges and Actions Taken

Coordinating TEST-UP advisement, activities and SI programs within existing campus structures and among campuses with different campus climates and cultures.

Action Taken: Secured key administrative support to maximize communication among TEST-UP participants; this is greatly facilitated by the Coordinator for STEM Transfer Student Services who moves each week among the three campuses. This is also facilitated by constant interaction with campus administrators who manage campus advising and activities.

Budget cuts have eliminated or severely reduced many STEM support services, STEM course offerings, and at CSUF will reduce the number of entering freshmen and transfer students; thus, fewer students will be admitted to pursue STEM degrees.

Action Taken: Efforts are being made to recalibrate baseline STEM student data to more accurately evaluate the impacts of the TEST-UP program.