There are also a series of new professional, mid-manager, graduate, and undergraduate awards that you can apply for, as well as research grants (see NASPA Region VI and NASPA Foundation webpages). Furthermore, undergraduate and graduate students may be able to apply for travel grants through student government or another student organization on-campus.

Be Your Own Driver

At the end of the day, you are in the driver's seat where your professional development is concerned. The suggestions provided above are just a few examples of ways to remain dedicated to professional development with little to no funding. Creating your own opportunities for professional growth is always the best way to go. Don't lose sight of the fact that most often the majority of your professional growth occurs right where you work. Every college and university campus has human resources and a wealth of knowledge that has yet to be tapped into. We challenge you to reach out to other Student Affairs professionals on your campus, and locally, to begin building relationships, sharing resources, and growing together. Simply start up a conversation and see where it takes you!

Improving Transfer Student Success in STEM Majors Spotlight on Supplemental Instruction

Steven Murray, Mark Filowitz, Martin Bonsangue, Rochelle Woods, Sean Walker, Cathy Fernandez-Weston, Ricardo Lopez -California State University Fullerton

One of the core drivers of innovation in the U.S. is its strength in science, technology, engineering, and mathematics-related (STEM) disciplines. Yet, in an increasingly interconnected world, the U.S. has not been keeping pace with its economic competitors. Shifts in the international talent pool and in America's role in global research and development are threatening U.S. ascendance in science and technology and, by extension, its ability to innovate. Since the 1960s, there has been a steady drop in STEM majors, and the National Science Board (2004) has noted "a troubling decline in the number of U.S. citizens who are training to become scientists and engineers, whereas the number of jobs requiring science and engineering...training continues to grow." Casting that decline in a particularly disquieting light is the fact that significantly fewer U.S. college students are pursuing science and engineering degrees than their counterparts in other countries. As reported in Rising above the Gathering Storm (Committee on Prospering in the Global Economy of the 21st Century, 2007), the U.S. ranks 20th in the proportion of its college-age population earning first university degrees in the natural sciences. The committee also notes that "It is clear that an inadequate supply of scientists and engineers can be highly detrimental to the nation's well-being."

A recent report from the National Research Council (Long, 2001) highlights the problem of retaining student interest in STEM fields—the so-called leaks in the STEM pipeline. In a survey of 4,000 ninth graders, 14% of males and 11% of females enrolled in a science track. By the time they enrolled in college as freshmen, however, only 7% of males and 2% of females planned to major in science; only 2% of male students and 1% of female students ultimately earned bachelor's degrees in science. Of those that enter college, attrition rates are especially high among first-year students (ACT, 1992). Tinto (1987) suggests that this attrition is more a function of what takes place after students enter college than what precedes it. In the sciences, numerous studies have shown that introductory courses can discourage talented students who might otherwise have pursued scientific careers (Tobias, 1990; Jarmul, 1995; Brainard, 2007).

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In Talking about Leaving: Why Undergraduates Leave the Sciences, Seymour and Hewitt (1997) identified 23 factors that contributed to a student's decision to switch out of a STEM major. Among the most common were: 1) a lack or loss of interest in science, math and engineering; 2) poor teaching by STEM faculty; 3) feeling overwhelmed by the fast pace of STEM instruction; 4) the perception that STEM career options were not worth the effort required to earn a degree; 5) inadequate advising or help with academic problems; 6) discouragement due to low grades in early years; 7) conceptual difficulties with one or more subject areas; and 8) lack of peer study group support.

There is an especially high attrition rate among those who transfer to the university in the sciences (Russell and Perez, 1980). Various studies of community college transfers have revealed that those who earn higher grades in community college, enroll on a full-time basis, and take more math and science courses are more likely to transfer to a four-year institution than those who earn lower grades, enroll part time, and avoid math and science courses (Palmer, 1991). Students who are more engaged with community college campus life are also more likely to transfer to four-year schools (Palmer, 1991). The latest Community College Survey of Student Engagement (Ashburn, 2006) revealed that community colleges with better advisement systems produced significantly more transfers to four-year institutions. Similarly, mentoring programs that help socialize students to STEM fields and the presence and guidance of peer or faculty mentors have been shown to positively affect retention (Brawer, 1996; Chang 2002). The Building Engineering and Science Talent committee (BEST, 2004) noted that while < 10% of 1996-2000 U.S. citizen doctorate recipients in science and engineering had attended two-year colleges, Native American and Hispanic doctorate recipients in STEM fields were more likely than those of other racial/ethnic groups to have been community college transfers (18% of Mexican American and 17% of Native American, compared with 5% of Asian, 8% of African American, and 9% of white STEM doctorate recipients).

In Choosing to Improve: Voices from Colleges and Universities with Better Graduation Rates, Kevin Carey (2005) observes that institutions with unusually high graduation rates worked especially hard at connecting students with the campus, particularly those from low-income families. Freshman seminars, mentoring programs, and creating a supportive campus climate are some of the strategies identified for integrating students into the college environment (Aragon, 2000, cited in Katalin, 2001). The National Survey of Student Engagement (2005) identifies five benchmarks for engaging students, including opportunities for active and collaborative learning, student-faculty interaction, enriched educational experiences, and the development of a supportive campus environment. These benchmarks can be achieved through the creation of student learning communities, the development of rich, supportive campus learning networks and facilities, and programs that ensure a high level of student-faculty interaction. Engagement was also stressed as a mechanism to increase the participation of underrepresented students in STEM fields in the recommendations of the BEST (2004) committee, which included: institutional leadership (commitment to inclusiveness across the campus community); engaged faculty (developing student talent as a rewarded faculty outcome); personal attention (addressing, through mentoring and tutoring, the learning needs of each student); peer support (student interaction opportunities that build support across cohorts and allegiance to institution, discipline and profession); bridging to the next level (institutional relationships that help students and faculty to envision pathways to milestones and career development); and continuous evaluation (ongoing monitoring of process and outcomes that guide program adjustments).

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Improving Transfer Student Success in STEM Majors Spotlight on Supplemental Instruction

TEST:UP is a collaborative program funded by NSF, initiated in fall 2008, among three Hispanic Serving Institutions—California State University, Fullerton (CSUF), a four-year, comprehensive university, and Mt. San Antonio College (Mt. SAC) and Santa Ana College (SAC), two of CSUF's feeder two-year community colleges. All three campuses are located within 23 miles of each other and have diverse student bodies with enrollments exceeding 27,000 students. Through TEST:UP, our collaborative program seeks to: 1) increase the recruitment and retention of STEM majors at Mt. SAC and SAC; 2) produce more STEM associate degrees and STEM transfers to four-year schools; 3) improve the retention and persistence of transfers and entering freshmen majoring in STEM fields at CSUF; 4) increase the number of students obtaining baccalaureate degrees in STEM disciplines at CSUF and other four-year institutions.

In the third year of a five year grant, we are meeting our goals on increasing declared STEM transfers from and STEM degrees awarded at the community colleges. Improved retention rates for STEM transfers (and first time STEM freshmen) reflect the impact of a number of retention efforts to improve awareness of the value of STEM careers and opportunities, including: transfer professionals and offices on each campus specifically to work with and advise STEM students; classroom presentations in courses populated by STEM majors; faculty-student mixers; workshops on careers and the transfer process; a student empowerment campaign aimed at increasing study time outside of the classrooms and laboratories; early exposure to undergraduate research; a family day to learn more about time management and requirements for success in STEM fields in the four-year institution; an early warning system to identify at-risk students within the first few weeks of the semester; and numerous social and outreach events to expose and attract students to STEM fields. We have observed much improved passing rates and GPA with Supplemental Instruction (SI) at all three institutions. The impact on underrepresented minority (URM) populations was most dramatic.

Description of SI

Targets key gateway courses for STEM majors in biology, chemistry, computer science, math. The SI leaders in all of the disciplines attend a day-long training session led by professors from the disciplines, most of whom have attended the U. Missouri - Kansas City SI training program. In biology and chemistry, students in targeted SI courses have the option to attend SI sessions that are offered twice each week. In mathematics, students sign up for the SI as a separate 1 unit course and are required to attend. SI leaders attend the professor's lecture each day to ensure that their SI sessions are current, and to act as a role model for students in the course. SI leaders then meet with students at least 3 hours per week to creatively work on problems based on that week's lessons, using tools like the 'Jeopardy' game to engage students. Students actively work on key concepts and problems resulting in increased time on task.

Impact of SI

As of Fall 2010 approximately 3500 students have participated in SI over a three year period, including 400 at SAC and 270 at Mt. SAC funded by TEST: UP, and 2800 at CSUF. Overall the SI passing rate approximately 82 % v. 69 % for non-SI students. The SI student group overall outscored non-SI student group by 0.7 grade points (2.6 v. 1.9). Data on all three campuses show significant improvements in passing rates and GPA for students attending multiple SI sessions, as well as improved retention in their STEM major.

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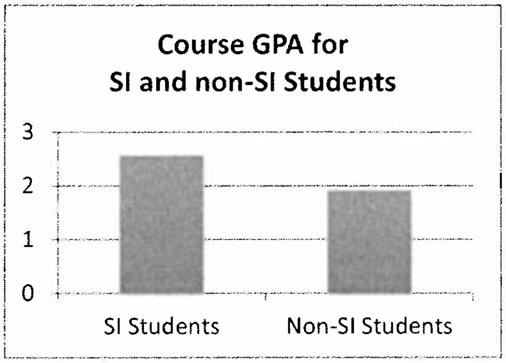

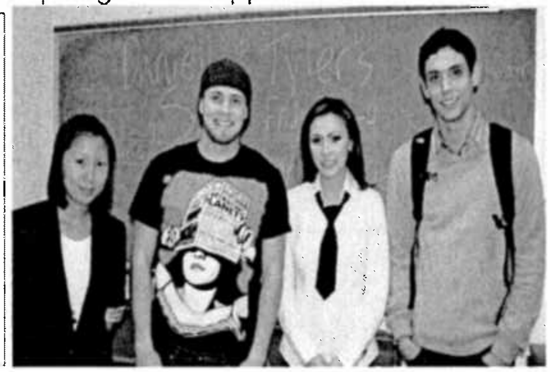

SI Leaders

While recruiting SI leaders takes some directed effort, our experience is that there are a number of undergraduate students who are excited about this opportunity. An exit survey was given to the SI leaders at the end of the semester in year 2. The purpose of this survey was to give SI leaders the opportunity to anonymously express their experience in the program as well as to share their observations and recommendations for future SI. The survey asked SI leaders, based on a 5-point Likert scale, to give their level of agreement or disagreement with fifteen different statements pertaining to SI. The survey centered on five important ideas or constructs:

a. Level of preparedness of students in the course
b. Level of effectiveness of SI on increasing student achievement
c. Level of satisfaction with the experience of being an SI leader
d. Impact on academic self-perception for SI leaders
e. Impact on career self-perception for SI leaders

Each construct was explored with at least two questions using opposite scales so as to minimize answering bias. Of the 26 SI leaders 20 (77 %) submitted completed surveys. Results showed that SI leaders felt that the experience was positive to very positive for them both academically and professionally. Eighteen of the twenty students indicated that the SI gave them 'valuable classroom teaching experience,' while 17 of the SI leaders indicated that the experience has made them become more interested in either 'considering teaching as a career' or 'going to graduate school.' There was some disagreement on level of satisfaction with the pay ($ 1,500 per semester, or about $10 per hr), with mean score of 4 but a standard deviation of 1.08. SI leaders generally agreed that students in the SI lacked basic skills for success in the course. Indeed, SI leaders regularly 'built in' practice for these skills on their bi-weekly worksheets to help SI students strengthen these skills in the context of problems in their mathematics, biology, or chemistry course.

Overall, the exit survey showed evidence that the experience was valued by the SI leaders and helped give them the opportunity to view themselves as future professionals that they might otherwise not have had as undergraduates.

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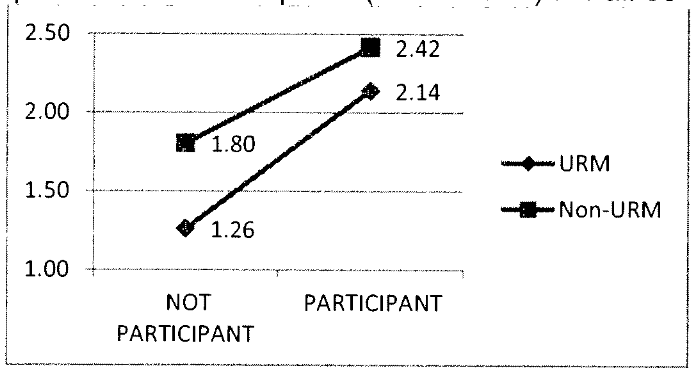
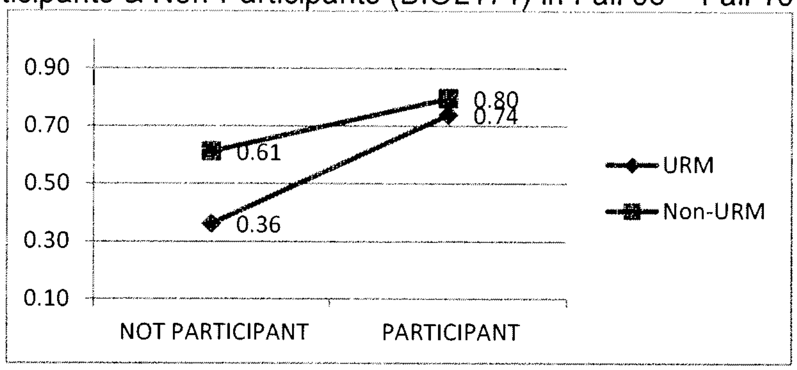
URM vs. Non-URM

SI impact on URM populations was most dramatic even though High School gpa's were the same.

Course Grade of SI Participants & Non-Participants (MATH150A) in Fall 08 – Fall 10



Success Rate of SI Participants & Non-Participants (BIOL171) in Fall 08 – Fall 10



Cal State Fullerton and its partners continue to develop improved understanding of STEM programs and the needs of STEM students for counselors, advisers, and others on our campuses. In addition, we are working to increase the dialogue between STEM and non-STEM faculty about STEM students and opportunities, as well as with other persons who may work with or advise STEM students at our institutions. We continue to develop SI materials to be shared among our participating campuses.

Professional Competencies for Student Affairs Practitioners

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In the summer of 2010, ACPA and NASPA jointly published a set of professional competency areas for Student Affairs practitioners, cleverly entitled *ACPA and NASPA Professional Competency Areas for Student Affairs Practitioners.* This document was created by a team of professionals from both ACPA and NASPA over a period of a couple of years, engaging in research about student affairs and competency areas. The document was then approved by both organizations' board of directors and published for your use.

As your Region VI competencies wonk, I am going to share all 10 competencies with you in the Region VI NASPA newsletter. I'll present two in each of the next 5 issues so that you'll have an understanding of the purpose of each competency and how you may incorporate it into your work, your teaching, and your professional development experience.

Professional Competencies continued on page 28.