



SEO

Helping Minorities Succeed in the Sciences

by Charles Brigham

After spending over thirty years conducting laboratory experiments, San Francisco State University microbiologist Dr. Frank Bayliss decided to take on a different type of experiment: the Student Enrichment Opportunities Program (SEO), designed to improve the future of minorities in science.

“The ultimate goal of our programs is to take a non-traditional pool of students and get them into Ph.D. programs at the best institutions,” he says. This non-traditional pool represents African American, Native American, Hispanic American, Pacific Islander, and other masters and bachelor students in the sciences bound for Ph.D. programs after SFSU. “It’s not just getting them into third rate schools, it’s getting them into first rate schools.”

Bayliss and six staff members operate the SEO out of a small office in the SFSU Sciences building. He, along with other SFSU teaching and administration faculty, encourage students to ignore traditional barriers and pursue their interests in the sciences. As director, Bayliss oversees several programs in the SEO aimed at raising the number of minority students in prestigious Ph.D. programs.

As to how he came to take on such a responsibility, Bayliss says, “I had a grand-

father who was a socialist who had a lot of axes to grind after losing everything in the depression. My grandfather wanted people to have opportunities that were denied to him, and I didn’t realize he had such a large influence on me.”

Bayliss himself represents a story of great academic accomplishment. Raised in Watts, Los Angeles, he came from a low-income family that lived in substandard housing. He worked, attended school and experienced obstacles similar to the ones minority students confront today.

“Students should not be judged on their ability to learn based solely on their GPA”, says Bayliss, “Many other components of their life must be considered, such as their job and living situation.” Many students have tremendous difficulty keeping life outside of school in order, which can interfere with their academic studies.

A student may come to the SEO with a 2.2 GPA overall and maybe a

slightly higher GPA in their major. Bayliss and his staff work with a student to see what in their life may be keeping them from doing better work. “I am in essence a horse trainer. You put a 200 pound jockey on a horse, he doesn’t run as fast. You put a 100 pound jockey on them and show them how to run, they run.” For example, Bayliss describes a student who works thirty hours per week and whose income goes to rent and food. Nothing is left to buy books and supplies and so school suffers. If you lighten a student’s load by providing a program where more time is spent on academic pursuits, the student performs better. Grades of students in the program typically jump up a full letter grade.

Janis Allen, a SFSU cellular and molecular biology student was working two jobs while going to school in Texas before she enrolled in the SFSU SEO Research In Science Education program. “Any minority student that wants a secondary degree

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and needs guidance should apply as soon as possible,” says Allen. “The program provided me with resources I thought I would never have access to.” Her current program allows for a \$10,500 scholarship after sophomore year, a tuition waiver and expenses paid up to \$3,000 for your junior and senior year. Now at the tail end of the SEO Minorities with Access to Research Careers program, she has chosen to attend the University of California, San Diego and enter the biomedical sciences program.

For SEO program eligibility, the student must have the goal of continuing to complete a graduate degree in the biological or physical sciences. Inevitably, a value judgment is made on whether the student qualifies for the SEO program by the SEO faculty and the funding sponsor since funding sponsors may have differing criteria intended for particular science fields.

SEO students enrolled in various biology, chemistry, physics, and math courses are required to attend a weekly, one and one-half hour workshops corresponding to the science courses in which they are enrolled and open to all non-SEO students. The workshops help students understand and keep up with the material, prepare for exams, and provide motivation through small, personal groups and one-on-one time with the instructor. Along with the SEO workshops offered by SFSU science staff, students are required to adhere to the conditions of the grant or scholarship.

A survey of 193 students showed overwhelming support for workshops; many requested longer sessions or more workshops. “The instructor was helpful and approachable,” says a biology workshop student in the anonymous survey. “She was also very accessible and made time to meet me outside of class time, even during exam week. The instructor genuinely cares about your progress and success in the course, and was generous in offering their time to make sure I understood the material.” Other positive aspects of the workshops are small class size, being

able to solve problems together, and sharing notes.

“By preparing and supporting underrepresented minority students, this year the SFSU SEO programs have made an impact equivalent to a 10% increase, 25 students, from the historic national average of 200-250 minorities that receive a Ph.D.s per year,” says Bayliss, “and this year is the best crop of students yet.” These twenty-five students have been admitted to prestigious Ph.D. science programs this year at leading universities, including the University of California Berkeley, University of California San Francisco, Stanford University and University of California, San Diego.

A listing of the top 100 degree producers in the nation cited SFSU as having the tenth highest number of bachelor’s degrees earned by minorities for the 2001-2002 academic year. This gain accounts for a 15% increase in degree holders over the previous year.

When Bayliss started the SEO program at SFSU in 1992 it had only a few students. Today 120 undergraduate and 52 graduate students are in the program. “Of the students entering Ph.D. programs, none have flunked out of the programs and only a few have left the programs for life reasons,” says Bayliss. He uses data from SEO’s 12 years of operation to persuade faculty at other institutions to adopt such programs.

Similar programs exist at California State University Los Angeles and New Mexico State University but are not widespread. Major funding for new grants and scholarships comes from agencies such as the National Science Foundation, National Institute of Health, Department of Defense, Department of Energy, and U.S. Department of Education.

The programs provide a voice for minorities in the sciences. “People must be seen as individuals,” says Bayliss, “The system is not working and many minorities are excluded or written off early. A more inclusive and equitable academic environment will serve to better education.” ❖



Frank Bayliss
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Janis Allen
SEO Program participant