Lamar University Students Advancing through Involvement in Research Student Talent Expansion Program (STAIRSTEP)

A National Science Foundation Program to Help Recruit and Retain STEM Majors at Lamar University

- Chemistry: C. Martin christopher.martin@lamar.edu
- CS: Director P. Doerschuk peggy.doerschuk@lamar.edu
- Math: Assoc. Dir. J. Daniel jennifer.daniel@lamar.edu
- Physics: C. Bahrim cristian.bahrim@lamar.edu
- Geologo/ES: J. Kruger joseph.kruger@lamar.edu
- Assessment: J. Mann judith.mann@lamar.edu
Goals

• Recruit and Retain majors

• Inspire them to attract others to STEM

• Transition them to advanced study or careers in STEM

http://dept.lamar.edu/stairstep
**Strategies**

• Develop and engage students through early undergrad **team research, mentoring, tutoring with faculty, peers**
• Expose students to beneficial applications and diverse careers in science through **professional conferences** and on-campus **Research Seminars** and **Career Forums**
• Provide **career counseling**
• Engage **undergrads in outreach**
• Provide **competitive stipends**
Implementation Progress First Two Years

• 11 STAIRSTEP students presented research and/or participated in 4 professional meetings and conferences in 2009; 16 students, in 6 meetings/conferences in 2010
• 47 STAIRSTEP and 180 STEM students participated in 10 Research Seminars with speakers from NASA, MIT, Purdue, Clemson, Brigham Young U, Texas A&M, and others.
• Hosted 8 Career Forums with over 30 guest scientist panelists
• STAIRSTEP undergrads participated in outreach events that exposed nearly 1200 pre-college and 300 university students to research, careers and beneficial applications of science
Assessment Results First Year

- 45 of 47 participants retained (96%)
- 13 participants graduated
- Successfully transitioned 8/10 graduating students into STEM graduate programs or careers within 6 months of graduation
- Participants had higher GPAs (3.10 vs 2.71) and lower drop rates (1.27% vs. 10.25%) in major courses than cohorts
- Participation had a significant impact on students’ professional growth, helped them attain learning outcomes for their disciplines
Challenges

Attracting community college students is our biggest challenge because of a history of perceived competition for students. Actions include:

• Developing individual contacts at feeder community college campuses to determine the best approach to take on their campuses
• Facilitating the development of institution-wide articulation and reverse transfer agreements
• Working with Admissions to develop scholarships for incoming community college transfer students who have potential to succeed in STEM disciplines
• Coordinating efforts with LU Recruiting
Opportunities

Informal partnerships with other Lamar University organizations created opportunities for participation in events that target students and educators

• INSPIRED middle school and high school computing academies
• MathFest, Sally Ride Festival, Math Camp
• New Student Orientations, Week of Welcome
• NSBE contests and seminars
• McNair Scholars forums
• Texas P-16 Roundtables
• Region 5 meetings

Our participation helps our partners achieve their goals as well
Benefits to students

• paid on-campus job with flexible hours
• peer mentoring, faculty mentoring
• peer tutoring, study groups
• experience in teamwork, writing professional papers, making professional presentations
• participation in professional conferences and meetings
• opportunity to serve others
• exposure to successful researchers, practicing professionals
• professional networking
• help with job search, grad school, internship applications
• friends
Benefits to faculty

- Provided undergraduate students to participate in research projects
- Helped my publication record by allowing the students to publish abstracts for talks and posters with me as a coauthor.
- Helped my research visibility when students shared with others the research they are doing with me.
- Helped bring students into my classes when STAIRSTEP students shared with other students information about what I teach and what kind of teacher I am.
- Helped me learn to work with undergraduate students better and learn what they are capable of doing
- Made it possible to pay my students for their research effort and to go to conferences
- Helped me enrich my department with seminars, outreach, collaborative research, and a sense of community
Benefits to departments

• New lab materials for CH and PH
  – CH STAIRSTEP students are developing a new series of labs for a CH majors section of the first semester of college chemistry.
  – PH STAIRSTEP students helped develop five setups for the analysis of diffraction and interference patterns produced by light used in the University Physics (sophomore level) course. The equipment was bought in part with money from this NSF grant.

• Reinvigorated student organizations
• New outreach programs
• Career Forums
• Research Seminars
For More information contact
Faculty Leaders :
CS: Director P. Doerschuk
peggy.doerschuk@lamar.edu
Math: Assoc. Dir. J. Daniel
jennifer.daniel@lamar.edu
Physics: C. Bahrim
christian.bahrim@lamar.edu
Geologo/ES: J. Kruger
joseph.kruger@lamar.edu
Chemistry: C. Martin
christopher.martin@lamar.edu
Assessment: J. Mann
judith.mann@lamar.edu

Partial support for this work was provided by the National Science Foundation's Science, Technology, Engineering, and Mathematics Talent Expansion Program (STEP) under Award No. DUE-0757057. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.