

Recruiting women for STEM careers isn't rocket science

By Madeline Patton, Published May 11, 2012

Using data from her [National Science Foundation](#) (NSF) project at eight California community colleges, Donna Milgram has identified the key factors for recruiting and retaining women in science, technology, engineering and mathematics programs (STEM).

For female students to consider a STEM career, particularly one with few women, they need personal encouragement from instructors or counselors.

"It really helps if you have a counselor or instructor saying, 'This could be a good career area for you ... I would like to see you check this out,'" said Milgram, executive director of the [Institute for Women in Trades, Technology and Science](#) (IWITTS).

Milgram serves as principal investigator of the [CalWomenTech Scale Up Project](#), an NSF-supported initiative that is spreading the lessons learned from the [CalWomenTech Project](#) to community college educators across the nation via webinars, 10-week online learning communities and two-day workshops at [Advanced Technological Education Centers](#). IWITTS also offers a variety of fee-based [programs](#) to improve the recruitment and retention of women in STEM education programs.

Seeing themselves in STEM careers

In addition to hearing encouraging words from instructors and counselors, women need to see—in posters, videos and career events with women actually working in STEM disciplines—what a typical day looks like for women employed as technicians in STEM workplaces.

Women need proactive personal encouragement and positive media messages to counteract the status quo at many community colleges, where few or no women are in STEM classrooms or appear on marketing materials for STEM programs, Milgram said.

A survey of 60 CalWomen Tech Project students by an external evaluator found that it is essential for women to get an accurate picture in their minds about what STEM work involves, Milgram said.

"They need to understand what kind of jobs they can get, what kind of career pathway there is from the field," she said. (IWITTS sells [Women in Technology Outreach Kits](#) with customizable marketing materials, posters and websites.)

As for where community colleges can find women to enroll in STEM programs, Milgram suggested that recruitment efforts focus on the large number of female students on their campuses who are still deciding what to major in.

"The number one audience for community colleges is female students already enrolled in the college that have not declared a major," Milgram said.

This approach has two advantages: these women are already affiliated with the college, and they have made the commitment to improve their position in the workforce. Efforts to build the STEM pipeline by targeting middle school students are "far too long a recruitment cycle," Milgram said.

Strategies can serve minorities, too

Even at a time when most community colleges at their enrollment capacity, college leaders should make increasing female enrollment in STEM programs a priority, according to Milgram. The reason is fewer women are enrolling in such programs. Women earned about 28 percent of sub-baccalaureate degrees and certificates in STEM disciplines in 2007, compared to 34 percent of these credentials in 1997.

"When you have a well gender-balanced classroom, it is a better experience for all the students and the instructor ... because they (women) are going to bring a different background and a different way of working," Milgram said.

Aside from women enriching the STEM disciplines with their different perspectives and experiences, STEM employment opportunities are growing, and they offer wages that allow women to support themselves and their families.

STEM curricula may be more demanding than other programs, but, with the time-management skills that IWITTS teaches, students can become more efficient, Milgram said. IWITTS also promotes "building block" strategies, such as teaching mathematics in the context of STEM workplace activities and having labs open for extended hours for all students with staff support from men and women of different races.

"Many of these strategies that work well for women also work well for minorities," Milgram added.

Results are in the data

IWITTS was featured in April in the [Discovery](#) section of NSF's website for its successes. The enrollment of women in the targeted introductory technology courses increased at six of the seven colleges that remained in the CalWomen Tech Project through spring 2011. Five of the colleges significantly surpassed their enrollment goals.

The colleges also closed the gap between women and men on completion rates, and six of the colleges reported improved retention of male students.

In California, the [City College of San Francisco](#) (CCSF) reported some of the best results from IWITTS's leadership team model. The strategic plan for recruitment and retention included professional development for the [Computer Networking and Information Technology](#) (CNIT) faculty and custom outreach materials to promote information technology careers to women. Female enrollment in the introductory CNIT course increased from an average of 19 percent in 2006-2007 to as much as 33 percent in fall 2008. In spring, 28 percent of the students in the introductory CNIT course were women.

Over the same period, the rate of women and men completing CNIT courses at CCSF increased significantly. In 2006-2007, 64 percent of women and 72 percent of men completed their courses. By spring 2010, the completion rate had increased to 85 percent for women and 81 percent for men.

IWITTS training takes administrators, faculty and support staff step-by-step as a team through the process for improving recruitment and retention, Milgram said.

"When you have the nuts and bolts of how to do it, then there's a better opportunity for implementation," she said.

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