

## Why are women so underrepresented in science, technology, engineering, and math?

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Lois Joy's research is about women's access to science, technology, engineering, and mathematics—dubbed the "STEM" fields. But a chat about her findings quickly turns to a discussion about opportunity.

Interviewing students and faculty at two community colleges in Massachusetts, Joy is examining why, despite extensive opportunities in technology, engineering, and manufacturing, female students are more often drawn to professions in health care. She is finding that a lack of female representation in STEM fields is a self-perpetuating cycle: women do not enter these industries because female role models are largely absent from them.



"I am very concerned about helping low-income women, single mothers, and women who are the first in their family to go to college find opportunities to get jobs that are going to support families," says Joy, a senior research associate based at EDC. "Focusing on just health careers really limits these opportunities."

Joy believes that many women can chart a faster path out of poverty by pursuing engineering and science careers, and is perplexed by women's low representation in STEM programs. But when she asked community college administrators why women were staying away from STEM, she kept hearing the same answer: women just didn't seem interested.

"Most people who pursue STEM majors have made their career decision before they enter community college," says Joy. "They have usually come across someone who has encouraged them to study engineering or who has made it fun. It's not as likely that women and girls are going to have such an experience or meet someone that is going to show them how engineering might be interesting for them."

Research has confirmed that women are underrepresented in STEM fields. In fact, a [recent report from the Institute for Women's Policy Research \(IWPR\)](http://www.iwpr.org/initiatives/student-parent-support-initiative/increasing-opportunities-for-low-income-women-and-student-parents-in-science-technology-engineering-and-math-at-community-colleges-that-doesn't-kill-them) shows that the percentage of women in STEM fields has actually declined in 1997, 33.8 percent of those who earned associate's degrees or certificates in a STEM field were female. In 2007, this number had dropped to 27.5 percent.

Yet the benefits of a STEM career are evident. The same IWPR report shows that women in STEM occupations earn more than those in non-STEM fields: the median earnings for a female computer support specialist was \$46,029 in 2009, while that of a licensed vocational nurse was \$36,997. Both careers require a two-year associate's degree.

"Women are flocking to nursing, radiation, and sonography, where there are huge waiting lists," she says. "They are drawn to these fields because they want to help people. We think there may be opportunities to counsel women who have taken higher level math, physics, or chemistry and talk to them about options in other fields where they could still be helping people."

Not only could they help people in other fields, but they could also have some measure of job security. The U.S. Department of Commerce projects that STEM fields will grow [at a rate of 17 percent between 2008 and 2018](http://www.eoc.gov/facts/vitm-good-jobs-low-and-fare), nearly doubling the growth rate of opportunities in non-STEM fields.

Joy believes that community colleges should prioritize the recruitment and retention of women in STEM, and reframing some courses might be a good start.

She offers one example of a computer-aided design program where students must create the plans for a type of machine. "Most of them build power tools," she says. "But what if they had the opportunity to build something different, like a stroller that works in the city? Or a new way to carry a baby?"

Joy is only halfway through her research study, but she hopes to continue to shed more light onto why some of these gender gaps persist in STEM fields.

"Increased representation of women in these fields will provide employers with the skilled technologists that they need to thrive," she says. "And at the same time, it's so important to open up options for women who may never have known that these careers were even possible."

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