

Study explores where high number of women earn STEM degrees

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(Phys.org) —There have been concerted efforts in recent years to determine how more women can be involved in science, technology, engineering and mathematics—the so-called STEM fields. Research from the University of Kansas shows that master's degree institutions that are doing the best in granting degrees to women in those fields are also the best at employing women in leadership positions within the disciplines.

Amanda Ostreko, program director of graduate enrollment in the Office of Graduate Studies, co-authored a study with Austin Ryland and Sara Tomek of the University of Alabama, examining predictors of graduate STEM degree production for women at U.S. master's degree granting institutions. In some, but not all of the STEM fields, having high numbers of female faculty and administrators was positively correlated with higher numbers of women who received masters' degrees in the fields.

The research was based on Ostreko's doctoral dissertation, which examined predictors for women gaining doctoral degrees in engineering.

"One of the questions we considered was 'would there be more women if we also looked at master's-granting institutions?'" Ostreko said. "So we decided to look at women and master's degrees in the broader STEM disciplines."

The authors analyzed data from the Integrated Postsecondary Education

Data Systems and the American Society for Engineering Education from 2007 to 2011. The data sets contained self-reported information from institutions that grant master's as their highest degree in the STEM fields. The most important institutional trait for predicting high numbers of women earning the degrees was a high percentage of women at an institution, either as faculty members, administrators or fellow students. The authors examined both how many domestic and international women were associated with the programs.

The findings were not static across disciplines, however.

"For computer science and engineering there were no significant findings for positive predictors," Ostreko said. "Which led us to a host of other questions."

In math and statistics, programs that had high numbers of female administrators and larger numbers of women, both international and domestic, produced more women with master's degrees. Lower numbers of female graduate assistants predicted more degree completions in the physical sciences. Domestic and international factors came into play with biological sciences. Institutions that had a higher percentage of domestic women involved produced more degrees than those that had higher representation of international women.

Ostreko said the findings support organizational attractiveness theory, or the idea that people will choose a program where they can see themselves fitting in.

"These are institutional level predictors, so we can get a good idea of why people might have selected these programs, but we would have to ask more individual questions to say 'this is why this person attended this institution,'" she said.

Ostreko presented the findings at the recent American Educational Research Association annual meeting in Philadelphia. She hopes to next take a larger look at both master's- and doctoral-granting institutions and factors that contribute to those who are successful in granting degrees to women. The findings thus far are valuable in showing the need for more women in tenure-track faculty positions in the STEM fields.

"It's one thing to recruit [women](#) as students and get them out into the workforce, but they need to be the role models and mentors they see in these programs. These may be things that people already expect, but having grounded data to support it can help provide inspiration to make changes and hopefully attract support to make real changes."

Provided by University of Kansas

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