

How peers influence teens' interest in studying math and science

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This is Nilanjana Dasgupta. Credit: UMass Amherst

The American workforce is losing out on precious human capital because too few women and racial minorities pursue education and careers in science, technology, engineering and mathematics—the so-called STEM subjects, says psychology researcher Nilanjana Dasgupta of the University of Massachusetts Amherst.

She recently received a five-year, \$1.5 million grant from the National Science Foundation to identify solutions to this problem. Women and minorities represent untapped human capital that could enhance the STEM workforce because together, they comprise more than 50 percent of the American population, she adds.

Dasgupta says her goal is "to test what types of classroom dynamics and peer relationships in math and [science classes](#) get girls hooked on STEM subjects, increase their confidence, interest and motivation to aspire higher. Middle school is an important period in development during which [peer relationships](#) make a big difference. My goal is to identify solutions to that so-called leaky pipeline, when we lose too many girls and minorities."

An important long-term outcome of the work in collaboration with sociologist Catherine Riegler-Crumb at the University of Texas at Austin and a diverse sample of middle schools across the nation, she adds, will be to translate findings into concrete classroom practices and learning approaches that may be used by K-12 teachers and principals to enhance STEM teaching practices and to attract, retain and advance more girls and students of color in math and sciences. Findings are likely to also benefit young women in college-level science and [math classes](#).

The researchers will launch two studies, the first exploring whether math and science classes in middle school that have female students only compared to mixed-gender classes enhance girls' interest in these subjects and whether girls-only classrooms have similar effects on black and Hispanic girls who face race and [gender stereotypes](#) compared to white girls, who face gender but not racial stereotypes. This study will also identify what types of peer dynamics in classrooms promote positive outcomes for girls in STEM and test whether these dynamics occur to different extents in all-female compared to coed classes.

Once the most beneficial peer dynamics are identified, the second study will test whether, when put in action in coed classrooms in a nationally representative sample of middle schools, they produce the same benefits for girls. "Our goal is to look for converging and complementary evidence using multiple methods across two studies," the researchers state.

Dasgupta is a leading expert on gender and STEM education. She has previously studied how implicit social expectations and stereotypes affect students' sense of self, views about their own competencies, and behavior in subtle, often unconscious ways. Her work identifies the circumstances and strategies that prevent implicit stereotypes from negatively affecting academic and professional self-concept among [girls](#), women and racial/ethnic minority students.

More information:

www.nsf.gov/awardsearch/showAward?AWD_ID=1348789

Provided by University of Massachusetts Amherst

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