

Illinois trailing other states in girls studying science, math

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A new study found Illinois educators and lawmakers have homework to do to figure out why fewer girls at the state's high schools study subjects associated with careers in the science, technology, engineering and mathematics fields than their peers in other states.

Compared with girls nationwide, fewer Illinois girls enroll in all career cluster areas that Illinois policymakers have identified as being associated with STEM fields, including finance, information technology and agriculture, food and natural resources.

However, the greatest disparity is in the science, technology, engineering and mathematics cluster, where females represent 15 percent of enrollments in these courses at Illinois schools compared with about 31 percent of enrollments nationwide, according to a brief written by scholars at a University of Illinois research center.

Joel R. Malin, Asia N. Fuller Hamilton and Donald G. Hackmann are researchers with the university's Pathways Resource Center, which helps Illinois school districts develop career and technical education and STEM programming and promote equal access.

The researchers compared enrollment data in CTE courses at all Illinois high schools and career centers during academic year 2012-13 with national statistics for the preceding school year. The Illinois State Board of Education provided the statewide data, while the nationwide statistics were obtained from the U.S. Dept. of Education.

Across Illinois, females were significantly underrepresented in STEM courses as well as in CTE courses associated with fields considered nontraditional for their gender, the researchers found.

However, these gender disparities were reversed in fields not associated with STEM. Females represented 91 percent of enrollments in education and training, and 77 percent of students in human services courses. Girls also dominated enrollments in the marketing career cluster and in the hospitality and tourism career cluster, representing 65 percent and 61 percent of enrollments, respectively.

With President Barack Obama identifying STEM education as a national priority, Illinois educators and lawmakers have to determine why so few girls in the state are choosing academic paths and training programs that would prepare them for careers in STEM and nontraditional fields, which typically pay higher wages.

To promote STEM education in Illinois schools, the researchers suggested that Illinois lawmakers provide financial incentives for school districts to develop STEM programs and activities for students.

The researchers also recommended that school districts review and audit their curricula, instructional practices and materials to eliminate gender biases that may discourage children from considering careers in fields considered nontraditional for their gender.

"Prior research suggests that stereotyping can happen, and students may get impressions about whether they 'fit' into certain fields as early as the age of 6 or 7," said Malin, a curriculum specialist with the center and the lead author on the brief. "Role models and classroom instructional practices can make a big difference. We recommend several strategies that would reduce gender inequities and make programs appealing and accessible for both males and females."

These strategies included schools partnering with local businesses and community colleges to offer exploratory programs - such as summer camps, job shadowing and mentoring - to promote interest in STEM careers and provide children with appropriate role models.

"If you simply do not expose students to nontraditional career areas, they may not even be aware of occupations that really could be of interest to them," said Hackmann, director of the center and a professor of education. "Alerting teachers to those concerns and providing opportunities for students to explore those careers would go a long way toward alleviating some of these [gender disparities](#)."

"We also recommend creating an exemplar program, so that high-performing programs can share information with other [school districts](#) to encourage them to adopt similar models," said Fuller Hamilton, a graduate research assistant with the center.

An example of one of these programs is the Girls in Engineering, Math and Science (GEMS) conference offered by Township High School District 211, northwest of Chicago. The annual event, which targets fifth- and sixth-grade girls, has doubled in attendance - from 100 to 200 students - since it was first held five years ago.

To better evaluate and monitor CTE and STEM education throughout Illinois, the researchers also suggested that state officials consider reviewing the statewide data collection system and expanding the reporting requirements to facilitate analyses of enrollment patterns and student performance by demographic group.

Provided by University of Illinois at Urbana-Champaign

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