

Early engagement key to getting girls into science careers, Canadian study says

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Katy Diederichs, 12, fine-tunes her science project that determines propeller efficiency at the 2009 Canada-Wide Science Fair in Winnipeg on May 12, 2009.

(MARIANNE HELM FOR THE GLOBE AND MAIL)

Girls are almost three times more likely to consider careers in science, math and engineering if they participate in science fairs and summer camps – particularly in the early grades – according to a new Canadian report.

The study by researchers at Mount Saint Vincent University in Halifax also suggests that good grades and teacher influence matters less than exposure to these outside-the-classroom activities.

The findings come at a time when governments are reaching out to young women in an effort to persuade them to consider the so-called STEM fields of learning – science, technology, engineering and mathematics – and organizations have stepped up their mentoring efforts. Learning experts say it is crucial to reach girls before their enthusiasm wanes and they drop science and math courses, which are optional in high school.

Although women greatly outnumber men on university campuses, they make up only 39 per cent of undergrads in math and physical sciences and only 17 per cent of undergraduates in engineering and computer science, according to data from the Natural Sciences and Engineering Research Council of Canada. Companies, meanwhile, are pushing for more women in these fields to build a more diverse and creative work force.

But experts say there are issues in the early grades with teachers not being as comfortable with the subjects to engage students, especially girls. And early engagement is the key. "I think this is a wake-up call. We need to increase the engagement level, and we need to encourage it from a young age," said the study's lead investigator, Tamara Franz-Odenaal, an associate professor at the university. She's also the Atlantic region chair of Natural Sciences and Engineering Research Council of Canada's program for Women in Science and Engineering.

Prof. Franz-Odenaal and her team surveyed about 600 students in Grades 7 through 9 last year from New Brunswick, Nova Scotia and P.E.I. and released their findings on Wednesday. They found girls who engaged in activities, such as science fairs, competitions and engineering summer camps, were 2.7 times more likely to consider a STEM career. For boys, the influence was statistically insignificant.

Prof. Franz-Odenaal believes that by participating in activities, girls develop a better understanding of what STEM careers look like, and, as a result, show a greater interest in them.

Elizabeth Croft, a professor of mechanical engineering at the University of British Columbia who is also a NSERC chair for Women in Science and Engineering, said it's not only important for girls to participate in STEM activities outside the classroom, but governments and educators need to address how to make classroom learning in these fields more engaging. UBC offers professional development workshops in engineering for teachers, she said, so they can be more comfortable with the subject and then engage their students through classroom activities. "The earlier you move those levers, the better it is," Prof. Croft said.

Prof. Croft said she's heard from a number of companies, who feel they are missing out on some bright and creative minds. "Not all our students are going to be engineers or technologists ... but we should make sure that we're giving kids opportunity early on in the classroom so they will think about choosing to do these things later," she said.