Women and STEM:
Bridging the Divide

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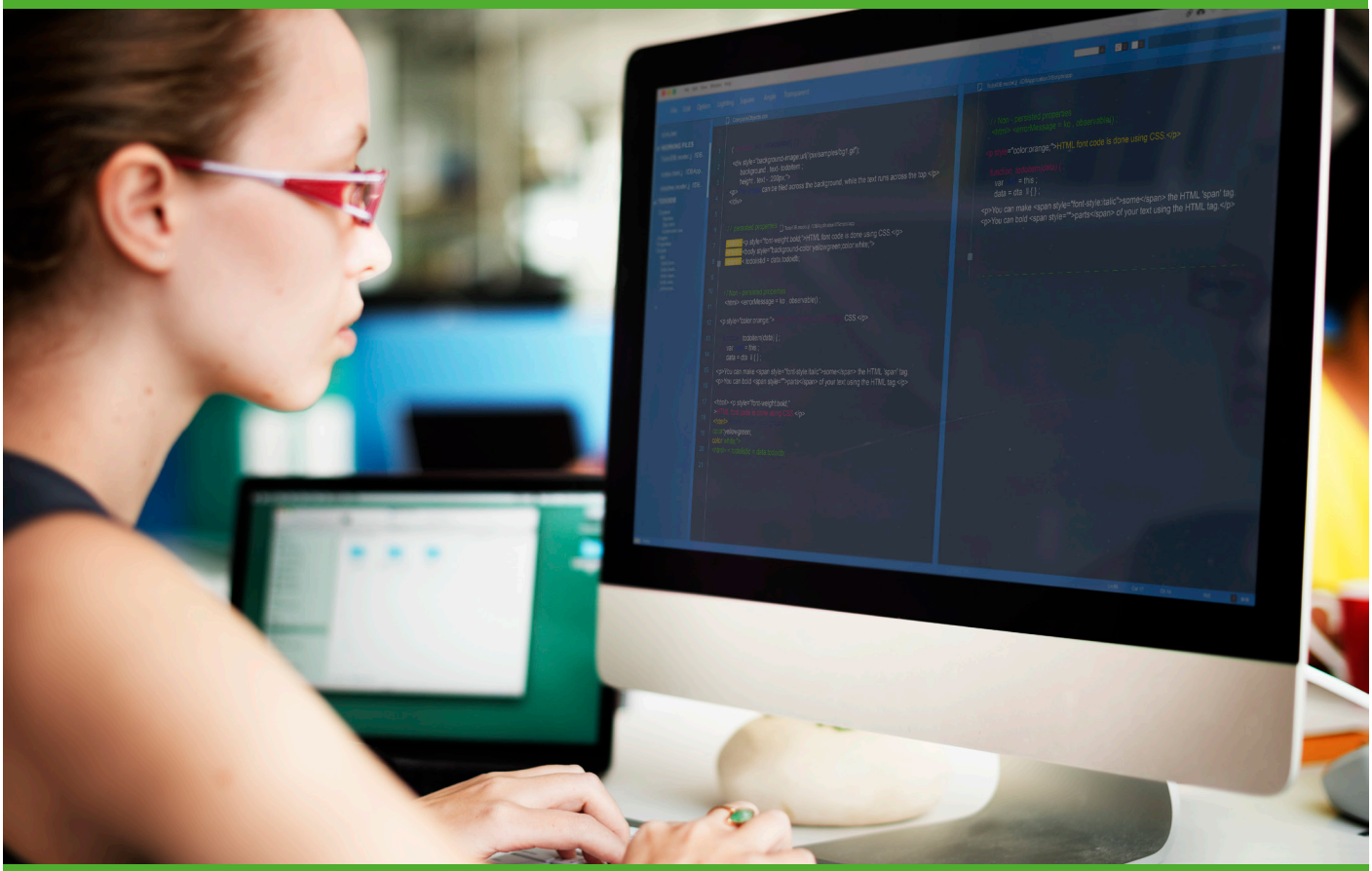

Opinion Editorial By Beata Caranci, Chief Economist

The newest cohort of university students has just begun their studies and it's a safe bet that female students will be vastly outnumbered by their male counterparts in STEM subjects (science, technology, engineering and math).

Today, like ten years ago, there's only one female engineering graduate for every four males. The representation of women graduating in computer science programs has edged down since the 1990s. Too few women pursuing STEM education and careers continues to be a challenge within a global economy that demands more of these skills. Canada has seen a 22 percent increase in the number of people working in STEM since 2009, compared to 8 percent within non-STEM jobs. Looking into the future, Statistics Canada projects labour shortages will persist among only 30 occupations by 2024, and two-thirds of these will fall into the broad categories of healthcare and STEM fields. Filling the gap through immigration is only half of the solution. The other is to ensure Canada is fully leveraging the potential within its own backyard.

There are myriad of reasons that create the gender chasm in education and the workplace, but math aptitude isn't one of them. The statistical difference within The Program of International Student Assessment scores between girls and boys when tested at 15 years of age is too small to warrant the classroom divide, and there are simply too many other discrepancies. For instance, did you know that Canadian girls in the 95th percentile for math score higher than their American male counterparts?

Educational choice is influenced by cultural and environmental factors early in life. Relative to young women, high school male youths consistently hold a higher self-perception of their abilities, regardless of their mathematical scores. This automatically makes them more likely to choose a STEM program in university. However, there are real-world examples of teaching practices that are succeeding in moving the dial for women. When the curriculum is adapted to be more inclusive, provide more exposure, and link education to various careers, young women show a higher selection into STEM subjects. American schools, like Harvey Mudd College and Stanford University, have proven this point by implementing variations of these tactics. In the case of Harvey Mudd, the share of female computer science graduates rose roughly from 10% to 40% in the first four years of implementation.

However, the journey does not end there. Within the workplace, companies still display a hidden gender bias that may be deterring women from pursuing these careers, while also depressing their earnings. Case in point, a recent TD Economics report uncovered that women with STEM-related university degrees are overrepresented within lower-paying technical jobs. These jobs may look like a software tester or network support technician, as opposed to a computer software engineer or programmer. The latter are higher paying professional roles, where men have a greater concentration. So even though women with a university degree in STEM tend to earn more than those outside these fields (roughly 12% more), they still have trouble bridging the gender pay divide with men of similar education.

It's important to challenge existing structures that may be perpetuating barriers to entry within educational programs and corporate institutions. First, the goal of any firm is to ensure that the skills of their workforce are optimally leveraged. Employers need to review whether workplace marginalization is occurring via occupational sorting into less challenging or lower paying roles. This comes with ensuring equal opportunities for women through transparent hiring practices and inclusive environments.

Second, within the educational system, it's increasingly evident that "how" a subject is taught is as important as "what" is taught in moving the dial. Curricula at all levels can be improved upon to unleash more potential and interest within STEM fields at earlier ages.

Lastly, for those with daughters heading back to school, whether it's university or primary school, help them perceive their abilities and realize the full scope of their career options. The leaders of the future are likely to need a higher proficiency in these fields than those of the past, regardless of the career of choice.

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