

## **How a single-gender environment can lead girls to choose a STEM career**

It's a call heard from academia to business: More women are needed in the STEM fields: science, technology, engineering and math. But how best to encourage girls to consider careers in STEM?

It turns out simply encouraging them to take risks and be the best they can in any subject leads many to consider STEM fields.

This is the strategy of many all-girls' schools.

For St. Clement's School principal Martha Perry, simply ensuring that her pupils receive a well-rounded education is the focus of the school.

"Our emphasis is girls learning, and if girls are interested and keen on a STEM subject then we're going to make sure we support them and we are going to make sure that they have access to the best possible instruction, the best possible facilities and the best possible experience to be learning," she says.

Not that she has to be overly concerned. Of the Toronto all-girls school's most recent graduating class, roughly one third of the 64 students were going on to study STEM subjects at the post-secondary level.

Studying at a single-sex school may have a bearing on that. According to a study by Goodman Research Group, which evaluates programs, graduates of girls' schools are six times more likely to consider majoring in math, science and technology at the postsecondary level compared with their peers at co-ed schools.

A similar study undertaken by the University of California, Los Angeles, commissioned by the U.S.-based National Coalition of Girls' Schools, suggests that girls' school graduates are three times more likely than their co-ed independent-school peers to consider engineering careers.

From Ms. Perry's perspective, the nurturing surroundings of an all-girls school play an important part in their development. St. Clement's doesn't put an overarching emphasis on STEM subjects, believing instead that the school's best role is to give its students the opportunity to believe that they have the capacity to make a difference in anything they do.

"I think a girls-only environment actually allows girls to explore their own passions and their own interests and affords us the opportunity to provide them with a wealth of different options to explore," she says.

The reasons for this vary. According to Megan Murphy, the executive director of the National Coalition of Girls' Schools (NCGS) in Virginia, two of the biggest are peer role models and overcoming a media message that too often portrays women as being less capable than their male counterparts in STEM subjects. In addition, she says, historically the majority of science

teachers at girls' schools were women, too.

"Whether it's from a faculty perspective, a graduate perspective, or a peer perspective, girls at girls schools have a wealth of role models and I think that's probably the key factor as to why we see so many more girls at girls' schools pursuing STEM subjects as undergraduates," she says.

In addition, she explains, being around peer role models who love science and math helps deflect some of the media or popular culture messages that portray women as less capable of successfully studying STEM subjects than men.

Being among peers doing the same thing, whether in a physics club or a science Olympiad, helps build girls' confidence that they can thrive in STEM subjects. That confidence is key to a long-term commitment to a field of study. For instance, the UCLA study suggests that 47.7 per cent of women entering postsecondary education from single-sex schools felt well prepared in math, compared to 36.6 per cent entering college from co-ed schools.

"When you check out of Algebra 1, even in a little way, that's a critical building block for every single science or technology class that comes after that," Ms. Murphy says. "So if you lose them in the pipeline as middle schoolers, it's really hard to get them back."

The impetus also seems to be there from the corporate world to encourage more girls to pursue STEM subjects and careers. When the NCGS was preparing to put on its conference STEM to STEAM: Girls' Schools Leading the Way in June, it was approached by Capital One Financial Corp. and Google Inc., which both wanted to be corporate partners.

"To be candid, they really came to us and said we need women around the table to be a healthy company and we're having a really hard time finding them, so it's of strategic importance to our bottom line as a corporation to be working in community partnerships," Ms. Murphy says.

Much like St. Clement's, Elmwood School in Ottawa doesn't put a direct emphasis on teaching STEM subjects, but helps its students build what headmistress Cheryl Boughton refers to as "balanced brains," based on a concept explored by American educator and psychologist Dr. JoAnn Deak. Consequently, the responsibility charged to Ms. Boughton and the rest of the faculty is to ensure that by the time the girls graduate from Elmwood, they are well versed in all areas of academia and not just the subjects in which they are particularly strong.

"A lot of it comes from creating an environment where it's okay to take risks, whether it's trying out for a team or putting up your hand in class when you're not sure if you know the answer," Ms. Boughton says. "We encourage them to be comfortable with a certain amount of discomfort; we think that that helps them learn new things."

In Grade 12, the girls are allowed to choose their subjects and it turns out that many are choosing STEM subjects. Elmwood says roughly 50 per cent of its students choose to study STEM subjects at university.

This year's Grade 12 cohort saw 80 per cent taking calculus, two thirds studying chemistry and 40 per cent studying physics.

For Ms. Boughton, the school's philosophy isn't about pushing STEM subjects on its girls, it all comes down to lifting girls up to make them understand that success in STEM is achievable.

"I don't think we're adapting our techniques," she says. "It's more about our approach to make girls feel they can be good at anything."

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The Globe and Mail