

3 Reasons to Consider Careers in STEM

Science, technology, engineering, and mathematics (STEM) fields often are associated with the stereotype of being “hard,” “boring,” or “not for me.”

Contrary to these stereotypes, careers in STEM fields involve teamwork, creativity, and communication.¹ They often go beyond the laboratory to address current issues our society faces. STEM teams require a variety of people with different skills in order to be successful.

For example, engineering is a creative, engaging, rewarding profession where people solve problems, design solutions, and help local, and global communities. It also requires students to take science and math courses in high school before starting a post-secondary program.

While the young people in your life are starting to make decisions about their future, encourage them to keep STEM options open. Finding role models that help demonstrate what STEM careers involve, and going to events that allow them to try out STEM activities (camps, workshops, open houses) challenge the dominant stereotypes, and are crucial to helping youth make informed career decisions.

environmental protection policies | development | advanced composite biomedical device design | textile human-robot interaction | water food supply improvements | buildings | lean manufacturing | construction management | video game materials | process improvements design | transportation networks and sanitation | workplace safety technology development | green special effects | primary resource

The variety of career paths

from technicians to Ph.D.s

STEM qualifications are in demand

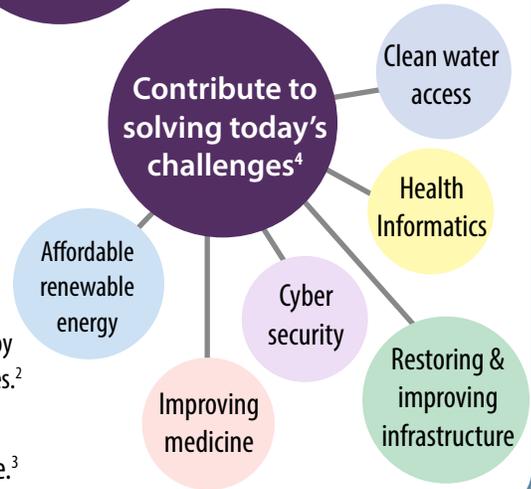


STEM organizations need new workers:

95,000+ engineering jobs available by 2020 due to retiring employees.²

100,000+ environmental sector job vacancies in the next decade.³

Contribute to solving today's challenges⁴



Why should your child keep STEM options open?

70% of top jobs require STEM education³

70%

But less than 50% of Canadian high school graduates complete Gr. 11 & 12 math and science⁵



Graduates with STEM degrees:

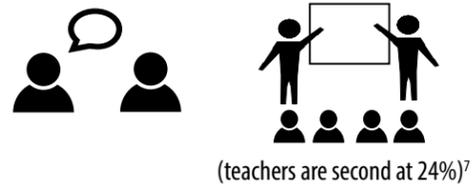
- ✓ Earn 26% more on average³
- ✓ Have better job security³
- ✓ Earn more than non-STEM graduates, regardless of career³

Unexpected Careers that have STEM prerequisites³



You are Influential⁶

76% of students say their **parents** have the greatest influence on their educational direction.⁷



only 28% of parents talk to their children about the value of optional STEM courses.⁹

Perceptions of STEM Professions

Middle school students were asked to **draw an engineer...**



only 4% of Grs. 7 and 9 students think engineering is a profession that can make the world a **better place**.²⁸

Students were asked to **draw a scientist...**



4th year student teachers' drawings of scientists were **more stereotypical** than **Gr. 5 students'**.²⁷

IN REALITY Top 10 Employability Skills for UK STEM Companies:²⁹

- Communication & interpersonal skills
- Problem solving skills
- Initiative & self motivation
- Working under pressure & to deadlines
- Organizational skills
- Teamwork
- Ability to learn & adapt
- Numeracy
- Valuing diversity & difference
- Negotiation skills

What Can We Do?

Encourage your child to pursue a broad range of activities and interests.

Help your child build self-efficacy, not just self-confidence. Give them opportunities outside of class to try new things, and work on mastery.

Be a role model to your child. Try new things. Talk about STEM at home. Consider family outings to STEM destinations, pursuing hands-on activities and do-it-yourself projects at home, and discussing STEM topics on TV or the news.

Expose your child to STEM careers through role models, mentors, workplace visits, the media, summer camps, and career days.

When you see stereotypes in person or in the media, challenge them. Discuss stereotypes with your child. Emphasize that each of us is unique, and have different strengths. Stereotypes do not define us.

If your child appears to be opting out of STEM, encourage them to keep their options open. People with STEM backgrounds are very successful in other fields, but it can be hard to move into STEM if you have opted out of math and science in school.

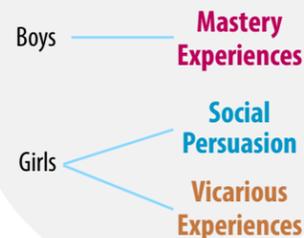
Overall, take the time to learn about what real STEM careers involve, and provide opportunities for your child to try them out.

STEM Self-Efficacy

Self-efficacy influences **the choices we make** in terms of:²¹

- what **goals** we choose
- how much **effort** we put into pursuing them
- our **persistence** when difficulties arise.

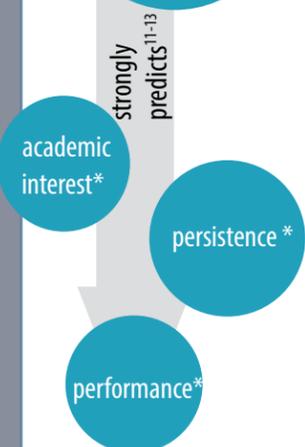
The most **influential source** of **STEM self-efficacy**:²²



Middle school girls' science self-efficacy is **lower than boys'**, & they are **more anxious** about science performance despite achieving higher grades overall.²³

Self-Efficacy

a person's belief in their ability to perform a task¹⁰

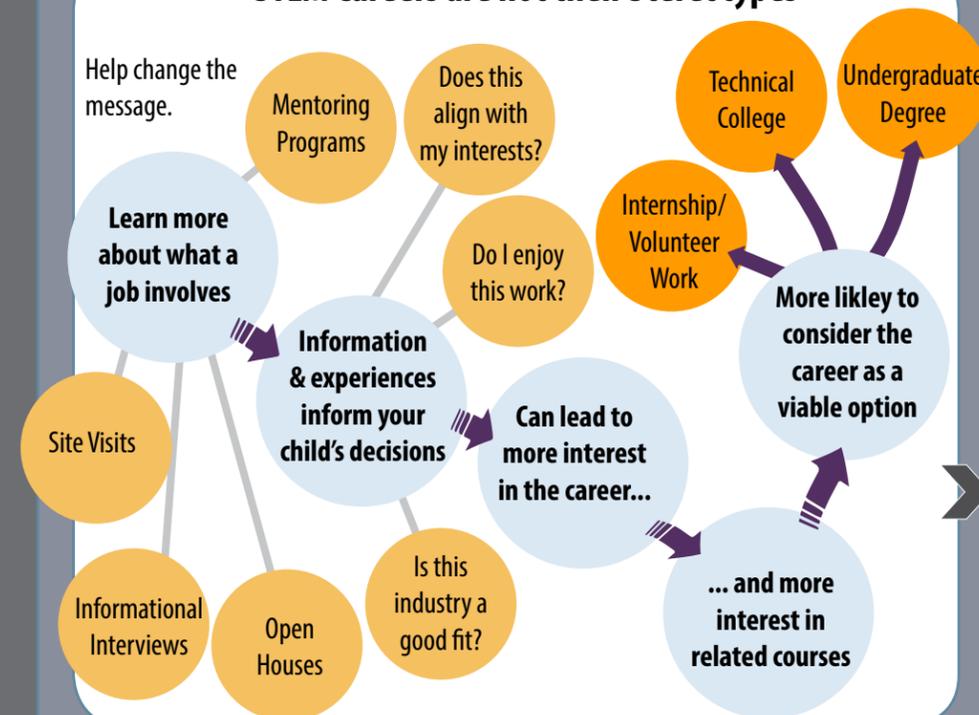


*in STEM disciplines¹²⁻¹⁸

4 Factors Affect Self-Efficacy^{10,19,20}

- Social Persuasion** Feedback, support and judgment from others (especially influential figures - parents, teachers).
- Mastery Experiences** Has done the task before. Had a chance to learn & practice strategies to do task effectively.
- Physiological Factors** How a person interprets their emotional/physiological state. E.g. "butterflies", nerves.
- Vicarious Experiences** Learning by observing others doing the task. Role models are important for this.

STEM Careers are not their Stereotypes



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Recommended Readings

1. Subject choice in STEM: Factors influencing young people in education. http://www.wellcome.ac.uk/stellent/groups/corporatesite/@msh_publishing_group/documents/web_document/wtx063082.pdf
2. http://www.wherestemcantakeyou.co.uk/docs/Why_STEM_Careers.pdf

About eng·cite

eng·cite is the working name of the Goldcorp Professorship in Women in Engineering at UBC. The Professorship – established in 2014 – is a vital aspect of the UBC Faculty of Applied Science's efforts to promote the engineering field to young women, to meet its goal to increase female enrollment in Engineering to 50% and to address a national shortage of Engineers expected by 2020.

The Goldcorp Professorship is a catalyst of change for the engineering field, with a commitment to help UBC become the national leader for gender diversity in engineering. Dr. Sheryl Staub-French, who holds the Professorship, works with teachers, counsellors, parents and high school students to promote engineering education, and provide mentorship and role models for young women who might not otherwise consider or pursue engineering education and careers.

Find out more at: engcite.ca