

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.<sup>1</sup> 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.



**3** **STEM** **TECHNOLOGY**

from technicians to Ph.D.s

STEM organizations need new workers:

- 7,000+** engineering jobs available by 2020 due to retiring employees.<sup>2</sup>
- 100,000+** environmental sector job vacancies in the next decade.<sup>3</sup>

Fields include: Aordable renewable energy, Improving medicine, Cyber security, Health Informatics, Restoring & improving infrastructure, Clean water access.

**4** **STEM** **TECHNOLOGY**

**Graduates with STEM**

- Earn 26% more on average<sup>3</sup>
- Have better job security<sup>3</sup>
- Earn more than non-STEM graduates, regardless of career<sup>3</sup>

less than 50% of Canadian high school graduates complete Gr. 11 & 12 math and science<sup>5</sup>

... 3

of students say their

...

## References

1. National Academy of Engineering: Committee on Public Understanding of Engineering Messages. (2008). *Engineering: A bright future*. Washington, D.C., National Academies Press.
2. Engineers Canada. (2012). *Engineering in Canada 2020*. Retrieved from <http://www.engineerscanada.ca/labour-market-report>
3. Let's Talk Science and Amgen Canada. (2013). *Engineering in Canada 2013*. Retrieved from <http://www.letstalkscience.ca/research-publications/publications-by-year.html>
4. National Academy of Engineering (2008). *Engineering in Canada 2008*. Retrieved from <http://www.engineeringchallenges.org>
5. Let's Talk Science and Amgen Canada. (2012). *Engineering in Canada 2012*. Retrieved from <http://www.letstalkscience.ca/research-publications/publications-by-year.html>
6. Bardick, A.D., Bernes, K.B., Magnusson, K.D. (2004). Junior high career planning: What students want. *Journal of Career Assessment*, 12(2), 104-117.
7. Let's Talk Science and Amgen Canada. (2014). *Engineering in Canada 2014*. Retrieved from <http://www.letstalkscience.ca/research-publications/publications-by-year.html>
8. Middleton, E.B., & Loughhead, T.A. (1993). Parental influence on career development: An integrative framework for adolescent career counselling. *Journal of Career Assessment*, 1(3), 161-173.
9. Let's Talk Science and Amgen Canada. (2015). *Engineering in Canada 2015*. Retrieved from <http://www.letstalkscience.ca/research-publications/publications-by-year.html>
10. Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioural change. *British Journal of Psychology*, 68(2), 191-215.
11. Lent, R.W., Brown, S.D., & Hackett, G. (2000). Contextual supports and barriers to career choice: A social cognitive analysis. *Journal of Career Assessment*, 8(1), 36-49.
12. Lent, R.W., Brown, S.D., & Larkin, K.C. (1984). Relation of self-efficacy expectations to academic achievement and persistence. *Journal of Educational Psychology*, 76(3), 356-362.
13. Lent, R.W., Sheu, H-B., Singly, D., Schmidt, J.A., Schmidt, L.C., & Gloster, C.S. (2008). Longitudinal relations of self-efficacy to outcome expectations, interests, and major choice goals in engineering students. *Journal of Career Assessment*, 16(3), 328-335.
14. Betz, N.E., & Hackett, G. (1983). The relationship of mathematics self-efficacy expectations to the selection of science-based college majors. *Journal of Career Assessment*, 1(2), 329-345.
15. Fouad, N.A., & Smith, P.L. (1996). A test of social cognitive model for middle school students: Math and science. *Journal of Career Assessment*, 4(3), 338-346.
16. Lapan, R.T., Boggs, K.R., & Morrill, W.J. (1996). Efficacy expectations and vocational interests as mediators between sex and choice of math/science college majors: A longitudinal study. *Journal of Career Assessment*, 4(3), 277-291.
17. Luzzo, D.A., Hasper, P., Albert, K.A., Bibby, M.A., & Martinelli, E.A. (1999). Effects of self-efficacy-enhancing interventions on the math/science self-efficacy and career interests, goals, and actions of career undecided college students. *Journal of Career Assessment*, 7(2), 233-243.
18. Schaefer, K.G., Epperson, D.L., & Natura, M.M. (1997). Women's career development: Can theoretically derived variables predict persistence in engineering majors? *Journal of Career Assessment*, 5(2), 173-183.
19. Gist, M. E., & Mitchell, T. R. (1992). Self-efficacy: A theoretical analysis of its determinants and malleability. *Journal of Organizational Behavior*, 13(2), 183-211.
20. Pajares, F. (2005). Gender differences in mathematics self-efficacy beliefs. In A. M. Gallagher & J. C. Kaufman (Eds.), *Handbook of research on gender and education* (pp. 294-315). New York: Cambridge University Press.
21. Bandura, A. (1997). *Social self-efficacy mechanisms*. New York: W. H. Freeman and Company.
22. Zeldin, A. L., & Pajares, F. (2000). Against the odds: Self-efficacy beliefs of women in mathematical, scientific, and technological careers. *Journal of Career Assessment*, 8(2), 215-246.
23. Britner, S. L., & Pajares, F. (2006). Sources of science self-efficacy beliefs of middle school students. *Journal of Career Assessment*, 14(4), 485-499.
24. Fralick, B., Kearn, J., Thompson, S., & Lyons, J. (2009). How middle schoolers draw engineers and scientists. *Journal of Career Assessment*, 17(1), 60-73.
25. Karatas, F.O., Micklos, A., & Bodner, G.M. (2011). Sixth-grade students' views of the nature of engineering and images of engineers. *Journal of Career Assessment*, 19(2), 123-125.
26. Ruiz-Mallén, I., & Escalas, M.T. (2012). Scientists seen by children: A case study in Catalonia, Spain. *Journal of Career Assessment*, 20(4), 520-545.