

## THE ENGINEERING PROFESSION'S POSITION

- Government support of science, technology, engineering, and mathematics (STEM) education is key to ensuring that Canada remains a leader in the provision of intelligent capital that can address local and global needs, and keep Canada prosperous.
- Programs dedicated to improving STEM education and access to education are critical in preparing the youth of today for the jobs of tomorrow.
- Canada is moving rapidly towards a knowledge-based jobs economy and STEM education can help provide sufficient graduates to address the current gap between demand and supply, while also addressing inequalities by providing access to good paying jobs to all.
- Canada must continue to be a leader in STEM education to protect its intellectual capital and ensure it is relevant in the future.

### The challenge(s)

Although it is difficult to predict labour market demands in the long-term, changing societal needs as well as new developments in STEM, are factors that will change the way in which Canadians will work, and consequently require changes in education curricula with heavy emphasis on STEM. STEM literacy should be a core competency to which all students are exposed. Foundational skills in STEM will prepare Canadian youth by equipping them with the knowledge base to adapt and succeed in quickly changing times. The recent shift to incorporate the arts into STEM, creating STEAM, is about incorporating creative thinking and applied arts into real life situations. Engineers consider the important role of arts in STEM as engineers rely on creative and innovative ways of thinking to solve society's complex problems. To ensure Canadians are prepared to meet coming challenges, the federal government must invest in STEM literacy and support the development of STEM skills for Canada's youth. Support for STEM education, specifically engineering education, is vital to address the challenges of today and the future with unbiased, innovative, and evidence-based solutions. This includes ensuring access

to education for youth across Canada, including those residing in rural, remote, and Northern communities.

### How Engineers Canada has contributed

Engineers Canada is actively engaged in supporting the development of STEM literacy in education and supporting engineering education through:

- Leading National Engineering Month, which is Canada's largest celebration of engineering excellence. Each March, volunteers engage youth in over 500 events through hands-on STEM activities that expose Canadian youth to engineering.
- Leading the Future City program in Canada, which, in partnership with DiscoverE, supports elementary schools in delivering a STEM-based curriculum that integrates the engineering design process with project-based learning.
- Working collaboratively with the Girl Guides of Canada to create the first engineering crest. This crest is awarded to Girl Guides who complete engineering-related activities under the supervision of a member of the engineering community, such as a

professional engineer, engineer-in-training, engineering graduate, or engineering student. These activities are designed to illustrate the many ways that engineering shapes everyday life. By participating in the program, girls also gain a better understanding of engineering.

- Supporting the Go Eng Girl program, an initiative that is expanding across Canada and is credited with strong increases of female enrolment in undergraduate engineering programs across Ontario. Engineers Canada also supports the Canadian Federation of Engineering Students (CFES), a national, bilingual organization that represents approximately 81,000 engineering students across Canada. The CFES aims to provide opportunities in support of an all-encompassing education for engineering students in Canada to become unparalleled professionals in their field.
- Accrediting undergraduate engineering programs across the country. The Canadian Engineering Accreditation Board holds university engineering programs to some of the highest standards in the world, which helps create some of the best engineers. These programs are certified as meeting the academic requirements needed to be licensed as a professional engineer in Canada. Engineers Canada accredits undergraduate engineering programs to help maintain the capacity for producing highly trained and skilled individuals to meet future economic demands. As part of this accreditation, Engineers Canada ensures that the education that engineers receive is current and forward looking, adapting to change and in many cases leading it.

## Recommendations to the federal government

Proactive and long-term education strategies must include investments in building fundamental STEM literacy. This strategic approach will help Canada maintain the

capacity for producing highly trained and skilled individuals to meet future economic demands, all while simultaneously supporting Canada's innovative capacity.

Too often, when discussing STEM education, the emphasis is placed on science, technology, and mathematics; ignoring the importance of engineering altogether. However, it is crucial that policies related to STEM literacy and skills place a larger emphasis on engineering to grow the public's understanding of the profession. Engineering is crucial to solving complex challenges that the Canadian public increasingly faces. Engineers, amongst their many other important contributions to society, create, maintain, refurbish, and decommission public infrastructure, from the basics of the provision of safe drinking water, to ensuring that Canadians remain connected through sustainable broadband infrastructure, and delivering solutions to adapt to Canada's rapidly changing climate.

A lack of understanding of how engineering work helps people in their everyday lives is one of several factors that contribute to a disproportionately low representation of women and Indigenous peoples in the profession. By including the contributions of previously untapped talent across Canadian communities, the engineering profession will be better prepared to serve the public and to address complex problems with innovative solutions.

Increased federal support in addressing the foregoing issues in supporting STEM education, access to education, mentorship opportunities, internships, and initiatives, with particular emphasis on engineering will help to grow the leaders and influencers of the future. This increased support must come in many forms, such as bursaries, funding for co-operative engineering placements, support for Indigenous People's access to post-secondary engineering education, funding for engineering-specific initiatives at universities, colleges, high schools,

elementary schools, and incubators, and placing an emphasis on engineering-related program funding through the Natural Sciences and Engineering Research Council of Canada (NSERC). Support can also come through the provinces and territories to obtain concurrence on STEM skills as a national priority.

## **How Engineers Canada will continue to contribute**

### **Engineers Canada will also continue to:**

- Collaborate with our partners and STEM organizations to offer engineering outreach programs and support the development of STEM initiatives related to engineering.
- Support the work the Canadian Engineering Accreditation Board does in accrediting undergraduate engineering programs at Canada.