

Engineers Canada's Submission to the Standing Committee on Human Resources, Skills and Social Development and the Status of Persons with Disabilities

Study on experiential learning and pathways to employment for Canadian youth

Questions concerning this report should be directed to:

Joey Taylor
Practice Lead, Public Affairs
Engineers Canada
Joey.Taylor@engineerscanada.ca
613.232.2474 Ext.213

Overview

Co-operative education is a recognized way for students to graduate from post-secondary education with relevant work experience and the essential skills required to succeed in entry-level positions. Co-op learning opportunities facilitate workforce recruitment and allow employers to train students in areas where there are evident labour market skills shortages.¹ In a competitive labour market, co-op placements allow individuals to stand-out from other applicants who have completed a similar degree, yet have not completed a work integrated experience. For all students, co-op programs can provide the opportunity to grow their professional network and to develop the necessary soft skills to succeed in their desired profession, such as advanced communication skills, time management abilities, self-confidence and organizational skills. Co-op programs are crucial in developing a student's professional network while simultaneously providing opportunities to gain relevant work experiences, guiding younger Canadians through the transitions between post-secondary education and the workforce.

In the engineering labour market in Canada, there is a growing need to replace retiring engineers with qualified individuals. Approximately 37,000 professional engineers will retire between 2015 and 2019; 23,000 between 2018-2020; and over 64,000 between 2018-2025.² Canada's engineering profession requires knowledgeable and innovative engineering leaders to improve aging infrastructure, promote clean technology, and revitalize health care, for example, while simultaneously promoting economic prosperity and global innovation. Supporting the transition of experienced post-secondary co-op engineering graduates into the engineering profession will allow young Canadians to advance more quickly to become mid-career professionals, allowing for mid-career professionals to progress to the more senior roles that have been left by retired engineers. Post-secondary engineering graduates who have completed a co-op placement have already applied their education within a specific field. These students bring forward innovative ideas to solve complex problems, allowing Canada's engineering profession to stay both relevant and competitive in an increasingly competitive global market.

Engineers Canada believes that experiential learning can guide students through the transitions between high school, post-secondary education, and the labour market. In this submission, Engineers Canada will focus on the theme of co-op programs and work-integrated learning.

Co-op placement defined

Co-op placements are often defined as a form of work-integrated learning that alternates between paid or unpaid work experiences with in-class learning components. This work-integrated learning program provides students with an opportunity to apply the knowledge that they have acquired in a classroom setting to a real-world work environment. Co-op placements provide Canadian students with smooth

¹ Higher Education Quality Council of Ontario (2012). "Work-integrated learning and postsecondary graduates: the perspective of Ontario employers." Retrieved December 20, 2017, from:

<http://www.heqco.ca/SiteCollectionDocuments/WIL%20Employer%20Survey%20ENG.pdf>.

² Engineers Canada (2015). "Engineering Labour Market in Canada: Projections to 2025." Retrieved December 20, 2017, from: <https://engineerscanada.ca/sites/default/files/Labour-Market-2015-e.pdf>.

Submission to the Government of Canada on *Human Resources, Skills and Social Development*, February 2018
Engineers Canada | Ingénieurs Canada

school-to-work transitions; specifically, by providing graduates with professional work experiences and a useful set of professional contacts.³

In Canada's competitive labour market, work experiences that are acquired through a co-op placement assist graduates in receiving the experience that they require to be considered for entry-level positions. The Higher Education Quality Council of Ontario (HEQCO) published a report in 2014 that highlighted that most employers in Ontario demanded at least one year of professional work experience before considering a candidate for employment; in comparison, one-quarter of employers posting entry-level positions considered hiring a candidate with no work experience.⁴ The study also delineated that approximately 60 per cent of those candidates that were hired into entry-level positions had three or more years of professional work experience.⁵ These statistics evidently demonstrate the need for co-op engineering placements to be integrated into post-secondary institutions where they do not currently exist; to increase an individual's professional work experience and to guide younger Canadians through the necessary transitions between post-secondary education and the Canadian labour market.

According to the Canadian Association for Co-operative Education (CAFCE), the number of co-op placements in Canada is growing. As outlined in Engineers Canada's 2017 *Final Year Student Exit Survey*, 75 per cent of students outlined that they had participated in an internship or co-op placement during their schooling.⁶ Approximately 55 universities, 26 colleges, and three institutes across Canada offer close to 1,100 co-op programs.⁷ Regarding engineering co-op placements in Canada, in 2010 approximately 37 per cent of engineering bachelor graduates completed a co-op program.⁸ In Canada, 24 post-secondary institutions offer an optional or mandatory co-op or internship experience; this accounts for over 75 percent of institutions with accredited engineering programs.

Co-op placements: Student and employer benefits

The perceived benefits for students who participate in co-op education in Canada includes enhanced career decision-making, improved integration into an individual's chosen field of interest, improved understanding of real-world challenges and practices that can be applied to academic learning, and favourable labour market outcomes.⁹

³ Statistics Canada (2016). "Insights on Canadian Society: Co-op participation of college and bachelor's graduates." Retrieved December 22, 2017, from: <https://www.statcan.gc.ca/pub/75-006-x/2016001/article/14692-eng.htm>.

⁴ Ibid.

⁵ Ibid.

⁶ Engineers Canada (2017). "Final Year Engineering Students 2017 Survey – National Results: The graduating class of 2017." Retrieved January 10, 2018, from: <https://engineerscanada.ca/reports/final-year-student-exit-report/2017-survey-national-results>.

⁷ Tamburri, R. (2014). "Co-op programs are popular and growing at Canadian universities." Retrieved January 1, 2018, from: <https://www.universityaffairs.ca/news/news-article/co-op-programs-are-popular-and-growing-at-canadian-universities/>.

⁸ Statistics Canada (2015). "Section 3: Co-Operative Education." Retrieved December 20, 2017, from: <http://www.statcan.gc.ca/pub/81-595-m/2014101/section03-eng.htm>.

⁹ Statistics Canada (2015). "Section 3: Co-Operative Education." Retrieved December 20, 2017, from: <http://www.statcan.gc.ca/pub/81-595-m/2014101/section03-eng.htm>.

Submission to the Government of Canada on *Human Resources, Skills and Social Development*, February 2018
Engineers Canada | Ingénieurs Canada

Positive employment rates following graduation

The benefits of co-op placements have been observed among the employment rates of individuals who graduated with bachelor degrees. According to Statistics Canada, approximately 90 per cent of bachelor co-op program graduates were employed full-time, compared to only 83 per cent of individuals who did not participate in co-op education during their bachelor's degree.¹⁰ Of the engineering students that were surveyed for Engineers Canada's 2017 *Final Year Student Exit Survey*, those who participated in a co-op placement during their schooling were more likely to have a job before graduating, specifically because of the help received from their professional networks built during their co-op placement. Approximately 52 per cent of engineering students relied on mentors from a co-op experience to attain a job following graduating.¹¹ With the unemployment rate of Canadian youth between the ages of 15 to 24 totalling 11.7 per cent in April 2017, it becomes evident that co-op placements are vital in guiding Canadian youth to full-time employment.¹²

The University of Waterloo is an excellent example of how an engineering co-op program can support a student's transition from post-secondary education to full-time meaningful employment. The University of Waterloo operates the largest post-secondary engineering co-op program of its kind in the world. The institution automatically enters engineering students into mandatory co-op programs, where students gain up to two years of relevant professional work experiences, while simultaneously connecting with top employers, strengthening skills, and building professional networks. In 2011, approximately 90.8 per cent of graduating students from the University of Waterloo's engineering program were employed only six months following graduation; compared to 87.6 percent of graduating engineering students from other universities across Ontario who may not have completed a co-operative placement.¹³ Two years following graduation, 95.2 per cent of University of Waterloo engineering graduates were employed full-time.¹⁴ In comparison to another university that does not offer engineering co-op placements for their students, approximately 89.5 per cent of these engineering graduates were employed full-time two years after graduation.¹⁵

In some jurisdictions, co-op placements can play an important role in the pathway to engineering licensure in Canada. In some jurisdictions, applicants who have applied for their professional engineering licence can use their time spent at their co-op placement towards their four-year work experience requirement for licensure. This is something specific and unique to engineering in Canada. By participating in a co-op placement, a graduate is that much closer to licensure and to the next phase of their career.

¹⁰ Statistics Canada (2015). "Section 3: Co-Operative Education." Retrieved December 20, 2017, from: <http://www.statcan.gc.ca/pub/81-595-m/2014101/section03-eng.htm>.

¹¹ Engineers Canada (2016). "Final Year Engineering Students 2016 Survey – National Results." Retrieved January 10, 2018, from: <https://engineerscanada.ca/reports/final-year-engineering-students-2016-survey-national-results>.

¹² Statistics Canada (2017). "Labour Force Survey, April 2017." Retrieved January 3, 2018, from: <http://www.statcan.gc.ca/daily-quotidien/170505/dq170505a-eng.htm>.

¹⁴ University of Waterloo (2015). "Key Performance Indicators – University of Waterloo 2014." Retrieved January 1, 2018, from: <https://uwaterloo.ca/institutional-analysis-planning/reports/ministry-training-colleges-and-universities-mtcu-key/key-performance-indicators-university-waterloo-2014>.

¹⁵ Laurentian University (2017). "Facts & Figures: Key Performance Indicators by program 2016." Retrieved January 22, 2018, from: <https://laurentian.ca/assets/files/2017-03-13%20-%20KPI%202008-2016%20Trends.pdf>

These statistics further demonstrate that a mechanism to effectively address youth unemployment in Canada are paid co-op programs. Co-op programs should be implemented into all post-secondary institutions to guide Canadian youth to meaningful employment following graduation.

Better job-education matching

In 2010, students who completed a co-op placement were more likely to start a job that related to their field of post-secondary studies when compared to students who did not take part in a co-op placement. Approximately 87 per cent of students who completed a co-op placement between 2009 and 2010 articulated that they began working in a field that was comparable or directly related to their post-secondary studies.¹⁶

According to Engineers Canada's 2017 *Final Year Student Exit Survey*, students claimed that industry-based internships or co-op programs had the most influence on them becoming an engineer, with 52 per cent of graduates delineating that these specific work-integrated learning programs were very influential on becoming an engineer. Among those who felt very or somewhat prepared to enter the engineering workforce in Canada, 31 per cent of graduates from our exit survey primarily said it was because of their co-op program, work term, or internship.

Lower levels of student debt

Lower levels of student debt have also been a reported benefit for students taking part in post-secondary co-op education. According to a 2013 study conducted by Statistics Canada, college co-op program graduates owed \$14,200 at the time of graduation, while college students who did not complete a co-op program owed \$1,100 more.¹⁷ At the bachelor degree level, students who took part in a co-op program owed \$24,000 at the time of graduation, compared to \$26,000 for students who did not participate in co-op placement.¹⁸ In 2010, both college and bachelor program graduates who had participated in a co-op placement had paid off their entire debt within three years of graduating, an important milestone to help Canadian youth find economic autonomy while transitioning into the workforce.¹⁹ Paid co-op programs are vital in supporting a individual's ability to pay off remaining student debt upon graduating from a post-secondary institution.

Higher workforce earnings following graduation

Landing secure, permanent, and full-time employment following post-secondary education is becoming increasingly rare for Canadian youth, which in turn is the beginning of a difficult road towards economic autonomy. Statistics Canada outlines that unemployment rates for 15- to 24-year-olds is almost twice that of the general Canadian population.²⁰ Providing youth with early access to traditional career pathways, specifically through co-op placements, can allow young students to access the economic autonomy that they require, as well as economic security that is elusive for many millennials.

¹⁶ Statistics Canada (2015). "Section 3: Co-Operative Education." Retrieved December 20, 2017, from: <http://www.statcan.gc.ca/pub/81-595-m/2014101/section03-eng.htm>.

¹⁷ Statistics Canada (2015). "Section 4: Student Loans and Debt." Retrieved December 27, 2017, from: <http://www.statcan.gc.ca/pub/81-595-m/2014101/section04-eng.htm>.

¹⁸ Ibid.

¹⁹ Ibid.

²⁰ CBC News (2017). "The millennial side hustle, not stable job, is the new reality for university grads." Retrieved January 11, 2017, from: <http://www.cbc.ca/news/business/millennial-jobs-education-1.4009295>.
Submission to the Government of Canada on *Human Resources, Skills and Social Development*, February 2018
Engineers Canada | Ingénieurs Canada

Post-secondary co-op placements have a direct correlation to a student's earning potential in the workforce following their graduation; particularly amongst graduates with bachelor degrees. The HEQCO, for example, highlighted a study of approximately 10,000 Ontario student graduates over a six-year period that delineated that those with co-op experiences earned salaries that were 22.2 per cent higher in their first year of work when compared to students who did not participate in co-op education.²¹

With these higher earnings, co-op graduates in Canada can pay off their student debts faster than those students who do not participate in a co-op placement. This is due, in part, to the hourly wages that a student earns during their co-op work placements, coupled with co-op graduate's higher workforce earnings following graduation.

Employer benefits of co-operative education

According to the HEQCO, there are several key benefits that Ontario employers associate with co-op work placements. These include better connections between post-secondary institutions and employers; increased opportunities for employers to demonstrate their commitment to encouraging youth to enter into their profession; improved productivity of projects, tasks, and reports, as well as streamlined recruitment and screening processes for potential new hires.²²

Not only do co-op placements provide employers with a weekly or monthly supply of innovative, hard-working, and enthusiastic student employees who are willing to take on tasks with a fresh perspective, but employers in select provinces, such as Ontario and Quebec, can profit from a Co-operative Education Tax Credit. The Ontario and Quebec governments both provide a Co-Operative Education Tax Credit to businesses hiring students enrolled in a recognized co-op program in their respective province. The Government of Ontario's tax credit is based on salaries and wages that are paid to a student in a co-op work placement. Corporations, businesses, and organizations can claim 25 per cent of eligible student expenditures, and small businesses can claim up to 30 per cent. The maximum credit for each work placement is approximately \$3,000.²³

The Government of Manitoba also offers a Paid Work Experience Tax Credit to qualified employers with a percentage of the wages and salaries paid to certain types of trainee employees and recent graduates working in Manitoba. The Co-op Student Hiring Incentive and high school apprentice component has been enhanced and expanded to help promote more paid work and on-the-job training opportunities for students. The new stream of support for post-secondary co-op students in Manitoba "provides a refundable tax credit of 15 per cent of eligible wages and salaries, up to a maximum of \$5,000 per student."²⁴

²¹ The Higher Education Quality Council of Ontario. (2012). "Work-integrated learning and postsecondary graduates: the perspective of Ontario employers." Retrieved January 1, 2018, from: <http://www.heqco.ca/SiteCollectionDocuments/WIL%20Employer%20Survey%20ENG.pdf>.

²² The Higher Education Quality Council of Ontario. (2012). "Work-integrated learning and postsecondary graduates: the perspective of Ontario employers." Retrieved January 1, 2018, from: <http://www.heqco.ca/SiteCollectionDocuments/WIL%20Employer%20Survey%20ENG.pdf>.

²³ Government of Ontario. (2017). "Co-operative Education Tax Credit." Retrieved January 9, 2018, from: <https://www.fin.gov.on.ca/en/credit/cetc/>.

²⁴ Government of Manitoba (2017). "Corporate Tax Credits." Retrieved January 12, 2018, from: <https://www.gov.mb.ca/finance/business/ccredits.html#co-opdctc>.

Submission to the Government of Canada on *Human Resources, Skills and Social Development*, February 2018
Engineers Canada | Ingénieurs Canada

Recommendations to the federal government

Support paid post-secondary engineering co-op programs

There is a large and growing need to replace retiring professional engineers in Canada. This is particularly relevant for civil, mechanical, electrical, electronic, and computer engineers.²⁵ Supporting the transition of experienced post-secondary co-op engineering graduates into the engineering profession will allow young Canadians to catch-up more quickly to mid-career professionals, allowing mid-career professionals to progress to more senior roles that will have been left by retired engineers. This will be paramount to support the reduction of a potential skills gap in the engineering profession.

With only 24 post-secondary institutions offering co-op placements for engineering students across Canada, it becomes clear that the federal government must continue to work with the engineering profession and post-secondary institutions across Canada to support the development of paid post-secondary engineering co-op programs in institutions where they do not exist. Paid engineering co-op placements are crucial in easing the economic burden that Canadian youth may face when entering into the Canadian labour market.

A first step that the federal government must take to support this endeavour is to adjust the Canadian Youth Employment Strategy to promote career-focused engineering programs that are affiliated with federal departments and agencies. Currently, the Youth Employment Strategy has a large focus on connecting young people to science and technology programs and initiatives, leaving engineering initiatives all but forgotten. Examples of these targeted programs include the Science Horizons Youth Internship Program through Environment Canada and the Science and Technology Internship Program through Natural Resources Canada.²⁶ The federal government needs to review the Youth Employment Strategy and provide a program stream that connects a federal department or agency to a youth-focused engineering program.

Federal subsidies to encourage co-op engineering programs

The federal government should provide wage subsidies for new post-secondary engineering co-op placements across Canadian employers. The HEQCO articulated in their 2012 study that financial incentives have a large role in influencing employers' likelihood in hiring students who participate in co-op education. By allocating wage subsidies for co-op placements, Canadian engineering employers will learn more about co-op engineering programs and will benefit from innovative perspectives from the students they train. Engineering students who are better prepared to enter the profession will contribute greatly to Canada's economic growth and innovation agenda.

Extend engineering co-op placement eligibility to international students

Engineers Canada supports the current Student Work-Integrated Learning Program's (SWILP) enhanced wage subsidy for newcomers to Canada. Engineers Canada encourages the federal government to extend the eligibility of the SWILP, specifically in relation to engineering co-op placements, to international students enrolled in accredited post-secondary engineering programs. The Canadian Bureau of International Education articulated in their 2016 report that approximately 51 per cent of internationally

²⁵ Engineers Canada (2015). "Engineering Labour Market in Canada: Projections to 2025." Retrieved December 20, 2017, from: <https://engineerscanada.ca/sites/default/files/Labour-Market-2015-e.pdf>.

²⁶ Government of Canada (2017). "Youth Employment Strategy." Retrieved January 4, 2018, from: <https://www.canada.ca/en/employment-social-development/services/funding/youth-employment-strategy.html>. Submission to the Government of Canada on *Human Resources, Skills and Social Development*, February 2018
Engineers Canada | Ingénieurs Canada

educated students intend on applying for permanent residency in Canada. For international students who completed an engineering degree in Canada, this number is significantly higher. According to Engineers Canada's 2017 *Final Year Student Exit Survey*, 68 per cent of international engineering students who are not permanent residents of Canada articulated that they wish to stay in Canada following the completion of their degree, while 10 per cent outlined that they plan on leaving Canada.²⁷ These results have been consistent over the past three years.

By extending the SWILP wage subsidy, internationally educated youth can successfully transition into the Canadian labour market, particularly due to their ability to participate in Canadian co-op placements during their studies.

Developing a national database on engineering co-op education in Canada

Information on the impacts that engineering co-op placements have on Canada's workforce and national economy need to be readily available for policy-makers, industries, students, and educational institutions. Data sources in Canada "have significant shortcomings, including their relatively short-term nature" when referring to critical labour market information, such as youth unemployment rates following post-secondary education.²⁸ Having a national database on the employment rates of post-secondary engineering students following a co-op program would be critical in addressing successful youth transitions into the Canadian workforce.

National surveys of graduates have been conducted in the past; however, the majority of them have failed to provide the "detailed, accurate, consistent, extended, and up-to-date information on graduate outcomes that is needed."²⁹ National baseline data on the impacts of co-op education would allow stakeholders to track the growth of co-op placements in Canada while simultaneously analyzing the outcome of student co-op participants.

Who we are

Engineers Canada is the national organization of the 12 provincial and territorial associations that regulate the practice of engineering in Canada and license Canada's more than 290,000 professional engineers. Together, we work to advance the engineering profession in the public interest.

²⁷ Engineers Canada (2017). "Final Year Engineering Students 2017 Survey – National Results: The graduating class of 2017." Retrieved January 10, 2018, from: <https://engineerscanada.ca/reports/final-year-student-exit-report/2017-survey-national-results>.

²⁸ Finnie, R., et al. (2016). "Barista or Better? New Evidence on the Earnings of Post-Secondary Education Graduates: A Tax Linkage Approach – Executive Summary." Retrieved January 3, 2018, from: https://static1.squarespace.com/static/5557eaf0e4b0384b6c9b0172/t/5796ca2be58c6252c0d41d3b/1469499948%20298/EPRI-ESDC+Tax+linkage_Exec+Sum.pdf.

²⁹ 7 Finnie, R. (2016). "Barista or Better? New Evidence on the Earnings of Post-Secondary Education Graduates: A Tax Linkage Approach." Retrieved January 3, 2018, from: <http://www.iariw.org/dresden/finnie.pdf>. Submission to the Government of Canada on *Human Resources, Skills and Social Development*, February 2018
Engineers Canada | Ingénieurs Canada