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Youth · STEM · Innovation
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Written Submission for the Pre-Budget Consultations in Advance of the 2019 Budget

August 2018



RECOMMENDATION:

That the government provide funding in the amount of \$45 million over five years to support and scale Actua's programs preparing youth for the future of work.

EXECUTIVE SUMMARY

Canada faces a serious labour force and skills shortage as a result of an aging population, increasing competition for global talent, and a growing pace of technological disruption. Without significant investment today in organizations, like Actua, that provide youth with the necessary skills for the jobs of tomorrow, Canada will struggle to compete in the global economy.

The Prime Minister's Advisory Council on Economic Growth notes this long-term challenge requires immediate investment beyond traditional skills development institutions (e.g. schools, universities, colleges). These institutions, while important, struggle to remain relevant to many young Canadians; particularly for underrepresented populations. As a result, there are substantial disparities in Science, Technology, Engineering, and Math (STEM) careers across regions, Indigenous peoples, genders, and new Canadians.¹

Developing a globally competitive future workforce means investing in the incubation of a strong STEM ecosystem. Many gaps remain in that ecosystem – and there are signs that existing strengths in key areas may be slipping.

Recognizing this, Actua is asking for a federal commitment of \$45 million over five years to support the work of its 36 local member organizations and leverage over \$115 million in corporate and member funding to scale youth workforce skills development programs across Canada, particularly among underrepresented groups.

To prepare Canadians for the future of work, Canada needs to support well-established complementary organizations that spark a lifelong interest for youth in the highly innovative and creative jobs of tomorrow and prepare them for the highly adaptive, technology-driven workplace of the future.



The long-term economic impact of leveraging this funding is estimated to generate a \$560 million increase to Canadian GDP and more than \$140 million in federal tax revenues.



Importantly, supporting Actua's workforce development programs over five years at this contribution level would lead to as many as 90,000 more young Canadians pursuing education and careers in STEM.

¹ Advisory Council on Economic Growth, "Learning Nation: Equipping Canada's Workforce with the Skills of the Future". December 1, 2017. URL: <https://www.budget.gc.ca/aceg-ccce/pdf/learning-nation-eng.pdf>

WHY INVEST IN FUTURE SKILLS?

According to the Advisory Council, economic growth is strongly linked to both the growth in the labour force participation rate and in individual economic prosperity. For decades, the Canadian economy has been driven by the aggregated factors of population growth, the accumulation of physical assets, and – importantly – rising workforce participation rates. In the face of rising economic pressures and disruptive technological change, Canada is increasingly unprepared for the future of work.

With future of work and global competition linked strongly to innovation, science, and digital literacy, Canada's prosperity and well-being depends on the extent to which we can improve our levels of STEM representation within the national workforce. A key question in this equation is how to improve opportunities for all to participate and benefit from an innovation economy.

Indigenous and Northern Canadians

Challenges with long-term labour force participation are particularly acute in Indigenous and Northern Canadian communities. For those populations, the future of work and workforce participation is highly linked to accreditation in the STEM fields due to the lack of local economic opportunity beyond the resource economy and government.

Indigenous Canadians' lack of equality of economic opportunity is a significant barrier to Reconciliation. According to the National Aboriginal Economic Development Board, the untapped potential of Canada's Indigenous communities represents almost \$28 billion in lost economic opportunity. A big factor in this discrepancy is the lack of adequate education and training to prepare Indigenous youth (on and off-reserve) for the workforce. The impact of this discrepancy is a shortfall of more than \$8 billion in lost wages (\$1.1 billion in Northern Canada).²

However, participating in these opportunities requires high school completion and (often) post-secondary education due to the highly skilled, technology-driven nature of employment in a resource economy. In these communities, high school graduation rates are low, in part because traditional institutions struggle to remain culturally relevant.

Nonetheless, without an early interest in education, the downstream effects for Canadian youth is likely workforce exclusion. Sparking a sustained, early interest in STEM education creates the foundation for later employment opportunities and relieves socio-economic pressures for governments.



Actua's programs build confidence and increase interest among Northern and Indigenous Canadians to pursue STEM careers.

² National Aboriginal Economic Development Board, "Reconciliation: Growing Canada's Economy by \$27.7 Billion". November 2016. URL: http://naedb-cndea.com/reports/naedb_report_reconciliation_27_7_billion.pdf


Women, Girls, and New Canadians

The consequences of lower workforce participation rates for women and new Canadians in STEM fields manifests in different forms. In addition to the disparities associated with individual economic attainment, a lack of diversity within the workforce can affect the quality of science and innovation.

Furthermore, racially and gender diverse teams consistently outperform homogenous teams in problem-solving, critical thinking, and innovation. According to recent research, “people think and behave differently when they interact with more diverse groups, leading to more open-mindedness, more deliberate consideration of possible outcomes, and more effective problem-solving.”

Unfortunately, women and girls often face barriers that discourage them from entering STEM fields, particularly in leadership roles. These are both cultural and curricular. Critically, a major barrier for many is a lack of confidence to pursue a STEM career. For Canada, programs that help break down barriers to inclusive STEM learning environments can result in long-term economic gains associated with gender parity in the workforce and in wages.

Similar barriers exist for new Canadians – not to mention barriers that must be overcome around language and cultural relevance. Addressing these inequalities through inclusive workforce development will build diverse perspectives in the economy and prompt researchers and teams to examine and consider issues differently.



Actua's programs provide the foundation to close the gender and diversity gaps in Canada's STEM workforce.

³ K. Phillips, “How Diversity Makes Us Smarter,” *Scientific American* (October 1, 2014). <https://www.scientificamerican.com/article/how-diversity-makes-us-smarter/>. See also the discussion in C. Clearfield and A. Tilcsik, *Meltdown: Why Our Systems Fail and What We Can Do About It* (Toronto: Penguin, 2018).

⁴ A. Sekuler, “Because it’s almost 2018: Inclusivity enhances our excellence,” *Globe and Mail* (November 13, 2017). <https://www.theglobeandmail.com/opinion/because-its-almost-2018-inclusivity-enhances-our-excellence/article36941996/>

ACTUA'S ROLE IN FILLING THE FUTURE SKILLS GAP

Canada's future prosperity and well-being depends on the extent to which we can improve our innovation performance and economic opportunities for traditionally underrepresented Canadians.

A key component of this challenge is filling the workforce development gap between traditional institutions (e.g. schools, universities, and colleges) and what will be required in the workforce of the future. Doing so requires community based culturally and community-relevant STEM programs for young Canadians.

Actua's network is uniquely positioned to deliver on the federal government's commitment to equip all youth with skills and competencies for the future workforce and to ensure diversity and inclusion throughout the process.

Actua's established and growing network of 36 local organizations has delivered STEM-related workforce development and early skills training to young Canadians in 500 communities throughout Canada for over 25 years – a federal investment of \$45 million over five years will build essential and foundational skills in 3.6 million youth.

Under our approach, total youth engagement will compound incrementally by approximately 8% annually, with a total projected reach of 3.6 million youth over the duration of the grant. Federal investments would represent under 30% of the total expenditures of the network in any one year. The remaining funds would come from the corporate sector, user fees, local funders, universities, and foundations.

Our breakdown of impact is as follows:

- Indigenous youth engagement through community-based programming that connects Traditional Knowledge with STEM will increase 20%, with a **total projected engagement of 196,000 Indigenous youth in 200-250 communities.**
- Northern Youth engagement will increase 25%, with a **total projected engagement of 49,000 youth across Yukon, Northwest Territories, and Nunavut.**
- Girls in high-impact all-girls programs will double, with a **total projected engagement of 80,000 girls.**
- New Canadians and youth facing socio-economic challenges through programming delivered in partnerships with other youth-facing organizations will increase 20%, with a **total projected engagement of 196,000 new Canadians** over the duration of the grant.
- Enhanced STEM and digital skills programming through trained teachers will **engage an estimated 1.875 million youth** over the duration of the grant.

Annual face-to-face hours of youth engagement will increase 35%, with a **total accumulation of over 13 million face-to-face hours of youth engagement delivered** over the duration of the grant. The following table details projected youth engagement over five years.

	Current Engagement	2019	2020	2021	2022	2023	Total
Youth Engagement							
General Population	170,000	184,700	199,400	214,100	228,800	243,500	1,070,500
Indigenous youth							
Provinces	27,000	27,400	27,800	29,200	30,600	32,000	147,000
Territories	8,000	9,000	10,000	10,000	10,000	10,000	49,000
Total Indigenous youth	35,000	36,400	37,800	39,200	40,600	42,000	196,000
Girls (in all-girls programs)	10,000	12,000	14,000	16,000	18,000	20,000	80,000
Other Youth	35,000	36,400	37,800	39,200	40,600	42,000	196,000
Youth engagement through trained teachers	0	375,000	375,000	375,000	375,000	375,000	1,875,000
Total projected youth Engagement	250,000	644,500	664,000	683,500	703,000	722,500	3,613,500
Face-to-face hours of engagement	2,000,000	2,591,750	2,621,000	2,650,250	2,679,500	2,708,750	13,251,250

THE IMPACT OF FEDERAL FUNDING

The impact of federal support can be measured not only by the extent to which Actua can scale-up its core programming (see above), but by the long-term economic impact associated with an increase in STEM field participation that results from participation in Actua's programs.

Pre- and post-program surveys conducted by Actua over the past three years found that an overwhelming majority of the 10,303 surveyed program participants reported positive changes in their enjoyment of STEM-related fields (81-84%), as well as their intent to pursue STEM-related higher education (70-74%) and employment (64-69%).

According to research conducted by the Conference Board of Canada, the impact of that increased confidence is significant. Over five years, as many as 90,000 Canadian youth – including girls and Indigenous youth – who would not otherwise have pursued STEM education or careers will develop the confidence to do so as a result of Actua's programs. With careers in STEM fields, their lifetime earnings are elevated by an average of 20%.⁵

The long-term impact for Canada is substantial.
A five-year, \$45 million contribution will leverage **\$115 million in funding from Actua's own network and generate an additional \$560 million in GDP and \$235 million in tax revenue** (\$140 million federally) as a result of higher participation in STEM careers by Actua participants.

In supporting Actua's programs, the federal government positions thousands of Canadian youth for long-term economic success, securing a greater financial return for government and a higher economic impact for the Canadian economy.

⁵ C G. Hermus and R. Zhuang, "Economic Footprint of Actua's Program Activities". Ottawa: Conference Board of Canada, 2018 (forthcoming).

ABOUT ACTUA

Actua is a network of 36 local organizations that share the mandate of developing essential employability skills in youth within STEM. Actua programs catalyze and foster an early career interest among youth in the STEM fields. Each year, Actua's network engages more than 250,000 young Canadians in 500 communities reaching every province and territory.

Actua's for-youth-by-youth learning model has been key to Actua's success. This is particularly evident in reaching youth populations traditionally underrepresented in STEM fields (e.g. girls, Indigenous and Northern Canadians, and new Canadians). Its evidence-based model integrates intensive, personalized instructor time with programming that incorporates cultural experience, community context, and specialized learning techniques to engage all learners.

Another key success factor is Actua's multi-sector approach to providing youth with relevant experiential learning opportunities in STEM. Through partnerships with leading corporations including Google Canada, GE Canada, Shopify, TD, Toyota, Microsoft, Lockheed Martin, Suncor and others, Actua provides youth with direct exposure to real-time applications of STEM and emerging technologies.

Finally, Actua works collaboratively with local, regional, and national organizations along with corporate sector partners to extend impact and build systemic change.

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The Indigenous Youth
in STEM program
is Actua's largest
program, working with
35,000 Indigenous
youth across 200 First
Nations, Inuit, and
Metis communities
annually.



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