Submission to the Standing Committee on Science and Research:

Canada's Artificial Intelligence Strategy

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Recommendations

- Create an annual $100-million funding stream within the College and Community Innovation Program (CCIP) to enable polytechnics to help businesses adopt and integrate artificial intelligence (AI) into their operations.
- Expand the National Research Council's (NRC) IRAP Interactive Visits program to support AI exploration and awareness-building activities for up to 1,000 businesses at polytechnic Applied AI Research Centres by investing $10 million annually.
- Invest $30 million per year in dedicated compute resources for polytechnic Applied AI Research Centres. These centres will support and serve the broader college sector as they undertake applied research related to AI exploration and adoption projects.
- Embed polytechnic applied research centres in Bureau of Research, Engineering and Advanced Leadership in Innovation and Science (BOREALIS) investments to ensure the country benefits from capacity across institution types.

Context

Canada has long been a global leader in artificial intelligence. Yet, despite strengths in theoretical research, businesses across the country have been slow to adopt and commercialize AI technologies. Weak adoption hinders economic growth and productivity, leaving much of AI's potential stranded in theory rather than translated into real-world impact.

Federal data and extensive academic literature all point to the same conclusion: Canada excels at discovery but struggles with diffusion. We invest heavily in research but too rarely translate discoveries into real-world solutions for commercial or social impact.[1] Applied research represents a natural next step to discovery research, moving from theory to practice.

Companies and organizations are eager to understand how AI can enhance competitiveness, improve products and services, and drive growth. More investment in AI research alone is not the answer. Funding must be strategic, offering Canadian businesses structured pathways to explore, adopt and integrate AI technologies to solve pragmatic business challenges. These are activities to which polytechnics naturally gravitate.

Polytechnic institutions sit at the intersection of industry and academia, helping thousands of organizations across Canada explore, prototype, test and deploy new technologies. Their work is demand-driven, partner-led and deeply applied. While polytechnics are actively engaged with enterprises seeking AI solutions, funding is insufficient to meet demand and access to compute

[1] Global Affairs Canada, *Key facts about Canada's competitiveness for foreign direct investment: January 2025*, Office of the Chief Economist, Government of Canada, ISSN 2819-4950, modified 15 October 2025.

capacity is limited. Together, these challenges serve to underutilize polytechnic expertise in partner-driven applied AI research.

The demand-driven nature of applied research means that partners shape research objectives in collaboration with institutions, reducing risks, removing barriers and making innovation accessible. It translates breakthroughs into usable technologies and scalable solutions, ensuring Canada's scientific discoveries lead to economic outcomes. AI collaborations with polytechnics are already driving advancements in wildfire mitigation, critical mineral mapping, pipeline monitoring, healthcare, agricultural yields and more.

A secondary benefit of polytechnic applied research is that it embeds students into projects as part of their experiential education. This equips them with industry-relevant skills and helps them build industry connections that lead to employment. AI-enabled talent stands to support broader adoption as they enter the workforce. Industry partners also develop new skills and broaden their understanding of both the potential and risks of new technologies like AI.

From Discovery to Diffusion

Innovation is the foundation of a competitive economy, a source of stronger growth, better jobs and a sustainable tax base. An estimated 88 per cent of AI pilots fail to scale, reflecting a system that generates groundbreaking insights but lacks the practical pathways required for adoption.[2]

Despite the longstanding suggestion that academic research leads to innovation in the broader economy, the impact of these investments has been largely elusive. At Polytechnics Canada, we attribute this to a failure to activate the entirety of the research ecosystem, prioritizing investigator-led research at the country's largest universities over industry-led research collaborations at polytechnics and colleges.

For example, in 2022–23, the Tri-Councils invested $3.7 billion in academic research. Of that, CCIP – the only purpose-driven program supporting polytechnic applied research – received $108 million. This translates to 121 eligible institutions collectively receiving less than 3 per cent of academic research funding, despite their ability to support business innovation activity.

In 2024-25, 84 per cent of the business partners served by polytechnics were small- or mid-sized enterprises (SMEs). This is relevant because, according to recent federal data, SMEs account for 99.7 per cent of all employer businesses in the country.[3] Present in every sector of the economy, the adoption of AI among these enterprises offers tremendous potential. We believe that because

[2] Schuman, Evan. "88% of AI Pilots Fail to Reach Production — But That's Not All on IT." *CIO*, 25 Mar. 2025
[3] Innovation, Science and Economic Development Canada, *Key Small Business Statistics 2023*, republished Feb. 2, 2024, ISED

Canada is dominated by SMEs – many of which under-invest in R&D – federal investments must prioritize better on-ramps to AI adoption.

For most SMEs, the cost of investing in R&D involves significant risk and, when it comes to AI where the benefits are unproven and the technology poorly understood, the risks and barriers to adoption are even more significant. Few have the internal R&D capacity, infrastructure, expertise or capital to adopt AI technologies. Encouraging these firms to integrate AI into their operations requires the assistance of innovation intermediaries.

Polytechnics are central players, routinely acting as applied R&D arms for the SMEs they engage. They prototype, test, refine and validate technologies, on timelines and at a scale compatible with operational needs. Beyond providing facilities and research talent, polytechnics help firms navigate the administrative hurdles of external funding. Collectively, this assistance addresses many of the barriers to innovation.

Polytechnic Capacity: Applied AI Research Centres

The Applied AI Research Centres resident at Canada's polytechnic institutions offer existing capacity that could be better activated with targeted investments under Canada's renewed AI Strategy. Expanding their scope of operation would complement the work of existing AI institutes by delivering cross-sector collaboration, defined project scopes and timelines, and by removing barriers common to fundamental research collaborations. Rather than duplicating the work of existing AI institutes, these centres stand to contribute polytechnic expertise in rapid prototyping and the translation of ideas into tangible outcomes.

Illustrative of existing capacity, we would point to:

- Algonquin's AI Accelerator Hub
- British Columbia Institute of Technology's Centre for Applied Research & Innovation
- Conestoga's Smart Manufacturing and Advanced Recycling Technologies Centre
- Northern Alberta Institute of Technology's Centre for Sensors and System Integration
- Southern Alberta Institute of Technology's Centre for Innovation and Research in Unmanned Systems
- Saskatchewan Polytechnic's Digital Integration Centre of Excellence
- Seneca Polytechnic's Centre for Innovation in Artificial Intelligence Technology
- Sheridan's Centre for Applied AI

The remaining polytechnics play a significant role in AI training by adapting post-secondary programs to include occupationally and sectorally relevant AI skills development and/or workforce upskilling via microcredentials and professional development programs. But the existence of centres fails to capture the pragmatic nature of the projects they undertake with business partners

of all sizes across a wide variety of sectors. These examples highlight the ability of polytechnics to apply AI expertise to a wide variety of partner-identified challenges.

Modernizing Healthcare Staffing with Made-in-Canada AI

Seneca Polytechnic's School of Software Design & Data Science is modernizing Canada's healthcare workforce system through an applied AI collaboration with TriNetra Systems, OctoChain and ConnexHealth. Building on an existing blockchain platform that verifies clinician credentials with speed and trust, Seneca's researchers are developing advanced AI-driven matching tools that pair personal support workers and other healthcare professionals with job assignments based on a holistic view of their certifications, training, work history, geography and real-time availability. This made-in-Canada innovation responds to the profound shifts in the labour market following COVID-19, boosting efficiency and reducing risk for hospitals and long-term care homes while empowering workers through fairer, faster and more transparent deployment.

Machine Learning to Improve Uranium Mining Efficiency

Saskatchewan Polytechnic is enhancing mining efficiency and sustainability through applied machine learning in partnership with Cameco, one of the world's largest uranium producers. Saskatchewan Polytechnic researchers developed a machine learning model capable of predicting the most efficient setpoints for optimal grinding conditions in real time. The applied research team translated these insights into a practical tool that can be integrated directly into Cameco's workflow, increasing processing efficiency, reducing downtime and minimizing energy use. This research is an important step toward reducing the environmental footprint of uranium production, improving throughput and lowering operating costs.

AI-Enhanced Immersive Training for First Responders

Fanshawe's new Centre of Excellence combines AI, virtual reality, extended reality and motion capture to create realistic training environments for first responders. AI will allow the system to adapt scenarios based on trainee performance, analyze behaviour and decision making, and generate data-informed feedback that strengthens operational readiness. By using AI-enabled training for workplace safety to model complex, high-pressure environments, the centre enables learners to develop critical thinking, situational awareness and judgment in a safe and controlled setting. The project also supports research on long-term wellness by integrating AI-driven observations with studies on stress, recovery and resilience among first responders.

To maximize this impact, it is necessary to ensure polytechnics and colleges can access dedicated compute resources. If housed at existing Applied AI Research Centres, they are well positioned to support and serve smaller institutions, diffusing expertise and resources among the broader community of colleges and cégeps. A shared compute infrastructure ensures smaller, rural institutions – and their local communities – are not left behind.

Networks of AI Excellence

As AI impacts sectors from energy and mining to retail and finance, cross-sectoral collaboration will be essential. To remain competitive globally, Canada must ensure AI experts nationwide can work together and share best practices and application-specific use cases, putting AI adoption into context and within reach.

Polytechnics consistently demonstrate their ability to collaborate across regions and disciplines through successful consortia such as the Prairie Polytechnic Innovation Network Accelerating Commercialization for Local Ecosystems (P2INACLE), Labs4 Impact, Canadian Colleges for Resilient Recovery (C2R2) and the Southern Ontario Network for Advanced Manufacturing Innovation (SONAMI). An effort should be made to better connect existing Applied AI Research Centres to encourage and support shared expertise across the sector.

One such network might occur within the BOREALIS infrastructure to align research priorities across institution types. By connecting fundamental and applied research, Canada can combine the deep expertise at universities with industry-driven, project-based approaches resident at polytechnics.

Building the Talent for AI Adoption

Canada has not sufficiently developed a talent pipeline able to find innovative ways to commercialize and adopt AI. Within Canada's new AI strategy, the country should seek to do so, emphasizing the development of skills related to commercialization, implementation and impact. Applied research projects offer ongoing learning opportunities to both students and industry professionals, enabling both groups to apply AI to business challenges.

The experiential nature of polytechnic applied research offers hands-on learning opportunities while arming technical personnel with a broad understanding of the risks and limitations inherent in a technology that is evolving quickly. The work-integrated learning approach to research ensures in-demand skills combine technical capability, data literacy, cloud architecture and applied machine learning with human competencies such as problem-solving, creativity, adaptability and ethical reasoning by applying them in a real-world context.

Ensuring equitable access to learning opportunities is equally essential if Canada's digital transition is to be inclusive and productive. Without intentional action, the benefits of AI adoption risk concentrating in urban, technology-dense centres, leaving small communities and underrepresented learners behind.

Polytechnics have deep connections with industry and are well-connected to local, rural and remote areas. Their students come from a diverse population, including mature students, newcomers,

Indigenous learners and mid-career professionals. Through their applied research partnerships, polytechnics ensure that the benefits of AI adoption are accessible to employers and learners in every sector and community.

Investing in polytechnic applied AI research would boost inclusive talent development, accelerate national AI readiness and build capacity in regions across the country to meet the country's AI skills development goals.

About

Polytechnics Canada is the voice of leading research-intensive, publicly supported polytechnics and institutes of technology. We advocate for federal action in areas where polytechnics provide solutions for a more innovative, productive and globally competitive country. Polytechnics Canada members play a critical role in addressing some of the country's greatest challenges. Through their facilities and networks, our members provide meaningful solutions to industry problems and accelerate knowledge transfer.

ALGONQUIN COLLEGE

BCIT BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY

CONESTOGA Connect Life and Learning

FANSHAWE

GEORGE BROWN COLLEGE

HUMBER POLYTECHNIC

KPU KWANTLEN POLYTECHNIC UNIVERSITY

NAIT

RRC POLYTECH

SAIT

SASKATCHEWAN POLYTECHNIC

Seneca POLYTECHNIC

Sheridan

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