

# POLYTECHNIC APPLIED RESEARCH

**Innovation drives economic growth and enhances social well-being.** It can be incremental—improving efficiencies, experimenting with new technologies or testing theories and concepts. Innovations can also be ground-breaking and globally significant—impacting the food we eat, human health and wellness, and the way we interact with the planet. Applied research at Canada's polytechnics is working at both ends of this spectrum and everywhere in between, supporting non-profit and business enterprises of all sizes to solve today's most pressing challenges.







Applied research refers to an exceptionally broad range of supports delivered in response to industry demand. Polytechnic institutions across Canada mobilize state-of-the-art facilities, equipment and expertise to deliver solutions for partners across industrial and social sectors, always in partnership and often with the help of student talent. As a result, institutions have a flexible and agile applied research infrastructure that adapts to the unique requirements of a partner and their project. In most cases, intellectual property is retained by the business partner, creating an environment that amplifies the incentive for creative engagement and supports ongoing collaboration.

By engaging students, polytechnics provide hands-on opportunities for learners to work alongside employers to solve real-world challenges. This ensures graduates enter the labour market with strong problem-solving skills, employer connections and relevant experience. For employers, this becomes a critical talent pipeline to deal with skills shortages and an aging workforce. More broadly, the lessons learned in applied research are folded back into classroom instruction, creating a virtuous innovation ecosystem that gets stronger with each project.

## Applied research focuses on near-to-market commercialization activities, such as:

Business validation	Field / lab testing and simulation
Product development / enhancement	Proof of concept
Prototype development	Pre-market product and process testing

## Polytechnics support business partners in a wide range of sectors, including:

 Energy & the Environment	 Advanced Manufacturing
 Health & Eldercare	 Construction
 Agri-food	 Digital Industries



# Building a Stronger Canada

Applied research leverages the facilities, equipment and expertise at polytechnic institutions for the benefit of partners of all sizes and in all sectors, creating and supporting an environment that pushes innovation boundaries and propels Canada forward as a country.

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## Business Development

Polytechnics are innovation intermediaries for organizations of all sizes and from all industrial and social sectors. As innovation partners, they provide support in diverse areas, contributing to growth, allowing for experimentation, solving on-the-ground challenges and nurturing new ideas. For business and non-profit partners, applied research can be the boost they need to realize greater efficiencies, reduce costs, scale production and enter new markets. While organizations of all sizes stand to benefit, small- and mid-sized firms are particularly well-served by having an innovation partner at the ready.

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## Social Development

While partners come to polytechnics seeking innovative solutions to challenges or obstacles to growth, the solution is almost always collaborative and mutually beneficial. In many cases, these projects are also supporting significant social advances—building improvements to health and eldercare, agriculture and food production, and environmental sustainability, among others. Applied research is oriented to pragmatic, scalable solutions to some of the biggest social challenges of our time.

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## Talent Development

Polytechnic applied research feeds an innovation ecosystem, addressing the innovation challenges businesses face today while developing the skills of the next generation of talent. Applied research projects offer valuable hands-on learning experience to students, giving them the opportunity to work with employers in their field of study. At the same time, learning from applied research is folded back into curriculum, providing a real-time feedback loop into the classroom and enabling current students to benefit from the lessons learned in applied research projects.

# Amplify the Impact of Applied Research

The benefits of applied research are broad based. Applied research enables business development, allowing Canadian companies to compete on the global stage; it enables social development, scaling and commercializing solutions that respond to some of the most pressing challenges Canada and the world face at present; and, applied research enables the development of next generation talent, equipping learners with the innovation skills necessary for achieving success across all sectors of the 21st century economy.

Industry / polytechnic applied research is making significant economic and social impact, and still Canada's polytechnics have the capacity to do more—they just need to be leveraged effectively and resourced appropriately.

Here's how the federal government can stimulate more innovation partnerships, help more businesses grow, enhance Canada's business competitiveness, create more social impact, and provide more opportunities for learners to participate in real-world experiential learning opportunities:

- **Create permanent and stable funding mechanisms** that will better facilitate the impact of polytechnics' applied research capacities in a sustainable fashion, outside of the granting cycle. This will allow polytechnics to serve more clients, enhance research expertise, and create more experiential learning opportunities for students.
- **Continue strategic infrastructure investments** to ensure institutions can build cutting-edge facilities that respond to emerging needs.
- **Assist employers with navigating the publicly funded research support eco-system**, to ensure that the facilities, equipment, technology, and expertise available at Canada's polytechnics are well-known and accessible.
- **Maintain a broad enough definition of work-integrated learning** to ensure that applied research projects are eligible for federal work-integrated learning funds.

## Applied Research Impacts

Polytechnics Canada collects the outcomes and impacts of applied research at its 13 member institutions annually.

### In 2020/21, the members:

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Undertook **3,720 applied research projects**

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Engaged **23,200 students** in applied research

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Co-developed **3,320 prototypes**

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Leveraged the expertise of **1,870 faculty**

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Served **2,600 partners**, 86% of which were **SMEs**

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Deployed nearly **\$38.7 million** in federal funding and leveraged an additional **\$61.9 million** from other sources

# About Polytechnics Canada

**Polytechnics Canada** is the voice of leading research-intensive, publicly supported polytechnics, colleges and institutes of technology. Our mission is policy advocacy for federal action in innovation and skills.

Polytechnics Canada members play a critical role in enhancing Canada's productivity and innovation. Through their facilities and networks, our members provide meaningful solutions to industry problems and accelerate knowledge transfer. Graduates are job-ready and equipped with the skills employers need across sectors.

At Polytechnics Canada, we are proud promoters of the polytechnic education model—applied, hands-on and technical; industry-focused and industry-driven.

Learn more at [polytechnicscanada.ca](http://polytechnicscanada.ca).

## Our Members

