POLYTECHNICSCANADA

POLYTECHNICS & THE FUTURE OF WORK

PREPARING TODAY'S LEARNERS FOR TOMORROW'S WORKFORCE

Preparing for Disruption

The signs of change are everywhere. Automation, artificial intelligence and the Internet-of-Things are becoming commonplace across economic sectors, even in traditional fields like agriculture, forestry and resource extraction. At the same time, demographics are working against us, amplifying the requirement for strategic workforce development. Disruption, regardless of its source, calls for swift action to prepare Canadians with the skills they need to adapt to new realities.

While the changing nature of work often provokes fear about the shrinking role of people in the labour market, it is becoming clear that new jobs will be created and many more transformed. In fact, report after report on the future of work speaks to the skills that set humans apart, including dynamic problem-solving, teamwork and adaptability. The challenge is to develop the workforce we need today while empowering learners with the skills to succeed tomorrow. The future of work will rely on our capacity to make lifelong learning affordable, accessible and integrated with workplace culture.

In this environment, one thing is clear: Canada's polytechnics are ideally positioned to lead the charge. Among Canada's post-secondary institutions, polytechnics have proven themselves to be adaptable, agile and well-connected to industry. They deliver up-to-date and in-demand skills across sectors and to all age groups. They support hands-on, applied and technology-enabled classroom and workplace learning. Best of all, they have the unique ability to pivot quickly as the ground shifts.

How do they do it? It starts with:

- Industry-responsive education
- Focus on developing a work-ready talent pipeline
- Industry-academic collaborative spaces
- Mid-career retraining options
- Bridge training and advanced placement
- Applied research supports

Read on to discover some of the ways Canada's polytechnics are preparing their students and partners for the future of work.

Canada's Polytechnics

No institution is better designed to prepare the workforce of tomorrow than a polytechnic.

Polytechnics offer a breadth and diversity of credentials, including four-year applied Bachelor's degrees, diplomas and advanced diplomas, certificates and graduate certificates, as well as apprenticeships in the skilled trades. These programs feature multiple entry and exit points, preparing learners for their first career and assisting those looking to retool, refine and modernize their skillsets.

Close ties to industry mean polytechnics can keep a constant eye on the horizon. Institutions work relentlessly with industry to build programs and design curricula, place students in work-integrated learning and position graduates for career success. Continuing education and professional development serve lifelong learners across every economic sector. Applied research projects bring business and public sector partners into the institutions to address their challenges, building bridges between employers and the talent pipeline.

Polytechnic education is:

- **Applied and hands-on**, ensuring students spend time in a real-world work environment, giving them opportunities to put theory into practice and develop industry-specific knowledge. As leaders in work-integrated learning, polytechnics help students develop a network of prospective employers while they hone their skills.
- **Industry-driven and responsive** to industry demand, with industry at the table to co-design curricula and ensure it is of the highest relevance. Working so closely to design curriculum and create work-integrated learning opportunities means there is a well-developed institution-to-industry pipeline to support smooth labour market transitions for polytechnic graduates.
- **Flexible and built for lifelong learning**, with a breadth of credentials designed to respond to labour market demand. Many programs are modular, with stackable credentials that allow students to move between education and the labour market. Polytechnics are constantly innovating the way credentials are delivered and at what speed, recognizing the requirements of both learners and industry.
- **Innovation-oriented**, delivering graduates with experience working on and with up-to-date technologies used in their field. Through participation in applied research, polytechnic students work with firms to solve technology-related challenges while building innovation-enabling skills.
- **Focused on full-spectrum workforce transition**, offering education and training to those entering post-secondary education for the first time and serving the needs of mid-career workers. Whether employed in the workforce and looking to modernize a skill set or temporarily displaced and looking to reskill, polytechnics have a solution. Partnerships with employers, continuing education options and bridge training build resilience, enhance skills and maximize workforce productivity.

Industry-Responsive Education

Polytechnic education is structured to respond to industry demand, ensuring graduates enter the labour market with pragmatic skills and the confidence to put them into action. Industry leaders sit on Program Advisory Committees to inform the creation of curricula. Employers provide work-integrated learning opportunities and work in collaboration with polytechnics to solve their pressing innovation challenges. The ability to design and deploy courses and programs at the speed of business is a significant polytechnic advantage.

KPU KWANTLEN POLYTECHNIC UNIVERSITY

Kwantlen Polytechnic University's School of Continuing and Professional Studies has launched a suite of courses designed to respond to an emerging market through their Cannabis Career Training program. As industry adjusts to new levels of consumer demand and new expectations around marketing and safety regulations, a skilled and knowledgeable workforce is a critical priority.

Courses include:

- Plant Production & Facility Management
- Marketing, Sales & Drug Development
- Financing a Cannabis Enterprise in Canada
- Retail Cannabis Consultant

GEORGE BROWN COLLEGE

When George Brown launched its Blockchain Development Program, employers like Toronto-based Metamesh Consulting were instrumental in the development of the curriculum. The collaboration paid off for both students and the company, which is hiring program graduates.

The program was developed in response to growing interest and demand for professionals with an understanding of this technology. Students learn to design and implement decentralized applications leveraging blockchain. The program also covers full stack development, smart contracts, blockchain architecture, security practices and regulations.

HUMBER

The world is changing, and Humber is changing with it. To reflect evolving workforce needs, Humber offers micro-credentials to allow learners to focus on skills and competencies for professional and personal development. Students can earn stackable digital badges that reflect the most in-demand 21st century skills and competencies, while building toward full credentials.

"The most significant challenge inhibiting growth in blockchain today is sourcing qualified talent. With this program, we are helping build the workforce that Canada needs to harness and ensure mainstream adoption of the technology."

Albert Danison,
Chair School of Computing Technology (George Brown)

A Work-Ready Talent Pipeline

Polytechnic graduates are ideally positioned for a smooth school-to-work transition in large part because of a commitment to work-integrated learning (often referred to as WIL). WIL connects students to employers, providing opportunities to develop the hands-on, applied and employability skills in high demand but difficult to develop in a classroom alone.

Sheridan

New technologies and techniques are changing the way video games, television and film are made. To stay ahead of these shifts, Sheridan created the Screen Industries Research and Training Centre (SIRT) – a Natural Sciences and Engineering Council of Canada (NSERC)-funded centre that engages industry partners in the Toronto area.

SIRT supports and fosters innovation in film, television, gaming and interactive media, creating work-integrated learning placements for Sheridan students along the way. Partner SPINVFX has, for example, created an internship program – Spinternships – that matches students and recent graduates with mentors, provides training and offers opportunities to familiarize themselves with different aspects of the film industry.

ALGONQUIN COLLEGE

A partnership between Algonquin College and Siemens Canada is creating hands-on applied learning experiences for 30 students. The school's one-year Energy Management graduate certificate uses practical training to teach students the fundamentals of energy and allows them to examine renewable energy solutions.

While Algonquin is responsible for developing the program's curriculum, Siemens Canada supplies the venue for hands-on learning. Learning is complemented by the Energy Innovation Centre Plant, an on-campus, high-efficiency co-generation power plant.

"Today's students are tomorrow's skilled workforce. Strong private-public partnerships like this one are vital to enhancing education and research in the energy space, ensuring Canada remains competitive and sustainable."

Robert Hardt
former President & CEO (Siemens Canada)

Industry-Academic Collaborative Spaces

Employers know the benefit of working in proximity to the talent on polytechnic campuses. That's why, across the country, dedicated spaces are springing up that facilitate connection. These collaborative spaces allow students and industry to come together to do tangible research and enhance innovation readiness, all while building real-world experience in students looking to develop critical thinking, problem-solving and communication skills. This kind of exposure helps employers identify future employees and students build a professional network.

Image provided by Saskatchewan Polytechnic

Saskatchewan Polytechnic's Innovative Manufacturing Centre (IMC), co-located in Regina and Saskatoon, is the most well-equipped machining and manufacturing facility in the province. For industry of all sizes – from start-up to multi-national – IMC is a resource like no other, providing a full testing, prototyping and certification centre. For example, agricultural equipment manufacturers can use the facility to improve production methods and experiment with bioplastics to make lighter, stronger and more environmentally friendly components.

IMC is also the physical hub of an Innovative Manufacturing program. The program imparts knowledge and skills from engineering, welding and machining to project management, industrial design and quality control.

The Productivity and Innovation Centre at the Northern Alberta Institute of Technology is a state-of-the-art hub for applied research activity in Alberta. At 190,000 square feet, the centre houses advanced manufacturing labs, acceleration spaces for small- and medium-sized businesses and flexible, collaborative workspaces that encourage clients, partners and staff to work together. The centre provides space for applied research focused on construction, water technologies, distributed energy and more.

HUMBER

In 2019, Humber opened the Barrett Centre for Technology Innovation (Barrett CTI), a facility dedicated to skills development, applied research and project-based, collaborative learning. The building features digital activity zones rather than traditional classrooms and is equipped with industry-leading technology. Companies use Barrett CTI to work with students and experts to solve their business and innovation challenges, drawing on Humber's expertise in automation and robotics, systems integration, advanced manufacturing and design, and user experience testing.

Barrett CTI is also home to Humber's Advanced Manufacturing Skills Consortium, a group of advanced manufacturing employers. In addition to building relationships between the companies, the consortium offers students and graduates employment and recruitment opportunities.

CONESTOGA
Connect Life and Learning

At 96 Grand Avenue South in Cambridge is a structure rich in industrial history dating back to the late 1800s. It is also the location of Conestoga@TheFoundry, Conestoga's applied research hub.

Key areas of research include smart manufacturing and digital innovation, cybersecurity and advanced recycling of waste electronics. Also located here, Grand Innovations is a co-working innovation hub, serving start-ups, scale-ups and corporate innovators as a full-service incubator. Invest Cambridge not only shares the space, but is a partner in Conestoga's vision of entrepreneurship, innovation and regional economic development.

Mid-career Retraining

Careers are no longer linear. Economic change has created a significant need for lifelong learning, with work punctuated by bursts of retraining. Polytechnics are ready partners, offering upskilling and retraining to people at every stage of their careers. A more productive and resilient workforce is one that can modernize skills on an as-needed basis, adopting new technology as it is introduced and transitioning quickly when displaced. For employers, polytechnics are well-positioned to offer expert-led, industry-specific education and training in the form of single-day workshops or delivered over time.

RRC POLYTECH

At RRC Polytech's Technology Access Centre for Aerospace and Manufacturing (TACAM), the institution provides ongoing, specialized training to Boeing Canada through a long-term corporate training agreement. As a certified global training supplier to Boeing, RRC Polytech delivers customized training programs related to composite fabrication and repair, composite assembly, composite tooling, CNC operation and quality inspection. Training programs use state-of-the-art equipment and facilities at RRC Polytech's aviation and aerospace campus, drawing on the technical expertise of TACAM staff, college instructors and contractors.

SAIT

The Southern Alberta Institute of Technology provides hands-on, skills-based and technology-focused training to the oil and gas industry worldwide. Active internationally for more than 30 years, SAIT has provided training services to governments, national and international oil companies, and academic institutions. Every year, SAIT trains some 7,000 operators in competency-based programs, offering both online and blended formats, as well as instructor-led courses.

Training programs are continuously updated to reflect the most current industry requirements and standards. Delivered through SAIT's MacPhail School of Energy, labs and classrooms house sophisticated equipment, systems and training infrastructure to prepare employees for immediate, real-world application.

Bridge Training and Advanced Placement

The ability to quickly retrain and re-deploy workers will be paramount to Canada's success at a time of economic and technological disruption. One of the keys will be to identify the specific work-related skills of individuals who find themselves in transition and match them to appropriate retraining opportunities. Doing so stands to leverage their previous learning and skills, maximizing efficient labour market transitions.

Bridge training is often used to launch skilled newcomers into positions that match their experience in the shortest possible time, supporting transition into fields with strong employment prospects. Competency-based assessments, wraparound supports such as language training and in-class instruction from industry professionals are key ingredients. Bridging programs can also be used to assist displaced workers transitioning from one industry to another.

Prior Learning Assessment and Recognition is one way to measure an individual's existing stock of skills, knowledge and abilities. Once the assessment is complete, learners can be directed to training and education opportunities aimed at skill and competency gaps.

Seneca

Seneca's Faculty of Continuing Education, in association with the Canadian Securities Institute, offers an accelerated bridging program for internationally trained professionals with a background in financial services. This program is designed to help newcomers enter the financial sector in the shortest possible time.

The Professional Excellence in Financial Services Bridging Program builds on existing knowledge to prepare learners for career opportunities with banks, credit card companies, insurance companies, investment funds, stock brokerages, consumer-finance companies, credit unions, accountancy companies and some government-sponsored enterprises.

BCIT

BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY

The British Columbia Institute of Technology's SITE Centre of Excellence conducts prior learning research and assessment, giving advanced standing to those from non-traditional educational backgrounds. For example, the Legion Military Skills Conversion program accelerates and advances the civilian careers of Canadian Forces members by mapping learning outcomes rather than course equivalencies. The SITE Centre also serves first responders and mature students, with potential to serve other mid-career workers and new Canadians.

Applied Research

Applied research refers to an exceptionally broad range of supports delivered in response to industry demand. Developing, validating and testing prototypes, adopting the latest technology and moving products from concept to commercialization is challenging for businesses of all sizes. The applied research expertise resident in Canada's polytechnics is increasingly critical to keeping Canadian businesses productive and competitive in a changing landscape.

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. By engaging students, polytechnics provide hands-on opportunities for learners to work alongside employers to solve real-world challenges.

FANSHAWE

A one-of-a-kind robot is hard at work in southwestern Ontario thanks to a research collaboration between London-based A&L Canada Laboratories and Fanshawe College. A&L, one of the province's largest agricultural and environmental laboratories specializing in soil, plant tissue, fertilizer and water testing, approached the college with a specific problem related to the automation of their soil sampling.

A&L was at capacity with its equipment and needed to develop a new way to meet industry demand. The research collaboration, funded through the College and Community Innovation Program, helped to create a robot able to analyze organic soil samples. The project not only delivered a solution for A&L, but created unique skill development opportunities for students.

An applied research partnership between Saskatchewan Polytechnic and Cowessess First Nation has made dispatching first responders easier and more effective by developing precision mapping procedures. Using GIS technology, SaskPoly grad and Manager of Applied Research Abdul Raouf created a geo-database of the roads and homes of the Cowessess First Nation. Reducing 911 response times stands to make a life-saving impact for this and other rural communities.

"This project provides vital geo-spatial information of the roads and homes of Cowessess First Nation in the form of digital maps. These maps will be integrated into an existing database to provide emergency responders with critical information to respond to calls more efficiently."

Dr. Larry Rosia,
President and CEO
(Saskatchewan Polytechnic)

RRC Polytech's Vehicle Technology & Energy Centre in Winnipeg is operating at the forefront of the vehicle technology industry. Working together with its partners, Red River offers innovation expertise in renewable fuels, the fuel efficiency of fleets and testing of emerging vehicle-related technologies, with an emphasis on cold-weather/climatic conditions. The team at RRC Polytech has expanded in preparation for an ambitious research agenda, including big data analytics, autonomous vehicles and alternative energy sources, such as hydrogen.

Image provided by RRC Polytech

Embracing Change

Maintaining a productive and competitive economy in the face of change and disruption is no small challenge, but Canada's polytechnics are a critical ingredient to meeting that challenge head on. Polytechnics deliver pragmatic, industry-relevant skills to young learners, targeted training to those at mid-career and bridging programs to newcomers. By offering applied research support on campuses across Canada, polytechnics are not only helping small- and mid-sized employers position for the future, but are introducing them to the talent pipeline they need to thrive. No matter how Canada's economic landscape changes, polytechnics are the agile solution required to strengthen human capital and boost capacity to compete on the global stage.

About Us

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 on 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 armed with the skills employers need across sectors.

Close ties to industry make the polytechnic talent pipeline dynamic and responsive to the challenges of developing the future workforce. Polytechnics work with industry to build programs and design curricula, to conduct applied research that helps firms scale and get products to market. They offer students work-integrated learning opportunities and position graduates for careers. Beyond the traditional student, polytechnics embrace those at mid-career who find themselves displaced from the labour market or simply need short-term retooling to refine and modernize their skillsets.

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.

Our Members

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CONESTOGA Connect Life and Learning

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