Strengthening Ontario’s Centres of Creativity, Innovation and Knowledge: University of Waterloo response

The University of Waterloo is proud to be Canada’s most innovative university. It’s a distinction we’ve earned by looking at things in a different way, by blazing new trails and redefining university education as a vital and transformational kind of learning.

Ontario is exploring new ways to drive creativity, innovation, knowledge and community engagement, with a more focused contribution on technology, economy and society in general, consistent with the global challenges and opportunities facing us. The University of Waterloo has the experience, the intellectual resources and the proven track record of enabling success to help lead the development of a new model for higher education for this province and the world.

In 1957, Waterloo’s founders made an unconventional decision to build a university that came down from the ivory tower to work collaboratively to build a better society. For 55 years, we’ve been doing just that, with growing relevance and impact.

As Canada shifted from an agricultural to a manufacturing economy, we first started producing the engineers the nation needed to run its plants and build its infrastructure. Today, Waterloo’s Faculty of Engineering remains the largest and best-recognized in Canada, but we have expanded to become relevant in other areas of strategic importance to society. As this country shifts to an economy based on sophisticated products and services, Waterloo leads the way with strengths in digital media, health, computing, high-tech, and leading-edge research and academic programs for undergraduate and graduate students.

In today’s knowledge economy, excellence in research and excellence in teaching go hand in hand, and ensure continuing relevance. At Waterloo, we offer students experience-based learning within a research environment. Learning and exploring in a way that transcends disciplinary, institutional and international boundaries encourages our students to address real challenges by anticipating, innovating and implementing change.

Prosperity is vital, but so are global issues such as clean water, sustainable energy, and health and aging. Waterloo research is having an impact in all parts of the planet, from Daniel Scott’s studies into the effect of climate change on tourism-dependent island nations, to Richard Kelly’s research into arctic ecosystems. Researchers including Jatin Nathwani and Linda Nazar will help lead the world to a future where energy is cleaner and more sustainable. Frank Gu and Carolyn Ren hope to transform medical diagnosis and treatment with nano-scale machines that can offer on-the-spot analysis or carry drugs directly to cancer cells.

Our students are transformed through a culture of innovation and bold thinking, a culture that encourages risk-taking and entrepreneurship. They have, more than any others, the competence and confidence to engineer their own success. For more than two decades, Waterloo has been recognized by *Maclean’s* as the most innovative university in Canada, and for 14 of those years has been named the most likely to produce the leaders of tomorrow.
Our success is built on a foundation of experiential and experience-based education and an uncompromised commitment to the highest level of academic excellence.

The co-operative education program pioneered by Waterloo is the largest of its kind in the world, offering experiential learning that gives students real-world experience and reinforces their studies, while building close links with industry and society. The benefits are wide-ranging. It not only helps them to be ready for life outside of university, but also to become truly well-rounded global citizens with a deeper and wider understanding of the value and importance of their education.

Co-op enables year-round and technology-enabled learning, and inspires entrepreneurship and innovation. Contact with leaders in industry, research, and other fields stimulates curiosity and ensures continued relevancy. Employers are made stronger and more innovative through regular infusions of new knowledge, ideas, and energy. Students return to the classroom with a breadth of new learning that drives further inquiry and discovery when shared with classmates and faculty.

Waterloo’s unique culture and intellectual property policy attracts students and faculty who are already open to new ideas and discovery. Through their Waterloo experience, they become risk-takers, willing to step beyond conventional thinking in pursuit of new knowledge and approaches. Waterloo’s researchers, graduate students, undergraduate students, staff, and alumni cross boundaries and explore new ways of addressing new and unrecognized global challenges. Entrepreneurs find support and encouragement to launch new businesses through innovative programs including VeloCity and the Conrad Business, Entrepreneurship and Technology Centre. Our continued focus on entrepreneurship will encourage more students to build their own businesses and ventures.

The opportunity to learn in such a dynamic and relevant way attracts the best and brightest students from across Canada and around the world — with 29,000 full- and part-time undergraduates and 4,800 full- and part-time graduates students currently enrolled in our programs. Almost a third of our undergraduates arrive at Waterloo with an admission average over 90 per cent.

Waterloo respects and appreciates Ontario’s efforts to transform post-secondary education in this province. We believe it is critical that we understand and improve the delivery and accessibility of education in this province, while further supporting the reputation for world-class research and teaching that institutions, including Waterloo, have earned. We would like to share some of the ways Waterloo can further support the aims outlined in Strengthening Ontario’s Centres of Creativity, Innovation and Knowledge, as well as some challenges that must be addressed in order to facilitate the minister’s goals. Together, we will continue to put students first, making high-quality and globally-competitive education accessible to more Ontarians.

Three-year degrees
Waterloo attracts driven and dedicated students, many with advanced knowledge and experience. While concerns have been raised that expanding the availability of three-year degrees could adversely affect the value and quality of university education in Ontario,
Waterloo proposes to study these as a form of accelerated learning for the most dedicated, driven and experienced students.

Content and delivery are important. We will explore ways, with no dilution, to accelerate learning for those exceptional students who demonstrate high level understanding of required foundational knowledge. Through better understanding of learning outcomes, and online and blended learning resources delivered in a modular format to meet any gaps, Waterloo would enable the most driven and dedicated students to leap-frog some coursework and complete their undergraduate degree in a shorter timeframe.

Many of Waterloo’s most talented and dedicated students enter their degree program with much of the required foundational knowledge already mastered. For this cohort, a mechanism to demonstrate their knowledge, quickly meet any gaps, and complete their honours degree in less time would be a welcome innovation.

Learning outcomes
Waterloo believes in the potential of learning outcomes as a valuable measure, but sees a clear need to develop deeper understanding of these tools. Across our curriculum, we are defining learning outcomes and researching better ways to measure them. We believe this effort must be led by universities, building on our research strength and the work already underway by the Council of Ontario Universities.

Productivity gains
Waterloo strongly believes in the value of technology-enabled learning. We have been doing this in a number of ways, including a large online learning program with several graduate and undergraduate degrees available fully online. Waterloo also offers several blended learning courses as part of its curriculum, incorporating online learning and redesigning classroom time to encourage more interactive learning opportunities. Collaboration is key to better, more efficient delivery, and Waterloo is willing to lead the way in establishing a regional university consortium to support technology-enabled learning. While it may offer cost savings in the long run, the motivation is enhanced quality of education for our students, along with increased productivity.

Full integration of experience into the total learning environment
As pioneers in co-operative education, Waterloo has seen first hand the transformative power of experiential learning. Co-op students infuse the organizations and companies that employ them with fresh energy and ideas, and return ready to share their new knowledge and experience with classmates and faculty. Direct contact with successful entrepreneurs, and opportunity to test and prove new ideas, emboldens our students. We have further embraced experience-based learning as we support the development of entrepreneurs, through programs including VeloCity, VeloCity Garage, and the Accelerator Centre. Our proposed Innovation Village would take this even further, building a nexus of talent, investment, support and opportunity, where creative, talented, ambitious faculty, students and external partners from diverse backgrounds and disciplines build on each other’s ideas, and bring them to life. As an institution of higher education, Waterloo provides education and nurture innovation. Education creates human capital, which enables economic growth, but entrepreneurship is essential to catalyze growth. We need both. We cannot leave the development of tomorrow’s entrepreneurs to chance.
Policy changes that will make education more accessible, enhance productivity and drive innovation

1) As governments are challenged to deal with global economic realities while fulfilling commitments to post-secondary education, universities must seek additional sources of revenue to continue delivering world-class education to students, and support breakthrough research. Within this context, a top priority of this government must be to address ancillary fees rules that limit the ability of universities to include in courses the growing number of digital resources that are available from publishers and other third party vendors to support and enhance student learning beyond textbooks.

2) Lifelong learning is important to keep members of Ontario’s workforce on the cutting edge of technology and innovation. Increased financial aid for adult part-time learners in degree or non-degree programs would make education more accessible to those seeking to increase their knowledge and upgrade their skills. New knowledge and skills will translate into increased productivity, new workplace innovations, and a better-educated workforce able to drive Ontario’s economy forward.

3) More must be done to encourage employers in all fields of the value of participating in co-operative education programs. Additional financial incentives for co-op employers would lead to much needed growth in this area, and allow Ontario universities to expand experiential education opportunities. Not only would this increase the range of workplace and research experiences available to students, it would introduce a new group of employers to the benefits of co-operative education, enhancing their productivity and outcomes through an infusion of new ideas and energy.

4) International students make up 30 per cent of our graduate student population, the highest ratio in the province, and Waterloo has one of the best records among U15 institutions in terms of time to completion. In a global economy, domestic students benefit from sharing the experience and knowledge of their international peers. Our province benefits from the immigration of highly-trained professionals who come here to study, and choose to remain. International graduates also maintain strong ties with the province, potentially leveraging investment and trade relations. Despite the wealth of knowledge and experience they contribute, international students are not currently included in graduate recruitment targets for Ontario universities. Government policy must be updated to reflect the value international graduate students bring to our institutions.

5) It is important that federal and provincial government policies change to ensure that financial support provided to support entrepreneurial students is not clawed back by another government department. For example, seed money meant to support students developing or preparing to launch new businesses, should not be counted as income, reducing OSAP eligibility.

The University of Waterloo welcomes the opportunity to help shape the future of post-secondary education, building on our exceptional track record of success, and the solid contributions of our students, faculty, staff and alumni to the creation of a strong Ontario and Canada. Through our innovative, can-do culture, we will continue to play an integral role as builders of a strong region, province and nation.