

In Quest for the Education of Future Talent: Academic Excellence Meeting Experiential Excellence

**Cooperative and Work-Integrated Education Day
Suranaree University of Technology
Nakhon Ratchasima, Thailand
June 9, 2021**

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President and Vice-Chancellor
University of Waterloo



COMPLEX DISRUPTIVE FORCES DEFINING OUR FUTURE



ARTIFICIAL INTELLIGENCE



5G AND CONNECTED DEVICES



AGING POPULATION



CLIMATE CHANGE AND SUSTAINABILITY

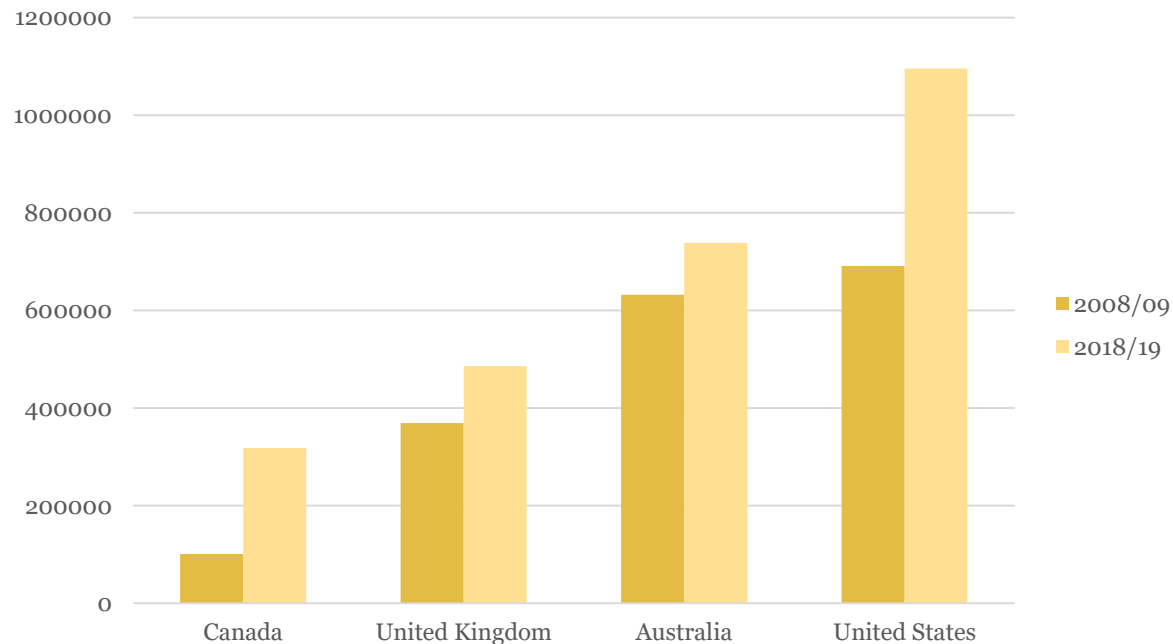
WHAT IS THE ISSUE: THE NATURE OF WORK IS SET TO CHANGE

- Thirty per cent of jobs and occupations that exist right now are at the risk of extinction due to automation and AI by the middle of the 2030s.
- At the same time, WEF forecasts that robotics alone will create 133 million jobs over that same period.
- By 2030, 25 per cent of Canadians will be over 65 – close to eight million people, putting pressure on the health care system

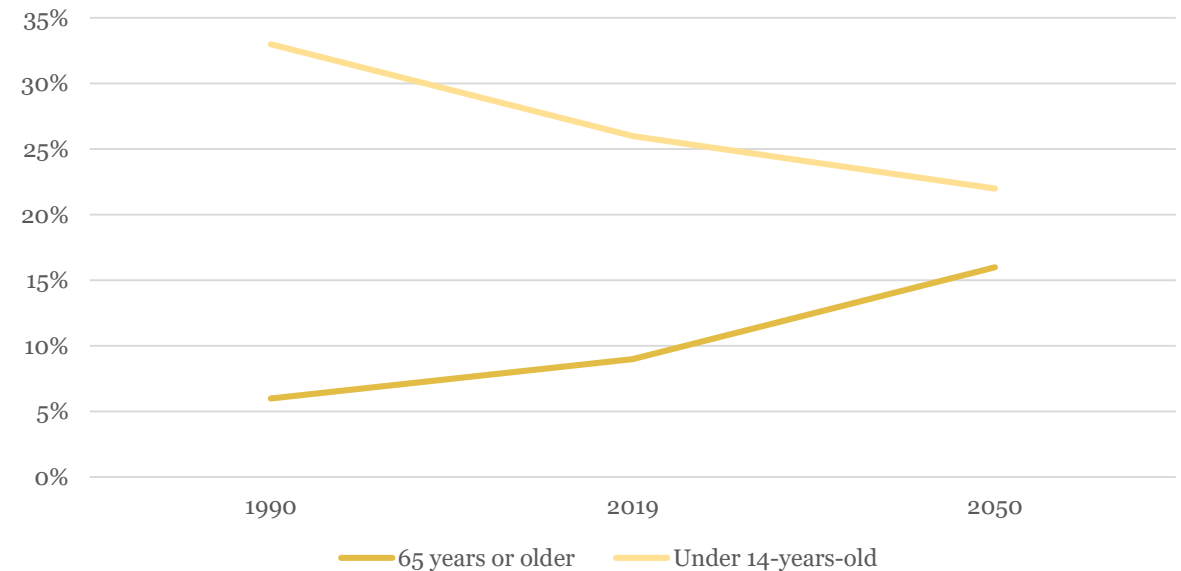
ARE UNIVERSITIES RELEVANT ENOUGH MOVING FORWARD?

Disruptive forces were already changing universities prior to COVID-19, how can we adapt?

Growth of International Students in Key Markets



World Population Growth Projection
(% of global population)



REMINDER: TWO MAIN PRIORITIES OF ANY UNIVERSITY

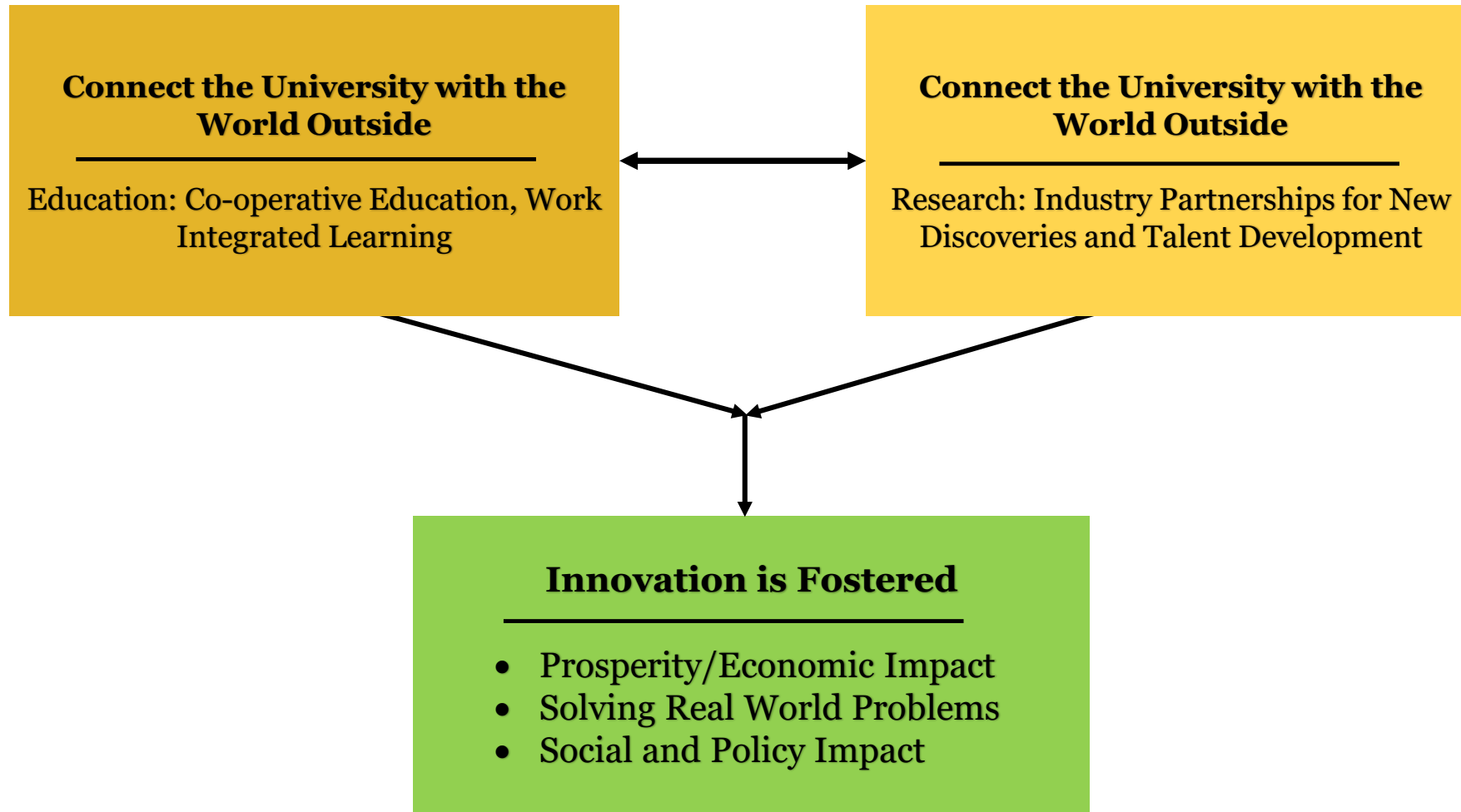
1. To provide an enriching education of future talent without losing focus on global citizenship.



2. Lead the creation of new knowledge to sustain and support a healthy society.



HOW INSTITUTIONS CAN PURSUE AND ADAPT TO CHANGE



FROM THE 14TH-CENTURY TO TODAY



TEACHING IN THE 14TH-CENTURY

Lecture at the University of Bologna,
14th-Century



TRADITIONAL TEACHING TODAY

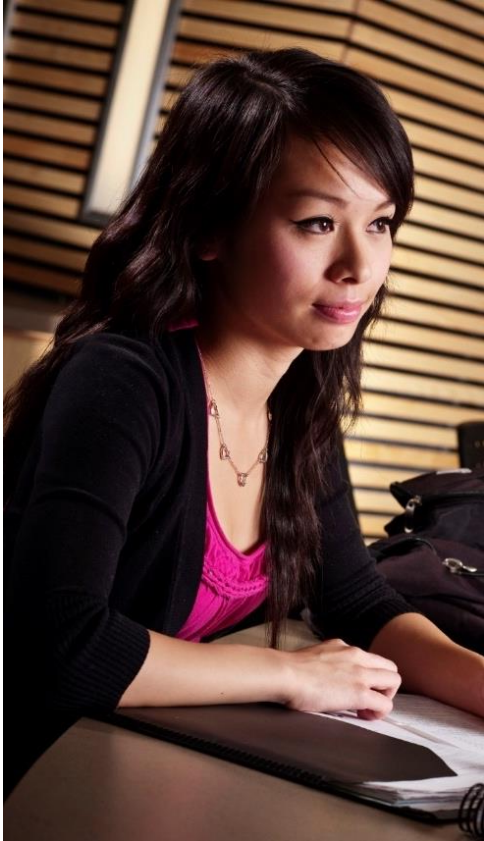
Looks very similar to 700 years ago.

A group of three business professionals, two women and one man, are walking outdoors in a city setting. They are dressed in professional attire, including blazers and skirts. The background shows modern city buildings under a clear sky.

**HOW DO WE FOSTER GLOBAL LEADERS
AND ENABLE INNOVATION?**



UNIQUE LEARNING PATHWAYS



CLASSROOM WORK



RESEARCH EXPERIENCE



CO-OP PLACEMENT



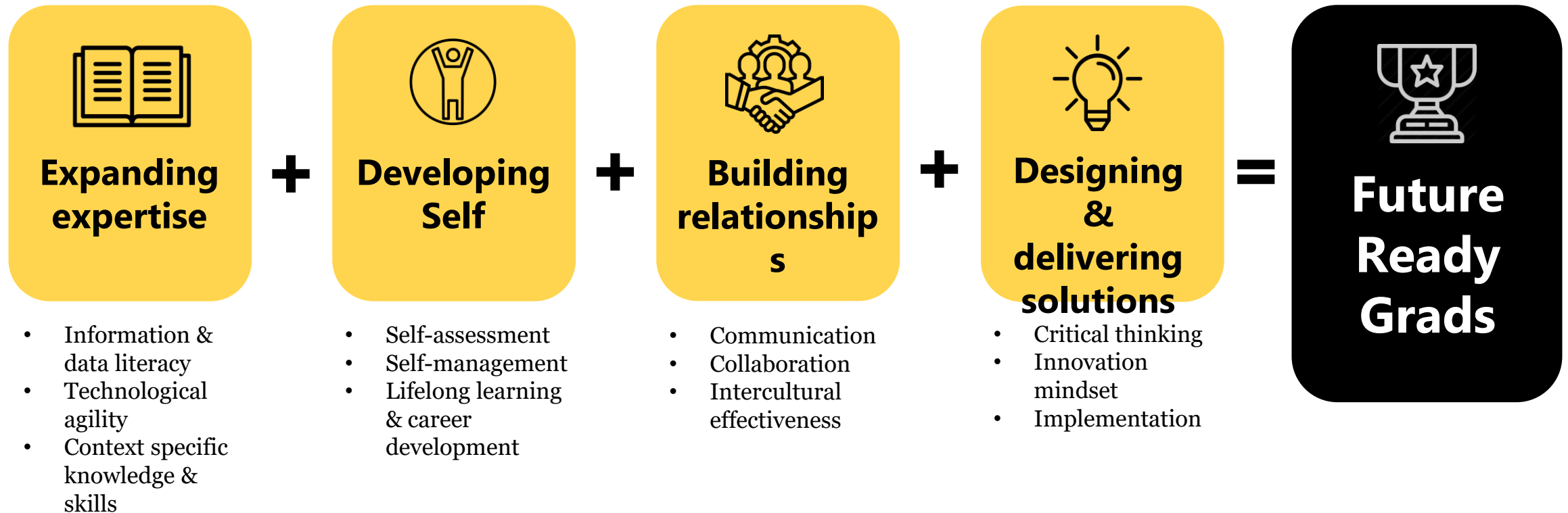
INTERNATIONAL
EXPERIENCE



REMOVING BARRIERS
ACROSS DISCIPLINES

TALENT DEVELOPMENT FOR A CHANGING WORK REALITY

In-demand skills are shifting, with a heightened focus on uniquely human talents and capabilities:



Learn more

[UWATERLOO.CA/FUTURE-READY-TALENT-FRAMEWORK](https://uwaterloo.ca/future-ready-talent-framework)

CO-OPERATIVE EDUCATION CYCLE OF KNOWLEDGE DEVELOPMENT



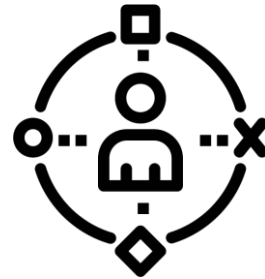
Learning does not stop at the classroom.

WHY ARE CO-OP OPPORTUNITIES IMPORTANT?

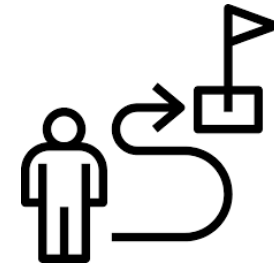
Co-operative education is a proven strategy to build the skillsets needed for the future workforce:



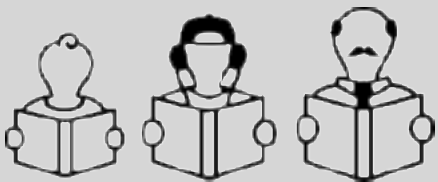
CREATES OPPORTUNITIES
TO WORK IN DIFFERENT
INDUSTRIES



OFFERS BREADTH &
DEPTH
OF EXPERIENCES



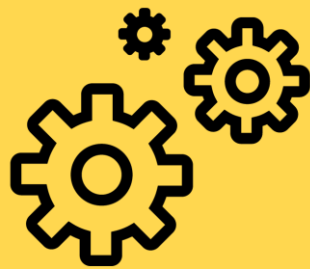
HELPS STUDENTS FIND
PURPOSE & MEANING



Lifelong learning is one of the biggest indicators of career success, leading to promotions, higher pay and more job satisfaction.

CO-OP AT WATERLOO

- Alternating co-op model – work terms and courses are offered year-round
- A large department supports students and employers in recruitment and work term success
- Work-Integrated Learning (WIL) Programs professional development training:
 - Online skill development courses
- Job performance evaluation becomes part of application package for subsequent work terms
- Work reports link study and work terms



60+ years
of innovation & growth
in co-operative education
for experiential learning



25,000+
co-op students
enrolled in
120+
programs



global network of
7,500+
employers
for employer-student
connections with a



\$260+
million
in co-op student
earnings annually

A KEY DRIVER OF ENROLMENT

72%

May 1, 2019 – April 30,
2020

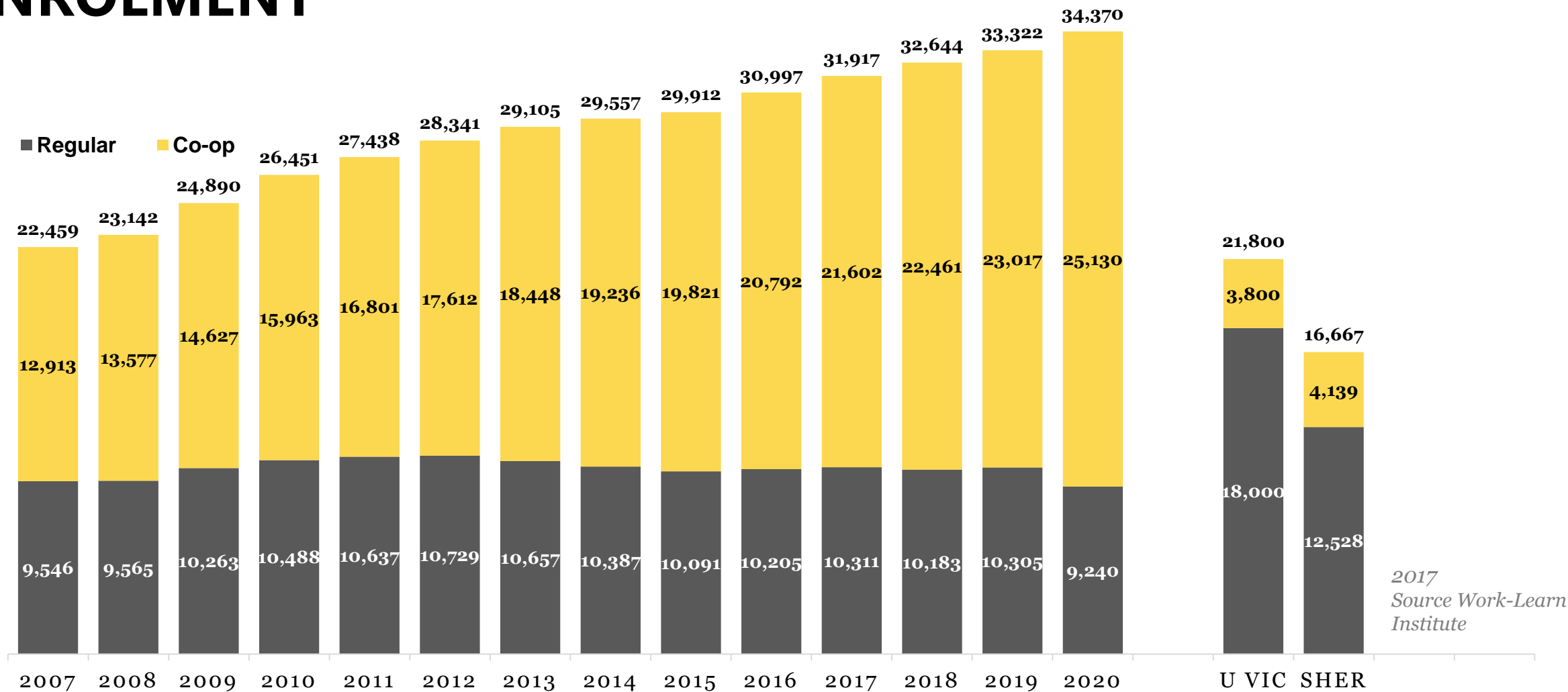
of incoming undergraduate co-op students
say they would not have accepted their offer
to Waterloo without **CO-OP**

Waterloo's strong academic reputation remains the other top reason incoming undergraduate students choose to accept their offer.

Source: University of Waterloo Incoming Undergraduate Student Survey 2018



CO-OP AT WATERLOO: FULL-TIME UNDERGRADUATE ENROLMENT



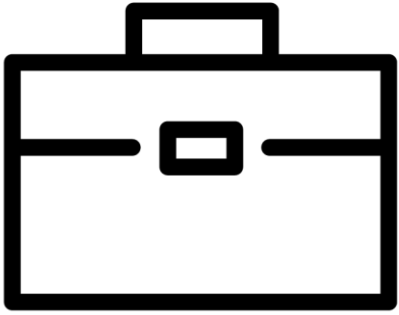
Source: IAP

2017
Source Work-Learn
Institute



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STUDENT WORK EXPERIENCE



Students graduate
with up to
TWO YEARS
of paid work
experience

May 1, 2020 – April 30, 2021



Students earned between
\$8,400
to

\$10,000

an average of \$13,000 per work
term in 2020/2021



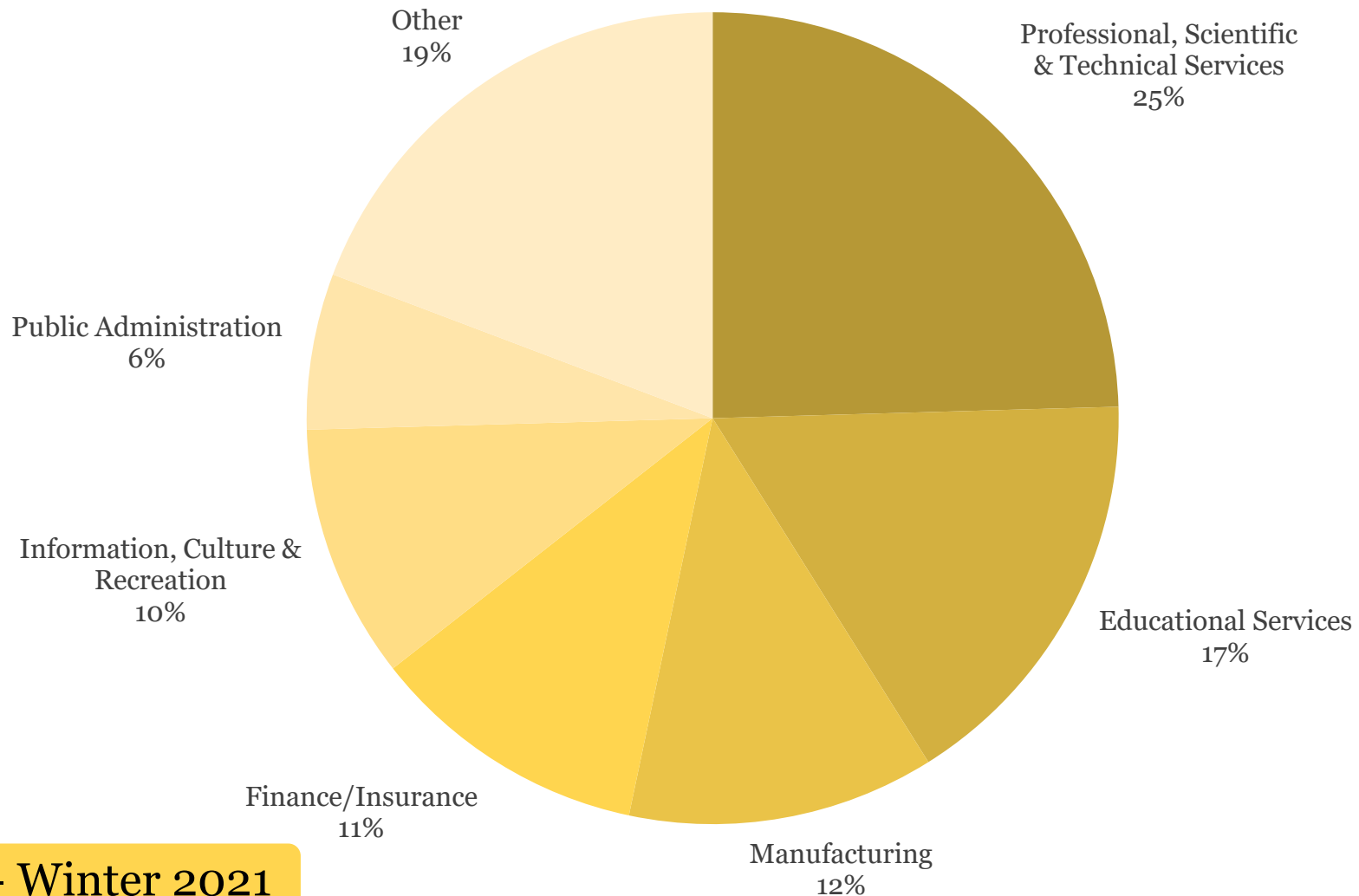
on Canadian work terms



8.5/10
average rating students
gave their work term
experience

93.0% of students gave their
work term a rating of 7 or higher

TOP INDUSTRIES FOR STUDENT EMPLOYMENT



Spring 2020 – Winter 2021

TAKING EXPERIENTIAL LEARNING INTERNATIONAL

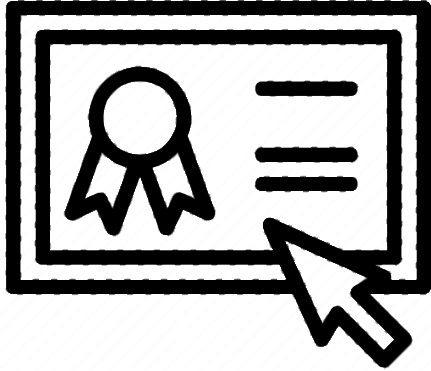
2,600+ **in** **60+**
INTERNATIONAL WORK TERMS **COUNTRIES**

Top 5 Regions

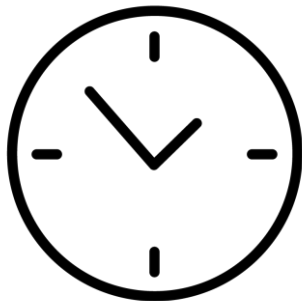
1. United States
2. China
3. Hong Kong
4. United Arab Emirates
5. Japan



PROFESSIONAL DEVELOPMENT FOR CO-OP STUDENTS



Four or five PD courses
over five years



20 – 25 hours
per course

PD1: CAREER FUNDAMENTALS

Improve your résumé, refine your interview skills and learn about the co-op process.



PD12: REFLECTION AND LEARNING IN THE WORKPLACE

Develop critical skills like
self-awareness and initiative.

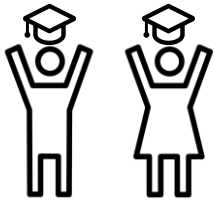


ELECTIVE COURSES

Choose two or three elective
courses.

CO-OP GRADS & THEIR DIVERSITY OF WORK EXPERIENCE

- From January 2015 – April 2018 there were **8,294 co-op graduates**
- **About these grads:**

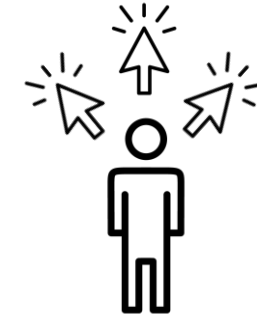


They worked for
5,165
different employers



88.4%
had three or more
different employers

68.6%
had four or more
different employers



68.4%
worked in three or
more industries, while only

7.7%
worked in only
one industry

WATERLOO CO-OP GRADUATE OUTCOMES



92%

of Waterloo co-op grads are
employed 6 months after
graduation

compared to 89% of Ontario
graduates



96%

of co-op grads employed 6
months after graduation
worked in positions related to
skills they acquired at Waterloo

compared to 79% of Ontario
graduates



82%

were earning at least

\$50,000

2 years after graduation

compared to 45% of Ontario
graduates



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WATERLOO

VALUE FOR EMPLOYERS



93%

of co-op employers
reported a positive
return on investment
from hiring a
co-op student

Source: Work-Learn Institute, 2019



81%

of employers indicated
they would be 'likely'
or 'very likely' to offer
a position to their most
recent student

Source: Work-Learn Institute, 2019



\$525M

in additional returns
for companies who
hired Waterloo co-op
students in 2018/19

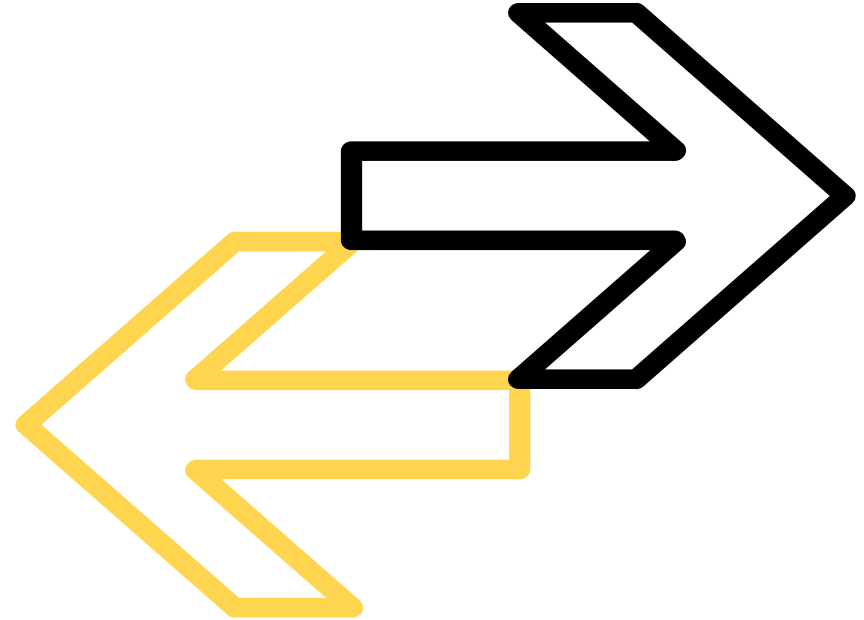
Source: Deloitte, 2019

UNIVERSITY-EMPLOYER DEVELOPMENT FROM CO-OP

New research approaches

Skills development

Industry networking

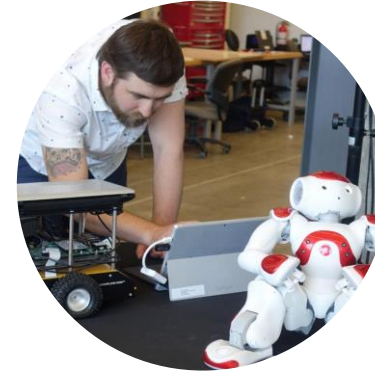
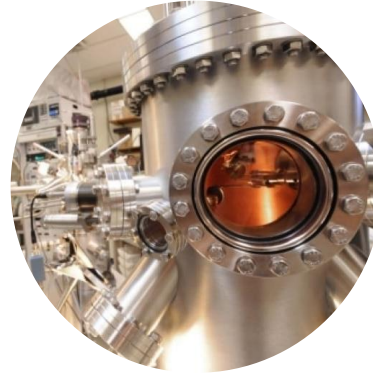


The talent that will *drive* and ensure our survival, growth and continued prosperity in this challenging new world must come from an interactive, networked, and connected environment.

A photograph of two young women in a classroom setting, focused on a task. The woman on the left has reddish hair in a braid and wears a maroon shirt. The woman on the right has dark hair and wears a black t-shirt with a red 'NORTH OCEAN' graphic and an NBA FIN logo. They are both looking down at a wooden surface, possibly a table or a large book. The background is blurred, showing other students and classroom furniture. A yellow banner is at the top of the image.

POWER OF INTERDISCIPLINARITY

CONNECTING TOP TALENT WITH TOP RESEARCH OPPORTUNITIES AND DEVELOPING THEM AS SOCIAL AND TECHNOLOGICAL LEADERS



IQC Institute for
Quantum
Computing

the **water**
INSTITUTE

WIN WATERLOO INSTITUTE FOR
nanotechnology

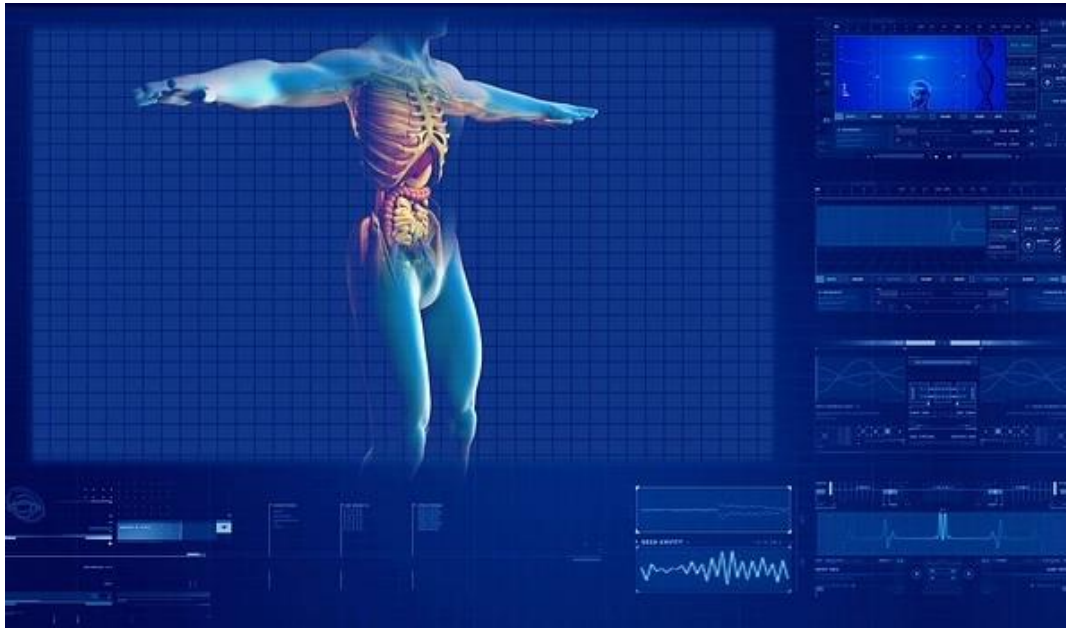
WATERLOO.AI
WATERLOO ARTIFICIAL INTELLIGENCE INSTITUTE

RIA RESEARCH
INSTITUTE
for AGING
Schlegel • UWaterloo • Conestoga

USING MATH TO SPEED UP VITAL KIDNEY DRUG TESTING

Using mathematical models to test new drugs

Professor Anita Layton has developed a new model that will allow scientists to gain better insights into how new drugs that target the kidney, such as diabetes medications, may work.



**ANITA LAYTON, FACULTY OF MATHEMATICS AND CANADA
150 CHAIR IN MATHEMATICAL BIOLOGY AND MEDICINE**

DRIVING ENTREPRENEURSHIP

A group of people are working in a modern office environment. In the foreground, a man in a blue shirt is looking at a laptop. Next to him, another man in a black shirt is smiling and looking at a computer monitor. A woman in a light-colored top is also smiling and looking at a computer monitor. They are sitting at desks with multiple computer monitors and laptops. In the background, there are whiteboards with handwritten notes and diagrams. One whiteboard is titled 'TRITONWEAR' and lists tasks for Adam, Darius, and Tristan. Another whiteboard is titled 'State Machine' and shows a flowchart. A third whiteboard is titled 'Schedule [Adam]' and lists tasks for the week ending Aug 22. The office has a bright, open feel with large windows and modern furniture.

ENTREPRENEURSHIP

IN A LITTLE OVER A DECADE,
COMPANIES FROM VELOCITY AND THE
ACCELERATOR CENTRE HAVE CREATED:

OVER:
7,500
JOBS

REVENUES OF OVER:
\$2.3 BILLION

A RECENT
STUDY ALSO
FOUND THAT

1 IN 5 TECH FOUNDERS IN
CANADA WE EDUCATED
AT WATERLOO



DRIVING ENTREPRENEURSHIP

390 University
of Waterloo
entrepreneurs
have raised

\$7.1B with **\$2.3B**
in collective revenues

PITCHBOOK

In the top **20** globally in the category of
“TOP UNIVERSITIES FOR VC-BACKED ENTREPRENEURS”
and **#4** in the category of
“TOP UNIVERSITIES THAT CREATE UNICORNS”

PITCHBOOK

\$850M+

raised by Velocity companies

7,500+ **JOBS CREATED**

through Waterloo entrepreneurship
programs

Velocity is the
**MOST PRODUCTIVE INCUBATOR
IN CANADA**

One-year company survival rate of **89%**
for Velocity startups

16,750+

Enrolments in 500+ courses, non-
credit events and workshops related
to entrepreneurship

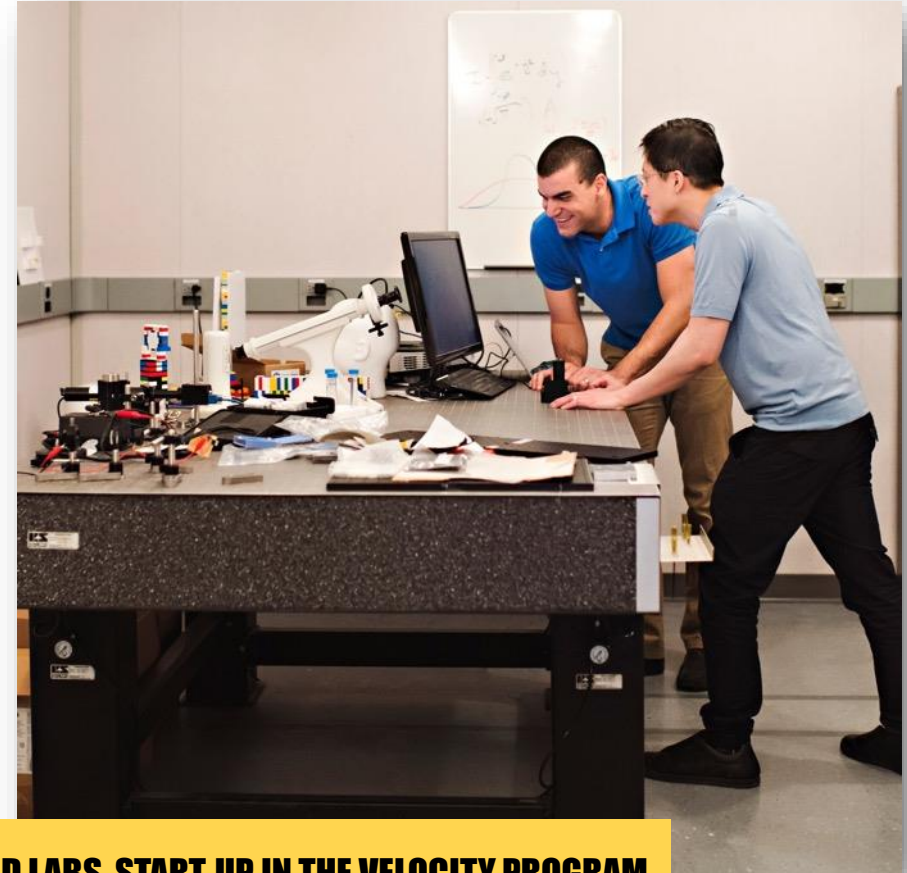


BREAKTHROUGH IN CANCER SCREENING

Alexander Wong, a professor in the Faculty of Engineering, and his research team are sharing their technology through a startup company, Elucid Labs.

“Taking the core of research and turning it into a practical, commercial reality is unique and encouraged at Waterloo.”

ALEXANDER WONG, FACULTY OF ENGINEERING



ELUCID LABS, START-UP IN THE VELOCITY PROGRAM

BIOTECH: THE MAKING OF AN ARTIFICIAL KIDNEY

More than two million people around the world suffer from end-stage renal disease, an illness that ties them to these regular dialysis treatments.

Working out of the Velocity Garage, Qidni Labs spent two years developing a nanofilter device that mimics the filtration function of the kidney.

Artificial intelligence will contribute

\$15.7 TRILLION

to the global economy by 2030

PWC REPORT, 2017



MORTEZA AHMADI, FACULTY OF ENGINEERING ALUMNUS

IMPACTS OF COVID-19 TO THE HIGHER EDUCATION SECTOR

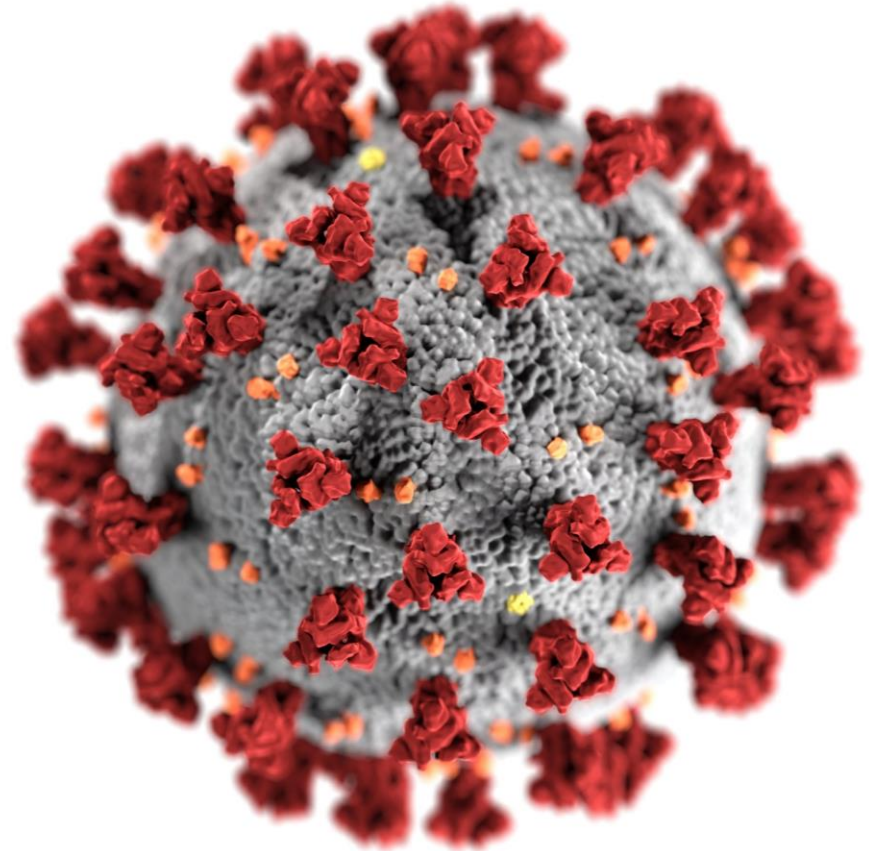
COVID-19 AND THE “RUDE AWAKENING”

The “rude awakening of the COVID-19 pandemic uncovered two groups of facts:

- Revealed pre-existing issues, challenges, and systemic problems in **education** and health care systems.
- A new set of issues : **digital transformation**, the **skill/service gaps** and clear operational redundancies

IMPACTS AND SOLUTIONS OF COVID-19 ON EDUCATION SECTOR

- Impacts of COVID-19 are still evolving
- Effects have touched:
 - How and who we teach
 - What and how we research
 - Current and future financial considerations
 - Health and safety on campuses
 - Future planning



IMPACT #1: THE DECLINE OF THE TRADITIONAL LEARNING MODEL

- Movement to a blended, remote and in-class learning environment decades in the making, COVID-19 merely accelerated this trend

Solutions

- Opportunity and need to instill essential skills like communications, critical thinking and teamwork more important
- Addition of co-operative education and work integrated learning will help talent learn to adapt to rapid change



INCREASED USE OF A BLENDED LEARNING ENVIRONMENT

IMPACT #2: EQUIPPING INSTRUCTORS FOR NEW MODES OF TEACHING

Steps to equipping instructors for new teaching modes



IMPACT #5: RESEARCH AND TEACHING EMPHASIS ON HEALTH

- Governments and global businesses have heavily invested in health care, health technology and health science innovations due to COVID-19
- Health-related challenges go beyond COVID-19 and they will not be solved by health professionals alone

Solution

- Interdisciplinary and global approaches to health and wellness solutions must be a first priority and be paired with industry collaboration

SHIFTING OUR PROCESS TO BETTER SUPPORT STUDENTS

CURRENT WORKFORCE TRENDS

Fluid gigs (gig economy) —————→

Decentralized teams —————→

Motivation to work —————→

Human augmented automation —————→

Lifelong learning —————→

UWATERLOO RESPONSE

Flexible pathways allow multiple jobs for students

Shift to remote workforce

Offer meaning and purpose via work/academics

Adapt to new reliance on technology

Introduce Digital Skills Fundamentals course



For further skills development, UWaterloo hired 320 co-op students to work as Online Learning Associates and Senior Online Learning Associates to support faculties develop and deliver new online academic courses.

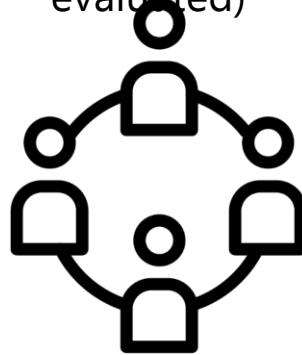
NEW FOR SPRING 2021: WATERLOO EXPERIENCE (WE) ACCELERATE

WE Accelerate is a high-quality alternative experience to a traditional co-op work term. A Waterloo Experience (WE) Accelerate term combines:

FUTURE READY SKILL
DEVELOPMENT TRAINING
(co-created with industry partners)



TERM-BASED PROJECT
WORK
WITH INDUSTRY PARTNERS
(skills are applied, practiced and
evaluated)



JOB SEARCH AND
EMPLOYABILITY SKILL
DEVELOPMENT TRAINING



Waterloo Experience (WE) Accelerate is a work-integrated learning opportunity that provides 160 hours of career and future-ready skills training with 120 hours of project work – **for a flexible work term credit.**

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