

# Applied Research Primer

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## Fleming College

Office of Applied Research and Innovation

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Teaching & Learning Day - October 20 19

# This Workshop

- The Applied Research Development Strategy
- The role of OARI
- Elements of a good project
- Questions and discussion

# Strategic Plan

## *Our Fleming Our Future*

### **To achieve this commitment, by 2024 Fleming will:**

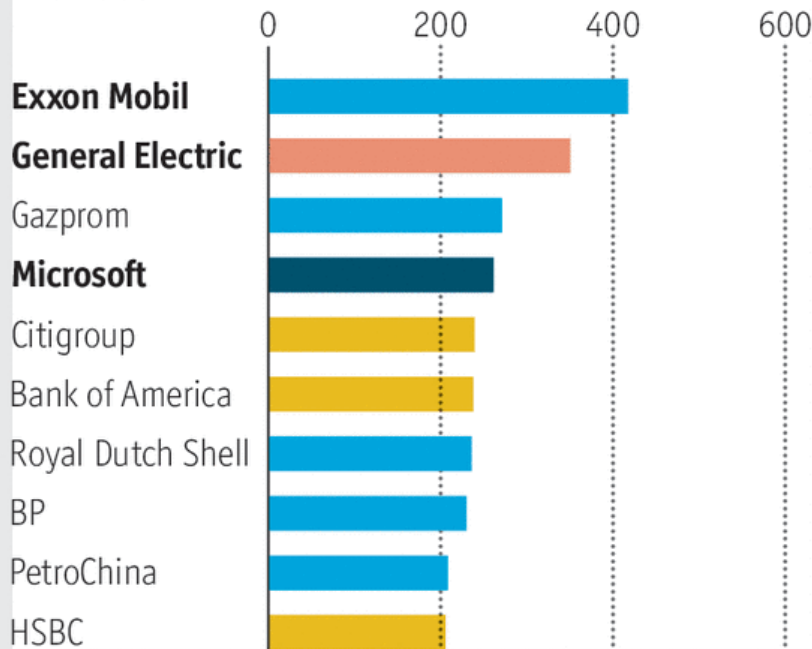
- Be the go-to institution for quality and future-oriented education for our community, Ontario and beyond. We will seek out opportunities to partner with industry and governments at all levels to develop new programs that support the economy, and provide lifelong learning as employees and entrepreneurs adapt to the evolving workplace.
- Diversify our streams of funding so that we will remain a sustainable public institution on which our students and communities rely, both as an employer and a contributor to our local economies, even as governments grapple with ways to tackle their deficits and the greater competition for the school-age population.
- Create an Applied Research Development Strategy to expand research activities into all Fleming programs so that we are stretching and contributing to innovation in Canada across all fields, while also finding solutions to issues with which our own municipalities and regions are grappling.
- Enhance pathways for students between Fleming College and Trent University and other post-secondary institutions so that students, regardless of where they start their post-secondary education, can receive the customized education they need to thrive and adapt in the workplace.
- Expand our partnerships to boost community innovation, by partnering with such organizations as Peterborough & the Kawarthas Economic Development and initiatives like the Innovation Cluster-Peterborough and the Kawarthas. This will leverage the many talents of our alumni to support small business and entrepreneurs, who are playing an increasing role in the economy of the future.

## A virtually new world

World, largest listed companies by market capitalisation, \$bn

Sector: ■ Energy ■ Financials ■ Health care ■ Industrials ■ IT ■ Telecoms

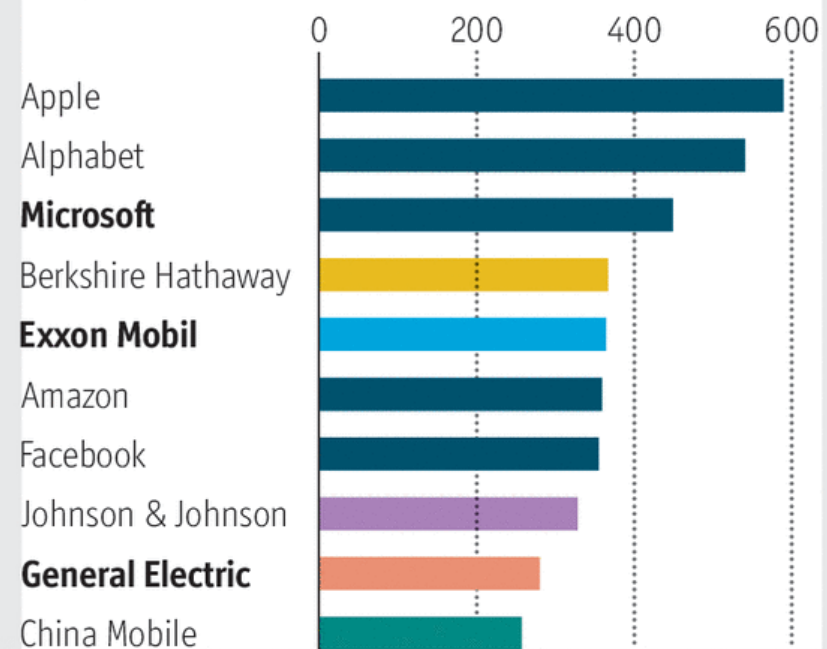
End 2006



Source: Bloomberg

Economist.com

2016\*



\*At August 24th 2016

## 2013–14 Global Competitiveness Index Rankings

(rank, n = 148)

Country	Population (millions)	GDP per capita (current US\$)	2013 Competitiveness rank (n = 144)	2012 Competitiveness rank (n = 144)	Change from 2012
Switzerland	8.0	79,033	1	1	→ 0
Singapore	5.3	51,162	2	2	→ 0
Finland	5.4	46,098	3	3	→ 0
Germany	81.9	41,513	4	6	↑ +2
United States	313.9	49,922	5	7	↑ +2
Sweden	9.5	55,158	6	4	↓ -2
Hong Kong SAR	7.2	36,667	7	9	↑ +2
Netherlands	16.8	46,142	8	5	↓ -3
Japan	127.6	46,736	9	10	↑ +1
United Kingdom	63.2	38,589	10	8	↓ -2
Norway	5.0	99,462	11	15	↑ +4
Taiwan, China	23.2	20,328	12	13	↑ +1
Qatar	2.1	99,731	13	11	↓ -2
Canada	34.9	52,232	14	14	→ 0
Denmark	5.6	56,202	15	12	↓ -3

Sources: World Bank (2013); World Economic Forum (2012, 2013).

## REPORT CARD

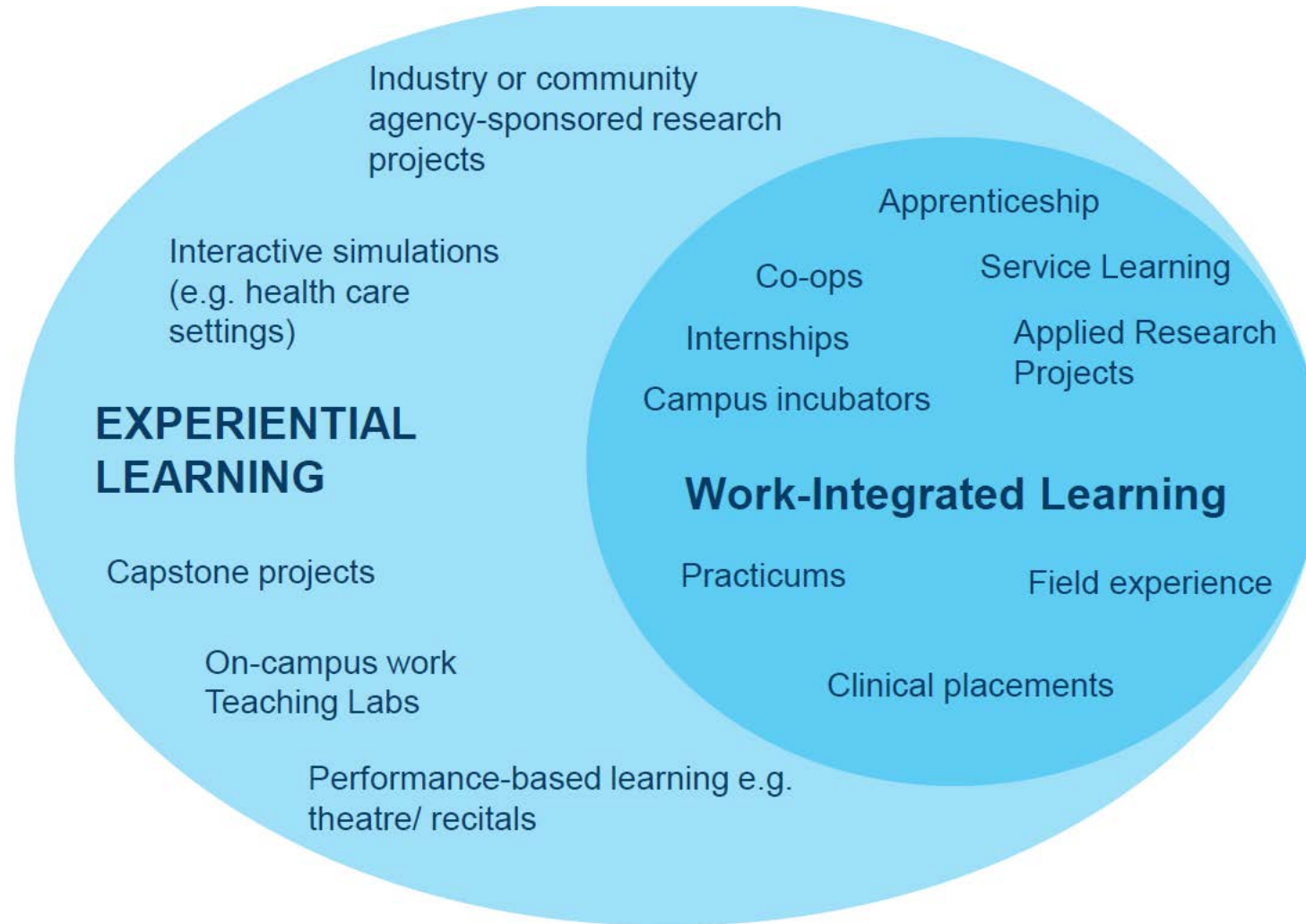
### Innovation

1	Switzerland	A
2	Sweden	A
3	U.S.	A
4	Denmark	B
5	Netherlands	B
6	U.K.	B
7	Finland	B
8	Ireland	C
9	Japan	C
10	France	C
11	Germany	D
12	Australia	D
13	Canada	D
14	Norway	D
15	Austria	D
16	Belgium	D

Note: Data for the most recent year available were used.

Source: The Conference Board of Canada.

# Defining Applied Research



# Applied Research

- application of knowledge, focused on the resolution of a problem or need specific to an external organization
- objective of delivering a resolution or result
- focus is more on the “how” and “what” rather than the “why”.

# EVALUATING new TECHNOLOGIES





# Applied research success does not require:

- advanced degrees
- prior formal research experience

# Applied Research Development Strategy

Four strategic priorities for 2019-2024:

1. Expand applied research activity across all schools
2. Empower faculty, staff, and students
3. Inspire a culture of applied research enthusiasm
4. Grow strategic areas of research

# Applied Research Development Strategy

## 1. Expand applied research activity across all schools

- Lay the groundwork for an institution-wide approach to applied research
- Establish school-specific applied research programs
- Increase research partnerships with universities
- Establish a Fleming College Applied Research Advisory Committee
- Create a database of applied research strengths
- Recruit faculty and staff with strong research capabilities

# Applied Research Development Strategy

## 1. Expand applied research activity across all schools

- Establish school-specific applied research programs

Working closely with academic leaders and faculty, we will internally develop and launch applied research activities and initiatives.

There isn't a one-size-fits-all approach to applied research. To best serve our students, staff, and external partners across all programs we will establish school- and program-specific plans for applied research that will include projects integrated into courses, applied projects, capstone projects, and small to large projects that rely on external research funding.

# Applied Research Development Strategy

How can you contribute?

- Brainstorm ideas within your program
- Let the Office of Applied Research and Innovation (OARI) know what you're already doing
- Let the OARI know what you're interested in
- Participate in developing a plan for your program/school

# Roles and Responsibilities

Office of Applied Research and Innovation

# OARI's role is to:

- Work with all programs, all schools to grow applied research

# OARI's role is to:

- Help turn your idea into a research question
- Help identify partnership opportunities
- Identify funding opportunities for your project



# OARI's role is to:

- Work closely with you to ensure you have the right approvals in place before you apply for funding
- Complete grant applications and submit them to the granting agencies
- Work with your Chair/ Dean to provide release time on your SW F once project funding is approved

# OARI's role is to:

- Administer research funds and budget
- Help with hiring students for projects
- Complete financial and project reporting
- Support the Research Ethics Board (REB)

# Research Ethics Board (REB)

Flemings' REB is a multidisciplinary committee comprised of community members, two internal members and a Chair from Trent.

- ensures the safety and well being of all participants where research is conducted on human participants.

# Research Ethics Board (REB)

- ensures that research is conducted in accordance with scientific and ethical principles

In most cases applied research does not involve research on human participants, therefore it is often not required

# Elements of a Good Project

# Elements of a Good Project

- Intention
- Strong problem statement
- Project design
- Good partnerships

# Intention

- focus on relevant content
- 21<sup>st</sup> century competencies
- engages students in in-depth inquiry
- encourage voice and choice
- incorporate critique and revision
- include a public audience

# Strong problem statement

- a driving question, problem
- clear purpose
- outlines the cost of the problem
- led by stakeholder need



# Strong problem statement

BeerBeer is a locally-owned and operated brewpub; like all brewing facilities, its operations generate high-strength wastewater. During periods of intensive brewing, excessive foaming has occurred on the water surfaces of the equalization and biological reactor tanks, spilling onto the floor and requiring significant remedial action. The purpose of this project is to collaborate with Fleming College's Centre for Advancement of Water and Wastewater Technologies (CAWT) on the development of a modified wastewater treatment system able to handle high-strength brewing effluent. Without an optimized wastewater treatment system in place to address foaming and product loss from spillage, the company's potential for increased production and sales is drastically limited.

- ✓ a driving question, problem
- ✓ clear purpose
- ✓ outlines the cost of the problem
- ✓ led by stakeholder need

# Project Design

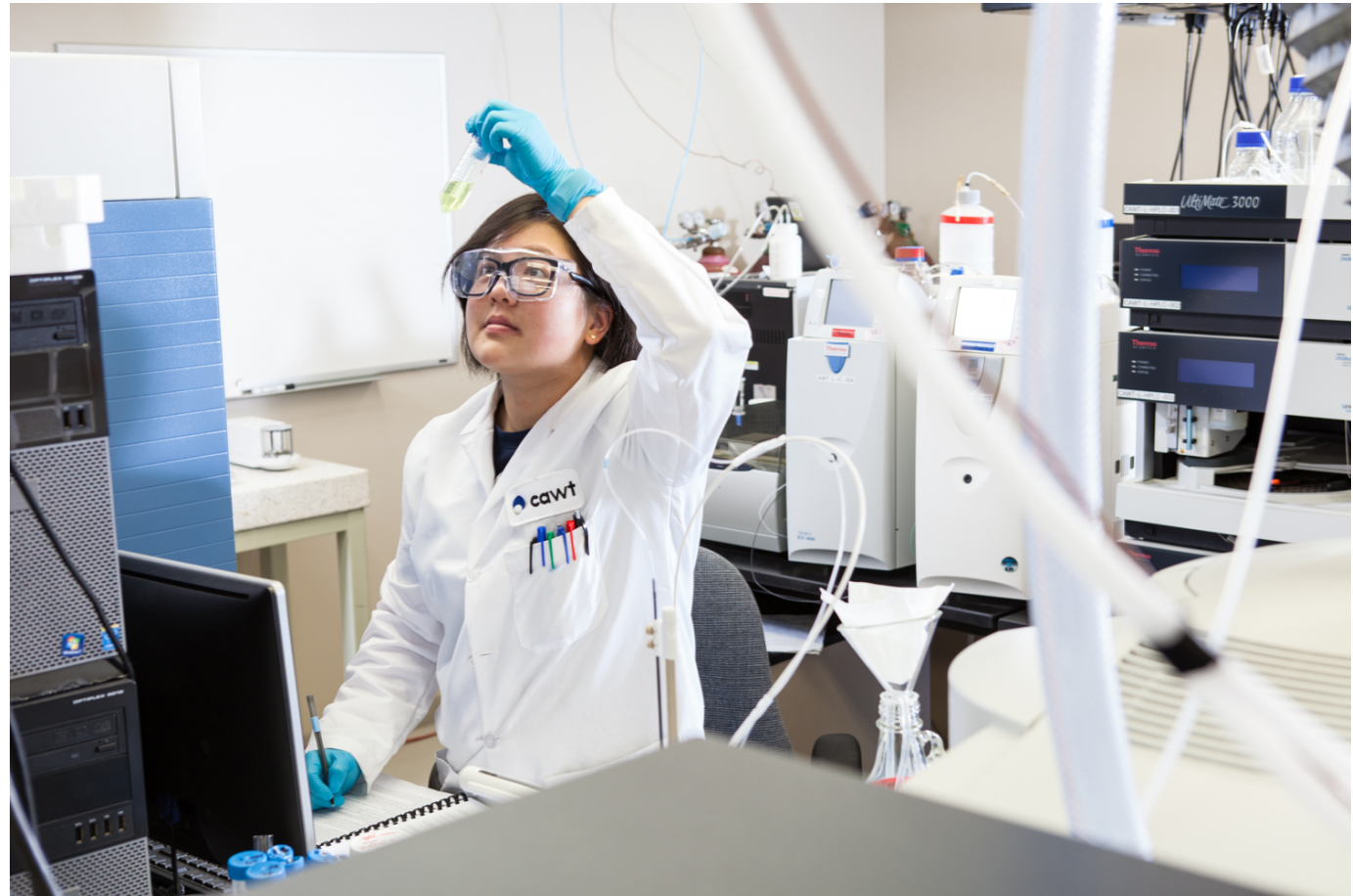
- one that best suits the problem statement, goals, and research capacity

# Good partnerships

- engaged
- clearly defined need or problem

# Funded Applied Research

- Over \$25M in external funding
- Over 255 projects



# Funded Applied Research



Government  
of Canada



Ontario Centres of  
Excellence

Where Next Happens



Social Sciences and Humanities Research Council of Canada  
Conseil de recherches en sciences humaines du Canada



Tech-Access  Canada



# Questions & Discussion

# Thank you

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Fleming College