



The Conference Board  
of Canada

Le Conference Board  
du Canada

# Partnering for Performance.

Enhancing Partnerships Between Post-Secondary Education  
and Business



## **Partnering for Performance: Enhancing Partnerships Between Post-Secondary Education and Business**

Dr. Michael Bloom, Cameron MacLaine, Dr. Daniel F. Muzyka,  
and James Stuckey, with contributions from Doug Watt.

### **Preface**

Partnerships between post-secondary education (PSE) institutions and businesses are crucial to Canada's competitiveness and prosperity. They help to develop and leverage skills, talent, and research. PSE institutions, businesses, and community stakeholders need better information on how to develop, operate, and maintain successful PSE–business partnerships. This report shows that partnerships are most effective when they are designed and operated ethically, when partners make effective decisions, and when they mutually benefit all partners. The report also provides 12 recommendations to help partnership practitioners and stakeholders develop and operate ethical, effective, and mutually beneficial partnerships.

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The findings and conclusions of this report are entirely those of The Conference Board of Canada. Any errors and omissions in fact or interpretation remain the sole responsibility of The Conference Board of Canada.

## About the Centre for Skills and Post-Secondary Education

The Conference Board of Canada's Centre for Skills and Post-Secondary Education is a major, multi-year initiative that examines the advanced skills and education challenges facing Canada today. While education is a provincial government responsibility, improving the skills and post-secondary education system is a national priority. The Centre involves a broad collaboration of public and private sector stakeholders working together to develop a national strategy. The Centre addresses Canada's advanced skills needs by helping to renew the roles, structure, activities, and impact of post-secondary education, while ensuring Canada's skills development and sustainability, competitiveness, and quality.

For more information about the Centre for Skills and Post-Secondary Education, visit [www.conferenceboard.ca/spse](http://www.conferenceboard.ca/spse).



## EXECUTIVE SUMMARY

# Partnering for Performance

### At a Glance

- Partnerships between post-secondary education (PSE) and business are crucial to Canada's competitiveness and prosperity. They help to develop and leverage skills, talent, and research.
- PSE–business partnerships are most effective when they are ethically designed and operated, when partners make effective decisions, and when they mutually benefit all partners.
- This report is designed to help Canada's post-secondary education system (including its universities, colleges, institutes, and polytechnics), businesses, governments, and community stakeholders develop and operate ethical, effective, and mutually beneficial partnerships.

## **PSE–Business Partnerships in Canada**

**Partnerships between post-secondary education and business are crucial to Canada’s competitiveness and prosperity. They enhance student learning, facilitate research and commercialization, and increase local and regional economic development. These partnerships are becoming common in Canada, and use increasingly innovative, complex, and diverse organizational structures. However, PSE institutions, businesses, and community stakeholders could take steps to generate more of the economic and social benefits that Canadians expect.**

Mutual benefit is key to successful partnerships. Common benefits for PSE institutions include enhanced educational programming, research capability, and responsiveness to community needs. Typical benefits for businesses include access to cost-effective research and improved talent pipelines. Effective PSE–business partnerships have clear objectives that reflect the reasons partner organizations chose to participate. Clear objectives help partners design and operate ethical partnerships, assess their value, and make effective decisions.

## **What Are Partnerships?**

PSE–business partnerships refer to mutually beneficial, cooperative relationships among one or more PSE institutions and one or more businesses. Partners share obligations, objectives, and contributions to achieve outcomes that directly support, and are aligned with, PSE mandates and business needs. They range from short-term interactions between two partners to strategic, long-term relationships between multiple partners and community stakeholders.

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Effective education–  
business  
partnerships  
enhance student  
learning, facilitate  
research and  
commercialization,  
and promote skills  
and workforce  
development.

Two of the most common types of partnerships are oriented toward research and development (R&D) and skills and workforce development. R&D partnerships involve mutual efforts of post-secondary institutions and businesses to generate and transfer knowledge and technology. Skills and workforce-oriented partnerships involve the flow of people and knowledge between PSE institutions and businesses to address the skills and employment needs of learners and employers.

## The Role of Ethical Guidelines, Operating Principles, and Value Assessment

Many PSE institutions and businesses have established codes of ethics, practice, and conduct that help their partnerships succeed. However, not all partnerships are alike, and many partners have little or no partnership experience. As partnerships become more complex, the organizations involved may need guidance on how to design and operate ethical and effective partnerships that provide value for all partners and stakeholders.

Many partnership practitioners face ethical challenges such as conflicts of interest; difficulties balancing the needs of students and partner organizations; and challenges maintaining trust, openness, and transparency. Partners also need to set clear objectives, make effective decisions, and accurately assess the value of their partnership. The Conference Board's *Ethical Guidelines, Operating Principles, and Value Assessment Process* can help partnership practitioners and stakeholders develop, operate, and maintain successful partnerships.

## The Conference Board Approach

Educational institutions, businesses, students, governments, and community organizations need better information on how to develop, operate, and maintain successful PSE–business partnerships. To

address the information gap, the Conference Board undertook a major study of PSE–business partnerships in Canada using a variety of methods, including:

- a review of relevant documents and data that relate to PSE–business partnerships from Canadian and international researchers, policy-makers, academics, and others;
- 59 interviews with representatives of Canadian PSE institutions, businesses, innovation support organizations, industry and technology associations, and others;
- an online validation survey of 52 education–business partnership practitioners to ask for their input on the development of ethical guidelines and operating principles. 21 representatives of educational institutions, twenty-one employers, and two government representatives completed the survey.

The report also draws on the Conference Board’s previous research on partnerships between businesses and primary and secondary educational institutions (K–12) that was conducted in the 1990s as part of the National Business and Education Centre and the Business-Education Partnerships Forum.

## **How to Build and Maintain Successful PSE–Business Partnerships**

Educators, employers, and community stakeholders recognize that they can do more to ensure their partnerships develop students’ skills and prepare them for work, and generate new ideas that are the genesis of new products, processes, and services. The following principles and strategies show how partnership practitioners and stakeholders can enhance their ability to achieve mutually beneficial outcomes for partners and stakeholders.

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Partnership practitioners and stakeholders can enhance their ability to achieve mutually beneficial outcomes.

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## Recommendations for Partnership Practitioners and Stakeholders

### Six Principles for Partnership Success

The following six general principles help educators and businesses develop, operate, and maintain partnerships of all types:

1. ensure that partnership activities create mutual benefits for all partners
2. establish clear goals and objectives
3. communicate with partners on a regular basis
4. evaluate partnership performance regularly
5. adapt to changing circumstances
6. celebrate success

### Strategies for All Partners and Stakeholders

- use *Ethical Guidelines*, *Operating Principles*, and the *Value Assessment Process* as the basis for dialogue and action.

### Strategies for PSE Institutions

- improve opportunities for collaboration between PSE researchers and businesses;
- increase opportunities for work-integrated learning as part of students' PSE experience.

### Strategies for Businesses

- increase investments in collaboration with PSE researchers;
- increase work-integrated learning opportunities for PSE students.

### Strategies for Governments

- support programs and initiatives that facilitate collaboration between PSE institutions and businesses.
-



## CHAPTER 1

# Partnerships for a Prosperous Canada

### Chapter Summary

- Partnerships between post-secondary education (PSE) and business help generate and transfer new knowledge and technology, and address the skills and employment needs of students and employers.
- Successful partnerships mutually benefit all partners and are based on sound ethical guidelines, effective operating principles, and value assessment practices.
- This report describes the different types of PSE–business partnerships in Canada; the benefits partnerships bring to learners, businesses, and communities; and how partners can use ethical guidelines, operating principles, and value assessment to develop, operate, and maintain successful partnerships.

**Canada has strong post-secondary education institutions and dynamic, high-performing businesses. By combining their resources and expertise, they can often generate greater benefits than they could achieve on their own.**

Those benefits include:

- enhanced student learning and employment pathways;
- improved business innovation, research and development (R&D), and commercialization;
- enhanced skills and workforce development;
- increased PSE research support and capacity building;
- improved PSE recruitment and reputation;
- increased local and regional economic development.

This report shows that PSE–business partnerships are becoming more common in Canada, and use increasingly innovative, complex, and diverse organizational structures. However, partnerships can do more to generate the economic and social benefits that Canadians expect from PSE institutions and businesses.

## **Purpose of the Report**

This report is designed to:

- help education, business, government, and community stakeholders understand the value and impact of PSE–business partnerships in Canada;
- provide guidance to help partnership practitioners—including those in the education system, the private and not-for-profit sectors, government agencies and departments, industry associations, and others—design, operate, and maintain ethical, effective, and mutually beneficial PSE–business partnerships.

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Canadian businesses are poor spenders on research and development.

## Overcoming Lagging Innovation and Productivity Through Partnerships

Canada faces an innovation and productivity challenge. Simply put, Canadian businesses are not doing as much as they could to turn ideas into new or improved products, processes, and services that generate economic and social value. One reason for Canada’s innovation and productivity “doldrums” is that Canadian businesses are poor spenders on R&D, especially compared to international peers. On this measure, Canadian businesses rank 15th out of 16 international peer countries.<sup>1</sup>

Successful PSE–business partnerships are a key to moving up in rankings for global innovation and commercialization. Thirty-eight per cent of Canada’s total R&D expenditures come from the PSE sector (higher education R&D, or HERD). This is double the average of countries in the Organisation for Economic Co-operation and Development (OECD).<sup>2</sup> Currently, that spending is not translating into commercial impact. This presents an opportunity for PSE, business, and government to combine their efforts through partnerships to leverage the real-world value of HERD.

The Conference Board’s *How Canada Performs Report Card* on public R&D notes that “although Canada may continue to be a world leader in producing ideas and basic research insights, it is at risk of remaining a laggard in commercialization unless ways can be found to better link higher-education research with business needs.”<sup>3</sup> In addition, a 2015 Conference Board report *Bridging the Valley: Linking Public Investments in Research to Business Innovation* highlights the need for more effective industry–university collaboration focused on commercialization.<sup>4</sup>

1 The Conference Board of Canada, *How Canada Performs: Business Enterprise R&D Spending*. These peer countries include Switzerland, Sweden, U.S., Denmark, Netherlands, U.K., Finland, Ireland, Japan, France, Germany, Australia, Norway, Austria, and Belgium.

2 Ibid.

3 Ibid.

4 Grant, *Bridging the Valley*.

Partnerships are an important commercialization strategy. A recent Industry Canada consultation paper notes that “collaboration is key to mobilizing innovation.”<sup>5</sup> There are signs that the number of education–business partnerships are increasing: The value of research contract dollars flowing from businesses to universities, colleges, polytechnics, institutes, and CEGEPS has increased significantly over the past decade.<sup>6</sup> However, more can be done at the PSE level. For example, *The Global Competitiveness Report 2014–2015*, published by the World Economic Forum, ranks Canada 19th out of 140 countries in terms of university–business R&D collaboration.<sup>7</sup>

## Enhancing Skills and Workforce Development Through Partnerships

Across Canada, many employers find it difficult to hire the skilled workers they need to maintain and grow their businesses. This stems from several factors including an aging population, increased globalization, new technology and machinery, and rising skills and knowledge requirements in the workplace.<sup>8</sup> Strong partnerships, and formal and informal training, can help students and employees develop the job-specific technical skills and the employability skills they need to be successful in the workplace, including:<sup>9</sup>

- communication
- information management
- numeracy
- problem solving
- positive attitudes and behaviours

5 Industry Canada, *Seizing Canada’s Moment*, 1.

6 Statistics Canada, *Survey of Intellectual Property Commercialization, 2003*, 22; Statistics Canada, *Survey of Intellectual Property Commercialization, 2008*, 17; CIGan, *The College and Institute Applied Research Advantage*, 13; CIGan, *Applied Research at Canadian Colleges and Institutes*, 16.

7 World Economic Forum, *Global Competitiveness Report 2015–2016*, 133.

8 Sattler, *Work-Integrated Learning*, 9.

9 The Conference Board of Canada, *Employability Skills 2000+*.

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Canadian employers invest less in employee training and development today than in the past.

- responsibility and adaptability
- continuous learning
- safety
- working with others
- contributing to projects and tasks

For more information about employability skills, see the Conference Board's *Employability Skills 2000+* webpage ([www.conferenceboard.ca/topics/education/learning-tools/employability-skills.aspx](http://www.conferenceboard.ca/topics/education/learning-tools/employability-skills.aspx)).

## Changing Business Investment Levels in Employee Training

Canadian employers invest less in employee training and development today than in the past. A 2015 Conference Board study of 152 businesses, for example, found that Canadian employers spend an average of \$800 per employee in 2014–15 on learning and development. This is a slight increase from 2013 (\$705) but is down significantly from 1993, when Canadian businesses invested an average of \$1,249 per employee on training and development.<sup>10</sup> Some of this change may be due to the shifting nature of employee training activities offered in Canadian businesses today; there is much more informal, on-the-job, and work-integrated learning taking place now than 20 years ago.

Many employers expect the PSE system to produce graduates with workplace-ready skills and knowledge who are capable of “hitting the ground running.” While employers are becoming more concerned about skills shortages, many students face increasingly competitive job markets that require job applicants to possess work-related experience, in addition to relevant educational credentials, for entry-level positions.<sup>11</sup>

10 Hall and Cotsman, *Learning as a Lever for Performance*, 19, 25.

11 Dehaas, “‘Entry-Level’ Jobs Are Getting Harder to Find.”

Consistent alignment between Canada’s employers and post-secondary institutions—a major source of future workers—can help Canada address its skills and workforce challenges in several ways:

- Partnerships that provide students with meaningful work experience (e.g., co-op placements and internships) help students develop work-related skills and experience, and help employers strengthen their talent pipelines.<sup>12</sup>
- Students who pursue PSE programs that are aligned with current and emerging labour-market needs often enjoy improved employment and income prospects.<sup>13</sup>
- Applied research at PSE institutions, where businesses and students connect, helps accelerate business innovation and ensure that future workers are “innovation-ready.”<sup>14</sup>
- Partnerships give employers opportunities to provide feedback on curricula, helping PSE programs respond to changing skills and occupational needs.<sup>15</sup>

## Ensuring Partnership Success Through Guiding Principles

Partnerships take work. Many PSE institutions and businesses have established protocols, regulations, and codes of ethics, practice, and conduct to help ensure their partnerships succeed. However, not all partnerships are alike, and many partners have little or no partnership experience. Many of today’s PSE–business partnerships—including social innovation partnerships—encompass innovative activities that present unique challenges, opportunities, and risks. As partnerships

12 Stuckey and Munro, *The Need to Make Skills Work*, 4.

13 *Ibid.*, 30.

14 Munro and Haimowitz, *Innovation Catalysts and Accelerators*, 64.

15 Council of Ministers of Education, Canada, *Ministers and Key Partners Chart Path Forward*.

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**PSE institutions and businesses should not treat partnerships as “extra” work.**

become more complex, the partners seek guidance on how to design and operate ethical and effective partnerships that provide value for all partners and stakeholders.

PSE institutions and businesses need to allocate dedicated human resources to develop and maintain successful partnerships, and should not treat partnerships as “extra” work. This is particularly true for large-scale partnerships. For example, universities, colleges, institutes, and polytechnics spend millions of dollars each year to staff and maintain systems, programs, and departments that support thousands of cooperative education students. Many PSE institutions also organize networking opportunities, training for competitions, and international activities that help students develop relationships with businesses.

## **Partnership Research at The Conference Board of Canada**

This report discusses the importance of partnerships, as well as the keys to success for designing and maintaining mutually beneficial collaborations. It is part of a larger partnership initiative at the Conference Board that includes:

- A suite of partnership tools to help education and business partners make decisions and establish mutually beneficial collaborations.

The tools include:

- *Ethical Guidelines for PSE–Business Partnerships;*
- *Operating Principles for PSE–Business Partnerships;*
- *Evaluating Education–Business Partnerships: Value Assessment Process.*

All are stand-alone, downloadable documents that partners can use to address their own needs and help turn their partnership ideas into meaningful and measurable actions.<sup>16</sup>

16 The partnership tools are available at [www.conferenceboard.ca/topics/education/ebp/](http://www.conferenceboard.ca/topics/education/ebp/).

- The Global Best Awards, which celebrate outstanding and effective business, education, and community partnerships that have a significant impact on the communities in which they operate. This bi-annual international awards program—organized by the Conference Board and the International Education Business Partnership Network—celebrates education–business partnerships that enhance learning outcomes, provide relevant experiential learning opportunities, increase educational attainment, and develop advanced skills for learners of all ages.<sup>17</sup>

## Research Methodology

The *Partnering for Performance* report and accompanying suite of tools update the state of knowledge regarding PSE–business partnerships, through primary research, literature, and data.

Research activities included:

- a review of relevant documents and data that relate to PSE–business partnerships from Canadian and international researchers, policy-makers, academics, and others.
- 59 interviews with representatives of PSE institutions, Canadian businesses, innovation support organizations, industry and technology associations, and others. Individuals interviewed included:
  - PSE institutions—faculty, vice-presidents, deans, program directors and managers, and provosts;
  - Businesses—CEOs, presidents, vice-presidents, scientific directors, and managers;
  - Other business organizations (e.g., industry associations, chambers of commerce, sector councils)—CEOs, presidents, vice-presidents, and mentors.

17 For information on the *Global Best Awards*, see [www.conferenceboard.ca/topics/education/ipn/awards.aspx](http://www.conferenceboard.ca/topics/education/ipn/awards.aspx); and for information on the *International Education Business Partnerships Network*, see [www.iebpn.net/](http://www.iebpn.net/).

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The report draws on research conducted on partnerships between businesses and educational institutions.

- an online validation survey of 52 education–business partnership practitioners to ask for their input on the development of ethical guidelines and operating principles. The validation was completed by 29 representatives of educational institutions, 21 employers, and two government representatives.

The report also draws on research conducted by the Conference Board in the 1990s—as part of the National Business and Education Centre and the Business-Education Partnerships Forum—on partnerships between businesses and primary and secondary (K–12) educational institutions.

## Report Structure

The report is structured as follows:

- **Chapter 2: Partnership Definitions and Concepts** provides a conceptual foundation for understanding PSE–business partnerships in Canada, including the primary objectives and types of interactions of partnerships; and the types of institutions and organizations that engage in partnerships.
- **Chapter 3: PSE–Business Partnerships in Canada—Activities, Benefits, and Challenges** describes the state of PSE–business partnerships in Canada, including types of partnerships; benefits, and motivations for partners and participants; and challenges that hinder partnership uptake and effectiveness.
- **Chapter 4: Ethical Guidelines for PSE–Business Partnerships** explains the components of ethical PSE–business partnerships, and how following sound ethical guidelines leads to mutually beneficial partnerships.
- **Chapter 5: Operating Principles and Value Assessment for PSE–Business Partnerships** describes how partners can use operating principles and value-assessment practices to make effective decisions and ensure they meet institutional and organizational objectives for education–business collaboration.
- **Chapter 6: Taking Action for Partnership Success** summarizes the report’s key findings and issues a call to action.

## CHAPTER 2

# Partnership Definitions and Concepts

### Chapter Summary

- PSE–business partnerships are mutually beneficial, cooperative relationships among one or more PSE institutions (university, college, polytechnic, CEGEP, or other institutions) and one or more businesses.
- The objectives of many partnerships are oriented towards either research and development (R&D) or skills and workforce development, while some combine both goals.
- Partnership interactions range from simple, one-time interactions between two partners to long-term, strategic relationships that involve several partners and stakeholders.

## **What is a PSE–business partnership? What types of institutions and organizations are involved? How do partnerships differ in their objectives, activities, scale, and complexity?**

Effective partnerships generate mutual benefits for PSE institutions and businesses. Organizations generally participate in partnerships to pursue research and development activities, or to develop the skills and knowledge of students and other learners. Partnerships range from simple, transactional relationships between two partners to large-scale, strategic relationships that involve a variety of partners and stakeholders.

This chapter provides a conceptual foundation for partnerships that defines the meaning of partnership and analyzes the types of institutions and organizations involved and the different ways they interact.

### **Defining PSE–Business Partnerships**

PSE–business partnerships are mutually beneficial, cooperative relationships among one or more PSE institutions (university, college, institutes, polytechnic, CEGEP, or other institutions) and one or more businesses. Partners share obligations, objectives, and contributions to achieve outcomes that directly support and are aligned with, PSE mandates and business needs.<sup>1</sup> They may also involve other stakeholders as full partners—including government organizations, industry associations, and innovation-support organizations (e.g., TEC Edmonton)—or in intermediary or supporting roles.

Partnerships involve shared investments of time for faculty, students, employees, managers and others, as well as of money or in-kind contributions. While specific partnership activities may require the contributions of only one partner, all partners have roles and responsibilities to help ensure that their partnership activities run

<sup>1</sup> Previous Conference Board research on business–education partnerships informed this definition. See Bloom, *Operating Principles for Business-Education Partnerships*, 2.

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Shared contributions are an essential underpinning of effective partnerships.

smoothly and achieve mutually beneficial objectives. Shared contributions are an essential underpinning of effective partnerships. As such, while worthy in their own right, collaborations based solely on customer-supplier relationships, philanthropic donations from businesses, or other interactions that do not involve shared objectives and commitments are not deemed to be partnerships and are not examined in this report. In addition, PSE–business partnerships are not necessarily partnerships in a legal or business sense (e.g., joint ventures), although they may involve the use of contracts, terms of reference, and other formal mechanisms to define roles, expectations, and objectives.

## Partner Profiles

### PSE Institutions

Post-secondary institutions of all types—including universities, colleges, institutes, polytechnics, CEGEPs, and others—engage in partnerships to support their basic mandates for teaching and skills development, research, and social and economic development.<sup>2</sup> Institutions may have specific missions and goals that further motivate them to pursue partnerships with businesses, including improving indigenous engagement (University of Saskatchewan)<sup>3</sup> or contributing to innovation in rural manufacturing industries (at Red Deer College).<sup>4</sup> These missions and goals help PSE institutions “respond to the shifting needs of society while holding true to the enduring values upon which they were founded.”<sup>5</sup>

This report explores PSE–business partnerships primarily through the lens of common partnership objectives—R&D, and skills and workforce development—rather than by the type of PSE institution involved. This focus reflects the fact that different types of PSE institutions engage in

2 Marceau, *The Canadian University Business Primer*, 1.

3 University of Saskatchewan, *Promise and Potential*, 5.

4 Red Deer College, *Comprehensive Institutional Plan*, 5

5 Universities Canada, *Canada’s Universities’ Commitments to Canadians*, 1.

similar kinds of partnerships and face similar challenges in developing, implementing, operating, and evaluating their partnerships. It also reflects the fact that universities, colleges, institutes, polytechnics, and CEGEPs may offer similar programs. As the Canadian Council for Learning points out, “numerous PSE institutions in Canada are neither completely one type of institution nor another.”<sup>6</sup> In some ways, differences *within* institutions can be just as significant as differences *between* them. (See “PSE Institutions and Partnership Models.”)

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## PSE Institutions and Partnership Models

Many PSE institutions are multi-faceted enterprises that include a large number of institutional sub-divisions with different “aims, operational norms, and outcomes.” Universities, in particular, resemble holding companies in the sense that they include “a diverse range of subsidiaries in the form of distinct campuses, faculties, and schools.”<sup>7</sup> These divisions—academic faculties (e.g., humanities, social sciences, natural and applied science), professional schools such as business, law, medicine and pharmacy, and schools of continuing education—may have different objectives for partnerships with businesses, and use different business models to develop and operate their partnerships.

Some institutional sub-divisions have more freedom than others to take an entrepreneurial approach to their partnership initiatives. One representative of a school of continuing education noted that new initiatives in the school generally do not require the approval of an academic senate. In addition, the school operates largely on the basis of student fees, and is not subject to the constraints imposed by base government funding.<sup>8</sup> This enables it to respond nimbly to partnership opportunities. To make programs sustainable, the school requires a high degree of business acumen and responsiveness to ensure that partnerships are continuously evolving.

6 Canadian Council on Learning (CCL), *Navigating Post-secondary Education in Canada*, 10.

7 Munro, Stuckey, and MacLaine, *Skills—Where Are We Today?*, 25.

8 Interview conducted by the Conference Board.

Business schools, which place special emphasis on connecting students to the business world, are also sources of entrepreneurial partnership initiatives. One representative of a university business school noted that the school's programs often involve industry practitioners as judges for their business case competitions. This provides students with feedback from real business owners, and gives businesses the opportunity to scout for future talent.<sup>9</sup>

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## Businesses

Firms of all types and sizes engage in PSE–business partnerships. In general, partnerships that involve long-term commitments and exploratory objectives are more likely to involve larger organizations.<sup>10</sup> However, among applied research partnerships involving Canadian colleges and institutes in 2011–12, 64 per cent of the business partners were small or medium-sized enterprises. In addition, many of the Canadian businesses that leverage government support are small or medium-sized. Data from the Natural Sciences and Engineering Research Council (NSERC) show that of 2,400 businesses that participated in its partnership programs in 2012, more than 2,000 were small or medium-sized enterprises.<sup>11</sup>

In many cases, the key determinant of whether businesses participate in partnerships is whether business representatives—including CEOs, managers, professionals, and others<sup>12</sup>—believe a partnership can help them reach organizational objectives such as increasing profitability or market share.<sup>13</sup> Business participation in partnerships also depends

9 Ibid.

10 Centre for the Study of Living Standards (CSLS), *Government Policies to Encourage University-Business Research Collaboration in Canada*, 11.

11 Natural Sciences and Engineering Research Council of Canada (NSERC), *Strategy for Partnerships and Innovation*, 1.

12 Board of Trade of Metropolitan Montreal, *A Look at Canadian University-Industry Collaboration*, 41.

13 CSLS, *Government Policies to Encourage University-Business Research Collaboration in Canada*, 11.

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Partnerships often involve the support and contributions of third-party organizations.

on the needs and interests of various company departments such as sales and marketing, production and manufacturing, research and development, and human resources.

Some businesses believe partnership activities contribute, but are not essential, to their operations.<sup>14</sup> Others, however, use partnerships such as co-op placements as a key human resources strategy to fill certain positions. Similarly, some start-up organizations and entrepreneurs use applied research partnerships, such as those that involve product prototyping or technical problem-solving, to develop and launch core lines of business. Many large businesses also find that outsourcing certain R&D activities to PSE institutions is more efficient than maintaining the same capacity in-house.<sup>15</sup>

### Third-Party Organizations

Partnerships often involve the support and contributions of third-party organizations. They bridge gaps between the needs of businesses and the supply of PSE skills and expertise by providing advice, coordination, and material support. Third-party organizations also assist with market research, negotiations, and contract design. Examples include:

- **Federal organizations:** The Tri-Council—the Canadian Institutes of Health Research (CIHR), the Natural Sciences and Engineering Research Council of Canada (NSERC), and the Social Sciences and Humanities Research Council (SSHRC)—plays a major role in supporting partnerships that focus on research and development.<sup>16</sup> NSERC’s partnerships program suite is especially robust (See “NSERC Partnership Programs”), as are its Networks of Centres of Excellence. For example, the Refined Manufacturing Acceleration Process Network

14 For example, one business interviewee advised against building the anticipated outputs of R&D partnerships into other critical paths and timelines.

15 Lester, *Universities, Innovation, and the Competitiveness of Local Economies*, 8; Klawe, *Getting the University-Industry Partnership Right... Or Not*; and Lambert, *Lambert Review of Business-University Collaboration*, 3.

16 For more information on the CIHR’s partnership programs, see CIHR, *Commercialization of Research*. For more information on SSHRC’s partnership programs, see SSHRC, *Partnership Development Grants and Partnership Grants*.

was recently launched to promote R&D in the electronics sector.<sup>17</sup> Other key programs at the federal level include the Canada Foundation for Innovation, which invests in research infrastructure, and The National Research Council's Business Innovation Access Program (BIAP), with a special focus on fostering partnerships between SMEs and universities.<sup>18</sup>

- **Provincial and regional organizations:** Organizations at provincial and regional levels work to connect local businesses, start-ups, and entrepreneurs with PSE institutions. At the provincial level, these include organizations such as the Colleges Ontario Network for Industry Innovation. At the local and regional levels, examples include TEC Edmonton and the MaRS Discovery District in Toronto, among others.
- **Organizations with issue-specific mandates:** Some organizations support particular types of partnerships and focus on specific partnership issues. Examples include: the Canadian Association for Co-operative Education, which fosters co-operative education between PSE institutions and employers; Mitacs, which supports research internships; CMC Microsystems, which fosters innovation and commercialization of micro-technologies; and the Canadian Association of University Research Parks, which promotes the development and growth of Canada's research parks.

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## NSERC Partnership Programs

NSERC supports PSE–business partnerships with a variety of programs, and often uses its financial resources to complement investments from businesses and PSE institutions. Its partnership programs address a variety of needs and opportunities in Canada's innovation landscape. Major programs include:<sup>19</sup>

- **Strategic Partnerships Program**—to accelerate research in areas of national importance to Canada and where the country can be a world leader.

17 Marketwired, *Harper Government Celebrates Launch*.

18 National Research Council Canada, *Business Innovation Access Program (BIAP)*.

19 NSERC, *Partnership Programs Overview*.

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Two common partnership objectives are research and development, and skills and workforce development.

- **Industry-Driven Collaborative Research and Development Program**—to address industry’s research and training needs and priorities, facilitate the productive use of knowledge through partnership projects, and build a critical mass of expertise through Industrial Research Chairs (IRC).
  - **Commercialization Program**—to increase market connection, knowledge translation, and technology transfer by providing resources and expertise to fill the gap between the completion of research and its uptake by end users.
  - **Training in Industry Program**—to connect companies with skills and increase the experiential training of students in industry.
  - **College and Community Innovation Program**—to increase innovation at the community and regional levels by helping Canadian colleges increase their capacity to work with local companies, particularly small and medium-sized enterprises (SMEs).
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## PSE–Business Partnerships: Primary Objectives and Types of Interactions

There are several types of PSE–business partnerships. Table 1 categorizes partnerships according to their general objectives, activities, and outcomes. It draws on previous efforts from the University-Industry Demonstration Partnership (UIDP) and the Science-Business Innovation Board.

Two of the most common partnership objectives are research and development (R&D), and skills and workforce development.<sup>20</sup> Many partnerships, such as research partnerships that place students in real work environments or situations, achieve both of these objectives at once. Some are long-term relationships that include R&D and skills and workforce development objectives at more strategic levels. For this reason, we do not consider them in a separate category for analysis in this chapter. David Johnston also includes knowledge transfer and commercialization as a partnership objective, and the partnerships discussed in this report often include commercialization as an extension of R&D.<sup>21</sup>

20 Johnston, *The University-Private Sector Interface and the Ontario Economy*, 6.

21 Ibid.

Table 1

**PSE–Business Partnerships: Primary Objectives and Types of Interactions**

Partnership Objectives	Partnership Interactions (Examples)		
	Transactional	Operational	Strategic
Research and development	<ul style="list-style-type: none"> <li>• Faculty consulting</li> <li>• Guest speaking/lectures</li> <li>• Workshops/seminars</li> <li>• Spin-off companies</li> </ul>	<ul style="list-style-type: none"> <li>• Contract research</li> <li>• Clinical trials</li> <li>• Industry faculty appointments (e.g., adjunct teaching positions or research support)</li> </ul>	<ul style="list-style-type: none"> <li>• Collaborative, multi-year research programs</li> <li>• Joint development and use of research facilities (e.g., laboratories, science and technology parks)</li> <li>• Sustained PSE–industry–government initiatives</li> <li>• Joint ventures</li> </ul>
Skills and workforce development	<ul style="list-style-type: none"> <li>• Career fairs</li> <li>• Job interviews and on-campus recruitment programs</li> <li>• Company seminars</li> <li>• Awards, contests, competitions</li> </ul>	<ul style="list-style-type: none"> <li>• Business involvement in teaching and curriculum development</li> <li>• Internships</li> <li>• Co-op programs</li> <li>• Apprenticeships</li> <li>• Student mentorships</li> </ul>	<ul style="list-style-type: none"> <li>• PSE–business training centres and programs</li> <li>• Sustained community skills and workforce development programs</li> <li>• Student consultancies</li> <li>• Industry–PSE consortia</li> </ul>

Source: The Conference Board of Canada; University-Industry Demonstration Partnership (UIDP); Science-Business Innovation Board.

PSE–business partnerships can also be distinguished according to the level of engagement between partners. Partnerships range from simple interactions to complex undertakings that differ greatly in terms of the resources committed, activities undertaken, and level of administration and management required for success.<sup>22</sup> Partnerships can be formal relationships that use binding contracts, memoranda of understanding, and other legal documents. Partnerships can also be informal, and depend on personal relationships between partners. Informal partnerships can help build trust between businesses and educators, and can potentially lead to more formal partnerships.

22 University of California Berkeley, Academic Senate, Task Force on University-Industry Partnerships, *Principles and Guidelines for Large-Scale Collaborations*, 2.

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Partnerships can be transactional, operational, or strategic.

As Table 1 shows, partnerships can be transactional (e.g., sharing of ideas), operational (e.g., sharing of activities and resources), or strategic (e.g., sharing of strategies, goals, and aspirations).<sup>23</sup> Partnerships become more complex as they move from the transactional to the operational to the strategic. However, Table 1 does not rank partnerships based on their value.

There are other typologies of PSE–business partnerships. For example, an MIT initiative, the Local Innovation Systems Project, examines the ways universities support economic development in their communities and regions, including: supporting the development of new industrial sectors and clusters (e.g., Silicon Valley); supporting the transplantation of an industry to a new region; transitioning existing industrial resources to new uses such as developing a polymer engineering industry from the declining tire industry in Akron, Ohio; and upgrading and revitalizing existing industries through product or process innovations.<sup>24</sup>

## Summary

PSE–business partnerships are mutually beneficial, cooperative relationships among PSE institutions and businesses. In Canada, partnerships include a range of actors that include PSE institutions, businesses, and several types of third-party organizations that provide partnership-supporting resources and services. As illustrated in Table 1, PSE–business partnerships in Canada have a variety of objectives and types of interactions. The following chapter examines the types of partnerships in more detail, outlines the benefits and motivations for partners and other participants, and discusses barriers to effective partnerships.

23 Science-Business Innovation Board, *Making Industry-University Partnerships Work*, 9.

24 Lester, *Universities, Innovation, and the Competitiveness of Local Economies*, 17–19.

## CHAPTER 3

# PSE–Business Partnerships in Canada: Activities, Benefits, and Challenges

### Chapter Summary

- R&D partnerships generate and transfer knowledge and technology to support innovation and commercialization-related objectives.
- Skills and workforce development partnerships involve the flow of people and knowledge between PSE institutions and businesses to address the skills and employment needs of learners and employers.
- Common challenges and barriers include partnership development; relationship and trust building; organizational and cultural differences; administrative burden; managing the unexpected; and awareness and bias barriers.

**PSE–business partnerships in Canada are growing larger and becoming more complex. PSE institutions and businesses, some of which have little or no partnership experience, are exploring new ways of partnering to achieve a diverse range of objectives such as better preparing students for employment or acting as compelling drivers of innovation, commercialization, and economic growth.<sup>1</sup> In addition, partners benefit from an increasing variety of supports and resources to sustain and expand their partnership initiatives.**

Despite many positive developments, however, partnerships could be enhanced further. This chapter describes partnerships in Canada, including their different types, the benefits and motivations for partners and participants, and common challenges and barriers that partnerships face.

## **Research and Development (R&D)-Focused Partnerships**

PSE institutions are among Canada’s most important sources of knowledge, expertise, and research capacity. Governments and community stakeholders are increasingly focused on tapping into this capacity to respond to opportunities and challenges in the marketplace.<sup>2</sup> As Bramwell and others note: “More than ever, governments in Canada and other leading countries are focused on leveraging public investments in higher education research and development to stimulate innovation, enhance competitiveness and bolster economic growth.”<sup>3</sup>

1 Canadian Chamber of Commerce, *Fragmented Systems*, 4.

2 Industry Canada, *Mobilizing Science and Technology to Canada’s Advantage*, 17.

3 Bramwell, Hepburn, and Wolfe, *Growing Innovation Ecosystems*, 3.

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More can be done to improve Canada's competitiveness and prosperity. Partnerships can help.

The sections that follow show that PSE institutions and businesses are doing a lot to achieve these objectives through partnerships; however, more can be done to improve Canada's competitiveness and prosperity. The World Economic Forum's recent *Global Competitiveness Report*, for example, shows that Canada ranks 19th out of 140 countries on university–industry R&D collaboration, slipping four ranks from 2012. In addition, on the availability of higher education research and training services, Canada ranks 20th out of 144 countries, having slipped seven ranks since 2012.<sup>4</sup>

## Overview of R&D Partnerships in Canada

R&D partnerships involve mutual efforts between PSE institutions and businesses to generate and transfer knowledge and technology, typically to support innovation and commercialization-related objectives.<sup>5</sup> As outlined in Table 1, some R&D partnerships are small in scale and scope—transactional partnerships, such as faculty consulting engagements—whereas other partnerships involve very extensive and complex investments and effort.<sup>6</sup>

R&D partnerships may involve short-term problem-solving of well-defined issues or long-term engagements that involve exploratory scientific objectives.<sup>7</sup> For example, the Consortium for Aerospace Research and Innovation in Canada shows how a sustained government–industry–academia partnership can improve the competitiveness of a sector through research and other activities.<sup>8</sup>

4 World Economic Forum, *The Global Competitiveness Report 2015–2016*, 133; Watt and Edge, *Business Leaders' Perspectives*, 12–16.

5 Bramwell, Hepburn, and Wolfe, (for example), *Growing Innovation Ecosystems*, 3.

6 Perkmann and Salter, "How to Create Productive Partnerships with Universities."

7 Abreu and others, *Universities, Business and Knowledge Exchange*, 16.

8 Government of Canada, *Harper Government Announces Support for Aerospace Innovation*.

Given the variety of R&D partnership activities in Canada, the landscape can only be described in broad strokes. Nevertheless, it is useful to distinguish between basic, use-inspired, and applied research partnerships. Basic research partnerships seek to generate new knowledge by exploring models of fundamental relationships “without any particular application or use in view,” while applied research partnerships seek to understand how these relationships work and address “practical aims or objectives.”<sup>9</sup> Use-inspired basic research partnerships are motivated by practical concerns and the application of fundamental research (e.g., chemistry research leading to a solution or treatment for a particular type of disease).<sup>10</sup> (See “Understanding the R&D Partnership Landscape.”)

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## Understanding the R&D Partnership Landscape

The distinction between applied and basic research captures some general differences between the motivations and outcomes of various types of R&D. This distinction also captures differences in approaches to research by universities compared to the college sector. However, the applied-basic dichotomy can also obscure the variety of motivations and outcomes that characterize R&D conducted by PSE institutions and their business partners. At issue is the question of how research relates to practical concerns, objectives, and outputs. As first considered by Stokes, a more robust way of approaching this question is by thinking in terms of a four-point quadrant, a classification of scientific research methods described by Donald Stokes in his book *Pasteur's Quadrant*. (See Table 2.)

The quadrant is named after the French chemist and microbiologist Louis Pasteur, who sought a fundamental scientific understanding of microbiological processes in order to achieve the practical objectives of reducing spoilage in foods and combating diseases—hence, “use-inspired basic research.”<sup>11</sup> In the same way, a great deal of basic research among university-business

9 Universities Canada, *Momentum*, 70.

10 Grant, *Bridging the Valley*, 9.

11 Stokes, *Pasteur's Quadrant*, 12–24.

partnerships is use-inspired. While the applied-basic research dichotomy may imply that innovation is linear—with ideas moving from basic research through to applied research and commercialization—it may also overlook the considerable extent to which practical research and technological developments contribute to scientific discovery.<sup>12</sup>

**Table 2**  
**Pasteur’s Quadrant**

<b>Quest for fundamental understanding?</b>	<b>Yes</b>	Pure basic research <b>(Bohr)</b>	Use-inspired basic research <b>(Pasteur)</b>
	<b>No</b>	–	Pure applied research <b>(Edison)</b>
		<b>No</b>	<b>Yes</b>
		<b>Considerations of use?</b>	

Source: Stokes.

Given these considerations, it is not easy to categorize the activities of an R&D partnership as either “applied” or “basic” in terms of their value to Canada’s R&D ecosystem, or in terms of the potential benefits they offer to researchers, institutions, and businesses. It is also becoming more difficult for business to know where to turn for assistance with applied or basic research. On this point, the distinction between the university and college sectors has traditionally been clear: The college sector focused on applied research, while the university sector focused on basic research. As both sectors seek to broaden their reach, however, this distinction has become increasingly blurred, and there is now a greater mix of applied and basic research in both sectors.

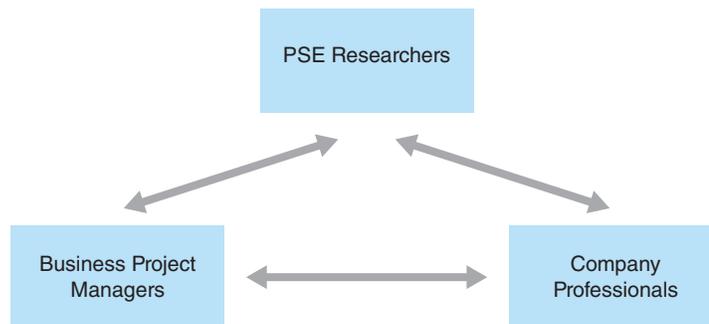
PSE faculty typically play leading roles in directing and performing research activities. Students often participate in research activities as part of a single course or an entire degree program; these activities

12 CSLS, *Government Policies to Encourage University-Business Research Collaboration in Canada*, 13–15; Stokes, *Pasteur’s Quadrant*, 21.

often include post-graduate dissertation projects. The role of businesses vary, but typically include helping to define research parameters and objectives, and assisting academic research by providing special materials or company expertise. In addition, the role of business partners may vary at different stages of a partnership as employees discover the most efficient ways to transfer and absorb research outputs into company-specific products or processes. As noted by Hall and others, “innovation adoption is a process rather than a decision-point.”<sup>13</sup> It often requires several steps, including internal company research, to identify how research results can be integrated into products, processes, production methods, and business lines.<sup>14</sup>

Given this, innovation adoption is best supported when PSE researchers, business partnership liaisons, and other company professionals communicate clearly and often. Other company professionals include employees who contribute to implementing or using research results, in manufacturing or marketing departments, for example. (See Exhibit 1.)<sup>15</sup>

**Exhibit 1**  
**Optimal Knowledge Exchange Pathways**



Source: Pertuze and others.

13 Hall and others, “Levels of Use of the Innovation,” 52.

14 Abreu and others, *Universities, Business and Knowledge Exchange*, 16.

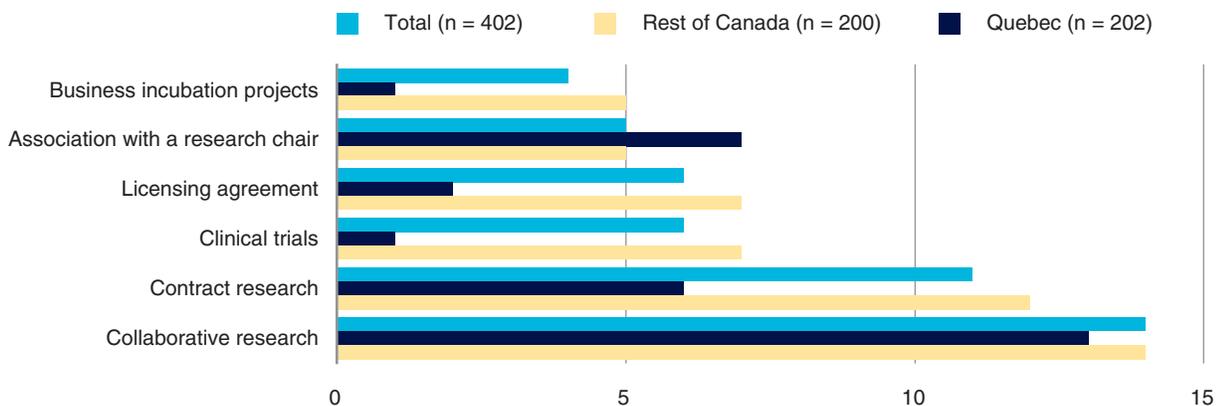
15 Pertuze and others, “Best Practices for Industry-University Collaboration,” 89.

## Uptake and Trends in the University Sector

As David Johnston noted in a 2004 report, “Universities are a principal source of the research discoveries on which application, development and commercialization can be based.”<sup>16</sup> Many businesses recognize the value of partnering with universities to achieve their business objectives, and support PSE–business partnerships in a variety of ways. A 2010 survey by the Board of Trade of Metropolitan Montreal sheds light on the R&D partnership activities of more than 400 businesses across Canada. These activities include collaborative research, contract research, clinical trials, licensing agreements, associations with research chairs, and business incubation projects.<sup>17</sup> (See Chart 1.)

Chart 1

### University–Business Research and Development-Oriented Partnerships



Sources: Board of Trade of Metropolitan Montreal; The Conference Board of Canada.

16 Johnston, *The University-Private Sector Interface and the Ontario Economy*, 3.

17 Board of Trade of Metropolitan Montreal, *A Look at Canadian University-Industry Collaboration*.

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Universities and businesses are engaging in more R&D partnerships than in the past.

There are signs that universities and businesses are engaging in more R&D partnerships than in the past. For example, the value of research contracts between Canadian businesses and organizations and university partners grew from \$236 million in 2003 to \$660 million by 2008.<sup>18</sup> These contracts also represent a greater share of total research contract dollars at universities, compared to other sources (e.g., federal and provincial governments)—an increase from 24 per cent in 2003 to 33 per cent in 2008.<sup>19</sup>

However, research contract value does not reflect the additional economic and social value that emerges when universities and businesses commercialize new products, processes, or services, such as life-enhancing technologies. In addition, between 2003 and 2009, university income from the commercialization of intellectual property (IP)—including licensing arrangements with businesses and the creation of university spin-off companies—increased 21 per cent, from approximately \$55 million to \$67 million.<sup>20</sup> (See Chart 2.)

Administration costs related to some partnership activities have also increased. Expenditures on IP management grew from \$36 million to \$56 million (55 per cent) between 2003 and 2009, almost twice the growth of *income* related to IP. In 2008, staff salaries and benefits accounted for more than 50 per cent of these expenditures. Patent and legal costs account for approximately 30 per cent, and other operational expenditures and litigation accounted for the remaining 20 per cent.<sup>21</sup>

18 “University partners” includes universities and university-affiliated research hospitals. Statistics Canada, *Survey of Intellectual Property Commercialization*, 2003, 22; Statistics Canada, *Survey of Intellectual Property Commercialization*, 2008, 17.

19 Statistics Canada, *Survey of Intellectual Property Commercialization*, 2003, 22; Statistics Canada, *Survey of Intellectual Property Commercialization*, 2008, 17.

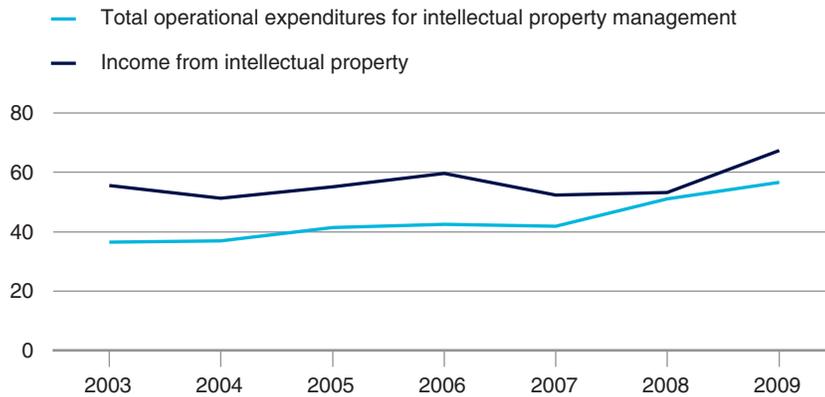
20 Statistics Canada, *Survey of Intellectual Property Commercialization*, 2008, 8; Statistics Canada, CANSIM table 358–0025.

21 Statistics Canada, CANSIM table 358-0025; Statistics Canada, *Survey of Intellectual Property Commercialization*, 11.

Chart 2

### Intellectual Property—Expenditures on Management Compared to Income

(\$ millions)



Sources: Statistics Canada; The Conference Board of Canada.

While some administration is necessary to ensure partnerships run smoothly, excessive expenditures on IP management may indicate that knowledge transfer in Canada is becoming less efficient.<sup>22</sup> At PSE institutions, owning and licensing IP can bring significant financial benefits, but overly protective IP policies can impede the dissemination of new ideas, and prevent Canada from generating the economic and social value that comes from developing new products, services, and processes.

### Uptake and Trends in the College Sector

Applied research is becoming more common at college-sector institutions, and is supported by more resources and a growing recognition of its value for students, businesses, communities, the economy, and society. In Ontario, colleges, governments, and businesses have long known that applied research furthers college mandates related to education, skills development, and economic and

22 Canadian Council of the Academies, *The State of Industrial R&D in Canada*, 145.

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Private sector investments in PSE applied research are increasing.

social development.<sup>23</sup> Private sector investments in applied research increased from \$4.2 million in 2006 to \$59 million 2012.<sup>24</sup> Between 2011 and 2012 alone, the number of students involved in applied research increased 77 per cent and the number of faculty increased 10 per cent.

Administration relating to applied research has also increased. In 2012, applied research development offices had 1,019 full-time staff, an increase of 40 per cent from 2011. In 2012, 98 institutions across Canada reported having a dedicated R&D office.<sup>25</sup> College-sector institutions are also developing strengths in specific research areas: As of 2013–14, there were 670 specialized research centres and labs in colleges and institutes across Canada.<sup>26</sup>

A 2010 Conference Board report notes that college-applied research often focuses on a “broad range of results-driven, collaborative, or service-based activities,” including proof of concept, testing and benchmarking; and product development, prototyping, and modelling.<sup>27</sup> With more resources, many colleges and institutions are now undertaking an expanded range of applied research initiatives of increasing scale and scope. Indeed, some partnerships involve broad-based, multi-year collaborations to address R&D goals in particular regions or sectors. The Alberta Biochar Initiative, for example, is an initiative of Lakeland College and 42 partners in industry and government that coordinates research and information-sharing for “the large-scale commercial deployment of biochar products and biochar applications for the benefit of Albertans.”<sup>28</sup>

23 Munro and Haimowitz, *Innovation Catalysts and Accelerators*, 1.

24 Colleges and Institutes Canada (CICan), *The College and Institute Applied Research Advantage*, 13; CICan, *Applied Research at Canadian Colleges and Institutes*, 16.

25 CICan, *The College and Institute Applied Research Advantage*, 2–5.

26 CICan, *Applied Research at Colleges and Institutes 2013–14*, 1.

27 Munro and Haimowitz, *Innovation Catalysts and Accelerators*, 2.

28 Alberta Biochar Initiative, *Alberta Biochar Initiative*.

## Benefits of R&D Partnerships

R&D partnerships provide several benefits to PSE institutions, businesses, PSE faculty, and students. We examine these benefits below.

### PSE Institutions

R&D partnerships help PSE institutions deliver on core mandates of teaching, research, and contributing to a prosperous and competitive society. Other benefits include:

- research and teaching support and capacity-building, including funding for research, equipment, and facilities;
- learning experiences for students and faculty;
- knowledge exchange that aligns curricula with emerging social and economic needs;<sup>29</sup>
- increased profile through timely and relevant R&D;<sup>30</sup>
- commercialization of institutional research.

PSE institutions also pursue PSE–business partnerships to:

- achieve greater institutional prestige;
- attract top-calibre students and faculty;
- attract more research funding from governments.<sup>31</sup>

29 Universities Canada, for example, notes that collaborations with industry “enable universities to be attuned to market signals and, where appropriate, to adapt their research and educational programs to reflect emerging social and economic needs.” Universities Canada, *Momentum*, 69. Universities Canada, likewise, notes applied research initiatives undertaken by colleges and institutes can keep “program content current, cutting-edge, and provides access to industry-relevant technologies and equipment.” Colleges and Institutes Canada, *College and Institute Applied Research Advantage*, 12.

30 Science-Business Innovation Board, *Making Industry-University Partnerships Work*, 6.

31 Interview conducted by The Conference Board of Canada.

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Business employees gain when their employers participate in R&D partnerships.

## Businesses

Business R&D has changed over the past few decades. Many businesses have reduced their in-house R&D capacity and look increasingly to external organizations for cost-effective R&D services.<sup>32</sup> At the same time, many businesses are becoming more knowledge-intensive. This increases their need for the ideas, expertise, and technologies offered by PSE institutions, and their interest in collaborative forms of innovation.<sup>33</sup> R&D partnerships help businesses offset the costs and risks of establishing and operating internal company research, explore knowledge areas that lay outside their core strengths, and address pre-competitive sectoral challenges or opportunities with other industry and academic partners.<sup>34</sup>

Business employees gain when their employers participate in R&D partnerships. Employees benefit from knowledge exchange opportunities with academic researchers, and from the opportunity to connect with other experts and professionals in their field. In addition, employees involved in partnerships develop better communication, teamwork, thinking, and other skills as they participate in partnership activities. (See Chart 3.) These activities include interacting and liaising with schools and students, answering questions and providing feedback, preparing work plans, and other project management tasks.<sup>35</sup>

R&D partnerships with universities help businesses access highly qualified personnel and specialized physical resources and infrastructure.<sup>36</sup> Results from a survey by the Board of Trade of Metropolitan Montreal show that the most commonly reported benefits for businesses are access to university competencies and

32 Lester, *Universities, Innovation, and the Competitiveness of Local Economies*, 8; Klawe, *Getting the University-Industry Partnership Right... Or Not*; Lambert, *Lambert Review of Business-University Collaboration*, 3.

33 Lambert, *Lambert Review of Business-University Collaboration*, 3.

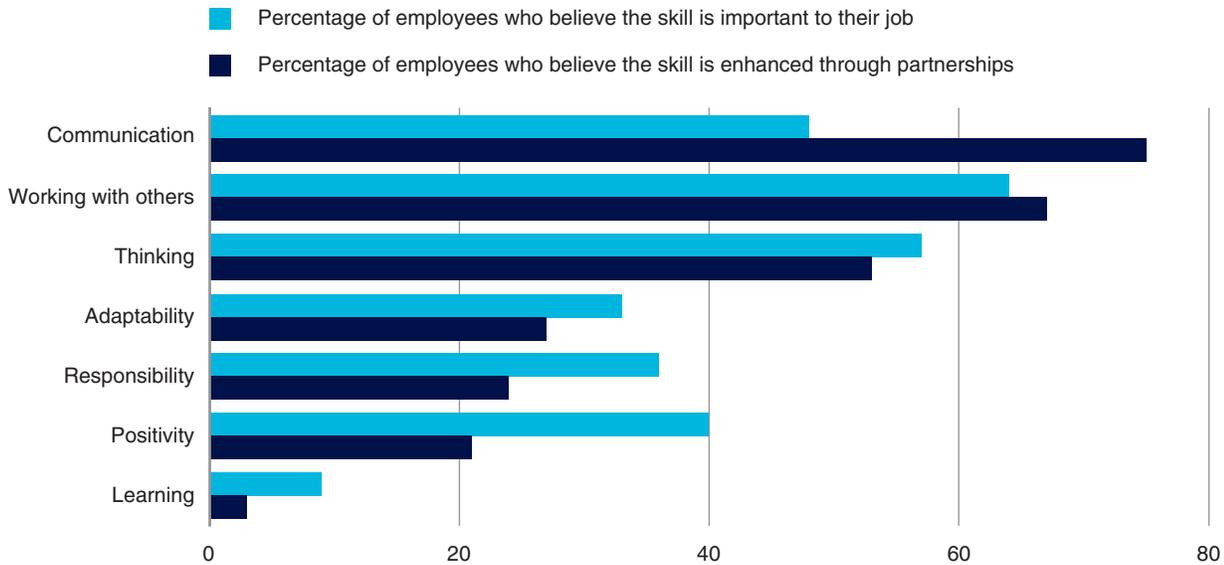
34 Wright and others, "Technology Transfer"; Prigge and Torraco, "University-Industry Partnerships."

35 Watt and Brady, *Benefits of Employee Involvement*, 9, 16.

36 CSLS, *Government Policies*, 6.

Chart 3

**Employee Skills Development Outcomes From Education–Business Partnerships**



Source: The Conference Board of Canada.

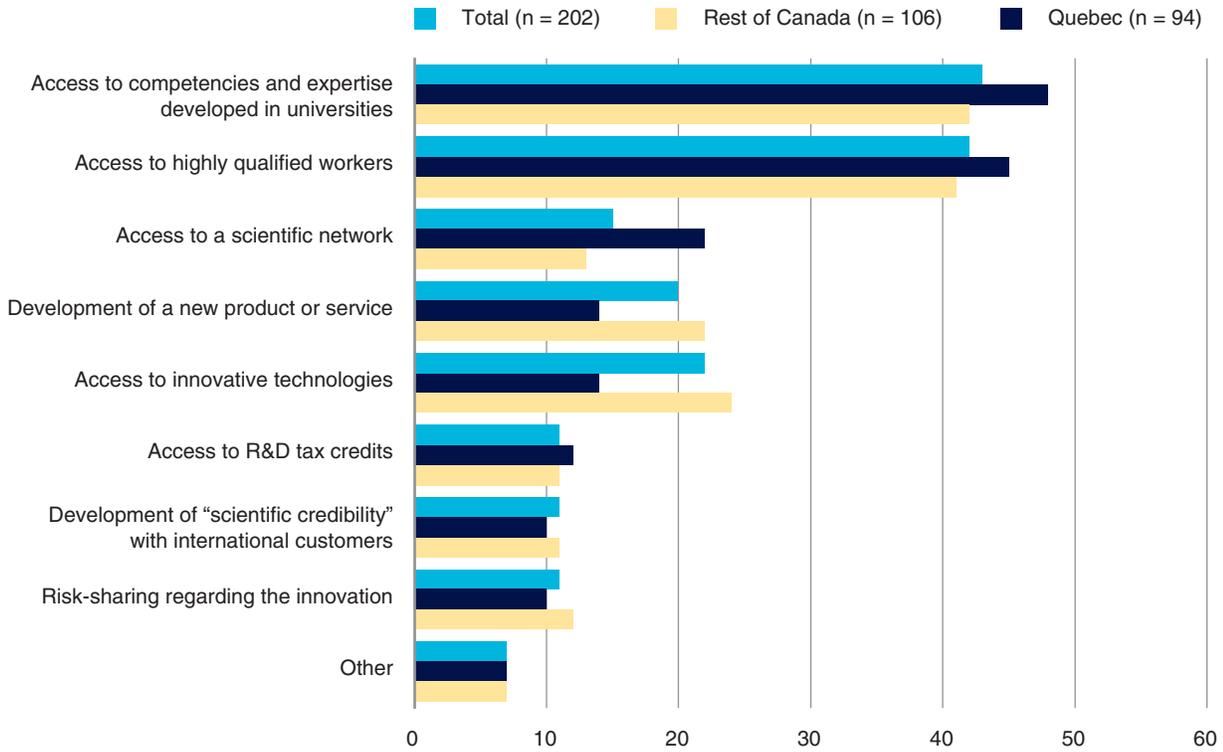
expertise, access to highly qualified workers, and access to innovative technologies.<sup>37</sup> Other benefits include the development of new products or services, reputation-building and networking, reduced R&D risks and costs, and access to R&D tax credits. (See Chart 4.)

Businesses can achieve many of the same benefits working with college-sector institutions, although there are some differences. Previous Conference Board research shows that the most common benefit for businesses that partner with college-sector institutions is the development of new or improved goods, services, or processes. R&D partnerships also benefit organizations more broadly through more effective marketing, improved decision-making, and enhanced business planning. The same research also shows that one-third of the businesses studied also believe R&D partnerships with college-sector

37 Board of Trade of Metropolitan Montreal, *A Look at Canadian University-Industry Collaboration*, 18.

institutions helped them increase their sales and revenues, improve their market position, expand their customer base, and improve customer satisfaction.<sup>38</sup>

**Chart 4**  
**Benefits to Business From University R&D Partnerships**



Sources: Board of Trade of Metropolitan Montreal; The Conference Board of Canada.

38 Munro and Haimowitz, *Innovation Catalysts and Accelerators*, 20.

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Knowledge-exchange in R&D partnerships is often a two-way street.

## Faculty

A survey by the Board of Trade of Metropolitan Montreal reveals that R&D partnerships benefit university researchers in several ways. For example, 58 per cent of respondents said that collaborating with businesses offered them the opportunity to test practical applications of their theories. In addition, 54 per cent noted that collaboration helped them attract new research contracts. (See Table 3.) Attracting research contracts is also an important benefit for the college sector, where institutions often need to partner with industry to access government research funds. In 2011–12, for example, 97 per cent of external funding for applied research at colleges and institutes was for “business and industrial research.”<sup>39</sup>

Other positive results included staying informed about industry issues (47 per cent), creating job opportunities for researchers (39 per cent), and creating and developing skills to help integrate academic researchers (36 per cent). (For a complete list of these results, see Table 3.)

These figures reveal that knowledge-exchange in R&D partnerships is often a two-way street. Indeed, many PSE faculty recognize that industry partnerships can inform and support their own research by providing access to cutting-edge knowledge, technology, and expertise. One university faculty member, whose research focuses on remote-sensing technology, noted that it was his “dream” to collaborate with a leading software company in the field.

Indeed, research from the Centre for the Study of Living Standards shows that academics often participate in R&D partnerships to pursue their research interests rather than to develop their own business opportunities or for financial gain. However, the potential for monetary benefits can still be a motivation, particularly for longer-term partnerships.<sup>40</sup> In addition, tenure and promotion systems at PSE institutions often emphasize publication in academic journals,

39 CICan, *The College and Institute Applied Research Advantage*, 13.

40 CSLS, *Government Policies to Encourage University-Business Research Collaboration in Canada*, 7.

**Table 3**  
**Researcher Motivations and Benefits**

Result	Per cent
Possibility of testing the practical applications of the theory	58
Attracting new research contracts	54
Staying informed about industry issues	47
Creating job opportunities for researchers at your research centre or chair	39
Creating and developing skills for the integration of academic researchers	36
Accessing industrial facilities and skills	31
Making additional income	31
Establishing relationships with companies in order to eventually attract new researchers	25
Potentially targeting business opportunities	20
Developing a mentor-mentoree relationship	10
Publishing the results of our research/collaborations	5
Other results	4

Sources: Board of Trade of Metropolitan Montreal, *A Look at University-Industry Collaboration*; The Conference Board of Canada.

and sometimes discourage faculty from seeking out partnership opportunities. There is an opportunity to expand tenure and promotion requirements and to encourage faculty to pursue collaboration with business through partnerships.

## Students

Students who participate in R&D partnerships deepen their subject matter knowledge and develop employability skills such as communication, critical thinking, problem-solving, and teamwork. R&D partnerships also prepare students for jobs in non-academic research environments where they may work on projects that resemble their R&D partnership experiences.<sup>41</sup>

41 Klawe, *Getting the University-Industry Partnership Right... Or Not*.

R&D partnerships help students develop entrepreneurship and innovation skills.<sup>42</sup> (See “Skills and Workforce Development Partnerships.”)

According to one business owner we interviewed, communicating research findings to the company helps students become more confident and improve their presentation and communication skills.<sup>43</sup> Participating in R&D partnerships sometimes provides job opportunities for students with partnering businesses, and supports the employability of students by enhancing their résumés and providing networking opportunities.

In addition, previous Conference Board research found that in “29 applied research collaborations between firms and Ontario colleges [...] 13 students were hired after working on the project, while other firms anticipated hiring students in the future as a consequence of their performance during the collaboration.”<sup>44</sup> These opportunities are valuable for students who intend to continue in higher education, and may increase their interest and capacity to commercialize the results of future research, and stimulate them to undertake partnerships of their own.<sup>45</sup>

## Skills and Workforce Development Partnerships

Governments want to ensure that Canadians have the skills needed to succeed in a global economy. PSE institutions are the major pipeline for skilled individuals entering the workforce, and contribute approximately four out of every five new entrants to the labour market.<sup>46</sup> It is not surprising, therefore, that governments are paying more attention to PSE–business partnerships to respond to employers’ skills needs.

42 Munro and Haimowitz, *Innovation Catalysts and Accelerators*, 24–25.

43 Interview conducted by the Conference Board.

44 Munro and Haimowitz, *Innovation Catalysts and Accelerators*, 25. Similar examples are found in university–business research partnerships: see Munn-Venn, *Lessons in Public-Private Research Collaboration*, 11.

45 Klawe, *Getting the University-Industry Partnership Right... Or Not*.

46 Sattler and Peters, *Work-Integrated Learning in Ontario’s Post-Secondary Sector*, 13.

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The range of skills and workforce-oriented partnerships is growing.

For example, a 2014 joint declaration of provincial and territorial education and labour market ministers outlines three principles for better aligning Canada’s education system with its labour market:<sup>47</sup>

- Education and training must empower Canadians to acquire the skills they need for success in the job market in a flexible and dynamic environment.
- Partnerships and alignment with business, labour, education, and training providers are keys to ensuring synergy between education and skills training systems and Canada’s labour markets.<sup>48</sup>
- Access to accurate, relevant, and timely labour market and education data is essential for enabling Canadians to make smart career choices, as well as enabling government and business to make evidence-based decisions in planning for the future.”

In addition, the 2015 federal budget augmented previous government measures to build the skills required for new and better jobs by “providing a one-time investment of \$65 million over four years” to help businesses develop and maintain PSE–business partnerships, and to develop curricula and programs that are aligned with the specific skills needs of the labour market.

## Overview of Skills and Workforce Development Partnerships

Skills and workforce-oriented partnerships involve the flow of people and knowledge between PSE institutions and businesses to address the skills and employment needs of students and employers. While the range of these types of partnerships is growing, those that involve students in actual work experiences are known as work-integrated learning (WIL).

47 Council of Ministers of Education, Canada (CMEC), *Ministers and Key Partners Chart Path Forward for Education and Skills in Canada*.

48 Government of Canada, *Economic Action Plan 2015*, 155.

## Work-Integrated Learning

Work-integrated learning refers to “student employment experiences that are usually organized by their institution, related to their field of study and geared towards making connections between classroom learning and on-the-job experiences.”<sup>49</sup> WIL generally involves PSE institutions placing a student with an employer; the partners then work together to structure and support the learning experience.<sup>50</sup> These experiences include apprenticeships, field experience opportunities, mandatory professional practicums, co-op placements, internships, applied research projects, and service learning.<sup>51</sup> In addition, the Canadian Chamber of Commerce notes that incorporating elements of game playing (gamification) can help students develop problem-solving skills, and provides “multiple possibilities for educators and employers to collaborate in the design of these challenges.”<sup>52</sup> Employers typically play the major role in student supervision, while PSE “monitor the WIL experience through contact ranging from a quick ‘touching base’ via email or telephone to a formal site visit.”<sup>53</sup>

Generally, WIL is a more prominent feature of college-sector programs than university programs. The OECD notes that “whereas co-op and internship programmes are well integrated into the curricula of most community colleges and polytechnics, they are not widespread across university campuses.”<sup>54</sup> A 2011 survey revealed that 16 per cent of undergraduates at Canadian universities participated in a co-op placement and 18 per cent participated in internships, placements, or practicum programs.<sup>55</sup> A 2005 survey by the Association of Canadian Community Colleges (now known as Colleges and Institutes Canada),

49 Kramer and Usher, *Work-Integrated Learning and Career-Ready Students*, 2.

50 Sattler, *Work-Integrated Learning in Ontario’s Post-Secondary Sector*, 11.

51 Ibid., 33.

52 Canadian Chamber of Commerce, *Fragmented Systems*, 17.

53 Sattler, *Work-Integrated Learning in Ontario’s Post-Secondary Sector*, 5.

54 Organisation for Economic Co-operation and Development (OECD), *Tertiary Education*, 36.

55 Kramer and Usher, *Work-Integrated Learning and Career-Ready Students*, 4, 7.

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There is growing support for WIL opportunities in the university sector.

revealed that “about 60 per cent of respondents confirmed that they were enrolled in a program that included an on-the-job component, either through a co-op arrangement or through a work placement.”<sup>56</sup> There appears to be growing support for WIL opportunities in the university sector, and many universities boast significant WIL programs, including the University of Waterloo.<sup>57</sup>

A survey by the Higher Education Quality Council of Ontario (HEQCO) of more than 10,000 PSE students helps shed light on WIL participation in Ontario, and provides more comparable data for universities and colleges. The study found that more than two-thirds (68 per cent) of college students participated in some type of WIL, compared to approximately half (48 per cent) of university students.<sup>58</sup> Among college WIL participants, 82 per cent said that WIL was a mandatory component of their program, compared to approximately half of university WIL participants.<sup>59</sup> Previous Conference Board research on skills needs in Ontario and British Columbia also reveals that co-op partnerships are the strategies most widely used by employers to address their skills and workforce needs, followed by mentoring and apprenticeships.<sup>60</sup>

Among college WIL participants, field placements are the most common type of WIL, followed by practicum or clinical placements (usually required to become a professional in a given field) and co-ops. (See Chart 5.) Among university WIL participants, practicums and clinical placements are most common, followed by co-ops and internships. (See Chart 6.)

56 CiCan, *Pan-Canadian Study of First Year College Students*, 20.

57 See, for example, University Affairs, *Co-op Programs are Popular and Growing*.

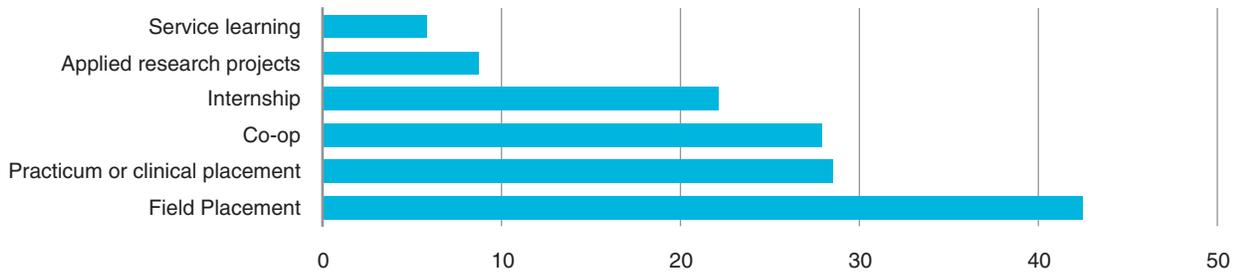
58 Sattler and Peters, *Work-Integrated Learning*, 8.

59 Ibid.

60 Stuckey and Munro, *The Need to Make Skills Work*, 30; Stuckey and Munro, *Skills for Success*, 63.

Chart 5

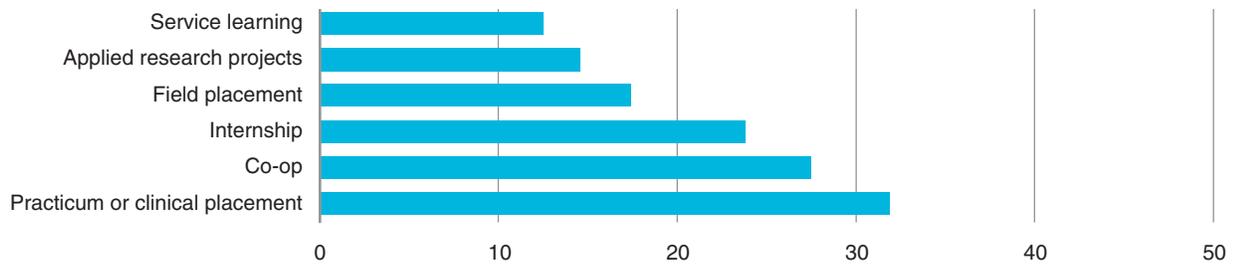
**College WIL—Program Types**



Source: Sattler and Peters, *Work-Integrated Learning in Ontario's Post-secondary Sector*.

Chart 6

**University WIL—Program Types**



Source: Sattler and Peters, *Work-Integrated Learning in Ontario's Post-secondary Sector*.

## Benefits of Skills and Workforce Development Partnerships

Skills and workforce development partnerships offer a variety of benefits to PSE institutions, students, and businesses, described below.

### PSE Institutions

WIL partnerships help PSE institutions improve student outcomes. They can also provide PSE institutions with a competitive advantage when recruiting students, given that businesses are increasingly interested

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## Work-Integrated learning offers practical work experience and skills.

in hiring entry-level employees with relevant work experience.<sup>61</sup> After consulting with PSE stakeholders, HEQCO identified several benefits that PSE institutions seek to achieve through WIL partnerships:<sup>62</sup>

- **Community relationships**—improve community relationships by demonstrating responsiveness of PSE institutions to community needs and issues, and support the development of new partnerships with local employers;
- **Institutional reputation**—strengthen institutional reputation through improved student outcomes, such as enhanced quality of graduates and employment rates;
- **Student recruitment and marketing**—make institutions more attractive to potential students;
- **Alumni relations and development**—enhance contact and communication with alumni, and increase opportunities for financial support;
- **Program improvements**—use employer and student feedback to maintain relevance of curricula and programs.

## Students

Competitive job markets are fundamental drivers of student participation in WIL. Through them, students gain practical work experience and skills, make career choices, and expand their networks.<sup>63</sup> Some students believe WIL is a more effective approach than traditional classroom instruction. For instance, a 2012 global survey of over 4,600 youth identified on-the-job training (62 per cent) and hands-on learning (58 per cent) as the most effective instructional techniques—whereas just 30 per cent of students said that traditional lectures and seminars

61 Dehaas, “‘Entry-level’ Jobs are Getting Harder to Find.”

62 Sattler, *Work-Integrated Learning*, 73–76.

63 CCL, *Lessons in Learning*, 4; Sattler and Peters, *Work-Integrated Learning*, 48–49.

(46 per cent of students) were the most effective learning techniques.<sup>64</sup> A 2014 study of more than 30,000 college graduates in the United States found that students who participated in an internship or a job that allowed them to apply what they were learning in the classroom were twice as likely to be engaged at work (i.e., more likely to be emotionally and intellectually connected with their places of work and their colleagues and teams; and more likely to care about their work and their development).<sup>65</sup>

Universities face increasing pressure to measure outcomes, and to ensure that their WIL partnerships provide students with valuable learning experiences. To isolate the value added by WIL experiences, Kramer and Usher compared the learning benefits from WIL co-ops and internships with non-WIL summer jobs for undergraduate students across Canada. Their findings show that students believe WIL provides more substantial learning experiences than non-WIL summer jobs. For example, 48 per cent of students believe internships, compared to summer jobs, provide a better appreciation of how concepts learned in the classroom are applied in the real world. In addition, 45 per cent of students believe participating in co-op work placements makes it easier for them to find a job related to their field of study after graduation, compared to summer jobs. (See Table 4.)

Other benefits of WIL compared to summer jobs include: improving students' knowledge and technical skills in areas related to their field of study (internship: 48 per cent; co-op: 42 per cent); giving students a better idea of what they want to do with their life (internship: 26 per cent; co-op: 23 per cent); and making it easier for students to find a job after graduating (internship: 23 per cent; co-op: 38 per cent). See Table 4 for a complete list of benefits that WIL offers students compared to non-WIL summer jobs.

64 Barton, Farrell, and Mourshed, *Education to Employment*, 45. The McKinsey & Company survey included youth aged 15–29 who are either in the labour force or studying and planning to look for work in six months. The student sample was equally distributed among five education levels: less than high school, high school, vocational, some college, and college/university; and included nine countries: the United States, the United Kingdom, Germany, Brazil, India, Mexico, Morocco, Saudi Arabia, and Turkey.

65 Gallup, *Great Jobs, Great Lives*, 3, 10.

Table 4

**Value-Add of Work-Integrated Learning (WIL) Compared to Summer Jobs**

(Percentage of students who agree or strongly agree that internship and co-op work provides a better learning experience than non-WIL summer jobs.)

Benefit of WIL compared to summer jobs	Internship (percentage)	Co-op (percentage)
Provide a better appreciation of how concepts learned in the classroom are applied in the real world	48	32
Improve knowledge and technical skills in areas related to field of study	48	42
Will make it easier to find a job related to my field of study after graduation	38	45
Gave me a better idea of what I want to do with my life	26	23
Will make it easier to find a job after graduation	23	38
Improve critical thinking, analytical thinking, problem-solving, and decision-making skills	16	21
Provide a better understanding of general workplace culture, norms, and behaviours	7	13
Improve interpersonal skills (teamwork, communication, conflict resolution, etc.)	1	4

Sources: Kramer and Usher; The Conference Board of Canada.

**Businesses**

Businesses benefit from WIL partnerships in many ways and have a range of motives for being involved. One motive is fulfilling a corporate social responsibility mandate. However, challenging economic times mean that businesses often cannot afford to invest in programs solely for the sake of doing good. Businesses expect concrete benefits from WIL partnerships, such as cost-effective work contributions, more robust talent pipelines, and the opportunity to tap into the theory, creativity, and fresh perspectives that students bring from the classroom.<sup>66</sup>

Businesses also believe WIL partnerships help them foster good connections with PSE institutions, and give them opportunities to provide feedback on PSE curricula and educational programming.<sup>67</sup> In these cases, the traditional distinction between universities (theoretical

66 CCL, *Lessons in Learning*, 5; Wood, *Getting Real in the Real World*; Interview conducted by the Conference Board.

67 CCL, *Lessons in Learning*, 5; Sattler, *Work-Integrated Learning*, 72.

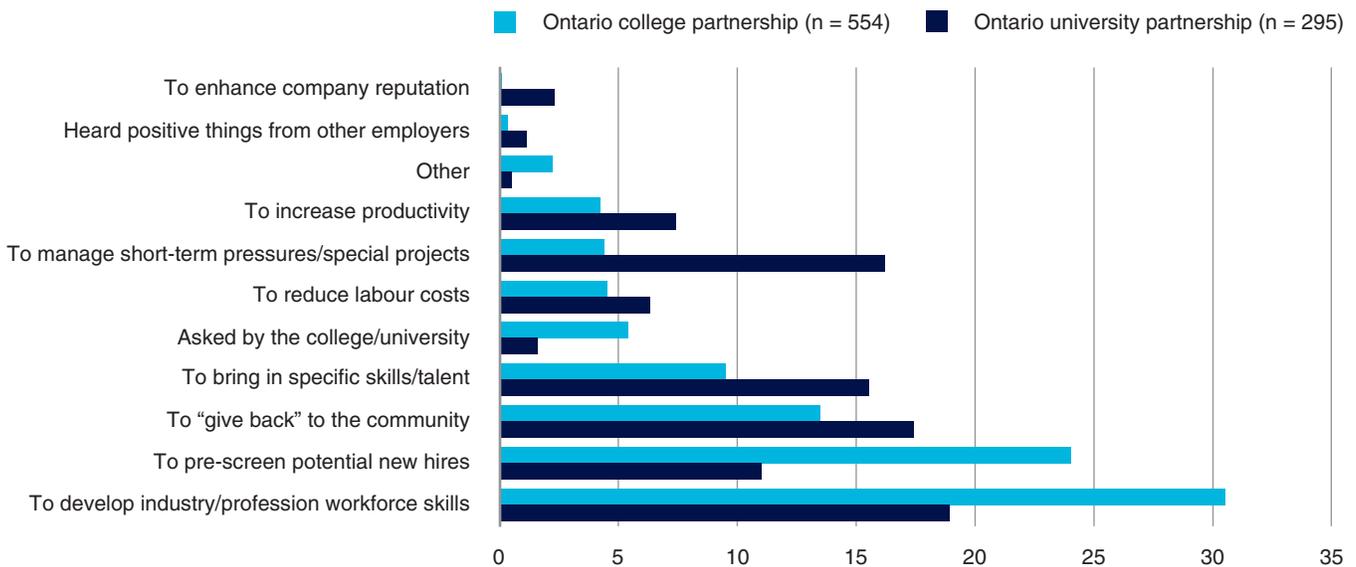
knowledge) and colleges (applied or professional knowledge) is becoming blurred, as WIL partnerships become a more integral part of the university experience.

A HEQCO study of the experience of Ontario employers with WIL reveals that businesses have different motivations for partnering with universities and colleges.<sup>68</sup> As Chart 7 shows, the top motivation for both university and college WIL partners is to develop workforce skills. For college WIL partners, the second biggest motivation is to pre-screen potential hires, while the third largest is to give back to their community. For university WIL partners, the second biggest motivation is to give back to their community, while the third largest is to manage short-term pressures and special projects that require employees on a non-permanent basis.

Chart 7

**Business Motivations for Partnerships with Universities and Colleges**

(percentage)



Sources: Sattler and Peters, *Work-Integrated Learning and Post-secondary Graduates*; The Conference Board of Canada.

68 Sattler and Peters, *Work-Integrated Learning*, 47.

## Key Challenges and Barriers to Successful Partnerships

PSE–business partnerships face several common challenges and barriers that limit their effectiveness and uptake. These include:

### Partnership Development and Relationship-Building Challenges

- **Finding suitable partners:** Businesses rarely advertise their interest in partnerships. As a result, successful WIL programs often require PSE institutions to invest significant amounts of time, money, and human resources to find suitable business partners. Businesses may also be reluctant to pursue R&D partnerships that require them to reveal sensitive information. In addition, it can be challenging for businesses to sort through patent literature, publications, conference proceedings, intellectual property databases and other materials from institutions to find suitable PSE researchers.<sup>69</sup> Because of these challenges, successful partnerships frequently emerge through interpersonal relationships, rather than relationships between institutions.<sup>70</sup>
- **Building relationships:** Even after initial connections are made, developing and implementing a partnership can take time. In some cases, this process lasts up to two years.<sup>71</sup> Many PSE institutions now have a variety of structures and mechanisms that support partnership development. (See “Institutional Approaches to Developing Partnerships.”) However, businesses often find it challenging to navigate complex and unresponsive bureaucracies and processes at PSE institutions. When left unaddressed, these challenges can impair communication, make it difficult to build trust, and create costly delays.<sup>72</sup>

69 University-Industry Demonstration Partnership, *A Guide for Successful Institutional-Industrial Collaborations*, 48; Abreu and others, *Universities, Business and Knowledge Exchange*, 13.

70 Munn-Venn, *Lessons in Public-Private Research Collaborations*, 15; Abreu and others, *Universities, Business and Knowledge Exchange*, 25.

71 Interview conducted by the Conference Board.

72 Sattler, *Work-Integrated Learning*, 85; Business-Higher Education Forum, *Working Together, Creating Knowledge*, 30; Munro and Haimowitz, *Innovation Catalysts and Accelerators*, 50.

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## Institutional Approaches to Developing Partnerships

PSE institutions are making larger investments in the offices, departments, structures, and mechanisms that help foster and support external collaboration with business. Examples include industry liaison and technology transfer offices; applied research and innovation centres; co-op program offices; business schools; and schools of continuing education.

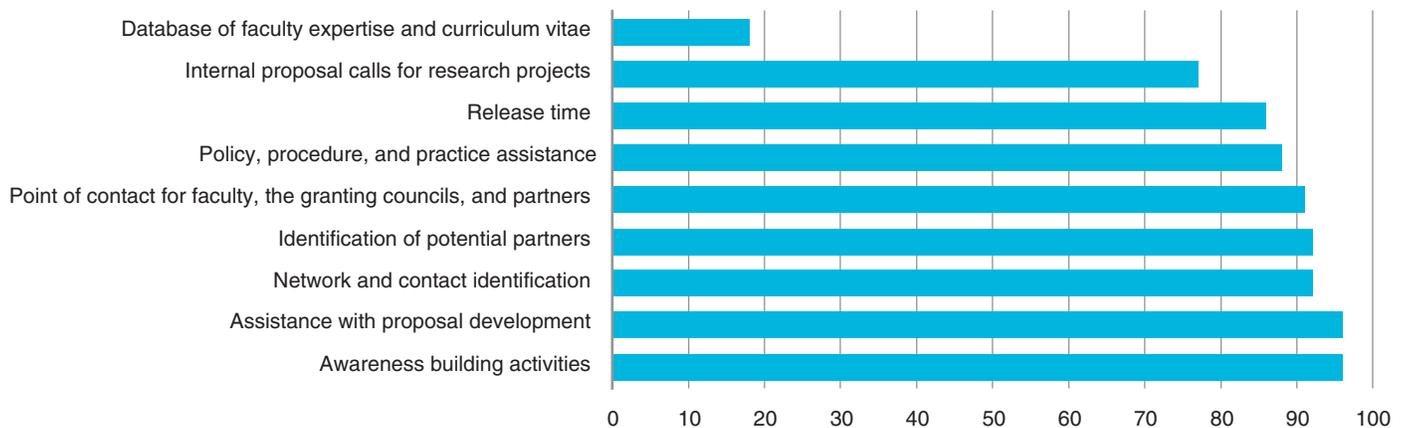
Strategies Used by Colleges and Institutes to Facilitate Faculty Participation in Applied Research, 2011–2012

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Chart 8

### Strategies Used by Colleges and Institutes to Facilitate Faculty Participation in Applied Research, 2011–2012

(percentage)



Source: Colleges and Institutes Canada.

## Organizational and Cultural Differences

- **Oriental barriers:** Successful partnerships involve overlapping interests and objectives between PSE institutions and businesses; however, underlying differences in partners' mission, operational approaches, and incentive structures can create challenges. For example, PSE institutions and businesses may have different views on how to select and pursue research topics, and how to disseminate

findings.<sup>73</sup> In addition, publications are often a significant component of faculty tenure reviews at PSE institutions; this may encourage non-tenured professors to focus on publishing research findings, instead of partnering with industry. Businesses, on the other hand, are typically interested in research with potential for commercial application. In many cases, businesses look to maintain the confidentiality of research findings.<sup>74</sup>

- **Operational differences:** Many businesses feel that PSE institutions could better understand and respond to business realities and bottom-line needs.<sup>75</sup> For example, businesses generally prefer projects with shorter timelines—such as external consultations on product, service, or process development—that allow them to respond quickly to market needs and opportunities. PSE institutions generally prefer longer, more in-depth projects.<sup>76</sup> In addition, activities at PSE institutions are often organized around academic calendars, and may involve turnover of participating students.<sup>77</sup> These differences can create challenges for timelines and partnership continuity.

### Administrative Burden

- **Excessive or overly complex administration:** Some administration is required for most partnerships, but excessive administration can also create challenges. Many PSE institutions are making significant investments in partnership-related administration and project management. For example, many research-intensive universities now have technology transfer offices to handle administrative matters relating

73 Bramwell, Hepburn, and Wolfe, *Growing Innovation Ecosystems*, 17.

74 Ibid.

75 Board of Trade of Metropolitan Montreal, *A Look at Canadian University-Industry Collaboration*, 22; Interviews conducted by the Conference Board.

76 The University-Industry Demonstration Partnership notes that this can result in “difficulty aligning institutional research schedules with business cycles or corporate manufacturing and product development schedules.” Business-Higher Education Forum, *Working Together, Creating Knowledge*, 17.

77 Munro and Haimowitz, *Innovation Catalysts and Accelerators*, 48; Munn-Venn, *Lessons in Public-Private Research Collaboration*, 19.

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High volumes of administrative tasks can overwhelm PSE institutions and business partners.

to IP protection.<sup>78</sup> However, high volumes of administrative tasks can still overwhelm PSE institutions, particularly those with smaller partnership administration offices.<sup>79</sup>

- **Matching the scale of operations:** Many PSE institutions devote significant financial and human resources to partnerships with businesses. The University of Waterloo, for example, uses its department of cooperative education to manage thousands of cooperative education students every year. However, many businesses—especially small- and medium-sized businesses—may not have the capacity to devote permanent staff and financial resources to managing partnerships with PSE institutions. This limits the ability of businesses to undertake complex or large-scale partnerships.<sup>80</sup>

### Awareness and Bias Barriers

- **Knowing the opportunity:** In 2004, David Johnston (then President of the University of Waterloo) noted: “Many potentially beneficial collaborations never occur because of the private sector’s unawareness of the valuable resources universities could offer, or because of the university’s lack of knowledge of the needs of regional and national industry.”<sup>81</sup> Although business awareness of the value of partnerships has increased over the past decade, challenges remain. Approximately 25 per cent of Ontario businesses surveyed in a 2013 Conference Board study said that a lack of awareness of experiential learning arrangements, such as co-ops and internships, prevented them from leveraging these opportunities.<sup>82</sup>

78 C.D. Howe Institute, *From Curiosity to Wealth Creation*, 3.

79 Sattler, *Work-Integrated Learning*, 77.

80 Business-Higher Education Forum, *Working Together, Creating Knowledge*, 30.

81 Johnston, *The University-Private Sector Interface*, 9.

82 Stuckey and Munro, *The Need to Make Skills Work*, 31.

- **Misconceptions and biases:** Some education institutions and businesses believe that WILs are best supported by college-sector institutions instead of universities.<sup>83</sup> However, there is increasing need and opportunity to provide WIL experiences for students at all types of PSE institutions. Expanding the reach of WIL experiences allows institutions to respond more effectively to business and community needs; provides work experience, career information, and networking to a greater number of individuals; provides businesses with access to more talent; and increases the relevance of PSE programming.<sup>84</sup>

Many businesses would like to participate in WIL programs. However, results from a recent survey of employers conducted for Universities Canada reveal that employers face several challenges when hiring students. These challenges include:

- finding students with the right knowledge and skills
- finding time to train students
- limited financial resources

Many businesses may be unaware that PSE institutions of all types can support R&D activities. They may also be unaware that college-sector institutions have greatly expanded their applied research capacity, and that universities are making more efforts to support results-oriented R&D. In addition, businesses and PSE institutions do not always understand how the strengths, capabilities, and resources of their potential partners can help them reach their own objectives.<sup>85</sup>

## Managing the Unexpected

- **Adapting to changing circumstances:** Despite sound planning and project management, unexpected situations can jeopardize partnership success. Many partnerships involve unique activities and

83 Sattler, *Work-Integrated Learning*, 81.

84 Universities Canada, *Co-op and Internship Students a Valuable Source of New Talent*.

85 Business-Higher Education Forum, *Working Together, Creating Knowledge*, 29.

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PSE institutions and businesses leverage each other's strengths and resources.

pursuits, and are innovative and exploratory. As a result, partnership participants often need to make decisions and take action in conditions of uncertainty.<sup>86</sup> By acknowledging this uncertainty, and by anticipating that their partnerships will shift direction, partners can minimize the negative effects of unexpected changes in circumstances. As noted by one continuing studies administrator, “the number one thing [about partnership challenges] is to expect them.”<sup>87</sup>

- **Turning challenges into opportunities:** In some cases, challenges present partnering organizations with new opportunities. For example, new or unexpected research results can lead to more valuable lines of inquiry or stimulate new partnerships and long-term relationships.<sup>88</sup> In these cases, partners should remain flexible and responsive to each other's needs and issues. One college representative noted that her institution's biggest challenge operating a multi-year research centre is to remain “open to feedback, and open to shifting and adjusting what [the institution] does to respond to business needs.”

## Summary

PSE institutions and businesses make important economic and social contributions by leveraging each other's strengths, capabilities, and resources. Some partnerships use PSE skills, knowledge, and research capacity to address business innovation needs, while others help students develop employment-relevant skills and experience. Both types of partnerships are essential to Canada's current and future prosperity and competitiveness. While PSE–business partnerships are becoming more common and complex, PSE institutions, businesses, and third-party organizations can do more to increase partnership uptake and effectiveness. The following chapters show how partnership practitioners can use ethical guidelines, operating principles, and value assessment to ensure partnership success.

86 Munro and Edge, *Thinking Like an Innovator*, 5–6.

87 Interview conducted by the Conference Board.

88 Science-Business Innovation Board, *Making Industry-University Partnerships Work*, 11.

## CHAPTER 4

# Ethical Guidelines for PSE–Business Partnerships

### Chapter Summary

- Ethical PSE–business partnerships safeguard the interests of students and other learners, build trust and respect, regulate themselves, and enable informed decisions that benefit all partners.
- PSE institutions and businesses face a variety of ethical challenges in their partnerships, including conflicts of interest, balancing the needs of partner organizations, and maintaining trust, openness, and transparency.
- The Conference Board's *Ethical Guidelines* for PSE–business partnerships help PSE institutions and businesses develop, operate, and maintain partnerships that strive for ideals, adhere to obligations, and manage effects.

**Ethics concern the rightness and wrongness of actions; they play an essential, if sometimes hidden, role in partnership success. PSE institutions and businesses need to understand and manage the ethical dimension of PSE–business partnerships. As PSE–business partnerships become more common, diverse, and complex, they sometimes involve new partners with little or no partnership experience.<sup>1</sup> In addition, partnership participants may be unaware of the ethical vocabulary and skills they need to identify and address ethical issues. This means that partnership practitioners do not always consider the ethical dimensions of their partnerships until they encounter challenges.**

When asked about ethical issues encountered during their partnerships, many PSE–business partnership practitioners we interviewed said that none had occurred. However, when asked about the challenges their partnerships face, many practitioners described conflicts of interest; difficulties balancing the needs of students and partner organizations; challenges maintaining trust, openness, and transparency; and other issues that have ethical components.

PSE–business partnership practitioners and stakeholders can refer to the Conference Board’s *Ethical Guidelines for Business Education Partnerships* to strengthen their ethical awareness and to ensure that their partnerships are based on sound ethical principles. (See Exhibit 2.) The guidelines are part of the Conference Board’s *PSE–Business Partnerships Tool Kit*, which also includes *Operating Principles for PSE–Business Partnerships* and *Evaluating Education-Business Partnerships*. (See “PSE–Business Partnerships Tool Kit.”)

1 Bloom, *Ethical Guidelines for Business-Education Partnerships*, 4.

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## PSE–Business Partnerships Tool Kit

The Conference Board of Canada's *PSE–Business Partnerships Toolkit* provides partnership participants and stakeholders with a suite of tools to help ensure their partnerships are based on sound ethical guidelines, operating principles, and value assessment practices. PSE institutions, businesses, not-for-profit organizations, government organizations, and community groups can use these tools to help them make sound and informed decisions and take effective action.

The Tool Kit has three components:

- Ethical Guidelines for PSE–Business Partnerships (Chapter 4);
- Operating Principles for PSE–Business Partnerships (Chapter 5);
- Evaluating Education-Business Partnerships: Value Assessment Process (Chapter 5).

These tools are available at [www.conferenceboard.ca/topics/education/ebp.aspx](http://www.conferenceboard.ca/topics/education/ebp.aspx).

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The ethical guidelines, developed by the Conference Board, are organized into three categories: strive for ideals, adhere to obligations, and manage effects. (See Exhibit 2.)

### Strive for Ideals

Each of the guidelines in this section refers to ideals—virtues, goals, and ideas of excellence—worth striving for in all types of PSE–Business partnerships.<sup>2</sup> These ideals are aspirational, and partners may not always reach them. However, when partnerships reflect these ideals, they lead to greater levels of trust and understanding among partners, and to stronger, more long-lasting collaborations. On the other hand, when partners strive for different ideals, it can be difficult for them to find common ground to address challenges and issues in their partnership.<sup>3</sup>

2 Ibid., 6.

3 Ibid., 13.

## Exhibit 2

### Ethical Guidelines for PSE–Business Partnerships

#### Ethical PSE–business partnerships are ones that:

##### Strive for Ideals

- Mutually benefit all partners
- Enhance the quality and relevance of education for all—including students and other learners
- Share knowledge, ideas, and perspectives to benefit participants
- Are based on shared or aligned objectives that support the goals of the partner organizations
- Are developed and structured in consultation with all partners
- Are based on trust and openness among all partners
- Recognize and respect each partner's expertise and contributions
- Respect differences among partners

Partnerships are based on trust and openness.



Treat fairly and equitably all participants and those who are served by the partnership.



Find common ground when challenges arise by returning to shared objectives and values.

##### Adhere to Obligations

- Are consistent with the ethics and core values of all partners
- Are based on the clearly defined expectations of all partners
- Treat fairly and equitably all participants and those who are served by the partnership
- Ensure that activities comply with partners' codes of conduct and regulations
- Allocate resources to complement and not replace funding for education
- Identify and manage potential conflicts between business needs and academic freedom
- Identify and address conflicts of interest within partnership organizations and among partners

##### Manage Effects

- Consider the effects of actions and test them against ideals and obligations
- Identify and address potentially negative impacts on non-participants
- Exercise diligence when making decisions by considering responsibilities to all partners and stakeholders
- Are open and honest when problems occur and avoid making excuses or rationalizations
- Find common ground when challenges arise by returning to shared objectives and values
- Celebrate and build on positive outcomes and progress made

#### PSE–Business Partnerships

PSE–business partnerships are mutually beneficial, cooperative relationships among one or more PSE institutions (university, college, polytechnic, CEGEP, or other institutions) and one or more businesses. Partnerships share obligations, objectives, and contributions to achieve desired outcomes that directly support, and are aligned with, PSE mandates and business needs.

#### PSE–Business Partnership Tool Kit

Ethical Guidelines is part of a tool kit of materials developed by The Conference Board of Canada. See also:

*Operating Principles for PSE–Business Partnerships*  
*Evaluating Education–Business Partnerships: Value Assessment Process*

These tools can be found at [www.conferenceboard.ca](http://www.conferenceboard.ca).

Source: The Conference Board of Canada.

## Ethical PSE–Business Partnerships

**Mutually benefit all partners.** Mutual benefit is a core element of all successful PSE–business partnerships. Partners often describe this as the “win-win” equation that drives partnership success, and there are many forms that this “win-win” can take. These include R&D partnerships that address business innovation needs, and work-integrated learning partnerships. The term “mutual” refers to the reciprocal gains that partners receive in a mutually beneficial partnership. Partnerships that

make mutual benefit a fundamental objective, and use it as the basis for partnership programs and activities and for evaluating performance, are more likely to be sustainable in the long term.

**Enhance the quality and relevance of education for all, including**

**students and other learners.** PSE institutions are in the business of teaching. As such, PSE institutions and businesses that engage in partnerships should strive to enhance student learning and skills development opportunities. Even in partnerships in which student participation is minimal, partners can take steps to generate learning benefits for students. For example, faculty can use what they learn in R&D partnerships to enhance curricula and pedagogy. In the case of work-integrated learning, meeting the needs of learners is especially important: As one business school administrator noted, student interns should be viewed not as “deeply discounted labour,” but as individuals who need education and mentoring.<sup>4</sup>

**Share knowledge, ideas, and perspectives to benefit participants.**

Partnerships that support a two-way flow of knowledge and ideas foster mutual benefit and strengthen relationships among partners. In some cases, stronger relationships lead to more collaboration and more support for partnership activities. As one PSE researcher noted, science is an “interactive” process: A failure to exchange relevant information can reduce the effectiveness of a partnership, and create mistrust among partners. To maximize the flow of knowledge in their partnerships, PSE institutions and businesses should take steps to ensure that participants feel comfortable sharing their ideas, and that their partnerships facilitate knowledge exchange between all participants.

4 Interview conducted by the Conference Board.

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Engaging all partners early makes participants feel that they contribute to the partnership.

**Are based on shared or aligned objectives that support the goals of the partner organizations.** Shared or aligned objectives ground partnership activities in a common vision of what is to be achieved, and foster greater degrees of enthusiasm and commitment among partnership participants. For example, the Kamskénow program, started in 2009 between the University of Saskatchewan, PotashCorp, and the Greater Saskatoon Catholic School Division, focuses on a shared goal: increasing the science literacy of indigenous youth. Ultimately, the partnership seeks to increase indigenous participation in science-based, post-secondary education and indigenous employment in the region's economy. By focusing on these common goals, the partnership receives continuing support and generates ongoing value for the partners, participants, and other stakeholders in the community.

**Are developed and structured in consultation with all partners.** Partners should begin cooperating at the initial stage of partnership development. All partners should have their interests taken into account, so that partnership objectives and activities are consistent with all partners' needs and expectations.<sup>5</sup> Partnerships developed and structured through consultation result in greater trust and commitment among partners, and a stronger sense of ownership of partnership activities and outcomes. As one partnership participant noted, engaging all partners early is important because it makes participants feel that they can fully and meaningfully contribute to the direction of the partnership. Without this direction, disagreements and misunderstandings may emerge.

**Are based on trust and openness among all partners.** Partners should operate on the knowledge that their partners are fulfilling their roles to the best of their abilities, and are openly discussing partnership activities, challenges, successes, and expectations. As one interviewee noted, partnerships in which one or more partners "keep their cards close to their chest" tend not to be successful. To be sure, aspects of some partnerships require that participants maintain confidentiality.

5 Bloom, *Ethical Guidelines for Business-Education Partnerships*, 16.

For instance, many R&D partnerships require PSE institutions to protect sensitive business information, such as intellectual property or information about the corporate strategy of a business. In these cases, partners need to be clear about the parameters of confidentiality from the outset of a partnership, so that they do not become sources of dispute later on.

**Recognize and respect each partner’s expertise and contributions.**

PSE institutions and businesses partner to leverage each other’s strengths and resources, and to achieve mutual benefit. However, they may not always appreciate the full range of expertise and resources that their partners can bring to the partnership due to preconceptions about their strengths and limitations. Partnerships that leverage all partners’ expertise and potential contributions are more likely to identify and develop unexpected opportunities, and to foster continued collaboration. (See “Respecting Partners’ Expertise and Contributions: The University of Waterloo, Maplesoft, and Toyota.”)

**Respect differences among partners.** An increasing variety of PSE institutions, businesses, and third-party organizations are becoming involved in PSE–business partnerships. As this variety increases, so too does the chance that differences between partners’ organizational style, structure, objectives, and expectations can lead to conflicts or misunderstandings. In addition, many partnerships involve individuals from varied cultural, ethnic, religious, and national backgrounds. Respecting differences among partners and participants is a matter of ethical and moral importance, and helps build trust and effective communication to drive partnership success.

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## Questions and Key Considerations: Strive for Ideals

- Are the partnership's objectives, anticipated benefits, and workload shared among all partners?
  - Do the partnership's objectives reflect the organizational goals and missions of all partners?
  - Do partners trust and collaborate with each other?
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## Respecting Partners' Expertise and Contributions: The University of Waterloo, Maplesoft, and Toyota

When software company Maplesoft decided to improve on its core computer algebra product, it sought the help of Dr. John McPhee, an expert in computer modelling and dynamics at the University of Waterloo. Since the software had initially been developed with intellectual property from the University of Waterloo, McPhee seemed like a natural fit. The initial collaboration between McPhee and Maplesoft resulted in a successful computer simulation technology, but it lacked the commercial focus necessary to be relevant to major industries.

An opportunity emerged for Toyota Motor Manufacturing Canada (TMMC) to work with Maplesoft and Dr. McPhee. After revising research objectives to suit the commercial needs of Maplesoft and Toyota, a partnership was born. A key component of the partnership's success is that it respects all partners' expertise and contributions. All partners have different areas of expertise, and have clarified their roles and responsibilities accordingly: Dr. McPhee and his team research new ways of using Maplesoft's technology; Maplesoft provides modelling and software support to Dr. McPhee's research team and leads commercialization efforts; and Toyota provides design input, testing, and post-deployment feedback.

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To achieve the objectives of a partnership, participants need to understand their ethical obligations.

The partnership has helped the University of Waterloo provide a more authentic learning experience to student researchers, improved its research capabilities through the new facilities developed for the partnership, and enhanced its profile. TMMC has made significant gains on safety and performance that resulted in significant savings for the company. Maplesoft's technology has since been licensed to companies across the world such as General Motors, Ford, Denso, and Harley-Davidson. In addition, the CEO of Maplesoft notes that the company "has been transformed from a supplier of software for solely mathematical education and research, to a world-leading provider of advanced engineering analysis tools and services."<sup>6</sup>

As Dr. McPhee notes, the partnership generated these benefits because the three partners maintained "well-organized, collaborative research that takes advantage of complementary contributions from partners."<sup>7</sup>

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## Adhere to Obligations

In ethical partnerships, all partners need to meet their obligations to each other and to those that could be affected by partnership activities. In some cases, partners outline these obligations in contracts, memoranda of understanding, other written agreements, or partners' regulations and codes of ethics, practice, and conduct. In many cases, obligations go beyond what can be formally articulated, including how participants' day-to-day behaviours adhere to basic ethical and moral values such as fairness and equitableness. To achieve the ideals and objectives of a partnership, all participants need to understand all their ethical obligations, and make decisions and actions accordingly.

6 Interview conducted by the Conference Board.

7 Ibid.

## **Ethical PSE–Business Partnerships**

### **Are consistent with the ethics and core values of all partners.**

PSE–business partnerships involve similarly minded people or organizations.<sup>8</sup> Large-scale, strategic partnerships (such as multi-year research centres) may use special mechanisms, such as due diligence practices or review by academic Senate, to determine whether the partnership is a good “fit,” and to flag any special ethical risks associated with the partnering organization.<sup>9</sup> To maintain ethical awareness at all stages of their partnership, partners should ensure that day-to-day decisions and actions are consistent with the ethics and core values of all partners.<sup>10</sup>

### **Are based on the clearly defined expectations of all partners.**

Partners should state their expectations at the beginning of a partnership and design partnership activities accordingly. Clearly defined expectations are particularly important for partnerships that involve exploratory objectives, such as those related to R&D. Indeed, one university researcher interviewed expressed his “frustration” at his business partners’ “constantly shifting objectives,” which made it difficult for him to meet their expectations. Clearly defined expectations can also strengthen partnerships by providing a baseline against which activities are measured and fostering enthusiasm among participants when they achieve success.<sup>11</sup>

8 Bloom, *Ethical Guidelines*, 15.

9 University of California Berkley, *Principles and Guidelines for Large-Scale Collaborations*, 8.

10 Bloom, *Ethical Guidelines*, 15.

11 Ibid.

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The ethical obligation begins when partners select their partnership teams.

**Treat fairly and equitably all participants and those who are served by the partnership.** Partners have an ethical obligation to ensure that all those involved in a partnership are treated fairly and equitably. This begins when partners select their partnership teams, which can include students and business employees. Partners should select participants without bias, and on the basis of their merits and ability to contribute to partnership objectives. Partnerships must ensure that all participants receive fair and equal opportunities to contribute to and benefit from the partnership, without regard for differences such as gender, ethnicity, or cultural background. In some cases, maintaining fairness and equitableness requires partners to provide additional assistance for participants with unique needs (e.g., people with disabilities).<sup>12</sup>

**Ensure activities comply with partners' codes of conduct and regulations.** Many institutions and organizations have existing protocols, codes of ethics, practice, and conduct, and regulations that set broad parameters for ethical action. Other guidelines, regulations, and processes also help govern more specific aspects of partnerships. For example, research involving humans or animals must typically be approved by an institution's research ethics board. In addition, work-integrated learning partnerships can draw on the guidelines developed by the Canadian Association of Career Educators and Employers, as well as those of institutional career centres and co-op offices.<sup>13</sup>

**Allocate resources to complement and not replace funding for education.** Partnerships with businesses can help PSE institutions deliver on their core mandates for teaching and research. In some cases, PSE programs and activities would not take place without support from PSE–business partnerships. Examples include research that requires industry partnerships for funding (particularly within the college sector) and work-integrated learning that requires the participation of business partners. Nevertheless, as business involvement with PSE increases, it is

<sup>12</sup> Ibid., 14.

<sup>13</sup> Interview conducted by the Conference Board.

necessary to ensure that business resources do not wholly replace public funding and that private interests do not override public authority over education. PSE should remain a public good, even as stakeholders find new ways of leveraging business support to complement public funding.<sup>14</sup>

**Identify and manage potential conflicts between business needs and academic freedom.** In many R&D partnerships, each partner may have a different view on how to manage research results. PSE institutions thrive on openness, discussion, and information exchange, and PSE faculty and students typically look to publish their research findings. Businesses, on the other hand, often need to protect sensitive and proprietary company information, especially when they share this information with their partners in R&D collaborations. Although it can be difficult to anticipate disputes over research confidentiality and publication terms, identifying potential disputes as early as possible can help partners resolve and mitigate them before they have negative consequences. For example, partners can agree to reasonable delays in the publication of research results, or agree to publish only non-sensitive information.

**Identify and address conflicts of interest within partnership organizations and among partners.** As noted by a managing director of a university industry-liaison office, conflicts of interest should not prevent a partnership from moving forward, as long as partners are transparent and actively manage these conflicts. For example, if a university faculty member manages a small business and then receives university contracts for research services, key decisions regarding the related use of university resources, such as the use of campus facilities, should be made or vetted by a third party at the university. (See “Conflicts of Interest Involving Student Researchers.”)

14 Bloom, *Ethical Guidelines*, 16.

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## Questions and Key Considerations: Adhere to Obligations

- Do partnership decisions, activities, and deliverables meet the expectations set out in contracts, memoranda of understanding, and other written agreements?
  - Do partners engage each other fairly and equitably?
  - Do partners understand their ethical obligations, and do they use these obligations as a basis for decision-making and action?
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## Conflicts of Interest Involving Student Researchers

Conflicts of interest can occur in numerous ways in R&D partnerships, and knowing how to identify and address them are keys to partnership success. One example comes from a partnership between a small technology development company and a university professor of engineering to develop new image processing software. The partnership was supported by an NSERC Engage Grant to help them cover the costs of the project, and the university professor employed a team of top graduate students to assist with the research.<sup>15</sup>

A conflict of interest emerged because a student researcher had competing priorities. During previous studies at another institution, the student completed research work in a similar field, and was attempting to promote and commercialize the results through his own company, while also participating in the partnership. The student's attempts to license the results of his research directly competed with his work for the partnership. By diverting effort to his own company, the student could have prevented the institution and the professor from seeing a return on their investment.<sup>16</sup>

15 Interview conducted by The Conference Board.

16 Ibid.

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## Unexpected challenges can derail a partnership.

Indeed, at the time of the partnership, the student had entered negotiations with a partnership-supporting organization to commercialize his work. The length and difficulty of these negotiations caused the student's business partner to become concerned about the student's ability to contribute to the partnership. These negotiations prevented the company from developing a relationship with a new customer and, according to the company's CEO, reduced the quality of the final prototype. In future partnerships, the company's CEO believes students should disclose conflicts of interest at the outset of the partnership, or decline to participate.<sup>17</sup>

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## Manage Effects

PSE–business partnership practitioners need to manage the effects of their partnerships. Some of these effects are unexpected, and can generate benefits as well as challenges. Unexpected challenges can derail a partnership, negatively affect non-participants, or limit support for future partnerships. While partnership practitioners often operate in conditions of uncertainty, they can strengthen their ethical footing by taking steps to reduce the potential for negative effects that result from their actions, and by properly addressing negative effects when they occur.

## Ethical PSE–Business Partnerships

**Consider the effects of actions and test them against ideals and obligations.** As partnerships become more complex, it can be more difficult for practitioners to anticipate all possible outcomes (positive and negative) of their actions. Partners should consider the effects of their actions, and ensure that these effects are consistent with their obligations to their partners. It helps to partner with individuals who have previous partnership experience, and are aware of the ethical ideals and obligations of the partnership. Ensuring that their actions are consistent with the core values of other partners and participants helps partnership practitioners build trust.

17 Ibid.

**Identify and address potentially negative impacts on non-participants.** Partners should ensure that partnership activities do not negatively affect non-participants. Doing so becomes more challenging as partnerships become larger and have wider impacts. For example, a partnership that provides skills development opportunities to one segment of a community might place other segments of the community at a disadvantage. As PSE institutions, businesses, and supporting organizations (e.g., community groups and government agencies) look to create larger impacts with their partnerships, they should ensure that partnerships only support positive outcomes and benefits for participants, while safeguarding the interests of non-participants.

**Exercise diligence when making decisions by considering responsibilities to all partners and stakeholders.** PSE institutions and businesses have responsibilities and obligations to their partners and to a variety of stakeholders, such as an institution's student body, non-participant faculty and employees, and company shareholders. One way to manage the effects of partnership activities is to encourage partners to diligently consider all of these responsibilities and obligations when making decisions. This is easier when partners and participants communicate clearly and regularly. For example, business project leads should report regularly to their own management or executive team to ensure that partnership decision-making is informed by the realities of their organization.

**Are open and honest when problems occur and avoid making excuses or rationalizations.** Challenges and issues can emerge in even the most well-designed PSE–business partnerships. Effectively responding to challenges and issues requires that partners report these problems openly and honestly, and avoid making excuses or rationalizations. Doing so allows partners to discuss solutions and to move towards a mutually beneficial resolution. Recognizing mistakes helps build mutual trust, and is a critical component of strong and lasting relationships. Partners should take steps to create and maintain a culture of openness in which individuals feel comfortable disclosing problems.

**Find common ground when challenges arise by returning to shared objectives and values.** Challenges arise when partners have competing needs that seem irreconcilable. However, partnerships can often overcome these challenges by finding common ground, such as shared objectives and values that provided the initial foundation for the partnership. For example, PSE and business partners can resolve differences on IP ownership by referring to the fundamental objectives of their partnership. In an R&D partnership, these objectives may include the development and transfer of technology to achieve value for both parties. By referring to these objectives, partners may discover solutions, such as alternate licensing terms, that involve fewer or more satisfying compromises.

**Celebrate and build on positive outcomes and progress made.** PSE institutions and businesses need to identify and manage negative effects and recognize and celebrate partnership successes and progress. As noted by one respondent to the Conference Board's Ethical Guidelines and Operating Principles Validation, there are many different types of progress, including expanded partnership activities, increased involvement of partnership participants, research publications, prototypes, enhanced learner skills and knowledge, and others. Partners should celebrate successes in ways that are most appropriate to their partnership. Examples include ceremonies, awards, online profiling of achievements on institutional and partnership websites and social media, and verbal recognition and praise, among others.

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## Questions and Key Considerations: Manage Effects

- Are partners conscious of how the intended effects of their actions measure against their ideals and obligations?
  - Have partners considered potential negative effects of their actions—either for themselves, their partners, or non-participants?
  - Do partners consider their ideals and obligations when responding to unanticipated negative effects and challenges?
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## Summary

Ethical PSE–business partnerships safeguard the interests of students and other learners, build trust and mutual respect among partners, regulate themselves, and make informed decisions that mutually benefit all partners. Many PSE institutions and businesses face ethical challenges in their partnerships, including conflicts of interest, balancing the needs of students and partner organizations, and maintaining trust, openness, and transparency. However, not all partners are aware of the vocabulary and skills they need to properly identify and address ethical issues.

PSE–business partnership practitioners can refer to the Conference Board’s *Ethical Guidelines for PSE–Business Partnerships* and the *Ethical Guidelines Checklist* to find a common vocabulary for dialogue among partners and help them make informed decisions based on sound ethical principles. (See Appendix A.)

## CHAPTER 5

# Operating Principles and Value Assessment for PSE–Business Partnerships

### Chapter Summary

- PSE–business partners, especially those with little partnership experience, need general guidance about how to develop, operate, maintain, and assess their partnerships.
- Operating principles help partners make effective decisions, reduce conflicts and misunderstandings, and collaborate effectively.
- Value assessment helps PSE institutions and businesses set clear objectives, evaluate partnerships, and make informed decisions about their partnership.

## Operating Principles and Value Assessment

**Partnerships often fail when partners do not set clear objectives, make effective decisions, or accurately assess performance. PSE–business partners, especially those with little or no partnership experience, need guidance about how to properly develop, operate, maintain, and assess partnership programs and activities. Partners can use the Conference Board’s operating principles and value assessment tools to complement their own codes of ethics, practice, and conduct.**

The operating principles provide general guidance to PSE–business partnership practitioners on how to enhance the effectiveness of their partnerships, and help them reduce conflicts and misunderstandings. They are organized into eight categories: inception and development, operation, intellectual property, resources and financing, governance, people management, communication, and assessment and evaluation. (See Exhibit 3.)

Operating principles help education and business partners take a “business-like approach” to their partnerships. This means that partnerships make effective decisions, and use financial and human resources as efficiently as possible. As Exhibit 4 shows, effective partnerships use operating principles from inception, through day-to-day operations, and ongoing assessment and evaluation.

In the initial stages of a partnership, partners need to discuss their vision and mission for the partnership, and set clear objectives for activities. Many operating principles help partners perform day-to-day activities and operations. These include principles on governance, operation, intellectual property, people management, resources and financing, and communication. PSE institutions and businesses should assess

PARTNERING FOR PERFORMANCE  
Enhancing Partnerships Between Post-Secondary Education and Business

Exhibit 3  
Operating Principles for PSE-Business Partnerships

Effective PSE-business partnerships are ones that:

**Inception and Development**

- Clearly identify benefits for all partners
- Identify learners' needs and take action to enhance learning outcomes
- Develop through consultation with all partners and stakeholders to meet partnership objectives
- Identify appropriate partners, according to their mandates, missions, skills, and resources
- Set clear objectives that support the partner organizations' goals
- Define clear roles and responsibilities for all partners
- Gain commitment of leaders in the partner organizations and build grassroots support
- Articulate expectations in formal or informal agreements (e.g., contracts, Memoranda of Understanding, verbal agreements)
- Identify possible challenges and risks

**Operation**

- Provide adequate support for partnership participants
- Understand the bottom-line needs of all partners
- Draw on the expertise and resources of partnership-supporting organizations (e.g., government funding bodies, innovation support organizations, economic development agencies)
- Adapt to changing circumstances and manage unintended consequences
- Use appropriate practices, tools, and resources to ensure sound project management
- Manage expectations by developing realistic timelines for partnership activities and deliverables
- Identify, learn from, and apply successful practices as the basis for improvement
- Align decision-making with partnership goals and objectives

**Intellectual Property**

- Clearly define ownership and use of intellectual property (IP) at the beginning of the partnership
- Make use of technology transfer offices, industry liaison offices, or other intermediaries to help facilitate IP agreements
- Specify terms that address possible conflicts between researchers' desire to publish and industry's desire to protect IP and confidentiality

Understand the bottom-line needs of all partners.



**PSE-Business Partnerships**

PSE-business partnerships are mutually beneficial, cooperative relationships among one or more PSE institutions (university, college, polytechnic, CEGEP, or other institutions) and one or more businesses. Partnerships share obligations, objectives, and contributions to achieve desired outcomes that directly support, and are aligned with, PSE mandates and business needs.

**Resources and Financing**

- Identify and allocate sufficient resources to ensure successful completion of activities
- Leverage broad-based and diverse resources and funding (e.g., government funding bodies) where available
- Employ good practices in accounting and finance
- Enact policies and practices for managing financial returns (e.g., the allocation and use of monetary benefits arising from partnership outcomes)

**Governance**

- Share ownership to build commitment and encourage participation
- Decide on the basis of consensus
- Use shared governance structures or mechanisms for large-scale collaborations (e.g., governing boards, steering committees)
- Identify and mitigate governance risks

**People Management**

- Create a partnership team with a clear mandate and continuity of membership
- Recruit champions and advocates in partner organizations
- Identify and manage personnel requirements and risks (e.g., student and employee turnover)
- Involve individuals with varied experience who can bridge educational and business environments
- Train participants to carry out their roles and responsibilities, and ensure that they are fulfilling them
- Build trust through face-to-face meetings, especially as partnerships are being established



Promote a two-way exchange of knowledge and ideas.

**Communication**

- Define communications needs and have a communications component at each stage of partnership activity
- Promote a two-way exchange of knowledge and ideas
- Identify and communicate confidentiality requirements to all participants (including students and employees)
- Share evaluation results regularly with all partners and stakeholders
- Build in personal recognition and feedback to participants
- Recognize and celebrate the partnership's successes, and acknowledge challenges

**Assessment and Evaluation**

- Develop meaningful performance metrics
- Measure and evaluate performance to make informed decisions that ensure continuous improvement
- Evaluate partnership goals and activities throughout the duration of the partnership
- Use evaluation results to decide whether to continue or disband the partnership

**PSE-Business Partnership Tool Kit**

Operating Principles is part of a tool kit of materials developed by The Conference Board of Canada. See also:

*Ethical Guidelines for PSE-Business Partnerships*  
*Evaluating Education-Business Partnerships: Value Assessment Process*

These tools can be found at [www.conferenceboard.ca](http://www.conferenceboard.ca).

Source: The Conference Board of Canada.

and evaluate the outcomes of their activities, and identify opportunities for improvement and further collaboration. Assessment and evaluation can also feed into the day-to-day activities that a partnership involves so partners can make adjustments and respond to unexpected challenges. (See Exhibit 3.)

## Exhibit 4

### Operating Principles Framework



Source: The Conference Board of Canada.

## Inception and Development

Sound decision-making and action at the initial stages of a partnership is critical for launching a partnership on a solid foundation. At this stage, partners consult each other about the objectives of the partnership, negotiate roles and responsibilities, and articulate expectations that will shape their attitudes and behaviours throughout the partnership. The initial stages of a partnership also give partners the opportunity to anticipate and address risks before they can negatively impact the partnership. Partners should be flexible in these stages—and throughout the duration of their partnerships—to ensure that partnerships are beneficial for all partners and stakeholders.

### **Effective PSE–business partnerships are ones that:**

**Clearly identify benefits for all partners.** This is one of the most important elements of successful partnerships. Examples of clear benefits include producing a certain number of highly skilled graduates in a particular field, or building a commercially successful product or service. As noted by one university research administrator, the potential for concrete, mutual benefits makes it much easier to recruit potential

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Partnerships proceed more smoothly when partners have complementary mandates, skills, and resources.

partners.<sup>1</sup> In addition, once partnership activities are under way, partners may participate more meaningfully when they know their efforts will lead to well-defined, beneficial outcomes.

**Identify learners' needs and take action to enhance learning outcomes.** Partnership participants should work to meet the learning and skills development needs of all learners, including students and employees. At the Lawrence Kinlin School of Business at Fanshawe College, knowing that real-world experience makes their graduates more attractive to potential employers has significantly enhanced their students' learning experience. Through a partnership with a local economic development association, Fanshawe students conduct economic feasibility studies for businesses seeking to operate in the London, Ontario, area. This research has been used to persuade three international companies to launch their North American operations from the community.<sup>2</sup>

**Develop through consultation with all partners and stakeholders to meet partnership objectives.** Partners should consult each other about their objectives at the initial stages of partnership development to ensure that the needs of all partners, participants, and stakeholders are incorporated into partnership objectives and activities. Consultation between partners and stakeholders reduces the likelihood and severity of any partnership challenges, and creates cohesion among partners that fosters partnership effectiveness and sustainability.<sup>3</sup>

**Identify appropriate partners, according to their mandates, missions, skills, and resources.** Partnerships proceed more smoothly when partners have complementary mandates, skills, and resources. In some cases, organizations may be motivated to enter a partnership by the reputation or profile of a potential partner; however, they should ensure that potential partners also have similar goals and objectives for the partnership. A large majority (90 per cent) of respondents to

- 1 Interview conducted by the Conference Board.
- 2 Ibid.
- 3 Bloom, *Operating Principles for Business-Education Partnerships*, 12.

the Conference Board's Ethical Guidelines and Operating Principles Validation believe this principle is important or very important. Partners with complementary mandates, skills, and resources have less difficulty agreeing on the design of a partnership, and have natural common ground that helps them avoid or overcome challenges and obstacles.

**Set clear objectives that support the partner organizations' goals.**

Partners should set clear objectives that are informed by all partners' goals, and which represent a common vision for the partnership. This is central to ensuring that a partnership does not benefit one partner at the expense of other partners. Clear and shared objectives contribute to a sense of community among partners, and provide partners with a point of reference in times of uncertainty or confusion. Clear objectives also help ensure that partners are satisfied with their roles and responsibilities, which is crucial to maintaining their full commitment to the partnership.<sup>4</sup>

**Define clear roles and responsibilities for all partners.** Partners need to have clear roles and responsibilities for partnership activities to be meaningful and for partners to be engaged. Clear roles and responsibilities are especially important when partners have different ideas about what constitutes appropriate involvement in a partnership. This is due, in part, to the increasing diversity of participant organizations and views about how partnerships should be designed and operated. PSE institutions and businesses should take steps to ensure that all partners' roles and responsibilities reflect their capabilities, available resources, and levels of commitment to the partnership.

**Gain commitment of leaders in the partner organizations and build grassroots support.** Support at high levels of an institution or organization helps partners leverage organizational resources to assist with partnership activities, and legitimize their involvement in a partnership. This is especially important when partnership activities require participants to divert time and effort from their regular job duties. At the same time, support from one's colleagues and peers

4 Ibid., 13.

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Agreements help clarify expectations for a partnership.

(i.e., at the grassroots level) can help partnerships be more successful, especially when organizations recognize a partnership's value in their organizational objectives.

**Articulate expectations in formal or informal agreements (e.g., contracts, memoranda of understanding, verbal agreements).**

Developing informal or formal agreements that satisfy all partners helps them clarify their expectations for a partnership and reinforces their commitment to meeting these expectations. Partners can refer to agreements during times of uncertainty or confusion, and can use them to eliminate or reduce the negative impact of uncertainty on partnership activities. In R&D partnerships, agreements clarify partners' expectations for the publication of research results and their responsibilities for research and commercialization. In WIL partnerships, agreements clarify employers' expectations for students and their responsibilities for students' learning. See, for example, the Canadian Association for Cooperative Education's *Co-operative Education Manual*, which outlines the preliminary considerations, benefits, and responsibilities for cooperative education, and highlights practices for planning and managing successful co-operative education programs.<sup>5</sup>

**Identify possible challenges and risks.** Partners should be prepared to address any challenges and risks that occur during partnership operation. These include unexpected financial pressures, the departure of key personnel, disagreements over the use of intellectual property, and shifts in partners' mandates and missions. Partners should expect that challenges will occur. By doing so, they are more likely to develop an action plan ahead of time based on open and honest communication between partners. Doing so proactively, instead of reactively, reduces the likelihood that risks and challenges will seriously undermine a partnership's success. (See "Innovative Project Risk Management at the Lawrence Kinlin School of Business.")

5 Canadian Association for Co-operative Education, *Co-operative Education Manual*, 5–16.

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## Questions and Key Considerations: Inception and Development

- Have all partners been consulted, and do they agree on objectives, expectations, and their respective responsibilities?
  - Is the partnership supported by key personnel in partnering organizations?
  - Have partners anticipated possible risks to the effectiveness of the partnership? How do they plan to address these risks?
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## Innovative Project Risk Management at the Lawrence Kinlin School of Business

Fanshawe College in London, Ontario, offers a variety of educational programs to achieve its mandate of preparing students for success in their communities. In addition to programs that address a range of technical skills in traditional areas, the College's Lawrence Kinlin School of Business provides students with practical instruction on how to succeed in the business world.<sup>6</sup>

The Kinlin School's mandate requires it to develop relationships with businesses. In 2013, school administrators recognized that some local small and medium-sized businesses needed to improve their web presence. Administrators already knew that their students needed real-world experience. With the help of a series of 19 "Vouchers for e-business" from the Ontario Centres of Excellence, the Kinlin School organized teams of three to four students to work with businesses to improve their e-business strategies. Many of these businesses had already developed a web presence, but needed the help of Kinlin students to increase the volume and quality of visits to their web pages.

6 Interview conducted by the Conference Board.

Liz Gray, an instructor at the Kinlin School, was responsible for 15 of the school's 19 vouchers. Her experience working with small- and medium-sized businesses had made her aware that circumstances in these businesses can change quickly, and can strain the resources they need to provide student interns with meaningful experiential learning opportunities.<sup>7</sup>

Gray took steps to manage this risk. Partners agreed that students would work with five businesses at once, instead of a single business. If circumstances in one business changed or the experience in one business was otherwise unsatisfactory, students would still receive an authentic learning experience. This strategy also exposed students to a variety of business needs and issues, making them more employable and helping the Kinlin School deliver on its mandate to prepare students for successful careers in business.<sup>8</sup>

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## Operation

To properly implement programs and activities, partners need to use sound operating principles once activities are under way, support all partners and participants, draw on expertise and successful practices from other collaborations, and ensure that activities are properly managed. They also need to develop realistic timelines for activities, and ensure their decisions reflect partnership goals and objectives. Using these principles helps partners operate dynamic, flexible, and pragmatic partnerships.

### **Effective PSE–business partnerships are ones that:**

**Provide adequate support for partnership participants.** Partnership participants should receive proper support to fulfill their duties, especially first-time participants or those with little experience. This involves ensuring that participants have the proper resources, time, skills, and supervision to complete their duties. For example, the cooperative education program at the University of Waterloo provides several

7 Ibid.

8 Ibid.

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Partnerships work when investments generate mutual benefits for all partners.

resources, including a student code of conduct, to help students understand and meet the expectations of employers during their work terms. Students and employers can access these resources through the program's website. In addition, the co-op program often requires students to complete several pre-placement and on-the-job courses on topics such as ethical conduct.<sup>9</sup>

**Understand the bottom-line needs of all partners.** Partnerships work when investments of time, energy, and financial resources generate mutual benefits for all partners. Designing activities to meet these needs ensures that partnerships are sustainable for all. For example, in work-integrated learning partnerships, PSE institutions can help businesses meet their bottom-line needs by identifying suitable students and preparing them for work placements. In R&D partnerships, businesses can ensure that partnering PSE faculty can publish their research results, and that student researchers have opportunities to develop relevant skills and experience.

**Draw on the expertise and resources of partnership-supporting organizations (e.g., government funding bodies, innovation support organizations, economic development agencies).** Navigating the complexities of PSE–business partnerships can be challenging, and it can be helpful to enlist third-party organizations that provide partnership support. These include the Tri-Council agencies (SSHRC, NSERC, and CIHR), Mitacs, and organizations such as TEC Edmonton, CANARIE, and CMC Microsystems. External organizations can help bridge business and PSE environments, and provide valuable expertise and financial support. For example, some third-party organizations can help partners negotiate IP agreements and design research contracts.

**Adapt to changing circumstances and manage unintended consequences.** Circumstances can change quickly, even for the most successful organizations. Not all changes require organizations to make major adjustments or disrupt their operations, but partners should be prepared for the possibility that these changes that will

9 Ibid.

affect their partnership initiatives. For example, organizations may experience financial difficulties, changes in leadership, loss of key personnel, or shifts in mandate or mission that prevent them from moving forward with partnership activities. Responding to these changes may involve curtailing certain activities, adjusting timelines, or revising the partnership's goals and objectives.

**Use appropriate practices, tools, and resources to ensure sound project management.** PSE–business partnerships can be complex and present a variety of operational and managerial challenges that include partnership development, operational differences between partners, awareness and bias barriers, and administrative burden. Partners should use sound project management practices, tools, and resources to ensure that their partnerships run smoothly. Key project management activities include: defining project scope and objectives; using a detailed work plan to assign resources and tasks; defining how a partnership will manage challenges, adjustments, risks, and communication; and defining quality-management processes.<sup>10</sup>

**Manage expectations by developing realistic timelines for partnership activities and deliverables.** Partners sometimes have different approaches to timelines. Developing realistic timelines that reflect the needs and organizational structures of all partners can reduce potential sources of conflict and frustration. In R&D partnerships, for example, inexperienced business owners may expect PSE researchers to develop products or processes according to pre-determined timelines. This expectation contrasts with the somewhat unpredictable nature of R&D. Using student researchers can also delay timelines. As one college business school instructor noted, students need room to make mistakes, and this need must be balanced with a company's need to meet deadlines.<sup>11</sup>

10 Tech Republic, *Project Management Best Practices*, 2–6.

11 Interview conducted by the Conference Board.

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Goals and objectives help partners determine their approach to partnership activities.

**Identify, learn from, and apply successful practices as the basis for improvement.** Each partnership has unique circumstances, but partners should not feel the need to constantly “re-invent the wheel” to develop, operate, and maintain successful partnerships. Even partner institutions and businesses with little or no direct partnership experience can draw on experiences and lessons from other partnerships. Several types of resources can guide partnership development and operation, including the partners’ codes of ethics, practice, and conduct, partnership best-practice studies and annual reports, and the Conference Board’s *PSE–Business Partnership Tool Kit*.

**Align decision-making with partnership goals and objectives.**

Making decisions in partnerships is not always easy. However, decision-making is easier and more effective when it is informed by, and aligned with, the underlying goals and objectives of a partnership. These goals and objectives help partners determine their approach to partnership activities, especially when facing significant challenges, or when several potential actions offer comparable benefits and drawbacks. Aligning decisions with underlying goals and objectives helps ensure that partnerships continue to serve those they were intended to, and that all partners are satisfied with the outcomes.

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## Questions and Key Considerations: Operations

- Does the partnership provide proper support for, and address the needs of, all partners and participants?
  - Do partners use appropriate processes, practices, and resources to ensure that the partnership is managed effectively?
  - Do partnership timelines and expected deliverables reflect realistic expectations of partners’ capabilities?
-

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Defining IP ownership at the beginning of a partnership is crucial to avoiding conflicts and miscommunication.

## Intellectual Property

Intellectual Property (IP) refers to “the legal form of protection for inventions, brands, designs and creative works.”<sup>12</sup> The most common forms of IP are patents, copyright, designs, and trademarks. IP protections provide important incentives for innovation because they ensure that individuals and organizations can benefit from the investments they make in research and development.<sup>13</sup> Clearly defining and managing partners’ expectations concerning the use and ownership of IP reduces the potential for disagreement over issues such as IP ownership, the commercialization of research results, and the publication of research results that may disclose proprietary company information.

### **Effective PSE–business partnerships are ones that:**

**Clearly define ownership and use of intellectual property at the beginning of the partnership.** Defining IP ownership at the beginning of a partnership is crucial to avoiding conflicts and miscommunication as a partnership progresses. Determining which organizations own the intellectual property is sometimes difficult when R&D partnerships are jointly funded by public and private institutions, each of which has an interest in collecting revenues from the commercialization of research. PSE institutions need to ensure that IP agreements protect their ability to complete further research in a particular field. In contrast, some businesses believe that controlling IP will protect their investments in a partnership. Failing to overcome these differences in a way that benefits all partners can result in costly delays that impede partnership success or prevent partnerships from developing altogether.<sup>14</sup>

**Make use of technology transfer offices, industry liaison offices, or other intermediaries to help facilitate IP agreements.** PSE institutions and businesses can use technology transfer offices, industry liaison offices, and third-party organizations to help negotiate IP agreements,

12 Lambert, *Lambert Review of Business-University Collaboration*, 47.

13 Ibid.

14 Ibid., 50.

especially when partners lack experience. Most respondents (15 of 19 respondents; 79 per cent) to the Conference Board's Ethical Guidelines and Operating Principles Validation Survey agree that these intermediaries are important or very important for partnership success.<sup>15</sup> For example, one university researcher noted that his institution's research office clarifies expectations for new members of his research team by setting general rules around the publication and use of IP. This also includes having partnership practitioners sign a project-funded agreement to allow them to publish their papers.<sup>16</sup> Intermediaries can also accelerate IP negotiations by providing PSE and industry partners with standard agreement templates.<sup>17</sup> However, excessive or overly complex administration can frustrate businesses and PSE institutions, preventing them from maximizing the value of their partnerships.

**Specify terms that address possible conflicts between researchers' desire to publish and industry's desire to protect IP and confidentiality.** Partners should address conflicts between researchers' desire to publish and businesses' need to maintain confidentiality as soon as possible. In R&D partnerships, for example, partners may agree on reasonable publication delays that protect sensitive company information while respecting faculty and students' interests in publishing their research. Some partnerships use formal, written agreements while others use informal agreements, including those based on verbal understandings alone. High levels of trust help ensure that partners honour informal agreements and can manage unexpected difficulties.

15 Most respondents (15 of 19 respondents; 79 per cent) to the Conference Board's Ethical Guidelines and Operating Principles Validation Survey agree that these intermediaries are important or very important for partnership success.

16 This also includes having partnership practitioners sign a project-funded agreement to allow them to publish their papers. Interview conducted by the Conference Board.

17 Ibid.

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## Questions and Key Considerations: Intellectual Property

- Have partners considered how intellectual property may be relevant to their partnership?
  - Have partners specified, and do they agree on, terms for the ownership and use of IP?
- 

## Resources and Financing

Partnerships need adequate human, financial, and capital resources to be effective. As they become larger and more complex, and require more substantial investments of resources, partners typically need more sophisticated strategies to allocate and manage resources effectively. The following section describes several principles that partnership practitioners can follow to effectively manage partnership resources and financing.

**Effective PSE–business partnerships are ones that:**

**Identify and allocate sufficient resources to ensure successful completion of activities.** Partners should determine their partnership's resource requirements (e.g., people, operating funding, machinery, and equipment) at the beginning of the partnership if possible. This sometimes involves lengthy discussion and negotiation with other partners and stakeholders. The process is necessary, however, to ensure that partners can meet resource needs for the duration of a partnership. Before supporting a co-op work placement, for example, employers should ensure that they can cover the cost of hiring a student, and of sustaining the student's placement for the full term of their employment.

**Leverage broad-based and diverse resources and funding (e.g., government funding bodies) where available.** Partnerships use of a variety of funding sources, including funding from divisions and departments within institutions or organizations, and external sources such as government funding bodies or non-profit organizations. As

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Accurate finance and accounting practices help partners assess the financial performance of a partnership.

the Canadian Chamber of Commerce notes, many small employers have limited resources to devote to partnerships. However, there are organizations such as Mitacs that build partnerships between industry, post-secondary education, and the world by connecting “organizations of all sizes with university graduates” in support of industrial and social innovation.<sup>18</sup> As partnerships become more complex, they often need to leverage more diverse sources of funding. This is particularly true for large-scale, strategic R&D partnerships with large financial requirements such as the cost of salaries for research teams, specialized facilities, machinery, and equipment. In these cases, additional financial support from organizations that support partnerships organizations such as the Tri-Council (NSERC, SSHRC, and CIHR), Mitacs, and other third parties can be especially helpful.

**Employ clear practices in accounting and finance.** Responsible and accurate finance and accounting practices help partners assess the financial performance of a partnership and achieve their bottom-line needs. Partners can use financial information to improve or adjust resource allocation, and even determine whether they wish to continue participating in a partnership. Good practices in accounting include: maintaining proper financial records; accurately recording revenues and expenses; being honest and realistic about the financial performance of the partnership; and disclosing financial records where appropriate.<sup>19</sup>

**Enact policies and practices for managing financial returns (e.g., the allocation and use of monetary benefits arising from partnership outcomes).** Some partnerships, particularly those that develop and commercialize products and services, create financial returns for partners and participants. Properly managing these returns is crucial to ensure mutual benefit. At the outset, partners should enact policies and practices to manage financial returns, and take steps to

18 Canadian Chamber of Commerce, *Fragmented Systems*, 28.

19 Brown Governance, *Generally Accepted Accounting Principles and Concepts*.

ensure they are respected throughout the partnership. This may involve ongoing collaboration and communication with additional members of an institution or business, such as accounting personnel.

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## Questions and Key Considerations: Resources and Financing

- Have partners properly assessed their partnership's need for financial, human, and capital resources?
  - Have partners developed appropriate policies and practices for managing their partnership's resources?
  - Have partners leveraged opportunities for funding from sources other than the partnership's partners and stakeholders?
- 

## Governance

The Institute on Governance notes that governance, at its essence, “determines who has power, who makes decisions, how other players make their voice[s] heard and how account is rendered.” Good governance, in other words, takes into account the interests of all partners and stakeholders, and provides clear direction on partnership activities.<sup>20</sup> Governance structures can be simple or complex, depending on the scale and scope of partnerships. The key components of good governance apply to all types and sizes of partnerships. These key components include: shared ownership, decision by consensus, shared governance structures, and effective management of governance risks.

**Effective PSE–business partnerships are ones that:**

**Share ownership to build commitment and encourage participation.**

All partners and stakeholders need to be fully committed and engaged in partnership activities. A strong sense of ownership is crucial, particularly

<sup>20</sup> Institute on Governance, *Defining Governance*.

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Partnerships should make decisions through consensus whenever possible.

when success depends on the discretionary efforts of participants such as students and employees. There are several factors—such as the availability of financial resources and personnel, and competing organizational priorities—that determine the involvement of participants in partnership activities. However, all partners should identify and leverage opportunities to strengthen commitment and participation in their partnership whenever possible.

**Decide on the basis of consensus.** Partnerships should make decisions through consensus whenever possible. This may be especially difficult when partnerships are large, complex, and involve multiple partners. In these cases, working towards full consensus can create unnecessary delays. Nevertheless, partnerships should take the interests of all partners into account as much as possible, to build the trust and strong relationships that are essential to long-term partnership success.

**Use shared governance structures or mechanisms for large-scale collaborations (e.g., governing boards and steering committees).** Partnerships may involve multiple and diverse partners, including PSE institutions, businesses, government agencies, and community groups. In these cases, partnerships can use shared governance structures to ensure that partnership decision-making takes into account the issues and interests of all partners. For example, the Centre for Northern Innovation in Mining at Yukon College seeks to address some of the Yukon's social and economic issues by providing training for jobs in the resurgent mining industry. Yukon College led the creation of a governing council that included three business stakeholders, local minority groups, subject experts, and one government official. The council's diverse membership has helped it address a variety of challenges and concerns, creating the necessary conditions for an effective and sustainable partnership.<sup>21</sup>

**Identify and mitigate governance risks.** As the scale, scope, and complexity of partnerships grows, so too does the potential for governance risks that can negatively affect partnership activities.

21 Interview conducted by the Conference Board.

Common governance risks include different motivations and expectations for a partnership, varying levels of experience with operating partnerships, and sharing sensitive business information among partners. Partners should identify these risks and develop strategies and take action to mitigate them as early as possible. (See “Protecting Sensitive Business Information at the University of Alberta’s Phytola Centre.”)

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## Questions and Key Considerations: Governance

- Do partnership administrators take into account the interests of all partners and stakeholders?
  - Do partnership administrators provide clear direction and guidance on partnership activities and duties?
  - Are the partnership’s governance structures—governing boards, steering committees, etc.—shared among all partners and stakeholders?
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## Protecting Sensitive Business Information at the University of Alberta’s Phytola Centre

Based at the University of Alberta, the Alberta Innovates Phytola Centre performs research in lipid biochemistry and molecular biology to develop products and technology solutions for Canada’s oilseed industry.<sup>22</sup> The Centre, a collaborative effort supported by Alberta Innovates Bio Solutions, involves academic researchers and industry partners. One of the Phytola Centre’s key goals is to help businesses leverage the Centre’s base of research to solve industry challenges.

22 Phytola Centre, *About*.

The Centre's Board of Directors includes several businesses that represent diverse interests. This diversity is valuable, but can create challenges when board members need to share sensitive information. Board members need to maintain confidentiality while ensuring that they can openly discuss the partnership's activities.

Identifying and managing governance challenges is key to the partnership's success, and according to the Centre's Scientific Director, Dr. Randall Weselake, the Centre created internal policies to manage the discussion of sensitive information. The Centre contracted TEC Edmonton, an Edmonton-based business incubator, to help develop non-disclosure agreements that provide board members with clear guidelines on sharing sensitive information. These agreements have helped board members protect sensitive information, but they sometimes prevent researchers and other members of the Centre from accessing valuable information.

Although some challenges are unavoidable, Dr. Weselake notes that learning how to navigate them is itself a valuable learning experience for the Centre's student researchers, some of whom will go on to find private sector employment in the biotechnology industry. Through their work for the Centre, students become aware of confidentiality challenges, and learn how to address them while respecting the academic freedom of researchers.

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## People Management

People are at the heart of successful PSE–business partnerships. Effectively managing people means developing and maintaining the quality and productivity of relationships among partners and stakeholders that support the partnership. Common challenges include creating stable partnership teams, recruiting champions and advocates, training participants, and building trust. Partnerships also encounter issues that are unique to their circumstances. Partnerships can use the following operating principles to manage relationships between partnership participants and stakeholders.

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Maintaining support for partnerships is important for partnership sustainability.

**Effective PSE–business partnerships are ones that:**

**Create a partnership team with a clear mandate and continuity of membership.** Partnerships need competent and stable teams to ensure that activities are completed successfully. Indeed, all respondents to the Conference Board’s Ethical Guidelines and Operating Principles Validation Survey noted that partnership teams with clear mandates and stable membership are important or very important for success. Clear mandates provide clarity for existing team members and help recruit new members. In addition, succession planning is especially important for multi-year teams because they are likely to experience staff turnover that create gaps in knowledge and experience.

**Recruit champions and advocates in partner organizations.**

Generating and maintaining support for partnerships is important for partnership sustainability. Much of this support comes from within partner institutions and organizations. For example, internal pressure or dissatisfaction among employees can prevent organizations from effectively engaging in partnership activities. It is therefore important that partners recruit individuals within their organization, at the leadership and grassroots levels, to advocate and generate support. To do so, they should identify the information that their employers need, and develop ways to satisfy their need for information and understanding.<sup>23</sup>

**Identify and manage personnel requirements and risks (e.g., student and employee turnover).** Managing personnel effectively involves addressing risks, such as student or staff turnover, by providing clear and fair directions to participants and ensuring that participants’ duties align with their skills. However, staff turnover is not always preventable, especially in long-term partnerships. To reduce the likelihood that student or staff turnover will derail their partnership, partners should develop succession plans, develop a shared base of knowledge, and facilitate effective knowledge transfer among participants.<sup>24</sup>

<sup>23</sup> Bloom, *Operating Principles*, 15.

<sup>24</sup> DeVore, *The #1 Risk Factor*.

**Involve individuals with varied experience who can bridge educational and business environments.** PSE institutions and business have different operating environments. Partnership teams should include individuals with experience and skills that help foster connections across these boundaries.<sup>25</sup> Experience in PSE and business environments is crucial to understanding the key needs and objectives of all partners. In R&D collaborations, for example, experience in academic and business environments can help PSE institutions understand key scientific questions faced by industry and ensure their research meets the needs of their business partners. Individuals who understand both environments can also mentor colleagues with less experience.

**Train participants to carry out their roles and responsibilities.** At the beginning of a partnership, participants may not have all the skills and knowledge they need to complete partnership activities successfully. For example, business employees may be inadequately prepared for roles as educators, and members of PSE institutions may be unfamiliar with the mechanics and needs of businesses. As such, partnership participants may require training to help them develop the skills and knowledge they need to carry out their roles and responsibilities. Training can take place in classrooms or on the job. Partners can also make educational resources available to participants throughout the partnership.

**Build trust through face-to-face meetings, especially as partnerships are established.** Face-to-face meetings facilitate communication and understanding between partners, and help them develop and maintain positive working relationships. Arranging face-to-face meetings can be difficult, especially when there is significant physical distance between partners. However, modern communications technologies have made it easier for partners to connect meaningfully without physical proximity. In some cases, strong commitments from partners eliminate the risk that physical distance will negatively impact their partnership. For example, a university researcher in an R&D partnership noted that a physical separation of 215 kilometres

25 Science-Business Innovation Board, *Making Industry-University Partnerships Work*, 10.

did not prevent partners from holding 85 face-to-face meetings over 16 years. These meetings were critical to strengthening the relationship between partners, and contributed to the partnership's success.<sup>26</sup>

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## Questions and Key Considerations: People Management

- Do participants have healthy relationships with their colleagues, partnership administrators, and others that support the partnership?
  - Are partnership team members adequately prepared to carry out their responsibilities?
  - Are partnership administrators prepared for the possibility of participant turnover?
- 

## Communication

Effective communication is a cornerstone of successful PSE–business partnerships. It helps partners design and operate partnerships through in-person meetings, phone calls, e-mails, and teleconferencing. It also generates enthusiasm and support for partnerships by communicating results and successes to partners, participants, and stakeholders. Partners and participants can communicate these results and successes through ceremonies, awards, ad hoc parties, speeches, media stories, newsletters, and intramural newsletters.<sup>27</sup>

**Effective PSE–business partnerships are ones that:**

**Define communications needs and have a communications component at each stage of partnership activity.** Partners should define their communication needs and develop appropriate communication strategies for each stage of a partnership. Effective communication helps maintain productive and open relationships among

<sup>26</sup> Interview conducted by the Conference Board.

<sup>27</sup> Bloom, *Operating Principles*, 20.

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Freely exchanging knowledge and ideas maximizes benefits and outcomes.

partners. It also helps partners clarify the benefits of their partnership, and motivates participants to contribute more to their partnership.<sup>28</sup>

In addition, effective communication with external stakeholders (e.g., community members, media) helps build support for a partnership and increases its impact.

**Promote a two-way exchange of knowledge and ideas.** When partners freely exchange knowledge and ideas, it is easier for them to maximize partnership benefits and outcomes. Open communication facilitates the discovery of new partnership opportunities and benefits. In one work-integrated learning partnership, a student's personal obstacles made it difficult to find a suitable work placement. By discussing those obstacles with potential business partners, a partnership administrator discovered that an employee at a local business had experienced, and overcome, similar hurdles. This common ground fostered a connection between the student and the business, and led to a successful work term for the student.

**Identify and communicate confidentiality requirements to all participants (including students and employees).** Administrators and participants in partnerships of all types should be familiar with the confidentiality requirements of all partners and stakeholders. For example, students in R&D partnerships may need to access sensitive business information. Without clearly communicating their confidentiality requirements, and showing students how to manage and control sensitive information, businesses expose themselves to potential breaches of information that can reduce their competitiveness and market share. (See "International Leadership Development Program: Protecting Confidentiality and Business Needs.")

**Share evaluation results regularly with all partners and stakeholders.** Partnership participants and stakeholders should be familiar with their partnership's evaluation results, and use them to inform their decisions and behaviours. Positive evaluation results generate support and enthusiasm for partnerships, and negative

28 Ibid.

results can help identify opportunities for improvement. In addition, communicating evaluation results to external sources (e.g., media, external stakeholders) can create more interest in a partnership and attract new partners. Evaluation results can be communicated in several ways, including in-person meetings, teleconferences, public and community media, presentations and speeches, and ceremonies.

**Build in personal recognition and feedback to participants.** Partners should recognize the achievements and contributions of partnership participants. Personal recognition and feedback makes participants feel valued and enhances cooperation among partners and outside stakeholders. In one R&D partnership, a university recognized a faculty researcher and his business partner by presenting them with awards for their contributions. The university presented the awards during a ceremony for faculty at which both partners were present. This strengthened the relationship between the two partners and has fostered a continuous collaboration.<sup>29</sup>

**Recognize and celebrate the partnership's successes and acknowledge challenges.** Recognizing success can help all partners generate enthusiasm and encourage more individuals to participate. Partners should also acknowledge challenges and learn from their mistakes. Focusing exclusively on positives may generate support and enthusiasm, but has the potential to weaken a partnership if partners fail to identify opportunities for improvement. As one respondent to the Conference Board's Ethical Guidelines and Operating Principles Validation survey noted, "challenges are where opportunities for meaningful growth and learning reside."

29 Interview conducted by the Conference Board.

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## Questions and Key Considerations: Communication

- Do partners communicate regularly and effectively through in-person meetings, phone calls, e-mails, and teleconferencing?
- What can be done to improve the effectiveness of these communications?
- Do participants clearly communicate the partnership's successes and challenges to their colleagues, relevant stakeholders, and communities?
- Does the partnership appropriately recognize those responsible for the partnership's success?

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## International Leadership Development Program: Protecting Confidentiality and Business Needs

At the University of Toronto's School of Continuing Education, PSE–business partnerships are critical for success, and the school takes an entrepreneurial approach to developing and operating partnerships. Students find the school's programs attractive because the programs are relevant, nimble, and responsive to their needs. The school operates with a high degree of business acumen, partly because it is funded through student fees alone, and needs to ensure that students and businesses see returns on their investments in learning.

In 2011, the school partnered with the Industrial and Commerce Bank of China (ICBC) to implement the International Leadership Development Program (ILDP). The program responds to ICBC's need to prepare its employees for careers abroad and to the school's mandate to deliver skills and education programming outside Canada. In addition to teaching ICBC employees the basics of finance and banking, the ILDP incorporates Canadian language and cultural components, providing ICBC employees with the foreign culture and English language experience necessary to succeed in international careers.

The School of Continuing Education and ICBC have an effective working relationship, but differences in organizational culture and structure sometimes create challenges. One of these challenges was protecting the confidentiality of student-employee grades. ICBC had asked to view students' grades to help

determine which of its employees were best suited to foreign assignments. For the ICBC, this information was critical to determining which of its employees were best suited to international postings.

As is the case with most PSE institutions, however, student grades at the school are confidential. However, there was concern that the ICBC sought to receive student grades without prior authorization. To overcome this challenge, both partners agreed to require students to sign a waiver that authorized the school to release their grades to the ICBC. Securing this authorization was key to ensuring that the partnership was mutually beneficial and that it respected the core values of both partners. In addition, resolving this and other issues through discussion and communication increased partners' mutual trust and cooperation.

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## Assessment and Evaluation

Assessment and evaluation is an important part of successful and sustainable partnerships. It can help partners identify opportunities for improvement, build trust among partners, and generate support among participants and external stakeholders. Effective assessment and evaluation is useful throughout the life of a partnership. To properly assess and evaluate their partnerships, partners should establish performance metrics linked to objectives, continuously measure performance, and use evaluation results to decide whether to continue, re-organize, or terminate a partnership.

### **Effective PSE–business partnerships are ones that:**

**Develop meaningful performance metrics.** To be effective, performance measurement should be based on common partnership objectives. Performance metrics range from informal observations to rigorous analyses. (See “Value Assessment Practices and Tools.”) For example, in small-scale R&D partnerships to develop new products, meaningful metrics include tracking whether a prototype is developed, commercialized, or becomes profitable.<sup>30</sup> Long-term, strategic partnerships that involve multi-million dollar investments

30 Ibid.

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Evaluation results can identify areas where the partnership can be improved.

and multiple partners may require complex qualitative and quantitative analysis. Measurement should not become so complex that it outstrips the partnership's resources.

**Measure and evaluate performance to make informed decisions that ensure continuous improvement.** Measurement and evaluation allows PSE institutions and businesses to analyze their reasons for collaborating, and helps partnerships generate social and economic benefits.<sup>31</sup> Even if evaluation results demonstrate that a partnership is high-performing, they can also identify areas where the partnership can be improved, especially when partners evaluate performance throughout the life of a partnership. For these reasons, all respondents to the Conference Board's Ethical Guidelines and Operating Principles Validation survey believe measurement and evaluation is important or very important for partnership success.

**Evaluate partnership goals and activities throughout the duration of the partnership.** Evaluating goals and activities helps partners stay on track, and allows them to take corrective action when necessary. Major milestones, such as the completion of deliverables, provide valuable opportunities for partners to determine and communicate their partnership's progress. Regular evaluation and communication is particularly important in partnerships with exploratory objectives, which may be more prone to "scope creep." For example, in R&D partnerships focused on product development, weekly research reports help maintain continuous alignment between the needs of businesses and PSE researchers.<sup>32</sup>

**Use evaluation results to decide whether to continue or disband the partnership.** Partners can use evaluation results to identify areas of underperformance, such as communication, governance, people management, resources, and intellectual property management. When there are changes in the objectives and priorities of partners, evaluation results can lead them to realize that a partnership does not meet their

31 Ibid.

32 Ibid.

objectives for involvement. If the efforts and resources necessary to sustain and improve a partnership outweigh its benefits, a partner may take steps to bring the partnership to an end.

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## Questions and Key Considerations: Assessment and Evaluation

- How do partners plan to evaluate the partnership?
  - Do proposed assessment and evaluation methods correspond with key objectives of the partnership?
  - Do partners use evaluation results as a basis for making continuous improvements to the partnership?
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## Value Assessment Practices and Tools

In an effort to effectively gauge partnership performance and inform continuous improvement, a partnership should commit resources to the ongoing evaluation and assessment of how well partnership program activities and efforts achieve objectives.

The Conference Board's Ethical Guidelines and Operating Principles Validation survey process reveals that informal feedback practices—such as asking key participants questions related to their partnership experiences—are the most commonly used methods of evaluation and assessment, with 78 per cent of partnerships using this method. Respondents also use other techniques and practices to assess the value of their partnerships, including skills and learning assessments, in-person meetings, surveys, and financial performance analysis.<sup>33</sup> (See Chart 8.) Regardless of the type of value assessment practice used, there is a clear consensus among respondents regarding

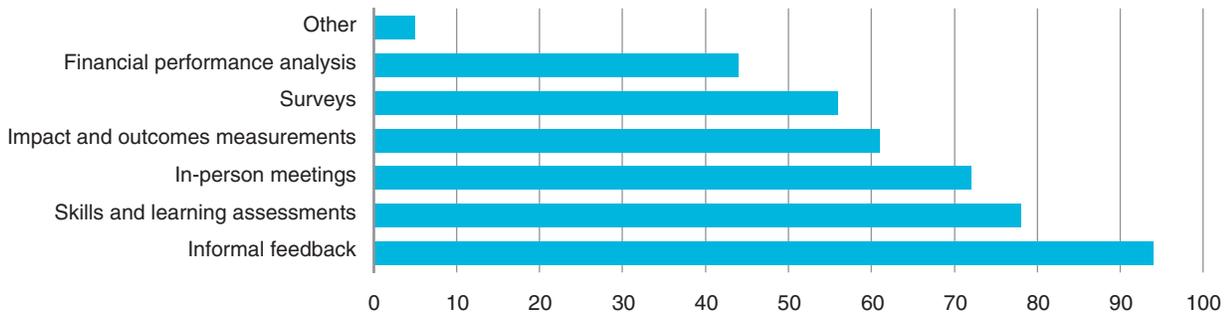
33 Results do not add to 100 per cent because respondents could select multiple methods of value assessment.

the importance of partnership value assessment, with 67 per cent indicating that value assessment is “very important” and 33 per cent indicating that it is “important.”

Chart 9

### Value Assessment Methods Used by Validation Respondents

(percentage)



Source: The Conference Board of Canada.

## Value Assessment Process—A Decision-Making Tool to Set Objectives and Assess Value

While the methods and metrics described above can provide a useful source of qualitative and quantitative data, by themselves they may not fully answer the question: Is this partnership achieving the full value that it could or should? Partners can best answer this question by first clearly understanding their objectives for involvement in education–business collaboration, and then thinking about partnership value in these terms.

The Conference Board’s *Evaluating Education-Business Partnerships: Value Assessment Tool* incorporates three well-established management practices and outlines a process that partnership practitioners can use to make the most of their partnerships. First, it helps partners engage in dialogue and decision-making with respect to defining desired outcomes and expressing them as objectives. Second, it helps partners select the programs and activities needed to achieve their desired objectives. Third, it helps partners understand their current performance,

measure the impact and results of their activities, and identify opportunities for improvement. (See “Value Assessment Process for Education–Business Partnerships.”)

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## Value Assessment Process for Education–Business Partnerships

The Conference Board’s *Evaluating Education-Business Partnerships: Value Assessment Tool* helps participants set organizational objectives for education-business collaboration. These objectives then become the standards against which partnership value is assessed.

Participants can use the Value Assessment Process (VAP) to determine how well a given partnership is *currently* achieving institutional/organizational objectives for involvement in education–business partnerships, based on input from partnership practitioners whose views may be informed by the methods and metrics considered above, in addition to their own experience.

Participants can also use the VAP to understand the *potential* value of a partnership, in terms of how it *could* achieve partnership objectives given further support, a greater level of effectiveness, or the resolution of challenges that might be impeding the partnership’s success.

The VAP is designed to help partnership practitioners:

1. Set and rank objectives—in order of importance, partners set and rank objectives for involvement in education–business partnerships. Objectives are rated on their importance to both education and business partners.
2. Assess partnership value—partners assess the current and potential value of partnerships, according to how well they achieve objectives for education–business partnerships.
3. Determine mutual benefit—partners compare value assessments to determine how well a partnership achieves mutual benefit. This process can be undertaken for multiple partnerships supported by education and business partners.

The Conference Board encourages PSE–business partnership practitioners to use the *Value Assessment Tool* in support of good partnership decision-making. The tool is available at: [www.conferenceboard.ca/topics/education/ebp/evaluation.aspx](http://www.conferenceboard.ca/topics/education/ebp/evaluation.aspx).

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Value assessment helps partners set organizational goals for education-business collaboration.

Education and business partners can achieve many benefits by using VAP, including improved:

1. **Objective-setting.** The VAP helps clarify each partner's goals and objectives. When completed by the partners, the VAP improves collaboration by helping them set shared goals, establish a framework for benchmarking, and set a basis for evaluation and cost-effective measurement.<sup>34</sup> Because value assessment ties partnership outcomes and performance to institutional and organizational objectives, all activities are assessed on their true value to the partnership.<sup>35</sup> VAP promotes true partnerships by asking partners to consider one another's perspectives when setting objectives.
2. **Identification of effective programs and enhanced decision-making.** Because the VAP requires prospective partners to assess their programs' value against defined objectives, it provides a structure for analysis and assessment that leads to better judgments around program selection and implementation. In some cases, an organization may decide that a partnership program or activity no longer meets their objectives and either requires a refresh, such as improvements to program activities and processes, or that their resources and commitments of time or money be directed toward other partnerships or partnership activities. (See Exhibit 5.)
3. **Program replication and internal support for partnership programs.** The VAP identifies the programs and activities that have been successful in the past, and helps individuals recognize the importance of their participation in PSE-business partnerships.
4. **Performance management.** Value assessment helps partners identify benchmarks upon which they can base subsequent evaluations.<sup>36</sup> It can help partners clarify the scale of their involvement and costs, and reliably communicate their partnership's value to all stakeholders and funders.

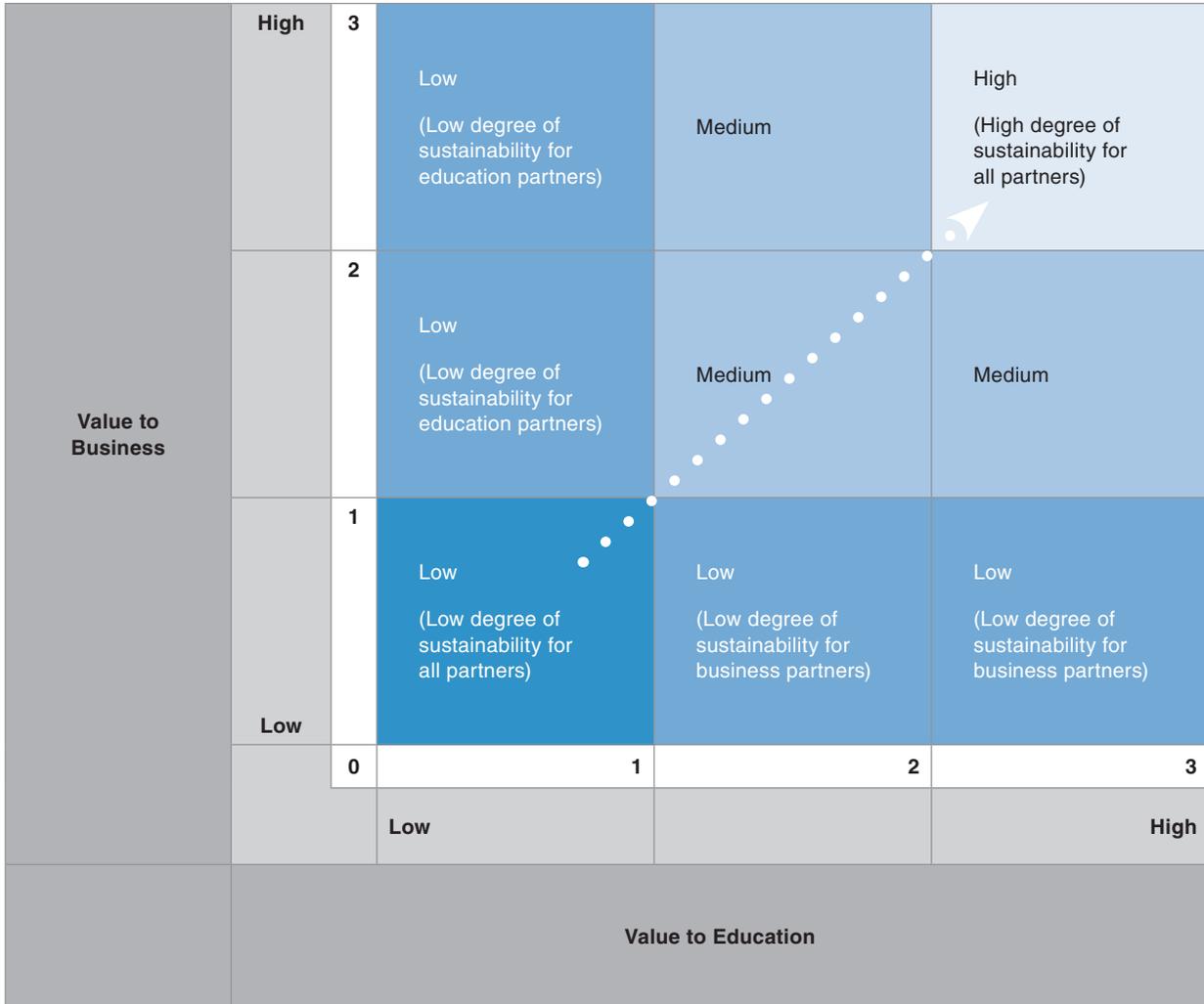
34 Bloom, *Evaluating Business-Education Collaboration*, 1.

35 Ibid.

36 Ibid., 3.

Exhibit 5

Value Assessment: Mutual Benefit Diagnostic Map and Partnership Sustainability Index



Source: The Conference Board of Canada.

## Summary

As PSE–business partnerships become more complex, and as partners and stakeholder groups become more diverse, partners face a variety of challenges. Many PSE institutions and businesses require assistance to overcome these challenges and make their partnerships more successful. PSE–business partnership practitioners can use the Conference Board’s *Operating Principles for PSE–Business Partnerships* and the *Operating Principles Checklist* to help them make effective decisions, reduce conflicts and misunderstandings, and collaborate more effectively. (See Appendix B.) Partners can also use value assessment to set objectives, evaluate partnership activities, and make informed decisions about the performance and future of their partnership.

## CHAPTER 6

# Taking Action for Partnership Success

### Chapter Summary

- PSE–business partnerships enhance educational programming and research capabilities, and provide businesses with access to cost-effective research and stronger talent pipelines.
- The ethical guidelines, operating principles, and value assessment process are tools to help partners and stakeholders make ethical and effective decisions, set objectives, and assess partnership value.
- Partners and stakeholders can use the ethical guidelines, operating principles, and value assessment process as frameworks for dialogue and action.

**When PSE institutions and businesses combine their strengths and resources, they often achieve more beneficial outcomes than either could achieve by themselves. Partnerships enhance the educational programming and research capabilities of PSE institutions, and help them respond to community needs.<sup>1</sup> Partnerships also provide businesses with access to cost-effective research and stronger talent pipelines.**

Despite having a highly educated population that produces world-class research, Canada is among the least innovative of its international peers. In addition, many Canadian businesses have trouble finding workers with the right skills and knowledge. PSE institutions, businesses, governments, and communities can work together to help overcome these challenges through partnerships.

## **Mutual Benefit is Key**

Ethical and effective PSE–business partnerships deliver mutual benefits to all partners. PSE institutions—universities, colleges, institutes, polytechnics, and CEGEPs—benefit from enhanced educational programming, research capability, and responsiveness to community needs. Businesses benefit from access to cost-effective research and improved talent pipelines.

Successful PSE–business partnerships have clearly defined objectives that reflect partner organizations’ reasons for participating in partnerships. Partners use these objectives to determine whether partnership activities and programs mutually benefit all partners and stakeholders, and to identify opportunities for improvement. If partners

1 The Conference Board of Canada, *How Canada Performs: Innovation*.

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**PSE–business  
partnerships  
provide benefits to  
PSE institutions,  
students, and  
businesses.**

determine their partnership does not benefit all partners, they should revise the partnership's goals and objectives, curtail certain activities, or take steps to terminate the partnership.

## **PSE–Business Partnerships are Important for Canada**

PSE–Business partnerships provide a variety of benefits to PSE institutions, students, and businesses. By participating in co-op work terms, internships, and other forms of work-integrated learning, students gain a better understanding of the world of work. They learn new skills that prepare them for employment, and learn how to apply their classroom knowledge. By combining classroom instruction with on-the-job training, students experience a new pedagogy and a different style of teaching. These benefits create a more authentic learning experience for students and other learners with resulting gains in knowledge and skills.

PSE institutions benefit from increased research support and capacity building, and access to funding, materials, expertise, and skills. Participation in partnerships helps faculty acquire new knowledge, which may be used to revise curricula and course content, thereby improving the student experience. Promoting successful PSE–business partnerships helps PSE institutions recruit new students, enhances their institutional brand, and strengthens their reputation.

PSE–business partnerships also generate significant benefits for businesses. Collaborating with PSE institutions helps businesses solve problems by increasing their capacity for innovation and R&D, and providing access to machinery, equipment, technology, and PSE faculty. In addition, partnerships help businesses access expertise that lies outside the core strengths of their innovation. This helps business make connections between previously unrelated or partially connected concepts.

Partnerships help businesses develop more skilled and stable workforces. Partnerships related to R&D and skills and workforce development provide businesses with access to potential new hires and skilled recruits. Accessing the skills and knowledge they need helps businesses improve their productivity and performance. Partnerships also give businesses the opportunity to provide feedback on curriculum development, helping them prepare workers of the future. Finally, partnering with PSE institutions helps businesses improve their reputation by enhancing their corporate social responsibility.

## Strategies for Success

Successful PSE–business partnerships need to be designed, managed, operated, and evaluated properly to generate the economic and social benefits that partners expect. To ensure that partnerships run smoothly, PSE institutions and businesses should be dynamic and flexible to overcome unexpected challenges and respond to new opportunities. Partners also need to be realistic and pragmatic. Some partners have limited resources to devote to partnerships, and need partners with complementary capabilities, mandates, and missions. Partnership programs and activities should be designed in a way that respects partners' ability to contribute to the partnership.

Ensuring that PSE–business partnerships contribute to Canada's economic and social well-being requires action by PSE institutions, businesses, governments, and third-party organizations. All have roles to play in ensuring that partnerships develop relevant skills, prepare students for the workforce, and generate new ideas that lead to the development of new products, processes, and services.

## Six Principles for Partnership Success

Many different organizations and stakeholders are becoming involved in PSE–business partnerships, bringing with them a wide variety of views about how to collaborate effectively. Each partnership operates in unique circumstances and faces unique challenges. PSE institutions and businesses can refer to the ethical guidelines, operating principles, and

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Partners and stakeholders can take strategic actions to ensure their partnerships run effectively.

value assessment process for guidance, and adapt them to their own circumstances. However, there are six general principles that can help educators and businesses develop, operate and maintain partnerships of all types. They are:

1. Ensure that partnership activities create mutual benefit for all partners.
2. Establish clear goals and objectives.
3. Communicate with partners on a regular basis.
4. Evaluate partnership performance regularly.
5. Adapt to changing circumstances.
6. Celebrate success.

Partners and stakeholders can take additional targeted, strategic actions to ensure their partnerships run smoothly and effectively.

## **Strategies for All Partners and Stakeholders**

### **Use Ethical Guidelines, Operating Principles, and Value Assessment Process as the basis for dialogue and action.**

These tools describe the key components of ethical and effective PSE–business partnerships, and help current and potential partners set objectives and assess partnership value. PSE institutions, students, business, and external stakeholders can use them to determine how to generate benefits for all partners. Partnership practitioners can use them, along with their own evaluation practices and codes of ethics and conduct, to:

- safeguard the interests of partners and participants, build trust and mutual respect, and make informed decisions that benefit everyone involved;
- set objectives for their involvement in PSE–business partnerships, and assess how well their partnerships achieve these objectives;
- make effective decisions, reduce conflicts and misunderstandings, and collaborate effectively with their partners and stakeholders.

## Strategies for PSE Institutions

**Improve opportunities for collaboration between PSE researchers and businesses.** Connecting PSE researchers with businesses can help Canada overcome its innovation and productivity “doldrums” and move up from its current ranking of 19th out of 144 countries on university–business R&D collaboration. While PSE operates in a challenging financial environment, investing in research collaborations with business helps institutions deliver on their mandate for research, and provides valuable knowledge exchange opportunities to students and faculty. PSE institutions recognize that partnering with businesses is important. For example, Universities Canada recently committed to help “build a stronger Canada through collaboration and partnerships with the private sector.”<sup>2</sup> To do so, PSE institutions should investigate ways to provide logistical and financial support to faculty members and students to take part in meaningful research partnerships with businesses.

**Increase opportunities for work-integrated learning as part of students’ PSE experience.** As previous Conference Board research notes, “PSE curricula should include a balance of theoretical and experiential learning opportunities.”<sup>3</sup> Work-integrated learning partnerships that offer students hands-on learning opportunities—such as apprenticeships, field experience opportunities, mandatory professional practicums, co-op placements, internships, applied research projects, and service learning—provide students with important opportunities to develop workplace skills and apply theoretical knowledge. PSE institutions can also arrange visits from employers involved in successful partnerships, and provide students with opportunities to interact and learn about how their learning connects to world of work.

2 Universities Canada, *Canada’s Universities’ Commitments to Canadians*, 2.

3 Watt and Munro, *Skills for Innovation Success*, 101.

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Businesses support the development of student skills through WIL opportunities.

## Strategies for Businesses

### **Increase investments in collaboration with PSE researchers.**

As Canada's economy becomes more knowledge-intensive, many Canadian businesses need to access the skills and expertise that PSE researchers have to offer. Doing so can be challenging, especially because many of Canada's small and medium-sized businesses have limited resources to devote to collaborating with PSE researchers. In addition, Canadian businesses are generally poor R&D spenders, receiving a "D" grade on business R&D spending and ranking 15th out of 16 international peer countries.<sup>4</sup> To bolster their investments to collaborate with PSE researchers, businesses can leverage the support and resources of a variety of external organizations, including the Tri-Council (SSHRC, NSERC, CIHR) and Mitacs, as well as partnership-supporting organizations such as TEC Edmonton, CMC Microsystems, and CANARIE.

### **Increase work-integrated learning opportunities for PSE students.**

Businesses can support the development of a skilled and stable workforce by providing work-integrated learning opportunities to PSE students. While businesses may need additional resources to administer and oversee these opportunities, they benefit from cost-effective work contributions, more robust talent pipelines, and the creativity and fresh perspectives that students bring from the classroom. Businesses can select the approaches—which include co-op work terms, internships, apprenticeships, and field placements, among others—that best suit their unique circumstances. In addition, businesses that participate in successful work-integrated learning experiences should communicate the value of these experiences to other businesses, PSE institutions, and students.

4 The Conference Board of Canada, *How Canada Performs: Business Enterprise R&D Spending*.

## Strategies for Governments

**Support programs and initiatives that facilitate collaboration between PSE institutions and businesses.** Federal, provincial, and territorial governments can encourage and support PSE–business collaborations that develop skills and workplace readiness, and generate and transfer knowledge and technology. When designing programs and allocating resources to support PSE–business partnerships, government funding bodies such as SSHRC, NSERC, and CIHR could use the *Ethical Guidelines, Operating Principles, and Value Assessment Process* to help ensure that these programs deliver benefits for all partners and stakeholders. In addition, federal, provincial, territorial, municipal, and industrial programs that support PSE–business collaboration should also be aware of the important role that ethics, operating principles, and value assessment play in developing, operating, and maintaining successful partnerships.

## Partnering for Performance

Canada is home to a wide variety of successful, dynamic PSE–business partnerships that strengthen the country’s workforce and generate new ideas, products, and processes. Ensuring that PSE–business collaborations mutually benefit all partners and stakeholders requires proper planning, effective decision-making, and accurate evaluation. Fortunately, PSE institutions and businesses have access to a wide variety of supporting organizations, programs, and resources to guide them. The *Ethical Guidelines, Operating Principles, and Value Assessment Process* are tools that can help PSE–business partners make ethical and effective decisions, set objectives, and evaluate partnership activities. Using them to stimulate discussion and dialogue will help ensure that PSE–business partnerships continue to contribute to Canada’s social and economic prosperity.

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## APPENDIX A

# Ethical Guidelines Checklist

The *Ethical Guidelines Checklist* helps partners make ethical decisions. It outlines criteria for PSE–business partnerships that guide partners in making informed decisions.

This checklist is designed to complement existing codes of ethics, practice and conduct. It can be used by partners to address aspects of their partnership that may not be treated in their organizations' codes.

### Using the *Ethical Guidelines Checklist*

The checklist is not exhaustive and stimulates dialogue. Partners discuss what the guidelines mean and analyse their appropriateness and importance to their partnership. They then explore how they can work collaboratively to establish and maintain a strong ethical basis for their PSE–business partnership.

**Step 1:** As a partnership practitioner, indicate whether you agree or disagree with the ethical guideline statements using a 4-point scale:

**1** (strongly disagree)   **2** (disagree)   **3** (agree)   **4** (strongly agree)

**Step 2:** For those ethical guideline statements where you either strongly disagree or disagree, consider what actions you—and your partners—might take to mitigate or resolve any unfulfilled or unmet ethical guidelines.

## 1. Ethical Guidelines: Strives for Ideals

To what extent do you agree with the following statements?

Your partnership...	1 Strongly disagree	2 Disagree	3 Agree	4 Strongly agree
Mutually benefits all partners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Enhances the quality and relevance of education for all, including students and other learners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shares knowledge, ideas, and perspectives to benefit participants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is based on shared or aligned objectives that support the goals of the partner organizations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is developed and structured in consultation with all partners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is based on trust and openness among all partners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recognizes and respects each partner's expertise and contributions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Respects differences among partners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

It is important to be aware of the ethical guidelines where you indicate a 1 or 2 (strongly disagree or disagree). You and your partners may wish to take action to mitigate or resolve any issues you disagree on.

### Actions to be Taken (By Yourself and/or Your Partners) to Mitigate or Resolve an Unfulfilled/Unmet Ethical Guideline

Action 1:

Action 2:

Action 3:

## 2. Ethical Guidelines: Adheres to Obligations

To what extent do you agree with the following statements?

Your partnership...	1 Strongly disagree	2 Disagree	3 Agree	4 Strongly agree
Is consistent with the ethics and core values of all partners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is based on the clearly defined expectations of all partners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Treats fairly and equitably all participants and those who are served by the partnership	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ensures activities comply with partners' codes of conduct and regulations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Allocates resources to complement and not replace funding for education	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identifies and manages potential conflicts between business needs and academic freedom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identifies and addresses conflicts of interest within partnership organizations and among partners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

It is important to be aware of the ethical guidelines where you indicate a 1 or 2 (strongly disagree or disagree). You and your partners may wish to take action to mitigate or resolve any issues you disagree on.

### Actions to be Taken (By Yourself and/or Your Partners) to Mitigate or Resolve an Unfulfilled/Unmet Ethical Guideline

Action 1:

Action 2:

Action 3:

### 3. Ethical Guidelines: Manages Effects

To what extent do you agree with the following statements?

Your partnership...	1 Strongly disagree	2 Disagree	3 Agree	4 Strongly agree
Considers the effects of actions and tests them against ideals and obligations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identifies and addresses potentially negative impacts on non-participants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exercises diligence when making decisions by considering responsibilities to all partners and stakeholders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is open and honest when problems occur and avoids making excuses or rationalizations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Finds common ground when challenges arise by returning to shared objectives and values	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Celebrates and builds on positive outcomes and progress made	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

It is important to be aware of the operating principles where you indicate a 1 or 2 (strongly disagree or disagree). You and your partners may wish to take action to mitigate or resolve any issues you disagree on.

**Actions to be Taken (By Yourself and/or Your Partners) to Mitigate or Resolve an Unfulfilled/Unmet Ethical Guideline**

**Action 1:**

**Action 2:**

**Action 3:**

## APPENDIX B

# Operating Principles Checklist

The *Operating Principles Checklist* helps partners make effective decisions. It outlines the keys to success for PSE–business partnerships and is designed to guide dialogue and complement the existing codes of practice and conduct of partner organizations. It is not intended to bind participants.

This checklist helps PSE and business partners understand the keys to successful partnerships, identify opportunities to make more effective decisions, and reduce conflicts and misunderstandings.

### Using the *Operating Principles Checklist*

In addition to referring to their own codes of practice and conduct, many organizations find it useful to conduct informal audits or checklist exercises throughout the life of their partnerships to maintain focus, clarify priorities, and ensure that their partnerships remain on track.

**Step 1:** As a partnership practitioner, you are asked to indicate whether you agree or disagree with a series of operating principles statements using a 4-point scale:

**1** (strongly disagree)   **2** (disagree)   **3** (agree)   **4** (strongly agree)

**Step 2:** For operating principle statements upon which you either strongly disagree or disagree, you are asked to consider what actions you and your partners might take to mitigate or resolve any unfulfilled or unmet operating principles.

## 1. Operating Principles: Inception and Development

To what extent do you agree with the following statements?

Your partnership...	1 Strongly disagree	2 Disagree	3 Agree	4 Strongly agree
Clearly identifies benefits for all partners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identifies the needs of learners and takes action to enhance learning outcomes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Develops through consultation with all partners and stakeholders to meet partnership objectives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identifies appropriate partners according to their mandates, missions, skills and resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sets clear objectives that support the partner organizations' goals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Defines clear roles and responsibilities for all partners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gains commitment of leaders in the partner organizations and builds grassroots support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Articulates expectations in formal or informal agreements (e.g., contracts, memoranda of understanding, verbal agreements)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identifies possible challenges and risks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

It is important to be aware of the ethical guidelines where you indicate a 1 or 2 (strongly disagree or disagree). You and your partners may wish to take action to mitigate or resolve any issues you disagree on.

### Actions to be Taken (By Yourself and/or Your Partners) to Mitigate or Resolve an Unfulfilled/Unmet Operating Principle

Action 1:

Action 2:

Action 3:

## 2. Operating Principles: Operation

To what extent do you agree with the following statements?

Your partnership...	1 Strongly disagree	2 Disagree	3 Agree	4 Strongly agree
Provides adequate support for partnership participants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Understands the bottom-line needs of all partners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Draws on the expertise and resources of partnership-supporting organizations (e.g., government funding bodies, innovation support organizations, economic development agencies)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adapts to changing circumstances and manages unintended consequences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Uses appropriate practices, tools, and resources to ensure sound project management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Manages expectations by developing realistic timelines for partnership activities and deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identifies, learns from, and applies successful practices as the basis for improvement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aligns decision-making with partnership goals and objectives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

It is important to be aware of the operating principles where you indicate a 1 or 2 (strongly disagree or disagree). You and your partners may wish to take action to mitigate or resolve any issues you disagree on.

### Actions to be Taken (By Yourself and/or Your Partners) to Mitigate or Resolve an Unfulfilled/Unmet Operating Principle

Action 1:

Action 2:

Action 3:

### 3. Operating Principles: Intellectual Property (IP) and Governance

To what extent do you agree with the following statements?

Your partnership...	1 Strongly disagree	2 Disagree	3 Agree	4 Strongly agree
<b>Intellectual Property (IP)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clearly defines ownership and use of intellectual property at the beginning of the partnership	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Makes use of technology transfer offices, industry liaison offices, or other intermediaries to help facilitate IP agreements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Specifies terms that address possible conflicts between researchers' desire to publish and industry's desire to protect IP and confidentiality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Governance</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shares ownership to build commitment and encourage participation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Decides on the basis of consensus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Uses shared governance structures or mechanisms for large-scale collaborations (e.g., governing boards and steering committees)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identifies and mitigates governance risks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

It is important to be aware of the operating principles where you indicate a 1 or 2 (strongly disagree or disagree). You and your partners may wish to take action to mitigate or resolve any issues you disagree on.

**Actions to be Taken (By Yourself and/or Your Partners) to Mitigate or Resolve an Unfulfilled/Unmet Operating Principle**

Action 1:

Action 2:

Action 3:

## 4. Operating Principles: Resources and Financing

To what extent do you agree with the following statements?

Your partnership...	1 Strongly disagree	2 Disagree	3 Agree	4 Strongly agree
Identifies and allocates sufficient resources to ensure successful completion of activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leverages broad-based and diverse resources and funding (e.g., government funding bodies) where available	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Employs good practices in accounting and finance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Enacts policies and practices for managing financial returns (e.g., the allocation and use of monetary benefits arising from partnership outcomes)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

It is important to be aware of the operating principles where you indicate a 1 or 2 (strongly disagree or disagree). You and your partners may wish to take action to mitigate or resolve any issues you disagree on.

### Actions to be Taken (By Yourself and/or Your Partners) to Mitigate or Resolve an Unfulfilled/Unmet Operating Principle

Action 1:

Action 2:

Action 3:

## 5. Operating Principles: People Management

To what extent do you agree with the following statements?

Your partnership...	1 Strongly disagree	2 Disagree	3 Agree	4 Strongly agree
Creates a partnership team with a clear mandate and continuity of membership	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recruits champions and advocates in partner organizations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identifies and manages personnel requirements and risks (e.g., student and employee turnover)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Involves individuals with varied experience who can bridge educational and business environments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Trains participants to carry out their roles and responsibilities, and ensures that they are fulfilling them	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Builds trust through face-to-face meetings, especially as partnerships are being established	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

It is important to be aware of the operating principles where you indicate a 1 or 2 (strongly disagree or disagree). You and your partners may wish to take action to mitigate or resolve any issues you disagree on.

### Actions to be Taken (By Yourself and/or Your Partners) to Mitigate or Resolve an Unfulfilled/Unmet Operating Principle

Action 1:

Action 2:

Action 3:

## 6. Operating Principles: Communication

To what extent do you agree with the following statements?

Your partnership...	1 Strongly disagree	2 Disagree	3 Agree	4 Strongly agree
Defines communications needs and has a communications component at each stage of partnership activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Promotes a two-way exchange of knowledge and ideas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identifies and communicates confidentiality requirements to all participants (including students and employees)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shares evaluation results regularly with all partners and stakeholders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Builds in personal recognition and feedback to participants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recognizes and celebrates the partnership's successes, and acknowledges challenges	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

It is important to be aware of the operating principles where you indicate a 1 or 2 (strongly disagree or disagree). You and your partners may wish to take action to mitigate or resolve any issues you disagree on.

### Actions to be Taken (By Yourself and/or Your Partners) to Mitigate or Resolve an Unfulfilled/Unmet Operating Principle

Action 1:

Action 2:

Action 3:

## 7. Operating Principles: Assessment and Evaluation

To what extent do you agree with the following statements?

Your partnership...	1 Strongly disagree	2 Disagree	3 Agree	4 Strongly agree
Develops meaningful performance metrics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Measures and evaluates performance to make informed decisions that ensure continuous improvement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Evaluates partnership goals and activities throughout the duration of the partnership	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Uses evaluation results to decide whether to continue or disband the partnership	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

It is important to be aware of the operating principles where you indicate a 1 or 2 (strongly disagree or disagree). You and your partners may wish to take action to mitigate or resolve any issues you disagree on.

### Actions to be Taken (By Yourself and/or Your Partners) to Mitigate or Resolve an Unfulfilled/Unmet Operating Principle

Action 1:

Action 2:

Action 3:

## APPENDIX C

# Bibliography

Abreu, Maria, and others. *Universities, Business and Knowledge Exchange*. London: Council for Industry and Higher Education, and Centre for Business Research, 2008.

Alberta Biochar Initiative. *Alberta Biochar Initiative Helps Grow Alberta's Bioeconomy*. <http://albertabiochar.ca/alberta-biochar-initiative-helps-grow-albertas-bioeconomy/> (accessed July 25, 2014).

Barton, Dominic, Diana Farrell, and Mona Mourshed. *Education to Employment: Designing a System that Works*. McKinsey Center for Government, McKinsey & Company, January 2013. [http://mckinseysociety.com/downloads/reports/Education/Education-to-Employment\\_FINAL.pdf](http://mckinseysociety.com/downloads/reports/Education/Education-to-Employment_FINAL.pdf) (accessed October 9, 2015).

Bloom, Michael R. *Ethical Guidelines for Business-Education Partnerships*. Ottawa: The Conference Board of Canada, 1995.

—. *Evaluating Business-Education Collaboration*. Ottawa: The Conference Board of Canada, 1993.

—. *Operating Principles for Business-Education Partnerships*. Ottawa: The Conference Board of Canada, 1997.

—. *Operating Principles for Business-Education Partnerships*. Ottawa: The Conference Board of Canada, 1997.

Board of Trade of Metropolitan Montreal. *A Look at Canadian University-Industry Collaboration*. Montreal: BTMM, 2011.

PARTNERING FOR PERFORMANCE  
Enhancing Partnerships Between Post-Secondary Education and Business

Bramwell, Allison, Nicola Hepburn, and David A. Wolfe. *Growing Innovation Ecosystems: University-Industry Knowledge Transfer and Regional Economic Development in Canada*. Toronto: University of Toronto, 2012.

Brown Governance. *Generally Accepted Accounting Principles and Concepts*. Halton Hills: Brown Governance, n.d.

Business-Higher Education Forum. *Working Together, Creating Knowledge: The University-Industry Research Collaboration Initiative*. Washington, D.C.: Business-Higher Education Forum, 2001.

Canadian Association for Co-operative Education. *Co-operative Education Manual: A Guide to Planning and Implementing Co-operative Education Programs in Post-Secondary Institutions*. Toronto: Canadian Association for Co-operative Education, 2005.

Canadian Chamber of Commerce. *Fragmented Systems: Connecting Players in Canada's Skills Challenge*. Ottawa: The Canadian Chamber of Commerce, 2015.

Canadian Council of the Academies. *The State of Industrial R&D in Canada: The Expert Panel on the State of Industrial R&D in Canada*. Ottawa: Canadian Council of the Academies, 2013.

Canadian Council on Learning. *Lessons in Learning: The Benefits of Experiential Learning*. Ottawa: CCL, 2008.

—. *Navigating Post-secondary Education in Canada: The Challenge of a Changing Landscape*. Ottawa: CCL, 2010.

Canadian Institutes of Health Research. Commercialization of Research. [www.cihr-irsc.gc.ca/e/44911.html](http://www.cihr-irsc.gc.ca/e/44911.html) (accessed October 9, 2015).

C.D. Howe Institute. *From Curiosity to Wealth Creation: How University Research Can Boost Economic Growth*. Toronto: C.D. Howe, 2013.

Centre for the Study of Living Standards. *Government Policies to Encourage University-Business Research Collaboration in Canada: Lessons from the U.S., the U.K. and Australia*. Ottawa: CSLS, 2011.

Colleges and Institutes Canada. *Applied Research at Canadian Colleges and Institutes*. CICan, 2006.

—. *Applied Research at Colleges and Institutes 2013–14*. Ottawa: CIGan.

—. *Pan-Canadian Study of First Year College Students: Report 1 - Student Characteristics and the College Experience*. Ottawa: CIGan (formerly ACCC), 2007.

—. *The College and Institute Applied Research Advantage: Innovation for Small Businesses and Communities*. Ottawa: CIGan, 2013.

Council of Ministers of Education, Canada. *Ministers and Key Partners Chart Path Forward for Education and Skills in Canada*. [http://cmec.ca/278/Press-Releases/Ministers-and-Key-Partners-Chart-Path-Forward-for-Education-and-Skills-in-Canada.html?id\\_article=831](http://cmec.ca/278/Press-Releases/Ministers-and-Key-Partners-Chart-Path-Forward-for-Education-and-Skills-in-Canada.html?id_article=831) (accessed August 10, 2014).

Dehaas, Josh. “‘Entry-level’ Jobs are Getting Harder to Find”. April 5, 2014. *Maclean’s*. [www.macleans.ca/work/jobs/entry-level-jobs-are-getting-harder-to-find/](http://www.macleans.ca/work/jobs/entry-level-jobs-are-getting-harder-to-find/) (accessed November 23, 2015).

DeVore, Jonathan. *The #1 Risk Factor Organizations Ignore When it Comes to Employee Turnover*. February 20, 2013. *ScreenSteps*. <http://blog.screensteps.com/the-1-risk-factor-organizations-ignore-when-it-comes-to-employee-turnover> (accessed November 23, 2015).

Gallup Inc. *Great Jobs, Great Lives: The 2014 Gallup-Purdue Index Report*. [www.luminafoundation.org/files/resources/gallup-purdue-index-report-2014.pdf](http://www.luminafoundation.org/files/resources/gallup-purdue-index-report-2014.pdf) (accessed October 9, 2015).

Government of Canada. *Harper Government Announces Support for Aerospace Innovation at the 2014 Aerospace, Defence and Security Expo*. <http://news.gc.ca/web/article-en.do?nid=874419> (accessed August 15, 2014).

—. *Economic Action Plan 2015: Strong Leadership*. <http://www.budget.gc.ca/2015/docs/plan/budget2015-eng.pdf> (accessed May 12, 2015).

Grant, Michael. *Bridging the Valley: Linking Public Investments in Research to Business Innovation*. Ottawa: The Conference Board of Canada, 2015.

Hall, Colin, and Simon Cotsman. *Learning as a Lever for Performance: Learning Development Outlook—13th Edition*. Ottawa: The Conference Board of Canada, 2015.

Hall, Gene, Susan F. Loucks, William L. Rutherford, and Beulah W. Newlove. "Levels of Use of the Innovation: A Framework for Analyzing Innovation Adoption," *Journal of Teacher Education* 26 (March 1975): 52–56.

Industry Canada. *Seizing Canada's Moment: Moving Forward in Science, Technology and Innovation 2014*. Ottawa: Industry Canada, 2014.

—. *Mobilizing Science and Technology to Canada's Advantage: Progress Report 2009*. Ottawa: Industry Canada, 2009.

Institute on Governance. *Defining Governance*. <http://iog.ca/defining-governance/> (accessed November 23, 2015).

Johnston, David. *The University-Private Sector Interface and the Ontario Economy*. Prepared for the Ontario Economic Summit, 2004.

Klawe, Maria. *Getting the University-Industry Partnership Right... Or Not*. <http://net.educause.edu/ir/library/pdf/ffp0407s.pdf> (accessed November 23, 2015).

Kramer, Miriam, and Alex Usher. *Work-Integrated Learning and Career-Ready Students: Examining the Evidence*. Toronto: Higher Education Strategy Associates, 2011.

Lambert, Richard. *Lambert Review of Business-University Collaboration: Final Report*.

Lester, Richard. *Universities, Innovation, and the Competitiveness of Local Economies: A Summary Report from the Local Innovation Systems Project—Phase 1*. Cambridge: MIT Industrial Performance Center, 2005.

Marceau, Richard. *The Canadian University Business Primer*. Memorial University of Newfoundland Library Press, 2014.

Marketwired. *Harper Government Celebrates Launch of Advanced Manufacturing Research Network*. [www.marketwired.com/press-release/-1923489.htm](http://www.marketwired.com/press-release/-1923489.htm) (accessed July 8, 2013).

Munn-Venn, Trefor. *Annual Innovation Report 2006: Lessons in Public-Private Research Collaboration: Improving Interactions between Individuals*. Ottawa: The Conference Board of Canada, 2006.

Munro, Daniel, James Stuckey, and Cameron MacLaine. *Skills—Where Are We Today? The State of Skills and PSE in Canada*. Ottawa: The Conference Board of Canada, 2014.

Munro, Daniel, and Jessica Edge. *Thinking Like an Innovator: Improving Innovation Management Decision-Making*. Ottawa: The Conference Board of Canada, 2014.

Munro, Daniel, and Joseph Haimowitz. *Innovation Catalysts and Accelerators*. Ottawa: The Conference Board of Canada, 2010.

National Research Council Canada. *Business Innovation Access Program (BIAP)*. [www.nrc-cnrc.gc.ca/eng/irap/biap/index.html](http://www.nrc-cnrc.gc.ca/eng/irap/biap/index.html) (accessed August 20, 2014).

Natural Sciences and Engineering Research Council of Canada. *Strategy for Partnerships and Innovation: Interim Progress Report*. Ottawa: NSERC, 2012.

—. *Partnership Programs Overview*. [www.nserc-crsng.gc.ca/Professors-Professeurs/RPP-PP/index\\_eng.asp](http://www.nserc-crsng.gc.ca/Professors-Professeurs/RPP-PP/index_eng.asp) (accessed March 18, 2014).

Organisation for Economic Co-operation and Development. *Glossary of Statistical Terms*. <http://stats.oecd.org/glossary/detail.asp?ID=192> (accessed July 15, 2014, page discontinued).

—. *Tertiary Education: Developing Skills for Innovation and Long-term Growth in Canada*. OECD: Paris, 2012.

Pertuze, Julio, Edward Calder, Edward M. Greitzer, and William A. Lucas. "Best Practices for Industry-University Collaboration," *MIT Sloan Management Review* 51 no. 4, 83.

Perkmann, Markus, and Ammon Salter, "How to Create Productive Partnerships with Universities", *MIT Sloan Management Review*, June 2012. <http://sloanreview.mit.edu/article/how-to-create-productive-partnerships-with-universities/> (accessed November 23, 2015).

Phytola Centre. About. [phytola.ales.ualberta.ca/about](http://phytola.ales.ualberta.ca/about) (accessed October 9, 2015).

Prigge, George, and Richard J. Torraco, "University-Industry Partnerships: A Study of How Top American Research Universities Establish and Maintain Successful Partnerships," *Journal of Higher Education Outreach and Engagement* 11, no. 2, 1–2.

Province of British Columbia. *B.C.'s Skills for Jobs Blueprint: Re-Engineering Education and Training*. Province of British Columbia, 2014.

Red Deer College. *Comprehensive Institutional Plan*. Manitoba: RDC, 2014.

Sattler, Peggy. *Work-Integrated Learning in Ontario's Post-secondary Sector*. Toronto: Higher Education Quality Council of Ontario, 2011.

Sattler, Peggy, and Julie Peters. *Work-Integrated Learning in Ontario's Post-secondary Sector: The Experience of Ontario Graduates*. Toronto: Higher Education Quality Council of Ontario, 2013.

—. *Work-Integrated Learning and Post-secondary Graduates: The Perspective of Ontario Employers*. Toronto: Higher Education Quality Council of Ontario, 2012.

Science-Business Innovation Board. *Making Industry-University Partnerships Work: Lessons from Successful Collaborations*. Science-Business Innovation Board, 2012.

Service Canada. *Collaboration between Federal Research Funding Organizations*. [www.science.gc.ca/default.asp?lang=En&n=A0A2F2CB-1](http://www.science.gc.ca/default.asp?lang=En&n=A0A2F2CB-1) (accessed March 17th, 2014).

Soares, Louis. *Community College and Business Partnerships*. Washington, D.C.: Center for American Progress.

Social Sciences and Humanities Research Council. *Partnership Development Grants: An Overview*. SSHRC, 2013. [www.sshrc-crsh.gc.ca/about-au\\_sujet/partnerships-partenariats/partnership\\_development\\_grants-bourses\\_partenariat\\_developpement-eng.aspx](http://www.sshrc-crsh.gc.ca/about-au_sujet/partnerships-partenariats/partnership_development_grants-bourses_partenariat_developpement-eng.aspx) (accessed March 17, 2015).

—. *Partnership Grants: An Overview*. Social Sciences and Humanities Research Council, 2013. [www.sshrc-crsh.gc.ca/about-au\\_sujet/partnerships-partenariats/partnership\\_grants-bourses\\_partenariats-eng.aspx](http://www.sshrc-crsh.gc.ca/about-au_sujet/partnerships-partenariats/partnership_grants-bourses_partenariats-eng.aspx) (accessed March 17, 2015).

Statistics Canada. *Survey of Intellectual Property Commercialization in the Higher Education Sector*. Ottawa: Statistics Canada, 2003.

—. *Survey of Intellectual Property Commercialization in the Higher Education Sector*. Ottawa: Statistics Canada, 2008.

—. *Survey of Intellectual Property Commercialization in the Higher Education Sector*, Table 358–0025.

Stokes, Donald E. *Pasteur's Quadrant: Basic Science and Technological Innovation*. Washington, D.C: Brookings Institution Press, 1997.

Stuckey, James, and Daniel Munro. *The Need to Make Skills Work: The Cost of Ontario's Skills Gap*. Ottawa: The Conference Board of Canada, 2013.

—. *Skills for Success: Occupations, Credentials, and Skills for a Prosperous B.C.* Ottawa: The Conference Board of Canada, 2014.

Tech Republic. *Project Management Best Practices*. [www.acqnotes.com/Attachments/Tech%20Republic%20PM%20Best%20Practices.pdf](http://www.acqnotes.com/Attachments/Tech%20Republic%20PM%20Best%20Practices.pdf) (accessed October 9, 2015).

The Conference Board of Canada. *How Canada Performs: Business Enterprise R&D Spending*. [www.conferenceboard.ca/hcp/details/innovation/berd.aspx](http://www.conferenceboard.ca/hcp/details/innovation/berd.aspx) (accessed October 10, 2014).

—. *Employability Skills 2000+*. [www.conferenceboard.ca/topics/education/learning-tools/employability-skills.aspx](http://www.conferenceboard.ca/topics/education/learning-tools/employability-skills.aspx) (accessed September 25, 2015).

—. *How Canada Performs: Innovation*. [www.conferenceboard.ca/hcp/details/innovation.aspx](http://www.conferenceboard.ca/hcp/details/innovation.aspx) (accessed November 23, 2015).

—. *How Canada Performs: Public R&D Spending*. [www.conferenceboard.ca/hcp/details/innovation/publicrandd.aspx](http://www.conferenceboard.ca/hcp/details/innovation/publicrandd.aspx) (accessed October 10, 2014).

University of California Berkeley, Academic Senate, Task Force on University-Industry Partnerships. *Principles and Guidelines for Large-Scale Collaborations between the University and Industry, Government, and Foundations*. [http://academic-senate.berkeley.edu/sites/default/files/recommendations-reports/tf\\_uip\\_final\\_report.pdf](http://academic-senate.berkeley.edu/sites/default/files/recommendations-reports/tf_uip_final_report.pdf) (accessed November 23, 2015).

University Affairs. *Co-op Programs are Popular and Growing at Canadian Universities*. [www.universityaffairs.ca/news/news-article/co-op-programs-are-popular-and-growing-at-canadian-universities/](http://www.universityaffairs.ca/news/news-article/co-op-programs-are-popular-and-growing-at-canadian-universities/) (accessed July 20, 2014).

Universities Canada (formerly the Association of Universities and Colleges of Canada). *Canada's Universities' Commitments to Canadians*. Ottawa: Universities Canada, 2015.

—. *Momentum: The 2008 Report on University Research and Knowledge Mobilization*. Ottawa: Universities Canada, 2008.

University-Industry Demonstration Partnership. *A Guide for Successful Institutional-Industrial Collaborations: Researcher Guidebook*. Washington, D.C.: UIDP, 2012.

—. *Understanding & Developing the Pathways for Beneficial University-Industry Engagement: Partnership Continuum*. Washington, D.C.: UIDP, 2012.

University of Saskatchewan. *Promise and Potential: The Third Integrated Plan 2012-2016*. [www.usask.ca/plan/documents/Third%20Integrated%20Plan%20-%20Summary%20Version.pdf](http://www.usask.ca/plan/documents/Third%20Integrated%20Plan%20-%20Summary%20Version.pdf) (accessed November 23, 2015).

University of Toronto. *Our Research Partners*. [www.research.utoronto.ca/about/our-research-partners/](http://www.research.utoronto.ca/about/our-research-partners/) (accessed August 19, 2014).

Watt, Douglas, and Penny A. Brady. *Benefits of Employee Involvement in Business-Education Partnerships*. Ottawa: The Conference Board of Canada, 1998.

Watt, Douglas, and Jessica Edge. *Business Leaders' Perspectives: Canada's Competitiveness and Innovation Doldrums*. Ottawa: The Conference Board of Canada, 2013.

Watt, Douglas, and Daniel Munro. *Skills for Innovation Success: It's People Who Innovate*. Ottawa: The Conference Board of Canada, 2014.

Wood, Maria. *Getting Real in the Real World: The Latest in University-Business Partnerships*. [www.skilledup.com/insights/getting-real-in-the-real-world-latest-in-university-business-partnerships](http://www.skilledup.com/insights/getting-real-in-the-real-world-latest-in-university-business-partnerships) (accessed October 22, 2015).

World Economic Forum. *The Global Competitiveness Report 2015–2016*. Geneva: WEF, 2015. [www3.weforum.org/docs/gcr/2015-2016/Global\\_Competitiveness\\_Report\\_2015-2016.pdf](http://www3.weforum.org/docs/gcr/2015-2016/Global_Competitiveness_Report_2015-2016.pdf).

Wright, Brian, Kyriakos Drivas, Zhen Lei, and Stephen A. Merrill. "Technology Transfer: Industry-funded Academic Inventions Boost Innovation," *Nature* 507, no. 7492, 2014. [www.nature.com/news/technology-transfer-industry-funded-academic-inventions-boost-innovation-1.14874](http://www.nature.com/news/technology-transfer-industry-funded-academic-inventions-boost-innovation-1.14874) (accessed November 23, 2015).

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