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Education Mismatches and Competency Shortages

An Evaluation Framework of the Responsiveness
of the Canadian Post-Secondary Education
System to Changes in the Labour Market

Major Research Paper

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Abstract

Post-secondary education (PSE) institutions in Canada serve as the primary means by which most individuals in highly skilled occupations gain the qualifications necessary to succeed in the labour force. For this reason, their responsiveness to changes in the labour market is essential to ensuring a productive economy.

Currently in Canada, employers of specific occupations and in certain regions are reporting that they are experiencing shortages of skilled workers. At the same time, employers across various sectors are stating that PSE graduates are lacking certain skills, including basic literacy and numeracy skills, soft skills, specific specializations and combinations of degrees.

In the labour market, as shortages in particular occupations or for particular skills emerge, employers are normally expected to respond in a variety of ways, including increasing wages. This in turn, attracts more people to the profession until the shortage is filled. This system, however, is dependent on the responsiveness of the PSE system to changes in the labour market. In theory, the higher wages and other incentives in occupations facing shortages should encourage more students to want to pursue related fields of studies. PSE institutions would then be expected to respond to the increased demand by increasing enrolment or the quantity of seats supplied.

In practice, there are many factors constraining this responsiveness in programs with increased demand both on the supply and demand sides. For example, many people in the PSE system do not believe it is their responsibility to be responsive to the labour market. PSE institutions also face institutionalized constraints and cultural or governance factors which make responsiveness slow and difficult. Furthermore, students do not always receive the signals from the labour market, nor know how to respond even when they do. Employers are also demanding new types of skills and combinations of skills that may not appear to be in shortage in traditional measures of collecting labour market information. This likely means there are shortages in the populace's skillsets that are going unnoticed by policy makers, students and the PSE system alike.

That being said, Canadian PSE institutions have managed to do a reasonable job at responding to changes in the labour market in the past. Furthermore, there are examples of universities, and particularly colleges, which have responded by finding ways to increase their students' employability skills on an *ad hoc* basis. These include co-op programs and PSE-private sector partnerships for experiential learning and curricula development. Some institutions have also increased extra-curricular activities on their campus to improve their students' skills while also maintaining academic freedom.

Other countries have taken far more action to make their PSE systems more responsive to their labour markets on a system-wide level. Australia, Germany, the United Kingdom, Sweden and France, all have good practices that Canada could learn from. This paper recommends following their models in improving the collection and dissemination of learning and labour market information to help students make better informed decisions and help PSE institutions to be more responsive to current skills needs. It also recommends increasing experiential learning opportunities and partnerships for curricula reform between the private sector and the PSE system in order to ensure a level of responsiveness necessary for graduates to succeed in the labour market and for the country to remain competitive.

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Introduction

As the economy continues to recover from the 2008 recession, politicians, the media, employers and academics have discussed and debated skill pressures and alleged impending shortages. These are expected to occur, in large part, due to demographic changes, the ongoing globalization of markets, industrial re-organization, and the process of technological change. Prime Minister Stephen Harper has described skill shortages as “one of the most significant economic challenges facing the country.”¹ There appears to be a consensus among politicians, academics, and industry that Canada is facing a shortage of employees in the skilled trades in some regions of the country, particularly in the West. However, less clear is the argument that there are also regional and occupational shortages, mismatches, or shortages of required competencies in more highly skilled occupations. It is these occupational and competency shortages in highly skilled occupations that are the focus of this paper.

Although Canada’s economy overall has been performing relatively well post-recession, the country still has over 1.3 million unemployed citizens, including a high youth unemployment rate (13.6%), and other under-represented groups who continue to struggle with weak labour market attachment.² At the same time, employers are reporting that they cannot find workers with the skills they require.³ These figures imply that there are disconnects in the labour market for certain occupations in certain locations across the country. Not only are these employers reporting shortages of educated people in particular sectors, there is also evidence pointing to people graduating with relevant degrees but who allegedly do not possess the “right” skills

¹ Stephen Harper as cited in Tavia Grant, “Why Canada’s Labour Mismatch is Getting Worse,” *The Globe and Mail*, November 29, 2012, <http://www.theglobeandmail.com/report-on-business/economy/economy-lab/why-canadas-labour-mismatch-is-getting-worse/article5793941/> (accessed June 15, 2013).

² “Labour Force Survey,” *Statistics Canada*, February 2014, <http://www.statcan.gc.ca/daily-quotidien/140307/t140307a001-eng.htm> (accessed March 7, 2014).

³ “The New Canada Job Grant,” *Economic Action Plan 2013*, <http://www.budget.gc.ca/2013/doc/themes/skills-eng.pdf>: 2.

required to participate effectively in the labour market. These problems of skills mismatches and competency shortages will only get worse as future demographic changes result in fewer people in the workforce, and the changing nature of the knowledge economy, including the on-going advent of new technologies, cause skills requirements to change rapidly. In order to remain globally competitive, decrease unemployment rates, and keep productivity high, Canada must work to diminish these skills mismatches.

Post-secondary education (PSE) institutions, as one of the primary pathways to employment in Canada, play a vital role in ensuring the labour market operates effectively. They do so by creating openings within particular programs to fulfil the demands of students who then, in a well-functioning system, create the supply of graduates who ultimately meet the needs of employers.

Colleges in Canada work with employers as part of their mandates to ensure that students are gaining the skills necessary for work. The mission of universities however, is less clear. There are differences of opinions in the country as to the role of universities. Some believe that universities should be training students and providing them with job-ready skills to succeed in the labour market. Others view universities as places of higher education concerned with higher-level skill development that provide their students with a broad understanding of themselves and of the world around them. The view subscribed to differs, both within and between institutions, with some focusing more on traditional roles and others focusing more on cultivating their students' skills to ensure they are able to integrate into the labour market. Relatively more institutions are also beginning to act as major training grounds for advanced professions, such as physicians, lawyers, engineers, accountants, computer scientists and business managers, which stand in stark contrast to the typical research institutions. The controversy can also be seen

within individual institutions with different faculties and professors holding varying views on the role of the university in modern society.

This paper brings together various viewpoints to identify the current rhetoric extolled by faculty members, PSE administrators, and employers regarding the response of the PSE system, and universities in particular, to changes in the labour market. It subsequently evaluates how effective they have been at responding. It also points to areas where future research could be conducted to gain a better idea of the state of PSE responsiveness in Canada. It then looks to international examples of governments implementing policies to better connect their educational institutions to the needs of the labour market, as potential examples for Canada. The paper concludes with policy recommendations, including ways in which the PSE system in Canada could be adapted to further address some of the underlying issues resulting in skills mismatches and competency shortages.

Part I: Skills Mismatches and Competency Shortages

Defining Labour Shortages, Skills Mismatches, and Competency Shortages

In order to understand the role of universities in addressing skills pressures, it is important to define skills shortages, skills mismatches, and competency shortages in order to distinguish them from one another. For the purposes of this paper, a skills shortage can be defined as a situation whereby employers cannot fill vacant positions, despite their offering of higher wages and other non-wage incentives, because there is an insufficient supply of qualified workers. In other words, a skills shortage takes place when the supply of skilled workers is insufficient to meet employers' demands at prevailing market wages and employment conditions.⁴

⁴ Other indicators of shortages include increased hours of work, increased recruitment efforts, and the offshoring or automating of certain aspects of the job.

A skills mismatch, on the other hand, is when there are shortages of workers with the right skills in some areas despite a surplus in others. This can take the form of a regional mismatch when there are, for example, shortages of workers in Alberta and an oversupply in Newfoundland. It can also take the form of an occupational or field of study mismatch, when there are, for example, too many students studying humanities and not enough studying science, technology, engineering or mathematics (STEM).

A job seeker may experience vertical or horizontal mismatches depending on their level and field of study.⁵ A vertical mismatch occurs when a candidate is either over or under-qualified for a job.⁶ For example, a graduate with a master's degree applying for a job requiring a bachelor's degree faces a vertical mismatch. A horizontal mismatch occurs when the level of education or qualification corresponds to the job requirements but the field of education does not.⁷ For example, a high-school teacher who is assigned a course or subject outside of their expertise could be said to be horizontally mismatched.

Related to skills mismatches are shortages of competencies required for the labour market. These take place when employers cannot fill vacancies because workers' skills, competencies, or work experience are not aligned with job requirements, even though their educational attainment may be. Competencies, like formal education, are critical to success in the labour market. Competencies include basic literacy and numeracy skills; soft skills or non-cognitive skills like creativity and problem-solving abilities; and, applied knowledge gained through work experience. These components tend to be just as important to employers as educational

⁵Michael J. Handel, "Skills Mismatch in the Labour Market," *Annual Review of Sociology*, Vol. 29 (2004): 135-165.

⁶"The Skill Matching Challenge: Analysing Skill Mismatch & Policy Implications," European Centre for the Development of Vocational Training (Luxembourg: Publications Office of the European Union, 2010).

⁷John Sutherland, "Qualifications mismatch and skills mismatch," *Education + Training*, Vol. 54, No. 7 (2012): 619-632.

attainment. A 2013 survey of executives from 42 different countries, including Canada, revealed that two-thirds of respondents felt that job candidates lacked soft skills.⁸ Shortcomings in these skills and competencies can result in a variety of outcomes, including job seekers not being hired, being overlooked for promotion, or experiencing wage penalties. For example, workers with technical expertise may lack teamwork and communication skills required for more senior positions. Engineers Canada has reported that many engineers lack the leadership skills required for management positions.⁹ In this case, the issue is not the supply of engineers, but rather the possession of the right skills *among* engineers. In this way, skills mismatches and competency shortages are qualitative, as opposed to skills shortages which are quantitative.

Challenges Measuring Skills Pressures

Due to varying definitions of skills and inconsistent data, skills mismatches and shortages are difficult to identify across industries and regions. Partially due to issues of sample sizes, labour market data is collected at a high level in Canada, thereby allowing for instances of shortages in particular occupations to go undocumented. Complicating the issue further is the fact that skills mismatches may also coexist with quantitative mismatches, i.e. skills shortages, such as a deficit of French teachers within an overall teacher surplus. Despite these challenges, skills mismatches can be measured with empirical studies, by analyzing job requirements, or with self-assessment surveys. Unfortunately, there are very few examples of such surveys in Canada.¹⁰ Instead, the majority of literature in Canada cites the substantial returns of university education and the relatively high employment rate as evidence that the university system is doing a good job in

⁸ "Talent Shortage Survey Research Results," *ManPower Group* (2013): 8.

⁹ "The Engineering Labour Market in Canada: Projections to 2020," *Engineers Canada*, October 2012, http://www.engineerscanada.ca/sites/default/files/w_Engineering_Labour_Market_in_Canada_oct_2012.pdf, (Accessed December 23, 2013): 25.

¹⁰ "Labour and Skills Shortages in Canada: Addressing Current and Future Challenges," *Report of the Standing Committee on Human Resources, Skills and Social Development and the Status of Persons with Disabilities* (House of Commons Canada, 41st Parliament, First Session, December 2012): 4.

preparing students for the labour market. They do not factor in the opportunity cost, or how much better the rates could be, if the students had studied something else. Questions about job satisfaction available in the National Graduate Survey can be useful for identifying mismatches on a broad scale, particularly cases of underemployment; however, these types of surveys are subjective, sometimes unreliable, and difficult to compare due to varying methodologies.

There also do not appear to be any surveys currently in place in Canada which seek to identify any shortages in graduates' competencies. Education is widely used as a proxy variable for competencies. For example, the National Occupational Classification compares education to job requirements to identify mismatches. While it is acceptable as a baseline indicator, level of education only reflects one aspect of a worker's abilities. Work experience, natural ability, and other competencies are not captured by these indicators. Using literacy levels as an indicator attempts to work around this challenge for that one particular competency.

Skills Shortages and Competency Shortages in the Canadian Economy

Despite the difficulties mentioned above in substantiating their claims, employers across the country have been reporting sectorial shortages in their industries and a shortage of competencies in their new employees.

Sectorial Shortages

According to a CIBC report, specific industrial sectors facing skills shortages in Canada include: mining; oil and gas; science, technology, engineering and mathematics (STEM); health; business (MBA's); and, information and communications technology (ICT).¹¹ These shortages are primarily identified through government projections and employer surveys. For example, a

¹¹ Benjamin Tal, "The Haves and Have Nots of Canada's Labour Market," *CIBC World Markets In Focus*, December 3, 2012: 1.

2012 *Nordicity* report surveying over 100 Canadian information and communication technology firms found that there is a labour shortage in their industry and firms reported that they face “alarming” difficulties recruiting suitable workers.¹² Several of these occupations have been identified as being important for innovation and national competitiveness in a globalized economy.¹³ These occupations also all require some form of PSE and yet there appear to be an insufficient number of students graduating with the relevant degrees.¹⁴ Alberta alone has estimated a skills shortage of more than 114,000 jobs over the next twelve years in science and technology, skilled trades, and healthcare.¹⁵ The Conference Board has also estimated that the skills mismatch in Ontario, whereby students are graduating with the “wrong” degrees is costing the province more than \$24 billion in lost economic activity and \$3.7 billion annually in potential tax revenue.¹⁶

According to a recent Canadian Council of Chief Executives (CCCE) report, while the largest companies in the country are still able to find graduates to meet their needs, they are increasingly facing challenges related to labour mobility and, furthermore, are worried about their subcontractors’ (in this case SMEs) ability to find the workers they require. Larger corporations still have the means available to recruit the best talent across the country or internationally, as well as invest in training their employees post-recruitment. In contrast, SMEs are more restricted to hiring workers who already possess the skills they require.¹⁷ The Canadian Federation of Independent Business (CFIB) reiterates this point, claiming that small businesses

¹² David Ticoll, “Labour Supply/Demand Dynamics of Canada’s Information and Communications Technology (ICT) Sector,” *Nordicity*, March 2012: 19.

¹³ Op. cit. “Talent Shortage Survey Research Results.”

¹⁴ Op. cit. Tal, “The Haves and Have Nots of Canada’s Labour Market.”

¹⁵ “Canada’s Skills Crisis: What We Heard: A Canadian Chamber of Commerce Report on Cross-Country Consultations in 2012,” *The Canadian Chamber of Commerce*, September 27, 2012: 10.

¹⁶ Daniel Munro & James Stuckey, “The Need to Make Skills Work: The Cost of Ontario’s Skills Gap,” *The Conference Board of Canada*, June 2013: 1.

¹⁷ “Preliminary Survey Report: The Skill Needs of Major Canadian Employers,” *Canadian Council of Chief Executives CCCE*, January 2014: 6.

are struggling more than others to find the skilled workers they need, particularly at the college level.¹⁸ According to CFIB's 2013 report, SMEs have responded in a number of ways: "In Saskatchewan, to cope with labour shortages 69% of entrepreneurs hired underqualified workers, 66% increased salaries and benefits, 48% ignored new business opportunities, 32% increased training, and 26% have recruited outside of Canada."¹⁹

Competency Shortages

Other commentators and surveys have shown that there are various competencies lacking across the Canadian labour force that are contributing to productivity losses in a variety of different sectors. These include shortages of hard skills, soft skills, combinations of certain skills, and a lack of emerging skills.

Hard skills are specific, teachable abilities that can be defined and measured. They refer to a person's knowledge and occupational skills, both general and specific. Examples of hard skills include mathematics capabilities or the ability to use software programs. According to the 2014 CCCE report cited above, several large companies in Canada have speculated that their recent declines in revenue has been the result of decreased productivity of their new hires because of their lower literacy and numeracy rates.²⁰ One of the companies surveyed stated that their company has noticed "a growing and noteworthy difference, or gap, in the quality of students, programs and schools in the Canadian PSE system."²¹

Other employers, including those surveyed in the 2012 Chamber of Commerce report, *Canada's Skills Crisis: What We Heard*, have also expressed dissatisfaction with graduates'

¹⁸ Amber Ruddy, Mandy D'Autremont, Janine Carmichael & Richard Truscott, "Looking for Hire Ground: Small Business Perspective on Labour Shortages in Western Canada," *Canadian Federation of Independent Business*, April 2013: 6.

¹⁹ Op. cit. D'Autremont, et al., "Looking for Hire Ground..."

²⁰ Op. cit. "Preliminary Survey Report: The Skill Needs of Major Canadian Employers:" 7.

²¹ Ibid: 10.

basic literacy and numeracy skills.²² Another Canadian Chamber of Commerce report found that SMEs have highlighted the disconnect between education and employment as being a major issue that has resulted in them having to invest a large amount of resources upfront to get new hires up to the required level. The report states that although the companies believe this is to be expected for technical work skills, they have the expectation that literacy and essential skills should be taught in schools.²³

Canada's results in the OECD's Programme for the International Assessment of Adult Competencies (PIAAC) demonstrate that young people may not be developing the hard skills they require to succeed in the labour force. The first results from PIAAC in 2013, which focused on adults between the ages of 16 and 65 and measured skills that are required to succeed in the knowledge economy, revealed that 16-24 year olds in Canada are performing worse in terms of literacy and numeracy than their peers in the rest of the OECD.²⁴ Yet, the same survey found that reading, writing and particularly numeracy skills are required more often in the Canadian workplace than in other countries.²⁵

Soft skills, or the character traits and interpersonal skills a person possesses, are also very important to employers, yet seem to be in shortage in many PSE graduates. A 2013 CCCE report entitled *Jobs, Skills and Opportunities: Strengthening Canada's Human Capital Advantage* stated that, "the common denominator across the country is that, everywhere, employers are looking to recruit young people with a strong complement of soft skills, such as the ability to communicate, think critically and work in teams."²⁶ According to John Manley, President and

²² Op. cit. "Canada's Skills Crisis: What We Heard:" 27.

²³ Global Public Affairs, "Closing the Skills Gap: Mapping the Path for Small Business," *The Canadian Chamber of Commerce* (February 2013).

²⁴ OECD, "OECD Skills Outlook 2013: First Results From the Survey of Adult Skills," OECD Publishing, 2013.

²⁵ Ibid: 145.

²⁶ John Manley, "Jobs, Skills and Opportunities: Strengthening Canada's Human Capital Advantage," *Canadian Council of Chief Executives*, November 28, 2013: 10.

CEO of CCCE, employers give greater weight to people skills, communication skills, problem solving skills, analytical abilities and leadership skills than industry-specific knowledge when evaluating potential new employees.²⁷

According to the January 2014 CCCE report, the soft skills most often listed by employers as being of primary importance includes: people skills and relationship-building, communication skills, problem-solving skills, analytical abilities and leadership skills.²⁸ Large companies in particular are primarily interested in hiring well-rounded individuals with the ability to learn rather than those with job-specific skills but few soft skills.²⁹

A recent survey of 500 Canadian executives, entitled *Career Development in the Canadian Workplace: National Business Survey*, conducted by the Canadian Education and Research Institute for Counselling also emphasized the importance of soft skills. The survey revealed that 70% of executives reported that finding skilled workers is not an easy task and one-in-four find it “very difficult.” Two-thirds of them attribute this to the difficulty of finding qualified candidates with the right skill set and 66% stated that they had difficulty finding employees with the right soft skills. The survey found that executives most valued a positive attitude, good communication skills, teamwork skills and a strong work ethic. Sixty-two percent of employers stated that they would hire someone with soft skills who is a “good fit” and provide them with the necessary technical training, if they were unable to find technically skilled employees to begin with.³⁰

Employers are also reporting that they are lacking candidates with the necessary combinations of skills. This includes the importance of both hard and soft skills in any given

²⁷ Op. cit. Manley, “Jobs, Skills and Opportunities: Strengthening Canada’s Human Capital Advantage.”

²⁸ Op. cit. “Preliminary Survey Report: The Skill Needs of Major Canadian Employers.” 7.

²⁹ Ibid

³⁰ Environics Research Group, “Career Development in the Canadian Workplace: National Business Survey,” *Canadian Education and Research Institute for Counselling*, January 2014.

candidate. The January 2014 CCCE survey revealed that employers were looking for the “full package” of candidates with soft skills and hard certifiable credentials.³¹ Furthermore, a recent American study revealed that although business leaders and recruiters value their employees’ soft skills just as much as hard skills, hard skills are often given more weight in the interview process, partly because they are easier to measure.³² It appears that the relative importance of soft skills or hard skills depends on the position the individual employer is seeking to fill.

The 2014 CCCE report also found that 40% of companies that took part were having difficulties recruiting workers with the right mix of hard skills.³³ This could include finding candidates with the right specializations, degree combinations or skills necessary to ensure innovation. For example, many employers report that their technically trained new employees lack training or education in management. Other jobs require combinations of skills thus far unheard of. The grouping of biochemistry and computer science degrees is now looked upon as a favourable combination by employers looking to innovate.³⁴ Finally, employers are also stating that the skills necessary to operate in the knowledge economy are evolving quickly and graduates lack the ability to adapt to changing requirements.³⁵

The various types of skills shortages described above, based on graduates lacking particular competencies, are unlikely to appear in current labour market forecasts and surveys because they involve different indicators not currently being measured. This explains why the recently released TD Economics report, “Jobs in Canada - Where, What and For Whom?,” which focused only on traditional measures such as unemployment rates, wage rates and unfilled job vacancies,

³¹ Op. cit. Environics Research Group, “Career Development in the Canadian Workplace.”

³² “The Prepared Project: An In-depth Look at Millennial Preparedness for Today’s Workforce,” *Bentley University*, January 29, 2014.

³³ Ibid

³⁴ “EScience Seminar: Why Computer Scientists Should and Can Learn Biochemistry,” *eScience Institute, University of Washington*, May 22, 2013, <http://escience.washington.edu/event/escience-seminar-why-computer-scientists-should-and-can-learn-biochemistry> (Accessed December 20, 2013).

³⁵ Op. cit. “Canada’s Skills Crisis: What We Heard.” 27.

could argue that there is no imminent skills crisis, even though employers continue to state that they are facing one and innovation levels remain low.³⁶

Part II: Labour Market Role of Universities

Universities in a Perfect “Market”

In theory, the simplest way of supplying training and education that matches firms’ specific labour needs would be for firms to provide all the necessary training to would-be employees themselves. However, in Canada, most education related to cognitive aptitudes and abilities, and training which produces general skills, takes place in PSE institutions.³⁷ As was previously mentioned, many of the particular competency and skills shortages taking place in Canada are in occupations that require PSE. For this reason, there is a clear link between the labour market and the PSE system or “PSE market.”

The concept of a PSE market, as outlined below, was described by Montmarquette and David Boisclair (2004) and more recently by Finnie and Norrie (2013) and Finnie (2014).³⁸ In a well-functioning neo-classical model of the labour market, if shortages in specific occupations emerge, employers would respond by increasing wages in those occupations or by using other means to try to attract the workers they need.³⁹ If these higher wages or other responses appeared

³⁶ Derek Burleton, Sonya Gulati, Connor McDonald & Sonny Scarfone, “Jobs in Canada: Where, What and For Whom?” *TD Economics*, October 22, 2013, <http://www.td.com/document/PDF/economics/special/JobsInCanada.pdf> (Accessed October 23, 2013); and, The Conference Board of Canada, “Innovation,” *How Canada Performs*, 2013.

³⁷ Lionel Page, Louis Levy Garboua, Claude Montmarquette, “Aspiration Levels and Educational Choices: An Experimental Study,” *Economics of Education Review*, Vol.26 (2007):747-757.

³⁸ Claude Montmarquette & David Boisclair described the market structure for PSE in their working paper for Human Resources Development Canada, “Post-Secondary Educational Institutions’ Adjustment to Labour Market Changes: Major Concerns and Key Research Issues,” *Skills Research Initiative*, 2004; Ross Finnie also characterized the PSE system as a market being in “The Skills We Need,” *Policy Options*, Institute for Research on Public Policy, January 2014; Ross Finnie and Ken Norrie described in detail the PSE market in their workshop paper “ICT Skills Shortages: Framing the Issues” *ICT Talent Workshop*, March 21-22, 2013, http://socialsciences.uottawa.ca/irpe-epri/eng/documents/ICTSkillsShortagesFramingtheIssues_000.pdf.

³⁹ Other non-wage responses include improving non-wage benefits, increasing overtime hours, and putting more resources into recruitment both domestically and internationally. For more information see Tony Fang, “Workplace

to be long-run in nature, the PSE system would adjust in two ways. First, demand for PSE would increase as more students would want to study in areas related to the in-demand occupation. In the medium to long term, post-secondary institutions would recognize the opportunity to increase tuition revenue and otherwise attract students by expanding enrolment and in doing so, would respond by accommodating demand. Students enrolled in these programs, on graduating, would fill the shortages in the market.

Market Failures

There are several reasons why the PSE system does not always respond this way in reality. There can be market failures on the demand side (the students), the supply side, (the PSE institutions) or both, as discussed below.

Demand Side

On the demand side, students may lack necessary information about the signals coming from the labour market in terms of what skills are required and what occupations are in demand. They could face delays or misinformation about learning and labour market information (LLMI) and the return on investment (ROI) of different occupations. For example, they may receive the signals but lack the necessary information about what schooling pathways lead to the in-demand jobs. It is increasingly becoming the case that occupations in the knowledge economy do not directly relate to a single field of study and, therefore, figuring out what to study can be confusing for students.

Students may also not know which types of skills and abilities would best prepare them for the labour market. A Bentley University study found that in the United States there was a wide

gap between the students and employers' understanding of being prepared for the labour market.⁴⁰ Conversely, students do not act collectively upon receiving labour market signals and for this reason, based on this type of information, more students may choose to pursue a particular field of study than the market can absorb.

Current or prospective students may also mistrust the labour market information they do receive or not believe that the wage responses in particular occupations will remain in the long-run. This may be due to fear that they will be let go or cast aside for promotions as their skills become obsolete. For example, some students may fear the high turnover rates in the ICT sector. Other students may fear the accuracy of labour market information based on recent history where professions once in high demand, such as financial advisors prior to the 2008 recession or ICT workers prior to the dotcom bust, have fallen out of favour quickly and unexpectedly, leaving new graduates with few job opportunities. Furthermore, there can be some confusion when, for example, employers in some parts of the country are reporting shortages, while other parts of the country experience an excess of workers, as appears to be the case in certain ICT fields.⁴¹ It also may be confusing for students when the same survey reports, for example, that there is an oversupply of computer technicians in the country but a shortage of cyber security technicians.⁴² According to a McKinsey Center for Government report, fewer than half of all students surveyed in nine countries, were well informed when making decisions about what to study.⁴³

⁴⁰ Op. cit. "The Prepared Project: An In-depth Look at Millennial Preparedness for Today's Workforce:" 11.

⁴¹ "HRSDC 2011 COPS Reference Scenario," *Employment and Social Development Canada*, <http://www23.hrsdc.gc.ca/1.3bd.2t.1ilshtml@-eng.jsp?lid=16%20&fid=1&lang=en> (Accessed November 15, 2013).

⁴² Ibid

⁴³ The countries participating in the survey included Brazil, Germany, India, Mexico, Morocco, Saudi Arabia, Turkey, the United Kingdom and the United States. It is worth noting that many of these countries do not have the same quality of higher education institutions in place as does Canada and this may account for some of this knowledge gap. Mona Mourshed, Diana Farrell and Dominic Barton, "Education to Employment: Designing a System that Works," *McKinsey Center for Government*, 2013: 19.

Finally, the model above assumes that prospective students are completely rational when in reality there are various reasons why they may not make the choice which would provide them with the most economic benefit, even under the assumption that they were somehow able to attain all the necessary information. For example, they may be culturally conditioned to believe that certain fields of study are inherently more valuable or better than others, even when there are better job prospects in other fields. In some cases, students may value studying a field that has relatively poor job prospects, such as film studies for example, due to an interest or the belief that they will be one of the rare successful cases.⁴⁴

Universities have also increasingly become the default option for high-school students, thereby diverting students who might otherwise achieve more labour market success by pursuing high-value college or polytechnic programs. Students may also be discouraged from pursuing the fields of study leading to in-demand occupations because they believe, whether validly or not, that the schooling or job itself is too difficult for them or they are ill-suited to it for other various reasons.⁴⁵ This is particularly an issue for fields of studies and occupations which have traditionally been occupied predominately by a single gender. For example, even when there are labour market signals that degrees in STEM fields result in better labour market outcomes, female students are still less likely than their male counterparts to pursue a STEM degree.⁴⁶

⁴⁴ Stephen L. DesJardins, Robert K. Toutkoushian, "Are Students Really Rational? The Development of Rational Thought and its Application to Student Choice," *Higher Education: Handbook of Theory and Research*, Vol. 20, (2005): 191-240.

⁴⁵ Brahim Boudarbat & Claude Montmarquette, "Choice of Fields of Study of Canadian University Graduates: The Role of Gender and their Parents' Education," *Institute for the Study of Labor Germany*, Discussion Paper No. 2552. January 2007.

⁴⁶ "Education in Canada: Attainment, Field of Study and Location of Study," *National Household Survey: Analytical Products*, Statistics Canada, 2011.

Supply Side

There may also be a lack of responsiveness on the supply side of the PSE system.

Differences in graduate employment rates across programs are partially indicative of mismatch and may be the result of failures on the demand or supply sides.

In the current system, institutions seem to oversupply some skills relative to labour market needs, i.e. they provide too many seats in a program or field of study leading to a particular occupation. For example, university teacher training programs in provinces like Ontario and British Columbia are turning out more graduates than are required by shrinking school systems.⁴⁷ In October 2013, job vacancy survey results from Statistics Canada revealed that the unemployment-to-job vacancy rate in education was the largest across industrial sectors.⁴⁸ This may be because program expansion is sometimes driven by student demand that can be out of tune with the labour market. If, as was mentioned above, students choose to study film studies despite poor job prospects, PSE institutions are unlikely to restrict enrolment because doing so may result in a loss of tuition revenue and fewer students pursuing PSE. In cases such as these, institutions have little power or incentives to make new programs that better align with labour market needs. Ultimately they are supplying their students with what they want, which is based on the often limited information they have.

Expansion at universities also tends to occur most readily in programs that have low unit costs.⁴⁹ For example, humanities and social sciences made up 44% of all undergraduate enrolment growth between 2000 and 2008 but graduates from these fields enjoy relatively lower

⁴⁷ “Teacher Outlook Report,” *Job Bank: Working in Canada*, http://www.workingincanada.gc.ca/LMI_report_bynoc.do?&noc=4142&reportOption=outlook (Accessed October, 2013).

⁴⁸ “CANSIM Table 284-0003,” Statistics Canada (Accessed October, 2013).

⁴⁹ Op. cit. Montmarquette et al., “Post-Secondary Educational Institutions’ Adjustment to Labour Market Changes:” 15.

labour market premiums than other university graduates or require more education before making their way to the labour market.⁵⁰

PSE institutions undersupply other skills due to institutionalized constraints. The complicated bureaucratic governance structures within PSE institutions and the public nature of their funding, means that they are often slow to shift their supply of seats for particular programs even with the incentive of demand from students.⁵¹ Their responsiveness is often limited by physical, human resources, organizational, and financial capacity and/or cultural and governance factors.⁵² Universities in particular are often constrained by pre-existing obligations. For example, they have responsibilities to tenured professors in particular disciplines or students who are part way through four-year degree programs.⁵³ As will be further explored later in the paper, colleges tend to be more flexible than universities.

Responsiveness is also often limited by cultural and governance factors. There is reportedly pushback in some instances from faculty and administrators who resist change due to the extra work and expense it would involve. As will be explored in further detail, at the university level, many faculty members also do not see “training for employment” as a key mission. Students on the other hand, place significant weight on post-graduation employment. Governance and labour relations structures can also make it hard to close outdated programs, create new programs that meet an identified need, and work in “interdisciplinary” ways to develop broad skill sets.

Responsiveness to learner and labour market needs is also limited by the nation-wide university

⁵⁰ “Trends in Higher Education: Volume 1- Enrolment,” *The Association of Universities and Colleges of Canada*, 2011: 10.

⁵¹ “Strategic Enrolment Management Group White Paper- Long-term Enrolment Planning,” Queen’s University, September 2013, <http://www.queensu.ca/provost/enrolmentplanning/SEMGWhitePaperSeptember.pdf> (Accessed October, 2013).

⁵² Op. cit. Montmarquette et al, “Post-Secondary Educational Institutions’ Adjustment to Labour Market Changes:” 9; and, Op. cit. Finnie & Norrie, “ICT Skills Shortages: Framing the Issues.”

⁵³ Sumon Majumdar & Katsumi Shimotsu, “Enrollment Responses to Labour Market Conditions: A Study of the Canadian Market for Scientists and Engineers,” *Queen’s Economics Department*, Working Paper No. 1105, September 2006.

culture that rewards research activity at the expense of teaching. This is possibly, if unintentionally, encouraged by federal research and development support.⁵⁴

Complicating the issue further, universities do not always know what skills employers specifically need. While professional programs maintain close ties to employers and professional organizations, other university programs lack sufficient mechanisms for feedback from the labour market. Furthermore, as has been mentioned, the country is not simply facing shortages of graduates with particular degrees, but shortages across the board of graduates with the right competencies and combination of skills regardless of degree. This may imply a pedagogical issue that stems as far back as falling standards in elementary and secondary education.

A United States study found that there is a significant disconnect between what educators believe employers want in graduates and what employers actually want.⁵⁵ According to the study, educators believe employers want students who study in fields that provide them with readily transferable job knowledge and skills, particularly professional programs, and who have had access to top-quality knowledge transfer. In addition, they believe employers want students who have demonstrated through their grades and standardized test scores that they are high achievers.

The study pointed to two recent American surveys conducted by the Association of American Colleges and Universities, and The Chronicle of Higher Education which demonstrated that these assertions made by educators do not hold true for employers. Instead, 93% of the employers surveyed stated that the quality they value most in new hires is the ability to think critically, communicate clearly and solve complex problems and demonstrate the

⁵⁴ “Post-Secondary Education in Canada: Strategies for Success,” *Canadian Council of Learning: Report on Learning in Canada*, 2007.

⁵⁵ Robert J. Sternberg, “Giving Employers What They Don’t Really Want,” *The Chronicle of Higher Education*, June 17, 2013.

capacity for continued new learning, regardless of field of study.⁵⁶ In the second survey, only 19% of the employers surveyed reported looking for students with specific majors and being unwilling to consider candidates without them.⁵⁷ Over 75% of them stated that they would like graduates to have more experience in critical thinking, complex problem solving, written and oral communication and applied knowledge in real-world settings.⁵⁸ Moreover, rather than signalling ability through grades, the employers surveyed consistently ranked outcomes and practices that involved application of skills over acquisition of knowledge.⁵⁹ The results of this survey are likely less applicable to Canada where there is a fairly widespread acceptance of the importance of soft skill development among educators; however, it does demonstrate the overall lack of communication between the two groups which is also present in Canada.

Finally, employers' demands for skills change very quickly, whereas the development of skills is often a gradual process. In normal circumstances, workers update their skills to respond to labour market changes, allowing them to move from mismatch situations to more productive jobs. As skill sets have become more complex, and as specialization has become more important to employers, the time required to acquire necessary skills also increases. Even in a perfect model where employers report to universities on a regular basis about their skills needs, it would still take several years for the candidate who has completed the necessary pre-requisites in high-school and completed their PSE to reach the market. It is also unclear what the market signals are for the newly required particular skills sets and how they can "be measured, evaluated, and communicated" to the relevant stakeholders.⁶⁰ There are no clear measures in place to ensure that

⁵⁶ Hart Research Associates, "It Takes More than a Major: Employer Priorities for College Learning and Student Success," *Association of American Colleges and Universities*, 2013.

⁵⁷ Op. cit. Sternberg, "Giving Employers What They Don't Really Want."

⁵⁸ Ibid

⁵⁹ Ibid

⁶⁰ Op. cit. Finnie, "The Skills We Need:" 32.

universities are receiving this information in order to adapt to the fast changing needs of the labour market, or preferably to stay ahead in order to spur innovation. Furthermore, they may not feel that the skills mismatch or competency shortage issues are valid, rather just employers complaining. According to the McKinsey report mentioned above, 39% of employers surveyed in 110 countries, state that skills mismatches are the main reason they cannot find the right people to fill entry-level jobs, while 72% of educators believe new graduates are ready to join the workforce.⁶¹

Part III: Current Level of Responsiveness

The previous section attempted to provide a clearer understanding of the factors that constrain the PSE system's responsiveness to signals from the labour market. The following section describes what different stakeholders argue should be the appropriate response of the supply side of the PSE system. It subsequently evaluates how well institutions and the PSE system overall are achieving this.

The difficulty in defining a single view of how the PSE system should be responding is that various stakeholders have differing views on two key questions. The first question relates to the role of PSE institutions: what is the purpose of a college or university? The second question is closely related to the first: is it the employers or the PSE institutions that are responsible for providing job-specific training?

The Mandate of Colleges

Colleges in Canada tend to have a much clearer mandate when it comes to their relationship with the private sector and their role in preparing students for the labour market and specific

⁶¹ Op. cit. Mourshed, et al., "Education to Employment: Designing a System that Works:" 25.

careers. Canadian colleges are recognized for being among the most responsive PSE institutions to labour market demand in the world, along with the German dual-apprenticeship system.⁶²

Many colleges have private sector representatives on their board of governors as part of their mandates.⁶³ For example, in Ontario, three-quarters of a college's board of directors must represent the private sector and community, in order to influence the overall direction of PSE.⁶⁴ Colleges across the country also have Program Advisory Committees designed to align each program with employment opportunities through the development and revision of program curricula.⁶⁵ The advisory committees are made up of a cross-section of people both internal and external to the college who have a direct interest in, and a diversity of experience and expertise related to the particular occupational area addressed by the program. The committees help college staff to define the objectives of the program and the specific skills students need to reach these objectives. They also assist in forecasting occupational trends and provide feedback to the college about the effectiveness and competence of graduates.⁶⁶

According to the Association of Canadian Community Colleges, traditionally business, industry and community partners have turned to colleges for the training and development of highly qualified employees.⁶⁷ Jason Kenney, the Federal Minister of Employment and Social Development, has stated that colleges in Canada provide "relevant skills for the labour market of

⁶² "Higher Education Reform Project," *Asian Development Bank*, <http://www.adb.org/projects/documents/higher-education-reform-project-pp> (Accessed August 2013).

⁶³ George Burton, "Institutional Vision, Proposed Mandate Statement and Priority Objectives," *Ontario Ministry of Training, Colleges and Universities*, 2013.

⁶⁴ Doug Auld, "Selling Postsecondary Education: The Role of Private Vocational and Career Colleges," *C.D. Howe Institute*, No. 219, October 2005.

⁶⁵ "The Private Sector Advisory Board," Networks of Centres of Excellence of Canada, August 2013, http://www.nce-rce.gc.ca/About-APropos/Committees-Comites/PSAB-CCSP_eng.asp (Accessed September 2013).

⁶⁶ *Ibid.*

⁶⁷ "Partnerships for Productivity and Advanced Skills: The Role of Colleges in Canada's Innovation System," *Association of Canadian Community Colleges* (February 2010).

today and the future.”⁶⁸ This sentiment is echoed by employer groups including the Canadian Chamber of Commerce, the CCCE and the Federation of Independent Business.⁶⁹

Many students choose the college route to gain more practical job expertise and work experience. Some recent media reports have even stated that university graduates are returning to college to gain more job-relevant skills. According to one article, Linda Franklin, President and Chief Executive Officer of Colleges Ontario, has stated that in the past five years in Ontario there has been a large increase in university graduates going to college.⁷⁰ However, there are no national statistics keeping track of these numbers.

The Mandate of Universities

The perceived purpose of universities differs greatly from that of colleges in Canada. There are two main views held by professors, faculty, staff and community members regarding the role of universities. On the one hand, some individuals believe that universities are places of higher education and should not concern themselves with specific skills training. On the other hand, there are some commentators and stakeholders who believe that Canadian universities have a responsibility to work closer with the private sector to ensure their education aligns with labour market needs.

This debate about the role of the PSE system is not a new one in Canada. A report by Janice Newson of York University entitled, *The Corporate-Linked University: From Social Project to Market Force*, written in 1998, reflects on some of the changes that were beginning to take place

⁶⁸ Jason Kenney, “Minister Kenney Stresses Importance of Skilled Trades to Jobs, Growth and Prosperity,” *Employment and Social Development Canada: News Release*, October 21, 2013, <http://news.gc.ca/web/article-en.do?m=%2Findex&nid=782359> (Accessed October 22, 2013).

⁶⁹ Op. cit. “Canada’s Skills Crisis: What We Heard: A Canadian Chamber of Commerce Report on Cross-Country Consultations in 2012”; and, “Preliminary Survey Report: The Skill Needs of Major Canadian Employers”; and, D’Autremont, Trustcott, “Looking for Hire Ground.”

⁷⁰ Linda Franklin as cited in Marjo Johne, “University Grads See College Diploma as Key to Jobs,” *The Globe and Mail*, November 12, 2013, <http://www.theglobeandmail.com/news/national/education/university-grads-see-college-diploma-as-key-to-jobs/article15375257/> (Accessed November 12, 2013).

in the higher education sector as early as the 1980s.⁷¹ According to Newson, this new corporatization of education was advanced through the argument that universities should develop closer relationships with the private sector as a means of alleviating some of their funding difficulties that came from government funding cuts in this period. These collaborations would provide universities with much needed funding and provide corporations with expertise to compete in a globalizing world.

These PSE-private sector partnerships were promoted as being good in and of themselves and were actively promoted by the government. For example, the first report published by the now defunct Canadian Corporate-Higher Education Forum in 1984 argued that universities would have to abandon some of their cultural ideals including “the maintenance of autonomy and academic freedom, in order to establish the needed compatibility with industrial culture.”⁷² According to Newson, if this argument had been presented as a re-structuring policy from government, it likely would have been rejected immediately by the academic community. However, they were instead presented as a direction of thinking about how universities could respond to the exigencies of their time, as well as offering a pragmatic solution to resolve universities’ underfunding problem. Newson argues that this was accepted by the key stakeholders in the 1980s and, to her dismay, it was not until her own time in the late 1990s that the university community began to offer some opposition to the re-constructed role of higher education and to the “re-ordering of its relationship to business, government and other markets for its services.”⁷³

⁷¹ Janice Newson, “The Corporate-Linked University: From Social Project to Market Force,” *Canadian Journal of Communication*, Vol. 23, No. 1 (1998).

⁷² Judith Maxwell & Stephanie Currie, *Partnership for Growth: Corporate- University Cooperation in Canada* (Corporate higher Education Forum: 1984): 16.

⁷³ Op. cit. Newson, “The Corporate-Linked University: From Social Project to Market Force:” 17.

Today, those who still share Newson's viewpoint tend to advocate learning for the sake of learning and see educational institutions as providing value to the community through their research and edification of individuals, even if these things have little practical value outside of academia and do not directly support the country's economic advantage. This also relates to the lower value they place on students choosing a field of study based on the employability of its graduates. Complicating this viewpoint, however, is the fact that many of the institutions, which these individuals belong to, market themselves to students as a means to get a job.⁷⁴

Those in support of Newson's viewpoint also reject the notion that universities should be working more with the private sector. They fear the further corporatization of the higher education system and believe that the private sector should not have a say in the development of course curriculum; instead this should be left up to career colleges and the private sectors' own training facilities. Along these lines, some are rather antagonistic towards the concept of viewing the PSE system as a market, with marketable goods. Slogans such as "education is not a good" or "education is a right that should not be at the mercy of markets" are examples of a cultural view that, according to Claude Montmarquette and David Boisclair of Montreal based university research centre CIRANO, prohibits labour market responsiveness by creating obstacles to labour market signalling.⁷⁵

An example of this distrust of the private sector was seen in 2012 when York University's faculty members decided to reject a partnerships whereby Jim Balsillie, co-founder of Research in Motion, offered \$30 million from his Centre for International Governance Innovations (CIGI)

⁷⁴ For example, Brock University advertises its institution by highlighting the 95% employment rate of its graduates. While this statistic may be accurate, it is not necessarily the degree alone that is resulting in these people getting jobs, nor is it necessarily the view of faculty members that this is the institution's responsibility. "Academic Programs Offered At Brock, Brock University, <https://www.brocku.ca/career-services/employers-organizations/recruit/academic-programs> (Accessed February 15, 2014).

⁷⁵ Op. cit. Montmarquette et al., "Post-Secondary Educational Institutions' Adjustment to Labour Market Changes:" 14.

with an addition \$30 from the Ontario government to create an international law program jointly at York and at the CIGI campus in Waterloo. The offer was rejected by faculty due to concerns of academic freedom.⁷⁶ Shortly before the York rejection, the Academic Freedom and Tenure Committee consisting of the 66,000 members in the Canadian Association of University Teachers (CAUT) served notice of a motion to censure York University, the University of Waterloo and Laurier University in relation to their agreements with CIGI. According to Jim Turk, Executive Director of CAUT, the union's motion to censure the universities was the result of a belief that "CIGI has no business at the table deciding what areas the chairs will focus on and who will be hired."⁷⁷

On the other side of the debate are those who believe that universities should be doing more to prepare students for the labour market by interacting more with the private sector. The majority of Canadian students appear to fall on this side of the debate. Surveys conducted by several Canadian universities reveal that the majority of students choose to attend university to prepare for or be hired for a job. The University of Manitoba found that in 2013, 48% of first year students were attending university in order to prepare for a specific career or job; 27% were attending in order to get a good job; 5% were attending in order to increase their knowledge in the academic field; 5% to get a good general education and 6% were there to prepare for graduate school.⁷⁸ Among first year students at the University of Victoria, 52% stated that preparing for a specific job or career was their primary reason for attending and 24% reported

⁷⁶ Jim Balsillie, "Academic Freedom at York University? More Like Academic Myopia," *The Globe and Mail*, April 11, 2012.

⁷⁷ Jim Turk as cited in Gwyn Morgan, "York University's Rejection of Funding from Jim Balsillie A Threat to Canada's Prosperity," *Troy Media*, April 17, 2012, <http://www.troymedia.com/2012/04/17/york-universitys-rejection-of-funding-from-jim-balsillie-a-threat-to-canadas-prosperity/> (Accessed January 10, 2014).

⁷⁸ "2013 CUSC Survey of First-Year Students: Pre-University Experiences," *University of Manitoba*, April 2013, <http://umanitoba.ca/student/media/research-report-vol-25-03.pdf> (Accessed July 2013).

that getting a good job was their main motivation.⁷⁹ Other universities surveyed in the *First Year University Student Survey* had similar results, including students from the University of British Columbia, Ryerson University, University of Waterloo, and the University of Saskatchewan, among others.⁸⁰ Various student organizations have made it clear that they encourage more partnerships between institutions and the private sector and simply state that such partnerships must be made public to all actors in a university and that private entities should not be allowed to limit academic freedom.⁸¹

Some faculty, professors, and staff share the view encapsulated in the *First Year University Student Survey* and emphasize the importance of preparing graduates to enter the workforce during their time in university. According to a Council of Ontario Universities report, universities “recognize that the key to a well-rounded academic experience is helping a student develop both hard skills that can be directly applied to a job, and a variety of soft skills and life experiences that would allow them to adapt to a dramatically changing workplace.”⁸² This viewpoint is also visible in the growth of professional, career specific university programs, such as nursing, engineering and law.⁸³ These programs teach students job-specific skills that may be generalized across various employers but not across occupations.

Other commentators argue that framing the debate in this way in fact perpetuates a false dichotomy. For example, in 2002, Dr. Michael Stevenson, then President and Vice-Chancellors

⁷⁹ “CUSC 2010 First-Year University Student Survey: University of Victoria Report,” *Prairie Research Associates*, June 103, <http://www.inst.uvic.ca/surveys/cusc2013.pdf> (Accessed July 2013).

⁸⁰ “Pre-2014 Surveys,” *Canadian University Survey Consortium*, January 2014, http://www.cusc-cceu.ca/surveys_pre2014.htm.

⁸¹ Huzaiifa Saeed, Chris Martin, Chris Walker, “Policy Paper: Students, Universities and the Private Sector,” *Ontario Undergraduate Student Alliance*, March 2013.

⁸² “#MyCareer: How Ontario University Career Services Prepare Students for the Future,” *Council of Ontario Universities*, N.D. <http://www.cou.on.ca/publications/reports/pdfs/mycareer---report-on-ontario-university-career-se>.

⁸³ Louise Brown, “More Professional Programs Calling Northern Ontario Home,” *The Toronto Star*, March 27, 2011, http://www.thestar.com/news/canada/2011/05/27/more_professional_programs_calling_northern_ontario_home.html (Accessed November 15, 2013).

of Simon Fraser University, stated that portraying the public university and the private sector as being antagonistic toward one another neglects the vast amount of co-operation that takes place between the two, including, but not limited to, the relationship for the productive of research and development.⁸⁴

Another commentator, Michael Bloom, Vice-President, Organizational Effectiveness and Learning at the Conference Board of Canada, suggests that Canadian PSE institutions must compete in an increasingly globalized system and therefore should find a middle-ground by creating and supporting institutions that both develop individuals with job-ready skills and knowledge of oneself and the world. According to him, this should be happening both within individual institutions and among the diverse institutions that make up the Canadian PSE system in order that they complement each other in developing Canadians' skills.⁸⁵

This idea is also somewhat reflected in the viewpoint of certain University Presidents, who tend to fall somewhere between the two sides. They argue that most individuals no longer have linear careers and for this reason universities must provide the kind of broad intellectual and personal development that enables graduates to thrive in a constantly changing world and change jobs regularly. According to Max Blouw, Chair of the Council of Ontario Universities and President of Wilfrid Laurier University:

Universities are primarily in the business of positive human development. They focus on enhancing the abilities of our graduates to communicate clearly and effectively, to analyze, to confront ambiguity with clear methods and confidence, to break down

⁸⁴ Andrew Petter, "The Public University and the Private Sector Creating a New Partnership," *Simon Fraser University's President's Office*, May 28, 2002, <https://www.sfu.ca/pres/president/speeches/20023.html> (Accessed July 2013).

⁸⁵ Michael Bloom, "Labour Market Demands a National Education Strategy," *The Globe and Mail*, November 7, 2013, <http://www.theglobeandmail.com/news/national/education/labour-market-demands-a-national-education-strategy/article15308094/> (Accessed July 2013).

problems into manageable parts, to think critically and to question deeply. The university experience enhances self-awareness and personal competencies.⁸⁶

According to Dr. Blouw and others like him, it is this breadth of development that provides the kind of flexibility required to enable employees to adapt as they move from one career to the next as well as into careers that do not yet exist. Although he argues that universities should not be responsible for providing job-specific training, he also claims that they are responsible for building human capital that will be advantageous and necessary in various careers and other aspects of one's life. Furthermore, several professors have made the argument that universities are not only in the business of making graduates to be employees but also to produce students who become job makers as entrepreneurs.⁸⁷

According to the University of Ottawa's President Allen Rock, universities need to be responsive to the criticism about their relevance that is being levied against them by the media and various commentators. At the same time, however, he also remarks that they are entitled to pushback somewhat, given that university graduates are still experiencing the greatest returns on their education investment and the vast majority find work in occupations related to their field of study.⁸⁸ Several of these commentators have argued that if the skills universities were supplying were truly mismatched to the needs of the economy, to the extent that some commentators are reporting, there would surely be an impact on the employment outcomes of their graduates.⁸⁹ For

⁸⁶ Max Blouw, "Universities Should Educate- Employers Should Train," *The Globe and Mail*, September 3, 2013, <http://www.theglobeandmail.com/globe-debate/universities-should-educate-employers-should-train/article14078938/> (Accessed September 4, 2013).

⁸⁷ "Entrepreneurship At Ontario Universities: Fuelling Success," *Council of Ontario Universities*, October 2013, <http://www.cou.on.ca/publications/reports/pdfs/entrepreneurship-at-ontario-universities---fuellin> (Accessed October 2013).

⁸⁸ Allan Rock, "The 'Skills Mismatch' and the Myth of the Irrelevant University," *University Affairs*, May 9, 2013, <http://www.universityaffairs.ca/the-skills-mismatch-and-the-myth-of-the-irrelevant-university-allan-rock.aspx> (Accessed July 12, 2013).

⁸⁹ *Ibid*

this reason, they continue to advocate the teaching of general skills that are transferable across all employers.

Who Should Provide the Training?

Part of the reason for the above debate is a disagreement about who should be providing employment training. Those who see university as being a means to increase general knowledge without being specific to future employment, tend to also believe that employers should be providing job-specific training to their employees. Again according to Dr. Blouw, “oversimplification of the line between education and employment does not serve individuals or society well. Employers, universities and governments need to recognize this and invest appropriately in their respective roles in education and job training.”⁹⁰

Canada has one of the lowest levels of employer-funded training in the OECD.⁹¹ Employers fear training their staff because they are concerned about poaching externalities once they have provided their employees with a human capital advantage. In theory, employers should take on the expense of training their new employees because they would see it as an investment that would be recuperated once their employees were fully trained and fully productive. However, once those same employees gain the training they need, other firms can offer them higher wages and poach them, thereby avoiding the expense of training them themselves.⁹² In the knowledge economy, many firm-specific skills are transferable across different employers in the same occupation and therefore this fear may be valid in the Canadian context.

⁹⁰ Op. cit. Blouw, “Universities Should Educate- Employers Should Train.”

⁹¹ Mark Goldenberg, “Employer Investment In Workplace Learning In Canada: How We Are Doing. Why It Matters. What The Key Issues Are. How We Can Do Better,” *Canadian Policy Research Networks*, Canadian Council on Learning, (2006); and, Richard Brisbois, Nicole Pollack & Ron Saunders, “Lessons from Other Countries Regarding Incentives for Employer-Sponsored Training,” *Canadian Policy Research Networks* (March 2009).

⁹² Op. cit. Goldenberg, “Employers Investment in Workplace Learning In Canada.”

Partly for this reason, those on the other side of the debate believe that universities have a responsibility to their communities, their students and the Canadian economy to provide their students with skills that they will require to enter and succeed in the labour market. By providing students with job-ready skills they give their graduates a competitive advantage in the labour market, which, as seen above, is one of the primary reasons people choose to attend PSE. In so doing, they would also make the economy stronger by increasing employment rates, productivity and innovation.

The current general consensus among employers and PSE institutions appears to be that job-specific training should come primarily from the workplace, but it should build on the broad educational foundation, which should include employability skills and competencies, developed through the university experience. In February 2013, the Canadian Chamber of Commerce revealed its findings from the Symposium on Skills and SMEs. The report found that small business owners believe that it is the education system's responsibility to prepare individuals with the basic skills required for jobs, especially literacy and essential skills, and that companies should be responsible for job-specific skills. However, they also felt the PSE system could do more to prepare potential employees for the world of work.⁹³

There is, in Canada, some difference of opinion about the responsibility for training among firms of different sizes. This is due to the different resources various types of employers have at their disposal. While the largest companies in Canada can afford to train their own employees with job-specific skills, smaller and medium size companies require their employees to have more job-ready skills or work experience when they come out of the PSE system.

Regardless of which position one takes on the issues outlined above, it is becoming clear that the current PSE system is doing an inadequate job of preparing students for the labour market

⁹³ Op. cit. Global Public Affairs, "Closing the Skills Gap: Mapping the Path for Small Business."

either through providing them with basic literacy and number skills, overall competencies, general knowledge and the ability to adapt, or with job-specific skills. It is a minority of educators and stakeholders who believe that the university should remain completely separate from the changing needs of the labour market, and this is not a view shared by the majority of students.

Those who point out that university graduates are still gaining value in terms of their ROI, while correct, may be neglecting the fact that with the “right” skillset, these students could be doing even better. Furthermore, these calculations of ROI tend to be based on averages and there are some students that are seeing very low labour market returns. In much the same way, commentators who point to the fact that current measurements are demonstrating that few genuine skills shortages exist in the economy, may be neglecting the fact that these measurements are potentially missing the relevant indicators and that the Canadian economy could be even more productive and more innovative if these were accounted for.

For the above mentioned reasons, it is clear that action should be taken to make sure universities remain relevant and prepare students with at least the basic skills they need to succeed in any career. In order to do this, the PSE system should be responsive to changes in the labour market. It is less clear, however, whether their response should be to provide more job-specific training or to work to improve the quality of their students’ overall employability skills.

Incentives and Response Mechanisms

In order to evaluate how well the current PSE system is responding to changes in the labour market, it is important to understand what incentives there are in place to encourage universities to respond and what mechanisms they have at their disposal. It is also important to establish a way to measure the level of adjustment between the educational sector and the labour market.

Unfortunately, in Canada there had been little research conducted on these subjects to date. One of the few previous Canadian studies was written by Claude Montmarquette and David Boisclair in 2004 as part of the Government of Canada's Skills Research Initiative. However, their paper stated that it was difficult to measure the responsiveness of the system due to the lack of data available.⁹⁴

Due to the absence of data, Montmarquette and Boisclair called for more data on the number of completers at each level and in different fields of study; the success of graduates' career paths and their satisfaction with them; returns to PSE in different fields, including changes over time; the matching of employment and graduation trends; patterns of institutions and students' responses to short-term changes versus response to long-term changes; and, the possible existence of shortages in different occupations. These questions remain largely unanswered today, with the exception of a limited amount of relevant data from the National Household Survey (NHS) and the National Graduate Survey. Individual institutions also sometimes collect this type of information for their own graduates but do not necessarily make the necessary linkages, nor share their information widely.

Despite the limited number of previous studies, it appears that there are certain measures that PSE institutions have historically used as a means to adjust to their surrounding environment. In particular, universities respond to incentives from provincial governments' funding formulas. Each province has an enrolment driven financing system at the undergraduate level that designates basic income units for students at each level, field, and year of study. Each province designates the value of their basic income units (BIU) and their associated dollar value differently. For example, in Ontario, a first year arts student is worth one basic income unit,

⁹⁴ Op. cit. Montmarquette et al., "Post-Secondary Educational Institutions' Adjustment to Labour Market Changes:" 17.

whereas a first year engineering student is worth 2 basic income units.⁹⁵ Institutions do not receive inflation adjusted funding, and instead only gain more money by taking in more students. For this reason they try to maximize their BIU values across the whole student population in order to, at a minimum, cover their infrastructure and teaching expenses while taking into consideration the varying costs of different fields.

Ideally, institutions go beyond covering their basic costs and gain some marginal benefit from accepting individual students. In this way, they make decisions about their internal funding allocations to particular programs, which then determines how many professors and teaching assistants they can hire in particular faculties, as well as the number of students they are able to accommodate in various programs. If the provincial government determines that the economy needs more computer engineers, they are able to increase the BIA value in that particular program and universities subsequently respond by opening up more seats. Since institutions have high fixed costs they are also limited in their response to increased student demand in particular fields unless they are provided with enough funding to hire new faculty members or sessionals.

According to Newson's 1998 paper, decisions about enrolment levels, admission standards, advising and registering students, hiring policy, and research priorities in most provinces are justified in terms of budgetary criteria and parameters that have been predefined in mission statements and five-year plans.⁹⁶ These are often predetermined by provincial government demands, which may be connected to the labour market. For example, the Ontario government's 2010-2011 university budget plan identified the need to increase university education so that 70% of Ontarians received PSE credentials to support Ontario's prosperity. In order to achieve

⁹⁵ "Council of Ontario Universities Position Paper: Framework for Planning and Funding of Enrolment," *Council of Ontario Universities*, June 2010, <http://www.cou.on.ca/publications/reports/pdfs/june-2010---framework-for-planning-and-funding-of-> (Accessed January, 2014).

⁹⁶ Op. cit. Newson, "The Corporate-Linked University: From Social Project to Market Force."

this they announced full funding for undergraduate enrolment growth for the year, so that universities had this information prior to making enrolment decisions.⁹⁷

As performance indicators, such as graduates' labour market outcomes, become more of a factor in budgetary decision making, the provincial government and individual institutions could also potentially gain more control over how reactive PSE institutions are to labour market changes. They could do so by tying funding for individual programs to their success in preparing graduates for future work. This may, however, meet with opposition from academics because of the perceived breach of academic freedom it may involve.

Institutions might also make enrolment decisions based on information coming from the labour market or from historical trends. Their actions can be adjusted over time as it becomes apparent that more or fewer students, either in response to labour market signals or other factors, are interested in pursuing these fields. If, for several years in a row, more students apply for a particular program than there are seats or resources available, institutions may take action to adjust their allocation of resources to better support those programs or introduce admission quotas or less formal screening processes taking place after admission. These decisions about the administrative allocation of resources among each institution are taken based on the perceptions and information possessed by the institution's management. At the same time, however, they may be constricted in increasing enrolment in certain fields, as was mentioned above, if doing so would be unprofitable and based on the other previously mentioned constraints they face, including for example the faculty they already have.

Academic curricula can also be reshaped to "better accommodate the demands of the external market."⁹⁸ According to Newson, this is often done less out of a desire to respond to changes in

⁹⁷ Op. cit. "Council of Ontario Universities Position Paper: Framework for Planning and Funding of Enrolment."

⁹⁸ Ibid

the labour market and instead based on external budgetary factors. For example, she states that pedagogical strategies are often justified in terms of measures of efficiency and cost-effectiveness. Furthermore, faculty research interests are often closely linked to government policy objectives because of the desire to obtain funding through the Social Sciences and Humanities Research Council (SSHRC), the Natural Sciences and Engineering Research Council of Canada (NSERC), and other similar federal agencies responsible for funding research.⁹⁹

Individual departments and professors often have control over their curricula and can also choose how relevant they wish to make them to “the real world” or changes in the labour market. For example, even in a philosophy course, a professor can choose to focus their class on theory and on developing particular skills necessary for the labour market in the relevant field, such as general critical thinking or writing skills. They also have control over their own individual relationship with industry and can invite special guests from the private sector. Departments can also have resident senior fellows or sector partners who can provide support for students. This practice is currently common in specific business programs and graduate schools across the country. Moreover, departments have the ability to increase experiential learning opportunities for their students through co-op programs. Individual institutions also have the ability to fund and support their career guidance centers.

Assessment of the Current System

The previous section provided an explanation of some of the incentives in place and measures that institutions have at their disposal to react to the labour market. This section will attempt to evaluate how well they are doing this. It is worth evaluating the Canadian PSE sector overall, as well as how individual institutions have performed. Although evidence is limited, there are some

⁹⁹ Op. cit. “Council of Ontario Universities Position Paper: Framework for Planning and Funding of Enrolment.”

examples of universities responding in the ways mentioned above, as well as *ad hoc* examples of more in-depth university-private sector partnerships at the institution level.

PSE System Overall

Overall, one could argue that the PSE system has been reasonably responsive to the needs of the labour market given the continued high employment rates and wage premiums for those who have completed PSE, and particularly university.¹⁰⁰ Furthermore, it is somewhat reasonable to think that if post-secondary graduates are still in high demand by employers, they must possess a reasonably valuable skill-set. At the same time, however, this does not necessarily capture lost potential revenue due to declines in productivity or lack of innovation due to skills mismatches. Employers may simply be making do with what they have.

Montmarquette and Boisclair's attempt to address the issue of responsiveness with the limited data they had led them to conduct a case study of bachelor students in management and education in Ontario and Quebec. They found that 17.7% of all bachelor students in Quebec, compared to only 8.9% of students in Ontario chose to enrol in management, where the rate of return was over 10%. Conversely, education accounted for 17.2% of enrolments in Quebec and 10.6% in Ontario, despite a less than 10% rate of return. When they compared these numbers to the relative size of these two sectors of activity in the economy, the authors found "a fair match-up between the working and educational sectors in both provinces," which according to them was "an elementary form of conclusive diagnosis about the "level of adjustment."¹⁰¹ Much of their research focused on field of study mismatch and adjustment, rather than on some of the

¹⁰⁰ "Post-Secondary Education is the Best Investment You Can Make," *TD Economics*, September 12, 2011, <http://www.cou.on.ca/news/commentary---events/impact-of-ontario-universities/pdfs/td-economics-report---postsecondary-education-is-t> (Accessed September 15, 2013).

¹⁰¹ *Ibid*: 19.

more subtle forms of mismatch, such as the need for highly specialized yet adaptable graduates and new combinations of degrees.

Specific PSE responses to employer needs tend to arise on an *ad hoc* basis from individual departments within institutions or in some cases from individual professors. This may partially be explained by the fact that there is a good system in place in Canada for getting employer feedback to individual college and professional university programs, but no way of co-ordinating that feedback at a provincial or national level so that governments can understand the aggregate needs of the economy as a whole.¹⁰²

Much of the responsiveness that does come from the PSE system seems to come from provincial government priorities based on nation or province-wide pressures. Historically, the PSE system in Canada has been responsive to various changes in the labour market. For example, the system responded to increased demand for higher education following WWII and again to the increased demand driven by globalization and the requirements of the knowledge economy over the past thirty years.¹⁰³ As one article from 2000 states:

More recently, in the last two decades, as the demand for, and awareness of the importance of higher education has accelerated, the attention of policy makers has expanded to include a more careful examination of the type and quality of post-secondary education, and in some jurisdictions, specific policies have been adopted to encourage changes intended to create a better match between post-secondary education and the changing labour market.¹⁰⁴

The article also outlines British Columbia's responsiveness to new skills needs, based on their labour market predictions. In 2000, the province had begun to place an increasing emphasis on technical, vocational, and specific career training in the college sector based on projected

¹⁰² Alex Usher, "Can Business Speak Up, Please?" *Higher Education Strategy Associates*, November 25, 2013.

¹⁰³ "Postsecondary Education Systems in Canada: An Overview," *Canadian Information Centre for International Credentials*, Council of Ministers of Education Canada, February 24, 2009, <http://www.cicic.ca/en/421/an-overview.canada> (Accessed December 15, 2013).

¹⁰⁴ Water Sudmant & Colleen Hawkey, "The Flow of Post-Secondary Graduates into the Knowledge Economy: Evidence from the National Graduate Survey," *The Office of Planning and Institutional Research*, University of British Columbia, May, 2000, <http://www.pair.ubc.ca/reports/knowledgeeconomy.htm> (Accessed July, 2013): 1.

shortages. They had also increased funding for university disciplines in “high tech” fields, as well as expanded engineering and computer science programs.¹⁰⁵

Today, the provincial governments still have the ability to tie their funding to specific requirements and have some control over the number of seats available in each program, as well as the creation and removal of programs. For example, Ontario’s new Differentiation Policy Framework, which includes strategic enrolment strategies, requires that Ontario universities and colleges specialize or risk losing funding.¹⁰⁶ Part of the justification for this decision by the government was to “ensure that students graduate with skills that respond to local and provincial labour market needs and contribute to social development.”¹⁰⁷ However, other provincial government initiatives including, for example, the promotion of more three year undergraduate degree programs have been met with limited response from institutions because of the lack of incentives to do so.

Furthermore, while there have been some successes in institutions responding to labour market needs, the difficulty in predicting future needs have also led to some failures. For example, the demand for high tech workers in the mid 1990’s, led certain institutions, including the University of Waterloo, the University of Ottawa and Carleton University to work in partnership with Nortel through the Access to Opportunities Program to lobby the Government of Ontario to increase funding for high tech fields of study.¹⁰⁸ This in turn opened up seats for students, who graduated just as demand for them was greatly reduced as Nortel went out of

¹⁰⁵ Op. cit. Sudmant & Hawkey, “The Flow of Post-Secondary Graduates into the Knowledge Economy.”

¹⁰⁶ “Ontario’s Differentiation Policy Framework for Postsecondary Education,” *Ontario Ministry of Training, Colleges and Universities*, (Queen’s Printer for Ontario, 2013).

¹⁰⁷ Ibid

¹⁰⁸ “Nortel Networks and U of O – Creating New Opportunities Together,” *University of Ottawa Research Perspectives*, August 1999, <http://www.research.uottawa.ca/perspectives/10176> (Accessed January, 2014).

business. This example is important because it demonstrates the dangers of over-responding to current labour market needs.

Provincial governments have also responded to the changing nature of skills and the necessity of getting students to market faster by attempting to shorten the length of degree programs. They also use their ability to determine the length of programs to address issues of mismatch by attempting to adjust the supply of graduates they produce. For example, the Ontario government has extended teacher's degrees from one year to two to take effect in 2015. The number of spaces will also be cut from 9,000 a year to 4,500, in an effort to ease the backlog that has been building for several years.¹⁰⁹ This will mean higher requirements to enter the program. The government has also doubled the amount of time students must spend in classroom-based practicums from 40 to 80 days.¹¹⁰

The changes to the teacher degree programs are expected to have the effect of decreasing the number of graduates, as well as better preparing those who enter the system. While this appears to be a positive step in terms of responding to the labour market, it is important to keep in mind that there are also several concerns with this decision. Several institutions have spoken out against it because the government simultaneously announced that they would be providing 20% less funding for each student, thereby leaving the institutions in a challenging situation monetarily.¹¹¹

¹⁰⁹ James Bradshaw, "Ontario Universities Bracing for Teachers-College Funding Cuts," *The Globe and Mail*, June 5, 2013, <http://www.theglobeandmail.com/news/national/education/ontario-universities-bracing-for-teachers-college-funding-cuts/article12374507/> (Accessed June 6, 2013).

¹¹⁰ Ibid

¹¹¹ Ibid

Colleges

As was previously mentioned, colleges in Canada have tended to be better placed to respond to labour market exigencies, primarily due to their mandates. Besides the presence of private sector employees on colleges' Boards of Governors in several provinces and in advisory committees overseeing individual programs, there are also several examples of institutions working in partnership with industries that serve as best case practices.

Career colleges also frequently respond to the private sectors requests for the provision of programs of study to develop specific skills for their industry. For example, in 2012 Lethbridge College and industry partners launched the Power Line Technician Pre-Apprentice Program with enrolment limited to what the industry could absorb.¹¹² In the same year, the Nova Scotia Community College received Irving Shipbuilding's commitment to contribute \$250,000 each year for the next 30 years to support the recruitment and training efforts of students who are under-represented in the trades, including women, Aboriginal peoples, African-Nova Scotians and people with disabilities.¹¹³

Hydro One offers scholarships, bursaries and "earn while you learn" co-op education and on-the-job learning work terms through Algonquin, Mohawk, Northern, and Georgian colleges. Hydro One brings its own equipment and technology into the college labs and classrooms and helps develop course curricula aligned with Hydro One careers.¹¹⁴ Noront Resources Ltd. has a partnership with Confederation College to help participants from Matawa First Nations gain

¹¹² "Leadership and Transformation: Lethbridge College Annual Report 2012-2013," *Lethbridge College*, 2013, http://www.lethbridgecollege.ca/sites/default/files/imce/about-us/goals-plans/lc_annual_report_12-13_web.pdf (Accessed September, 2013).

¹¹³ "Province Invests in Jobs, Infrastructure, and Training Through Shipbuilding Contracts," *Nova Scotia Premier's Office*, March 30, 2012, <http://novascotia.ca/news/release/?id=20120330010> (Accessed September, 2013).

¹¹⁴ "Staying in School = Success," *Hydro One*, 2013, <http://www.hydroone.com/OurCommitment/FirstNationsMetisRelations/Pages/SIS.aspx> (Accessed September, 2013).

skills for in-demand occupations in the mining industry.¹¹⁵ The Association of Canadian Community Colleges (ACCC) also works with healthcare educators and professionals to explore issues in education and professional practice, and with the Canadian forces to align their skills needs with relevant college programs.¹¹⁶

According to the ACCC, their members will continue to strengthen existing partnerships and seek new ones with industry to support programs that continue to give students experiential learning opportunities and real-world job experience.¹¹⁷ In order to continue to improve their responsiveness, the ACCC has announced that it plans to re-establish an employer coalition, continue work on pathways and transferability for college students, leverage their membership on committees of other related organizations and name three new external industry people to their Board of Directors.¹¹⁸

Individual Universities

Canada has historically had high levels of university-private sector partnerships for research and development. There are also some examples of universities that are involved in partnerships with employers on the training front. According to the Honourable David Johnston, “universities are involved in training and advanced skill development in support of industry: many new

¹¹⁵ “Ring of Fire Aboriginal Training Alliance (RoFATA) Prepares Matawa First Nations Members for Employment in Mining Sector,” *Confederation College*, August 8, 2013, <http://www.confederationc.on.ca/node/11539> (Accessed September 15, 2013).

¹¹⁶ “Public Policy and Canadian Partnerships,” *Association of Canadian Community Colleges*, N.D. <http://www.accc.ca/xp/index.php/en/programs/cdnpartnerships> (Accessed September, 2013).

¹¹⁷ Op. cit, “Public Policy and Canadian Partnerships.”

¹¹⁸ “Educators, Industry and Government Agree Greater Focus on Colleges, Training and Apprenticeships Will Help Reduce Skills Gap,” *Association of Canadian Community Colleges*, October 25, 2013, <http://www.accc.ca/xp/index.php/en/comm/news-releases/768-nr-20131025#sthash.vDjXbk6Z.dpuf> (Accessed October 30, 2013).

undergraduate, professional and graduate programs have been created explicitly to respond to the needs of the labour market.”¹¹⁹

According to the 2014 CCCE survey, the majority of large companies in Canada have some form of partnerships with PSE institutions at both the college and university level. Eighty-five percent of the companies surveyed reported “working with” educational institutions to participate in recruitment campaigns or to improve the skills of current employees. Over 75% of the 85% of employers who reported some connection with PSE institutions, were working with academic institutions through internship opportunities or co-op programs. Over 30% were involved in curriculum development, over 25% were directly involved in classroom instruction and over 5% were involved in faculty development.¹²⁰

Co-op or work-integrated learning programs, which are offered in many Canadian universities and colleges, account for one of the most significant examples of PSE-private sector partnerships. There are 79 PSE institutions which belong to the Canadian Association for Co-operative Education (CAFCE) whose mission is to foster and advance post-secondary co-operative education in Canada. The University of Waterloo had the first co-operative education program in Canada and currently has the largest post-secondary co-op program in the world with more than 17,000 co-op students in over 120 programs at the undergraduate and graduate levels, accounting for 80% of all undergraduate programs at the university. According to the University of Waterloo co-op website, 4,500 different employers hire their co-op students.¹²¹

¹¹⁹ David Johnston, “The University-Private Sector Interface and the Ontario Economy,” *Ontario Economic Summit*, October 6, 2004, <http://www.cou.on.ca/publications/reports/pdfs/the-university-private-sector-interface-and-the-on> (Accessed September, 15, 2013): 6.

¹²⁰ Op. cit. “Preliminary Survey Report: The Skill Needs of Major Canadian Employers:”

¹²¹ “Co-operative Education,” *University of Waterloo*, N.D., <https://uwaterloo.ca/co-operative-education/about-co-operative-education> (Accessed February, 2014).

Both employers and students benefit from co-op programs at Canadian universities. According to a 2012 HEQCO study, employers of co-op students are positive about the advantages of work-integrated learning, citing improved firm productivity, the opportunity to screen students for permanent employment at a lower rate of pay and risk, and the opportunity to engage in positive interactions with PSE institutions.¹²²

Students participating in co-op are given the opportunity to learn valuable real-world skills to help them in their future careers, as well as gain a better idea of the type of positions available to them in their given field of study. According to research conducted in Australia, work-integrated learning has a variety of benefits for students, including building their confidence in their capabilities in professional practice, gaining a greater appreciation of the importance of employability skills, increasing their understanding of workplace values and culture, and developing professionalism.¹²³ According to the University of Waterloo, their co-op graduates earn 15% more immediately after graduation than their graduates who do not participate in co-op programs. Their co-op graduate employment rate is also higher than their students' overall employment rate.¹²⁴ It is unclear, however, whether this is a causal relationship or simply reflective of the type of students who choose to pursue co-op.

There are growing concerns about an insufficient supply of work-integrated learning opportunities to meet rising student demand. Even at the University of Waterloo, students are warned that co-op employment cannot be guaranteed due to a lack of available jobs.¹²⁵ In a 2012 survey conducted by the Higher Education Quality Council of Ontario, finding enough

¹²² Op. cit. Sattler, et al., "Work-Integrated Learning and Postsecondary Graduates: The Perspective of Ontario Employers:" 19.

¹²³ Denise Jackson, "The Contribution of Work-Integrated Learning to Undergraduate Employability Skill Outcomes," *Asia-Pacific Journal of Cooperative Education*, Vol. 14, No. 2 (2013): 99-115.

¹²⁴ "Employment Statistics," *University of Waterloo*, 2013, <https://uwaterloo.ca/co-operative-education/why-co-op/employment-statistics> (Accessed February, 2014).

¹²⁵ Ibid

placements for students was the second most-cited challenge facing work-integrated learning in Ontario, with 61% of university professors citing availability as a growing problem.¹²⁶ Another HEQCO survey found that 14.4% of employers cited that they did not have the proper resources to properly recruit, train and supervise co-op students.¹²⁷ These are challenges that policy makers will have to address in order for these partnerships to continue in the future, as discussed in further detail later in this paper.

Other examples of employer-university partnerships also exist outside of the co-op purview. For example, York University recently partnered with the Toronto Central Community Care Access Centre to collaborate on joint research and training opportunities.¹²⁸ Through this partnership, students in the faculty of health have been given the opportunity to participate in experiential learning placements. In a second example, the University of Saskatchewan recently formed a partnership with the Federated Co-operatives Ltd. and is developing co-operative business models in rural and Aboriginal communities.¹²⁹ The project will provide experiential learning opportunities, research, teaching tools, and case studies for students in public policy and business.

The University of Regina also developed a program in 2011 that guarantees graduates a job within six months of graduating.¹³⁰ This is partially accomplished through internships and work

¹²⁶ Julie Peters, "Faculty Experiences with and Perceptions of Work-Integrated Learning (WIL) in the Ontario Postsecondary Sector," *Higher Education Quality Council of Ontario* (Queens Printer for Ontario, Toronto: 2012): 25.

¹²⁷ Peggy Sattler & Julie Peters, "Work-Integrated Learning and Postsecondary Graduates: The Perspective of Ontario Employers," *Higher Education Quality Council of Ontario*, (Queens Printer for Ontario, Toronto: 2012): 57.

¹²⁸ "York Partners with Toronto Central Community Care Access Centre," *York University*, December 11, 2013, <http://yfile.news.yorku.ca/2013/11/12/york-partners-with-toronto-central-community-care-access-centre/> (Accessed December 20, 2013).

¹²⁹ "Federated Co-operatives Limited Invests \$1 Million in U of S Partnership to Explore Co-operative Business Development in Rural and Aboriginal Communities, November 13, 2013, <https://words.usask.ca/news/2013/11/13/federated-co-operatives-limited-invests-1-million-in-u-of-s-partnership-to-explore-co-operative-business-development-in-rural-and-aboriginal-communities/> (Accessed December 20, 2013).

¹³⁰ "UR Guarantee," *University of Regina*, N.D., <http://www.uregina.ca/urguarantee/> (Accessed December 20, 2013).

programs through the university's partnerships with employers. If a student does not find a job related to their field of study, the university provides him or her with another year of education to upgrade their skills tuition-free.

Another example of students working with industry experts can be seen in Brock University's Interactive Arts & Science Program. The program is housed at the Centre for Digital Humanities at the nGen complex which is also home to a variety of technology and software companies, many of whom have developed partnerships with Brock to offer Interactive Arts & Sciences students the opportunity to conduct in-study internships and develop contacts while still in school. Many of these students go on to work for these firms post-study.¹³¹

In 2012, the Huawei-TELUS innovation Centre for Enterprise Cloud Services was opened at Carleton University through a \$1.4 million investment made by Telus and Huawei.¹³² The centre was created in Carleton's engineering building for students, faculty and industry to research real-world programs associated with enterprise clouds. According to Rafik Goubran, Dean of Carleton's Faculty of Engineering and Design, "Our students will get the hands-on, real-world training they need to be competitive in the job market."¹³³

These examples demonstrate that it is possible for universities to create valuable partnerships with the private sector; thereby helping them stay attuned to employers needs and helping their students gain valuable experience and workplace skills they would not otherwise obtain in the classroom.

In other situations, professional programs work in partnership with PSE institutions to train students for their professions. For example, certified general accountant programs in Ontario can

¹³¹ "Biolinc," *Brock University*, St. Catherines, 2013, <http://www.brocku.ca/BioLinc> (Accessed December 20, 2013).

¹³² "Huawei, TELUS and Carleton University Celebrate Opening of Cloud Computing Research Centre," *Carleton University*, January 12, 2012, <http://research.carleton.ca/2012/huawei-telus-and-carleton-university-celebrate-opening-of-cloud-computing-research-centre/> (Accessed December 20, 2013).

¹³³ Ibid

be taken as part of a four year university degree, followed by three years working in a certified accountant training office, combined with professional exams. MBA programs present another interesting example where, in most cases, students are expected to have spent considerable time in the labour force before returning to PSE to upgrade their skills and then again returning to the labour force. The Professional Master of Public Administration program at Queen's University is similarly designed for professionals seeking to upgrade their skills in the policy field.

There are also examples of employer involvement in university curriculum development and teaching in Canada. Many of these operate at the individual course level and are initiated by larger companies or individual professors. For example, in 2013 a professor at the University of Waterloo and an application development consultant at BlackBerry Ltd. co-taught an undergraduate course for students in computer science called software design and architecture.¹³⁴ Students in the class used the beta version of the company's newest device and were graded on their ability to develop innovative applications. In 2012, IBM Canada Ltd. announced "a major research partnership" with institutions in several provinces. In Ontario, seven universities took part in the partnership. As part of the collaboration, IBM delivered a post-secondary analytics curriculum to produce workers with in-demand analytics skills, train graduates in skills to make them more employable, and retrain valuable employees with aging skill-sets.¹³⁵ This form of experiential learning within the classroom is another way individual university professors have adapted their classes to ensure the content they are providing, and the skills their students are acquiring, are up to date and useful in the labour market.

¹³⁴ Shadab Rashid, "University of Waterloo Students Know Apps!" BlackBerry Developer Blog, July 5, 2013, <http://devblog.blackberry.com/2013/07/uw-know-apps/> (Accessed December 20, 2013).

¹³⁵ James Bradshaw, "IBM Teams with Ontario Universities as Part of Federal Innovation Push," *The Globe and Mail*, April 10, 2012, <http://www.theglobeandmail.com/news/national/ibm-teams-with-ontario-universities-as-part-of-federal-innovation-push/article4099260/> (Accessed December 19, 2013).

Similar to IBM's focus on retraining employees with aging skills, other institutions are also partnering with industries in continuing education to serve the needs of full-time employees for skills upgrading and professional development. This is important in the knowledge economy as skills are constantly evolving and skill-sets deplete without regular use. For example, Simon Fraser University's Faculty of Business Administration's Learning Strategies Group works with firms such as Cominco and Alcan to design and deliver executive and management education to middle managers at their place of work.¹³⁶

Certain Canadian institutions are also responding to calls for the development of more practical skills within the institution setting but outside of the classroom. For example, several universities across the country, including the University of Toronto and Simon Fraser University, offer co-curricular leadership programs to students to develop competencies in communication strategies, self-awareness, popular leadership concepts in real-life applications and goal-setting.

The University of Toronto and Lakehead University have also developed official university transcripts to record students' extra-curricular activities on campus, including clubs and volunteer work.¹³⁷ Through co-curricular program students can pursue degrees in areas of their interest while also gaining more job-specific skills, such as the ability to write club constitutions or work in teams, and have this experience, in theory, recognized by employers. This could be beneficial for students who pursue degrees in high demand fields, such as engineering, but who may lack some of the soft-skill development in their regular classes. It could also be beneficial for students in lower demand fields, such as the arts, who gain many of the soft skills and general employability skills but may lack the specific technical skills that would make them more

¹³⁶ Op. cit. Petter, "The Public University and the Private Sector Creating a New Partnership."

¹³⁷ "Co-Curricular Record Acknowledges Activity Beyond the Classroom," University of Toronto, October 30, 2013, http://ose.utoronto.ca/ose/ose_new_v/article.php?id=5472&page_issue=201311&cid=13 (Accessed December 19, 2013); and, "Co-Curricular Record!" Lakehead University, N.D., <https://www.lakeheadu.ca/about/news-and-events/news/archive/2014> (Accessed December 19, 2013).

package-able to employers. It will be worth monitoring these types of programs to see whether companies consider these factors when making hiring decisions and if they find employees who have taken part in these programs to be more productive and prepared for the job.

Part IV: International Examples

The current skills crisis that Canada is reportedly facing is a world-wide phenomenon in large part due to the changing nature of the knowledge economy. Several countries are interested in finding ways in which to better link their higher education systems to the labour market, and others have already been doing so for many years. This section considers various international best case practices with the aim of informing Canadian policy makers of ways in which Canada could learn from them. Several of these examples come from studies conducted by the Netherlands when they attempted to explore options to improve their system's responsiveness.¹³⁸ The examples are primarily actions that have been taken by the government on a system-wide level rather than actions taken at the institution level.

Policy lessons from these countries include areas such as: steering the quantity of graduates relative to labour market demands, including enforcing capacity restrictions in fields leading to low-demand occupations; implementing reforms in the higher education system including degree structures and qualifications to ensure that skills and competencies acquired in higher education match the needs of the economy; encouraging more practice-oriented research and vocational training opportunities in order to enhance the employability of graduates; and, defining the role and responsibilities of the different stakeholders in aligning supply and demand, including the

¹³⁸ Egbert de Weert, "Perspectives on Higher Education and the Labour Market: Review of International Policy Developments," *Center for Higher Education Policy Studies*, December 2011.

role of employers in increasing the employability of graduates through, for example, course provision, quality assurance and accreditation processes.¹³⁹

Each of the following case studies has its own strengths and limitations and not all of them are directly transferable to Canada. For example, due to underlying cultural differences, Canadians would be unlikely to accept the German process of streaming young people for specific jobs and opportunities. Furthermore, many of these countries face different circumstances than Canada. For example, a primary concern for the UK and Australia is raising the PSE attainment level overall, while Canada has been performing relatively well on this front. However, it is still worthwhile to keep in mind that other countries have identified skills and competency shortages as being issues worthy of tackling and have had varying degrees of success in policies aimed at better linking their labour markets and markets for higher education. For this reason, some of the main trends found in these countries' responses below will form some of the recommendations for Canada in the following section.

The United Kingdom

In the United Kingdom, the connection between the education system and the labour market has been studied systematically for many years via the Higher Education Statistics Agency. Their system includes a variety of surveys, including the *Destination of Leavers from HE* surveys which collect information on students' level and field of completed studies, employment rates, earnings and type of work. These are conducted six months and 35 months after students complete their studies and are linked to each individual institution. There are several other surveys conducted during a graduate's career as well as surveys for employers on what they expect from higher education in terms of preparing their graduates for the workplace, including

¹³⁹ Op. cit. de Weert, "Perspectives on Higher Education and the Labour Market."

the National Employer Skills survey and the Employer's Perspective Survey. These surveys distinguish between the formation of subject-specific knowledge and other skills including non-cognitive ones.¹⁴⁰

The United Kingdom reacted to their perceived skills mismatch as early as 2006 by commissioning a white paper on higher education reform. As part of said reform, they aimed to increase the number of their citizens with PSE credentials. Specifically, their objective was, and is, to achieve a 40% university attainment rate by 2020 in order to increase their population's overall skills level.¹⁴¹ The report recommended changing funding mechanisms in order to better support the decisions of learners as the drivers for a more responsive system. To this end, it suggested that the country should move away from tight enrolment controls constraining individual higher education institutions and improve information for students regarding their employment prospects in any given field.

In order to generate economically valuable skills through the demand approach, the report also stated that government, employers, and individuals should engage more in skills development. For this reason, they have re-adjusted the way they view higher education in the country away from the importance of particular fields of studies to one that values competencies gained during studies. The report also recommended strengthening the voice of employers on skills development through the creation of a new Commission for Employment and Skills and increasing employer engagement and investment in skills.

Prior to the white paper on skills and the higher education system, the UK already had Sector Skills Councils which were independent, employer-led organizations committed to creating the

¹⁴⁰ Cathleen Stasz, "Assessing Skills for Work: Two Perspectives," *Oxford Economic Paper*, Vol. 53, No. 3 (2001): 385-405.

¹⁴¹ Leitch, "Prosperity for all in the Global Economy: World Class Skills," *Leitch Review of Skills*, National Archives Government of the United Kingdom (December 2006): 3.

conditions for increased employer investment in skills. Their primary focus up until 2006 was vocational education. In 2009, the Department for Innovation, Universities and Skills of the Higher Education Funding Council suggested that the councils begin to focus more on the university system to increase skills necessary for the labour market. In particular, the sector skills councils aim to reduce skills gaps and shortages, improve productivity, and boost the skills of their sector workforces. They do so by contributing to the development of the National Occupational Standards which specific performance standards that people are expected to achieve in their work and the knowledge and skills this will require. They also create sector skills agreements with the PSE sector, including qualification strategies to ensure the necessary skills are being taught. Some skills councils deliver skills training in PSE institutions and others provide funding and advice for the institutions to provide this training themselves.

In order to accelerate the formation of new relationships between employers and the higher education establishment, the Department for Innovation, Universities and Skills has also called for increasing the volume of employer co-funding of PSE programs to support skills development. In their view, this does not only require a new approach to funding but will also require innovation and culture change: “[higher education] providers will need a growing appreciation of the requirements in the workplace; to provide and adapt courses swiftly in response to demand; to offer provision tailored to individual business; and make it accessible in ways that suit employers and students.”¹⁴²

In 2010, the Higher Education Funding Council for England (HEFCE) invested £100 million to support projects to get universities to change their infrastructure to be more responsive to employers and £50 million to co-fund work based learning opportunities with employers. For example, a project at the University of Cumbria aims to meet the workforce development needs

¹⁴² Op. cit. Leitch, “Prosperity for all in the Global Economy: World Class Skills:” 12.

of the police by creating new degree programs specifically designed with this aim in mind. In the same year, the government, through the HEFCE, also provided £12.8 million of funding to 57 universities and colleges to support graduate internships in order to aid unemployed graduates and employers in small businesses and priority economic sectors. They also provided £1 million to 30 universities and colleges to support undergraduate internships for disadvantaged and underrepresented students to work in professional organizations, and gain employability skills.¹⁴³ In the 2012-13 school year universities and colleges also began to provide increased and enhanced information for prospective students to make more informed choices. This was accomplished through the creation of “employability statements” published on an online portal linking all of the HEFCE-funded PSE institutions in the country.¹⁴⁴

HEFCE has also worked to identify strategically important subject areas and implemented funding mechanism, including scholarships, grants and reduced fees for students to stimulate demand for the subjects. They simultaneously increased funding for institutions to meet this new demand. This took place in STEM subjects, modern foreign languages and quantitative social sciences.¹⁴⁵

Australia

The 2008 *Bradley Review* of the higher education system in Australia was conducted because the system was thought to be inflexible to the demands of a modern economy. One of the key reforms based on the recommendations from the review included the implementation of a

¹⁴³ “Internships,” *Higher Education Funding Council for England*, November 1, 2011, <http://www.hefce.ac.uk/whatwedo/kes/ee/graduateemployability/internships/> (Accessed December 21, 2013).

¹⁴⁴ “Graduate Employability and Employment,” *Higher Education Funding Council for England*, July 21, 2011, <http://www.hefce.ac.uk/whatwedo/kes/ee/graduateemployability/> (Accessed December 21, 2013).

¹⁴⁵ *Ibid*

demand-driven funding and enrolment system.¹⁴⁶ Similar to the UK, the Australian system is moving towards the idea that the market will adjust on its own. To facilitate this process the government believes it must first provide students with information about future job prospects and second make institutions as flexible as possible to respond to their demand. For example, since 2012 student seats in universities have been funded on the basis of demand rather than pre-negotiated agreements. This system is similar to the Canadian BIU funding system but with no caps to encourage increased enrolment. According to them, this should ensure that the higher education system is responding appropriately to the needs of the labour market.¹⁴⁷

This reform calls into question the ability of students to make the appropriate decisions on their own and of PSE institutions to be able to respond.¹⁴⁸ While in theory this system makes sense, as has been mentioned in earlier section of this paper, PSE institutions are often constrained by other factors in their response, such as labour relations with tenured professors in low-demand fields, which are not necessarily overcome by the reforms thus far in Australia. However, the country has made headway in developing more flexible delivery options for higher education in terms of both the length and nature of their offerings. For example, they are shortening the time it takes to complete a bachelor's degree in many fields to ensure that graduates are getting their skills to market faster.¹⁴⁹

Australia has also strengthened the enrolment growth of their higher education programs leading to credentials below a bachelor's degree in recent years. This has been done in response to a perceived need to widen participation and make higher education accessible for

¹⁴⁶ Denise Bradley, Peter Noonan, Helen Nugent, Bill Scales, "Review of Australian Higher Education: Final Report," *Commonwealth of Australia* (2008): 1.

¹⁴⁷ *Ibid*: 173.

¹⁴⁸ Angela Magarry, "Australia's Higher Education System, A Transformation in Waiting," *OECD Conference, (Institutional Management in Higher Education, Paris: September 2010)*.

¹⁴⁹ *Ibid*

underrepresented groups who would not otherwise have taken part. It is also the result of employer needs, particularly SMEs, for the skills and knowledge of their workforce to be improved quickly. For example, Australia's associate degrees are only two years in length and tend to have a larger vocational education component than traditional degrees. The country uses their associate degrees as a means to meet current labour market needs, to bridge students into the university system who may be less prepared, and to improve access to higher education for people in rural areas. The Bradley review made the recommendation that structural divides between bachelor's degrees and associate degrees be removed so as to enhance pathways between the two.¹⁵⁰

Germany

In Germany, the success of the dual-apprenticeship system in high school, which involves combining experiential on-the-job training with classroom training, has decreased the gap between the skills students gain while in school and those they require as graduates in the labour force. Two-thirds of German high-school students enter the dual-apprenticeship system, which includes over 340 occupations ranging from the skilled trades to highly skilled occupations such as commerce and engineering. Training on the job takes places three to four days a week. Learning at vocational schools happens one to two days per week. The training occupations are continuously updated and new occupations are created as required, based on projected labour market demand from employer surveys about their skills needs.

The same model of vocational training can also be found in the PSE system in Germany. *Berufsakademie*, are relatively new tertiary sector institutions which offer academic training combined with practical in-company professional training. Students who complete these

¹⁵⁰ Op. cit. Bradley et al., "Review of Australian Higher Education: Final Report."

programs are considered as having equal credentials to students who obtain bachelor degrees from universities.¹⁵¹

One of the greatest strengths of the German system is the collaboration of employers, education institutions, trade unions and federal and state governments on the issue of skills development.¹⁵² The strong connection between the labour market and PSE system is made possible in part by the country's rigorous approach to projecting future labour market demand. The Federal Institute for Vocational Education and Training (BIBB) is tasked with conducting research on the vocational education training system and projecting labour market demand up to 15 years in the future.

To project labour market demand, Germany considers the availability of apprenticeship positions, as a proxy for future labour market demand, in each occupation specifically. These projections are based on how many apprentices various employers are hiring at any given time, along with the general state of the economy. New competency requirements are also monitored using extensive complementary approaches. These include regular surveys of over 2000 companies to help build a comprehensive picture of technological and organisational developments and the associated skills requirements. This information is empirically verified through job advertisement analysis and the review of qualification profiles desired by companies. Furthermore, surveys of advertisers are conducted to find out whether the advertised vacancies were filled, and if not why that was. There are also regular surveys of continuing education providers used to gather data on the implementation, reception and any modifications of courses

¹⁵¹ Karin Reinhard, "The German Berufsakademie Work-Integrated Learning Program: A Potential Higher Education Model for West and East," *Asia Pacific Journal of Cooperative Education*, Vol. 7, No. 1 (August 25, 2006).

¹⁵² Diane-Gabrielle Tremblay & Irene Le Bot, "The German Dual Apprenticeship System Analysis of its Evolution and Present Challenges," Research Note No. 2004-4A, *Chaire de Recherche du Canada sur les Enjeux Socio-Organisationnels de l'économie du Savoir*, (Télé-université, Université du Québec: February 2003).

offered based on the evolving competencies required by the labour market, as well as experiences and assessments of trends in training establishments.¹⁵³

In terms of the labour force supply projections, the *Vocational Training Act* stipulates that statistics must be collected every September on enrolment levels in the dual-training system and the number of students completing apprenticeships in each occupation. Germany also has a federal ministry of education that keeps statistics on the number of students enrolled in each stream at any given time through the *Standing Conference of the Ministers of Education and Cultural Affairs of the Länder*. This information, along with projected demographic trends, allows the government to keep track of the supply of students to better match them with labour force requirements.¹⁵⁴

In this way, the German government has, at least in principle, an effective means of predicting labour market demand and has the streaming structures in place in the education system to attempt to ensure an adequate supply of employees to meet those needs. Unlike the belief in the UK and Australia that the system will adjust best if left to operate based on student demand, the German model tightly controls the supply of graduates through streaming mechanism. The German market of apprenticeships operates as a link to the labour market by pre-selecting the future labour force.

Sweden

Sweden has a long history of closely monitoring the supply of and demand for higher education graduates through their census data. They respond to surpluses or shortages of graduates, as measured by employment and wage rates, by adapting the number of places offered

¹⁵³ Op. cit. Tremblay & Le Bot, "The German Dual Apprenticeship System..."

¹⁵⁴ "Report on Vocational Education and Training 2013," *Federal Ministry of Education and Research (BIBB)*, October 2013, http://www.bmbf.de/pub/bbb_2013_en.pdf.

in different programs and fields of study. Furthermore, universities decide whether or not to start new programs based on labour market analysis. Employment statistics are also published on a regular basis to help inform student choice.¹⁵⁵

There is growing collaboration in Sweden between employers, universities, and colleges regarding the content and organization of their courses. One of the recent outcomes of this dialogue has been the advent of *kvalificerad yrkesutbildning* (advanced vocational education) as a new component to the higher education system that is completely tailored to the labour market.¹⁵⁶ In these programs, students spend one-third of their time in on-the-job training and the other two-thirds in a traditional PSE institution. These programs can be initiated by employers or by educational institutions; however, they must be shown to be meeting a real labour market need based on statistical data and consultations with employer organizations. There also must be labour market demand for the course. Furthermore, employers must take part in designing and organizing the curriculum.

France

Much like the other countries discussed above, France's system also has an elaborate method for monitoring the transition of its graduates to work. The *Centre D'Études et de Recherches sur les Qualifications* is a central department that provides the State and regional departments with earnings and employment data for graduates from the various levels of education and fields of study, so that they can make funding decisions. It is also the agency in charge of accreditation of university programs. In a 2006 report by the *Commission du Debat National Universtie-Emploi*, it is stated that there is growing concern in the country over the employability of students in all educational levels in the higher education system. In particular, the large number of students in

¹⁵⁵ Op. cit. de Weert, "Perspectives on Higher Education and the Labour Market:" 52.

¹⁵⁶ Ibid: 27.

fields with few employment opportunities is considered a waste of human potential and weakens the higher education system as a whole.¹⁵⁷ For this reason, the report recommends making bachelor programs more flexible to allow students to easily change their field of study.

The report also recommends enhancing the professional dimension of university education through a closer connection between higher education and the labour market and strengthening the relationship with the employment sector to ensure that students are gaining the relevant competencies for the workplace.¹⁵⁸ In order to enhance graduate employability, the report recommends: integrating a professional dimension into all programs at every level of study; establishing a career counselling service in each university; creating associate professor positions whose sole responsibility is to enhance the professionalization of university courses through curriculum development; implementing and strengthening internships that are mandatory in every university program; and, developing a regulatory framework for universities to engage with companies.¹⁵⁹

The higher education system in France encourages differentiation both in duration and type of program in order to respond to specific labour market needs. In this system, the stated intent or objectives of bachelor degree programs are described in a range of skills including, most importantly, employment-related skills and competencies. The inclusion of the development of these skills in the curriculum is being used as benchmarks to determine how well different universities are performing at preparing their graduates for work.¹⁶⁰

This last point relates to a trend in many of these countries, which is an increasing focus on learning outcomes or competencies in quality assurance systems rather than credentials earned or

¹⁵⁷ Op. cit. de Weert, "Perspectives on Higher Education and the Labour Market:" 17.

¹⁵⁸ Ibid: 18.

¹⁵⁹ Patrick Hetzel, "De l'Université à l'Emploi: Rapport Final de la Commission du Débat National Université-Emploi," *La Documentation Française* (2006): 38.

¹⁶⁰ Ibid

hours put in. These are useful not only for teachers and students to assess the value of their education but also for employers to know what graduates from particular programs are able to do. This is part of the reason why in France there has been an emphasis on employers developing and formulating learning outcomes and ensuring that labour market issues have been used in the evaluation. Along these same lines, Sweden, the UK, and Australia have also revised their quality assurance systems to include graduate employability as a primary component. This information is being provided to students and shaping their choice in which institution to attend and is also often accounted for in funding mechanisms by the governments in question.

Part V: Future Directions for Canada

The issues of skills mismatch, competency shortages, and the responsiveness of the PSE system to the labour market are complex ones that will require more attention and research in the years to come. The CCCE and the Conference Board have both committed to conferences and research on the subject which will take place over the next couple of years. These will be important steps in bringing the relevant stakeholders together to gain a better understanding of the challenges being faced and the responsibility of each in addressing the issues. To date, the subject has been discussed too much in silos without representation from all involved. The way forward will be through identifying common goals and ensuring that each stakeholder works in its own interest to achieve a more responsive system. This may ultimately involve changing the incentives and missions of universities.

Despite the obvious need for more research and collaboration on this subject, this paper now turns to tentative policy prescriptions based on the challenges identified and the best case practices in other countries, as identified and reviewed above. The first involves the creation and increased dissemination of LLMI. The second involves increased experiential learning

opportunities and partnerships for curricula development between the PSE system and the private sector. Both broad recommendations involve several specific actions which need to be taken by the different levels of government, PSE institutions, employers, and students.

Learning and Labour Market Information

The first step towards creating a well-functioning and responsive PSE system will be to improve LLMI in the country. This will help parents, guidance counsellors, and ultimately students make better informed decisions about which level of education (e.g. trade school, college or university, bachelors, masters or PhD) and field of study to pursue, based on their individual preference, as well as the market incentives of future job prospects. This may also have the added benefit of shifting the current cultural bias away from universities being the preferred option for students wishing to pursue higher education and instead encourage those who may be better suited to, or may get more benefit from, college to attend these institutions, and vice versa. Increased and improved LLMI could also help PSE institutions and provincial governments to be more proactive in their responses to changes in the labour market in terms of funding formulas, institutional-level program decisions, and responsive curriculum design. The concrete steps that should be taken to improve the country's LLMI are listed below.

Data Collection

As was mentioned in the international examples section above, Canada has limited data connecting the national labour market with the education system, partly due to the provincial jurisdiction over education. In order to improve LLMI in Canada, more data need to be collected both from educational institutions and employers across the country. To be most effective, these data should go beyond traditional LLMI which includes information on the ROI of levels of education and fields of study, projected occupational and skills shortages, and the short and long-

run outcomes of graduates in particular fields. It should also include better information on student outcomes that are more up-to-date, more accurate, more detailed and more available. In other words, the information needs to be useful for those making schooling decisions.

In order to collect the relevant labour market information, including which occupations are facing a shortage of workers, Canada would require an effective employer survey, as in the German model, potentially funded by the federal government. This survey should also include information from employers about the skills they require and how they recruit their students. Several CCCE member companies have stated that they choose to focus their recruitment efforts on a select number of colleges or universities across the country, and this information could help students decide which institution best fits their needs and ambitions.¹⁶¹

It would also be worthwhile to find out from employers what kind of indicators they believe would be most effective in identifying skills shortages and competency shortages which may not be accounted for in current surveys. This would help the government gain a better appreciation of short-term and long-term skills needs and forecast shortages. The current projection models should also be strengthened to include a greater number of occupations at the six-digit national occupation code (NOC) level, as is the case in many other countries.¹⁶² Furthermore, in order to gain a better understanding of areas of shortages in the economy, vacancy data should be made available for all occupations.¹⁶³

Labour market information also needs to be forecasted to accommodate the time it takes a student to develop the necessary skills to enter the labour market. It takes the typical student at

¹⁶¹ Paul Smith & Matt Lam, “2013 Campus Recruitment Report – Recruiters Summary,” *Canadian Association of Career Educators and Employers*, November 4, 2013.

¹⁶² Currently the Canadian Occupation Projection System (COPS) presents data at the four-digit NOC level meaning that occupations are grouped into 500 categories at the most micro level.

¹⁶³ Currently much of statistics Canada’s vacancy info is suppressed. Miana Plesca and Fraser Summerfield, Labour Market Conditions, Skill Requirements and Education Mismatch,” *University of Guelph Job Market Paper*, (February 2014).

least six years from the time they are in high-school attaining the prerequisites for PSE to the time they graduate from PSE and enter into employment. This process takes even longer for certain high levels skills that require a master's degree or post-doctoral studies. PSE institutions also need to know, at least three to four years in advance, what the industry expects its labour demand to be in order to prepare for enrolment adjustments, including the hiring of new faculty members and adjustments to curricula.

While it is clear that there are difficulties that arise in forecasting future demand in particular occupations, more can be done to at least track and perhaps extrapolate general trends as long as the appropriate caveats are made clear (i.e. no one can perfectly predict the future). After all, policy based on limited data is better than policy based on no data. These surveys should also be backed by empirical analysis of job postings, wage rates and other indicators to better ensure the information being provided by employers match with the realities in the labour market. The government could also encourage local Chambers of Commerce to conduct employer surveys tracking technological and organizational developments and the associated skills requirements as a means to better inform students of future innovative careers and the type of education they would require.

In order to inform students of historic trends in the rate of returns of particular levels and fields of study, more should be done to track graduates of the PSE system. Minister Kenney has announced the creation of a “career choice web-tool” using data from the 2011 National Household Survey and COPS to inform students of the returns to various types of education.¹⁶⁴ While this is a positive first step, the NHS is limited in its scope, and administrative data from

¹⁶⁴ “Analysis of Programs by Strategic Outcome,” *Employment and Social Development Canada*, March 6, 2014, http://www.esdc.gc.ca/eng/publications/rpp/2014_2015/section2.shtml (Accessed March 7, 2014).

individual PSE institutions would be a better way of attaining this information and observing progression of graduates over time.¹⁶⁵

Another area which needs attention in Canada is the ease with which students can find information about particular PSE institutions to make decisions about which one best suits their needs. At the undergraduate level most students tend to attend the university closest to them; however, if Canada had a well-known system that provided information in a single place about each one's area of expertise, their connections with the private sector and the number of available seats, students could make more informed choices based on their own particular career aspirations.

Data Dissemination

In order for the data collected to be useful, there must be improved mechanisms in place to ensure that the information is reaching prospective students, including ones who may not otherwise consider attending PSE. Ideally this information would be reaching students at the high-school level, well before they begin to make decisions about future education. It should also be accessible once these students have entered PSE and have a better idea of their educational and career aspirations. In each case, the information should be tailored to specific audiences. This is essential because what is most important and/or interesting to a high-school student may not be what is most important to a parent or to a PSE student. Moreover, what is important to someone who has always planned on going to PSE and is just faced with choosing a major is likely to be quite different from what is important to a first generation student considering whether or not to pursue further studies.

¹⁶⁵ The Education and Policy Research Initiative (EPRI) is currently linking PSE administrative data with tax data to track graduate outcomes over time. Ross Finnie & Dejan Pavlic, "Background Characteristics and Patters of Access to Postsecondary Education in Ontario: Evidence from Longitudinal Tax Data," *HEQCO Research Publications*, April 23, 2013.

One of the primary means of disseminating this information in a tailored way could be through making it directly available to students through a website with customizable options. Any information presented online should be accessible and technologically up to date (e.g. should be accessible through a variety of mediums, including mobile applications, etc.) but also prefaced with a recommendation for students to speak with their guidance counsellors, teachers or parents. Provincial governments or PSE institutions could also establish programs whereby current students and graduates from fields in high demand could speak at high-schools and act as mentors outlining their own educational and career paths and guiding students.

PSE Response

Finally, as students begin to gain a better appreciation for their future job prospects in a given field of study, PSE institutions will need to be flexible in responding to changes in students' demands by offering the appropriate types of programs with up-to-date curricula. Canadians tend to culturally value freedom of choice over educational matters more so than people in other countries where streaming is more prevalent.¹⁶⁶ For this reason, PSE should not be strictly restricted on the supply side with limited numbers of seats in particular fields based on job prospects, and as determined by government authorities, as in Germany. Instead, supply should be made more responsive to enrolment demand from students, as in the UK and Sweden.

Rather than tying public funding for individual programs to the success of their graduates (an option which may meet with criticism from the PSE community), making this information available to students would, in theory, allow them to "vote with their feet."¹⁶⁷ Alternatively, provincial governments could incentivize the increased enrolment in particular fields they

¹⁶⁶ Andrew Sharpe & James Gibson, "The Apprenticeship System in Canada: Trends and Issues," *Centre for the Study of Living Standards Research Report 2005-04*, (September 2005): 25.

¹⁶⁷ Op. cit. Montmarquette et al., "Post-Secondary Educational Institutions' Adjustment to Labour Market Changes:" 16.

identify as being in high demand by providing scholarships or grants for students and increased BIU values for each student the institution successfully enrolls in those fields.¹⁶⁸ In this way they would encourage incentivize students and institutions to respond to labour market exigencies while also maintaining funding for other university programs.

According to Montmarquette and Boisclair, one way to make this type of demand-driven system feasible given the differing costs of certain programs may be to implement a tuition differential to reflect the real per-student costs of each program or the labour market relevance of the degree.¹⁶⁹ This type of system could still be made accessible for students without the means to pay for the more expensive programs through an income-contingent loan repayment scheme whereby students with demonstrated financial need repay their loans upon graduation based on their income.¹⁷⁰

Furthermore, as better LLMI becomes available, including more information on what specific competencies employers feel students and graduates are most lacking, PSE institutions and provinces can respond in various ways. For example, if it is found that in recent years students' communication skills have declined and that this is having an impact on the country's productivity, provinces may consider providing more funding to institutions to be able to accommodate smaller class sizes and an increased focus on the development of communication skills. This could be incentivized through the creation of an effective quality assurance system, which would include increased training for professors on how to develop labour market relevant curricula and pedagogical techniques for developing their students' competencies; however, such a system is beyond the scope of this paper.

¹⁶⁸ Although beyond the scope of this paper, Ross Finnie and Alex Usher propose a similar solution to increase graduate student enrolment, "Room at the Top: Strategies for Increasing the Number of Graduate Students in Canada," *C.D. Howe Institute Commentary*, No. 245, February 2007.

¹⁶⁹ Ibid: 10.

¹⁷⁰ Ibid

Individual professors, particularly at the university level, could also do more to be responsive to skills needs in particular fields. This increased information would help professors who are already open to making their classes relevant to the labour market to develop curricula that reflect labour market needs and exigencies. It may also be worth encouraging college or university professors to do more to judge their students' competencies alongside the traditional grading system. For example, to evaluate a student's teamwork skills, a professor could use group evaluations of the process, as well as the final product to determine the final grade. If these types of competencies were explicitly made part of the grading rubric, students would have a better idea before beginning the class about what types of practical skills they would be improving.

Institutions could potentially conduct pilots to see if it would be feasible to develop competency lists for each field of study consisting of both general soft skills and field specific skills, as is done in France. Professors would then provide students with an evaluation of these competencies separately from their final class grades. This type of system could provide employers with an alternative to hiring graduates based on credentials alone and encourage students to actively think about developing those types of competencies rather than focusing on grades alone.

Institutions could also do more to promote extra-curricular activities. If the examples at the University of Toronto and Lakehead University of extra-curricular transcripts prove to be successful, more universities could look to adopt similar systems. Furthermore, a greater investment in career centers could also help students recognize the transferability of the skills they already have and become better at marketing them to potential employers. Finally, undergraduate students could also be encouraged to take elective courses in different faculties so

that, for example, a business student may gain competencies in communications and a history major may gain skills in marketing or entrepreneurship.

Experiential Learning and Development of Employment Skills

The second broad recommendation of this paper is to encourage more partnerships between PSE institutions and the private sector, and in particular to increase experiential learning for students at all levels and fields of study. The examples listed in the evaluation section of the paper demonstrate that colleges are already doing a substantial amount to connect their institutions with the private sector. Furthermore, the university examples demonstrate that it is possible for universities to create valuable partnerships with the private sector as well.

Co-op

Going forward, it may be worthwhile for governments to encourage PSE institutions to continue forming such partnerships, perhaps on a larger scale, to ensure that the education they provide meets the needs of the labour market and society. As was mentioned in the evaluation section, there is contradictory information in the existing literature as to whether the bottleneck in terms of co-op is within the PSE institutions or in the private sector. According to the Government of Ontario's 2012 paper *Strengthening Ontario's Centres of Creativity, Innovation and Knowledge*, the recognition of the benefits and importance of experiential learning is not widespread within PSE institutions and should be further promoted.¹⁷¹

At the same time, other reports find that co-op and work-integrated learning programs are expanding across the country; however, there is a concern about the lack of private sectors involvement and the lack of positions available for students. According to a 2014 CAFCE report,

¹⁷¹ "Strengthening Ontario's Centres of Creativity, Innovation and Knowledge," *Ministry of Training, Colleges & Universities* (Queen's Printer for Ontario, Toronto: 2012): 21.

as co-op programs grow across Canada, local and regional PSE institutions are competing with each other to secure placements for “existing programs, growing programs, and new programs.”¹⁷² This is a problem for smaller institutions in particular which may have fewer resources to devote to their co-op program and are forced to compete with larger institutions.

Despite this contradictory information, all involved agree that co-op is generally beneficial. According to the CCCE, employers would like to increase their co-op opportunities at the university, college and polytechnic levels because they see it as a safe recruitment tool.¹⁷³ Co-op programs also benefit students and PSE institutions by providing students with the opportunity to explore various careers and build on-the-job skills while still protecting the integrity and academic freedom of the institutions. Particular programs also become more competitive because of their strong co-op programs. A 2010 Ipsos Reid survey found that 17% of all PSE students in Canada participate in some form of co-op education and half of those surveyed who did not had the opportunity to participate in a co-op program would have liked to.¹⁷⁴

Specific actions could be taken to address challenges to the creation of co-op programs both for PSE institutions and employers. For example, one possible solution on the PSE side would be for provincial governments to provide more funding to institutions for the creation of programs with experiential learning components, or to add experiential learning components to existing programs. Furthermore, institutions may be incentivized to improve their co-op programs if more information were made readily available to students about their strengths as part of the LLMI information discussed above. This would encourage more students to enrol in institutions that have better co-op programs, thereby incentivizing schools to improve their programs.

¹⁷² “CAFCE Annual General Meeting 2013,” *Canadian Association for Co-operative Education*, (October 2013): 10.

¹⁷³ Currently, 30% of the CCCE employers surveyed stated that they hire their co-op students once their term is complete. Op. cit. “Preliminary Survey Report: The Skill Needs of Major Canadian Employers:” 9.

¹⁷⁴ “Canadian Post-Secondary Education: Impact of Co-op Education Programs,” *Ipsos Reid* (January 20, 2010): 3.

Provincial governments could also help connect more colleges and universities with their local Chambers of Commerce to help facilitate increased relationships with their members. This would be particularly valuable for connecting smaller companies who may benefit from having a co-op student but who do not yet have a relationship with their local PSE institutions.

More could also be done to support co-op on the employer's side. This would involve improving incentives for participation and providing the necessary funding. Several provincial governments including Manitoba, Ontario and Quebec provide co-op education tax credits to encourage employers to hire students. For example, Ontario offers up to \$3,000 in wage subsidies for placements between 10 and 16 weeks.¹⁷⁵ This could be expanded to all provinces. The University of Victoria has also made the recommendation that co-op education tax credits should be offered by the federal government to encourage co-op participation by employers.¹⁷⁶ Currently the Government of Canada offers a tax credit to employers to encourage them to hire "apprentices," but not co-op students.¹⁷⁷

Economic Action Plan 2014 proposed dedicating \$40 million towards supporting up to 3,000 internships in high-demand fields and reallocating \$15 million annually towards supporting up to 1,000 internships in SMEs.¹⁷⁸ By subsidizing co-op students' wages, the government could encourage smaller companies, non-governmental or non-profit organizations, who ordinarily could not afford to hire a student, to offer learning placements.

¹⁷⁵ "Co-operative Education Tax Credits," Ontario Ministry of Finance, (Queen's Printer for Ontario: Toronto, 2010).

¹⁷⁶ "Co-operative Education Manual: A Guide to Planning and Implementing Co-operative Education Programs in Post-Secondary Institutions," *Canadian Association for Co-operative Education*, (2005): 5.

¹⁷⁷ "Apprentices" in Canada refers to those completing studies in skilled trades. "Minister Kenney Tours LiUNA Local 506 Training Centre to Discuss Apprenticeship and Job Creation," *Employment and Social Development Canada*, Government of Canada, January 17, 2014, <http://news.gc.ca/web/article-en.do?nid=809899> (Accessed January 20, 2014).

¹⁷⁸ "Strengthening Canada's Labour Market," Economic Action Plan 2014, February 21, 2014, <http://actionplan.gc.ca/en/blog/strengthening-canadas-labour-market> (Accessed February 25, 2014).

Other Private Sector-PSE System Partnerships

Increased partnerships beyond the co-op experience, such as professionals co-teaching classes and curriculum development informed by the needs of particular occupations, could also be encouraged in Canada. Participation in such programs could be up to the discretion of individual departments or faculty members, in which case it would be up to students to demonstrate, through their enrolment choices, whether or not they value these types of classes. There is evidence that “students who strongly agree that their classes are giving them skills that will help them in the job market are considerably less likely than others to leave PSE.”¹⁷⁹

University and private sector partnerships for curriculum development could also potentially be mandated by provinces in the same way that they are for colleges currently. This option would require further consideration as to the mission of universities, and the potential role of the private sector in particular fields with less clear-cut ties to particular occupations (i.e. philosophy). Related to this, some of their funding could be tied to meeting certain requirements in terms of ensuring labour market relevance; however, again this is beyond the scope of the current paper.

In order to facilitate more employer sponsored training, colleges could also open their facilities to more programs specifically designed for particular industries or companies. If these types of relationships existed, employers could ensure that their employees’ skills were not atrophying over time and that they were being upgraded to keep up with changing requirements. This type of system would be particularly valuable in Canada because of the lack of a strong adult education framework. For this to work, those being trained would likely need to be willing to take on some of the investment costs, by being paid a relatively lower wage based on their

¹⁷⁹ Ross Finnie, Stephen Childs, Andrew Wismer, “Engagement, Attitudes and Support Networks,” *The MESA Project* (February 24, 2010): 6.

lower productivity while in training. This may result in more employers being willing to train their own employees with job-specific skills, while providing funding to PSE institutions, which already have the infrastructure in place to accommodate them.

Conclusion

Very little research has been conducted to date on the responsiveness of the Canadian PSE system to changes in the labour market. This is an area of increasing importance as the issue of skills and credential shortages continue to make headlines and lead commentators to question the relevance of higher education overall. This paper has attempted to establish a framework for evaluating the responsiveness of the system to date and to establish the current state of knowledge on the subject.

Overall, the system appears to have successfully adjusted to changing circumstances in the labour market in the past. Furthermore, particular institutions and professors are taking it upon themselves to find innovative ways to partner with the private sector and ensure their students gain necessary skills for the labour market. At the same time, the overall system faces challenges in its ability to be responsive to labour market and student needs due to institutional constraints and cultural and governance issues which cannot be overcome easily. Partly for this reason, employers are reportedly having trouble finding graduates with the right skills and are being faced with having to hire graduates who lack many of the necessary competencies to ensure high levels of productivity.

In the future it will be important to identify more concretely the specific bottlenecks the PSE system faces when attempting to respond. Canada appears to be behind many other countries in beginning to identify and address these issues. The benefit of this, however, is that we can now learn from the best practices of other countries. Perhaps most importantly, each of the other

countries analyzed in this paper have a strong method of predicting future skills requirements and labour market demands. They also tend to have ways of ensuring that this information reaches prospective students in time for them to make informed decisions about which type of education to pursue to best achieve their job aspirations. They also have various incentives in place and mechanisms to ensure the PSE system is responsive. It is clear that more work must be done to identify what the skills and credential needs of the future are and to ensure this information is reaching students, PSE institutions and individual professors and other teachers in Canada.

Once this information has been collected and shared, PSE institutions will naturally become somewhat more responsive to the demands of their students. At the same time, in order to overcome some of the hindrances that will constrict their response, PSE institutions should be working more actively towards developing their students' employability skills through co-op programs, increased experiential learning opportunities and extra-curricular activities. These types of programs allow students to gain valuable skills while also maintaining academic freedom in the classroom. Educators who are willing should also continue to forge partnerships with employers in terms of training and curriculum development in order to ensure students are attaining up-to-date skills. At the same time, the Canadian government should encourage employers to increase their funding of job-specific training for their employees, rather than relying on PSE institutions to provide this for them.

Provincial governments will also have a role in changing the incentives for universities to address skills shortages through funding mechanisms. They may also have a role in addressing competency shortages through the creation of quality assurance mechanisms that clarify the

mission of universities and provide professors with training on how to effectively prepare students for the labour market.

In coming months the Conference Board, the Canadian Council of Chief Executives, the Canadian Association for Co-operative Education, and Employment and Social Development Canada will all be conducting research or holding conferences and bringing stakeholders together on this very subject. These will serve as an opportunity to begin to answer some of the questions this paper has raised.

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