Aligning Skills Development With Labour Market Need.
Aligning Skills Development With Labour Market Need
Michael Grant

Preface
This report explores the paradox of rising levels of educational attainment coexisting with weak alignment between skills and labour market needs. Understanding this paradox and possible solutions involve an analysis of Canada’s skills development system. The skills development system includes formal post-secondary education, informal learning, job training, and work experience.

Labour market demand varies in response to evolving market conditions. A key challenge is to design a system that is flexible enough to respond to short-term demand while not compromising core skills development that positions Canadians for jobs over the long haul. This report considers the critical role of Canada’s labour market information systems—specifically, the way employers articulate their skills demands to prospective employees and the post-secondary education system that is expected to develop these skills.


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About the Centre for Skills and Post-Secondary Education

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

For more information about the Centre for Skills and Post-Secondary Education, visit www.conferenceboard.ca/spse.
EXECUTIVE SUMMARY

Aligning Skills Development With Labour Market Need

At a Glance

- Despite Canada having one of the highest levels of educational attainment in the world, employers regularly complain about a lack of skills.

- Skills are developed in a variety of settings—including education, work, family, and community.

- Labour market information systems are key to aligning skills availability with demand. Improvements in information technology make it much easier to understand which skills employers are demanding.

- Better alignment may come about through multiple strategies such as improved labour market information systems, a shorter school-to-work transition, partnerships between employers and educators, and informed employers.

- Canadian employer surveys regularly cite skills shortages as a key business challenge. Large, medium-sized, and small companies all suggest that they have difficulty finding people with the right skills for available jobs.
Canadian employer surveys regularly cite skills shortages as a key business challenge. Large, medium-sized, and small companies all suggest that they have difficulty finding people with the right skills for available jobs.

*Aligning Skills Development With Labour Market Need* builds on the Centre for Skills and Post-Secondary Education’s (SPSE) foundational report *Skills—Where Are We Today: The State of Skills and PSE in Canada*. A key finding of that report was that the “literacy, numeracy, and problem-solving skills of Canadian adults are less impressive than one might expect for a country with a high level of post-secondary (PSE) participation and attainment.”¹ The report noted that Canada’s adult tertiary education attainment is over 50 per cent compared with the OECD average of 32 per cent.

**Which Skills?**

In the SPSE typology, we organize skills into the following categories:

- **Essential**—skills that provide a foundation for work and lifelong learning (e.g., reading, writing, document use, numeracy, computer use, thinking, oral communication);
- **Employability**—skills needed to enter, remain at, and progress in work (e.g., personal management skills, adaptability, working with others, having a positive attitude);
- **Knowledge**—awareness and understanding of information, facts, and ideas—often specific to a field;
- **Technique**—skills related to doing specific tasks (e.g., driving a truck, creating software, drawing, pipefitting, and maintaining an aircraft).

¹ Munro, MacLaine, and Stuckey, *Skills: Where Are We Today?* vi.
The typical Canadian will spend far more time at work than at school, perhaps upwards of 70,000 hours during the working life of a full-time employee. From a skills acquisition perspective, work differs in important ways from school and community. People are organized into work groups that operate within reporting lines of authority. And, for the first time in many people’s life, they spend extended periods of time working and interacting with people of different ages.

**Skills Shortfalls**

In the SPSE foundation study on skills, we analyzed data from the OECD’s Survey of Adult Skills to determine why Canada was merely an average performer despite high levels of educational attainment and expenditure. A key factor is Canada's reliance on internationally educated people drawn from countries where the native language differs from Canada’s two official languages. For instance, 45 per cent of foreign-born Canadian university graduates scored in the lower range on literacy skills and a similar number scored in the lower range on numeracy skills These results are below the level required to perform most jobs efficiently and effectively. Meanwhile, 16 per cent of Canadian-born university graduates were in the lower range for literacy and 23 per cent were in the lower range for numeracy.

**Why Gaps and Mismatches?**

Gaps and mismatches between available skills and labour market demands may exist for many reasons. But the core reason is that individual disciplines differ significantly in the way they are aligned with the world of work.

Although higher-education institutions (particularly universities) often frame themselves in broad educational terms, they do offer many programs of study where there is excellent alignment between curricula, pedagogy, the development of knowledge, essential skills, technique and

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2 Munro, MacLaine, and Stuckey, *Skills: Where Are We Today?*
workplace skills, the assessment of these skills, and their application. One need only consider the case of health practitioners, such as surgeons and dentists. There is a clear pathway from university education to post-education supervised training and mentorship, to practice licensure and actual practice. To varying degrees, other vocationally oriented college, polytechnic, and university programs are organized the same way.

Graduates from vocationally oriented disciplines are more likely to work in their field and in ways that use the skills they developed in higher education. They also tend to earn more because, after graduation, they apply their full range of skills to their job. For example, a Statistics Canada study of education and high-income earners demonstrates how this alignment between university education in vocationally oriented disciplines—such as health care, business, finance, and engineering—results in high earnings.³

Employers’ credential demands may not necessarily align with their demand for skills. Between industry, occupation, and location there are literally hundreds of arrangements of knowledge, technique, and essential and employable skills. That explains why skills are often grouped in sets (as in skill set). Someone may possess a higher education credential but not in the right subject matter to address a need. As well, if the major hiring challenge is the replacement of retirees, then it is unlikely that education alone is enough to prepare people for available jobs.

The Way Forward

Based on this report’s analysis, changes to PSE programs, stronger links between PSE institutions and employers, and improved labour market information would improve skills outcomes and workplace performance. The following recommendations are for consideration in the SPSE’s national strategy:

- improve labour market information systems;
- shorten the school-to-work transition and improve alignment;
- enhance employers’ partnerships with PSEs;
- develop today’s employer;
- align skills with Canada’s need for innovative employers.

This report was prepared with financial support from the Centre for Skills and Post-Secondary Education, The Conference Board of Canada.
CHAPTER 1

Introduction

Chapter Summary

- Canadian employers regularly cite skills shortages as a key business challenge.
- Skills shortages exist despite rising levels of educational attainment.
- This report explores the paradox of high levels of educational attainment coexisting with skills shortages.
Canadian employer surveys regularly cite skills shortages as a key business challenge. Large and small companies both suggest that they have difficulty finding people with the right skills for available jobs.

For instance, the Canadian Federation of Independent Business (CFIB), which represents small and medium-sized (SME) companies, conducts regular surveys of its members on pressing business concerns. These surveys consistently show that about one-third of SME employers say that there is a shortage of skilled labour. Meanwhile, large companies, as represented by the Canadian Council of Chief Executives (CCCE), also indicate difficulties in skills recruitment. About 40 per cent of respondents in a 2014 survey said that they had difficulty recruiting for “hard” skills, while a similar percentage indicated that they had difficulty recruiting for “soft” skills. Conference Board employer surveys for British Columbia and Ontario largely corroborate the findings of these studies.

These employer surveys are merely focused on one type of mismatch between employer demand and available skills—a recruitment shortage. Other labour market indicators demonstrate the full range of mismatch, which also involves overqualified and underqualified people who are currently employed. In addition, other Conference Board of Canada research shows a geographic gap between the major population centres in Central Canada and Western provinces that have experienced rapid employment growth. This may result in skills shortages in occupations and regions that are experiencing this rapid growth.

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1 For instance, the August 2015 CFIB Business Barometer showed that 34 per cent of respondents indicated that skilled labour shortages set a limit on growth.

2 Canadian Council of Chief Executives, Preliminary Survey Report, 7.

3 See Stuckey and Munro, The Need to Make Skills Work; and Stuckey and Munro, Skills for Success.

4 Antunes and Ades, Evolving Skills Shortages.
It is common to use education attainment as a proxy for skill. Given this tendency, ongoing skills shortages are perplexing—given rising levels of educational attainment in Canada. According to the Organisation for Economic Co-operation and Development (OECD), in 2012, Canada had the highest percentage of adults with a college (tertiary-type 5B) education (at 24 per cent) and the eighth highest percentage of adults with a university (tertiary-type 5A) education (26 per cent). As this report will show, Canada’s skills development system, over time, has tilted increasingly toward formal education and away from workplace experience and training.

Perhaps one reason why the skills have not kept pace with employer demands is due to demographic factors. It is well-known that the baby boom cohort had relatively small families—below the 2.1 child/adult couple that would stabilize population. This has resulted in a relatively small emerging labour pool in relationship to retirees. Over the next decade, the number of retirees will likely exceed the number of new labour market entrants emerging from Canada’s education system. The labour force participation rate for adults is set to decline from 67 per cent in 2010 to around 60 per cent by 2031, rates that haven’t been seen since the 1970s.

Skills shortages are not unique to Canada. In the United States, employer surveys show that 40 per cent of the college graduates seeking employment lack applied skills to meet employer needs. And, nearly one-third of manufacturing companies claim that they are experiencing skills shortages. The OECD has conducted work showing that many industrialized countries have similar problems with aligning skills to labour market needs.

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7 Martel, and others, “Projected Trends to 2031.”  
8 Sparks and Waits, *Degrees for What Jobs?*  
9 See, for example, Desjardins and Rubenson, *An Analysis of Skills Mismatch.*
No country has achieved a perfect match between employers’ skills demands and available skills. Yet given the structural changes in Canada’s labour market, it is imperative for us to strive for as close a match as possible. While this is important for the overall economy, it is equally so for young Canadians’ life satisfaction.

Notwithstanding the many social and personal development advantages of post-secondary school, today’s students expect that post-secondary education will help them acquire job-relevant skills. According to a recent Canada-wide survey of first-year university students, “... students tend to be most heavily influenced in attending university by employment outcomes, such as preparing for a job or career or getting a good job. Although academic pursuits play a role, employment outcomes play a much stronger one in convincing students to pursue a university education. This also tends to be how students choose their university, as they are often influenced by career-related programs or the quality of the academic program (which may be a proxy for the quality of job they hope to get from earning their degree from the program).”

To meet these expectations, post-secondary institutions and government policy-makers need to think strategically about the alignment between post-secondary education and labour market needs. Given the complexity of the skills development system and the nature of labour market demands, this is no easy task. Reasonable people may disagree on the correct diagnosis and appropriate actions. For instance, in June 2014, the then federal Employment and Social Development Canada Minister, Jason Kenney, convened a national conference on skills shortages. Mr. Kenney attributed the shortages to a variety of factors, including the inability to attract youth to skilled trades and inadequate labour market information systems. Others point to the unwillingness of employers to invest adequately in training and development or employers’ unwillingness to increase wages to attract more qualified candidates.

11 Clancy, Canada’s Coming Economic Headache.
About This Report

This report builds on the Centre for Skills and Post-Secondary Education (SPSE) foundational report *Skills—Where Are We Today: The State of Skills and PSE in Canada*. A key finding of that report was that the “literacy, numeracy, and problem-solving skills of Canadian adults are less impressive than one might expect for a country with a high level of PSE participation and attainment.” 12 The report notes that Canada’s adult tertiary education attainment is over 50 per cent compared with the OECD average of 32 per cent.

As with other SPSE reports, we use a variety of methodologies to inform our analysis. We have conducted a thorough review of the relevant literature. We have also conducted interviews with knowledgeable observers and practitioners in Canadian skills development and employment systems.

In terms of quantitative evidence, the report draws on The Conference Board of Canada’s proprietary databases, such as the aforementioned surveys of Ontario and British Columbia employers. In addition to proprietary databases, we mine data from a job ad database called Wanted Analytics, which tracks thousands of employer job listings. 13 This report undertakes a content analysis of the database to understand how employers communicate their skills needs.

Our report employs these methods toward answering the five following research questions:

1. What are the skills that employers are looking for—including specific technical, essential, and employability skills; knowledge; experience; and other skills—as expressed in their job ads and descriptions, hiring processes, and articulated training needs?

12 Munro, MacLaine, and Stuckey, *Skills: Where Are We Today*? vi.

13 See Wanted Analytics, *Wanted Analytics*.
2. What are the skills that students and job candidates have or are developing—including specific technical, essential, and employability skills; knowledge; experience; and other skills—as captured by field of study, credentials, content of curricula (i.e., skills development objectives), and assessed through exams and by employers in work placements?

3. What are the key issues in the way skills shortages and mismatches are identified and addressed?

4. How can we define the key terms in skills supply and demand so that employers and PSE institutions can obtain a common understanding and vocabulary as a basis for assessing data and allowing joint planning to resolve supply-demand issues?

5. With this common understanding and vocabulary, how can a labour market information system be established that conveys employers’ demand for skills to students who wish to develop skills, and to post-secondary learning institutions that help students develop skills?
CHAPTER 2

Concepts

Chapter Summary

• Many countries grapple with the challenge of aligning skills development to labour market needs.

• One reason is that labour market needs are immediate, whereas skills are developed over a long period of time.

• Skills can be organized into the following categories: essential, employability, knowledge, and technique.

• The Canadian skills development system favours long school stays and relatively little work experience. This system enhances some skills that are relevant to employers but underdevelops other skills that are important to the work.
Skills mismatches are endemic in most industrialized countries. This reflects the fundamental difficulty in aligning skills development to labour market needs.

There are several reasons why it is difficult to align skills to need. To begin with, skills are developed over a long time period, whereas labour market needs are immediate. As we are now seeing in the resource sector, the skills demands can fluctuate considerably over the business or commodity cycle. Employers are mostly worried about meeting today’s demand, whereas labour market participants are concerned about positioning themselves for stable employment over the long term.

Skills investments are very much akin to financial investments; thus it is common to liken skills to human capital. Like financial investments, investments in human capital are subject to market risk. People manage this risk through several strategies. They may, for example, invest heavily in specialized skills in areas that have a solid track record of providing good employment and earnings. Or they may specialize once they have had an opportunity to develop a secure relationship with an employer. Alternatively, people may develop broad-based skills that they believe position them for a wide range of jobs over time.

Employers, too, are subject to risk, which shapes how they manage skills. Specifically, employers face recruitment risks, whereas skills misalignment raises costs. This is due to work inefficiency, ineffectiveness, and redundancies. Moreover, employers also face the risk of poaching or turnover, whereby training and development expenditures may be lost when an employee leaves to join another employer. This may make employers reluctant to invest in employee skills or to focus those investments on individuals who are less likely to move to other employers.
One of key reasons why skills mismatches persist is because individuals’ risk management strategies are out of sync with employers’ risk management strategies. In this chapter, we explore the conceptual issues around skills development and employer needs.

## Which Skills?

The SPSE defines skill as an ability acquired or developed through education, training, and/or experience, which provides a person with the potential to achieve life satisfaction by applying their abilities in the economy and in society.

This conceptualization of skills aligns with Aristotle’s idea of *phronesis* or practical wisdom. In this concept, it is not enough to acquire knowledge, but rather to apply knowledge in specific contexts.¹

In the SPSE typology, we organize skills into the following categories:

- **Essential**—skills that provide a foundation for work and lifelong learning (e.g., reading, writing, document use, numeracy, computer use, thinking, oral communication);
- **Employability**—skills needed to enter, remain at, and progress in work (e.g., personal management skills, adaptability, working with others, having a positive attitude);
- **Knowledge**—awareness and understanding of information, facts, and ideas—often specific to a field;
- **Technique**—skills related to doing specific tasks (e.g., driving a truck, creating software, drawing, pipefitting, and maintaining an aircraft).

Essential and employability skills are considered foundational because they are most likely to be applicable in a wide range of work settings—meaning that they are aligned to the needs of many employers. But the application of skills in specific contexts requires precise knowledge and technique. Employability skills are often referred to as “soft” skills to distinguish them from “hard” skills. The employability relates to the

¹ See Munro, MacLaine, and Stuckey, *Skills: Where Are We Today?*, 5–6.
how of skills application in work as opposed to the what. Jobs use these skills in differing proportions depending on the nature of the job and the organization of work.

**How Are Skills Demands Evolving?**

Employers’ demand for skills evolves over time in relationship to changing technology and new ways of organizing work. Rapidly evolving technology has fundamentally changed the tasks carried out by people compared to machines. The most important change is in information and communication technologies. These technologies allow for rapid encoding and retrieval of information. Machines encode and compute data, thus relieving humans of the need to perform complex tasks.

Communication technologies have fundamentally changed the way work gets done, allowing for collaboration, often across long distances. The integration of highly populated low-wage countries into global supply chains has basically changed the demand for skills. Low-skill manufacturing jobs have mostly migrated to these countries.

Throughout history, technological change has resulted in humans focusing on the jobs that machines do not do as well. The demand for skill changes in relationship to the capabilities and cost of machines.

In today’s context, humans are better than machines at:

- complex thinking and problem-solving;
- contextualized analysis;
- programming and machine operation/programming;
- tasks involving dexterity;
- human communication (flexible, empathetic communication);
- personal and business services that require the “human touch.”
A University of Phoenix analysis of future skills is typical of the new skills that will be in demand, which include sensemaking, social intelligence, and new media literacy. (See “Future Skills”) Although these exercises in forecasting skills needs are interesting in their own right, we even have difficulty aligning skills development to simpler typologies like the SPSEs.

### Future Skills

1. **Sensemaking**—Ability to determine the deeper meaning of what is being expressed.
2. **Social intelligence**—Ability to connect to others in a deep and direct way to sense and stimulate reactions and desired interactions.
3. **Novel and adaptive thinking**—Proficiency in thinking and finding solutions and responses beyond those that are rote- or rule-based.
4. **Cross-cultural competency**—Ability to operate in a different cultural setting.
5. **Computational thinking**—Ability to translate vast amounts of data into abstract concepts and to understand data-based reasoning.
6. **New media literacy**—Ability to critically assess and develop content that uses new media forms, and to leverage these media for persuasive communication.
7. **Transdisciplinarity**—Literacy in and ability to understand concepts across multiple disciplines.
8. **Design mindset**—Ability to represent and develop tasks and work processes for desired outcomes.
9. **Cognitive load management**—Ability to discriminate and filter information for importance and to understand how to maximize cognitive functioning using a variety of tools and techniques.
10. **Virtual collaboration**—Ability to work productively, drive engagement, and demonstrate presence as a member of a virtual team.

Source: Davies, Fidler, and Gorbis.
How Are Skills Developed?

The SPSE definition of skills is admittedly broad. We recognize that skills are developed throughout life by multiple influences—including family, friends, community, formal and informal education and training, work experience, and mentorship.

Skills are mastered through repetition and continuous application. The acquisition and application of skills depend on where and how people spend their time (their environment).

In his book *Outliers*, Malcolm Gladwell showcased research by psychologist K. Anders Ericsson and others that suggests that commitment to deliberate practice is more important to high-level skills acquisition than is innate ability. Ericsson developed the famous 10,000-hour rule of skill mastery.

A criticism of the 10,000-hour rule is that it fails to answer why some people are inclined to deliberate practice while others are not. Clearly, personality traits, innate intelligence, and predispositions play a role and help to explain why some people are motivated to master skills and, indeed, their choice of skills to master. In our skills scheme, innate intelligence and personality are important in their own right for both hard and soft skills.

People who are naturally analytical are more likely to master the techniques of mathematics to solve problems, whereas those who enjoy fiction will be inclined to develop literacy skills. In addition, personality traits are key to employability skills.

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Economists struggle to explain why people with similar levels of education often have very different employment experiences and lifetime earnings (called “earnings heterogeneity”). Recent research suggests that personality and innate intelligence may very well explain this heterogeneity.3

**Skills Development Environments**

A key strategic question facing Canada is about the best environments for skills development and how these environments interact (or for our purposes, align) with one another. (See Exhibit 1.) There are three environments for skills development—community (including family, friends, and affinity groups); school (formal education and training of all types); and work (experience and mentorship).

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3 Gensowski, Personality, IQ and Lifetime Earnings.
Communities are informal learning environments where people acquire employability and technical skills related to their interests. People naturally acquire skills in communities through their day-to-day routines. Family members are powerful influences on young peoples’ career aspirations because they provide positive (and negative) role models.

For instance, our work on innovation management found that successful Canadian entrepreneurs were heavily influenced by positive role models prior to selecting their career path. Entrepreneurism skills tend to be developed through an unstructured process of trial and error by people who are predisposed toward work independence and control of their destiny.

Schools are structured learning environments that focus on essential skills, knowledge, and technique. Meanwhile, work is best for applying skills to work tasks within the context of an organization’s mission. These environments differ substantially in the way they develop skills. Personality often determines how effective these environments are for skills development.

Apropos Ericsson’s work on time spent in deliberate practice, time allocation is a useful way to think about skills acquisition. For example, Prensky notes that, by the time he or she reaches 21, the typical American is likely to have spent 5,000 hours reading, 10,000 hours on video games, about the same amount of time on the cell phone, and 20,000 hours watching television. As Prensky’s study is 10 years old, it is likely that some of the television watching hours have been moved toward various Internet platforms (including social media). The point is that the people arrive at structured environments (school and work) with natural skill sets developed in their communities. They have been shaped by current technology and social networks. Oblinger argues

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5 Prensky, *Digital Game-Based Learning*.
that today’s youth naturally gravitate toward group activities and new technology, and accord a higher social value to intelligence than did previous generations.6

School differs from community in that school is an organized and structured approach to skills acquisition. It is organized around curricula and pedagogy. People are grouped into classes of people in their age cohort. Most post-secondary education in Canada is structured into semesters where students take multiple courses per term and accumulate credits toward a credential. Courses typically group people of roughly the same age in a learning environment geared primarily toward three of the four skill types (knowledge, technique, and essential skills). Although post-secondary education is the highest level of schooling, and therefore develops the most advanced skills, it typically amounts to a relatively short period (especially when compared to work) of perhaps 1,000–5,000 hours of instruction and independent study.

By comparison, the typical Canadian will spend far more time in work—perhaps upwards of 70,000 hours during the work life of a full-time worker. From a skills acquisition perspective, work differs in important ways from school and community. People are organized into work groups that operate within reporting lines of authority. For the first time in many people’s life, they spend extended periods of time working with and interacting with people of different ages.

The formal structures of work are, to a large extent, performance-based. Performance takes place within the context of an organization’s mission that determines performance benchmarks. A person’s perceived (by those in higher authority) contribution to the mission determines their position and compensation. In this environment, skills are developed that are seen as pertinent to an organization’s mission, which usually entails differentiation from competitors. Soft skills tend to be valued in work because work is about interacting with others (e.g., employees and customers) to achieve organizational goals.

6 Oblinger, “The Next Generation.”
In work, skill is developed through experiential learning more than through structured training. The Conference Board regularly tracks employer investments in formal workplace training. In 2014, our employer survey found that respondents spent just over $705 per employee on training and employees spent an average of 28 hours per year being trained. Adult training opportunities tend to be allocated heavily to those who use the skills in question. Some workers attract more investment for continued skills development than others, meaning that training is not normally distributed. By comparison, a full-time employee may spend upwards of 2,000 hours a year doing work tasks under supervision for 30–40 years. Even people who graduate from PSEs are likely to end up spending many more hours at work than in formal education or workplace training.

That explains why aligning skills to the labour market (or, alternatively, the school-to-work transition) is critically important. People spend many hours at work and continue to develop their skills in that setting. When there is an initial mismatch between a person’s skills and the requirements of a job, an employee may have to acquire new skills while working or may see existing unused skills atrophy over time. For instance, de Grip and others found that job–worker mismatch induces a cognitive decline with respect to immediate and delayed recall abilities, cognitive flexibility, and verbal fluency. Krahn and Lowe had similar findings with regard to literacy skills in Canada.

**How Has Skills Development Evolved Over Time?**

Canada’s skills development system has evolved away from work experiential learning toward longer school stays. For instance, in 1972, the 15- to 24-year-old cohort had a full-time employment rate of 45 per cent compared with today’s 27 per cent. (See Chart 1.) In addition, the
The rate of post-secondary enrolment as a percentage of this cohort also increased. In 1992, the rate was 31 per cent, whereas today it is closer to 40 per cent.\(^{11}\)

This means that today’s youth are more likely to develop skills in formal education than in a work environment. However, one thing that has not changed is the desired end point—young people want good jobs after school. For instance, a recent, large-scale survey of first-year university students showed that 68 per cent of the sample were either preparing for a specific job or career or counting on obtaining a “good job.” (See Table 1.)

In fact, young people are more likely to believe that longer school stays should entitle them to a good, well-paying job. According to a representative of a major Canadian employers association, a survey of his members showed that new recruits tend to have high salary expectations, perhaps because they arrive with more formal education.\(^{12}\)

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\(^{11}\) Statistics Canada, CANSIM tables 282-0002 and 477-0019.

\(^{12}\) Interview with Michael Grant on September 14, 2015.
They are less likely to see an entry-level job as part of career development. And they are skeptical about the role of informal training in developing employability skills.

Not only are today’s young people more likely to be in school than in work, but they are also more likely to spend extended periods of time accumulating knowledge and technique in non-vocational disciplines. Miner suggests that there is an educational hierarchy in Canada consisting of (in order) university, college, apprenticeship, and career colleges. Academically capable young people are more likely to attend university in a non-vocational discipline than choose institutions lower on the hierarchy that are vocationally oriented.

This is not to suggest that non-vocational post-secondary enrollees do not develop skills. But it may be more difficult to align these skills to labour market need. And there may be an overabundance of the sort of skills valued in academia (e.g., literacy, abstract thinking) and a scarcity of skills valued in the workplace (numeracy and problem-solving

specific to the organization). As argued, formal schooling is very different from the workplace environment and may be an inappropriate setting for the development of workplace-specific employability, knowledge, and technique.

The key question is whether the Canadian system of relatively long school stays and less work experience is the best way to develop workplace skills. Even those who frame the university mission in non-vocational terms must acknowledge that universities offer many vocationally oriented programs—most notably in business, finance, engineering, and health care. Indeed, these disciplines generate the highest earnings for graduates and tend to raise the returns to education for universities overall. Post-secondary institutions have been quite innovative in developing new vocational programs targeted at emerging sectors of the economy. Indeed, it is fair to say that higher education is divided between highly vocational programs (at both the college and university levels) and non-vocational programs.

**How Do We Know That People Have Skills?**

In a recent SPSE study on the recognition of learning, we found that employers rely heavily on credentials awarded by Canadian educational institutions as evidence of skill.14 Employers do not seek to independently verify skills that they believe have already been assessed by post-secondary institutions. They simply build their recruitment systems from these educational credentials and vet candidates for other skills. From an employer perspective, it makes sense for post-secondary institutions to verify certain skills, given that they observe students over prolonged periods of time and that evaluation is a core institutional function.

PSEs assess the acquisition of knowledge and technique through testing and assignment protocols. Although some institutions have changed their curricula and pedagogy to develop employability skills, there generally is not any direct assessment of these skills. Therefore,

14 See Grant, *Brain Gain 2015*. 
a credential is not usually a testament to their existence. The difference in employability skills may partly explain earnings heterogeneity, where people with the same credentials realize different earnings based on non-credentialed skills.

Employer surveys regularly show that employers take knowledge and technical skills for granted and increasingly recruit on the basis of employability skills. Recruiters focus on finding people with a strong work ethic, people skills, and a willingness to learn. As a respondent to a Canadian Council of Chief Executives (CCCE) [now known as the Business Council of Canada] workforce survey said, “Attitude always comes first … recruits must be passionate about learning, contributing, and fitting into the company’s culture.”

Yet, employers would be unlikely to hold these views if they were not confident that recruits had already developed an acceptable level of knowledge, technique, and essential skills. A likeable person with a good attitude and who is passionate about learning is not very useful if he or she can’t perform basic tasks.

For vocationally oriented, post-secondary programs, it is fairly easy for employers to build on PSE credentials because the credential speaks directly to mastery of specific subject matter and technique. Yet many post-secondary graduates emerge from fields of study where it is more challenging to make a connection between skills development and workplace application. Employers may believe that these graduates have some essential skills (in particular, literacy skill) but the subject matter is highly unlikely to relate to the knowledge requirements of the workplace.

The challenge for PSEs is to demonstrate to employers that graduates do, in fact, possess skills that “work in their workplace.” It is not clear to what extent PSEs develop these skills. For instance, as we show in the next chapter, employers often look for critical thinking skills. Yet, in the U.S. context, Richard Arum and Josipa Roska found that an independent

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assessment of 2,300 U.S. college students showed that 45 per cent had achieved no statistically significant improvement in critical thinking skills after the first two years at college.\textsuperscript{16}

In the last 20 years, there has been a movement toward independent verification of skills through standardized testing. High-paying professions (e.g., accountants, lawyers, doctors, and dentists) have had these independent systems in place for many years. Increasingly, other occupations and industries have adopted specialized credentials that speak to specific employer needs.

Concurrently, the OECD has taken the lead on independent assessment of skills for high school students and adults through a variety of standardized tests. The tests include the Programme for International Student Assessment (PISA—a test of 15-year-olds) and the Survey of Adult Skills (SAS) under the Programme for the International Assessment of Adult Competencies (PIAAC).

These tests tend to focus on essential skills that lend themselves to standardized testing, such as numeracy, literacy, and problem-solving. The specific test questions take the form of various types of applied thinking and problem-solving.\textsuperscript{17} For instance, the numeracy test asks respondents to compute how much they would pay for running shoes that are on sale. The problem-solving test has respondents working out how to return a lamp by navigating a company website.

No doubt, these testing protocols are designed to assess competencies, but how these relate to the world of work is not at all clear. Problem-solving requires a specific context, and workplace problems are rarely solved in isolation—they involve teamwork.

The OECD data appear designed to provide insights for policy-makers as opposed to being directly used by employers. Indeed, it is unclear how employers would be able to use these data in their current form.

\textsuperscript{16} Arum and Roska, \textit{Academically Adrift}.
\textsuperscript{17} OECD, \textit{About the Survey of Adult Skills}.
In the SPSE foundation study on skills, we analyzed the SAS data to determine why Canada was merely an average performer despite high levels of educational attainment. A key factor is Canada’s reliance on internationally educated people drawn from countries where the native language differs from Canada’s two official languages. For instance, 45 per cent of Canadian foreign-born university graduates scored in the lower range for literacy skills and a similar number scored in the lower range for numeracy skills. Meanwhile, only 16 per cent of Canadian-born university graduates were in the lower range for literacy and 23 per cent were in the lower range for numeracy.

These results speak directly to employer recruiting systems and the relative value they place on international credentials versus Canadian credentials. Our work on learning recognition clearly shows that recruiting systems are built around an evidentiary pecking order, with Canadian educational credentials and work experience being more valued than international education credentials and work experience. But even though Canadian-born university graduates perform well, a fairly significant number struggle with numeracy skills. Numeracy is a foundational skill that is directly related to the ability to think logically, analyze, and problem-solve. All of these skills are valued in the workplace.

Why Mismatches?

Mismatches between available skills and labour market demands may exist for many reasons. But the core reason is that individual disciplines differ significantly in the way they are aligned to the world of work.

Although higher education institutions (particularly universities) may frame themselves in broader educational terms, the fact is that they do offer programs of study where there is excellent alignment between

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18 Munro, MacLaine, and Stuckey, Skills: Where Are We Today?
19 Grant, Brain Gain II.
curricula, pedagogy, the development of knowledge, essential skills, technique and workplace skills, the assessment of these skills, and their application.

One need only consider the case of medical practitioners, such as surgeons and dentists. There is a clear pathway from university education to post-education supervised training and mentorship, and to practice licensure and actual practice. To varying degrees, other vocationally oriented college, polytechnic, and university programs are organized the same way.

Canada has top-notch vocational programs at its colleges, polytechnics, and universities. Consider, for example, Bloomberg's recent ranking of top international (outside the U.S.) business schools.20 The ranking was based on several factors that speak directly to labour market alignment, such as the satisfaction of alumni, employer assessments of graduates, salary of graduates, and success at placing people in jobs. Western's Ivey School of Business finished first among international business schools ahead of prestigious schools such as London Business School and INSEAD. And four Canadian business schools (Western, Queen's, McGill, and U of T) finished in the top 20—a rather impressive achievement for a country of just over 35 million people.

Graduates from vocationally oriented disciplines are much more likely to work in their field and in ways that use the skills developed in higher education. They also tend to earn more because they apply their full range of skills to their jobs. A Statistics Canada study of education and high-income earners demonstrates how this alignment between university education in vocationally oriented disciplines—such as health care, business, finance, and engineering—result in very high earnings.21 (See Table 2.)
The fact is that other disciplines are not organized in a way that achieves this alignment. Knowledge acquisition may be unrelated to employer needs. There may be an absence of non-university occupational standards that would help students understand workplace competencies. There may be no opportunity to receive mentorship through apprenticeship or cooperative education. In the absence of these design elements, graduates in certain disciplines at the college, polytechnic, and university levels are at much higher risk to develop skills that are either not relevant to employers or where the fit is not immediately obvious to employers.

Employers rarely make any direct investment in skills prior to employment. Although employers do, in effect, make investment in skills via the tax system, the enrolment-based funding system for
post-secondary means that the nature of the investment is determined by students (in their program choices) and by educational institutions (through their enrolment policies and practices).

And, yet, employers still hire people from these fields because rising levels of educational attainment spoils them for choice. Employers continue to demand these credentials because they believe higher-education graduates are preferable to secondary school graduates, in that they have demonstrated an ability to learn and possess some level of dedication, work ethic, and discipline. But employers don’t have any direct financial stake in the skills that are developed. All this is not necessarily good for the employee (who may be underemployed), the employer (who may face a disgruntled/underskilled employee), or the society that has orchestrated an over-investment in some skills and on under-investment in others.

Although the employment rate for these post-secondary graduates is consequently high and they most definitely earn more than secondary school graduates, they are much less likely to work in their field and generate good returns on their investment in skills. Tal and Enenajor show that graduates in psychology, humanities, social sciences, and education have somewhere between 1 in 3 and 1 in 2 odds of earning less than the median income.22 And as we point out in an SPSE foundational study, these are the same fields that face few institutional and funding constraints to expanding enrolments, and therefore have been accounting for much of the increase in enrolments and graduates.23

When faced with job disappointment following graduation, more and more young people continue on to a second phase of post-secondary education. Miner notes that colleges now attract 15 per cent of their full-time enrolments (and up to half of part-time enrolments) from university graduates seeking marketable skills.24 Linda Franklin, the President of

22 Tal and Enenajor, Degrees of Success.
23 See the discussion in Grant, The Economic Impact of Post-Secondary Education, Chapter 4.
24 Miner, The Great Canadian Skills Mismatch, 17.
Colleges Ontario, notes that between 2009 and 2014, the number of university graduates enrolled in Ontario’s colleges increased more than 40 per cent.25

This approach of university followed by college results in a costly (for the individual, their family, and society through its financial support of post-secondary education) and elongated school-to-work transition. Given that the vast majority of students entering higher education are doing so to improve their job prospects, Canada needs to do a better job of ensuring that higher education prepares people for jobs.

**Conclusion**

Skills needs are evolving rapidly in the face of technological change and globalization. This is changing the requirements of jobs toward skills that can best be performed by people.

The post-secondary system has traditionally focused on essential skills, knowledge, and technique. Some of these programs of study are clearly aligned to jobs. The idea that higher education’s (particularly university) mission is unrelated to workplace skills doesn’t stand up to scrutiny. Some of the best employment outcomes are achieved in areas where there is excellent alignment and all levels of post-secondary offer both highly aligned programs and less aligned programs.

But many people who are enrolled in non-vocational programs may be at higher risk of mismatch simply because their skills are not developed in relationship to employer demands. This is not to suggest that they do not develop skills of interest to employers, but the learning process and the assessment of skills and credentials primarily relate to the mastery of non-vocational subject matter. There may be room for post-secondary institutions to develop a range of workplace skills without compromising curriculum and pedagogy, and to communicate skills to employers through modified transcripts.

In the next chapter, we consider evidence on employers’ skills demands.

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25 Franklin, “Can Canada Help the Unemployed.”
CHAPTER 3

Employers’ Skills Demands

Chapter Summary

- Canada has a well-developed labour market information system.

- Numerous studies point to employer disappointment in the skills of recruits.

- Higher-level educational credentials may not be a good indicator of alignment because the credentials may reflect the wrong knowledge or a lack of employability skills.

- So-called “soft” skills are the most difficult to recruit.
There are numerous sources of information on employers’ skills demands. Canada has a deep reservoir of employer surveys that have been developed and executed by research organizations like The Conference Board of Canada; employer groups like the Canadian Federation of Independent Business (CFIB) and the Canadian Council of Chief Executives (CCCE); and federally supported human resources sector councils (e.g., Canadian Automotive Repair and Service Council).

In fact, a 2010 evaluation of sector councils found that the 28 sector councils had produced around 200 market-related research reports specific to the needs of sectors. In addition, the federal government maintains a large-scale model of employment demand. The model is called the Canadian Occupational Projection System (COPS), and it produces long-range forecasts of occupational demand. In addition to these federally sponsored efforts, provinces also maintain support for provincial sector councils that produce numerous labour market studies.

It is fair to say that Canada does not lack for labour market information. But all macro analyses of the labour market face a fundamental challenge. By necessity, they must organize information into a logical and meaningful categorization, often through a deductive process employed by labour market economists. This process inevitably results in lost information, misinterpretation, and miscategorization. For instance, a common complaint is that a resource like the National Occupational Classification (which forms the basis for COPS) does not accurately describe jobs the way employers do and cannot evolve fast enough to account for new jobs.

1 Human Resources and Skills Development Canada, *Summative Evaluation.*
2 Interview with a provincial workforce development senior official by Michael Grant, October 19, 2015.
There is also a geographic aggregation issue. Labour markets are primarily local. Employer demands need skills to be applied to tasks at a specific place and time. There are hundreds of thousands of Canadian employers in thousands of Canadian communities. There are 20 million people in the Canadian labour force.\(^3\) Despite the best efforts of the federal and provincial governments, a system that captures the nuances of local employer demand has yet to be devised.

A more fundamental problem, however, is that there is little direct connection between macroeconomic labour market studies and the day-to-day functioning of Canada's labour market. The labour market functions primarily by employers communicating skills needs either indirectly (to existing employees or recruiters) or directly through job advertisements. Yet, people make their skills development decisions over time and these decisions may not be well-informed about future employer demands.

Fortunately, through so-called “big data” analytics, it is possible to understand how employers directly articulate their skills needs through job advertisements via tools like Wanted Analytics. This inductive way of understanding employer skills demands relates more directly to the functioning of the labour market. By combining deductive approaches with inductive approaches, this chapter seeks to generate insights on the evolving nature of employer skills demands.

**Conference Board of Canada Evidence**

Over the last 20 years, The Conference Board of Canada has worked with employers to design typologies to categorize skills, specifically in the areas of employability and innovation.\(^4\) Furthermore, the Conference Board regularly conducts business surveys that ask employers to inform about their skills requirements, among other things.

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\(^3\) Statistics Canada, CANSIM table 282-0002.

Some recent data from our surveys help to illustrate employers’ skills demands. For instance, we undertook two large-scale studies of skills for Ontario and British Columbia. Collectively, these provinces account for over half of Canada’s labour market. These surveys are interesting in the way they articulate employer needs. We know that employers’ need for skills relates directly to the tasks that need to be completed in order to achieve organizational performance objectives. Organizations gauge their performance against peers in a sectoral context. Tasks are grouped into work units (or divisions) and occupations. These tasks are completed at a specific place and time.

Employers frame their demand for skills against occupations and location. Most job ads are headlined by a position and a location. The detail of the ad deals with the required skill set to perform tasks. Employers ask for educational credentials and work experience as testaments to the required skills. After candidates respond to the initial ad, employers use other recruitment screening techniques to sort candidates against their company’s skills criteria.

So we can consider employer skills demands through multiple lenses—industry, geography, occupation, and credentials. For example, in our report on British Columbia skills, we found the strongest sector/occupational need in primary industries was for managers and supervisors, and across a variety of sectors for computer and information services specialists. In trades, there was a particular need for millwrights, heavy-duty equipment mechanics, and electricians. Much of the incremental demand in these occupations was outside the B.C. Lower Mainland. From a credential perspective, we found that employers demanded higher-level educational credentials, especially university degrees. (See Chart 2.)

5 See Stuckey and Munro, Skills for Success; and Stuckey and Munro, The Need to Make Skills Work.

6 Statistics Canada, CANSIM table 280-0024.
The Ontario and British Columbia surveys also asked about specific skills. Employers in Ontario and British Columbia both believed that the skills requirements of jobs were higher today than in the past and would continue to increase in the future. (See Chart 3.) From an employability and essential skills perspectives, employers in these provinces demand (in order) critical thinking and problem-solving, oral communication, literacy, and the ability to work with others.

![Chart 2: British Columbia Employer Credential Needs](chart2.png)

*Source: The Conference Board of Canada.*

![Chart 3: How Will Skill Requirements Increase in the Future?](chart3.png)

*Source: The Conference Board of Canada.*
Demands for skills exist in a demographic context—specifically, imminent baby boom retirements. In both Ontario and British Columbia, a plurality of employers says they are either concerned or very concerned about looming retirements. (See Chart 4.)

**Chart 4**
**How Concerned Are You About Retirement Over the Next 5–10 Years?**
(percentage of respondents; Ontario: n = 1,538, British Columbia: n = 854)

These data raise two issues. First, employers' credential demands may not necessarily align to their demand for skills. Between industry, occupation, and location there are literally hundreds of arrangements of knowledge, technique, and essential and employability skills. That explains why skills are often grouped in sets (as in skill set). Someone may possess a higher education credential, but not in the right subject matter to address a need. Second, if the major hiring challenge is the replacement of retirees, then it is unlikely that education alone is likely to prepare people for available jobs.

In our British Columbia skills report, we note that British Columbia has already achieved a high rate (63 per cent of the labour force) of post-secondary educational attainment. We also note that two-thirds of new
hires will be needed to replace retirees, and that there is a particular need for managers. Managers are decision-makers who typically require some working knowledge of the organization to make decisions.

So, despite the fact that employers demand higher levels of education, their real need appears to be for relevant education, combined with work experience. And if the initial education is not relevant, then the work experience is unlikely to be forthcoming.

**Other Employer Surveys**

As mentioned, there are numerous employer surveys that speak to employers' skills needs. In this section, we highlight recent employer surveys that emphasize these needs.

In 2013, the polling firm Environics surveyed 500 employers for the Canadian Education and Research Institute for Counselling (CERIC). This survey showed that employers are often disappointed in applicants' skills. For instance, 72 per cent of respondents either strongly or somewhat agreed that a skills gap exists. But, about half of those thought that the skills gap had not changed in the last five years (while 36 per cent thought it had worsened).

This survey also showed that two out of three employers said it was either very or somewhat difficult to find employees with soft skills, which in our typology is equivalent to employability skills. Chart 5 shows that 36 per cent of respondents indicated that it was important for applicants to have a positive attitude. Other soft skills include communication and teamwork skills.

The Canadian Council of Chief Executives undertook a survey of large companies that buttresses the CERIC findings on soft skills. Employers in this survey were given the opportunity to rank the various skill types they look for in entry-level hires. People and relationship skills came out

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on top. (See Chart 6.) Communication, problem-solving, and analytical skills were also ranked highly by large companies. Interestingly, respondents actually rank industry-specific knowledge and functional knowledge relatively low when compared to other skills.

Finally, consider the views of small companies, as seen in a September 2015 survey conducted by the Canadian Federation of Independent Business (CFIB). Respondents indicated that employees are the number-one factor in their business success, likely because many small employers are in service businesses where interaction with people is key. Yet, 73 per cent of respondents indicated that the work ethic of new hires had deteriorated in recent years and 68 per cent of respondents had indicated that the quality of job applicants had also deteriorated.

In The Conference Board of Canada’s employability skills typology, we emphasize that employability involves a mix of skills, attitudes, and behaviours. The CFIB survey is interesting because it focuses on behaviours that are desirable/undesirable to small and medium-sized
businesses. (See Chart 7.) In terms of desirable behaviours, employers prefer employees who empathize with customers, “go the extra mile,” and take initiative. Noted undesirable behaviours included various forms of a lack of focus and distraction: for example, texting while on the job, casual conversations with co-workers, or personal Internet use. These behaviours may seem unimportant or mundane, but they nonetheless impact workplace performance.

A researcher who worked on the CFIB study indicated that small organizations have a particular problem recruiting people with employability skills.\(^{10}\) New recruits tend to have high salary expectations, perhaps because they arrive with more formal education. They are less likely to see an entry-level job as a stepping stone to a long-term career. And, they are skeptical about the role of informal training and the idea of starting a career in a low-wage job. In fact, CFIB’s survey findings show that almost 70 per cent of small companies strongly or somewhat

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\(^{10}\) Interview with Michael Grant on September 14, 2015.
agree that it is difficult to find people to take entry-level jobs. All this relates to prospective employees' attitudes, which are part and parcel of employability skills.

Chart 7
**Observed Desirable and Undesirable Behaviours**
(percentage of respondents; n = 8,800)

Sources: The Conference Board of Canada; Gormanns.

**Employer Ads Through Wanted Analytics**

One of the challenges of survey-based approaches is that they may be divorced from actual people management practices. For example, employers may complain that recruits lack skill, but do they actually recruit for those skills and develop them in the workplace? As such, it is helpful to augment employer surveys with more direct measures of employers' actual recruitment practices.

Our ability to analyze employer demands has greatly improved in recent years through the development of information and communication technologies (ICTs). These technologies have facilitated online recruitment through sites such as Workopolis, JobBank.gc.ca, LinkedIn, and Monster. The trend toward online job postings allows for database development and mining—so-called “big data” analytics.
Wanted Analytics, a company based in Québec City, specializes in job database development and tools for database mining. At any one time, between 250,000 and 300,000 job openings are tracked by the site. The company’s tool allows us to understand how employers articulate their need for skills, credentials, and occupations.

We undertook a data run for Canada during the time period September 1, 2013–September 30, 2015, and focused on full-time permanent jobs. During this time, Canadian employers advertised over 1.6 million jobs. (See Table 3.)

### Table 3

**Employer Demands for Permanent Full-Time Jobs, September 2013–September 2015**

(number of advertisement mentions; \( n = 1,674,727 \))

<table>
<thead>
<tr>
<th>Hard Skills</th>
<th>Soft Skills</th>
<th>Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality assurance</td>
<td>Oral and written communication skills</td>
<td>High school</td>
</tr>
<tr>
<td>Bilingual French</td>
<td>Problem-solving</td>
<td>College degree</td>
</tr>
<tr>
<td>Bilingual</td>
<td>Detail-oriented</td>
<td>Bachelor’s degree</td>
</tr>
<tr>
<td>Technical support</td>
<td>Marketing</td>
<td>Master’s degree</td>
</tr>
<tr>
<td>Quality control</td>
<td>Microsoft Office</td>
<td>Doctorate degree</td>
</tr>
<tr>
<td>Structured query language</td>
<td>Critical thinking</td>
<td></td>
</tr>
<tr>
<td>Customer relationship management</td>
<td>Customer service-oriented</td>
<td></td>
</tr>
<tr>
<td>JavaScript</td>
<td>Numeracy</td>
<td></td>
</tr>
<tr>
<td>Java</td>
<td>Creativity</td>
<td></td>
</tr>
<tr>
<td>Spreadsheet software</td>
<td>Team-oriented, teamwork</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Occupations</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional occupations in natural and applied sciences</td>
<td>153,941</td>
<td></td>
</tr>
<tr>
<td>Specialized middle management occupations</td>
<td>116,592</td>
<td></td>
</tr>
<tr>
<td>Professional occupations in business and finance</td>
<td>104,359</td>
<td></td>
</tr>
<tr>
<td>Sales representatives and salespersons—wholesale and retail trade</td>
<td>99,479</td>
<td></td>
</tr>
<tr>
<td>Technical occupations related to natural and applied sciences</td>
<td>91,694</td>
<td></td>
</tr>
<tr>
<td>Administrative and financial supervisors and administrative occupations</td>
<td>90,288</td>
<td></td>
</tr>
</tbody>
</table>

(continued …)
Table 3 (cont’d)

Employer Demands for Permanent Full-Time Jobs, September 2013–September 2015
(number of advertisement mentions; n = 1,674,727)

<table>
<thead>
<tr>
<th>Occupations</th>
<th>Demand (number of mentions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service representatives and other customer and personal services occupations</td>
<td>85,789</td>
</tr>
<tr>
<td>Retail sales supervisors and specialized sales occupations</td>
<td>77,496</td>
</tr>
<tr>
<td>Service supervisors and specialized service occupations</td>
<td>73,497</td>
</tr>
<tr>
<td>Industrial, electrical, and construction trades</td>
<td>60,609</td>
</tr>
</tbody>
</table>

Source: Wanted Analytics.

A few aspects of this run are noteworthy. First, soft skills are mentioned by employers more often than hard skills. The reason is that hard skills are occupation-specific, whereas soft skills apply across many occupations. Second, the occupational demands and educational attainment demands largely agree with our Ontario and British Columbia survey findings. Employers are, in effect, looking for a range of professional and managerial positions and expect employees to possess a post-secondary credential. In fact, for full-time jobs, the demand for various types of post-secondary credentials is about 40 per cent higher than for high school credentials.

However, it is interesting to note how the need for credentials and work experience varies across occupations. (See Chart 8.) For instance, we applied control for ads that request a bachelor’s degree. The data show that only 30 per cent of the bachelor’s degree jobs are for people with less than three years’ work experience. Jobs for inexperienced, well-educated people are likely to be technical, operational, or professional jobs as opposed to managerial jobs. This supports our earlier assertion that employer demand for managers to replace retiring baby boomers is unlikely to be addressed solely through education.
Conclusion

Employers demand people with a combination of knowledge, technique, and essential and employability skills. These skill sets vary by sector, occupation, and location. In terms of knowledge, technique, and essential skills, employers increasingly require people with higher education credentials. But they also look for people with work experience, especially for managerial positions where applied problem-solving and judgment depend on workplace context and experience.

Employability (or soft) skills are in wide demand by employers and are often cited as the most difficult to recruit. In this sense, employers’ demand for higher education credentials may operate as a double-edged sword. People with higher-level credentials may be less willing to take lower-paying jobs that allow them to develop soft skills relevant to the workplace. They may feel that they have invested enough in skills through a lengthy stay in education. So, in many ways, employers’ credential demands work against their soft skill demands.

The next chapter explores aspects of skills mismatch.
CHAPTER 4

Why Skills Mismatches?

Chapter Summary

- Skills mismatches exist for numerous reasons.
- Given that skills are developed over a long period of time and employers’ demands are immediate, it may be difficult for people to know which skills to develop over time.
- Other aspects of mismatch are geographic and sectoral mismatches, such as those occurring during resource sector booms.
- The sort of critical thinking and problem-solving skills that are developed in education are fundamentally different from those that are required in the workplace.
Chapter 3 showed that employers’ skills demands are complex. Employers require competent people to perform workplace tasks at a specific place and time. They want people with so-called soft skills because work often involves serving customers and collaborating with colleagues. Employers expect people to have both post-secondary learning credentials and work experience.

The immediacy of these demands contrasts with the way that skills are developed—a gradual process through education, work, and life experience. To be sure, in some professions with a reliable track record of providing good jobs, people may choose to develop relevant workplace skills fairly early. But for many people, skills development occurs in isolation from workforce demands.

One reason is that it is difficult for people and their advisors (e.g., parents and secondary school counsellors) to forecast demand. This is especially true in Canada because many high-paying jobs are related to the highly cyclical resource sector. Students and their advisors, therefore, may choose to focus on one aspect of employer demands—namely, a higher education credential—and downplay specific knowledge, technique, and essential and employability skills.

This strategy may make sense given the risks involved in skills development. Moreover, it aligns well with the biases of the education system and society, which put a premium on educational attainment, and may also focus on core skills demands.

Much of the mismatch literature focuses on education mismatch as opposed to skills mismatch.1 Over-education has received more attention than under-education. But, in addition to these forms of mismatches,

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a large and diverse country like Canada also experiences regional imbalances that result in mismatches. In this chapter, we explore these various forms of mismatches.

**Regional Mismatches**

Canadian employment growth is strongly related to commodity prices. This results in growing employment, especially during boom periods in parts of the country that are commodity focused—namely, the Western provinces and the North. But since these provinces account for a relatively small share of the population, they must accommodate growth through interprovincial or international migration.

Between 2004 and 2014, Alberta and Saskatchewan accounted for over 31 per cent of employment growth and yet only account for 14 per cent of Canada’s population. (See Table 4.) Both provinces have, in fact,
been successful in growing their labour force. But they are likely to face ongoing challenges because their need for people exceeds their native capacity. Meanwhile, Central Canada is less likely to have an issue with a lack of people but may have other types of skills mismatches. For instance, Ontario’s share of the growth in labour force during this period was smaller than its share of the growth in employment.

This explains why Alberta and Saskatchewan communities are among the tightest labour markets. Employers in these provinces can’t be quite as choosy about a perfect skill set, as they just need people to do jobs. Wanted Analytics has developed a hiring scale index (the Hiring Scale) of labour market tightness that compares local supply with demand and allocates points between 1 and 100 (with 100 being the tightest conditions). In October 2015, the national index stood at 48 and yet many Alberta communities are much higher. Nine of the top 10 tightest local labour markets were in Alberta. (See Chart 9.) The geographic mismatch can also work within provinces. For instance, British Columbia is anticipating a building boom in liquefied natural gas (LNG) that will result in an increasing demand for thousands of skilled tradespeople. But most of the skilled labour is in the Lower Mainland, whereas many of the jobs are in the North or the interior of British Columbia.

Skills Mismatches

This report has argued that skills are developed through life in a multitude of settings. Moreover, skills acquisition is determined by personality and predilection. And, foundational essential skills are key to the ongoing development of skill sets.

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2 The Hiring Scale assigns a score between 1 and 100 based on available candidates who work in the demanded occupations (from Statistics Canada’s 2011 National Household Survey); the number of ads seeking people in these occupations; the local unemployment rate; and the pay.

3 Interview with a senior official in the British Columbia government by Michael Grant, October 20, 2015.
Consider, for example, the contrast in Canada’s performance in numeracy, science, and literacy skills. Numeracy skills form the basis for a variety of analytical occupations in trades and the professions. Mastery of numeracy is a prerequisite skill for admission into higher education in many vocationally oriented programs in computing, business and finance, and engineering. Numeracy skills are also indicative of the ability to think logically and solve problems. Similarly, science skills are key to health care and other science-based professions.

In *How Canada Performs*, we analyze Canada’s performance against a variety of skills and education metrics. Our work shows that Canadian high school students who took the OECD’s Programme for International Student Assessment (PISA) were most likely to score highly in literacy skills (where Canada achieved an A grade) than in numeracy (where Canada achieved a B) or science (where Canada achieved a C).
Ultimately, this is reflected in Canada’s performance in the percentage of post-secondary graduates in science, math, computer science, and engineering, where we again score a C.

Hence, an initial capability affects the later development of skill sets, which, in turn, determine the supply of available skills. Students pick pathways that suit their competencies. This predisposition toward certain disciplines may result in a mismatch between disciplines of study compared with workplace disciplines that are in demand. In our B.C. study, we found that this disconnect was partly behind the co-existence of high educational attainment and skills mismatches.\(^5\)

Based on Statistics Canada enrolment data, Miner estimates that as many as 700,000 post-secondary enrolments are in non-vocational disciplines. Likely, this is because these disciplines are less demanding in terms of numeracy skills.\(^6\)

Canadians who lack high-level numeracy and science skills in secondary school will avoid disciplines that develop these skills further. We see this in the aforementioned survey of first-year university students, which shows clear differences in the skills that are developed by discipline. (See Table 5.)

Yet, the same survey found that 73 per cent of respondents thought that university had developed their ability to think logically and analytically. However, only half of the sample thought that university had developed their ability to identify and solve problems.

Perhaps this helps to explain the mismatch between high levels of educational attainment and employers’ complaints of an absence of problem-solving skills. For example, in our British Columbia skills study, over 70 per cent of employers indicated that there was a lack of critical thinking and problem-solving skills—by far the greatest skills mismatch.\(^7\)

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5 Stuckey and Munro, *Skills for Success*.


7 Stuckey and Munro, *Skills for Success*, Chapter 3.
And yet, the same survey found that fewer than 20 per cent of employers thought there was a numeracy skills gap, compared with 35 per cent who felt there was a literacy skills gap.

This raises questions about the meaning of the terms numeracy, logic, analysis, critical thinking and problem-solving, and the relationships between them. Analysis and problem-solving through the use of mathematical and scientific technique is clearly not the same as analysis in the arts and humanities. And it is unclear how post-secondary approaches to problem-solving relate to “real world” problem-solving. On this point, it is interesting to note how business students rank group cooperation—a team-based approach to problem-solving—which is explicitly developed via the typical university business school group case pedagogy.

The skills of critical thinking and problem-solving are often grouped in employer surveys and yet are actually separate skills. Critical thinking may be used to solve problems, but may also be used in isolation of a problem to be solved (think of text criticism). In the labour market, problems arise every day and are solved in an organizational context. Many of these problems may be considered humdrum, certainly in relationship to the existential questions addressed at universities.

### Table 5

**Percentage of First-Year Students Responding That University Contributed Much or Very Much to Skill Development, by Discipline, 2012**

(per cent; n = 15,109)

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Analyze quantitative problems</th>
<th>Computer literacy</th>
<th>Mathematics</th>
<th>Writing</th>
<th>Group cooperation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering</td>
<td>80</td>
<td>64</td>
<td>79</td>
<td>52</td>
<td>n.a.</td>
</tr>
<tr>
<td>Physical science</td>
<td>64</td>
<td>59</td>
<td>64</td>
<td>45</td>
<td>46</td>
</tr>
<tr>
<td>Overall</td>
<td>37</td>
<td>35</td>
<td>28</td>
<td>66</td>
<td>57</td>
</tr>
<tr>
<td>Arts and humanities</td>
<td>15</td>
<td>23</td>
<td>8</td>
<td>77</td>
<td>48</td>
</tr>
<tr>
<td>Business</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>73</td>
</tr>
</tbody>
</table>

n.a. = not applicable
Source: Prairie Research Associates.
Hence, some university graduates may possess solid critical thinking skills, but not necessarily be problem-solvers. In fact, they may be disinclined to find any solution because, at university, analysis is the point. But in a business setting, excessive analysis can lead to paralysis. Businesses have a bias toward action, even with complete information.

Yet, we have also seen that employers are demanding and have difficulty finding a variety of soft or employability skills. The challenge here is that it is not at all clear how these skills are developed, through education or other influences. A shortage of employability skills may or may not be a formal education issue.

**Underemployment and Overemployment**

This analysis has implications for the use of skills in the workplace. Skills mismatches are likely to result in either underemployment or overemployment. Underemployment of skills results in unhappy employees and skill atrophy. Overemployment of skills results in poor workplace performance. For instance, our British Columbia study found that skills gaps resulted in lower quality, reduced productivity, and forgone sales opportunities.\(^8\)

Desjardins and Rubenson analyzed OECD adult skills survey data to explore the mismatch between literacy and numeracy skills and employment. (See tables 6 and 7). They juxtaposed OECD adult skill test results with survey respondents’ views of the skills demands of their jobs. This supports the idea that Canada does a better job developing literacy than numeracy skills. Canadians were more likely to be underskilled in numeracy ability and overskilled in literacy proficiency.

In 2012, the Certified General Accountants of Canada published a study of youth unemployment that suggested that underemployment of youth is a growing problem.\(^9\) The study noted that the number of young people working in low-skilled jobs had not changed much over time. Between

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8 Ibid, 34.
9 Certified General Accountants of Canada, *Youth Unemployment*. 
1990 and 2011, the percentage of workers aged 25–29 in low-skilled jobs had fallen barely over 6 percentage points, from 49.7 to 43.4 per cent. This was in spite of growing levels of educational attainment that resulted in the percentage of that cohort, who had high school or less, falling from 42.7 to 24.5 per cent.

Furthermore, the study contrasted educational attainment with actual labour market performance. It found that many people with university degrees were working in jobs that require less education. In fact, the report estimated that 24.6 per cent of all youth with a university degree, who were employed full-time and worked full year, were employed in occupations that required less than a university degree.

### Table 6
**Skills Mismatch by Age, Canada**  
(percentage of sample; n = 16,000)

<table>
<thead>
<tr>
<th>Age</th>
<th>Literacy</th>
<th>Numeracy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low skill match</td>
<td>High skill match</td>
</tr>
<tr>
<td>16–35</td>
<td>22</td>
<td>36</td>
</tr>
<tr>
<td>36–50</td>
<td>23</td>
<td>44</td>
</tr>
<tr>
<td>61–65</td>
<td>30</td>
<td>37</td>
</tr>
</tbody>
</table>

Note: Numbers may not add to 100 due to rounding.  
Source: Desjardins and Rubenson.

### Table 7
**Mismatch of Skills to Use of Skills in Jobs, Canada, 2003**  
(percentage of sample; n = 16,000)

<table>
<thead>
<tr>
<th></th>
<th>Literacy</th>
<th>Numeracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deficit</td>
<td>15</td>
<td>29</td>
</tr>
<tr>
<td>Surplus</td>
<td>22</td>
<td>16</td>
</tr>
</tbody>
</table>

Source: Desjardins and Rubenson.
A large-scale survey of Ontario university graduates also speaks to the issue of mismatch. In 2012–13, over 25,000 graduates from the class of 2010 were surveyed about their post-graduate experience. In reporting these data, the Council of Ontario Universities (COU) notes that, six months after graduation, 23.4 per cent of respondents were working full-time in fields unrelated to their discipline. This number fell to 17.5 per cent two years after graduation. And 26.4 per cent of respondents indicated that their job was “somewhat” related to their discipline. This percentage actually rose slightly to 27.2 per cent two years after graduation. Meanwhile, corresponding percentages for “closely related” were 50.1 and 55.1 per cent.

The COU puts a favourable interpretation on these data by grouping the “closely related” respondents with the “somewhat” respondents to arrive at over 80 per cent who are related to their discipline. Yet, that result depends on one’s interpretation of “somewhat.” Some of the “somewhat” respondents may be closer to the “related” while others may be closer to the “unrelated.” If we split the “somewhat” respondents between “related” and “unrelated,” we could just as easily interpret the data as 30 to 36 per cent of graduates working in areas that are substantially unrelated to their discipline.

Moreover, the COU’s data clearly demonstrate that vocational fields of study have much higher earnings and rates of employment. Two years after graduation, the average annual earnings for fine arts was $35,539, humanities was $38,696, and social science was $42,585, compared to, for instance, engineering ($61,884), computer science ($63,044), law ($70,395), and optometry ($93,571). These data confirm our earlier assertion of a wide dispersion of earnings outcomes and a relationship between alignment and earnings.

Conclusion

This chapter has explored the reasons why skills mismatches may persist. One type of mismatch is simply that employment growth is occurring away from the major population centres. This involves skilled people being willing to move to where the jobs are.

But there is also evidence of a disconnect between the educational preferences of people and the skills demands of the economy. We see this particularly in relationship to numeracy, analytical, and problem-solving skills. Canadians tend to be overskilled in literacy proficiency and underskilled in numeracy ability.

In addition, there is evidence of overeducation or, at least, inappropriate education. Many young people with post-secondary credentials are working in jobs that have not traditionally required post-secondary qualifications.

In the next chapter, the report considers changes to Canada’s school-to-work transitions system that may improve the alignment between skills and labour market need.
CHAPTER 5

Improving Alignment

Chapter Summary

- In order to improve alignment, Canada needs to combine macro labour market information systems with micro-level, big data analytics of employer skill demand.

- The curriculum and pedagogy of the post-secondary system needs to focus more on non-academic employability skills. Credentials need to speak to the wider range of skills.

- Canada needs to expand cooperative education opportunities.
There is sufficient evidence of a lack of alignment between skills development and labour market need. This should motivate Canadians to want to do something to improve the alignment. Some misalignment may be inevitable, given the fundamental temporal and spatial challenges that face all school-to-work transition systems. Yet, some disciplines and occupations have achieved a high rate of alignment and there is little reason why alignment cannot be improved for other disciplines.

This chapter explores some ideas for improving alignment. It discusses innovations to the labour market information (LMI) systems, the school-to-work transition system, employer partnerships with educators, and employer training systems.

**Labour Market Information Systems**

Labour market information is important to alignment. If people have the right information at the right time, then they should be in a position to make good decisions in a way that aligns skills development and labour market needs. The only caveat is if they do not want to achieve alignment because they believe skills should be used for purposes other than the needs of the labour market.

There are, in fact, two labour market information systems. There are federal and provincial macro labour market systems, like the Canadian Occupational Projection System (COPS) organized around the National Occupational Classification (NOC). Then there are the micro employer-based information systems that involve all the methods that employers use to communicate their need for skills, and how job candidates come forward to offer skills.
It is important to understand that these systems have different purposes and functions. Macro systems are primarily designed to forecast skills demand. Micro systems are an expression of current demand. Macro systems are really policy tools that federal and provincial policy-makers use to try to influence choices by individuals, and also the offerings of skill developers, particularly educators. Micro systems seek to link current job openings to available supply, so they are integral to the day-to-day functioning of the labour market.

Macro systems tend to be organized around educational attainment and occupations. They do not directly address skills but tend to equate educational attainment to skill. These systems essentially observe the educational attainment profile of occupations and then assume that future demands will require similar levels of educational attainment. But this approach is rather circular. If educational attainment is rising for reasons not connected to labour market performance, then we may observe higher levels of attainment in certain jobs. But this may not actually reflect the actual skills requirements of jobs.

Models like COPS work best for occupations where skills development is already well-aligned to labour market needs. Models like COPS work best for occupations where skills development is already well-aligned to labour market needs, due to a variety of institutional, human, and employment factors. We have seen, for instance, that some professions have created systems for aligning post-secondary education to employers’ need for knowledge and technique. These professions often implement supplementary measures to ensure that graduates develop applied skills, obtain licences to practise, and work experience. In this case, educational attainment is, indeed, a good indicator of actual skill.

COPS is useful for these kinds of occupations because labour demand, retirements, and entrants are fairly predictable. A problem arises, however, if there are structural changes in skills demand in areas where institutional mechanisms are underdeveloped. It becomes much more difficult to forecast demand and to equate educational attainment to skill because there is, by definition, a lack of alignment.
A criticism of micro systems is that they merely reflect current demand for skills and, therefore, may not be reliable guides for individuals and educators on future employer demands. But micro systems have numerous advantages over macro systems because they are the most accurate expression of actual employer need. The needs are expressed directly and do not have to be interpreted or filtered by labour market economists. Moreover, there is little issue with survey confidentiality, because employers advertise their needs and generally attach their name to their ads. We have shown that employers do, in fact, express a range of knowledge, technique, and essential and employability skills in their ads. Therefore, there is no need to use educational attainment as the sole proxy for skills.

Today, the macro systems operate largely independently of micro systems. For instance, consider the 2009 report of the federal Advisory Panel on Labour Market Information. The Panel’s report bespeaks a macro perspective of LMI. For instance, the Panel expressed concern that Canada was unable to report on 73 per cent of the data points covered by the OECD’s Education at a Glance report. The Panel suggested that Canada strive for more labour force data granularity, especially in terms of so-called small area data.

It is not clear how the Panel’s suggestions for enhancements to Statistics Canada’s Labour Force Survey will actually improve alignment, except for a subgroup of labour market participants who are candidates for activist labour market policies. Employers do not tend to use labour force data except, perhaps, when they are organized into sector councils. And the Panel’s call for greater granularity is likely to run up against survey confidentiality. The sampling frame may be more granular, but the reporting will still be aggregated.

The Panel’s report did, in fact, note that there was an absence of data on required skills, which is what is really needed to create alignment. But these data are already available via employer ads and therefore can be harvested through big data analytics without recourse to further research.

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1 See Advisory Panel on Labour Market Information, Working Together.
cumbersome employer surveys. As these databases develop over time, it will be possible to distinguish between short-term demand fluctuations and core skill needs.

**School-to-Work Transition**

Improvements to the LMI system will not improve alignment unless individuals, employers, and institutions use the information to create better alignment. That is about improving Canada’s school-to-work transition systems.

One example of the way government policy can use LMI to inform policy is British Columbia’s Skills for Jobs Blueprint. This sort of policy is especially effective when a province controls major policy changes that facilitate increased demand for skills. For example, the B.C. government has implemented a policy regime to support the development of the province’s liquefied natural gas (LNG) industry. Since the province plays a key role in the LNG project application and approval process, it in the position to align its post-secondary policies to the need for skilled trades. The government uses specialized data providers to forecast demand and works with the college system to increase supply.

A provincial government interviewee suggested that it was generally easier to motivate a college to adapt its curriculum and pedagogy to anticipated increases in demand than it was to get a university to do so. One reason is that higher education ministries are more directly involved in the governance of colleges and generally are more inclined to evolve their offerings to short- to medium-term demand fluctuations.

This may explain why governments focus much of their alignment attentions on the college system, which they increasingly look to in order to shorten the aforementioned elongated school-to-work transition. Provinces are increasingly encouraging the development of applied degrees and/or degree-granting colleges. The idea is to provide students

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3 Interview with Michael Grant, October 20, 2015.
One innovation that may improve the school-to-work transition relates to integrative learning.

with a broad education while developing job-ready skills. There has also been a trend toward having clearly defined learning outcomes for courses and to relate these to competencies (or skills). Yet, this approach is far from uniformly applied across the PSE system, and testing protocols and credentials rarely confirm the presence of skills.

Another innovation that may improve the school-to-work transition relates to integrative learning. The idea behind integrative learning is for the student to connect all the sources of learning (both academic and non-academic) to understand and express the full range of developed competencies.4

The idea of an ePortfolio has emerged from the integrative learning approach. Not only does an ePortfolio allow the student to reflect on the many sources of competency development, but it also facilitates the communication of competencies to prospective employers. Although some post-secondary institutions are starting to experiment with student ePortfolios, students can effectively put together their own ePortfolios through commercial sites like LinkedIn.

Clearly, in some disciplines, there is little need for these enhanced ways to communicate skills because good educational attainment–labour market alignment already exists. But these mechanisms may be helpful for improving alignment for those disciplines where alignment is weak.

On this point, some post-secondary institutions have experimented with modified transcripts that attempt to communicate a range of workplace skills. For instance, the University of Northern Arizona (UNA) now provides proficiency scores for skills as an adjunct to traditional degrees. As Fred Hurst, UNA’s Senior Vice-President of Extended Campuses, put it: “If you think about it, if somebody takes three history courses, an employer really doesn’t know what that means … but what the employer really wants to know is how the person’s skills will work in the employer’s workplace.”5

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4 See University of Waterloo Centre for Teaching Excellence, Integrative Learning.
5 KJZZ, Northern Arizona to Offer New Transcript.
Partnerships Between Employers and Educators

We have noted that alignment may be achieved when institutional arrangements are made that directly connect the post-secondary education to either the employers or the occupational standard bodies. So one approach to improving alignment is simply to develop these institutional links where they are currently lacking.

One approach that is used in the college and polytechnic sector is via Program Advisory Committees (PACs). PACs are mandated in Ontario through the Ontario Colleges of Applied Arts and Technology Act (2002). The Act requires that program advisory committees be set up for colleges’ programs of instruction. The PAC’s role is to ensure that college curricula and pedagogy are designed in a way to address the needs of employers and the broader community.

Although these kinds of partnership are useful, employers can make a significant contribution to alignment by simply offering to integrate work experience into course curricula through various forms of cooperative education, internships, and apprenticeships.

Internships and co-ops were cited by 70 per cent of large business respondents to the aforementioned Canadian Council of Chief Executives survey. (See Chart 10.) These cooperative arrangements may be easier to arrange with larger companies. For instance, our survey of B.C. employers, which included small and medium-sized companies, showed that less than half used co-op placements (47 per cent), mentoring (40 per cent), and apprenticeships (32 per cent). Yet our data show that interest in these sorts of partnerships are often much higher than the existing usage. (See Chart 11.)
That is good news for those PSE institutions that have embraced so-called work-integrated learning. For instance, George Brown College in Toronto has set a strategic objective to have work-integrated learning incorporated into all of its programs by 2020.⁶

⁶ Interview with a senior executive of George Brown College by Michael Grant on October 27, 2015.
Expansion in these partnerships will involve dealing with various barriers to partnerships. More than half of our British Columbia sample indicated that they did not have good opportunities to communicate their skills needs to PSE institutions.

Respondents also indicated that time constraints and administrative red tape were barriers to these arrangements. Dealing with these barriers will be important, especially given that cooperative education/internships are seen as a “high impact” approach to learning and skills development. Moreover, such partnerships deal with a fundamental weakness in the Canadian approach to skills development, namely a lack of workplace context for the development of an applied skill, such as problem-solving.

Fortunately, educators and employers both understand the importance of improving these partnerships. For instance, the CCCE’s Job and Skills for the 21st Century initiative is an attempt to bring together leading companies with educators to determine the best way to create more experiential learning opportunities for Canadian youth.

**Employer Training Systems**

Canada is often cited as being weak in employee training. In 2008, about 31 per cent of adult Canadians aged 25–64 received some form of non-formal job-related education. Notably, this is above the OECD average of 28 per cent and higher than comparator countries such as Ireland, Australia, and France, and only slightly behind the United States. Yet, Northern European and Nordic countries have substantially higher rates of adult participation in non-formal job-related education.

There are fundamental challenges in relying on non-formal job-related training to develop skills. Employers may want to invest in their people but are fearful that these investments will be lost through employee turnover. Interestingly, 82 per cent of respondents in the Environics survey indicated that they were either very or somewhat willing to

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7 The Conference Board of Canada, How Canada Performs, Adult Participation in Education.
conduct training. Yet, 64 per cent indicated that they were very or somewhat concerned about losing the employees whom they had trained. (See Chart 12.)

**Chart 12**

**Concern of Losing Trained Employees**

(percentage of respondents; n = 500)

A representative of a national business organization remarked that although employers do want to put more money into training and development, a lack of employee loyalty made this a challenging investment for many, particularly small organizations. During economic upturns, there is a tendency for employees to be poached, meaning that the employer would not receive adequate return from training investments.

Employers deal with risk by focusing training on employees who are likely to stay with them. This tends to be experienced employees in challenging jobs. Desjardins and Rubenson found that the skill content of jobs is a stronger determinant of participation in employer-supported adult education/training than in educational attainment or literacy.

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8 Environics, *Career Development*.

9 Interview with Michael Grant, October 5, 2015.
proficiency. 10 They suggest that employers are the single most important source of financing of adult education/training. Therefore, employers have a major impact in determining who receives adult education/training and who does not. But employers may simply be investing more on the highly skilled as opposed to filling in skills gaps.

Northern European training systems use an industry approach because they understand that the inter-industry turnover of people is much lower than the inter-firm turnover. Hence, employers join together to ensure a good supply of recruits with industry-specific skills. Employers, meanwhile, focus their training systems on firm-specific competitiveness factors. They are more likely to invest in these because the industry has cooperated to develop the industry-specific knowledge and experience so that employers have a foundational skills base upon which to build firm-specific skills.

There are good examples in Canada where employers have cooperated in this way and achieved good results. For instance, the Insurance Institute of Canada offers the property and casualty (P&C) insurance business a Chartered Insurance Professional (CIP) program that develops industry-specific knowledge. 11 Conference Board research on the CIP found that even other university commerce and business programs offer students very little content on the theory and practice of P&C insurance. In addition, the industry is organized around hundreds of small insurance brokers who simply are not well-equipped to provide foundational industry training. Thus, the CIP program plays a valuable role. Employers will support employees to take this industry training based on their commitment to the industry.

But one should not necessarily expect transformational change via the employer training system. Canadian business, and for that matter culture, is notoriously small-C conservative and financially repressed. This is at the core of Canada’s innovation challenge.

10 Desjardins and Rubenson, An Analysis of Skills Mismatch.
To illustrate, The Conference Board of Canada’s 2014 Centre for Business Innovation survey found that Canadian businesses say they do not have enough resources to fund innovation. But, more importantly, in the current report’s context, is the finding that employers’ scoring of their employees’ innovation skills actually exceeds their scores for the importance of these skills to their business. (See Chart 13.)

Chart 13
Innovation Capabilities Outrank Their Importance to Business
(scale of 1 to 5; n = 1,102)

Risk assessment/risk-taking
Implementation
Relationship–building/communication
Creativity/problem-solving/continuous improvement

Source: The Conference Board of Canada.

That raises the question as to whether the misalignment problem, at least pertaining to innovation, is a lack of skills or a lack of employer capacity to use the skills. A cultural change in business is unlikely to be engineered by the incumbents. Hence, the current policy debate around the use of post-secondary school to develop entrepreneurial skills is to hopefully engender a new class of business people. But enterprise requires even more real world trial and error than salaried employment.

Employers can indeed do more to ensure alignment between their needs and the skills of employees. Too many employers expect educators to compensate for their lack of an organized approach to workplace skills development or their lack of innovative zeal. But education can only go

12 See Grant, Approaches to Innovation Management.
so far in developing workplace and entrepreneurial skills. If Canada had more innovative and forward-looking businesses, then workplace training systems would indeed develop a full range of skills.

**Conclusion**

Canada can do better to align skills development with labour market needs. One approach is to continue to innovate within Canada, based on well-established systems that are successful. Another approach is to adopt practices that work in other countries, such as the Northern Europe approach to training.

Innovation is likely to be facilitated through modern information and communication technologies (ICT). These technologies make it much easier to directly analyze the skills demands of employers through “big data” analytics. LinkedIn and ePortfolios allow students to articulate their skill sets. Such data systems would be improved if educators could adopt learning outcome-based course curricula and skills-based assessments.

Partnerships are only as effective as the partners. More PSEs have to be willing to hear the needs of Canadian employers. But the employers themselves need to be more innovative in order to create a workplace platform for the ongoing development of skills.
CHAPTER 6
The Way Ahead

Chapter Summary

- This chapter summarizes suggestions to improve alignment between skills development and labour market needs.

- Labour market information systems need to get the best of macro- and micro-level systems.

- Improved alignment would allow Canada to shorten the school-to-work transition process.

- PSEs and employers need to enhance partnerships to improve alignment.

- The quality of employers needs to improve in order to make use of the full range of skills that are developed in PSEs.
The Conference Board of Canada’s Centre for Skills and Post-Secondary Education (SPSE) is closely examining Canada’s skills development system, particularly as it relates to PSEs. The SPSE brings together public and private sector stakeholders to develop a national PSE strategy. Research reports, like this one, are an input into this national strategy.

As the national strategy is action-oriented, each SPSE research study suggests specific actions that flow from the analysis. Based on this report’s analysis, the following recommendations are made for consideration in the national strategy.

**Improve Labour Market Information Systems**

Currently, Canada’s labour market information systems are divided into a macro and micro system. The macro system is too large-scale to be of much use to individual employers and the micro system is too focused on today’s demand to influence the skills development system.

Yet, as employers articulate their skills requirements through online advertising, it is now possible to marry the macro and micro Labour Market Information (LMI) systems. Innovations in “big data” analytics allow us to directly observe employers’ skills demands. And as these data are developed over time, it will be possible to discern trends and to develop forecasts of labour market demands based on employers’ actual demands.

A job, ad-based LMI has numerous advantages over macro LMIs. First, it is based on employers’ actual demands as opposed to employers’ survey responses about their demands. Second, there is little need to treat educational attainment as a proxy for skill, because an employer’s ads articulate the full range of knowledge, technique, essential skills,
and employability skills. Third, analyzing employers’ demands allows supplementary employer surveys to focus on filling in real data gaps and waste less employer time in a search for granularity.

Stakeholders from the private and public sectors who now work in parallel to develop LMI systems need to work together to leverage “big data” for a better understanding of labour market skills requirements.

Moreover, LMI has to be understood in a much broader context than employer demand. The way job applicants express their skills to employers is, in effect, part of the LMI system. In some disciplines, an educational credential is sufficient evidence of skills because there is already good alignment. But other disciplines that lack this alignment need to find ways to make the connection between their curriculum, pedagogy, skills assessments, credentials, and the methods for communicating skills to employers. And the LMI system also has to accommodate those with entrepreneurial skills, which may not necessarily align to current employer demands but that may need to be supported through business creation policy.

These measures are necessary, but insufficient. This is because an improvement in LMI systems alone will not improve alignment unless parents, career counsellors, educators, and employers make better use of LMI data to make decisions.

**Shorten the School-to-Work Transition and Improve Alignment**

Canada’s elongated school-to-work transition system is largely a historical artifact. Four-year degree programs were initially developed for a relatively small group of academically inclined youth. Over time, the standard four-year degree program became a feature of the post-secondary regulatory regime.

The so-called “massification” of higher education has resulted in growing enrolments and a much larger percentage of enrollees who look to higher education as a path to a good job. Yet, many graduates struggle
in the labour market, which results in a growing number of university graduates needing supplementary training in colleges and polytechnics after completing their four-year degree.

Stakeholders need to work together to find ways to shorten the school-to-work transition process and improve alignment. This will likely involve changes in degree programs and institutions. Certainly those students who are academically accomplished should continue to be offered the four-year degree, often followed by post-graduate work. But post-secondary students need to be provided other degree options that allow them to develop workplace skills while pursuing a degree.

**Enhance Employers’ Partnerships With PSEs**

This report has demonstrated an employer appetite for enhanced partnerships with Canada’s PSEs. Employers are best placed to address a major gap in the skills development system—namely, the workplace context. PSE institutions simply are not well-positioned to simulate the real world of work. They need to work with employers to design cooperatives, internships, and apprenticeships that help develop employability skills in a work setting.

There are some barriers to the development of these partnerships, specifically the administrative burden associated with their management. This burden is likely to be especially onerous for small businesses because standardized approaches to administration effectively act as a sort of fixed cost for participants. Larger organizations can spread these costs out over more participants.

PSEs should explore ways to lighten the administrative burden while maintaining the educational integrity of these programs. And occupations associations and small businesses (especially sector-based organizations) should work with PSEs to explore ways to leverage association-level economies of scale to reduce costs to individual small businesses.
Develop Today’s Employer

Canadian employers have to take their share of the blame for a lack of alignment. For too long, employers have operated at arm’s length from the skills development system. They make increasing demands for higher learning credentials and yet express disappointment when people lack specific workplace skills. Jobs that used to require no more than a secondary school diploma now require a PSE certificate or diploma, even though it is not clear whether the skills requirements of these jobs have changed sufficiently to justify a further two or three years of schooling.

Employers have to realize that their demands for higher credentials are behind the over-credentialed workforce, which is resulting in significant underemployment. It is leading to the development of a workforce that is heavily educated but with little work experience. It is reducing youths’ willingness to accept relatively low-paying entry-level jobs and to develop skills in the workplace.

Employers need to rethink their credentials demands and the way they onboard people. If they expect the PSE system to be based on a learning outcomes/competency development system, then they too have to be clear on which competencies are required and how this relates to the many ways that skills are developed—including education, life experience, and work. Employers need to work with PSEs to develop competency-based curricula that relate to specific jobs.

Canada’s workplace training performance is, at best, average. Canadian employers need to organize themselves better to offer industry-specific training that builds on PSE knowledge and essential skills. Industry training would effectively reduce individual employer’s training investment risks because inter-industry turnover is lower than inter-firm turnover. There is no reason why Canada cannot perform as well as Nordic countries in workplace training.
Large companies have to take the leadership in filling in skills gaps as they become apparent. For instance, Google recently collaborated with the computer programming school General Assembly to design a 12-week “boot camp” course to address a shortage of Android operating system programmers.\(^1\) Google co-designed the curriculum, pedagogy, and approach to graduate placement. The program is targeted at people with no previous experience in technology. This is the sort of rapid-response skills alignment that Canada needs.

**Align Skills With Canada’s Need for Innovative Employers**

Innovation requires a unique skill set. Innovators are often distinguished by unique personality traits and life experiences. Our academic system of evaluation does not currently gauge these innovation skills and does very little to nurture them. To be sure, many PSEs have introduced entrepreneurship programs. And yet our work on innovation management shows that successful entrepreneurs often develop their skills from a very early age, in a mentorship setting.\(^2\)

Innovation and entrepreneurship skills need to be identified earlier. They need to be developed, often outside of the education system. The alignment here is less about current labour market needs but alignment to Canada’s need for future innovative businesses. A growing number of innovative businesses will improve workplace experiential learning and the development of innovation skills.

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\(^1\) Grant, "Google and General Assembly Launch Developer Boot Camp."

APPENDIX A

Bibliography


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