

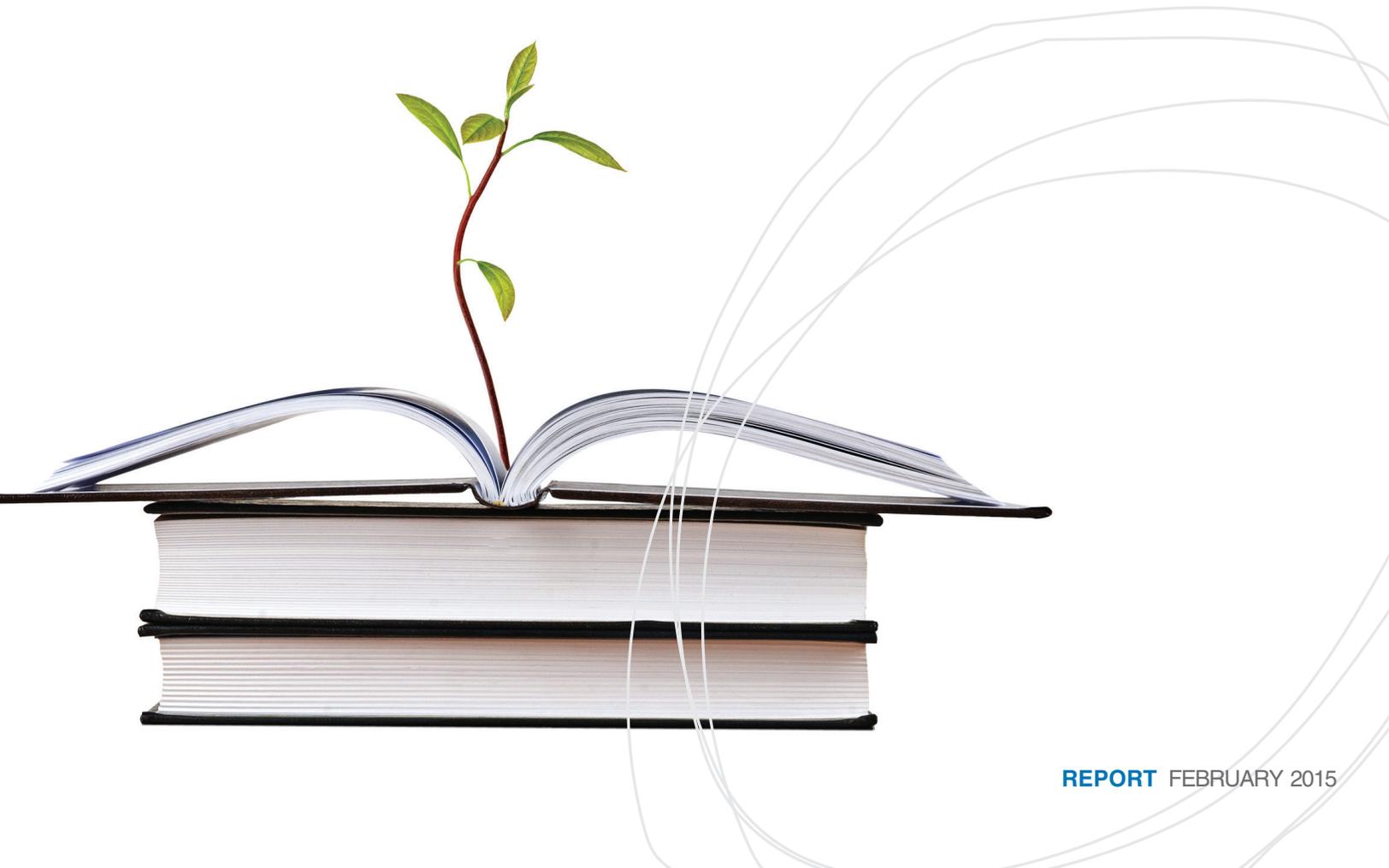


The Conference Board
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Skills for Success.

Developing Skills for a Prosperous B.C.



REPORT FEBRUARY 2015

Skills for Success: Developing Skills for a Prosperous B.C.

James Stuckey and Daniel Munro

Preface

Skills gaps cost the British Columbia economy up to \$4.7 billion in foregone GDP and \$616 million in provincial tax revenues, annually. To address the issue, the Conference Board recently conducted a survey of 854 B.C. employers to find out which skills, occupations, and credentials employers require to meet current and future needs. The results shed light on the skills needs and issues facing B.C., including the factors shaping skills supply and demand; the economic impacts associated with skills shortages and mismatches; and the occupations, credentials, and skills that employers need to meet their workforce needs. This report also proposes 10 recommendations for stakeholders (employers, educators, governments and individuals) on how to address skills challenges.

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EXECUTIVE SUMMARY

Skills for Success: Developing Skills for a Prosperous B.C.

At a Glance

- The Conference Board of Canada estimates that skills gaps cost the British Columbia economy up to \$4.7 billion in foregone GDP and \$616 million in provincial tax revenues—annually.
- The Conference Board conducted a survey of 854 B.C. employers—covering over 130,000 employees or 9 per cent of British Columbia’s employees—to find out which skills, occupations, and credentials employers require to meet current and future needs.
- There is much that employers, educators, government, and students can do to address skills gaps and mismatches, and prepare British Columbia to seize new opportunities and achieve its economic potential.

Skills to Support British Columbia's Bright Future

British Columbia has bright economic prospects on its horizon, including growth as a global trade hub, the emergence and development of new knowledge-based industries, and major infrastructure and resource project developments. But there is rising concern among leaders in business, government and education that the province will not have enough people with the right education and skills to seize and support these opportunities. The Conference Board of Canada estimates that skills deficits already cost the province up to \$4.7 billion in foregone GDP and \$616 million in provincial tax revenues, annually—a result of too many British Columbians not obtaining adequate levels of education to find employment in today's economy.

Finding people with the right skills, or developing those skills through education and training, is urgent as B.C. pursues major development projects, especially liquefied natural gas (LNG) opportunities. Failure to meet the skills and labour requirements in this sector could jeopardize the province's ambition to become one of the world's top LNG producers and exporters. Concerns about skills gaps and mismatches are also emerging in B.C.'s service-based industries, which make up three-quarters of the provincial economy, as well as in its goods-producing industries. For B.C. to sustain its economy, pursue new opportunities, and achieve its full economic potential, not only will it require an educated and highly skilled workforce to meet near- to medium-term needs, but also one that has the ability to adapt to changing economic and social circumstances and opportunities.

B.C. is losing out on opportunities due to skills *mismatches*. Although 63 per cent of British Columbians have a post-secondary education credential of some kind, too few are employed in occupations that make full use of their education and skills. In some cases, individuals have been educated in fields for which there is low market demand. In other cases, individuals work for employers who are unsure about how to engage the full range and extent of their employees' skills. Together, these skills mismatches cost B.C.'s economy up to \$1.3 billion in foregone GDP and \$169 million in provincial tax revenues annually.

Many are worried that neither the current workforce, nor those who are about to enter the labour market, has the skills and experience needed to support the level of growth and prosperity that B.C. could achieve. While concern is high, not enough is known about the costs of British Columbia's skills gaps and mismatches; the exact skills, occupations, and educational credentials employers need in the workforce; nor what actions employers, governments, educational institutions, and individuals can take to ensure that B.C. has the highly educated and skilled workforce it needs.

Advancing the Skills Discussion

Leaders in education, business, and policy, as well as students and workers, need better information on British Columbia's skills needs and issues, and what can be done to address them. To fill the information gap, the Conference Board undertook a major study of skills challenges in B.C.—drawing on a variety of perspectives and methods, including:

- Original economic analysis undertaken by the Conference Board found that skills deficits and mismatches (where employees' skills are underutilized) cost the province billions in foregone GDP and millions in foregone tax revenues.
- A survey designed and conducted by the Conference Board of 854 B.C. employers—covering over 130,000 employees, or nearly 9 per cent of total provincial employment—in various sectors of the provincial economy. The survey fills in knowledge gaps about the occupations,

post-secondary credentials, and skills required by a large number of B.C. employers. Together, these components have a significant employment footprint in the province.

- Nearly 30 interviews with B.C. employers and skills and labour market experts. They provided insights into British Columbia's skills issues, strategies to address gaps and mismatches, and ideas about the resources and kinds of coordination needed to ensure success.

Key Findings

This report sheds light on the skills needs and issues facing B.C., including the factors shaping skills supply and demand; the economic impacts associated with skills shortages and mismatches; the occupations, credentials, and skills that employers need to meet their workforce needs; and strategies that employers, educators, governments, and individuals can pursue to develop the workforce B.C. requires. In particular, the report reveals the following:

Skills Gaps and Mismatches Have High Economic Costs

- Between 1990 and 2013, the employment rate for individuals with less than a post-secondary education dropped 5.3 percentage points. If more people in this cohort of potential workers attained the higher education and skills necessary for employment in today's economy, the contribution to GDP could amount to as much as \$4.7 billion annually. An additional \$775 million in federal tax revenues and \$616 million in provincial tax revenues could also be achieved annually.
- The cost of skills mismatches, in the form of the underutilization of skills, is also high. The Conference Board estimates that if individuals who are currently underemployed—either because they are discouraged from looking for work, or because they can find only part-time work—were to find full-time work that matches their level of education, B.C. could achieve an additional \$1.3 billion in GDP. As well, the province could garner \$212 million in federal tax revenues, and \$169 million in provincial tax revenues, annually.

The Occupations, Credentials, and Skills Employers Need

Results from the Conference Board's BC Employer Skills Survey show that B.C. employers expect to have the greatest difficulty finding employees in business, finance, and administration (35 per cent); trades, transport, equipment operators, and related occupations (30 per cent); and sales and service occupations (23 per cent). Across all occupational categories, B.C. employers are especially motivated to find managers and supervisors. This reflects concerns about an emerging "experience gap" as managers and other workers retire over the next five to ten years. Notably, while tradespeople for LNG and other opportunities are a key need, B.C. employers are looking for a wide range of skilled, and adaptable, workers.

In terms of post-secondary education credentials, B.C. employers' greatest needs are for employees with university degrees (57 per cent); college diplomas (44 per cent) and certificates (41 per cent); and applied degrees (24 per cent). They are most interested in graduates of business and management programs (42 to 66 per cent, depending on credential type); computer and information sciences (28 to 44 per cent); communications (23 to 39 per cent); and engineering and electronics (22 to 35 per cent).

More than one-third (35 per cent) of employers surveyed are looking for candidates with trades qualifications and credentials. Millwrights (32 per cent), heavy-duty equipment mechanics (30 per cent), welders (28 per cent), and industrial electricians (26 per cent) rank as the top four trades in demand.

B.C. employers are also concerned about deficits in the essential skills of recent graduates and job candidates, with many identifying troubling weaknesses in critical thinking and problem-solving (73 per cent); oral communication (38 per cent); literacy (36 per cent); and working with others (33 per cent).

Strategies to Address Skills Shortages

B.C. employers who completed the survey say they make use of a wide range of strategies to attract and develop workers. The strategies include supporting in-house training and development (76 per cent); developing flexible workplace environments (49 per cent); hiring from out of province (45 per cent); and increasing wages, compensation, or benefits (45 per cent).

B.C. employer survey respondents also participate in a variety of experiential learning initiatives to provide students with applied learning opportunities—including co-op placements (47 per cent), mentoring (40 per cent), and apprenticeships (32 per cent).

Although skills challenges can be better addressed through collaboration and cooperation between B.C. employers and post-secondary education (PSE) institutions, more than half of the surveyed employers reported that they did not have good opportunities to communicate their skills needs and issues to PSE institutions.

Taking Action: A Skills Strategy for Sustainable Success

B.C. is at a turning point in how it develops the education and skills of its citizens to prepare them for success—both in the short term and throughout their careers and lives. Concerted effort is required of all of B.C.'s skills stakeholders—in particular, employers, educators, governments, and individuals—if the province is to maximize its economic prosperity and social well-being. Fortunately, there are signs that stakeholders are taking the province's skills challenges seriously, and making efforts to overcome them. There is much more that can be done, however, to position the province for sustained, long-term success. Stakeholders should take strategic action in a variety of areas to ensure that the province has a skills development system able to respond to the province's current and future skills needs and issues. (See "Securing Skills for Success.")

Securing Skills for Success—10 Recommendations for B.C. Stakeholders

Governments

1. Increase investment in education and training to better address labour market needs.
2. Support broad-based education and essential skills development to foster a flexible and dynamic workforce and society.
3. Provide greater resources for experiential learning partnerships between PSE institutions and employers to facilitate a better fit between skills development and employers' needs.

Educators

4. Improve opportunities for cooperation and communication with employers to ensure skills needs are being heard and addressed.
5. Make adjustments to programs and curricula to reflect the current and future realities of the labour market.
6. Collect and communicate, to current and prospective students, information regarding employment, and income prospects for graduates of specific programs and disciplines to allow for informed decision-making.

Employers

7. Increase investments in employee training and development to ensure that employees' full skills potential and contribution to the organization can be realized.
8. Increase experiential learning opportunities for PSE students to help prepare the future workforce.

Individuals

9. Be attentive to labour market trends and become active participants in education and training to ensure that one's skills development aligns with labour market realities.
10. Act on opportunities to gain experience in order to be more attractive to employers facing "experience gaps."

Source: The Conference Board of Canada.

CHAPTER 1

Introduction

Chapter Summary

- The Conference Board of Canada estimates that skills gaps cost the British Columbia economy up to \$4.7 billion in foregone GDP—as well as \$616 million in provincial tax revenues—annually.
- The Conference Board conducted a survey of 854 B.C. employers—covering over 130,000 workers or 9 per cent of B.C.’s employees—to find out which skills, occupations, and credentials employers require to meet current and future needs.
- The report sheds light on the economic costs of British Columbia’s skills gaps and mismatches; identifies the occupations, credentials, and essential skills needed to address them; and recommends additional actions that can be taken to address skills gaps and mismatches.

British Columbia enjoys a high level of prosperity owing to its educated workforce and dynamic industries. Looking ahead, the prospects are bright for greater success, as the province prepares to build on existing economic strengths and develop new ones. These include new and emerging knowledge-driven industries, growth as a global trade hub, and major infrastructure and resource developments, such as the LNG projects that are anticipated in the Northern regions of the province.¹

For the province to seize these opportunities and achieve its full economic potential, however, it will need a well-educated and highly skilled workforce. Many are worried that neither the current workforce, nor those who are about to enter the labour market, have the skills and experience needed to support the level of growth and prosperity that the provinces' businesses and economy have the potential to achieve. Addressing these skills challenges represents one of British Columbia's most pressing issues in the years ahead.²

The Changing Shape of Skills Needs in B.C.

Concern about possible skills shortages in B.C. has intensified in recent years as prospects for major project developments, such as LNG, have emerged. British Columbia's Natural Gas Workforce Strategy Committee, for example, estimates that if 5 of the 12 proposed LNG projects move

- 1 BC Ministry of Jobs, Tourism and Skills Training, *BC Major Projects Inventory*.
- 2 Concern about skills shortages is growing among policy-makers and politicians. The Honourable Ida Chong, Minister of Regional Economic and Skills Development, notes that "... over the next decade, British Columbia will be faced with one of its largest economic challenges—i.e., ensuring we have enough workers, with the right skills, in every region of the province to maximize British Columbia's economic potential." BC Ministry of Regional Economic and Skills Development, *Skills for Growth: British Columbia's Labour Market Strategy to 2020*.

forward, approximately 63,000 jobs will be created in construction (over half of them in trades occupations) and another 64,000 for ongoing operation and maintenance.³ The economic potential of these developments is significant. B.C. could become one of the world's top LNG producers and exporters if the right investments in these projects are made.⁴

Still, it is important to recognize that LNG developments—as significant as they are—will constitute only a small part of the province's overall economy. Service-based industries, which make up three-quarters of the provincial economy, as well as goods-producing industries in a variety of sectors, will continue to be dominant employers.⁵ As such, the skills needs of these industries—and the economy and society as a whole—are central to discussion and planning.

For employers across the economy, industrial and technological changes are raising the skills and knowledge bar for employees and workplaces. About 75 per cent of employers who responded to the Conference Board's BC Employer Skills Survey say that skills requirements in their workplaces have increased to a moderate or significant extent over the *past* five to ten years. And, the same proportion anticipates that skills requirements will increase over the *next* five to ten years. Reflecting this, some analysts estimate that B.C. may need 78 per cent of its population to have post-secondary education or training to meet the needs of its increasingly knowledge-intensive economy⁶—an increase from the 63 per cent of British Columbians who currently have a PSE credential.⁷

In addition to changes in economic conditions and technology, demographics are shaping B.C.'s labour and skills needs. Labour force growth will not be enough to meet the number of projected job openings,

3 Petroleum Human Resources Council of Canada, *Natural Gas Workforce Strategy and Action Plan*, 6–7.

4 Burt, *B.C. Must Act Quickly to Profit From LNG Exports*.

5 BC Ministry of Regional Economic and Skills Development, *Skills for Growth*, 4.

6 WorkBC, *British Columbia Labour Market Outlook 2010–2020*.

7 Statistics Canada, *Education Indicators in Canada*, 85.

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owing largely to weak natural population growth (the slowest of any province west of Quebec) and a rapidly aging workforce.⁸ As such, the number of job openings is projected to outstrip the number of available workers as early as 2016.⁹ As older employees retire, an “experience gap”¹⁰ is emerging—including, in many cases, the loss of critical managerial and supervisory capacity. In fact, employers who responded to the Conference Board’s BC Employer Skills Survey report that over the next 5 to 10 years, their greatest need will be for qualified people to fill business and management-related occupations.

Another challenge is posed by economic uncertainty. We simply do not know, in many cases, just what will be the specific requirements of future industries and workplaces. Given the pace of economic and social change, new types of businesses—new occupations and tasks for which different skill sets are required—are sure to emerge. In that case, B.C. will need people who are able to learn and adapt to new job opportunities, innovate, and build businesses that can power future economic growth. This means that not only will B.C. need to address its current and near horizon skills needs, it will also need to think about how students and employees can develop the skills that will allow them to adapt to changing conditions over the medium to long term. In particular, B.C. should look to build on and enhance essential and employability skills—including critical thinking, problem-solving, oral communication, literacy, numeracy, and innovation skills—that provide a long-term foundation for thriving in a rapidly changing economy and society. (See Chapter 5.)

8 See The Conference Board of Canada, *Provincial Outlook Long-Term Economic Forecast for British Columbia 2014*; and WorkBC, *British Columbia Labour Market Outlook 2010–2020*.

9 WorkBC, *British Columbia Labour Market Outlook 2010–2020*, 3.

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

Addressing the Risks—Developing Skills for Success

A failure to address skills shortages and mismatches in B.C. could lead to a wide range of economic, social, and individual consequences. Employers could find themselves without the people they need to sustain their activities—let alone pursue major opportunities that could generate new value, and contribute to employment and tax revenues for the province. And, many British Columbians could find themselves without a job and the economic and social benefits that employment provides.

Economic and social impacts of skills gaps are already being felt. Over the past two decades, British Columbians who lack post-secondary education credentials are increasingly less likely to find employment. The Conference Board estimates that these skills and education deficits cost British Columbia up to \$4.7 billion annually in foregone GDP. The deficits also cost \$775 million in foregone federal tax revenues and \$616 million in foregone provincial tax revenues, annually. Had these individuals been better educated, trained, and employed, B.C. could have achieved billions more in economic activity and tax revenues than it has in recent decades.

Fortunately, B.C. is taking its skills challenges seriously and is working to address them. In particular, B.C.'s Skills for Jobs Blueprint represents a major policy effort to achieve better alignment between its skills development system and labour market requirements, by directing more funding to programs that demonstrate a match with high-demand occupations. Over the next three years, 25 per cent of total operating funds, up from 10 per cent, will be directed toward programs that support these high-demand occupations.¹¹ The effectiveness of this policy will depend on good information about where occupational shortages are emerging, and realism about the extent to which a student interested in one field can actually move to a higher-demand field. PSE institutions' knowledge of local workforce needs (e.g., obtained through program

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

advisory committees and other mechanisms¹²) will play a role in identifying high-demand occupations, alongside other sources of labour market information.

There is no single policy solution to B.C.'s skills challenges. In addition to improving the alignment between educational programming and labour market realities, PSE institutions will need to improve cooperation and communication with B.C. employers, and provide current and prospective students with more information on the employment and income prospects of various educational paths. Employers will need to increase investments in employee training and development, as well as experiential learning opportunities (such as co-ops, mentoring, apprenticeships, and internships) for PSE students. B.C. residents themselves will need to be more attentive to labour market trends, and actively pursue education and experience that supports employment goals. Government can design policies, and provide resources to support these and other activities, with a view to equipping current and future cohorts of workers with the education and skills necessary for attaining rewarding lives and careers.

Project Objectives

B.C. cannot afford skills shortages as it prepares to respond to the challenges and opportunities it faces. Mitigating the costs of skills shortages requires that effective and timely action be taken to address them, based on a clear understanding of the occupations, credentials, and skills needed to support a dynamic and high-performing economy.

In Canada, and in B.C. in particular, government forecasts shed light on anticipated workforce demands, typically by extrapolating from current and past economic data and trends. This kind of information plays a

12 As noted in previous Conference Board research, "... firms have become formally involved in the colleges' program advisory councils that provide them with a wide range of opportunities to network with others, to keep abreast of developments and opportunities in their sectors and fields, and to nurture their relationships with the colleges that have a variety of mutual benefits." See Munro and Haimowitz, *Innovation Catalysts and Accelerators*, 32.

role in providing policy-makers with broad estimates of labour and skills needs. At the same time, B.C. skills stakeholders have an interest in data that reflect the real and anticipated skills needs and issues of employers across the province.

To address the need for this kind of information, the Conference Board undertook a major survey of B.C. employers, in addition to other research activities (see below). This report presents the results of that survey and other research activities in order to provide a clearer foundation for discussion and action on British Columbia's skills needs and issues. In particular, the report:

- discusses the key factors shaping skills needs and issues in B.C.;
- estimates the economic impacts and issues related to skills gaps and mismatches;
- identifies the occupations, post-secondary credentials, and essential skills that B.C. employers need to contribute to growth and economic competitiveness;
- explores the strategies that employers adopt to attract and develop the workers they need;
- articulates actions that can be taken to address skills gaps and mismatches.

Report Methodology and Structure

Methodology

To achieve the project's objectives, the Conference Board undertook a multi-faceted research methodology, including:

- a survey of 854 B.C. employers to understand their skills needs and issues (see "About the Conference Board's BC Employer Skills Survey");
- an analysis of the economic impacts of skills gaps in B.C.;
- a review of relevant documents and data to supplement the survey and economic analysis;
- interviews with 20 employers to obtain a more in-depth picture of skills issues;

- interviews with seven experts on issues relating to the province's labour market and skills situation, to provide context for the report's findings.

About the Conference Board's BC Employer Skills Survey

In the spring of 2014, the Conference Board conducted an online survey of B.C. employers. The Conference Board received assistance from the institutional members of BC Colleges and the BC Association of Institutes and Universities, as well as several B.C. industry associations and chambers of commerce. In total, 854 individuals took the time to provide their input regarding the skills needs and issues their organizations face. The input included how skills needs have changed; the impacts of skills shortages; the occupations, credentials, and skills needed in the years ahead; strategies undertaken to address workforce needs; and how effectively skills and training needs can be communicated to PSE institutions.

Large firms, with 500 employees or more, made up 19 per cent of the sample, while small and medium-sized firms made up 80 per cent. The remaining 1 per cent was self-employed. Large firms are oversampled compared with the make-up of the B.C. economy, where approximately 98 per cent of B.C. firms are small (with 50 employees or less).¹³ Given that a large share of the population is employed by SMEs,¹⁴ understanding the skills issues facing this segment of the economy is crucial. Nevertheless, the presence of large firms in the sample, with relatively large occupational needs compared to other firms, has the advantage of maximizing the total employment in the province covered by survey respondents—and of contributing to a well-rounded picture of the skills needs and issues facing a variety of types of organizations in British Columbia. (See “Employer Responses by Industry Sector.”)

The Conference Board estimates that the organizations surveyed employ a minimum of 130,000 British Columbians—or nearly 9 per cent of B.C.'s employed labour force. The actual number may be higher due to responses from

13 BC Ministry of Jobs, Tourism and Skills Training, *Small Business Profile* 2013, 3.

14 Industry Canada, “Key Small Business Statistics—August 2013.”

some very large firms, each with more than 20,000 B.C.-based employees, that did not provide precise data on employee numbers.

Source: The Conference Board of Canada.

Structure

The remainder of the report is structured as follows:

- Chapter 2 outlines what is known about the shape of British Columbia’s skills pressures, including economic signs of skills shortages in B.C. and the key factors that are shaping skills supply and demand.
- Chapter 3 details the impacts of skills shortages and mismatches for the province’s economy, businesses, and individuals.
- Chapter 4 examines the occupations, PSE credentials, and essential skills that employers say they will need in their workforces in the years ahead.
- Chapter 5 explores the strategies that employers adopt to address their workforce needs— including experiential learning and other forms of cooperation with PSE institutions.
- Chapter 6 summarizes the key findings and offers recommendations to government, educators, employers, and individuals on how to address skills challenges.

Employer Responses by Industry Sector

Employer respondents represent a wide cross-section of B.C.’s economy. The 15 industry sectors with the largest numbers of responses are:

1. Professional, scientific and technical services	81
2. Information and technology industries	70
3. Manufacturing (including food, textiles, machinery, etc.)	64
4. Health care and social assistance	53
5. Educational services	51

(continued ...)

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6. Construction	41
7. Arts, entertainment, and recreation	36
8. Forestry and forest industries	35
9. Finance and insurance	33
10. Public administration	30
11. Retail trade	29
12. Tourism and cultural industries	29
13. Transportation and warehousing	24
14. Agriculture, aquaculture, and agri-foods	22
15. Utilities	17

Respondents were asked to indicate the region in which the majority of their workforce is located, and employers from 29 districts across the province are represented in the survey findings. Response rates in some regions, particularly in B.C.'s Northern districts, were lower than others, such as the Lower Mainland and surrounding areas.¹⁵ We group responses into four broad regions that provide for both regional representation and analytical power: these are the Lower Mainland; B.C. North and Central Interior; Okanagan Boundary, Kootenay, and Southern Interior; and Vancouver Island and Central Coast.

While the survey is not perfectly aligned with the industrial structure of B.C.'s employers, and so does not allow us to draw inferences about B.C. employers as a whole, it does provide a direct window into the skills needs and issues of a large number of B.C. employers across the province. This permits us to qualify the nature of B.C.'s labour and skills situation, and to quantify these issues to some extent, making it a valuable complement to existing data on skills and labour market needs in the province.

Source: The Conference Board of Canada.

15 The survey did not achieve a high number of responses from B.C.'s Northern regions. Thus, the results may under-report the occupational and skills needs of employers in those regions. Given the considerable workforce requirements that are likely to emerge in B.C.'s Northern regions as a result of major project developments, further research should be undertaken to understand the skills needs of a larger number of Northern employers and communities.

CHAPTER 2

The Shape of B.C.'s Skills Situation

Chapter Summary

- British Columbia is facing occupational and skills gaps in key sectors of the economy—including business, finance, and management; construction; and services—and may not be prepared to take advantage of new economic opportunities, such as liquefied natural gas projects.
- Mismatches between the skills, training, and education that employers need, and those that employees and graduates have, are growing due to technological and industrial change, demographics, and uncertainty about future economic opportunities.
- Nearly 70 per cent of surveyed employers said that skills requirements in their workplaces had increased over the past decade, and the same proportion said that they expect further increases in the next five to ten years.
- B.C.'s post-secondary education (PSE) institutions play a major role in meeting skills needs. Approximately 63 per cent of B.C. residents have obtained a PSE credential; but by 2020, the labour market will likely require that 78 per cent hold PSE credentials.

British Columbia is already beginning to feel the pinch of skills shortages. In particular regions and sectors, challenges have emerged in occupations ranging from skilled tradespeople and truck drivers to managers and supervisors.¹ Many employers fear significant economic losses if shortages are not addressed. Retirements of key personnel over the next decade and changing workplace skills needs are raising concerns that employers may not have the people they need to sustain and grow their businesses. What does the evidence actually say about the shape of B.C.'s skills situation? Are employers' concerns warranted? If skills shortages are a genuine risk, which factors have contributed to them, and what might exacerbate them over the coming years?

This chapter looks at the broad contours of B.C.'s skills issues, including key factors that are shaping skills supply and demand dynamics in British Columbia. These factors include demographic and labour market trends, new economic developments, industrial and technological change, and education and training trends. The evidence points to emerging skills shortages and challenges that threaten to constrain economic prosperity and social well-being if steps are not taken to address them.

1 Interviews with the Conference Board of Canada.

Advancing the Skills Debate

Skills shortages are a key concern among business and policy leaders, with many employers (30 per cent) claiming to be experiencing them.² Some suggest that the challenge of skills shortages is overblown—even theoretically incoherent.³ The reality is that while Canada does not yet face a country-wide labour shortage in the aggregate, there is clear evidence of serious skills shortages in particular regions and for particular occupations. And, there are indications that pressures may intensify as many experienced workers retire in the next five to ten years.

At the national level, for example, many occupations are currently showing signs of labour shortages. A 2012 analysis by Benjamin Tal revealed that 25 occupations across Canada face both low unemployment rates (just over 1 per cent) and rising wages (more than double the rate of the economy-wide average), which together provide strong evidence of skills pressures.⁴ (See “25 Occupations Showing Signs of Skills Shortages in Canada.”) These occupations exist in sectors across the entire economy—including mining, science, engineering, and health care—and represent an estimated 2 per cent of total employment.⁵

Tal’s analysis also found 20 industries—representing 1 per cent of employment—facing labour surpluses, characterized by higher and/or rising unemployment and decelerating wage growth. This points to the challenge of skills *mismatches*, which contribute to employer skills shortages, weaken individual employment outcomes, and limit the return on educational investment. (See Chapter 3.)⁶

2 Tal, *The Haves and Have Nots*, 2.

3 See, for example, Stanford, “Canada’s Sluggish Labour Market.”

4 Tal, *The Haves and Have Nots*, 1.

5 Ibid.

6 Ibid., 2.

25 Occupations Showing Signs of Skills Shortages in Canada

- Managers in engineering, architecture, science, and information systems
- Pharmacists, dieticians, and nutritionists
- Managers in health, education, social, and community services
- Therapy and assessment professionals
- Managers in construction and transportation
- Nurse supervisors and registered nurses
- Auditors, accountants, and investment professionals
- Technical, and related occupations in health
- Human resources and business service professionals
- Medical technologists and technicians (except dental health)
- Professional occupations in natural and applied sciences
- Technical occupations in dental health care
- Physical science professionals
- Other technical occupations in health care (except dental)
- Life science professionals
- Psychologists, social workers, counsellors, clergy, and probation officers
- Civil, mechanical, electrical, and chemical engineers
- Supervisors, mining, oil and gas
- Other engineers
- Underground miners, oil and gas drillers, and related workers
- Professional occupations in health
- Supervisors in manufacturing
- Physicians, dentists, and veterinarians
- Supervisors, processing
- Optometrists, chiropractors, and other health diagnosing and treating professionals

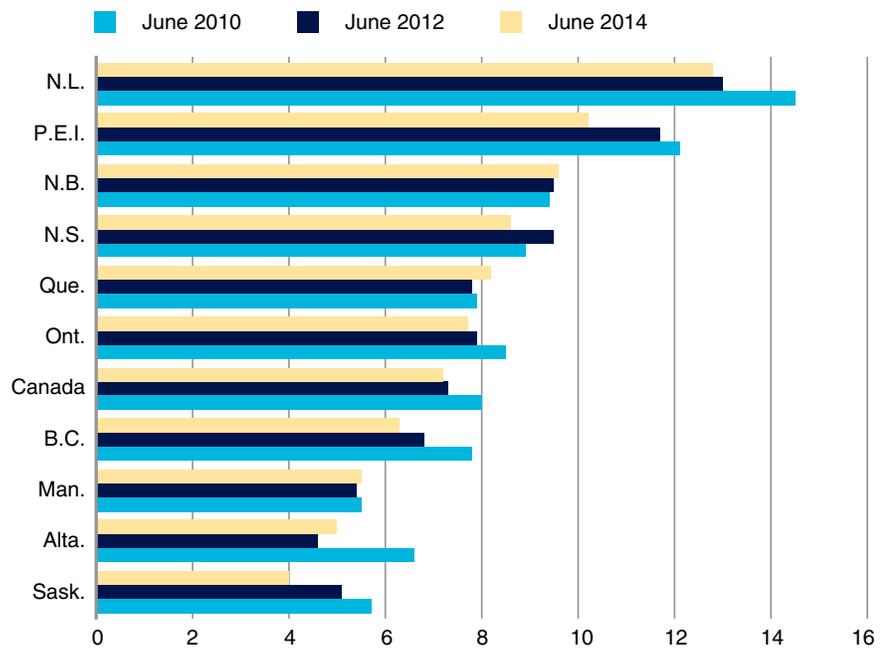
Source: Tal, *The Haves and Have Nots of Canada's Labour Market*.

High and persistent unemployment rates in some regions and sectors lead some analysts to assert that concerns about skills shortages are overstated by employers.⁷ Indeed, unemployment remains high in many provinces and is at very low levels in only Saskatchewan (3.9 per cent) and Alberta (4.9 per cent). At 6.2 per cent, British Columbia's unemployment rate does not, on its face, suggest serious labour shortages. Nevertheless, falling unemployment rates in many provinces suggest that labour markets are tightening and, as retirements accelerate, the pressure could well intensify. (See Chart 1.)

Chart 1

Provincial Unemployment Rates

(percentage unemployed, aged 15 to 64, seasonally adjusted)



Source: Statistics Canada, CANSIM table 282-0087.

7 Stanford, "Canada's Sluggish Labour Market."

The data are not evidence of a general skills *crisis* in Canada. Nor should one downplay the challenge of unemployment. On the contrary, unemployment and underemployment are often the consequence of individuals not possessing skills that have a place in the labour market, even though these people may be highly educated. However, there is evidence that employers' claims about imbalances between skills supply and demand have some foundation. Given the significant costs of skills shortages (considered in Chapter 4), and given that solutions take time to implement (e.g., the education of future cohorts of graduates), it is important that stakeholders recognize where skills shortages are emerging, and take steps to address them.

Key Factors Affecting B.C.'s Skills Supply and Demand

What are the key factors affecting skills supply and demand in B.C. that will produce shortages in the future? Demographic and labour market trends play a key role. A diminishing pool of workers, compared with projected job openings, threaten to constrain B.C.'s economic prospects.⁸ Along with this, new economic developments, as well as industrial and technological change, shape the quantity and quality of skills demanded by employers. PSE institutions and the adult education and training systems play leading roles in meeting these skills needs, although more is required to address B.C.'s workforce needs.

Demographic and Labour Market Trends

Forecasts by the Conference Board show that B.C.'s compound annual population growth rate will average 1.1 per cent between 2013 and 2035, making it "the slowest-growing province west of Quebec over the long term."⁹ By 2035, migration (the vast majority of which will originate from

8 The Conference Board of Canada, *Provincial Outlook Long-Term Economic Forecast for British Columbia 2014*, 113.

9 Ibid., 114.

outside of Canada¹⁰) will be the most important source of population growth in the province. Total migration is projected to rise from an annual average of 47,402 (between 2013 and 2020) to 52,324 (from 2021 to 2035).¹¹ British Columbia's population is also rapidly aging. By 2035, individuals aged 65 and older will constitute 25.8 per cent of the population as opposed to 16.4 per cent in 2013.¹²

While these are long-term trends, their initial impacts will be felt in the short and medium terms. Compound annual labour force growth is estimated to be 1 per cent until 2020, after which it will fall to a mere 0.7 per cent until 2035.¹³ Labour force growth will not be adequate to meet the estimated one million job openings that are projected to 2020, according to the *British Columbia Labour Market Outlook, 2010–2020*.¹⁴ The outlook estimates that demand for workers will outstrip supply by 2016, leading to a deficit of 61,500 workers by 2020.¹⁵ Some regions will experience deficits more acutely than others. B.C.'s three largest regions (Mainland/Southwest, Vancouver Island/Coast, and Thompson-Okanagan) will account for 90 per cent of new job openings, although growth in the demand for workers will be highest in the Northeast and the Mainland-Southwest regions, driven in part by major resource and infrastructure projects.¹⁶

Some of the job openings will be the result of economic growth. Almost two-thirds, however, will occur as older cohorts of British Columbians retire from the workforce.¹⁷ Results from the Conference Board's BC Employer Skills Survey show that many employers are worried about the retirements of individuals with specialized skills in the coming years. On

10 Ibid., 114–116.

11 The Conference Board of Canada, *Provincial Outlook Long-Term Economic Forecast for British Columbia 2014*, 116.

12 Ibid., 114.

13 Ibid., 117.

14 WorkBC, *British Columbia Labour Market Outlook 2010–2020*, 3.

15 Ibid., 2.

16 Ibid., 6.

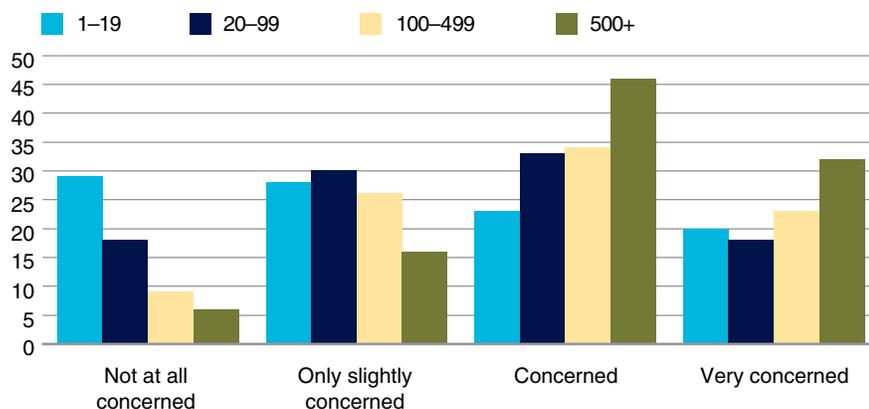
17 Ibid., 3.

the whole, 57 per cent of employers say they are “concerned” (35 per cent) or “very concerned” (22 per cent) about imminent retirements. Results vary considerably according to firm size. (See Chart 2.) Among the province’s largest firms (with 500 or more employees), 78 per cent are “concerned” (46 per cent) or “very concerned” (32 per cent), while only 6 per cent are not concerned at all. By contrast, among smaller firms (with 1–19 employees), less than half are “concerned” (23 per cent) or “very concerned” (20 per cent)—though this is still a significant proportion that worries about retirements.

Chart 2

B.C. Employers’ Concerns About Retirements in the Next 5–10 years, by Firm Size

(number of employees; percentage of respondents)



Source: The Conference Board of Canada.

The looming retirements give rise to employers’ concerns about an “experience gap”,¹⁸ and the survey revealed that B.C. employers are especially worried about shortages of experienced managers and supervisors. Although employers will need graduates of business

18 Engineers Canada, for example, reports that the country as a whole already faces shortages of engineers with more than 10 years of experience. See Canadian Council of Chief Executives, *Solving Our Skills Gap Challenge*.

and management programs, it is unlikely that new graduates right out of school will be able to meet the “experience” needs of employers. Employers will have to do more training and development, and succession planning, in addition to looking for graduates of specific fields and with certain skills. An experience gap may persist until younger cohorts accumulate more years of employment.

Still, many employers hope to find entry-level job candidates with some work experience, in addition to relevant educational credentials.¹⁹ The hope seems to be that candidates with some experience—gained either through other employment or experiential learning—will have a variety of “soft skills” (such as critical thinking and problem-solving skills), necessary for workplace effectiveness. Chapter 5 examines experiential learning partnerships that integrate work experiences (such as co-op placements) with educational programming, and the extent to which these can help to bridge the experience gap.

New Economic Development

New economic opportunities can bring sudden changes in labour and skills needs and B.C. has many such opportunities on the horizon. A major project inventory by the Ministry of Jobs, Tourism and Skills Training estimates a potential \$85.7 billion in new project developments in the coming years. This includes BC Hydro’s Site C hydro dam (\$8 billion) and an upgrade of the Rio Tinto Kitimat smelter (\$4 billion).²⁰ Top of mind for many B.C. business and policy leaders, however, are LNG projects (including wells, pipelines, and LNG terminals) that could turn the province into one of the world’s top five LNG producers over the coming decade.²¹

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

20 The Conference Board of Canada, *Canadian Industrial Outlook 2014: Canada’s Gas Extraction Industry*, 9.

21 Burt, *B.C. Must Act Quickly to Profit From LNG Exports*.

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The Conference Board sees potential for three LNG projects moving forward in the near future, which could result in average annual investments of \$10 billion between 2016 and 2019, and significant LNG production by 2018.²² The development of LNG export terminals on the coast will allow Canadian industry to tap into growing demand for LNG in the Asia-Pacific market—the fastest-growing in the world—provided investments are made soon enough to beat out other potential suppliers, such as those in the United States.²³ In many cases, these investments will depend on the province’s ability to demonstrate to investors that workforce requirements can be met.

The BC Natural Gas Workforce Strategy Committee estimates labour demand based on a scenario in which five of the twelve LNG projects being proposed are developed and operated. Key workforce needs under this scenario could include:

- 21,600 jobs directly involved in *construction* of LNG projects (facilities and pipelines), peaking in 2016–17;
- 41,900 jobs in *supporting industries* providing goods and services during peak construction;
- 2,400 permanent jobs for *ongoing operation and maintenance* of LNG plants and pipelines;
- 61,700 jobs to support LNG *operation* (including “workers required to drill, produce, process, and transport the natural gas required to feed the export facilities”).²⁴

22 Ibid. Major LNG projects are likely to include Kitimat LNG; LNG Canada (a joint venture led by Shell); and Pacific Northwest LNG (led by Petronas), which will add significantly to the developments in the Montney and Horn River formations (which have already been occurring for some years). See The Conference Board of Canada, *Provincial Outlook Long-Term Economic Forecast for British Columbia 2014*, 120.

23 Burt, *B.C. Must Act Quickly to Profit From LNG Exports*.

24 Petroleum Human Resources Council of Canada, *Natural Gas Workforce Strategy and Action Plan*, 6–7.

In all, over 63,000 jobs could be created in the construction of five new LNG projects, and another 64,000 for ongoing operation and maintenance. As Chart 3 illustrates, over half of these occupations would be in trades, with a further quarter in construction trades helpers and labourers.

Chart 3
LNG Construction—Occupational Needs
(per cent)



Sources: B.C. Natural Gas Workforce Strategy Committee; The Conference Board of Canada.

Stakeholders considering these workforce needs are acutely aware of the lessons of Australia’s LNG boom, where labour supply shortages resulted in significant cost overruns (40 per cent in the case of the Gorgon LNG project) and are jeopardizing the development of approximately \$180 billion in new or expanded projects.²⁵ As one commentator put it, “[c]osts have shot up over the past few years as energy companies and iron ore and coal miners, which are all building multi-billion-dollar projects at the same time, have competed for local equipment and a limited pool of workers.”²⁶ The parallel with B.C. is striking, given the need for B.C.’s gas extraction industry to compete

25 Sonali, “High-Cost Australia May Miss \$180 bln LNG Expansion Wave.”

26 Ibid.

for skilled workers against Alberta's expanding oil industry (which is expected to make investments of \$20 billion in 2014 alone).²⁷ (See "Workforce Competition.")

Workforce Competition

Interprovincial competition among employers for suitable job candidates is increasing and has a range of impacts. Twenty-seven per cent of employers who responded to the Conference Board's BC Employer Skills Survey said that their greatest competition for employees will emerge from industries outside of B.C. over the next five to ten years. B.C.'s proximity to Alberta's oil sands plays an especially large role in driving competition for workers, particularly in sectors in which skills and occupational requirements are similar (e.g., skilled trades in construction-oriented fields).

Competition can be intense in regions that are geographically close to the oil sands. According to one interviewee representing a mining company near the province's Rocky Mountains, the recruitment practices of oil sands employers have become more aggressive over the years. The recruitment includes regular trips to B.C. communities in the area to solicit potential employees. Even without such tactics, the lure of high-paying jobs in Alberta can affect the economic prospects of B.C. communities in the region. A representative of the BC Ministry of Environment noted that they were unable to recruit individuals to a Fort St. John office, despite running multiple job competitions over the course of a year, because competition for employees from Alberta's oil and gas sector was intense. As such, the ministry was forced to close the office and "retreat" to the nearest office, in Prince George.

Even in distant regions, the presence of the oil sands looms large for many B.C. employers. Alternate work models (e.g., three weeks on, three weeks off) in the oil sands have made it easier for B.C. residents from across the province, including from the Lower Mainland, to engage in "commuter travel" to far-away workplaces. And, some have noticed marked increases in the number

27 The Conference Board of Canada, *Canadian Industrial Outlook 2014: Canada's Gas Extraction Industry*, 9.

of commuter-travel flights to regions such as Fort McMurray in recent years.²⁸ Several interviewees noted that B.C. may need to consider similar strategies as it considers how to mobilize large numbers of workers in Northern regions (e.g., for construction projects that will not require a permanent workforce).

Source: The Conference Board of Canada.

Industrial and Technological Change

In B.C., as in other jurisdictions, workplace skills requirements are changing. Technological change is creating new job categories and related skills needs, often outpacing analysts' abilities to classify them. In 2003, the U.S. Council of Economic Advisors observed that "a quarter of today's workforce is in jobs that were not even listed among the Census Bureau's Occupation Codes in 1967, and technological change has only accelerated since then."²⁹ Along with the development of new jobs and industries, the skills and knowledge bar in familiar job settings is also increasing. In B.C.'s lumber mills, for example, technicians and engineers are needed alongside millwrights and saw filers to operate technology related to computers, robotics, and bio-energy technologies.

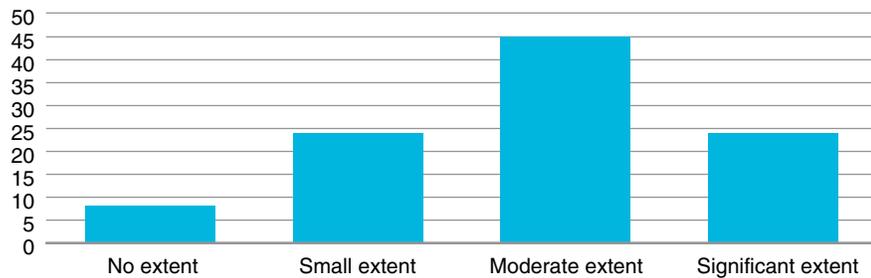
Respondents to the Conference Board's BC Employer Skills Survey confirm the view that skills requirements are rising. Asked about how skills requirements have changed over the *past* five to ten years, nearly 70 per cent said that they have increased to a "moderate" or "significant" extent. (See Chart 4.) Nearly the same proportion of survey respondents expects skills requirements to further increase over the *next* five to ten years. (See Chart 5.)

28 Interview with an executive in the B.C. construction industry. Confidential telephone interview by The Conference Board of Canada, April 1, 2014.

29 Council of Economic Advisors, *Preparing the Workers of Today for the Jobs of Tomorrow*, 22.

Chart 4

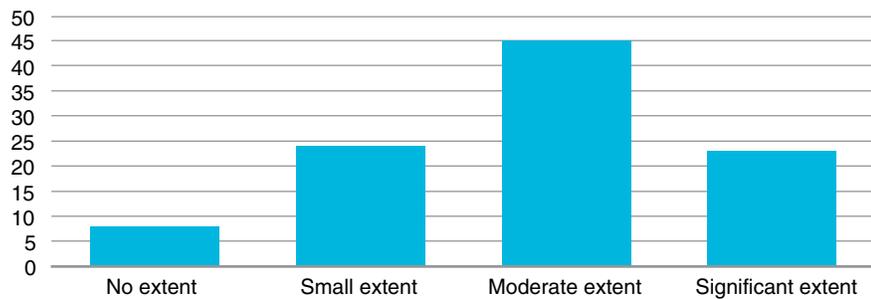
Have Skills Requirements Increased Over the Past 5–10 Years?
(percentage of respondents)



Source: The Conference Board of Canada.

Chart 5

Will Skills Requirements Increase Over the Next 5–10 Years?
(percentage of respondents)



Source: The Conference Board of Canada.

Education and Training Trends

B.C. has a strong education system that contributes to the province's supply of skilled and educated workers. The B.C. K–12 system is a top performer in Canada, as well as internationally, especially in terms of high school attainment and the low numbers of students with inadequate literacy and math scores.³⁰ These strengths play an important role in

30 The Conference Board of Canada, *How Canada Performs: Education and Skills*.

positioning B.C. students to advance into, and succeed in, the PSE system—where many of the skills and credentials most relevant to employment are developed.

Like B.C.'s K–12 system, its PSE system is also high-performing, with above-average university attainment compared with the rest of Canada.³¹ Its 25 publicly funded institutions—including seven teaching-intensive universities, eleven colleges, an Aboriginal training institute, and other institutes—address current and future education and skills needs. They offer a wide range of credentials, including trades training, certificates and diplomas, and degrees. Many B.C. colleges and institutes have acquired authority to grant degrees alongside trades training, certificates, and diplomas, with degree-granting authority determined by the BC Degree Quality Assessment Board.³² These include bachelor's degrees, as well as associate degrees and applied bachelor's degrees, which differ from bachelor's degrees primarily in terms of their greater emphasis on hands-on training and occupational focus. (See Table 1.)

31 Ibid.

32 Ministry of Advanced Education, *Degree Authorization*.

Table 1

B.C. PSE Degree Granting Authorizations

Type of Institution	Degrees Offered
Public colleges	Associate degree
	Applied bachelor's degree
Public institutes	Associate degree
	Applied bachelor's degree
	Applied master's degree
Public universities	Associate degree
	Bachelor's degree
	Master's degree
	Doctoral degree (among select institutions)
Provincially authorized private degree-granting institutions	Associate degree
	Bachelor's degree
	Master's degree
	Doctoral degree

Source: Ministry of Advanced Education, Degree Authorization.

In addition to supporting a wide variety of credential offerings, B.C.'s PSE system also works to support a high degree of student mobility among institutions. Colleges and other institutions not only offer a range of programs leading to credentials, but also serve as feeder institutions for four-year university degree programs by allowing students to transfer credits. The system is overseen by the British Columbia Council on Admissions and Transfer (BCCAT).³³ As the number of educational options and pathways expands, maintaining effective credit and degree transfer and recognition will be important. This should not only enhance student mobility, but should help minimize costs for individuals and governments by limiting the need to duplicate course work.³⁴

33 British Columbia Council on Admissions and Transfer, *What We Do*.

34 Council of Ministers of Education, Canada, *CMEC Ministerial Statement on Credit Transfer in Canada*, 1. See also Canadian Council on Learning, *Post-Secondary Education in Canada*, 70.

Over several decades, B.C.'s PSE system has delivered a post-secondary education to an increasing proportion of the population. About 63 per cent of B.C. residents have obtained a PSE credential, either in a tertiary (university or college sector program) or post-secondary non-tertiary program.³⁵ Specifically, 28 per cent of individuals have university level credentials; 22 per cent have credentials at the college and vocational level; and 13 per cent have some form of non-tertiary post-secondary education. These include trades credentials or apprenticeship training and other programs to prepare students for further studies, or to enter the workforce.³⁶

According to some estimates, the number of individuals with some form of PSE education will need to increase. By 2020, about 78 per cent of new job openings will require at least “some post-secondary education and training.”³⁷ As the OECD notes—given high rates of post-secondary attainment among mainstream populations—boosting PSE participation will increasingly require efforts to engage under-represented groups. The groups include Aboriginal peoples; mature students; individuals with disabilities; international students; and those who, for other reasons, have lacked the aspiration, preparation, or access to PSE-level studies.³⁸

Adult Education and Learning

There is a critical need for lifelong skills development given the pace of economic change. Canada's adult education and training system plays a principal role in delivering lifelong skills development activities by developing, refreshing, and enhancing skills among the unemployed

35 Statistics Canada, *Education Indicators in Canada*, 85.

36 Statistics Canada, *Education Indicators in Canada*, 19 (for definitions).

37 WorkBC, *British Columbia Labour Market Outlook 2010–2020*, 3.

38 Cheung, Guillemette, and Mobasher-Fard, *Tertiary Education*, 11.

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and employed.³⁹ The system comprises many elements, including labour market programs supported by government agencies to address specific skills development and upgrading needs.⁴⁰

For the majority of employed individuals, however, employer-sponsored training (e.g., structured training sessions, workshops, off-site activities, etc.) is a key means by which job-related skills development and maintenance occur. Unfortunately, Canada's performance in this area is weak, lagging even historical standards. Employer investments in employee learning and development fell from \$1,116 per employee in 1993 to \$705 in 2013.⁴¹ Over the past five years—despite growing concerns about skills shortages—learning hours per employee per year have stayed at 28.⁴² Reflecting these trends, data from the OECD show that Canadians' participation in non-formal job-related education (31 per cent in 2008) lags that of key international peers.⁴³

Most employers would not deny that training and developing (T&D) employees is important. The reality, however, is that not enough are willing to spend the resources needed to achieve a socially optimal level of training. Reasons include the concern that they will not be able to capture a full return on their T&D investments (for example, given the risk of “poaching” from other employers). It would also appear that many increasingly look to PSE institutions to produce graduates that can “hit the ground running” with job-ready skills and competencies.⁴⁴ Although some employers invest in employee skills development, more is needed to meet the skills needs facing British Columbia and Canada. We discuss these issues further in Chapter 5.

39 Munro, Stuckey, and MacLaine, *Skills—Where Are We Today?*

40 This includes services such as job search assistance and career counselling (often with a focus on populations under-represented in the labour market, including Aboriginals and those with disabilities).

41 Hall, *Learning and Development Outlook 2013*, 19, 22.

42 Ibid.

43 Munro, Stuckey, and MacLaine, *Skills—Where Are We Today?*

44 See Munro, *Employers Must Start Investing in Skills Training*.

Conclusion

This chapter has considered the broad shape of skills issues in British Columbia. The province currently faces some skills shortages but does not yet face general or widespread *labour* shortages. But significant demographic shifts, new economic developments, and rising skills and knowledge requirements in the workforce are creating new *critical skills* pressures that the province will need to address. Indeed, as the following chapter reveals, the impact of skills shortages is already being felt by individuals, businesses, and the B.C. economy—resulting in a wide range of costs, and jeopardizing the province’s future economic potential.

CHAPTER 3

The Impact of Skills Gaps in B.C.

Chapter Summary

- The Conference Board of Canada estimates that skills gaps associated with low educational attainment among some B.C. residents cost the provincial economy up to \$4.7 billion annually in foregone GDP—as well as \$775 million in federal tax revenues and \$616 million in provincial tax revenues.
- Underutilization of the skills of highly educated British Columbians may cost the province up to \$1.3 billion in foregone GDP annually—as well as \$212 million in federal tax revenues and \$169 million in provincial tax revenues.
- Firm-level impacts of skills gaps and mismatches include inconsistent product and service quality, reduced productivity, lower sales and loss of new opportunities, and diminished profits.
- Individual-level impacts of skills deficits include higher unemployment, lower earnings, poorer physical and mental health, weaker community engagement, and lower life satisfaction.

There is growing concern about the potential impacts of skills shortages in British Columbia. In some cases, skills shortages present potential risks for economic development—for example, many stakeholders are keenly aware of the possibility of LNG cost overruns and investment risk if workforce requirements are not met. On the whole, however, a greater level of information and clarity is needed on precisely how skills shortages will be felt by businesses, individuals, and the economy—and how impacts may worsen without adequate steps to address them.

As this chapter explores, skills shortages lead to a wide range of impacts and costs. Some of these are already emerging for B.C. businesses, residents, and society as a whole. In addition, there is lost opportunity resulting from skills *mismatches* that are a result of individuals being overeducated for the positions they hold and/or the underutilization of their skills by employers. Together, skills shortages may be costing B.C.'s economy as much as \$4.7 billion annually in foregone GDP.

Economic Impacts—The Hidden Costs of Inadequate Skills

The Conference Board conducted an original economic analysis to estimate the costs of low educational attainment, and the costs of skills mismatches in British Columbia. The analysis showed that the province is experiencing considerable performance gaps due to a misalignment between the skills employers need and the education and skills attainment of its workforce.

Low Educational Attainment

Over the years, the increasing skills and knowledge requirements of the economy have made finding employment more difficult for those whose education and skills have not kept pace. Economic analysis by the Conference Board shows that there has been a reduction of 5.3 percentage points since 1990 in the employment rate for those without a post-secondary education credential. Today, over 95,000 B.C. residents are not employed because they have not obtained a level of education adequate to meet current employers' needs (but which would have been adequate 20 years ago). The cost of this "access gap" in real GDP (2007 dollars) to B.C.'s economic potential is up to \$4.7 billion annually. (See Appendix A.)

If this cohort of individuals had obtained the levels of education needed to secure employment at the rate they did in 1990, when lower levels of education could still provide access to the job market, B.C. could expect to achieve approximately \$4.7 billion in additional GDP annually. This would result in an additional \$775 million in federal tax revenues and \$616 million in provincial tax revenues. This foregone economic activity and tax revenues over the years could have contributed significantly to B.C.'s economic and social well-being.

Skills Mismatches

Just as some occupations face skills shortages, others face skills *surpluses*—areas where individuals have obtained educational credentials for which there is low demand from employers. Individuals with "misaligned" credentials may find themselves underemployed—working in jobs that do not fully utilize their skills and education. Both surpluses and underemployment represent a failure to maximize individual skills and educational investments, resulting in economic and social costs.

The Conference Board estimates that skills mismatches, in the form of *underutilized* skills, are also high. If individuals who are currently underemployed—either because they are discouraged to look for work,

or because they can find only part-time work—were to find full-time work, British Columbia could achieve an additional \$1.3 billion in GDP annually, \$212 million in additional federal tax revenues, and \$169 million in additional provincial tax revenues. Furthermore, if individuals were employed in jobs that paid the average for their level of education, B.C. could achieve \$1.2 billion in additional GDP, along with an additional \$195 million in federal tax revenues, and \$155 million in provincial tax revenues. (See Appendix A.)

To be sure, jobs that fully utilize the education and skills of every graduate can not be created out of thin air. The analysis does, however, help quantify the opportunity cost of individuals not finding work as a result of a misalignment between educational attainment and economic realities—as well as the extent to which productivity has suffered because of a failure to maximize individual capabilities in the workplace.

Firm-Level Impacts

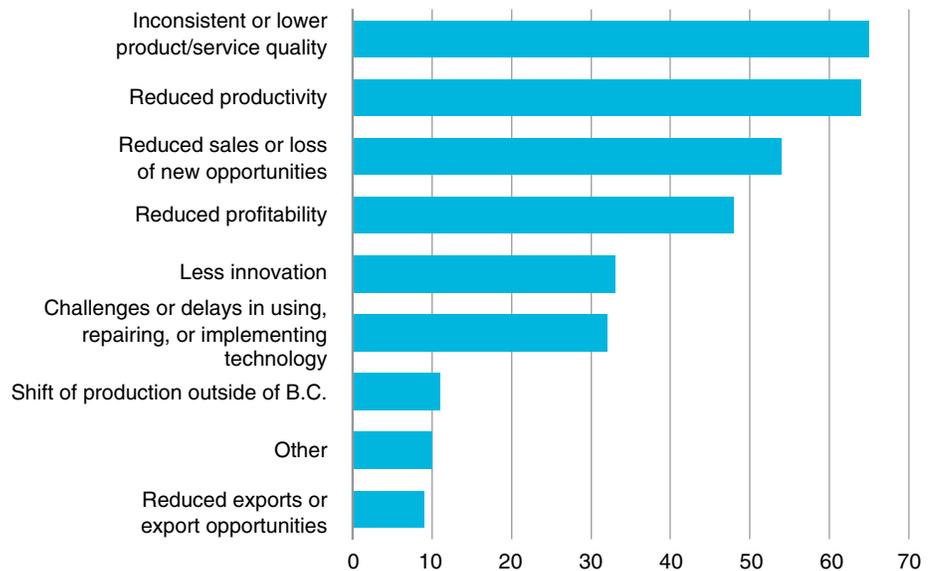
In addition to the aggregate economic effects of skills deficits, individual businesses are affected in a number of ways when they are unable to find employees with the skills they need. Results from the Conference Board's BC Employer Survey reveal that 65 per cent of employers say that current and anticipated skills gaps will lead to inconsistent or lower product or service quality, while 64 per cent expect reduced firm productivity. About half of employers anticipate reduced sales or loss of new opportunities (54 per cent) and reduced profitability (48 per cent). One-third of employers expect negative impacts to their capacity to innovate (33 per cent) and challenges or delays in using, repairing, or implementing technology (32 per cent). Both issues are troubling in the context of B.C.'s interest in improving innovation and workforce productivity.¹ (See Chart 6.)

1 BC Ministry of Regional Economic and Skills Development, *Skills for Growth*, 21.

Chart 6

Anticipated Firm-Level Impacts of Skills Gaps

(percentage of respondents)



Source: The Conference Board of Canada.

Examples of such impacts are already emerging. One firm, a diesel engine manufacturer, noted that an inability to find a qualified mechanic resulted in a “domino-effect” of organizational impacts that ultimately resulted in the company’s failure to meet its annual budget. The representative of a mining company noted that a lack of heavy duty mechanics (in B.C. and nation-wide) is resulting in some equipment sitting idle when it could be used. Other interviewees noted higher costs associated with finding other arrangements to address gaps in full-time personnel, such as paying employees overtime, or bringing in additional employees on short-term contracts.

Skills gaps can also have negative social consequences, such as when they affect the ability of organizations to deliver critical services like health care. As one technician at a Vancouver Island hospital noted, a general lack of intra-operative monitoring technicians, able to perform neurological testing and assist in higher-risk surgeries,

means that the wait list for these services is over one year at that hospital. The interviewee noted that the British Columbia Institute of Technology (BCIT) is currently the only English-speaking school in Canada that offers training in this area. And although the intake of students is increasing to meet growing demand, retirements of many senior technicians will make it harder for many hospitals to find enough technicians in the years ahead.² This is in addition to other health care practitioners (such as nurse supervisors and registered nurses) who receive their training and education through college-sector institutions and for whom there will be considerable demand in the future.³

Individual Impacts

The costs of skills shortages and mismatches also have implications for individuals and families. Individuals with education and skills deficits are more likely to experience unemployment, underemployment, and lower earnings than those with higher education and skills levels. These lower employment and earnings outcomes are associated with poorer physical and mental health, weaker community engagement, and lower life satisfaction.⁴

Employment Prospects

As Chart 7 indicates, there is a clear relationship between education and employment. Among B.C. residents of all age groups, unemployment rates decrease as educational attainment increases. University degree holders are least likely, and those with only some high school most likely, to be unemployed. The data also show that among younger individuals (15–29 years of age), unemployment rates are higher in all credential categories than among the 30 and older cohort. Although many factors are at play, it appears that educational credentials matter to

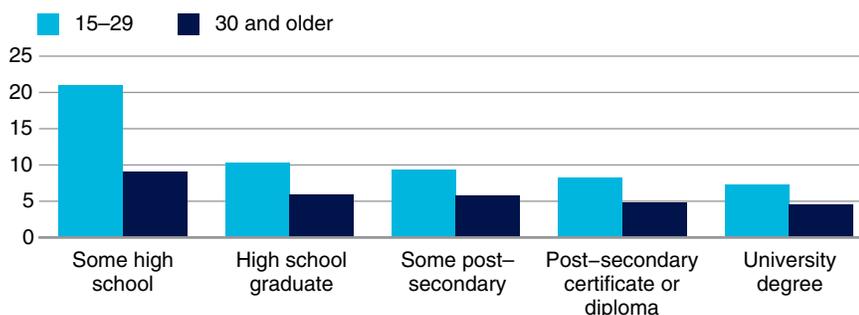
2 The interviewee noted that an estimated 6 per cent of these technicians in the Vancouver Children's Hospital will be retiring in the next 5–7 years.

3 WorkBC, *British Columbia Labour Market Outlook*, 8.

4 See, for example, Munro, *Skills and Higher Education in Canada*; Munro, Stuckey, and MacLaine, *Skills—Where Are We Today?*

employment more at the beginning of one’s career than they do in later years. Yet, even though the gap between those with and those without PSE credentials narrows in the older cohort, there are still substantial differences in job quality, security, and earnings.⁵

Chart 7
Unemployment Rates in B.C., by Educational Attainment and Age
(per cent unemployed)



Source: BC Stats, British Columbia’s Youth Labour Market.

Just as higher levels of education improve employment potential, they also add to an individual’s labour market “resilience.” A Conference Board report on skills gaps in Ontario noted that an estimated 81 per cent of jobs lost during the recession were attributed to those who lacked post-secondary education.⁶ Moreover, post-recession job growth between 2012 and 2013 was “concentrated among those with post-secondary education.”⁷ Other research confirms that the employment

5 See Munro, *Skills and Higher Education in Canada*; Munro, Stuckey, and MacLaine, *Skills—Where Are We Today?*; and Stuckey and Munro, *The Need to Make Skills Work*.

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

7 Ontario Ministry of Training, Colleges, and Universities, *Ontario Labour Market Statistics for January 2013*, 2.

prospects of higher-skilled graduates are less sensitive to adverse labour market conditions (such as recessions) than are those of the lower-skilled.⁸

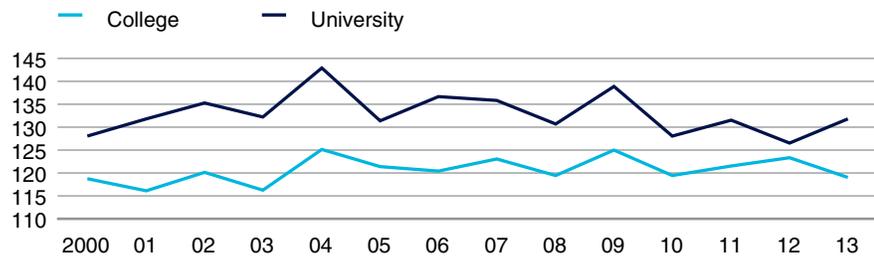
Return on Educational Investment

Individuals with higher educational attainment can expect to earn more than their less-educated peers. Although it varies by discipline and over time, B.C. university and college graduates enjoy a substantial wage premium over those with only high school education or less. As of 2013, for every \$100 earned by high school graduates, university graduates earned \$131 and college graduates earned \$118. (See Chart 8.) The premiums spiked in the year following the recession (2009), providing another lens on the superior employment prospects of higher-skilled individuals in adverse labour market conditions.

Chart 8

Earnings Premium, by Educational Attainment in B.C.

(\$ earned, per \$100 earned by high school graduates)



Sources: Statistics Canada;The Conference Board of Canada.

There is no guarantee that pursuing a PSE credential in some fields will result in the higher earnings seen across credential types more generally. Previous research has noted that among OECD countries, Canada has the highest percentage of tertiary-educated graduates who

8 See Altonji, Kahn, and Speer, *Cashier or Consultant?*; Oreopoulos, von Wachter, and Heisz, *The Short- and Long-Term Career Effects of Graduating in a Recession*.

earn less than half of the median national income, according to OECD data.⁹ This suggests that field of study, among other variables, plays a role in the variance in earnings premiums.

Tal, for example, calculates the return on investment for bachelor's degrees across various fields of study, taking into account up-front educational costs and future earnings premiums (relative to high school graduates). He finds that degrees oriented toward the sciences, health, and commerce have significant lifetime earnings premiums (over high school graduates), and produce higher returns than the social sciences, humanities, and fine arts:

- engineering—117 per cent
- math, computer and physical sciences—86 per cent
- health—74 per cent
- commerce—74 per cent
- education—43 per cent
- social sciences—38 per cent
- life sciences—37 per cent
- humanities—23 per cent
- fine and applied arts—12 per cent.¹⁰

Across Canada, a better alignment between students' educational paths and labour market opportunity is possible—though within B.C., there is some indication that students are gravitating toward well-paying fields. (See “B.C. Graduates: Trends in Fields of Study.”)

B.C. Graduates: Trends in Fields of Study

An examination of trends in the fields of study from which B.C. students graduate suggests that B.C. college and university students are responding well to media and market signals about which fields are in demand. As Chart 9 indicates, over the past decade, the number of credentials awarded in the high-demand fields

9 Stuckey and Munro, *The Need to Make Skills Work*, 14.

10 Tal, *Degrees of Success*, 3–4.

of business, management, and public administration has grown rapidly. As well, there are many more credentials awarded annually in these fields than in the next greatest category—architecture, engineering, and related technologies.

Growth in those fields (architecture, engineering, and related technologies) has been greater than in any other field over the past decade. By contrast, the number of degrees awarded in humanities, visual and performing arts, and communication technologies, has remained virtually unchanged since 2001, even as overall participation rates in PSE have increased.

On the surface, B.C. students' pursuit of business, management, and public administration aligns with the occupational and credential needs reported by employers in the Employer Skills Survey. (See Chapter 4.) Nevertheless, there are still areas where better alignment could improve the employment prospects of graduates (and address provincial workforce needs). For example, among the surveyed B.C. employers who are looking for university graduates, their second-greatest need is for graduates from computer and information services fields of study. However, the number of degrees awarded in mathematics, computer, and information sciences has actually declined by approximately 26 per cent since 2001.¹¹

More graduates emerging from these disciplines could help meet the needs of B.C.'s technology sector as it contributes to the development of priority industries. These industries include clean technology able to feed into the further development of B.C.'s resources sector (e.g., technology related to spill prevention, electronic monitoring, and environmental remediation).

Few students have the interest and ability to shift from a fine arts program to a mathematics or management program, or vice versa, so a sense of realism is needed. But it may be possible for students in “adjacent” fields to switch depending on labour market needs. For example, some social science students with quantitative interests and strengths could do well and be happy in finance or accounting programs. And many humanities students with strong communications skills might find they have much to offer in management programs and positions that value communication.

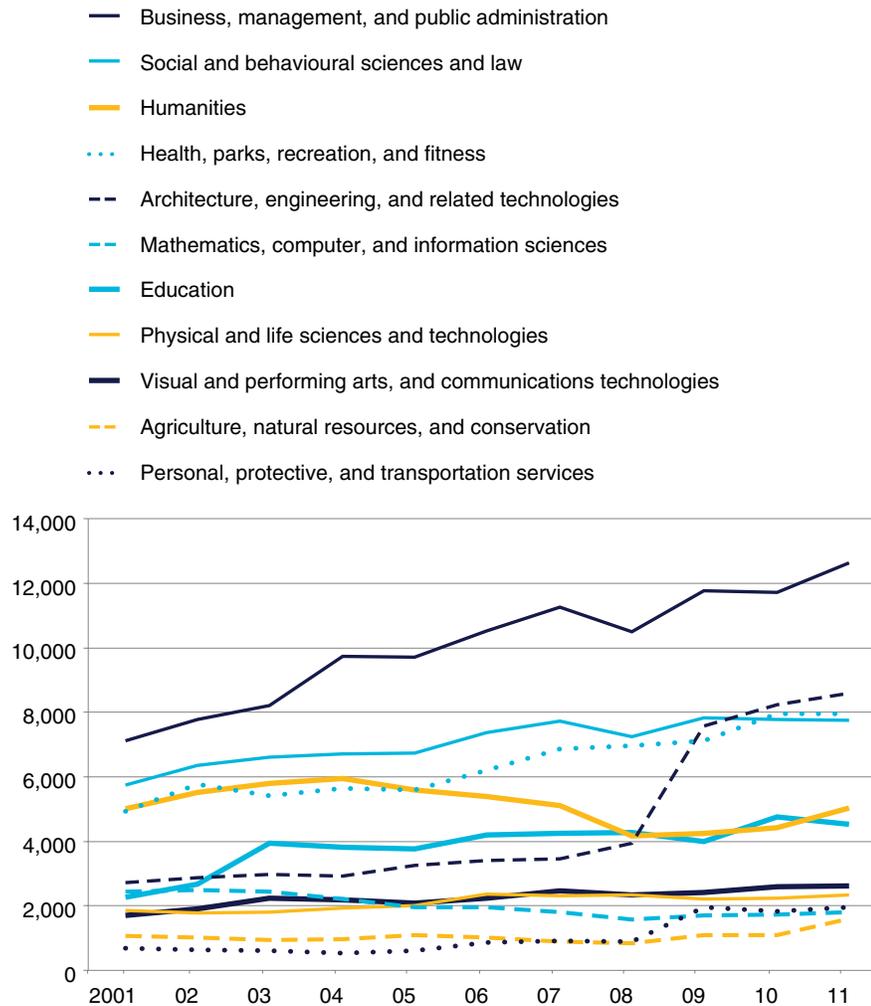
Sources: Statistics Canada, CANSIM table 477-0020; The Conference Board of Canada.

11 One expert notes that the number of PSE seats in engineering and computer science programs could almost be doubled to meet the growing need.

Chart 9

College and University Credentials Awarded Annually in B.C., by Discipline, 2001–11

(number)



Sources: Statistics Canada, CANSIM 477-0020; The Conference Board of Canada.

Conclusion

It is clear that skills gaps can have considerable impacts on individuals, businesses, and the economy as a whole. Conference Board economic analysis finds that the economy-wide costs of skills shortages—owing

to lagging or misaligned skills—are already in the billions. This is in addition to a range of impacts at the business and individual levels that collectively reduce competitiveness and individual well-being. To mitigate these impacts, education and policy stakeholders require knowledge of the occupations, educational credentials, and skills that are needed in the years to come. The following chapter considers the results of the BC Employer Skills Survey to help address these knowledge requirements.

CHAPTER 4

The Occupations, Skills, and Credentials That Employers Need

Chapter Summary

- B.C. employers responding to the Conference Board’s Skills Survey expect to have greatest difficulty finding future employees in business, finance, and administration (35 per cent); trades, transport, equipment operators, and related occupations (30 per cent); and sales and service occupations (23 per cent).
- An emerging “experience gap” due, in part, to retirements, has B.C. employers especially motivated to find experienced managers and supervisors across almost all occupational categories.
- To fill their skills needs, respondents said that they will be looking for employees with university degrees (57 per cent), college diplomas (44 per cent), certificates (41 per cent), trades qualifications and credentials (35 per cent), applied degrees (24 per cent), and associate degrees (13 per cent).
- B.C. employers are also concerned about deficits in the essential skills of recent graduates and job candidates. Many employers identify weaknesses in critical thinking and problem-solving (73 per cent), oral communication (38 per cent), literacy (36 per cent), and working with others (33 per cent).

British Columbia faces a risk of significant skills shortages on its horizon, largely owing to the retirements of baby boomers and the changing skills and knowledge requirements of the workplace. With timely and effective action to address its skills and workforce needs, B.C. can ensure a solid foundation for economic growth and mitigate the far-reaching economic and social consequences that result from skills shortages. But which occupations will experience the greatest challenges? What education and skills will job candidates need to fill these occupations?

To answer these questions, the Conference Board surveyed 854 B.C. employers who, together, employ nearly 9 per cent of the employed labour force in the province. This chapter reports the results of the survey, including employers' requirements in terms of:

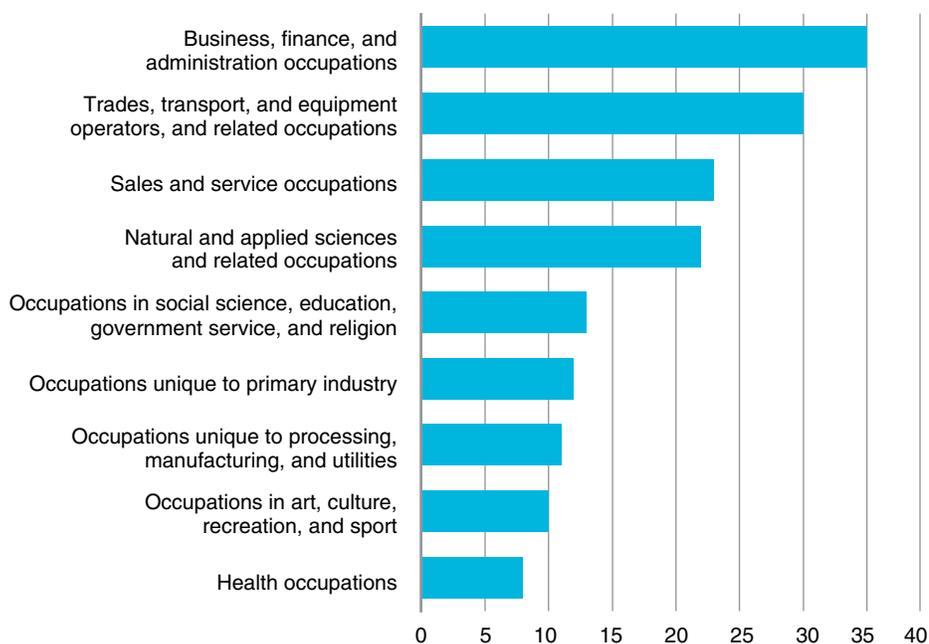
- **Occupations**— qualified individuals to fill the job categories and positions;
- **PSE credentials**—the educational requirements (university degrees, applied degrees, associate degrees, diplomas, certificates, and trades qualifications and credentials) that will be sought in new hires;
- **Essential skills**—the foundational skills employees need to be effective in the workplace, advance into senior positions within organizations, and adapt to changes in the job market.

Occupational Needs

We asked employers to specify the occupations for which they will have the greatest need over the next five to ten years. As a first step, we asked them to identify the general occupational categories for which they will need people, then specific occupations within each category

(below).¹ Thirty-five per cent of surveyed employers said they will need individuals in the business, finance, and administration category. (See Chart 10.) Nearly the same proportion (30 per cent) said they will need people in trades, transport and equipment operators, and related occupations.² Over 20 per cent indicated a need for individuals in natural and applied science and related occupations, and those related to social science, education, government service, and religion. (The percentages sum to more than 100 per cent as employers were asked to indicate *all* categories in which they will need people.)

Chart 10
Top Occupational Categories B.C. Employers Expect to Have Difficulty Filling
(percentage of respondents)



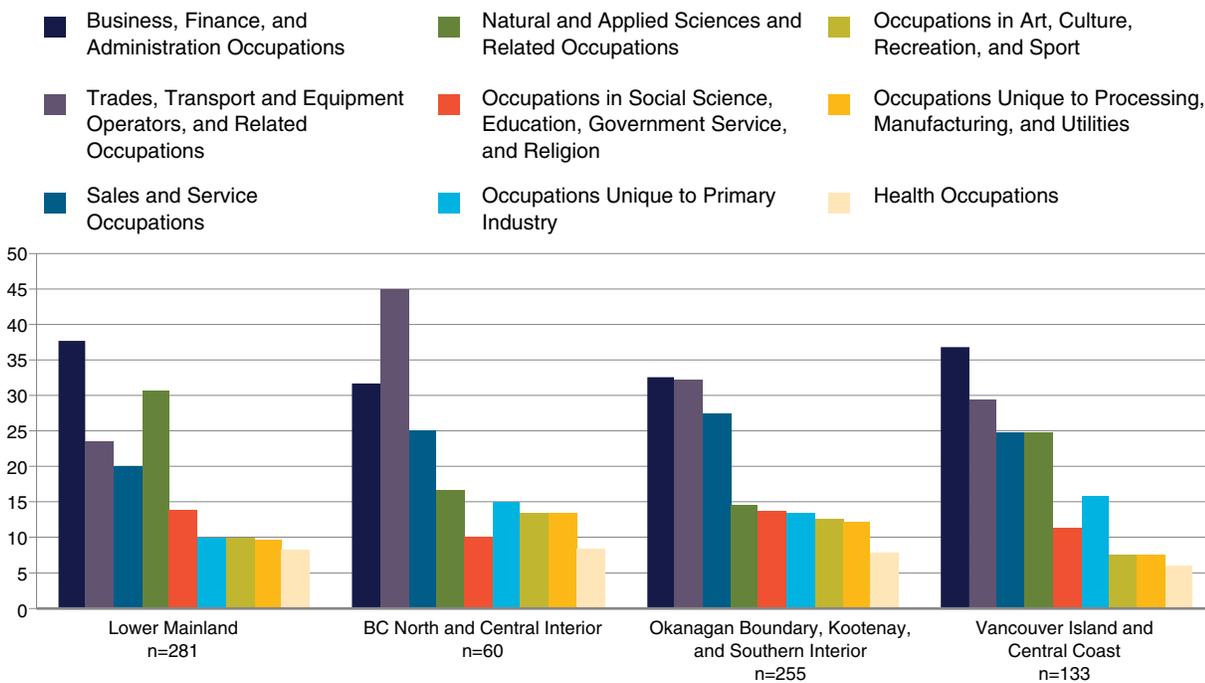
Source: The Conference Board of Canada.

- 1 Employers selected their occupational needs using National Occupational Classification (NOC) occupational codes at the one- and three-digit levels.
- 2 It should be noted that since most employer respondents represent private sector organizations, survey findings may not fully reflect the considerable need for health-related occupations, skills, and credentials—those which will emerge given the growing need for health services from Canada’s aging population.

The occupational needs reported by employers show substantial regional variation. (See Chart 11.) More employers expressed a need for people in business, finance, and administration than other occupational categories in three of the four B.C. regions considered—including 38 per cent of employers in B.C.’s Lower Mainland; 37 per cent in Vancouver Island and Central Coast; and 33 per cent in the Okanagan Boundary, Kootenay, and Southern Interior Regions. In the fourth main region—B.C.’s North and Central Interior—the most cited occupational category (45 per cent) is trades, transport, and equipment operators and related occupations. Sales and service occupations, and natural and applied sciences and related occupations, are also priority areas in all regions.

Chart 11
Occupational Categories Needed, by Region

(percentage of regional responses)



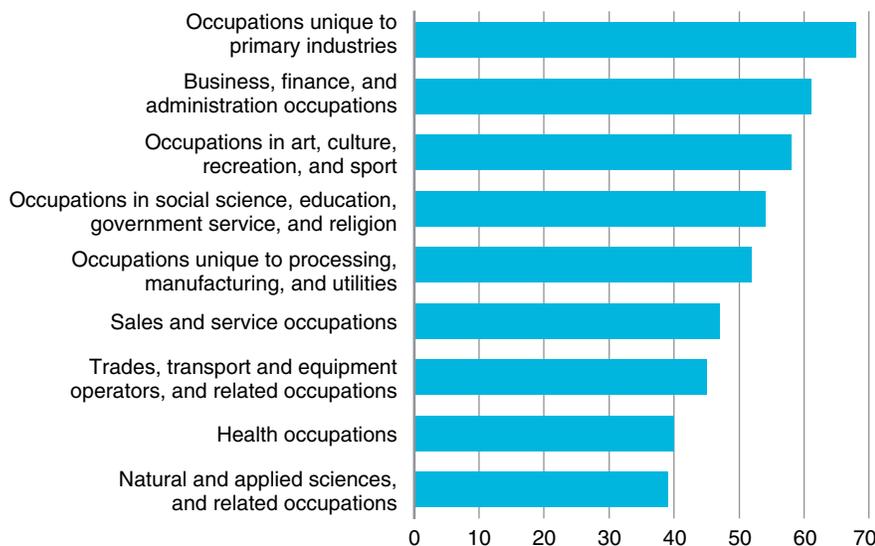
Source: The Conference Board of Canada.

We asked employers to indicate which specific occupations (within each occupational category) they will need people to fill. In almost all categories, employers indicated the greatest need for managers and supervisors. The exceptions are in the health, natural and applied sciences, and related occupations categories. (See Chart 12.) The preference for managers and supervisors is most apparent in the category of “occupations unique to primary industries,” where almost 70 per cent of employers specify a need for managers and supervisors over the next five to ten years. This indicates that although future needs for resource-sector workers may be considerable (e.g., oil and gas drillers³), these do not reflect the current and anticipated realities for most employers—which are still largely shaped by the prospect of looming retirements of key personnel.

Chart 12

B.C. Employers’ Need for Managers and Supervisors, by Occupational Category

(percentage of responses)



Source: The Conference Board of Canada.

3 Petroleum Human Resources Council of Canada, *Natural Gas Workforce Strategy and Action Plan*, 8.

Aside from managers and supervisors, people will be needed to fill a variety of other occupations. (See “Top Five Specific Occupational Needs, by Category.”)

Top Five Specific Occupational Needs, by Category

Business, Finance, and Administration Occupations

1. Managers and supervisors (61 per cent)
2. Human resources and business service professionals (46 per cent)
3. Auditors, accountants, and investment professionals (41 per cent)
4. Clerical occupations, general office skills (29 per cent)
5. Administrative support clerks (29 per cent)

Natural and Applied Sciences, and Related Occupations

1. Civil, mechanical, electrical, and chemical engineers (42 per cent)
2. Managers and supervisors (39 per cent)
3. Computer and information systems professionals (33 per cent)
4. Technical occupations in civil, mechanical, and industrial engineering (33 per cent)
5. Other engineers (32 per cent)

Health Occupations

1. Assisting occupations in support of health services (48 per cent)
2. Nurse supervisors and registered nurses (48 per cent)
3. Managers and supervisors (40 per cent)
4. Therapy and assessment professionals (40 per cent)
5. Other technical occupations in health care, except dental (24 per cent)

Occupations in Social Science, Education, Government Service, and Religion

1. Policy and program officers, researchers and consultants (33 per cent)
2. Psychologists, social workers, counsellors, clergy, and probation officers (23 per cent)
3. College and other vocational instructors (23 per cent)

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4. Paralegals, social services workers, and occupations in education and religion (20 per cent)
5. University professors and assistants (18 per cent)

Occupations in Art, Culture, Recreation, and Sport

1. Managers and supervisors (54 per cent)
2. Writing, translating, and public relations professionals (39 per cent)
3. Photographers, graphic arts technicians, and technical and coordinating occupations in motion pictures, broadcasting, and the performing arts (36 per cent)
4. Athletes, coaches, referees, and related occupations (31 per cent)
5. Creative designers and craftspersons (25 per cent)

Sales and Service Occupations

1. Managers and supervisors (47 per cent)
2. Technical sales specialists, wholesale trade (29 per cent)
3. Sales representatives, wholesale trade (24 per cent)
4. Retail salespersons and sales clerks (24 per cent)
5. Occupations in food and beverage service (21 per cent)

Trades, Transport and Equipment Operators, and Related Occupations

1. Managers and supervisors (45 per cent)
2. Electrical trades and telecommunication occupations (39 per cent)
3. Trades helpers and labourers (29 per cent)
4. Machinists and related occupations (28 per cent)
5. Machinery and transportation equipment mechanics except motor vehicle (25 per cent)

Occupations Unique to Primary Industry

1. Managers and supervisors (68 per cent)
2. Primary production labourers (35 per cent)
3. Logging and forestry workers (22 per cent)
4. Logging machinery operators (15 per cent)
5. Agriculture and horticulture workers (9 per cent)

Occupations Unique to Processing, Manufacturing, and Utilities

1. Managers and supervisors (52 per cent)
2. Labourers in processing, manufacturing, and utilities (46 per cent)
3. Central control and process operators in manufacturing and processing (34 per cent)
4. Other assembly and related occupations (27 per cent)
5. Mechanical, electrical, and electronics assemblers (23 per cent)

Source: The Conference Board of Canada.

Education and Training Requirements

To meet B.C. employers' occupational requirements, graduates of B.C.'s PSE institutions will have to have the right credentials. Respondents to the BC Employer Skills Survey were asked to indicate which PSE credentials they will need employees to have, in addition to the specific subject areas they are looking for. Their responses can help inform B.C. youth, their parents, and educational policy-makers, as they consider where to make educational investments.

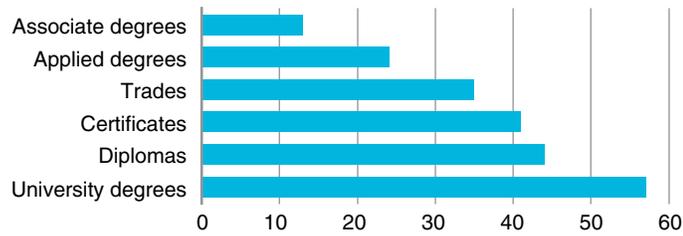
On the whole, employers need graduates with a variety of credential types. (See Chart 13.) A majority (57 per cent) of employer survey respondents indicate a need for university degree holders, and large numbers also indicate a need for college diploma holders (44 per cent) and certificate holders (41 per cent). Thirty-five per cent of employers say they will need individuals with trades qualifications and credentials. Fewer say they will require individuals with applied degrees (24 per cent) or associate degrees (13 per cent).⁴ Chart 14 shows that, generally, the larger the firm the greater the demand for employees with university degrees. Demand for employees with college diplomas is second greatest among firms of most sizes, except among firms with 20–99 employees, where demand for certificates is greater.

4 As employers were able to select more than one type of credential need, percentages sum to more than 100.

Chart 13

B.C. Employer Credential Needs

(percentage of respondents)

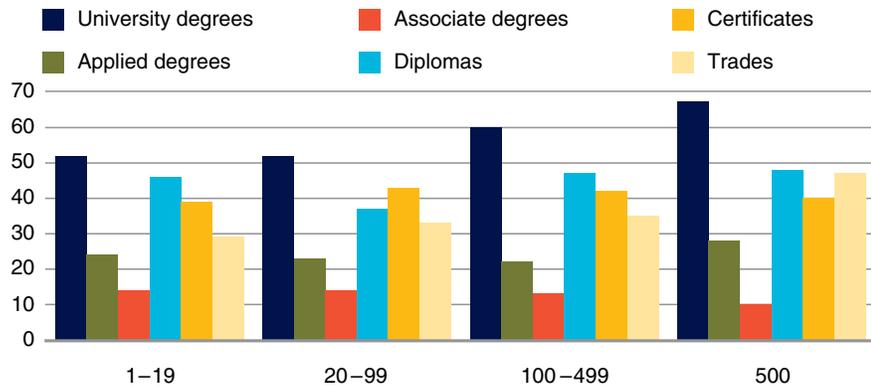


Source: The Conference Board of Canada.

Chart 14

B.C. Employer PSE Credential Needs, by Firm Size

(number of employees; percentage of respondents)



Source: The Conference Board of Canada.

From a regional perspective, B.C.'s Lower Mainland and Vancouver Island/Central Coast regions have the greatest need for university degree holders (as a percentage of responses from those regions), by considerable margins—70 per cent and 59 per cent, respectively. (See Chart 15.) Trades qualifications and credentials are in greatest demand among employers in the North and Central Interior regions (52 per cent).

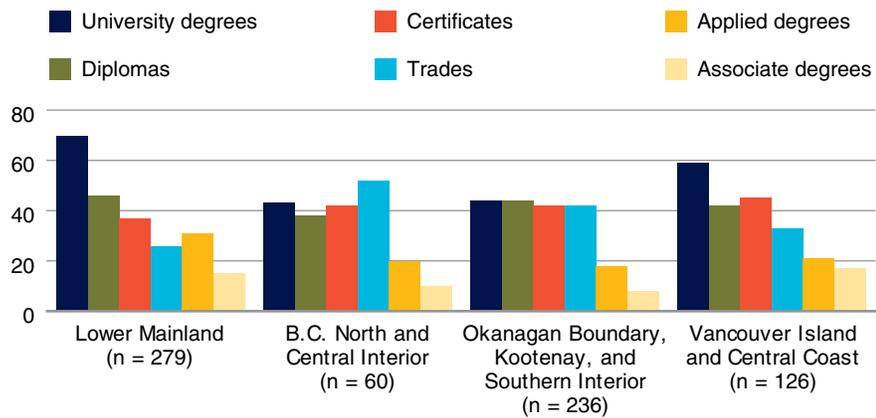
In the Okanagan Boundary, Kootenay, and Southern Interior region, employers have an almost equal need for university degrees, diplomas, certificates, and trades, at just over 40 per cent for each.

In all regions, demand for applied degrees and associate degrees is smallest, except in the Lower Mainland where there is a greater need for holders of applied degrees (31 per cent) as compared with holders of trades qualifications and certificates (26 per cent).

Chart 15

B.C. Employer Credential Needs, by Region

(percentage of regional responses)



Source: The Conference Board of Canada.

Subject Areas Needed

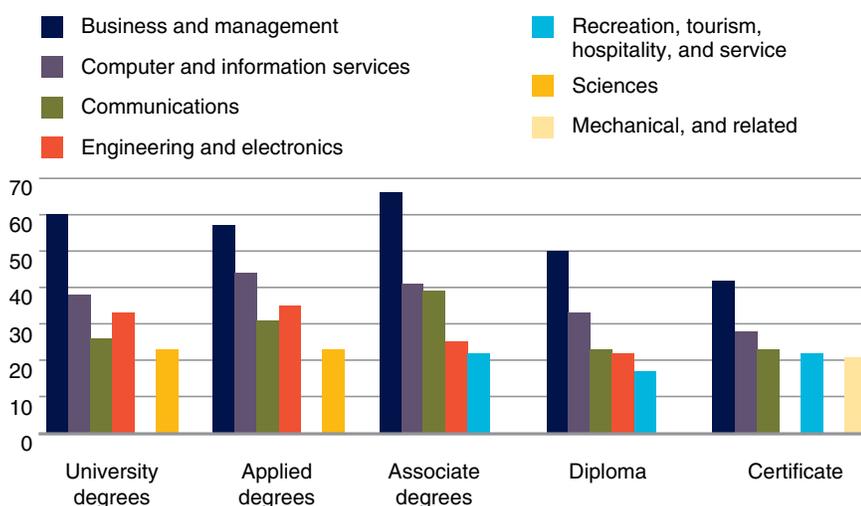
Employers were asked to specify the subject areas they will be looking for among graduates of all credential types, and there is an interesting similarity for each credential type. In particular, there is a considerable preference for graduates from business and management subject areas across all credential types (in terms of the percentage of employers that indicated a need for these subject areas for each credential). (See Chart 16.) The need for graduates from computer and information services programs is the second-most mentioned area. Engineering

and electronics programs, and communications programs, are either the third- or fourth-most desired subject areas for graduates of each credential type. Other top subject areas include sciences; recreation, tourism, hospitality, and service programs; and mechanical and related programs.

Chart 16

B.C. Employers' Subject Area Needs, by Credential Type

(percentage of respondents)



Source: The Conference Board of Canada.

Trades

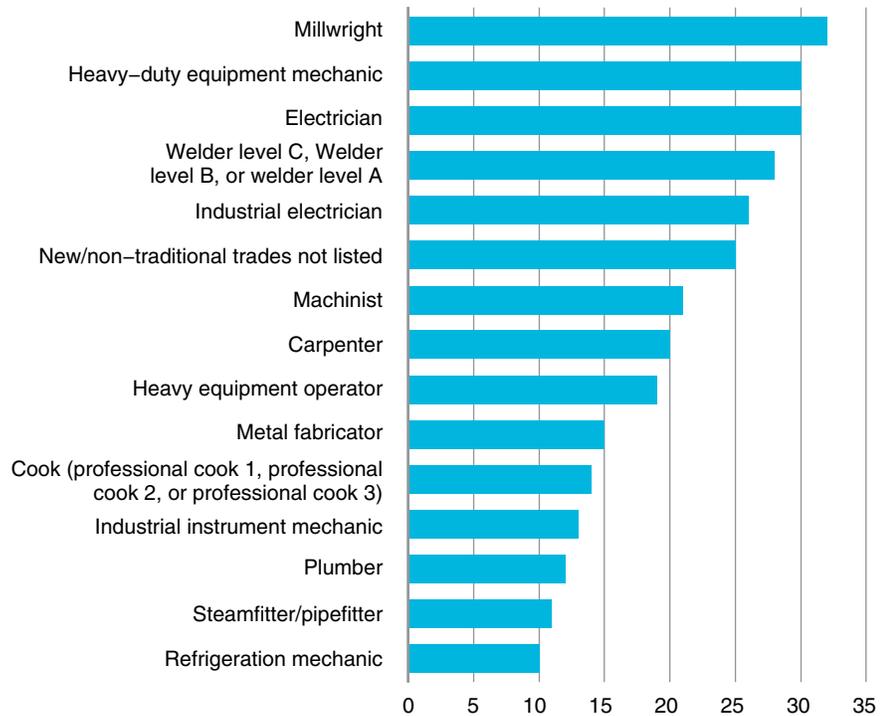
The 260 employers who indicated a need for employees with trades qualifications and certificates, were asked to indicate which B.C. Red Seal-designated trades were needed.⁵ Among the top 15 trades needed, employers indicated the greatest need for millwrights, (32 per cent of employers), heavy duty equipment mechanics (30 per cent), electricians (30 per cent), welders (28 per cent), industrial electricians (26 per cent), as well as a host of others. (See Chart 17.)

5 See Red Seal Program, *Red Seal Trades Designated in British Columbia*.

Chart 17

B.C. Employers' Top 15 Trades Needs

(percentage of respondents, n = 260)



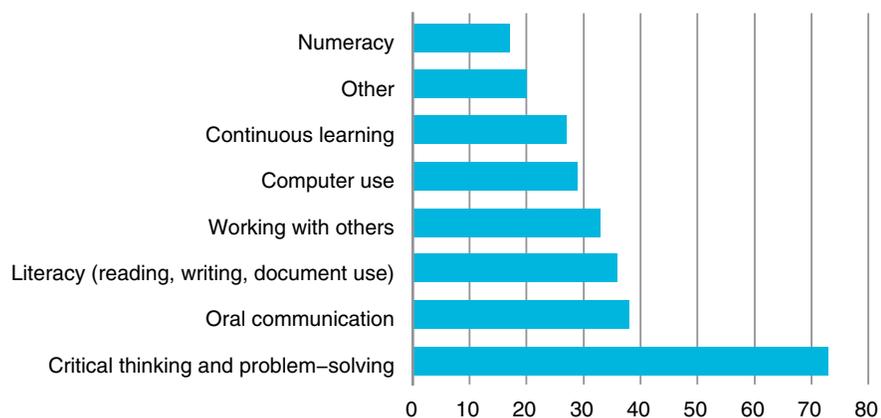
Source: The Conference Board of Canada.

Essential Skills

Here, it should be noted again that employers' responses to the survey indicate the skills needs that they anticipate for their own firms in the foreseeable future. The data do not, therefore, reflect the possible economy-wide needs for skills and related occupations that may emerge given the development of significant new projects, as considered in Chapter 2. It was noted there that the development of even a few of the LNG projects being proposed will result in considerable demand for skilled trades people in the years to come.

As noted in Chapter 2, B.C. employers are looking for employees with “soft skills” and competencies that are important for workplace and career-related success. This includes essential skills linked to an individual’s ability to think, learn, and communicate, and which “provide the foundation for learning all other skills and enable people to evolve with their jobs and adapt to workplace change.”⁶ Employer survey respondents identify critical thinking and problem-solving skills as the most difficult essential skills to find in their new hires. (See Chart 18.) Oral communication and literacy skills were the next most difficult to find (38 and 36 per cent, respectively), followed by working with others (33 per cent).

Chart 18
Essential Skills Gaps
(percentage of respondents)



Source: The Conference Board of Canada.

Essential skills are important for a variety of reasons. When individuals lack essential skills, their ability to meet the basic demands of their roles may be diminished—and they may be less likely to receive other forms

6 ABC Life Literacy Canada, *Essential Skills*.

of workplace training.⁷ In addition, these skills, at higher levels, are typically required for advancement into new roles and responsibilities. Senior positions in most organizations, for example, typically require highly developed communication and problem-solving skills. Moreover, a workforce with good essential skills will be better positioned to engage in continuous learning, of the kind needed to respond to future changes in the workplace and job market.

As British Columbia looks to bolster its labour force, with greater participation from Aboriginal people and newcomers to Canada (immigrants as well as international students), it will be important to ensure that all employees have good essential and employability skills. The BC Employer Skills Survey asked employers to describe the essential skills proficiency of recent graduates, Aboriginal graduates, and recent immigrants or international students, whom they have hired or interviewed. A key finding was that essential skills levels among Aboriginal people, immigrants, international students, and other recent hires and job candidates were relatively similar in many areas, though there were some differences.

Aboriginal Graduates

Aboriginal graduates, recently hired or interviewed, were more likely to be viewed by employers as being proficient in critical thinking and problem-solving (34 per cent “good” or “very good”) than other recent hires or job candidates (31 per cent), and equally proficient in working with others. However, employers were more likely to view Aboriginal candidates as less proficient than non-Aboriginal candidates in literacy, numeracy, oral communication, computer use, and continuous learning skills. (See Charts 19 and 20.) The gaps are largest in the area of computer use (where 70 per cent of employers view non-Aboriginal candidates as having good or very good skills, versus 40 per cent who held that view of Aboriginal candidates) and numeracy (where 57 per

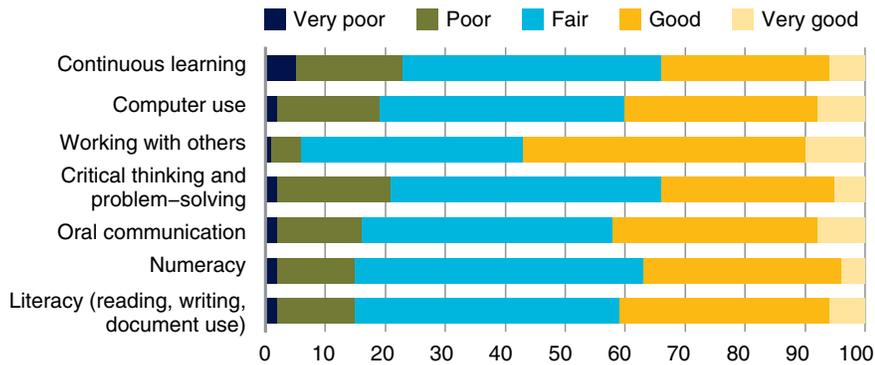
7 Munro, *Skills and Higher Education in Canada*, 14.

cent of employers view non-Aboriginal candidates as having good or very good skills, versus 37 per cent who held that view of Aboriginal candidates).

Chart 19

B.C. Employers' View of Skills Levels of Recent Aboriginal Graduates, Interviewed or Hired

(percentage of respondents)

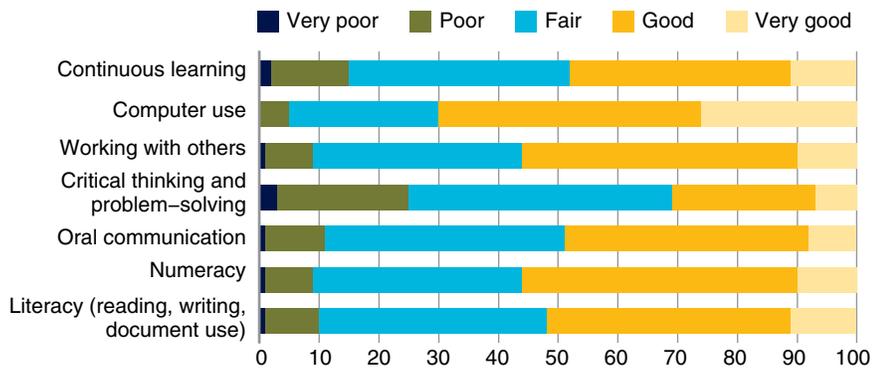


Source: The Conference Board of Canada.

Chart 20

B.C. Employers' View of Skills Levels of Recent Graduates, Interviewed or Hired

(percentage of respondents)

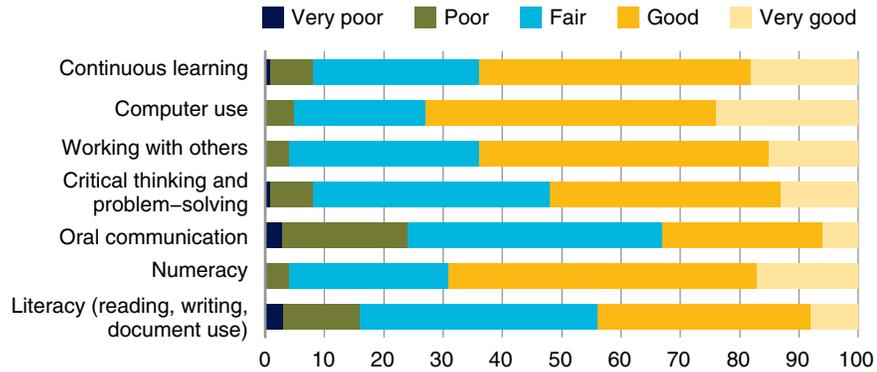


Source: The Conference Board of Canada.

Chart 21

B.C. Employers' Views of Skills Levels of Recent Immigrants or International Students, Interviewed or Hired

(percentage of respondents)



Source: The Conference Board of Canada.

Recent Immigrants and International Students

Among recent immigrants and international students interviewed or hired by employer survey respondents, skill levels lag only in the areas of literacy and oral communication. (See Chart 21.) In other areas, recent immigrants and international students interviewed or hired were less likely to be considered “poor” or “very poor.” In critical thinking and problem-solving skills, for example, only 8 per cent of employers ranked immigrants and international students as either poor or very poor, compared with 25 per cent for recent graduates in general.

In fact, recent immigrants and international students interviewed or hired have an edge over other candidates in employers’ eyes in every skills category except for oral communication and literacy. Immigrant and international student candidates were more likely than other candidates to be viewed by employers as having good or very good skills in computer use, continuous learning, critical thinking, numeracy, and working with others.

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These results are consistent with the results of a 2013 essential skills development program in which colleges in British Columbia and other provinces participated. The program aimed to identify essential skills gaps among learners and workers and found that 65 per cent of 1,308 participants tested poorly for literacy.⁸ Fortunately, some PSE institutions recognize the need for improvement and have developed programming to target essential skills development needs. A case in point is Douglas College's Essential Skills Practitioner Training program—a first-of-its-kind program in Canada to teach educators, human resources practitioners, and others how to incorporate essential skills development into their work with students and workers.⁹

Conclusion

Employers across the board indicate that their greatest need will be for employees with business and management education and experience. But many also need people with the education and essential skills to fill other roles—including roles that change in response to business needs and wider economic forces. Indeed, the demographic and technological changes employers face—along with increasing competition from other firms, sectors, and provinces—are creating real challenges for firms looking for people with certain kinds of education, experience, and a range of critical thinking, communication, teamwork, and other skills. Although there is some untapped labour force capacity in the province, the challenge is to find not just people, but people with the right combination of skills. Meeting this challenge will require action by educational institutions, as well as action by firms themselves, given that much experience and skills acquisition can really only occur in a workplace setting. So what are employers doing?

8 Below Level 3 on the scale used by the International Adult Literacy and Skills Survey (IALSS). See Munro, Stuckey, and MacLaine, *Skills—Where Are We Today?; Post-Secondary Education and the State of Skills Production in Canada*.

9 Tetarenko, *First Essential Skills Practitioner Training Students Graduate From Douglas College*.

CHAPTER 5

Employer Strategies to Meet Skills Needs

Chapter Summary

- Employers who responded to the BC Employer Skills Survey use a wide range of strategies to attract and develop workers, including in-house training and development (76 per cent); developing flexible workplaces (49 per cent); hiring from out of province (45 per cent); and increasing wages, compensation, or benefits (45 per cent).
- B.C. employers say they participate in a variety of experiential learning opportunities to provide students with applied learning opportunities—including co-op placements (47 per cent), mentoring (40 per cent), and apprenticeships (32 per cent).
- Employers report challenges in participating more fully in experiential learning—including a lack of time to mentor and manage students (38 per cent), an excess of administration and “red-tape” (36 per cent), and a lack of awareness and understanding of the value of experiential learning (27 per cent).
- More than half of surveyed employers reported that they did not have good opportunities to communicate their skills needs and issues to PSE institutions.

Many factors that affect labour and skills supply are beyond the control of employers. They cannot change demographic realities, and their influence over policy decisions relating to immigration, education, or other matters is limited. In some industries, employers claim to have difficulty paying wages that would be considered competitive relative to those paid in high-performing industries like oil and gas. However, there is still much that employers can do to effectively attract, retain, and develop the skilled employees they need. This chapter considers the strategies employers adopt to achieve these objectives, including experiential learning, and other forms of cooperation with PSE institutions.

Employer Strategies

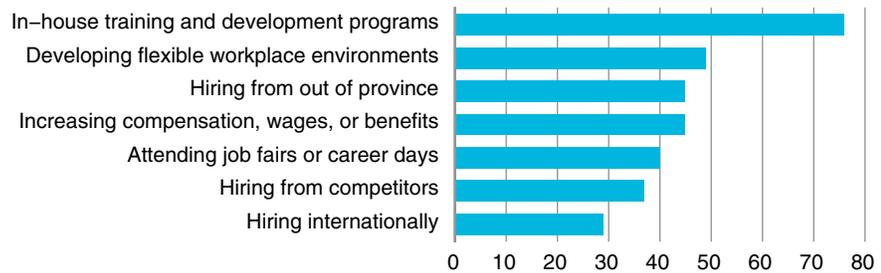
Employers use many strategies to attract and develop workers. Almost 80 per cent of surveyed B.C. employers say they provide in-house training and development. (See Chart 22.) While training and development (T&D) investment among Canadian employers is poor in general, this finding suggests that B.C. employers recognize its importance in attracting and further developing skilled individuals. Forty-eight per cent of B.C. employer respondents indicate that they intend to spend “more” on employee T&D in the years ahead, and 8 per cent intend to spend “substantially more.” Forty-one per cent intend to spend “about the same,” and 3 per cent intend to spend “less.”

In tightening labour markets, non-monetary incentives can be important to worker attraction and retention. Almost half (49 per cent) of respondents to the BC Employers Skills Survey said that they try to

Chart 22

B.C. Employer Skills Strategies

(percentage of respondents)



Source: The Conference Board of Canada.

foster flexible workplace environments as a way to attract workers. And, nearly half (45 per cent) say that they have increased compensation, wages, or benefits; and an equal proportion have hired employees from other provinces. One-third of employers noted that they try to hire from competitors, while slightly less than 30 per cent hire from international sources. Other strategies adopted by B.C. employers include social, media-based advertisement and recruitment; engaging with and recruiting from Aboriginal communities; and providing other benefits and compensation (including profit-sharing arrangements, competitive parental leave policies, etc.).

Looking ahead, interviewees noted that other workforce management strategies may be needed. In particular, a mobile workforce, involving a “fly-in, fly-out” work model (where employees alternate between several weeks on the job and several weeks at home) is a possible “paradigm” for addressing the need for non-permanent labour in some regions. Indeed, interviewees noted that there is much B.C. employers could learn from Alberta oil sands employers in terms of supporting workforce arrangements of this kind.

Experiential Learning

Employers were asked separately to describe their strategies with respect to experiential learning¹—partnerships that are undertaken with PSE institutions to provide students with opportunities to apply and develop their knowledge and skills in real-world contexts. These include co-op positions, internships, applied research projects, mentoring opportunities, apprenticeships, and other models. Interviewees noted that these arrangements not only provide students with valuable work experience, but also help employers to identify future employees, access the best talent emerging from PSE institutions, and see if the job and individual are a good “fit” for each other.²

Almost half of employers surveyed (47 per cent) have supported co-op positions for PSE students; 40 per cent have supported mentoring; 32 per cent have supported apprenticeships; 23 per cent have supported paid internships; and 19 per cent have supported research and development collaborations involving students. (See Chart 23.)³ Eighteen per cent of employers also make use of unpaid internships, although almost half (48 per cent) express no interest in this strategy—with many commenting that workers, whether students or others, should (as a basic matter of principle) always be paid for their work.

Despite the participation of many employers in experiential learning, others indicated that they are not interested or are incapable, and cited key barriers. (See Chart 24.) Among these are a lack of time for employees to mentor and manage students (38 per cent), perceptions of excessive administration and “red-tape” associated with undertaking

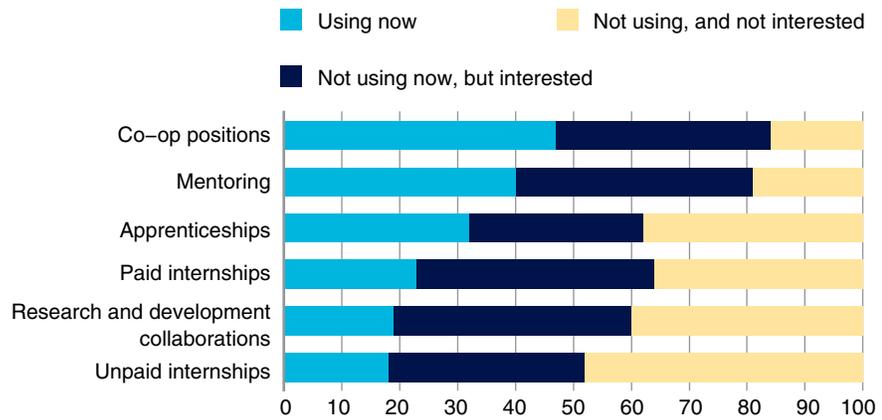
- 1 Sometimes also referred to as work-integrated learning.
- 2 Interviews suggest that in many cases, employers see experiential learning arrangements as key talent pipelines. The representative of one manufacturing firm noted that “more often than not” co-op placements in their engineering division lead to permanent jobs for the students.
- 3 Given that employers could indicate their participation in more than one experiential learning strategy, numbers do not add to 10 per cent.

these partnerships (36 per cent), and cost (25 per cent). Twenty-one per cent were aware of experiential learning but not convinced of its value, while 27 per cent were not aware of experiential learning nor its value.

Chart 23

B.C. Employer Experiential Learning Strategies

(percentage of respondents)

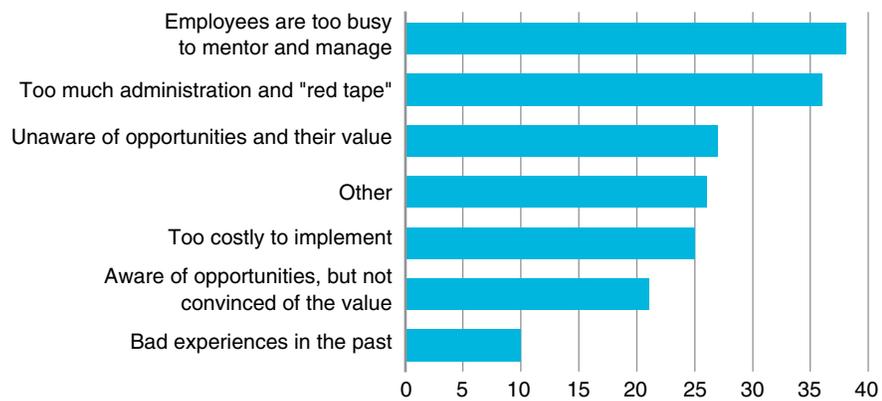


Source: The Conference Board of Canada.

Chart 24

B.C. Employers' Barriers to Experiential Learning

(percentage of respondents)



Source: The Conference Board of Canada.

Some experiential learning strategies face unique challenges. For example, apprenticeship non-completion is a challenge that contributes to shortages in the trades in B.C. and other jurisdictions.⁴ Even here, however, there are steps employers can take to help overcome challenges, particularly in their own communities. One interviewee, representing a mining company facing shortages of tradespeople, described a positive relationship with the local College of the Rockies, in which the company commits to finding placements for students undertaking the college's Mining Apprenticeship Program. This helps allay student concerns about finding an employer to indenture them—a common challenge to apprenticeship uptake—and highlights the importance of strong relationships between employers and PSE institutions.

Improving PSE-Business Cooperation

Employers engage with PSE institutions in ways that go beyond experiential learning partnerships. Some of the ways include participating in program advisory committees, acting as guest speakers, participating in career fairs, and other activities to help connect education and training with workforce needs.⁵ There is a growing recognition that effective cooperation between PSE institutions and businesses, in these and other areas, is integral to meeting the quickening pace of workplace change.⁶

- 4 The Conference Board's Centre for Skills and PSE is currently working on a report on Canada's apprenticeship system.
- 5 An upcoming Conference Board report explores the importance of business–education partnerships.
- 6 Reflecting the national scope of this priority, at a recent symposium consisting of education and labour market ministers and business leaders from across Canada, a joint declaration was made that “Partnerships and alignment with business, labour, education, and training providers are key to ensuring synergy between education and skills training systems and Canada's labour markets.” Council of Ministers of Education, Canada, *Ministers and Key Partners Chart Path Forward for Education and Skills in Canada*.

Indeed, it is already the case that some employers rely on the programs of only a few PSE institutions to meet their need for graduates with specialized skills needs.⁷

The recent BC Skills for Jobs Blueprint represents a key policy effort to help improve alignment between PSE educational programming and workforce needs, by routing a greater portion of funding to programs that support high-demand occupations. The amount of targeted funding for these initiatives is expected to increase from about 10 per cent to 25 per cent of total operating funding over the next three years.⁸ PSE institutions' knowledge of local workforce needs will, alongside other sources of labour market information, play a role in identifying these high-demand occupations. As such, it will become increasingly important that employers have the right opportunities to engage with PSE institutions to share with them the skills and knowledge needs developing in their organizations and industry as a whole.

The BC Employer Skills Survey asked B.C. employers to characterize their opportunities to communicate skills and training needs to PSE institutions, and results show that there is room for improvement. Fewer than 35 per cent of employer respondents in each region characterize these opportunities as “good,” and less than 10 per cent characterize them as “excellent.” In every region, at least 57 per cent said that such opportunities were “limited” or “non-existent.” (See Chart 25.)

A different picture emerges when looking at these results by firm size. B.C.'s larger firms clearly feel better able to communicate their skills and training needs to PSE institutions than smaller ones—with nearly half of B.C.'s largest firms characterizing these opportunities as good, and 14 per cent characterizing them as excellent. (See Chart 26.) B.C.'s smaller firms (1–19 employees) feel considerably less able to communicate their skills and training needs to PSE institutions, with

7 One organization interviewed—a provider of ocean mapping services for the government—looks to the hydrographic programs at the University of Victoria and Camosun College as a conduit for new recruits.

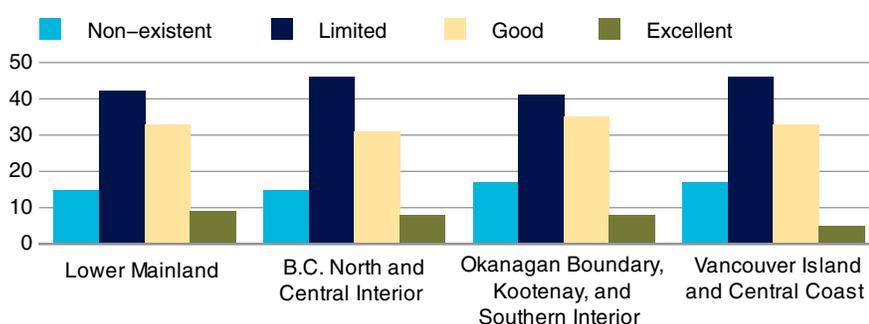
8 Province of British Columbia, *B.C.'s Skills for Jobs Blueprint*, 34.

almost a third describing these opportunities as non-existent. Given the importance of smaller firms to B.C.'s economy, particularly in rural regions,⁹ improving connections between these sectors represents a considerable need for addressing skills shortages at local and regional levels in the years ahead.

Chart 25

B.C. Employers' Ability to Communicate Skills and Training Needs to PSE Institutions, by Region

(percentage of respondents)

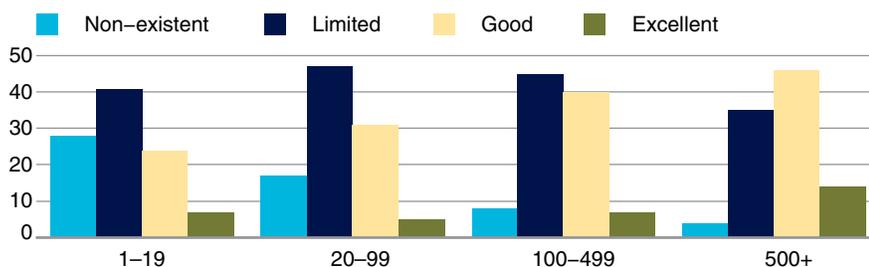


Source: The Conference Board of Canada.

Chart 26

B.C. Employers' Ability to Communicate Skills and Training Needs to PSE Institutions, by Firm Size

(number of employees; percentage of respondents)



Source: The Conference Board of Canada.

9 BC Ministry of Regional Economic and Skills Development, *Skills for Growth*, 7.

Conclusion

Results from the BC Employer Skills Survey and interviews with employers show that employers undertake a variety of strategies to meet their workforce needs. Utilizing these and other strategies is an important element of workforce strategy for employers facing skills pressures. As one interviewee put it, B.C. now requires a “different kind of employer”—one that pays greater attention to the total “value proposition” for potential employees.¹⁰ Many employers are increasing T&D spending, as well as monetary and non-monetary forms of compensation, to attract and retain the talent they need. B.C. employers also recognize the importance of cooperation with PSE institutions—particularly in the form of experiential learning arrangements—and would like to see greater opportunities for communicating their skills needs to PSE institutions.

¹⁰ Executive in the B.C. forest industry. Confidential telephone interview by The Conference Board of Canada, March 26, 2014.

CHAPTER 6

Conclusion: Skills for Success

Chapter Summary

- B.C. has bright economic prospects, but skills deficits and mismatches are already taking a heavy economic toll and threaten to stall development and growth.
- Although preparing part of B.C.'s labour force for LNG projects will be important, skills needs in other larger sectors will also require sector-specific strategies; coordination with PSE institutions; and additional resources, information, and leadership from businesses, government, and PSE institutions.
- All of B.C.'s skills stakeholders—government, educational institutions, employers, and individuals—have important roles to play in securing the province's economic potential.

A number of important social and economic changes are on the horizon for British Columbia. Labour markets are undergoing considerable shifts, new industries and economic development possibilities are emerging, and changes are being made to the manner in which education and training systems respond to a new generation of skills development needs. Careful reflection and strategic action is required to ensure that employers, educators, governments, and other stakeholders are ready to meet skills needs and do their respective parts to position B.C. and its residents for sustained economic success and social well-being.

Reviewing B.C.'s Skills Situation—Mind the Experience Gap

Much of the current discussion around skills issues in B.C. revolves around the prospect of major project developments, such as LNG. To be sure, these developments are likely to introduce considerable needs for skilled workers. However, for the bulk of B.C.'s economy, employers' skills needs will continue to be shaped by traditional economic and labour market forces. Indeed, the key factors shaping the skills and workforce issues among B.C. employers today are not major new economic developments, but demography and uncertainty.

Wanted: Managers and Supervisors

The effects of an aging population will not only constrain labour force growth, but will also result in the retirement of older, more experienced employees. This will contribute to an emerging "experience gap," including the loss of managerial and supervisory capacity throughout

British Columbia. It is no surprise, then, that among a wide range of occupational categories, employer survey respondents report the greatest need for managers and supervisors. This need is greatest among occupations unique to primary industries—highlighting the fact that, even though new resource developments may generate a considerable need for tradespeople (e.g., oil and gas drillers¹), what matters most across almost all sectors is access to workers with the ability and experience to manage and lead businesses in the years ahead.

Business and Management Graduates (With Experience)

The majority of employer survey respondents (57 per cent) say they will need people with university degrees. Many also say they need people with diplomas (44 per cent) and certificates (41 per cent). Across all credential types, employers are interested in graduates from many disciplines, but especially graduates of business and management programs. Additionally, many employers want candidates with several years of workplace experience—arguably a proxy measure for key essential skills (such as critical thinking and problem-solving, communication, and the ability to work with others), but also reflecting a worry about retirements.

Essential Skills for a Dynamic Workforce

In addition to having the right educational credentials, current and future cohorts of workers will need essential skills to enable them to function effectively in the workplace, fill emerging managerial and supervisory gaps, and adapt to changes in the economy. Employers identify many essential skills that they have difficulty finding among new hires—particularly, critical thinking and problem-solving. As B.C.'s workforce comes to depend more on the participation of new Canadians, Aboriginal people, and other traditionally under-represented groups, special

1 Petroleum Human Resources Council of Canada, *Natural Gas Workforce Strategy and Action Plan*, 8.

supports may be needed to bridge certain gaps (e.g., English-language training for new Canadians). It is noteworthy, however, that Aboriginal people, immigrants, and international student job candidates and hires were seen by employers to have better essential skills in some key areas than other job candidates.

Recommendations

All of B.C.'s skills stakeholders—government, PSE institutions, employers, and individuals—have important roles to play in securing the province's economic potential. With targeted, strategic action by all stakeholders, B.C. will be in a stronger position to address its skills challenges and achieve benefits for the economy, society, employers, and individuals.

Recommendations for Governments

1. Increase investment in education and training to better address labour market needs.

New economic developments, such as potential LNG projects, offer well-paying job opportunities for B.C. residents. But, if residents are not qualified to fill the openings, employers will have to look elsewhere for workers—or delay work. There is an understandable desire to ensure that B.C. residents are not sitting on the sidelines while work on these developments begins, and to ascertain that this work produces benefits for business and workers.² The provincial government has introduced measures, such as the BC Skills for Jobs Blueprint, to achieve a better alignment between the education and skills of B.C. residents, and those that employers will need. But additional steps could be taken.

2 As Premier Clark noted in the Throne Speech, “Preparing the workforce with skills that match current and future job opportunities, where people live and in the communities they love, is essential to ensuring that British Columbians are first in line for jobs.” See Fowlie, “Christy Clark Promises Action as Numbers Show a Looming Job Skills Shortage.”

In particular, the B.C. government should consider additional investment in higher education and training programs (e.g., more seats in existing or new programs) that produce graduates not only in high-demand fields, but with advanced, transferable skills that enable them to adapt to new economic and social opportunities. The government should consider increasing investment in essential skills training, upgrading initiatives, and career development and counselling programs for all learners, especially under-represented populations (such as Aboriginal peoples and the disabled). These measures would help ensure that all B.C. residents can achieve success in the labour market.

2. Support broad-based education and skills development to foster a flexible and dynamic workforce and society.

Even as B.C. works to achieve a better alignment between its PSE system and labour force needs, investments should continue to be made in a broad spectrum of PSE programs and disciplines. A diverse range of graduates will be needed as part of a creative and entrepreneurial society, able to create the strong businesses, smart policies, and thriving communities of tomorrow. In addition, given the difficulty of predicting exactly which skills may be needed in the job market of the future, the development of essential, transferable skills should be a key priority, and supported with the appropriate investments in educational programs and initiatives.

3. Provide greater resources for experiential learning partnerships between PSE institutions and employers.

Given that many workers will be expected to take on the positions and responsibilities of retiring experienced workers, programs and initiatives that provide students with real-world, hands-on learning will be a key part of a successful skills strategy. Experiential learning offers numerous benefits to PSE institutions, students, and employers. In particular, it can provide PSE students with the relevant work experience that many employers now require of entry-level job candidates, as students pursue their educational credentials.

While PSE institutions and employers are the key actors in developing, implementing, and monitoring experiential learning for students, government is a key supporting partner. The amount of resources, which are provided to PSE institutions to address barriers and carry out these activities, will largely determine the size and shape of B.C.'s experiential learning "ecosystem." Although many PSE institutions currently support experiential learning in a variety of forms, there is much that can be done to make experiential learning an even more prominent component of a post-secondary education at all institutions.

Recommendations for PSE Institutions

4. Improve opportunities for cooperation and communication with employers.

Skills gaps that are experienced by employers and recent graduates are partly a result of sub-optimal communication between PSE institutions and employers about respective roles and responsibilities in the broader education, training, and skills development environment. Most employers feel that they have limited opportunities to communicate their skills development needs to PSE institutions. PSE institutions, in many cases, feel that employers have a limited understanding of the diversity of education and training aims across institutions and programs. Addressing emerging skills gaps will require better communication.

As a key component of cooperation, employers must have better opportunities to communicate their skills and training needs to PSE institutions. The BC Employer Skills Survey reveals that there is much that can be improved in this area. Most employers consider these opportunities to be limited, and the problem is particularly acute for the province's smaller businesses and employers in more remote locations. PSE institutions should consider ways of improving cooperation and communication with businesses in the years ahead, to enhance labour market effectiveness.

5. Make adjustments to programs and curricula to reflect the current and future realities of the labour market.

The BC Skills for Jobs Blueprint will require PSE institutions to focus more resources on programs that support high-demand occupations. This is a good first step to help maximize the employment outcomes of graduates, and mitigate skills mismatches throughout the economy. Efforts should also be made to ensure that all programs and curricula are appropriately informed by an understanding of the skills that graduates will need to find and maintain meaningful employment. This includes those that relate to specific, job-related skills and competencies, as well as the essential and transferable skills that graduates will need to respond to future changes in the job market. In addition, PSE institutions should ensure that education and training programs to *upgrade* individuals' skills and knowledge throughout their careers (e.g., through continuing education departments) keep pace with, and are informed by, labour market realities.

6. Collect, and communicate to current and prospective students, information regarding employment and income prospects for graduates of specific programs and disciplines.

The shape of B.C.'s workforce is determined not only by the policy decisions of governments and educators (for example, regarding funding levels for various programs), but it is also shaped by the choices of students and workers about what to study and where to work. Fundamentally, it is up to individuals to decide whether to pursue a PSE education, which kind of credential program to undertake, and which subject area to focus on. Unfortunately, those choices are often made with very limited, or even inaccurate, information about the employment and income prospects that await graduates in specific fields.

Although some institutions provide information on employment outcomes at an institutional level, those preparing to make significant investments in post-secondary education should have better information about what returns they might expect. Students' choices are heavily influenced by their interests, preferences, and capacities—criteria that should continue

to play an important, if not primary, role in decision-making. And we should be realistic about how much students who are interested, and able to succeed, in one area can be influenced and incentivized to shift to another area. Still, there is some range of realistic choice and students making those choices would benefit from information about the potential employment and income prospects of various fields. Collecting and sharing better information could improve decision-making and contribute to greater efficiency in the skills and labour market.

Recommendations for Employers

7. Increase investments in employee training and development.

The T&D expenditures of Canadian employers do not stack up to the skills challenges ahead. T&D expenditures lag those of key international competitors, and even lag Canada's own historical standards, at a time of increasing concern over skills shortages. Employers have come to expect more from PSE institutions in terms of preparing students with relevant employability skills and experience, in addition to technical skills and know-how. And, over the years, many PSE institutions have responded by becoming more vocationally oriented. However, skills development is a mutual responsibility. Employers facing skills shortages should, as a first step, consider ways of investing in the development of their current and future employees to meet their business needs. Collective action should be encouraged among all employers to commit to shared T&D investments for the ongoing development of Canada's workforce.

Recognizing that many employers are worried that investments in employee training could be undermined by competitors' poaching their skilled workers, we suggest that employers within and across sectors try to coordinate their efforts. Failing that, the B.C. government could explore the possibility of introducing training levies, such as those operating in Quebec, to ensure that employers are spending on training themselves, or forfeiting a percentage of revenues to a public fund to support training and skills development.

8. Increase experiential learning opportunities for PSE students.

Employers are key partners in the support of experiential learning opportunities for students. To be sure, involving students in work often requires additional investments in oversight and administration. But against these costs, employers benefit from student work contributions, the infusion of students' enthusiasm and new ideas in the workplace, and the ability to identify and test the "fit" of future job candidates. Given the advantages of experiential learning to employers and students alike, employers should support a greater range of these partnerships, using approaches (e.g., co-ops, mentoring, apprenticeships, and internships) that best suit their unique business needs. Employers who have had successful experiences with experiential learning should help raise awareness of the benefits of these partnerships among other businesses, and in their communities.

Recommendations for Individuals

9. Be attentive to labour market trends and become active participants in education and training.

For emerging cohorts of job seekers, B.C.'s job market will offer abundant opportunities—including job prospects in new and emerging industries and the potential for advancement as older employees retire—even as it becomes more competitive. B.C. youth have unprecedented access to, and choice of, educational pathways that may lead to rewarding lives and careers. Yet, as the costs of a post-secondary education increase, and the returns on educational investments become more variable across different fields of study, the need has never been greater for B.C. residents to be *active* consumers of education and training. They should be attentive to how various educational choices and work experience choices may support their goals for employment, given current and emerging labour market realities, as well as provide a foundation for success in the uncertain job markets of the future.

10. Act on opportunities to gain experience.

Having relevant work experience has increasingly become an essential job qualification, even for recent graduates. Current and future students can improve their employment prospects by acting on opportunities to gain experience. Experiential learning, such as co-ops and internships, can contribute to skills development—particularly, the essential skills that are key for workplace success—and improve employment prospects. As a structured component of an educational program, experiential learning is an effective mechanism for combining classroom-based learning with real-world application.

Skills for Success

British Columbia has bright prospects. But ensuring that the province and its residents can benefit from the range of economic opportunities on the horizon will require a highly and appropriately educated and skilled workforce. Fortunately, there are good indications that B.C. is taking its skills challenges seriously and considering the actions that employers, PSE institutions, governments, and individuals can take to seize the opportunities before them. Indeed, what is needed is a plan of action that ensures the province and its residents are ready to meet the skills challenges of the near future while also developing the foundational skills needed for long-term economic prosperity and social well-being.

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APPENDIX A

Explaining the Economic Analysis

Calculating the Impact of Low Educational Attainment

The Conference Board’s estimate of \$4.7 billion foregone GDP due to low educational attainment is based on a multi-step calculation. We measured the “access gap” as the reduction in the employment rate since 1990 for those without PSE credentials, multiplied by the current relevant British Columbia population 15 years and older. We then used equations from our B.C. and Canadian forecasting models to estimate the foregone GDP and foregone provincial and federal tax revenues. We used the assumption that policies and programs could be implemented to reduce the “access gap” by 10 to 20 per cent. The final estimates are reported in 2007 dollars.

The final estimates rely on some key assumptions and, as such, constitute estimates of the highest *potential impact*—not projections of actual impacts. For example, the estimated gap does not account for the impact on wages of closing the gap. Theoretically, employers would employ more people if the wage rate of full-time workers declined, but then the “impact” of a higher employment rate would be lower overall due to the effects of a lower wage rate in the calculation.

Another assumption to note is the use of the 1990 employment rate as the potential employment rate of this cohort of workers. The employment rate of British Columbians with some PSE or less in 1990 was relatively high in historic terms, though not unmatched in other years over the

past two decades. As a result, the \$4.7 billion figure may overestimate the actual impact if the employment rate achieved was closer to the historical average. But given our aim to estimate the potential impact—i.e., the impact that could be achieved if the best policies, practices, and conditions were in place—using the 1990 employment rate (a rate that was at one point *actually*, and not simply theoretically, achieved) is consistent with this aim.

Calculating the Impact of Underutilizing Skills

To calculate the economic impact of the underutilization of skills, the Conference Board used estimates of the underutilization of skills from the Certified General Accountants Association of Canada's (CGA-Canada) report *Youth Unemployment in Canada: Challenging Conventional Thinking?*¹ based on their analysis of 2005 census data. We then calculated the increase in income (to the average income level for each age group and credential cohort), as well as the additional provincial and federal tax revenues, that could be obtained if the underemployed were working in jobs that actually required the educational credentials they hold. The final estimates are reported in 2007 dollars.

As with the estimate of the impact of low educational attainment, these estimates are based on key assumptions. These include the assumption that people would choose to work in jobs that utilize their full skills/educational credentials if offered the opportunity. Additionally, the CGA-Canada analysis is for all workers in Canada, not just British Columbia. In the absence of B.C.-specific analyses, our calculations apply the Canada-wide estimates to the B.C. situation. In both cases, changes in the assumptions could affect the final estimates. However, the estimates still constitute a realistic estimate of foregone GDP and revenue due to underutilization of skills.

1 Certified General Accountants Association of Canada, *Youth Unemployment in Canada*.

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