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Centre for Skills and Post-Secondary Education

SKILLS—WHERE ARE WE TODAY?

The State of Skills and PSE in Canada.

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Daniel Munro, Cameron MacLaine, and James Stuckey

Preface

This report provides a systems perspective on the state of skills and higher education in Canada and identifies areas where the sector could improve in producing highly skilled graduates. It is one of three foundational studies for the Centre for Skills and Post-Secondary Education that, together, offer the first steps in a diagnosis of the sector and its performance.

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

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About the Centre for Skills and Post-Secondary Education

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

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

EXECUTIVE SUMMARY

Skills—Where Are We Today? The State of Skills and PSE in Canada

At a Glance

- Canada requires a high-performing post-secondary education (PSE) sector to produce people with the advanced skills and knowledge necessary to contribute to economic, social, political, and individual well-being.
- Canada is among the world's leaders in terms of PSE attainment, but participation rates in adult learning and education (including workplace training) lag those of international peers.
- While PSE discussion and policy has tended to focus on quantity and access issues, more attention needs to be focused on the quality of skills.
- Potential actions to enhance Canada's skills and PSE sector and outcomes include focusing more attention and measurement on issues of quality in PSE and skills development than has been the norm, encouraging and supporting employers to increase their investment in training and skills development, and improving interprovincial mobility for apprentices.

Education and skills are essential to Canada's economic prosperity and social well-being, and to the health and welfare of individuals. Individuals who have acquired advanced skills and credentials are able to make greater contributions to the economy, society, and cultural life of the communities in which they live and work than those without such skills and credentials. Moreover, education and training are critically important to the financial, physical, and psychological well-being of individuals and families.

Canada's post-secondary education (PSE) sector is among the most successful in the world in contributing to the development of a highly educated population. But the sector faces many challenges. There is rising concern that the sector is producing neither enough nor sufficiently high-skilled graduates to sustain and enhance the country's economic and social well-being. Although a high proportion of Canadians have higher education credentials and Canada performs well relative to international peers in some skills areas, there is significant room for improvement. Moreover, opportunities for adult learning and education to maintain and enhance skills, including workplace training, are limited and the impact of investments is mixed.

Although Canada's PSE sector has performed relatively well to date on many measures, current and emerging challenges prompt the need for reflection, reform, and improvement. We do well, but we can do much better. In light of these realities and the need to consider how the PSE sector can respond, we need a clear picture of the state of the PSE sector as a whole—what it is, how well it produces the skilled people Canada needs, and what improvements can be made.

Purpose of the Report

This report provides a systems perspective on the state of skills and higher education in Canada and identifies areas where the sector could improve in producing highly skilled graduates. It is one of three foundational studies for the Centre for Skills and Post-Secondary Education that, together, offer the first steps in a diagnosis of the sector and its performance. They will be followed by future studies that articulate a "desired future state" of PSE and examine options and strategies for improvement.

In particular, the report:

- highlights the importance of skills for Canada's economic and social well-being, and for the well-being of individuals;
- maps and characterizes the PSE and skills development sector, in terms of major institutions and their roles;
- provides an overview and analysis of the state of skills in the Canadian adult population;
- discusses the extent to which the current and projected quantity, quality, and mix of skills can meet the economic and social needs and imperatives facing Canada;
- identifies areas where improvement is needed in Canada's skills development and PSE systems.

The Importance of Skills and Education

Skills are critically important to the economic, social, political, and cultural well-being of Canada and Canadians. Advanced skills, when attained and used by a large proportion of a country's population, improve productivity, economic competitiveness, and political and

community engagement, and also contribute to better employment prospects, household and personal income, and health for individuals and their families.

- *Education and Skills Improve Economic Productivity and Growth.* According to the Organisation for Economic Co-operation and Development (OECD), differences in average literacy skills explain 55 per cent of the variation in economic growth among OECD countries since 1960.[1] Although Canada has OECD-leading levels of PSE educational attainment (as described below), we lag international peers in advanced degrees (MAs and PhDs) and workplace education and training, which are key to enhancing productivity.[2] Historically, Canada has lagged far behind international peers in productivity growth since the 1970s, usually earning a C or D grade in the Conference Board's *How Canada Performs* report card on productivity.[3]
- *Education and Skills Enhance Labour Market Outcomes.* In 2013, Canadians (aged 25 to 54) with a university degree had an unemployment rate (4.4 per cent) that was less than half the unemployment rate of those with only some high school (11 per cent).[4] For those with a PSE certificate or diploma (normally obtained at a college), the rate was 5.3 per cent. Additionally, Canadians aged 25 to 64 with less than a high school diploma have an employment rate of only 55 per cent, while those with university degrees, college diplomas, or trade certificates have employment rates of 82, 81, and 79 per cent, respectively.[5] And those with PSE credentials have higher earnings than those without PSE credentials. College graduates earn from 12.3 per cent (Quebec) to 29 per cent (Newfoundland and Labrador) more than

1 Coulombe, Tremblay, and Marchand, *Literacy Scores, Human Capital and Growth*.

2 The Conference Board of Canada, *How Canada Performs: Advanced Skills and Innovation*; The Conference Board of Canada, *How Canada Performs: Education—Adult Participation in Education*.

3 The Conference Board of Canada, *How Canada Performs: Economy*.

4 Statistics Canada, CANSIM table 282-0004.

5 Council of Ministers of Education Canada, *Education Indicators in Canada*, 93.

high school graduates.[6] For university graduates, the income advantage over high school graduates ranges from a high of 79 per cent in Newfoundland and Labrador to a low of 32 per cent in British Columbia.[7] However, there are significant variations across types of credentials and occupations.[8]

- *Education and Skills Contribute to Physical and Mental Health.* As literacy and education increase, so too does the ability to find secure, well-paid employment and the ability to find, understand, and follow health information, navigate the health system, and lead a healthy lifestyle.[9] Given Canada's high rate of tertiary educational attainment, it is not surprising to find Canadians among the world's healthiest citizens.[10]
- *Education and Skills Increase Political and Community Involvement.* An analysis of voting patterns in the 2011 federal election, for example, shows that while 78 per cent of people with a university degree voted, those with a high school education or less voted at rates of only 60 per cent or less.[11] Similarly, Canadians with a university or college education are much more likely to volunteer in their communities than those with a high school education or less. In 2010, 58 per cent of adults with a university degree and 45 per cent with a post-secondary diploma or certificate reported doing volunteer work compared with 43 per cent with only a high school education and only 37 per cent of adults with less than high school.[12]

6 The Conference Board of Canada, *How Canada Performs: Education—Income Advantage for College Graduates*.

7 The Conference Board of Canada, *How Canada Performs: Education—Income Advantage for University Graduates*.

8 OECD, *Education at a Glance 2013—Canada*, 3.

9 Chief Public Health Officer of Canada*, Report on the State of Public Health*.

10 World Health Organization, *Canada: Health Profile*.

11 Uppal and LaRochelle-Côté*, Factors Associated With Voting*, 6.

12 Vézina and Crompton, *Volunteering in Canada*, 41–2.

Education and Skills Attainment in Canada

The education and skills attainment of adult Canadians is mixed. In terms of attainment of higher education credentials, Canadians do very well. But on measures of key skills in the adult population (such as literacy and numeracy) and participation rates in adult learning and education (including workplace training), Canada lags international peers and, arguably, our own expectations.

Educational Attainment

- Approximately 53 per cent of Canada's adult population held a tertiary qualification (i.e., university or college degree, diploma, or certificate) in 2012. This is the highest rate among OECD countries and well above the OECD average of 32 per cent. Among adults aged 25 to 34, Canada's tertiary attainment rate is 57 per cent—trailing only Japan (59 per cent) and Korea (66 per cent). Canada leads OECD countries in college attainment by a large margin, while its proportion of university graduates is a bit lower than the OECD norm.[13]
- An additional 12 per cent of Canadians held trades certificates in 2011, bringing the proportion of Canadians with some form of post-secondary credential to nearly two-thirds of the adult population.[14] While 12.8 per cent of those aged 55 to 64 hold trades certificates, only 10.7 per cent of Canadians aged 25 to 34 do.

Skills Development

The literacy, numeracy, and problem-solving skills of Canadian adults are less impressive than one might expect for a country with such a high level of PSE participation and attainment.[15] Results from the OECD's Survey on Adult Skills show that Canadians, on average, score *at* the OECD average in *literacy*; *below* the OECD average in *numeracy*; and

13 OECD, *Education at a Glance 2014—Canada*, 1.

14 Statistics Canada, *Education in Canada*, 8.

15 OECD, *OECD Skills Outlook 2013*.

above the OECD average in *using technology to solve problems*.[16] Although the last result is positive, given Canada's leading rate of higher education attainment, one would expect much better performance in all three areas. In fact, Canadians with a higher education credential have relatively weak scores among the OECD countries that participated in the survey.

The picture changes somewhat when we distinguish between immigrant and non-immigrant credential-holders. For example, the average literacy score of "native-born, native-language" university graduates in Canada was 313—slightly better than the OECD mean of 307 and bringing Canada into seventh place among the comparator countries.[17] For "foreign-born, foreign-language" university graduates in Canada, the average score was 275—essentially at the OECD average of 273. Overall, the data indicate that Canada's tertiary graduates perform reasonably well in literacy, numeracy, and problem-solving in a technology-rich environment, but there is room for improvement.

Adult Learning and Workplace Training

In terms of adult learning and education—including workplace training—the research reveals a less than ideal picture.

- In 2008, 31 per cent of adult Canadians aged 25 to 64 participated in some form of non-formal job-related education. This is slightly higher than the OECD average (28 per cent), but well behind some countries such as Sweden (61 per cent), Norway (47 per cent), Finland (44 per cent), and Switzerland (42 per cent).[18]
- Canadians who participated in non-formal job-related training in 2008 received fewer hours (49 hours) of instruction than the OECD average (59 hours). This represents less than half the hours received by adults

16 Statistics Canada, *Skills in Canada*, 3.

17 Parkin, "Is Canada's Post-Secondary System Prepared?"

18 The Conference Board of Canada, *How Canada Performs: Education—Adult Participation in Education*.

in Denmark (105 hours) and well behind Belgium (86 hours), Finland (74 hours), Austria (69 hours), Norway (69 hours), and Germany (61 hours).[19]

- In fact, employer spending on training and development declined by nearly 40 per cent between 1993 and 2010 (from approximately $1,116 to $688), before edging up slightly in 2013 (to $705).[20] Employer responses to the Conference Board's Learning and Development survey show that learning hours per employee per year declined from 28 in 2008 to 25 in 2011, before returning to 28 in 2013.[21]

Canada's Apprenticeships Systems

Apprenticeship training in Canada plays an important part in developing skill sets that contribute to economic, social, and individual well-being. Although participation and completion numbers have been rising, younger workers are less likely than older workers to hold a trade certificate. More research is required to determine whether this could lead to shortages in skilled trades. Many apprentices face interprovincial mobility challenges, which is an area requiring coordinated action. Moreover, there are poor labour market outcomes for some apprenticeable trades, raising questions about whether time and resources spent in those areas is worthwhile. At the same time, there may be opportunities to expand apprenticeship training to other occupations given the success of apprenticeships in developing skills through mentorship and hands-on learning. Fortunately, the Forum of Labour Market Ministers has indicated that it will work to address these issues in coming months.[22] It remains to be seen what improvements will be made.

19 The Conference Board of Canada, *How Canada Performs: Education—Adult Participation in Education*.

20 Hall, *Learning and Development Outlook*, 19.

21 Ibid., 22.

22 Forum of Labour Market Ministers, *Federal, Provincial and Territorial Governments*.

Improving Skills and PSE in Canada: Key Areas for Action

In providing both an account and assessment of the PSE sector and its skills development performance, the report identifies a number of areas for concern which, in turn, give rise to areas for action. Potential actions to enhance Canada's skills and PSE sector and outcomes include:

- focusing more attention and measurement on issues of quality in PSE and skills development than has been the norm;
- collecting and publicizing better (and nationally and internationally comparable) skills attainment data;
- thinking systematically about whether Canada has the right mix of university, college, and apprenticeship programs and pathways to meet economic, social, and individual needs;
- achieving greater clarity about the different, but complementary roles, that diverse institutions and stakeholders should play in Canada's skills development system;
- encouraging and supporting employers to increase their investment in training and skills development;
- improving interprovincial mobility for apprentices and considering whether Canada's apprenticeship sector has an occupational scope that would best contribute to training and skills development.

Closing the Education and Skills Divide

Canada is doing quite well in producing people with university, college, and trades credentials, but our actual skills attainment is underwhelming and there are challenges to sustaining and enhancing the performance of the system. Given the importance of knowledge, technical skills, and essential skills for individual and national success, and as a foundation for further learning, the results are worrying. This study shines light in some areas that require further investigation. Indeed, to continue achieving the economic and social benefits we have come to expect of higher education, some serious reflection and action on the gap between education and skills is needed.

CHAPTER 1

Introduction

Chapter Summary

- Canada requires a high-performing post-secondary education (PSE) sector to produce people with the advanced skills and knowledge necessary to contribute to economic, social, political, and individual well-being.
- Canada is among the world's leaders in terms of higher education credential attainment, but performance on measures of key *skills* in the adult population is mixed, and participation rates in adult learning and education (including workplace training) lag those of international peers.

While PSE discussion and policy in recent decades have focused primarily on *quantity* and *access* issues, this report emphasizes the importance of focusing of the *quality* of skills being produced to meet and address current and future economic and social opportunities and challenges. Education and skills are essential to Canada's economic prosperity and social well-being, and to the health and welfare of individuals. Individuals who have acquired advanced skills and credentials are able to make greater contributions to the economy, society, and cultural life of the communities in which they live and work than those without such skills and credentials. Moreover, education and training are critically important to the financial, physical, and psychological well-being of individuals and families.

Canada's post-secondary education (PSE) sector—comprising 13 provincial and territorial education systems, federal labour market, and higher education-related policies, agencies, and funding programs, and a federal system for Aboriginal education—is among the most successful in the world in contributing to the development of a highly educated population. Roughly 53 per cent of Canadians hold a university or college credential, and another 12 per cent hold trades certificates. But the sector faces many challenges. There is rising concern among some students, employers, governments, and others that Canada's PSE sector is producing neither enough nor sufficiently high-skilled graduates to sustain and enhance the country's economic and social well-being. Although a high proportion of Canadians have higher education credentials, the picture of which specific skills have been developed or attained, and the quality of those skills, is less clear. Where

data on skills attainment exist, they show that although in many areas Canada performs well relative to international peers, there is room for improvement. Moreover, opportunities for adult learning and education to maintain and enhance skills, including workplace training, are limited and the impact of investments is mixed.

In short, although Canada's PSE sector has performed relatively well to date on many measures, current and emerging challenges prompt the need for reflection, reform, and improvement. We do well, but we can do much better. In light of these realities and the need to consider how the PSE sector can respond, we need a clear picture of the state of the PSE sector as a whole—what it is, how well it produces the skilled people Canada needs, and what improvements can be made.

Purpose of the Report

This report provides a systems perspective on the state of skills production in the PSE sector, including an account of the kinds of skills produced, locations, and quality. It also identifies areas where the sector could improve in producing highly skilled graduates. It is one of three foundational studies for the Centre for Skills and Post-Secondary Education that, together, offer the first steps in a diagnosis of the sector and its performance, with more diagnostic studies to come. They will be followed by future studies that articulate a "desired future state" of PSE and examine options and strategies for improvement.

In particular, the report:

- highlights the importance of skills for Canada's economic and social well-being, and for the well-being of individuals;
- maps and characterizes the PSE and skills development sector, in terms of major institutions and their roles;
- provides an overview and analysis of the state of skills in the Canadian adult population;
- discusses the extent to which the current and projected quantity, quality, and mix of skills can meet the economic and social needs and imperatives facing Canada;

- identifies areas where improvement is needed in Canada's skills development and PSE systems.

The report provides a current snapshot of the sector and its performance, historical trends, and future challenges with respect to skills development in order to motivate discussion about whether and why change is needed and what can and should be done.

Framing the Analysis

There is widespread agreement that Canada requires a high-performing PSE sector to produce people with the skills and knowledge necessary to contribute to economic competitiveness and social, political, and cultural well-being. And in many respects, the sector appears to be doing a good job. But it is not enough to have a rough picture of the sector and its performance. To assess performance, and to have an informed discussion about potential changes to sustain and enhance performance, we need greater clarity about the institutions and organizations that make up the sector, what their exact roles and responsibilities are, and what skills they are already producing.

The need for a clear picture of the PSE sector and its skills development performance is especially pressing given that governments, institutions, and students are already making decisions based on expectations of the sector and its institutions that do not always align. This can produce conflict and threaten the value and potential effectiveness of proposed changes in the sector.

To advance skills development and PSE in Canada, then, we need answers to some fundamental questions.

1. What are the institutions, organizations, and other elements that make up the skills development sector?
2. What are the *roles and responsibilities* of the various institutions in contributing to the development of skills for the economic and social well-being of Canada and Canadians?

3. What is the *state of skills production* in Canada? Is the PSE sector producing graduates with the knowledge and skills needed to meet the economic and social needs facing individual Canadians and the country as a whole?
4. What are some potential strategies for improving Canada's PSE and skills development sector?

In addressing those questions, however, four key issues emerge throughout the report and it is useful to introduce them at the outset.

Defining Skills

The Conference Board's Centre for Skills and Post-Secondary Education defines skill as an ability acquired or developed through education, training, and/or experience which provides a person with the potential to make a useful contribution to the economy and society. A skilled person, then, is a person who, through education, training, and experience, makes a useful contribution to the economy and society.[1] This definition incorporates not only expert knowledge and professional or technical skills for specific occupations and activities, but also the broad range of generic employability skills (such as communication, teamwork, and personal responsibility), literacy and numeracy, critical and analytical skills, creativity, and life skills.

This understanding of skills includes, in some respects, the ancient Greek notions of *techne* (i.e., craft or technical art) and *episteme* (i.e., knowledge or theory), thereby capturing both technical and theoretical elements of the skills continuum. But our conceptualization aligns closest with Aristotle's notion of *phronesis*, or practical wisdom.[2] Practical wisdom, for Aristotle, is a matter not simply of "knowing" how, but of "being able" to act (i.e., to apply knowledge and take appropriate action in specific contexts in the sense of aiming at the "right mark" and

1 The Conference Board of Canada, *Centre for Skills and Post-Secondary Education*, 2. Thanks to Anthony Secco, University of New Brunswick, for helping us to clarify the definition.

2 Parry, "Episteme and Techne."

using the "right means").[3] In short, the notion of skill incorporates not just technical know-how and knowledge but also, critically, the ability to apply both and to succeed in particular contexts.

More concretely, we can distinguish between four categories of skill, broadly understood:

- *Knowledge*—awareness and understanding of information, facts, and ideas, often in a particular field (e.g., knowledge of physics, philosophy, literature).
- *Technical skills*—skills related to doing specific tasks (e.g. writing a proposal, driving a truck, creating software, performing accounting functions).
- *Essential skills*—skills that provide a foundation for work and future learning (e.g., reading, writing, document use, numeracy, computer use, thinking, oral communication).
- *Employability skills*—skills needed to enter, stay in, and progress in the world of work (e.g., personal management skills, adaptability, innovation skills, working with others, having a positive attitude).

PSE institutions and programs vary in the emphasis they place on the development of each category of skill. Many programs in colleges, institutions, and polytechnics, as well as a range of professional programs in universities, have emphasized technical skills and, to some extent, essential and employability skills. Many social science and humanities programs have emphasized knowledge and the essential skills that provide a foundation for future learning, but less so technical and employability skills—at least until recently.

3 Aristotle, *Nicomachean Ethics*, 137, 150–2, 155–6, 158.

In many ways, this understanding of skill reflects many academics and educators' views, even if they reject the term "skill" to describe these phenomena.[4] To be sure, some are skeptical of attempts to conceptualize what they do as "skills" development.[5] In particular, some are concerned about:

- an apparent utilitarian emphasis on job-ready skills rather than the exploration and acquisition of knowledge and human understanding for its own sake and for the sake of future social and economic opportunities;
- a focus on what employers require (or think they require) at the expense of what one needs to become a well-rounded, responsible, civic-minded citizen of the world;
- a short-sighted view of specific skills the economy needs now rather than the general, transferable skills that graduates need to ensure their long-term adaptability and labour market resiliency;
- potential threats to academic freedom prompted by pressure to focus on what others identify as important rather than on what academics identify as important.

These concerns are worth discussing, and efforts to study and reform the PSE sector should be attentive to them. Still, whether one uses the label skills development or something else, the roles of educators in the PSE system have always involved assisting students in developing skills such as thinking, listening, writing, speaking, accessing and analyzing information, working in groups, and working individually. Key parts of PSE institutions also focus on occupationally specific technical skills, such as mechanical engineering, accounting, medical skills, and public policy analysis. The reality is that there is a wide range of skills development approaches in the PSE sector—both across and within various institutions. Ideally, the various approaches constitute a continuum of complementary skills development efforts that meet the needs of the economy, society, and individuals.

4 Bloom and Kitagawa, *Understanding Employability Skills*, 13.

5 See, for example, Blouw, "Universities Should Educate."

Measuring Skills

A closely related issue is that of measuring skills. How can we know whether the PSE sector is producing graduates with the skills needed to serve economic, social, and individual objectives? There are some proxy measures, such as credentials earned (which provide a rough signal of the skills and knowledge a graduate should have acquired) and labour market outcomes (which provide feedback on whether employers believe that graduates/workers have the skills they need). Additionally, the skills of graduates from some professional and vocational programs can be captured though professional exams (e.g., bar association exams, trade certification exams). Yet, as Coulombe and Tremblay note, although proxy measures like educational credentials have traditionally been used as indicators of human capital, "what really matters for growth is the *skills* that are produced by education."[6]

The problem is that *systemic* and *direct* measures of students' and graduates' skills are few, thereby complicating assessments of the sector's performance through a skills lens. Many individual institutions are attempting to measure learning outcomes, but the efforts are rarely comprehensive or comparable across the sector. At a system-wide level, the Organisation for Economic Co-operation and Development's (OECD) recent Survey on Adult Skills (Programme for the International Assessment of Adult Competencies [PIAAC]) captures helpful data on general literacy, numeracy, and problem-solving skills in technology-rich environments (PS-TRE), but not technical or occupation-specific skills, knowledge, or innovation and employability skills.[7]

An OECD pilot initiative—the Assessment of Higher Education Learning Outcomes (AHELO)—is examining the feasibility of testing learning outcomes in, initially, engineering, economics, and generic skills with a view toward developing a survey that can measure and compare

6 Coulombe and Tremblay, "Education, Productivity and Economic Growth," 4. Emphasis added.

7 OECD, *OECD Skills Outlook 2013*.

outcomes across cultures and languages.[8] Some worry that AHELO will try to assess skills across disciplines that are hard to compare, that it may encourage homogenization of higher education institutions, and/or that poorly scoring institutions may face punitive decisions about resources.[9] Ultimately, AHELO's approach may have risks were it adopted for assessing skills in Canada. But we do need to think about alternate mechanisms for measuring knowledge and skills acquisition as part of any effort to improve the sector and to ensure that resources are being well spent.[10]

Scope of the PSE and Skills Development Sector

Defining the scope of the PSE and skills development sector is another challenge. We include in the skills development sector any institution, organization, or location where adults have opportunities to acquire new skills through learning or experience. This includes the institutions commonly referred to as post-secondary institutions—such as universities, colleges, *Collèges d'enseignement général et professionnel* (CEGEP), polytechnics, and institutes—as well as career colleges, apprenticeships, workplaces, community spaces (such as libraries and public health centres), and Indigenous and First Nations education and training institutes.[11] Additionally, it includes open universities and open, online learning.

8 OECD, *Testing Student and University Performance Globally*.

9 Guttenplan, "Should University Systems Be Graded, Too?"

10 It might be asked why the traditional practice of faculty and instructors assessing the skills acquisition of their students is no longer sufficient. In the first place, there is little agreement on which skills should be assessed. In that case, relying on faculty would provide the sector with assessors, but no shared understanding of what to assess. To be sure, some programs have identified or are in the process of identifying the specific skills and knowledge they aim to develop in students, but more is needed. Second, the practice of faculty assessing their own students is neither as "traditional" nor as reliable as some might think. It was once the case—and still is in many institutions around the world—that the achievements of students would be assessed by faculty *other than those who taught them* in order to ensure an objective assessment against shared standards.

11 For an introduction to some issues related to First Nations education and training institutes, see Hill, *First Nations Post-Secondary Education*.

Admittedly, drawing the boundaries of the skills development sector this broadly makes for an unruly unit of analysis. But consider two points:

- First, because our overarching concern is with the development of skills necessary for economic, social, and individual well-being, it is important to examine, where possible, all pathways through which this occurs. Wide boundaries are necessary to ensure that all pathways are analyzed.
- Second, although the boundaries are widely drawn in theory, the reality is that the majority of *formal* skills development and credentialing relevant to labour markets occurs in conventional PSE institutions, apprenticeship systems, and, to a lesser extent, workplaces—that is, places that have more clearly defined parameters and purposes.[12] In practice, clarity about the major units of analysis, as well as richer sources of data about their activities and performance, makes most of the sector amenable to careful study.

Finally, it is worth noting that, for this report, we use the term "sector" rather than "system" to describe the collection of institutions, organizations, and locations where adults have opportunities to develop skills. This reflects the fact that Canada's PSE sector is composed, in the first place, of institutions and programs that operate within 13 distinct provincial and territorial systems—as well as a federal Aboriginal education system—and whose operations and activities are not coordinated through a central federal agency. Although there are federal-level programs, policies, and institutions that play key roles in shaping and supporting Canada's PSE sector—such as the tri-council granting agencies and federal labour market programs and policies—there is no overarching, interconnected, and coordinated "system" in Canada's PSE environment. Part of the aim of the Centre for Skills and PSE is

12 Much skills development occurs in workplaces through experience and informal mentoring and guidance, but this is very hard to capture through direct analysis. As the Conference Board notes in a previous report, "When learning and learning credentials are not recognized, it impacts the economic or 'market' value—to individuals, employers, and the country as a whole." Bloom and Grant, *Brain Gain*. The Conference Board is continuing to explore how to measure informal learning and its value in other work.

to move the sector and its constituent parts toward a more coordinated skills development system, albeit without a central federal ministry of higher education.

Differentiated Roles and Institutional Mix

Finally, differentiating between institutions and their roles—as well as between different parts and programs within institutions—and determining the appropriate mix of institutions and programs in the PSE and skills development sector are pressing issues. How and to what extent are PSE institutions and programs differentiated, and how is this changing? Does Canada have the right mix of institutions and programs to meet the diverse skills needs of the economy, society, and individuals? Is there a need to more clearly differentiate the responsibilities and activities of different orders of government as they relate to PSE institutions?

Although categories of institutions can be identified based on shared roles, features, and approaches to learning, the boundaries are fuzzy and shifting. For example, while universities have traditionally been distinguished by their degree-granting authority, research focus, and emphasis on education rather than training, many colleges and polytechnics have acquired degree-granting authority in certain areas and have expanded their applied research activities in recent years. At the same time, many universities have incorporated more professional, vocational, and employment-oriented activities and training into their programs and curricula, which blur the boundaries between their activities and those of colleges and polytechnics whose traditional focus has been on employment-ready training and education.[13]

We maintain that a good PSE sector will provide meaningful choices for students across jurisdictions—for example, by providing students in both Nova Scotia and Alberta with equivalent opportunities to study physics,

13 One of the other two skills and post-secondary education foundational studies, *The Economic Impact of PSE*, provides a conceptual map of institutions, which distinguishes them according to, on one axis, their economic application in purpose and, on the another axis, their economic application in practice. See Grant, *The Economic Impact of PSE*.

plumbing, photonics, or poetry. Moreover, it will provide all students with opportunities to improve certain foundational and transferable skills, such as literacy, numeracy, critical thinking, communication, creativity, entrepreneurialism, and innovation skills. At the same time, in a context of scarce resources and other public needs, a good PSE system will avoid duplication and waste—for example, by minimizing the prevalence of nearly indistinguishable programs being offered at different, but proximate, institutions and by reducing funding to programs with low demand and comparable alternatives. In short, an effective PSE sector must carefully and simultaneously manage the imperatives of choice, access, differentiation, and prudent fiscal management.

PSE and Skills: A Snapshot

Canada's PSE sector has experienced significant changes and challenges over the past few decades. The demand for higher education has grown, and students with new and diverse learning needs have entered the sector's institutions. Moreover, the sector faces rising expectations to teach a range of technical, general, and employability skills that prepare graduates to make contributions to economic competitiveness and social well-being soon after graduation. How well is the sector doing in producing skilled graduates and where are improvements needed? An initial snapshot of the importance of skills, education, and skills attainment in Canada, and key challenges to skills production and PSE sector viability, provides useful orientation for the remainder of the report.

The Importance of Skills and Canada's PSE Sector

Skills are critically important to the economic, social, political, and cultural well-being of Canada and Canadians, just as they are in other countries. Not only does the attainment of advanced skills by a large proportion of a country's population improve productivity, economic competitiveness, and political and community engagement, it also contributes to better employment prospects, household and personal income, and health for individuals and their families. As OECD notes,

"Without adequate investment in skills, people languish on the margins of society, technological progress does not translate into economic growth, and countries can no longer compete in an increasingly knowledge-based global society."[14]

Education and skills are a determinant of *economic productivity and growth*. According to OECD, differences in average literacy skills explain 55 per cent of the variation in economic growth among OECD countries since 1960.[15] Although Canada has OECD-leading levels of PSE educational attainment (as described below), we lag international peers in advanced degrees (MAs and PhDs) and workplace education and training, which are key to enhancing productivity.[16] Historically, Canada has lagged far behind international peers in productivity growth since the 1970s, usually earning a C or D grade in the Conference Board's *How Canada Performs* report card on productivity.[17]

Canadians with higher education have better *labour market outcomes* than those without:

- In 2008, before spiking in all categories during the economic crisis, Canadians (aged 25 to 54) with a university degree had an unemployment rate (4 per cent) that was less than half the

14 OECD, *Better Skills, Better Jobs, Better Lives*, 10.

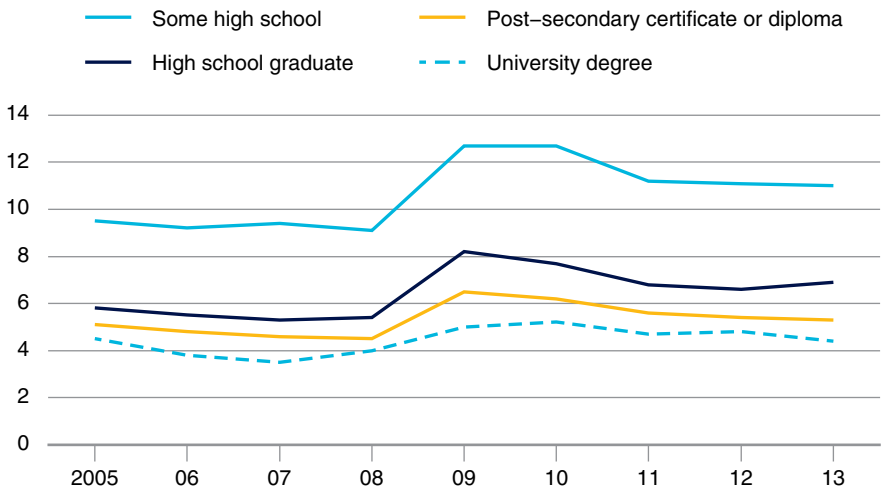
15 Coulombe, Tremblay, and Marchand, *Literacy Scores, Human Capital and Growth*.

16 The Conference Board of Canada, *How Canada Performs: Advanced Skills and Innovation*; The Conference Board of Canada, *How Canada Performs: Education—Adult Participation in Education*.

17 The Conference Board of Canada, *How Canada Performs: Economy—Labour Productivity Growth*.

unemployment rate of those with only some high school (9.1 per cent).[18] For those with a PSE certificate or diploma, the rate was 4.5 per cent in 2008.[19] (See Chart 1.)

Chart 1
Unemployment Rates Aged 25 to 54, by Educational Attainment, Canada, 2005–13
(per cent)



Source: Statistics Canada, *Unemployment Rates*.

- By 2013, unemployment was 0.4 percentage points higher (to 4.4 per cent) for those with a university degree and 0.8 percentage points higher (to 5.3 per cent) for those with a PSE certificate or diploma, versus 1.9 percentage points higher (to 11 per cent) for those with only some high school.[20]

18 Although many colleges and polytechnics now offer degrees, Statistics Canada's Labour Force Survey reports unemployment by educational attainment using the category "university degree." See Statistics Canada, CANSIM table 282-0004, footnotes 16 and 17.

19 Statistics Canada, *Unemployment Rates of Population Aged 15 and Over*.

20 Statistics Canada, CANSIM table 282-0004.

- Additionally, Canadians aged 25 to 64 with less than a high school diploma have an employment rate of only 55 per cent, while those with university degrees, college diplomas, or trade certificates have employment rates of 82, 81, and 79 per cent, respectively.[21]
- The income advantage for college graduates over high school graduates ranges from a high of 29 per cent in Newfoundland and Labrador to a low of 12.3 per cent in Quebec.[22] For university graduates, the income advantage over high school graduates ranges from a high of 79 per cent in Newfoundland and Labrador to a low of 32 per cent in British Columbia.[23] However, there are significant variations across types of credentials and occupations.[24]

Having a highly educated population has health, political, and other social benefits as well. For example, higher educational attainment is correlated with both higher income and *better physical and mental health*.[25] As literacy and education increase, so too does the ability to find secure, well-paid employment and the ability to find, understand, and follow health information, navigate the health system, and lead a healthy lifestyle.[26] Given Canada's high rate of tertiary educational attainment, it is not surprising to find Canadians among the world's healthiest citizens.[27]

Highly educated Canadians are also more likely to be *active in politics and their communities*. An analysis of voting patterns in the 2011 federal election, for example, shows that while 78 per cent of people with a university degree voted, those with a high school education or less

21 Council of Ministers of Education Canada, *Education Indicators in Canada*, 93.

22 The Conference Board of Canada, *How Canada Performs: Education—Income Advantage for College Graduates*.

23 The Conference Board of Canada, *How Canada Performs: Education—Income Advantage for University Graduates*.

24 OECD, *Education at a Glance 2013—Canada*, 3.

25 Chief Public Health Officer of Canada, *Report on the State of Public Health in Canada 2008*. See Chapter 3.

26 Chief Public Health Officer of Canada, *Report on the State of Public Health in Canada 2008*.

27 World Health Organization, *Canada: Health Profile*.

voted at rates of only 60 per cent or less.[28] Similarly, Canadians with a university or college education are much more likely to volunteer in their communities than those with a high school education or less. In 2010, 58 per cent of adults with a university degree and 45 per cent with a post-secondary diploma or certificate reported doing volunteer work compared with 43 per cent with only a high school education and only 37 per cent of adults with less than high school.[29]

Education and Skills Attainment in Canada

However, the research reveals that the education and skills attainment of adult Canadians is mixed. In terms of attainment of higher education credentials, Canadians do very well. But on measures of key skills in the adult population (such as literacy and numeracy) and participation rates in adult learning and education (including workplace training), Canada lags international peers and, arguably, our own expectations. (See also box "The Educational Attainment and Skills Development of Aboriginal People.")

In terms of *higher education credential attainment*, Canada's PSE sector is performing well.

- Approximately 53 per cent of Canada's adult population held a tertiary qualification (i.e., university or college degree, diploma, or certificate) in 2012. This is the highest rate among OECD countries and well above the OECD average of 32 per cent. Among adults aged 25 to 34, Canada's tertiary attainment rate is 57 per cent—trailing only Japan (59 per cent) and Korea (66 per cent). Canada leads the OECD countries in college attainment by a large margin, while its proportion of university graduates is a bit lower than the OECD norm.[30]
- The rate of tertiary education attainment in Canada has increased substantially—13 percentage points—since 2000.[31]

28 Uppal and LaRochelle-Côté, *Factors Associated With Voting*, 6.

29 Vézina and Crompton, *Volunteering in Canada*, 41–2.

30 OECD, *Education at a Glance 2014—Canada*, 1.

31 Ibid., 1.

- An additional 12 per cent of Canadians held trades certificates in 2011, bringing the proportion of Canadians with some form of post-secondary credential to nearly two-thirds of the adult population.[32] While 12.8 per cent of those aged 55 to 64 hold trades certificates, only 10.7 per cent of Canadians aged 25 to 34 do. Whether this imbalance poses a risk to Canada's economic performance, given the imminent retirement of the older cohort, is investigated in Chapter 4.

  At the same time, the *literacy, numeracy, and problem-solving skills* of Canadian adults are less impressive than one might expect for a country with such a high level of PSE participation and attainment.[33] Results from the OECD's Survey on Adult Skills show that Canadians, on average, score:

- *at* the OECD average in *literacy*
- *below* the OECD average in *numeracy*
- *above* the OECD average in *using technology to solve problems*[34]

  Although the last result is positive, given Canada's leading rate of higher education attainment, one would expect much better performance in all three areas. In fact, Canadians with a higher education credential have relatively weak scores among the OECD countries that participated in the survey. For example,

- Canadians *with tertiary credentials* scored *290* in literacy, which is below the OECD average of *297* for people with tertiary credentials. Only three countries—Italy, Spain, and Cyprus—had lower scores than Canadian tertiary graduates.[35]

32 Statistics Canada, *Education in Canada*, 8.

33 OECD, *OECD Skills Outlook 2013*.

34 Statistics Canada, *Skills in Canada*, 3.

35 OECD, *OECD Skills Outlook 2013*, 119. See Table A3.9 (L) and data at http://dx.doi.org/10.1787/888932901011.

- *47 per cent* of Canadians *with tertiary credentials* score at Level 3 or higher *using technology to solve problems* versus the OECD average of *52 per cent.* Canada ranks 15th of 19 countries on this metric.[36]

  To be sure, the picture changes somewhat when we distinguish between immigrant and non-immigrant credential-holders. For example, the average literacy score of "native-born, native-language" university graduates in Canada was 313—slightly better than the OECD mean of 307—and bringing Canada into 7th place among the comparator countries.[37] For "foreign-born, foreign-language" university graduates in Canada, the average score was 275—essentially at the OECD average of 273. Canada's higher proportion of immigrants explains some, but not all, of the overall lower performance among university graduates.

  But among college graduates, literacy scores for both "native-born, native-language" (281) and "foreign-born, foreign-language" (251) were below the OECD average in the comparable cohorts (287 and 253, respectively).[38] The lower college results may actually reflect the fact that Canada succeeds in admitting proportionally more students to college than other OECD jurisdictions. The more students admitted, the more they will be drawn from cohorts whose potential for academic success is lower. Additionally, the "college" category in the PIAAC test includes a diversity of credential types, ranging from graduates of two-year intensive programs to graduates of three-month certificate programs. Thus, the aggregate scores are affected by those who have spent only a short time at a college, and thus are likely more a function of prior capacity than college education itself. Overall, the data indicate that Canada's tertiary graduates perform reasonably well in literacy, numeracy, and PS-TRE, but there is room for improvement.

36 OECD, *OECD Skills Outlook 2013*. See Table A3.10 (P) and data at http://dx.doi.org/10.1787/888932901030.

37 Parkin, "Is Canada's Post-Secondary System Prepared?"

38 Ibid.

Finally, in terms of *adult learning and education*—including workplace training—the research reveals a less-than-ideal picture.

- In 2008, 31 per cent of adult Canadians aged 25 to 64 participated in some form of non-formal job-related education. This is slightly higher than the OECD average (28 per cent), but well behind some countries such as Sweden (61 per cent), Norway (47 per cent), Finland (44 per cent), and Switzerland (42 per cent).[39]
- Canadians who participated in non-formal job-related training in 2008 received fewer hours (49 hours) of instruction than the OECD average (59 hours). This represents less than half the hours received by adults in Denmark (105 hours), and well behind Belgium (86 hours), Finland (74 hours), Austria (69 hours), Norway (69 hours), and Germany (61 hours).[40]
- In fact, employer spending on training and development declined by nearly 40 per cent between 1993 and 2010 (from approximately $1,116 to $688), before edging up slightly in 2013 (to $705).[41] Employer responses to the Conference Board's Learning and Development survey show that learning hours per employee per year declined from 28 in 2008 to 25 in 2011, before returning to 28 in 2013.[42]

To be sure, much skills development among adults and workers occurs through experience and informal mentoring and guidance which are difficult to capture through direct analysis. There may be much more learning going on in workplaces than the data suggest. Given the critical link between recognizing learning (e.g., through credentials) and the market value of that learning to individuals, employers, and the country as a whole, greater efforts are needed to track and recognize informal learning.[43]

39 The Conference Board of Canada, *How Canada Performs: Education—Adult Participation in Education*.

40 Ibid.

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

42 Ibid., 22.

43 Bloom and Grant, *Brain Gain*.

Challenges

The above picture shows mixed results for Canadians across the PSE and skills development sector. But there are more reasons for concern. Even as nearly two-thirds of Canadian adults have attained a post-secondary credential and enjoy the associated economic and social benefits, many others face significant *barriers to PSE participation*, leaving them and the country economically and socially less secure and successful than they could be. (See box "The Educational Attainment and Skills Development of Aboriginal People.")

Another area of concern is the *fate of skills after individuals have graduated from formal education*. As OECD observes, skills that are not regularly used or exercised can be lost.[44] Although some of these skills may not be needed for particular occupations, their loss can negatively affect individuals' labour market resiliency. When lost skills include those that support further learning—such as literacy, numeracy, and critical thinking—individuals and organizations may find it difficult to develop skills for new tasks, technologies, and occupations. Consequently, an effective PSE and skills development sector must not only contribute to initial skills development, but also provide essential and continuous learning skills and opportunities to preserve a foundation for lifelong learning and skills development.

Finally, although the sector is producing many highly skilled graduates, there are worries that, particularly on a regional and sector level of analysis, there are still not enough skills, or the right kinds of skills, being produced. Not only do some employers note that they have difficulty finding people to fill specific occupations, but many also observe that job candidates and recent hires lack sufficient essentials skills (such as literacy, numeracy, and communication), which provide a foundation for further training.[45]

44 OECD, *Better Skills, Better Jobs, Better Lives*, 14.

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

Over 70 per cent of employer respondents to a recent Conference Board survey observed gaps in candidates and recent hires' critical thinking and problem-solving skills. Nearly half also said that they are seeing insufficient oral communication (46 per cent) and literacy skills (42 per cent) in the workforce. Even the least selected area—numeracy skills—still reveals that more than one in five (22 per cent) employers are seeing deficits. From these employers' perspectives there is clearly a need for improved essential skills in the workforce.[46] At the same time, many Canadians who have obtained post-secondary diplomas and degrees are employed in occupations that do not use the full extent of their education and skills. These skills gaps and mismatches cost Canada's economy, workers, and governments billions in foregone GDP, income, and tax revenues.[47]

The Educational Attainment and Skills Development of Aboriginal People

The educational participation and attainment of Aboriginal people in Canada is well below what the country is capable of achieving. Less than one-half (48.4 per cent) of those who self-identify as Aboriginal had a post-secondary credential in 2011. This was higher (54.8 per cent) for those reporting Métis as their single identity, but much lower (35.6 per cent) for those reporting Inuit as their single identity.[48] In terms of types of credentials held by Aboriginal people, 20.6 per cent hold a college diploma, 9.8 per cent hold a university degree, and 3.5 per cent have "a university certificate or diploma below the bachelor level."[49] Notably, 14.4 per cent of Aboriginal people in Canada hold a trades certificate—versus 12 per cent in the general population.

Additionally, although the OECD's Survey of Adult Skills found that, overall, people in Canada who identify as Aboriginal (off-reserve) score lower on literacy and other skills than non-Aboriginal Canadians, "Aboriginal and non-Aboriginal

46 Stuckey and Munro, *The Need to Make Skills Work*, 26–7.

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

48 Statistics Canada, *The Educational Attainment of Aboriginal Peoples*, 7.

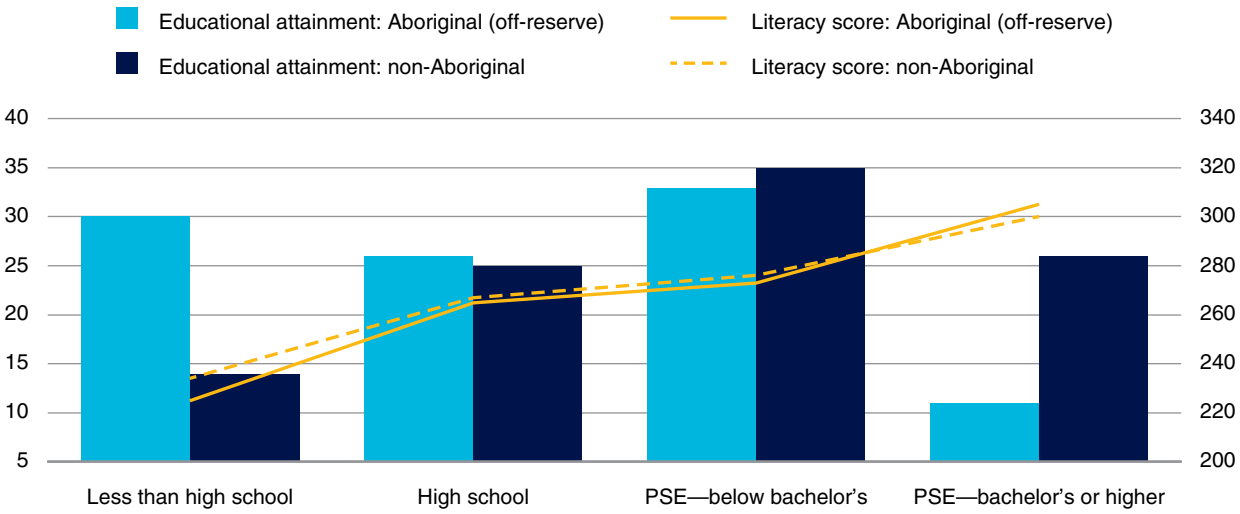
49 Ibid, 4.

people with similar levels of education have similar skills proficiency."[50] The overall difference, then, is explained primarily by the relatively lower educational attainment of Aboriginal people in Canada which, in turn, is related to a variety of social and economic barriers. (See Chart 2.)

Chart 2

Educational Attainment and Literacy Scores, Aboriginals (Off-Reserve) and Non-Aboriginals

(per cent, educational attainment; PIAAC* literacy score out of 500)



*PIAAC = Programme for the International Assessment of Adult Competencies
Sources: Statistics Canada, *Education Indicators in Canada*; OECD, *OECD Skills Outlook 2013;* The Conference Board of Canada.

Educational Attainment and Literacy Scores, Aboriginals (Off-Reserve) and Non-Aboriginals

We are cognizant of the importance of Aboriginal outcomes both to Aboriginal well-being and the performance of Canada's PSE sector. It presents substantial issues, challenges, and opportunities which, in our opinion, deserve focused attention and analysis. Future research will investigate this issue in depth.

Sources: Statistics Canada; Council of Ministers of Education Canada; The Conference Board of Canada.

50 Council of Ministers of Education Canada, "PIAAC in Canada," 55.

Methodology

The research methodology involved both quantitative and qualitative analyses, including:

- an extensive literature review of books, articles, reports, and other documents that address the importance of skills; the structure of Canada's PSE and skills development sector; the credentials, competencies, and skills produced; and the challenges faced;
- collection and analysis of data from a variety of sources to quantify the state of skills in the adult Canadian population, including data from OECD, Statistics Canada, provincial ministries responsible for higher education, and other organizations;
- interviews with experts and stakeholders to better understand the roles, responsibilities, and performance of institutions in the PSE and skills development sector, the challenges faced, and opportunities for reform;
- consultations with stakeholders to gain additional perspectives on research questions and initial findings and to receive feedback on preliminary report drafts.

The remainder of the report explores all of the above issues in greater depth, with each chapter focusing on one part of the PSE and skills development sector. There is more to be said—and future research will investigate many themes in greater detail—but what appears here will help to frame the issues and provide a strong foundation for discussion and deliberation about the future of Canada's PSE and skills development sector.

CHAPTER 2

Universities

Chapter Summary

- Canada's universities graduate many individuals with advanced knowledge and skills who make substantial contributions to economic, social, and individual well-being.
- The universities do well, but they can do more to further improve skills and better articulate and communicate to graduates, employers, and others exactly what skills are being developed, to what extent, and for what purposes.
- As universities and the economy evolve, clearer thinking and action will be needed on whether graduates have the skills to sustain and enhance their own, and Canada's, well-being, and on what universities can do to maximize their unique contributions to skills outcomes.

With institutions dating back to the 18th century, Canada's university sector occupies a long-standing place in the country's cultural, social, political, and economic fabric.[1] Universities maintain a core aim of generating and disseminating knowledge through scholarship and teaching[2] and, in many respects, Canada has a world-class university system.

But the university sector is evolving and faces new challenges and expectations. Participation has risen to more than a quarter of the young adult population, putting strain on resources and raising questions about the unique contribution universities make to skills development. Universities are being called on to produce skilled graduates who are better prepared to contribute to economic, social, and individual well-being. While the available data suggest that the sector is doing well, improvements are needed in key areas.

A Profile of the University Sector

Clearly defining what a Canadian university is and what its roles are is no easy task. Not only do universities differ from each other in many respects, but each is itself the site of a wide variety of programs and activities with different aims, operational norms, and outcomes. As one university leader observed, universities are much like holding companies that include a diverse range of subsidiaries in the form of distinct campuses, faculties, and schools—each possessing some independence over matters of policy, as well as differing education and skills development objectives.[3]

1 Canadian Council on Learning, *Navigating Post-Secondary Education in Canada*, 7.

2 Skolnik, *Does Structure Matter*, 4–5.

3 Anonymous spokesperson, e-mail communication to The Conference Board of Canada, April 2014.

Size and Activities

According to the Council of Ministers of Education (CMEC), "Canada has 163 recognized public and private universities (including theological schools)" as well as "68 university-level institutions … operating as authorized institutions, at which only selected programs are approved under provincially established quality assurance programs."[4] Most universities can be classified as public not-for-profits because they receive public funds, while a few dozen others can be classified as private not-for-profits because they receive little or no public funding. The latter tend to be religious-based institutions—such as Trinity Western University in British Columbia and the Canadian Mennonite University in Manitoba—though there are a handful of secular, private not-for-profit universities.[5] Quest University, in British Columbia, is one of the few secular, private, not-for-profit universities.

Canadian universities range in size and research intensity. Some have only a few hundred students—such as Quest University with 540 undergraduates currently and an expected enrolment of 650 in future years.[6] Others have tens of thousands—the largest is the University of Toronto with over 67,000 undergraduate and nearly 16,000 graduate students spread across three campuses.[7] Although the research intensity of universities varies by discipline and some smaller institutions hit above their weight, larger universities tend to be more active in research—both in absolute terms and in per-faculty output—than smaller institutions. The universities of British Columbia, Toronto, Montréal, and McGill are especially active, while smaller, teaching-focused institutions, such as Bishop's (Quebec), King's (Nova Scotia), and Royal Roads (British Columbia), are less involved in research.[8]

4 Council of Ministers of Education Canada, *Education in Canada*.

5 Canadian Council on Learning, *Navigating Post-Secondary Education,* 14.

6 Quest University, *Quest at a Glance*; David Strangway (President, Quest University), e-mail communication to The Conference Board of Canada, April 2014.

7 University of Toronto, *Quick Facts*.

8 See, for example, Jarvey and Usher, *Measuring Academic Research*; Research Infosource Inc*., Canada's Top 50 Research Universities List 2013*.

Having a critical mass of universities involved in research enriches human understanding and contributes to social and economic well-being. Through the employment of graduate students as researchers and assistants, university research also contributes to the development of Canada's stock of people with skills to conduct research in health, business, policy, and other areas both inside and outside the academy. Additionally, the research itself, and graduates with research skills, can help to create future economic opportunities and jobs.

Program Types

Canadian universities offer a considerable diversity of programs and education and skills development objectives. CMEC has a Degree Qualifications Framework, which shows that universities offer programs ranging from those "designed to provide a broad education as an end in itself" to those designed with an applied or professional focus in mind.[9]

Although programs differ by university, as a whole, the Canadian university sector offers programs in humanities and social sciences (e.g., history, philosophy, psychology, political science, geography); natural and applied sciences (e.g., mathematics, physics, engineering); and many professional fields (e.g., law, medicine, pharmacy, accounting, business). All universities offer programs leading to bachelor's degrees while some also offer master's and doctoral degrees. In recent years, the number of graduate-level programs has increased, especially at the master's level and particularly in applied and professional fields. According to the Canadian Association of Graduate Studies, between 1994 and 2003, approximately 70 per cent of master's students were enrolled in professionally oriented degree programs.[10]

The diversity of program types and objectives in the university sector has implications for how we think about universities and their skills development role. Although some claim that universities should focus only on expanding knowledge and contributing to critical thinking,

9 Council of Ministers of Education Canada, *Ministerial Statement*, 2–3.

10 Canadian Association of Graduate Studies, *A Profile*, 15.

creativity, and communication, and others assert that job-specific skills and training is critical, the reality is that universities already exhibit a wide range of skills development activities and objectives.

Continuing Education

Many universities have departments of continuing education designed to meet labour force skills upgrading needs, including credential and diploma programs in areas targeted to local labour market needs.[11] The range of continuing education programs continues to expand as increasing numbers of mature learners seek to further their careers, prepare for new ones,[12] or simply undertake general interest courses.[13] Universities also serve the needs of older adults undertaking degrees for the first time, with 6 per cent of new undergraduate enrolments coming from students aged 21 or older.[14]

Participation

Although individuals pursue a university education for various reasons, significant participation increases over the last half century have been driven largely by demographics, labour market demands, and efforts by provincial governments to make university more accessible. Demographically, university enrolment swelled as baby boomers reached university age in the 1960s and 1970s, and again beginning in the late 1990s through to the present as the children of boomers reached university age.[15] At the same time, governments responded to market signals about the value of university education by increasing funding,

11 Jones, "Sectors, Institutional Types, and the Challenges of Shifting Categories," 3.

12 See, for example, Canadian Council on Learning, *State of Learning in Canada 2009–2010*, 34.

13 Jones, "Sectors," 3.

14 Prairie Research Associates, *Canadian University Survey Consortium*, 8. See also Stechyson, "Kickin' It Old-School."

15 Association of Universities and Colleges of Canada, *Trends in Higher Education*, 27. See also Cheung, Guillemette, and Mobasher-Fard, *Tertiary Education*, 31; Berger, "Participation in Post-Secondary Education," 35.

while individuals responded by pursuing it in greater numbers. Indeed, the share of occupations that require a university degree increased from 13.1 per cent in 1987 to 17.8 per cent in 2007.[16] As noted in the introduction, labour market outcomes for those with higher education credentials exceed outcomes for those without.

Participation Trends

A striking change in the university sector over the years is the significant increase in both the absolute number of students and the proportion of the population that attend and graduate. Much of the increase occurred between 1951 and 1975, when enrolment rose from 63,500 to 371,100 and the participation rate for those aged 18 to 24 increased from 4.2 to 12.5 per cent.[17] Since then, enrolment has more than tripled to 1.14 million across all degree types, with more than 870,000 in undergraduate programs—an undergraduate participation rate of over 26 per cent among the cohort aged 18 to 24.[18] (See Chart 3.)

An additional 119,000 international students enrolled in Canadian universities in 2011.[19]

Between 1992 and 2010, participation rates increased in most provinces, including Ontario (6 percentage points), Manitoba (2 points), Quebec (2 points), and Prince Edward Island (3 points). Although Newfoundland and Labrador and Nova Scotia witnessed modest growth in the absolute number of enrolments, their participation rates increased dramatically due to migration of student-age individuals out of these provinces.

16 Cheung, Guillemette, and Mobasher-Fard, *Tertiary Education*, 19.

17 Statistics Canada, *Historical Statistics of Canada*.

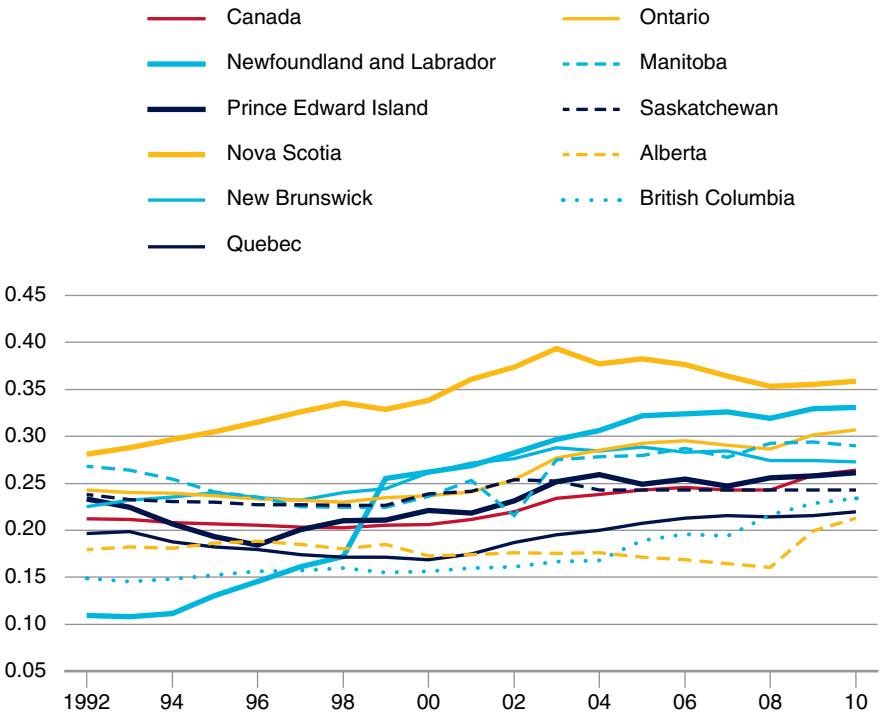
18 Calculations based on Statistics Canada CANSIM tables 477-0019 and 051-0001. Enrolment data do not identify students' ages, so the participation rate for 18- to 24-year-olds cited here is likely lower in reality due to enrolments by those over 24 years of age.

19 Statistics Canada, CANSIM table 477-0019.

Chart 3

Undergraduate Enrolments by Province

(percentage of student-age population, 18 to 24)



Notes: Data were not available for the University of Regina between 2005 and 2008, so we have assumed constant enrolment for those years and resumed with actual reported data in 2009. In 2008–09, five colleges in British Columbia and two in Alberta became universities, boosting university enrolment by definition.
Sources: Statistics Canada, CANSIM tables 051-0001 and 477-0019; The Conference Board of Canada.

Participation rates in British Columbia and Alberta also increased; however, the sharp rises seen in 2009 reflect the fact that seven colleges in those provinces were granted university status.[20]

20 Without these institution changes—i.e., if enrolment growth in British Columbia were consistent with that of previous years—participation rates would have remained at approximately 19 per cent between 2007 and 2010.

Participation Outlook

Enrolment has grown in recent years as a result of rising participation rates and some growth in the university-age population since about 1999. However, recent data from Ontario indicate that a long-expected structural decline in enrolment, due to demographic trends, is beginning to take hold. In 2014, direct-entry first-year enrollment in that province (though not total enrollment) declined by 2.8 per cent over 2013—explained in part by a 2.1 per cent decline in the number of 18-year-olds in the province.[21] Nor are potential students simply enrolling in colleges instead, as Ontario's college sector witnessed a decline of 2 per cent in enrolments in 2014.

Concerns about declining enrolments have provided impetus to identify strategies to sustain or grow enrolment levels by recruiting from traditionally under-represented groups.[22] Strategies to boosting enrolment of under-represented groups—including Indigenous persons, people with disabilities, mature students, individuals who have historically lacked the preparation and aspiration to attend university, and international students—are already under way, but the support required for these students to succeed can be costly.[23] (See box "International Students in Canada: Opportunity and Risk.") Moreover, as some of the barriers to participation among these groups are cultural rather than financial,[24] creativity and innovation in policies and programs will be needed.

It is fair to ask whether increasing university participation—or any part of the PSE sector—is wise. There are concerns about whether expanding participation is compatible with maintaining, let alone enhancing, the

21 Usher, *Welcome to the Crisis*.

22 See, for example, Association of Universities and Colleges of Canada, *Trends in Higher Education*, 28; Cheung, Guillemette, and Mobasher-Fard, *Tertiary Education*, 11; Berger, "Participation in Post-Secondary Education," 35.

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

24 Finnie, Sweetman, and Usher, "Introduction," 27–8.

quality of university education.[25] And with other skills development opportunities—such as colleges, institutes, polytechnics, and workplace training—some careful thinking about the extent to which each should contribute is warranted. That said, Canada's university attainment rates lag those of international peers. With 27 per cent of the population holding a university credential, Canada ranks 7th of 16 peer countries in the Conference Board's *How Canada Performs* report card, though there is substantial variation across provinces—from a low of 18.4 per cent in New Brunswick, to a high of 31 per cent in Ontario.[26] By contrast, Canada ranks 1st in college completion.[27] At a minimum, then, it is worth reflecting on the fact that Canada's mix of PSE graduates is quite different from its international peers and ask whether that is a good, bad, or mixed reality.

International Students in Canada: Opportunity and Risk

International students make up a sizable and increasing share of graduates. (See Chart 4.) In total, 4.75 per cent of all students who study in a country other than their own do so in Canada—a higher proportion than would be expected for a country of Canada's size.[28] Canada ranks 6th of 16 peer countries on this metric.[29]

Increasing the number of international students could lead to a number of benefits. There is a positive relationship between involvement in international education and four indicators of economic performance: growth in international trade, trade in advanced technologies, levels of foreign direct investment, and

25 Weingarten, "Time to Say No"; Fallis, *Rethinking Higher Education*, 2, 8; Munro, *Skills and Higher Education*.

26 The Conference Board of Canada, *How Canada Performs: Education—University Completion*. See also Cheung, Guillemette, and Mobasher-Fard, *Tertiary Education*.

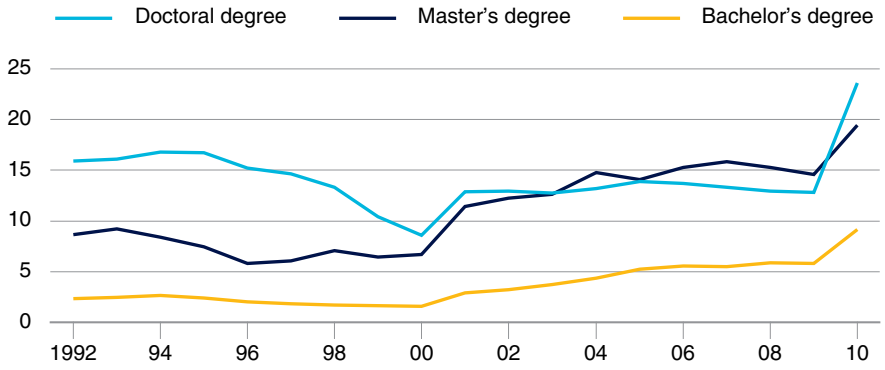
27 The Conference Board of Canada, *How Canada Performs: Education—College Completions*.

28 The Conference Board of Canada, *How Canada Performs: Education—Foreign Student Index*.

29 Ibid.

overall GDP growth.[30] Moreover, spending by international students on "tuition, accommodation, and living expenses" in 2010 totalled more than $8 billion, including $445 million in government revenue.[31] This made educational services Canada's largest export to China in 2010.[32]

Chart 4
International Students as a Percentage of Total Graduates, Academic Years
(per cent)



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

International students are also "immigrants of choice" (i.e., candidates who are already educated, "attuned" to life in Canada, impose smaller settlement and integration costs, and require no foreign credential recognition before entering the labour market).[33] At the provincial and federal levels, governments provide special immigration options for international students through Provincial Nominee Programs and Citizenship and Immigration Canada's Canadian Experience Class program.[34]

30 The Conference Board of Canada, *The Economic Implications*, 16.

31 Advisory Panel on Canada's International Education Strategy, *International Education*, 4.

32 Ibid., x, 4.

33 Canada Immigration Newsletter, *Canadian Labour Shortage Solution.*

34 See Citizenship and Immigration Canada, *Canadian Experience Class*.

Although international student enrolments are not always supported with provincial grants, international tuition fees are higher than domestic fees[35] and foreign student enrolments help institutions address funding shortfalls.[36] International students also create a more diverse and worldly student body. As Colin Dodds, President of St. Mary's University, in Halifax put it, greater internationalization on campus enriches the educational experience with "new perspectives, cultures and languages."[37]

At the same time, there is concern that not all international students have the language skills necessary to succeed.[38] Moreover, relying on international students for funding can be risky. Australia's ambitious international recruitment strategy resulted in international student tuition accounting for 15 per cent of university funding by 2008. But the global recession caused the supply of international students to decline, leaving Australian universities with major funding challenges.[39] Along with less-than-ideal experiences for some international students, the Australians' aggressive approach exposed the system to significant risks. The Australian experience is one to keep in mind as the Canadian government looks to increase the number of international students, in all PSE programs, from 239,000 in 2011 to more than 450,000 by 2022.[40]

Sources: The Conference Board of Canada; Advisory Panel on Canada's International Education Strategy; CIC News; Citizenship and Immigration Canada; Ontario Undergraduate Student Alliance; Cheung, Guillemette, and Mobasher-Fard; Dodds; Dehaas; Cebon; Department of Foreign Affairs, Trade and Development Canada.

35 Ontario Undergraduate Student Alliance, *Global Examination*, 12.

36 Cheung, Guillemette, and Mobasher-Fard, *Tertiary Education*, 30.

37 Dodds, "Canada Can Become International Education Powerhouse."

38 Dehaas, "Do International Students Need Better English Skills?"

39 Cebon, "A Lesson in Courting Foreign Students."

40 Department of Foreign Affairs, Trade and Development Canada, *Canada's International Education Strategy*, 11.

Credential Outputs

Bachelor's degrees make up 74 per cent of the total number of university degrees held by Canadians aged 25 to 64, while master's degrees make up 22 per cent and doctoral degrees represent 4 per cent.[41] Although many Canadians have graduate degrees, we trail international peers. The number of Canadians graduating with master's degrees more than doubled from 19,434 in 1992 to 41,085 in 2011, and doctoral graduates per year increased from 3,135 to 5,907.[42] Yet, in terms of degrees awarded per capita per year, Canada ranks below the OECD average in all graduate degrees,[43] and ranks 15th of 16 key comparator countries in PhDs per capita.[44]

Major Fields of Study

Twenty per cent of all degrees are held in business, management, and public administration; 17 per cent in social and behavioural sciences and law; 13 per cent in education; 12 per cent in architecture, engineering, and related technologies; and 11 per cent in humanities. By contrast, only 2 per cent of all degrees are held in agriculture, natural resources, and conservation; 3 per cent in visual and performing arts, and communications technologies; 5 per cent in mathematics, computer, and information sciences; 8 per cent in physical and life sciences and technologies; and 9 per cent in health and related fields.[45] (See Chart 5.)

By 2011, nearly 25 per cent of all degrees were in one of the STEM disciplines—science, technology, engineering, and mathematics. At the graduate level, 26 per cent of master's and 53 per cent of doctoral degrees were in one of the STEM disciplines.[46] Although Canada has

41 Statistics Canada, *Education in Canada*, 7.

42 Statistics Canada, CANSIM table 477-0020.

43 Cheung, Guillemette, and Mobasher-Fard, *Tertiary Education*, 8.

44 The Conference Board of Canada, *How Canada Performs: Education—PhD Graduates*.

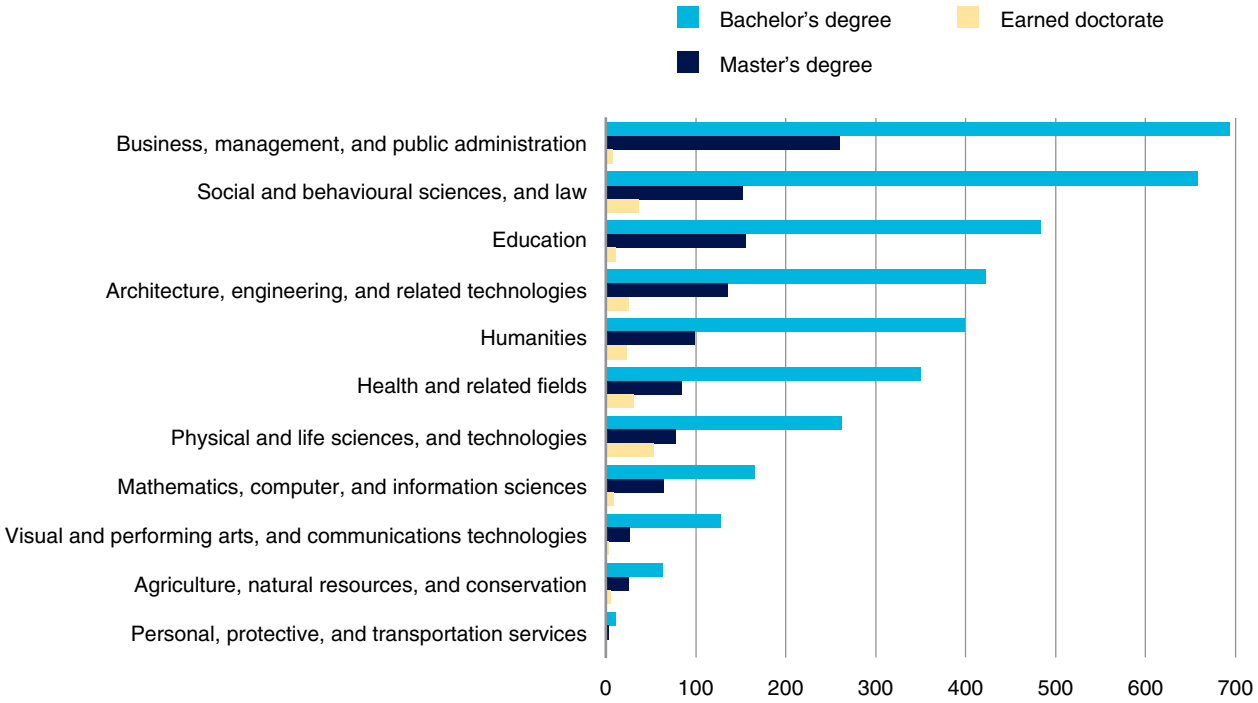
45 Statistics Canada, *Education in Canada*, 7.

46 Statistics Canada tracks STEM attainments through special groupings that cut across several of the major fields of study considered in the data above. Statistics Canada, *Education in Canada*, 14.

Chart 5

Highest University Credentials by Major Field of Study, 2011, Canada

(000s)



Sources: Statistics Canada, *2011 National Household Survey*; The Conference Board of Canada.

a higher share of university graduates in STEM fields than the OECD average,[47] we lag many international comparator countries, ranking 10th of 16 countries in the Conference Board's *How Canada Performs* report card.[48] Immigrants hold a disproportionate number of STEM credentials in Canada (51 per cent), despite representing just under a quarter (24.6 per cent) of adults.[49] To be sure, the share of STEM graduates may be less relevant than the absolute number given that countries have

47 Cheung, Guillemette, and Mobasher-Fard, *Tertiary Education*, 26.

48 The Conference Board of Canada, *How Canada Performs: Education—Percentage of Graduates.*

49 Statistics Canada, *Education in Canada*, 15.

different rates of university completion overall. But as Canada lags on both university completion and share of STEM graduates, there is reason for concern.

What are the trends in particular disciplines in recent years? Chart 6 shows the proportion of students graduating with undergraduate university degrees annually in specific disciplines.[50]

As a proportion of the total number of undergraduate degrees awarded annually, the strongest growth was in business, management, and public administration—from 14.8 per cent in 1992 to nearly 19.9 per cent in 2011. At 21.3 per cent, social and behavioural sciences and law graduate more students than any other field, but the trends suggest that business, management, and public administration may take over soon. Signals about the need for more people in health-related occupations may also be getting through to students as the proportion of degrees earned in health, parks, recreation, and fitness increased from 9.4 per cent in 1992 to 13.2 per cent in 2011.

Along with the downward trend in social and behavioural sciences and law, a notable decline occurred in education—from 15 to 11.7 per cent. This may be due in part to increasing concern about the scarcity of teaching jobs for graduates. A decline also occurred in the humanities, with the proportion of bachelor's degrees in these fields falling from 13.2 per cent to less than 9.9 per cent by 2011. In both cases, the absolute number of graduates rose. Education awarded 20 per cent more degrees in 2011 (22,179) than in 1992 (18,492), while the number of humanities graduates increased 16 per cent over the past two decades (from 16,173 to 18,711). But their relative popularity is on the wane.

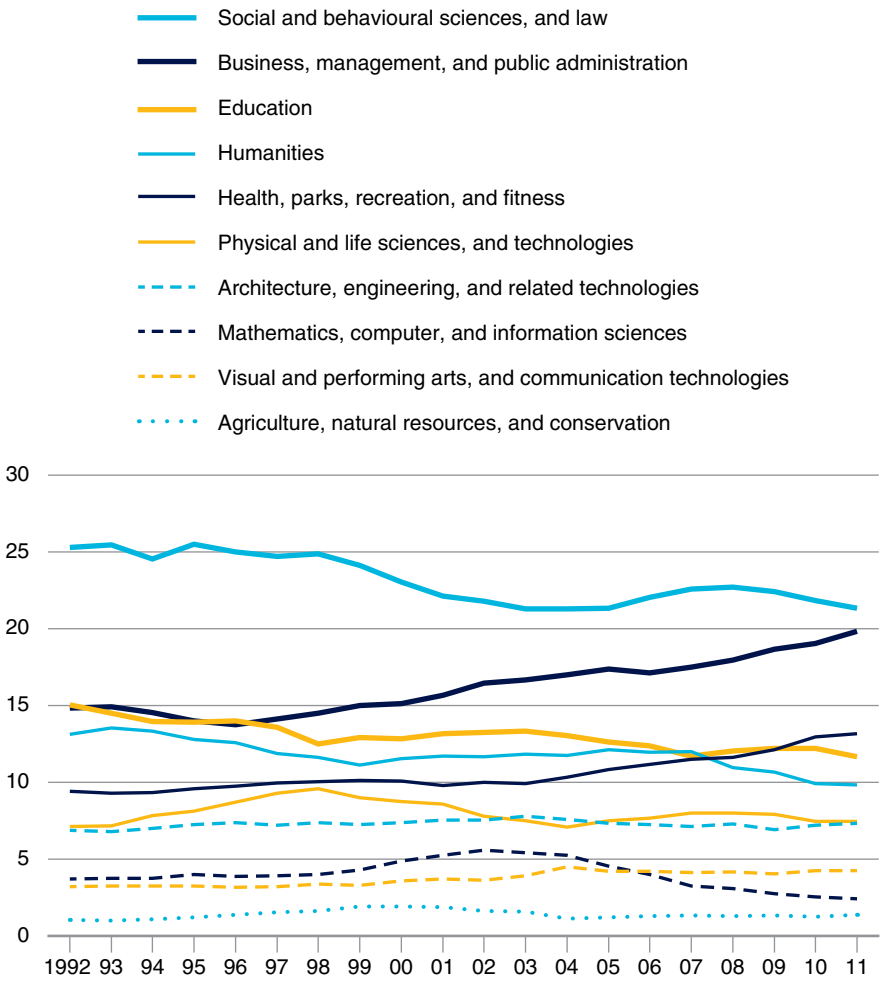
An interesting rise and subsequent fall occurred in mathematics, computer, and information sciences. In 1992, 3.7 per cent of all degrees were awarded in these fields, rising to 5.6 per cent by 2002, but falling to 2.4 per cent by 2011. One possible explanation is that more

50 Note that, although the proportion of international students receiving degrees in Canada fluctuates from 2.3 to 6.6 per cent over the period, their disciplinary preferences do not significantly affect the overall trends.

Chart 6

Proportion of Undergraduate University Degrees Awarded Annually, by Discipline, 1992 to 2011

(per cent)



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

students may have been influenced to pursue these subjects during the rising hype about dot-com businesses in the late 1990s, while later cohorts turned away because of the dot-com bust in the early 2000s.

Downward pressure on the proportion studying these fields is likely also a consequence of proportionally more women entering higher education and the fact that they are less likely to study one of the STEM disciplines.

Total Degrees

It is important to note that all fields experienced growth in the absolute number of graduates, even as some have declined in terms of proportion of total degrees. Overall, 189,948 bachelor's degrees were awarded in 2011—over 40 per cent more than in 2001 and 54 per cent more than in 1992. Since 1998, the proportion of Canadians with a university degree has climbed from 18 per cent to approximately 27 per cent.[51]

However, a recent analysis of trends in Ontario, by Alex Usher of Higher Education Strategy Associates, shows that 2014 direct-entry first year enrolments in university and college declined by 2.8 and 2 per cent, respectively, over 2013 enrolments—not surprisingly, since the number of Ontarians aged 18 has declined by 2.1 per cent.[52] In that case, even as the proportion holding degrees might continue to climb, the absolute number of graduates may begin to slip in a few years.

An interesting feature of the discipline-specific trends is how they suggest that students may be hearing and responding to some market and media signals about high-demand fields, despite beliefs to the contrary. Just as surveys and studies reveal that employers indicate a need for more people in business, management, and health-related occupations, the proportion of graduates in those fields has grown. Similarly, trends in mathematics, computer, and information sciences indicate sensitivity to the rise and fall of dot-com businesses in the 1990s and 2000s. And as debates about the value of the arts and humanities intensify, and many worry about the availability of jobs for teachers and others in education, proportionally fewer students are graduating from Canadian institutions with bachelor's degrees in these fields. Whether

51 The Conference Board of Canada, *How Canada Performs: Education—University Attainment*.

52 Usher, *Welcome to the Crisis.*

these shifts are objectively good or bad for students, the economy, and society, they show that students are responsive to the signals they receive. Together, we need to ensure that those signals are fair and accurate.

Professional Credentials

In addition to degree credentials obtained through universities, many Canadians have professional credentials (and related designations) that provide further indication of their skills and competencies. Obtaining these credentials often requires that skills and competencies meet the standards set by professional organizations—by passing exams and/or completing certain kinds and durations of work experience (e.g., internships, articling).

Understanding the number of credentials attained in these areas, therefore, also provides an understanding of the "state of skills" in Canada. Although it would be beyond the scope of this report to consider the state of professional credentials in Canada as a whole, the following provides a glimpse of professional credential attainments in several major professional categories:

- *Engineers*—There were 168,304 practising professional engineers (PEng) in Canada as of 2012, up 4.1 per cent from 2011, according to Engineers Canada.[53]
- *Lawyers*—There were 114,380 lawyers in Canada as of 2011, up 5.4 per cent since 2010, according to the Federation of Law Societies of Canada.[54]
- *Physicians*—There were 75,142 physicians in Canada as of 2012, an increase of 3.6 per cent from 2011, according to the Canadian Institute for Health Information.[55]

53 Engineers Canada, *Engineers Canada 2012 Membership Survey*, 1.

54 See Federation of Law Societies of Canada, *Federation Statistical Report 2010*; Federation of Law Societies of Canada, *Federation Statistical Report 2011*.

55 Canadian Institute for Health Information, *Supply, Distribution and Migration of Canadian Physicians, 2012*, 5.

- *Pharmacists*—There were approximately 33,000 licensed pharmacists in Canada as of 2014, according to the Canadian Pharmacists Association.[56]

While these credentials are likely familiar to most Canadians, other types have emerged recently. For example, Canada's Association of I.T. Professionals now offers two certification and professional designation programs—the Information Systems Professional (I.S.P.) designation and Information Technology Certified Professional (ITCP) designation.[57] In other, more traditional professions, such as accounting, credentials are evolving. As of 2013, there were over 70,000 Canadian Chartered Professional Accountants (CPA)—a new designation that unifies former certified members of the Society of Management Accountants of Canada (CMA Canada) and the Canadian Institute of Chartered Accountants (CICA).[58]

Aggregated data on professional credential attainments in Canada would be helpful. The only standard category for professional credentials in national-level survey data is "Degree in medicine, dentistry, veterinary medicine or optometry," which shows a total of 154,700 degree holders as of 2011. Still, the data available from particular professional associations can assist in producing accounts of occupation-specific skills development.[59]

56 Canadian Pharmacists Association, *Pharmacists in Canada*.

57 Canadian Information Processing Society, *Professional Certification (I.S.P., ITCP*).

58 Chartered Professional Accountants Canada, *About CPA Canada*.

59 Although the National Household Survey categories "University certificate or diploma above bachelor level" and "University certificate or diploma below bachelor level" likely include professional credentials, they do not indicate which professional credentials are included.

Skills Outputs

Credentials provide some information about the knowledge areas in which Canadians specialize, but they are at best a proxy measure of actual knowledge and skills attainment. To understand what skills university graduates acquire requires that we look at other measures.

Which Skills?

A key question to ask at the outset is, which skills are universities *expected* to develop in their students? Many see the purpose of universities as knowledge creation and dissemination and resist the idea of skills development. But the reality is that universities have always embraced the objective of developing students' *critical thinking, analytical,* and *communication skills*. They also aim to improve students' *literacy* and, insofar as it relates to analysis and applying knowledge, students' *numeracy* as well. At the same time, given the proliferation of professional programs and schools (such as engineering, law, business, medicine), some universities are expected to develop students' *technical* skills in certain fields.

Moreover, and more broadly, the massive growth in participation over the past few decades has created expectations that universities contribute to students' *employability* and *innovation* skills. It is now common for universities themselves to use the language of workforce preparation when describing and marketing the value of a degree.[60] While acknowledging that systemic and direct measures of skills are few and controversial,[61] what do we know about the skills attainment of Canadian university graduates?

60 The Association of Universities and Colleges of Canada (AUCC) notes that graduates will gain "hands-on research, innovation and knowledge-sharing experiences they'll need and use in the workplace." AUCC, *Canada's Universities*, 2. The Council of Ministers of Education Canada's framework of educational outcomes includes a range of work-related skills components, such as critical thinking, analysis, and communication. Council of Ministers of Education Canada, *Ministerial Statement,* 2–5.

61 See the discussion of OECD's AHELO in Chapter 1.

Measuring Skills Directly

Although it tests only general literacy, numeracy, and problem-solving in technology-rich environments (PS-TRE), OECD's Programme for the International Assessment of Adult Competencies (PIAAC) provides some useful clues about university graduates' skills.[62] (See box "Programme for the International Assessment of Adult Competencies.")

Programme for the International Assessment of Adult Competencies

Between November 2011 and June 2012, over 27,000 Canadians aged 15 to 65, in all provinces and territories, participated in OECD's test of adult skills along with tens of thousands more in other countries. Participants had their skills assessed in three areas:

- *Literacy*—The ability to understand, evaluate, use, and engage with *written texts* to participate in society, to achieve one's goals, and to develop one's knowledge and potential.
- *Numeracy*—The ability to access, use, interpret, and communicate mathematical information and ideas in order to engage in and manage the mathematical demands of a range of situations in adult life.
- *Problem-Solving in a Technology-Rich Environment (PS-TRE)*—The ability to use digital technology, communication tools, and networks to acquire and evaluate information, communicate with others, and perform practical tasks.[63]

Literacy, numeracy, and PS-TRE skills are essential to the ability to acquire and process information, and provide a foundation for the development of additional higher-order skills.[64] As such, survey results on skills attainments in these areas provide a picture of the preparedness of individuals to succeed in many areas of work and life, including increasingly technological environments.[65] It

62 See Statistics Canada, *Skills in Canada*.

63 OECD, *Skills Outlook 2013*, 59.

64 See, for example, Statistics Canada, *Skills in Canada*, 5.

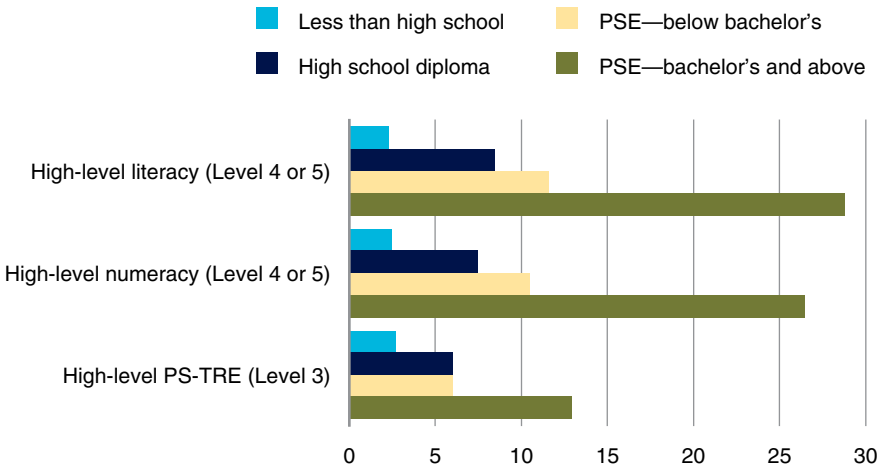
65 OECD, *Skills Outlook 2013*, 2; Parkin, "Is Canada's Post-Secondary System Prepared?"

also provides one way to assess how well various parts of the PSE and skills development perform.

Sources: Statistics Canada; OECD; The Conference Board of Canada.

There is a positive relationship between educational attainment and skills levels. Graduates with bachelor's degrees or above (primarily earned through universities) achieve higher literacy, numeracy, and PS-TRE scores than those who do not hold bachelor's degrees.[66] As Chart 7 illustrates, those with bachelor's degrees are more than twice as likely to be in the top skills levels for literacy, numeracy, and PS-TRE as those with PSE below a bachelor's. To be sure, the differences are not entirely attributable to one's educational attainment, though one would hope that education makes some difference. (More on this below.)

Chart 7
Top Skills Proficiency by Educational Credential
(per cent achieving high-level skills)



Source: Statistics Canada, *Skills in Canada*.

66 Statistics Canada, *Skills in Canada*, 32.

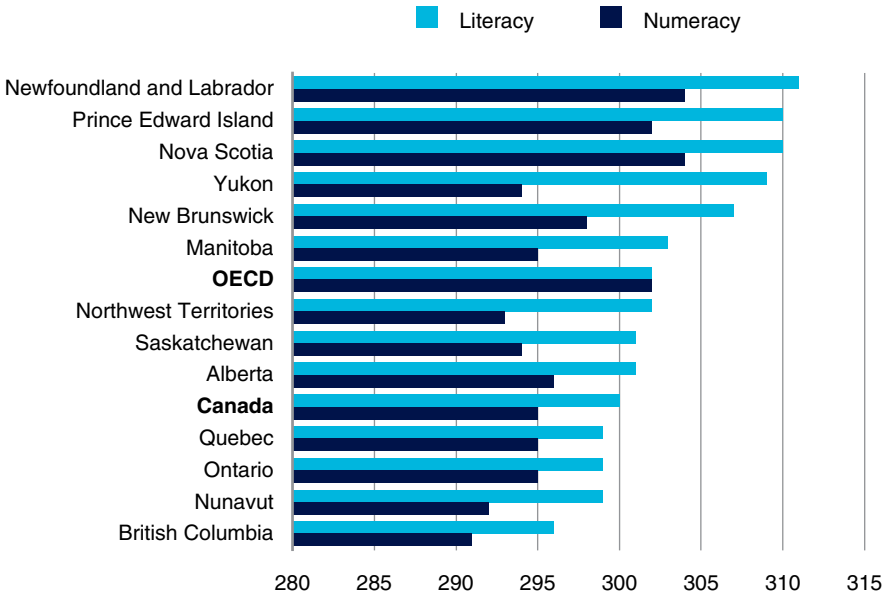
Skills Attainments by Province and Territory

PIAAC scores also reveal provincial and territorial differences in skills attainments. Average literacy and numeracy scores of university graduates range from a low of 291 (numeracy in British Columbia) to a high of 311 (literacy in Newfoundland and Labrador) out of 500.[67] Overall, the average literacy score for university graduates in Canada is comparable to the average OECD university graduate, while the average numeracy score for university graduates in Canada is below the OECD average. (See Chart 8.)

Chart 8

Average Literacy and Numeracy Scores Among University Graduates

(average score out of 500)

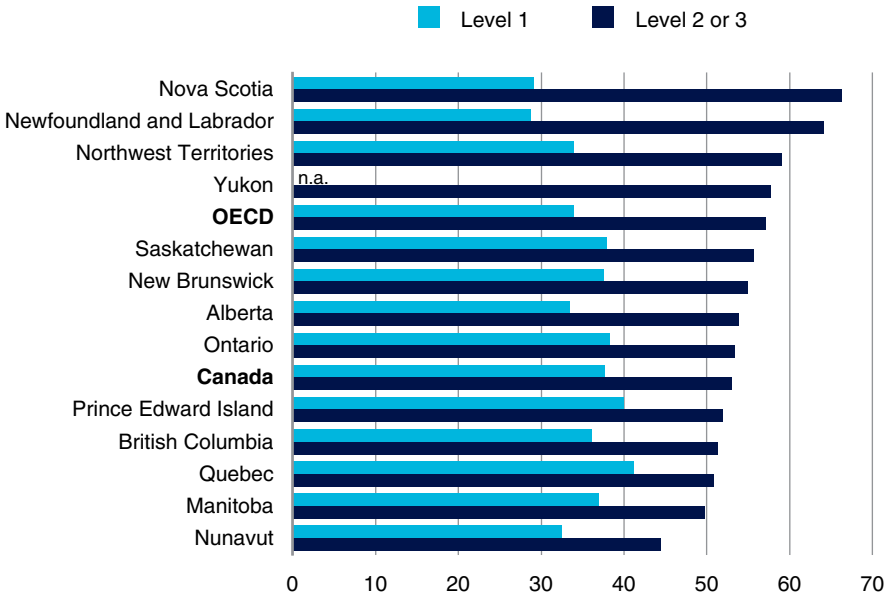


Sources: Statistics Canada, *Skills in Canada—First Results From the Programme for the International Assessment of Adult Competencies* (PIAAC), Annex D; The Conference Board of Canada.

67 This is consistent across other OECD countries, where more individuals score within this range than any other. See OECD, *Skills Outlook 2013*, 66.

Overall, university graduates in Canada score slightly below the OECD average in PS-TRE, but there is significant provincial variation. Nova Scotia, Newfoundland and Labrador, the Northwest Territories, and Yukon have more university graduates scoring at levels 2 or 3 (the higher levels) on PS-TRE than the OECD average, while all other provinces and territories score at or below the OECD average.[68] (See Chart 9.)

Chart 9
PS-TRE Skill Level Among University Graduates
(per cent)



PS-TRE = problem-solving in a technology-rich environment.
n.a. = not available
Sources: Statistics Canada, *Skills in Canada*, Annex D; The Conference Board of Canada.

68 This may have more to do with the fact that (with the exception of Yukon) these jurisdictions produce fewer university graduates (and thus select only the top-performing students into their PSE systems) than it does with the quality of the systems themselves. In other words, if we assume a normal distribution of skills proficiency in a population, those provinces that produce more university graduates will be recruiting more people further down the distribution. Their university education may improve their skills, but starting from a lower baseline.

At PS-TRE levels 2 and 3, individuals can use multi-step procedures and multiple applications to complete tasks, and develop solutions to unexpected challenges.[69] This means that among Canadians with bachelor's degrees or above, there are still many who have only a basic ability to use digital technology, and who experience difficulties solving technology-related problems.[70]

Canada in the World

As Chart 10 illustrates, Canada is a middle-of-the-pack performer in terms of average literacy proficiency among young adults (16 to 29 years old) with university-level credentials. With an average literacy score of 308 for university graduates, Canada places 12th of 23 comparator jurisdictions. However, if we take the scores of only those Canadian university graduates who were born in Canada and whose native language is either French or English, the average score rises to 313—slightly above the OECD average, and 7th place compared with other countries' "native-born, native-language" test-takers. By contrast,

the average literacy score among foreign-born and foreign-language test-takers in Canada with a university degree is only 275—38 points below that of the native population.[71] This speaks to the need for better immigrant integration and language support for international students, including English as a Second Language.

Graduates' Views on Skills Development

In 2012, the Canadian University Survey Consortium (CUSC) surveyed over 15,000 graduating undergraduate students about the extent to which they felt university contributed to the development of their skills and knowledge.[72] Although subjective measures of skills attainment are problematic, they do provide some insights in a data-starved

69 Statistics Canada, *Skills in Canada*.

70 Ibid., 1.

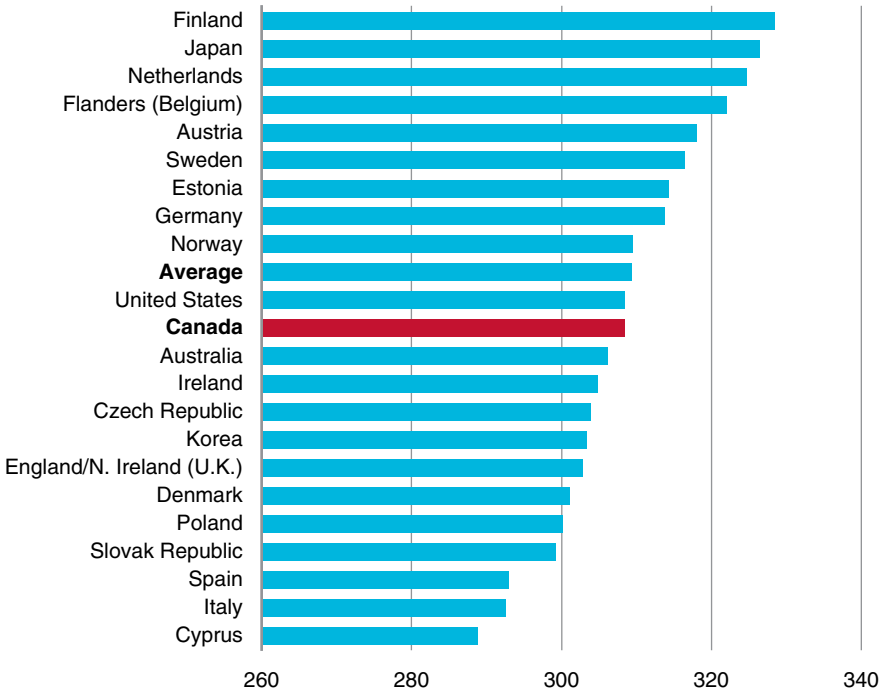
71 Parkin, *"Is Canada's Post-Secondary System Prepared?"*

72 See Prairie Research Associates, *Canadian University Survey Consortium, 2012 Survey.*

Chart 10

Literacy Proficiency Among Young Adults (16 to 29) With a University Degree

(score out of 500)



Source: OECD, *OECD Skills Outlook 2013*.

area. The results presented below show that while many graduates acknowledge the contribution of university to their skills attainment, a sizable minority—sometimes nearly half—were unimpressed. The fact that so many believe that their university education did not contribute to their development raises pressing questions—either university quality is not as high as it should be for many students, or universities are doing a less-than-ideal job of ensuring that graduates recognize and are able to articulate and communicate the skills that they have developed.

Knowledge

Ideally, completing a degree and achieving certain grades provides evidence of knowledge acquisition and mastery of subject-specific skills. Yet, not all graduates feel that their knowledge has improved significantly over years of study. The CUSC survey found that three-quarters of graduates felt that university contributed much or very much to knowledge of their subject area, and only 45 per cent said that their undergraduate experience prepared them for further levels of study (such as a graduate or professional program).

Technical and General Skills

In terms of technical and general skills, results differ by discipline. Engineering and physical or biological sciences graduates are more likely to report higher levels of skills development in analyzing quantitative problems, mathematics, computer literacy skills, and understanding and applying scientific principles and methods. By contrast, arts and humanities graduates are more likely to report higher development in written communication. (See Chart 11.)

The results align with the outcomes one would expect from degree programs of these types. Nevertheless, skills development outcomes can be improved in areas that are important regardless of a person's discipline or career path. For example, it is troubling to see that only 38 per cent of all arts and humanities graduates say that university contributed much or very much to their ability to identify and solve problems, and that only 45 per cent of physical or biological science graduates say that university contributed significantly to their written communication skills.

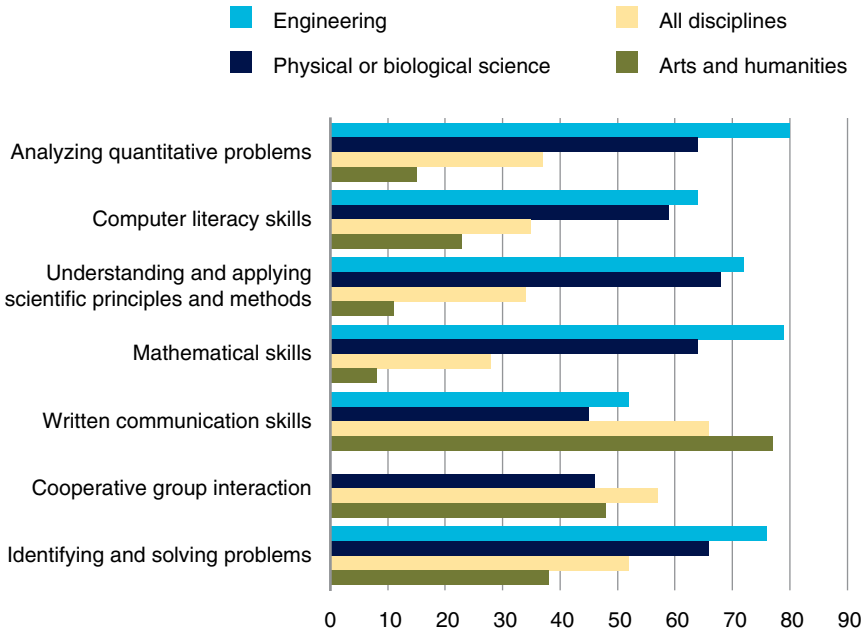
Continuous Learning and General Reasoning

A majority of students felt that university contributed much or very much to the development of their skills related to continuous learning, finding and using information, and general reasoning. (See Chart 12.) On the high end, 72 per cent said that university contributed much or very much to their logical and analytical thinking skills, while 52 per cent felt

Chart 11

Contribution of a University Degree to General Skill Set

(percentage responding "much" or "very much")



Sources: Canadian University Survey Consortium, *2012 Survey*; The Conference Board of Canada.

the same about identifying and solving problems. Are large minorities of students not getting as much from their university education as they should? Do they benefit but fail to *recognize* the benefits?

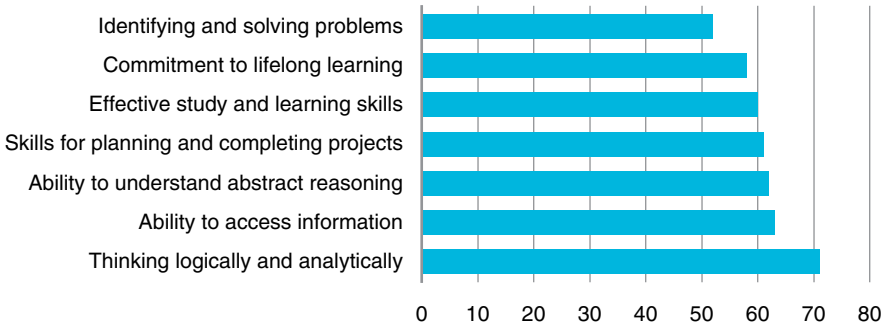
Employability and Other Life Skills

Seventy-three per cent of students said that university contributed significantly to their ability to work independently and a slim majority (51 per cent) said it contributed significantly to *general* skills and knowledge relevant for employment. On other employability and life skills, however, few students believed that university made much difference. Only 44 per cent reported that university contributed to *specific* employment-related skills and knowledge and a mere 18 per

Chart 12

Contribution of University Degree to Continuous Learning and Reasoning Skills

(percentage responding "much" or "very much")



Sources: Canadian University Survey Consortium, *2012 Survey of Graduating Students*; The Conference Board of Canada.

cent thought that it improved their entrepreneurial skills. Given Canada's persistently weak innovation performance and high reliance on entrepreneurial endeavours, this result is especially troubling.

In addition, less than half of graduates said that university had contributed significantly to an appreciation of the arts (29 per cent), living in an international world (44 per cent), or understanding of national and global issues (47 per cent). Not all disciplines are suited to developing skills in all of these areas, but some of these are basic citizenship skills that most universities claim to be interested in transmitting to their graduates. (See Chart 13.)

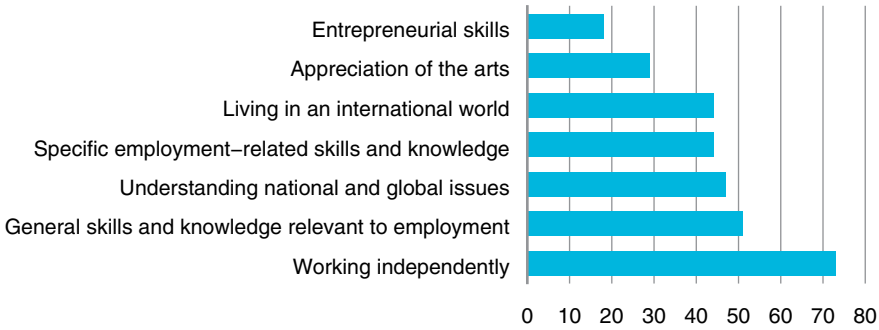
Conclusion

In many respects, Canada's university sector has kept pace with changing economic and social demands by evolving its structures and operations and by graduating many people with the knowledge and skills to contribute and continuously learn. However, there is room for improvement, and the sector will face many challenges in the years ahead. Employers are not entirely satisfied with the essential and other

Chart 13

Contribution of University Degree to Work and Life-Related Skill Sets

(per cent responding "much" or "very much")



Sources: Canadian University Survey Consortium, *2012 Survey of Graduating Students*; The Conference Board of Canada

skills of graduates, and some graduates themselves are not sure that university contributed much to their critical thinking, communication, entrepreneurial, and other skills. Universities must consider whether sufficient numbers of students are developing these advanced skills and, if they are, identify strategies to ensure that students recognize and can communicate that they have these skills. Additionally, there is room to improve literacy, numeracy, and digital problem-solving skills—though this is as much a task for the K-12 system and adult learning initiatives as it is for the university sector.

While thinking about how to sustain and improve the skills outcomes of graduates, the university sector will face increasing pressure with respect to enrolment trends, financial sustainability, and defining the unique roles and activities of the institutions and sector as a whole with the broader PSE environment. Indeed, as the sector evolves it will need to pay considerable attention to how institutions are internally diverse and how they are, or should be, differentiated from other universities and non-university PSE institutions. In short, Canadian universities are doing well, but improvements can and should be made to sustain and enhance a world-class system.

CHAPTER 3

Colleges, Institutes, Polytechnics, and CEGEPs

Chapter Summary

- Canada's college sector is composed of a variety of institutional types—including colleges, institutes, polytechnics, and CEGEPs.
- The sector's institutions have succeeded in expanding PSE access geographically and to previously under-represented groups; have high completion rates relative to international peers; and contribute to a technically skilled and innovative workforce.
- Although there is variation across regions and institutional types, there is room for the college sector to improve its track record on graduates' foundational skills that provide a basis for employability and future learning.

Canada's colleges, institutes, polytechnics, and CEGEPs play an essential role in professional and technical education and training, and preparing graduates for employment in a wide range of occupations. Although there are important regional differences, in general the sector grew rapidly in the 1960s to meet changing labour needs, to increase the variety of PSE programs, and to improve geographic and financial accessibility.[1] While achieving some success in all three areas over the decades, the sector is evolving in ways that require further reflection on its role in the PSE system and what more the sector could do to improve skills development. The sector produces many graduates with professional, technical, and job-ready skills, but there is room to improve graduates' literacy, numeracy, problem-solving, and other transferable skills.

Sector Profile

Like the university sector, identifying the boundaries, aims, and activities of Canada's college sector is a challenge. Not only do colleges take on different forms and functions across provinces and territories—with Quebec's CEGEP offering the most striking example of difference—but even within provincial and territorial jurisdictions, colleges differ in terms of focus and activity. Moreover, the boundary between universities and colleges is increasingly difficult to draw as many colleges now offer degrees and engage in applied research, while universities increasingly

1 See Cheung, Guillemette, and Mobasher-Fard, *Tertiary Education*; Jones, "Sectors"; Skolnik, "The Relationship," 42.

complement their academic focus with experiential and practical learning opportunities for students. Still, most colleges are focused on providing students with professional and technical education and training intended to prepare them for employment.

Size, Types, and Activities

Colleges and Institutes Canada (CICan) reports 136 colleges, CEGEPs, and institutes as member institutions. OECD points to 183 "recognized public colleges and institutes"—a number that includes many theological and online institutions not members of CICan.[2] With campuses serving over 3,000 communities across the country, colleges constitute an especially accessible part of the PSE and skills development system.[3] Colleges focus on providing skills for employment to all students and do well reaching urban, rural, remote, Indigenous, mature, and other learners.[4]

There is considerable institutional variation in terms of structure, purposes, and activities, both across and within provinces and territories. In British Columbia and Alberta, for example, colleges offer diploma and degree programs (and, in a few cases, master's degrees). They also act as transfer institutions to universities. Students in those provinces can complete two years of credits toward a degree before transferring to a university to complete the degree.[5] At the same time, growing numbers of university graduates are returning to PSE to complete college diplomas, degrees and post-graduate certificates. Polytechnics such as the British Columbia Institute of Technology (BCIT), Southern Alberta Institute of Technology (SAIT) Polytechnic, and Northern Alberta Institute of Technology (NAIT)—are on the leading edge of conducting applied research and preparing graduates to contribute to innovation. (See box "Polytechnic Institutions.") In Quebec, two years of study at one of the

2 Colleges and Institutes Canada, *List of Members*; Cheung, Guillemette, and Mobasher-Fard, *Tertiary Education*, 7.

3 Association of Canadian Community Colleges, *Serving Canada's Colleges and Institutes*.

4 Ibid.

5 Jones, "Sectors," 4.

province's CEGEPs is required before a student can attend university in Quebec. At the same time, CEGEPs provide opportunities for students not on a university track to pursue three-year technical programs.[6] Additionally, through their Centres for Technology Transfer, CEGEPs provide extensive applied research support to industry across Quebec. In other provinces, such as Ontario, colleges "are comprehensive, applied, technical institutes running parallel to the universities."[7]

The primary (though not exclusive) credentials offered include diploma and certificate programs (including trades training certificates),[8] which typically run at shorter duration than university programs. Diploma programs normally require two or three years to complete, and certificate programs up to two years. Programs are focused on "applied training for the labour market,"[9] and are often delivered by instructors who have industry experience in addition to academic credentials, such as PhDs.[10] Colleges also offer essential skills training; second language education for immigrants; general interest programming; apprenticeships and trades training; customized training programs for industry; and, with tight linkages with industry and communities, play an important skills-upgrading role for the adult population, including programs to support labour market entry or mid-career transition.[11]

Polytechnic Institutions

A subset of 11 institutions have either been designated by provincial legislation, or have self-identified, as polytechnic institutions, including the British Columbia Institute of Technology; Southern Alberta Institute of Technology

6 Skolnik, *Does Structure Matter?,* 6.

7 Jones and Shanahan, "Shifting Roles and Approaches," 7.

8 Canadian Information Centre for International Credits, *Postsecondary Education Systems in Canada*.

9 Cheung, Guillemette, and Mobasher-Fard, *Tertiary Education*, 7.

10 Canadian Information Centre for International Credits, *Postsecondary Education Systems*.

11 See also Canadian Information Centre for International Credits, *Postsecondary Education Systems*.

Polytechnic, and Northern Alberta Institute of Technology; Saskatchewan Institute of Applied Science and Technology; Red River College (Manitoba); and Conestoga, Sheridan, Humber, George Brown, Seneca, and Algonquin, all in Ontario. Although the criteria for classification as a polytechnic vary by jurisdiction,[12] these 11 institutions have nevertheless formed a national alliance as Polytechnics Canada.

Polytechnic institutions focus on "advanced technical and technological education" and producing "highly qualified and skilled talent for Canadian employers."[13] Providing education to nearly 300,000 full- and part-time students, and another 42,000 apprentices, polytechnic institutions in Canada grant a wide range of credentials, including diplomas, certificates, and graduate certificates, as well as bachelor's degrees in 100 programs, including 26 offered jointly with universities.[14] Additionally, polytechnics have contributed to innovation and experiential learning (for 11,927 students) through more than 1,700 applied research collaborations with businesses and other organizations.

Sources: Doern; Polytechnics Canada; The Conference Board of Canada.

Degrees and Applied Research

A recent innovation in the college sector is the provision of four-year baccalaureate degrees alongside diploma and certificate programs. British Columbia led the way when the province's university-colleges obtained the ability to grant degrees in 1995.[15] Since then, several other provinces have approved degree-granting authority to colleges, polytechnics, and other institutes. As of 2014, CICan reports that 36 colleges and institutes offer 189 bachelor's degree programs—100 by polytechnic institutes, which tend to be larger, focus on technology and

12 Doern, *Polytechnics*.

13 Polytechnics Canada, *Polytechnics Canada 2014*.

14 Ibid.

15 Canadian Council on Learning, *Navigating Post-Secondary Education*, 10.

the trades, and emphasize applied research and skills for innovation.[16] According to CICan, 55 colleges and institutes offer 619 post-graduate programs in response to employers' needs for targeted skills in high-demand occupations. They are delivered within a short time-frame, typically one academic year, and draw upon faculty with industry experience and connections to employers. They require a post-secondary education diploma or bachelor degree as a prerequisite.[17] Many more college degree programs will likely be approved by respective provincial and territorial ministries responsible for post-secondary education in coming years.

Moreover, while some colleges continue to focus exclusively on education and training, over 100 have the mandate and capacity to provide applied research services to industry and community organizations "in areas of problem solving, process innovation and technical skills."[18] More than 29,000 students participated in applied research projects as part of their education in 2012–13, led by 2,298 faculty and staff and assisting 5,444 companies.[19]

Connections to Industry

Many college, polytechnic, and institute programs have "advisory committees which are required to have representatives from community or regional employers to ensure that education and training programs are developed and updated in accordance with employers' needs."[20] In many cases, colleges strive for advisory committees of 10 or more employers and community representatives for each academic program or department. With some institutions having well over 100 programs,

16 Colleges and Institutes Canada, *Listing of Degrees Awarded by Colleges, Institutes, Polytechnics and Universities With a College Mandate*. www.collegesinstitutes.ca/wp-content/uploads/2014/05/Degrees_at_colleges_july312014_en.pdf (accessed November 4, 2014); Polytechnics Canada, *Bachelor and Applied Degrees.*

17 Colleges and Institutes Canada, e-mail communication with The Conference Board of Canada, November 4, 2014.

18 Association of Canadian Community Colleges, *Colleges, Institutes and Polytechnics*, iii.

19 Association of Canadian Community Colleges, *College and Institute Applied Research*, i–ii; Haimowitz and Munro*, Innovation Catalysts and Accelerators*.

20 Association of Canadian Community Colleges, *Consultation*, 4.

networks of 1,000 or more industry and community representatives tied to a single college are possible. The networks offer colleges an unmediated way to learn about industry concerns, integrate their insights into curricula, and identify opportunities for collaboration, including applied research.[21]

Adult Upgrading

Many colleges and institutes also offer adult upgrading to enable learners to gain high school equivalencies to access PSE programs. These programs offer a pathway for Canadians in low-wage, low-skill jobs to upgrade skills and transition to PSE. It is an important pathway for many Aboriginal learners and workers, in particular, who have not completed high school. CICan notes that nationally there are not good data on the annual total of students in adult upgrading programs. These programs tend to have continuous intake, whereas data released by Statistics Canada show only the number of students enrolled on one given date in the year, missing students not enrolled on that date.[22]

Mission and Differentiation

There is some concern about so-called "academic drift" (i.e., a perceived movement of colleges away from their traditional activities in the PSE system and toward those of universities).[23] This mirrors concerns about so-called "vocational drift" among universities (i.e., a perceived movement of universities toward more applied programs and research and away from traditional academic research and programs).[24] In most cases, the new initiatives being pursued by both colleges and universities appear to have sound educational and economic rationales and provide more choice for students. (See box "Private Colleges and Vocational Schools" for a summary of institutions that focus on continuing and lifelong skills development.) However, in the context of limited PSE

21 Haimowitz and Munro, *Innovation Catalysts and Accelerators*, 13.

22 CICan, e-mail communication to The Conference Board of Canada, April 28, 2014.

23 Skolnik, "The Relationship"; Clark, Moran, Skolnik, and others, *Academic Transformation*, 152–5; Fallis, *Rethinking Higher Education*, 4.

24 Fallis, *Rethinking Higher Education*.

resources, policy-makers, administrators, and others should ask whether the changes are always positive. Although we take no position on this issue here, we believe that frank discussion about respective roles and mandates is needed.

Private Colleges and Vocational Schools

The college sector contains a sizable number of for-profit institutions that go by a variety of names including private career colleges, vocational colleges, and business schools.[25] While their course offerings are determined according to market demand, they are subject to some level of provincial oversight, and cannot legally operate without a licence or registration.[26]

As of 2008, 156,000 Canadians were enrolled[27] in 2,423 private career colleges[28] pursuing certificate and diploma programs in vocational areas that often match those of public colleges. Although the programs are usually shorter in duration (one year or less)[29] and have less "breadth and depth of subject matter"[30] than public college programs, scheduling is often more flexible, making them suitable for mature workers seeking to improve their skills while managing employment and other responsibilities.[31] As such, they serve an important function in Canada's continuing and lifelong skills development system.

Despite some provincial oversight, private colleges lack industry-wide standards and a coherent quality assurance framework. Efforts are being made to address these gaps. The Canadian Education and Training Accreditation Commission (CETAC) will recognize an institution if it meets quality criteria set in conjunction

25 See Canadian Council on Learning, *Navigating Post-Secondary Education*, 13; Statistics Canada, *Canada's Private Colleges*, 3.

26 See Canadian Council on Learning, *Navigating Post-Secondary Education*, 13; Auld, *Selling Postsecondary Education*, 9.

27 Berger, *Participation in Post-Secondary Education*, 31.

28 Malatest and Associates, *Survey of Canadian Career College Students—Phase II*, 3; Auld, *Selling Postsecondary Education*, ii–1.

29 In the words of a Government of Ontario report, private colleges "have the common objective of bringing the student, in the shortest possible time, to the level of a beginning practitioner in their desired field." Auld, *Selling Postsecondary Education*, 4.

30 Auld, *Selling Postsecondary Education*, ii–1.

31 Ibid., 4.

with government, industry, and educators.[32] The National Association of Career Colleges, which lists 357 members across Canada,[33] endorses these standards through its Quality Assurance Initiative.[34]

Over the past decade, steps have also been taken to introduce standards at the program level. For example, standards have been developed by the National Association of Career Colleges (NACC) for Personal Support Worker and Personal Attendant programs (including a curriculum and standardized examination material), to reflect occupational requirements across provinces. These standards have been adopted by many NACC members, helping to foster better employment prospects and mobility for graduates.[35]

Sources: Canadian Council on Learning; Statistics Canada; Auld; Berger; Malatest and Associates; Canadian Education and Training Accreditation Commission; Canadian Information Centre for International Credentials; National Association of Career Colleges; The Conference Board of Canada.

Participation

The development and expansion of the college sector in size and geographic reach has contributed to considerable improvements in PSE access, participation, and completion for Canadians. The sector ranks consistently high in international comparisons of college completions per capita.[36] The Conference Board's *How Canada Performs* report

32 Canadian Education and Training Accreditation Commission, *About CETAC*.

33 Canadian Information Centre for International Credentials, *NACC Member Institutions in Canada*.

34 National Association of Career Colleges, *Activities*.

35 Auld, *Selling Postsecondary Education*, 6.

36 To be sure, high participation rates also reflect the unique contributions of Quebec's CEGEP system, a two-year pre-university or technical training program that replaces the fourth year of high school in other provinces, and lead to a college diploma. Some forms of "adult education and occupational preparation programmes" are included as college-level attainments in Canada that are not in other OECD countries. See Cheung, Guillemette, and Mobasher-Fard, *Tertiary Education*, 8–9; The Conference Board of Canada, *How Canada Performs: Education—College Completions*.

card on education, for example, shows that Canada ranks 1st of 16 peer countries in terms of college credentials per capita—and is the only country that has consistently been a top performer since 1998.[37]

Participation Trends

Like universities, Canada's colleges have witnessed striking increases in both the absolute number of students and the proportion of the population that attend and graduate. In 1992, 469,806 individuals enrolled in one of Canada's colleges. By 2011, annual enrolment increased by 56 per cent to 732,450 individuals.[38] Although there are gaps in Statistic Canada's data on college and institute enrolments, the scale of growth is impressive.

According to analysis conducted by Statistics Canada, the full-time college participation rate for the 17 to 19 age cohort increased from approximately 15 per cent in 1990–91 to just over 16 per cent in 2005–06. For the 20 to 24 age cohort, participation rose from 7.4 per cent in 1990–91 to just under 10 per cent by 2005–06. Full-time participation among those aged 25 to 29 was consistently between 2 and 3 per cent over the 15-year period.[39] The part-time participation rate for the full 17 to 29 age group ranged between 1.4 and 1.8 per cent during that period, with 20- to 24-year-olds participating at a slightly higher rate than 17- to 19-year-olds.[40] (See Chart 14.)

37 The Conference Board of Canada, *How Canada Performs: Education—College Completions*.

38 Statistics Canada, CANSIM table 477-0019.

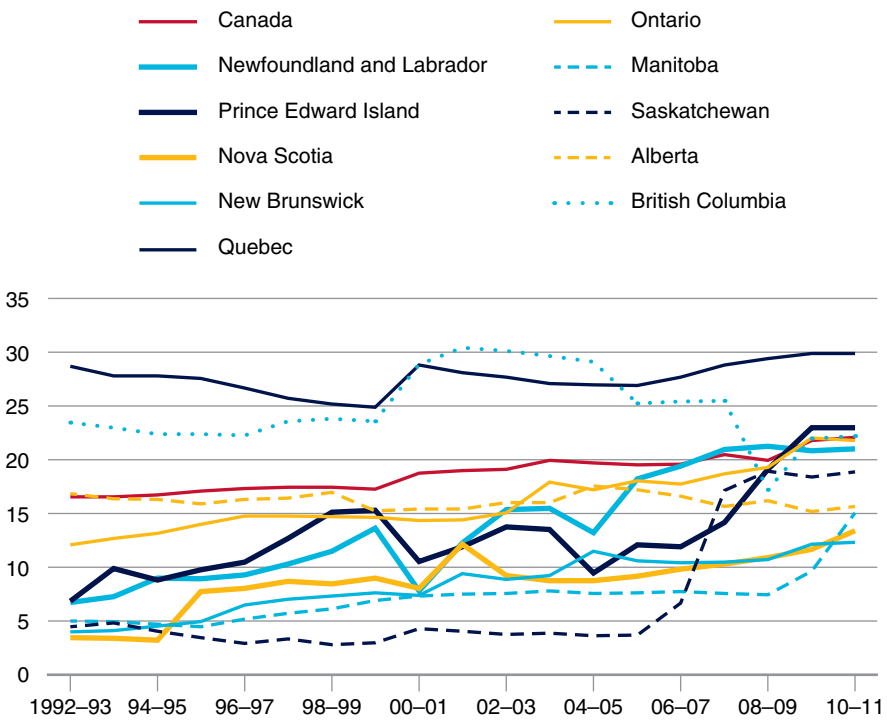
39 Hango and de Broucker, *Postsecondary Enrolment Trends to 2031*, 24.

40 Ibid., 25.

Chart 14

College Enrolments as a Percentage of Student-Age 18 to 24 years Population

(per cent)



Sources: Statistics Canada, CANSIM tables 051-0001 and 477-0019; The Conference Board of Canada.

Enrolment has increased in all provinces over the past two decades, though there has been some variability due to a variety of factors.[41] In British Columbia and Alberta, for example, enrolments and participation are higher now than 20 years ago. However, when seven colleges were granted university status in 2008–09, college enrolments

41 Some variation in the trends reflects peculiarities in how data are collected. College enrolment counts are typically based on a "snapshot" date rather than a full-year count. In the case of Prince Edward Island, given the small size of its college sector, this means that enrolment numbers can fluctuate considerably depending on when the count is taken, and how college intake is distributed in a given year. In the case of Saskatchewan, substantial enrolment "growth" in 2007–08 simply reflects one institution counting a greater range of programs (including in continuing education) in its enrolment numbers.

dipped (while university enrolments spiked) in those two provinces that year.[42] In Ontario, participation rates increased by almost 10 percentage points between 1992 and 2011. Quebec showed the smallest growth in participation rates of any province (1.2 per cent), reflecting the unique nature of the CEGEP system, where participation rates have always been higher than the Canadian average and where making gains may be more difficult.[43] In the territories, college enrolment has varied from a high of 2,253 students in 1994–95 to a low of 894 in 2008–09, but otherwise has been relatively flat over the past two decades. An exception to that trend occurred in 2011–12 when the territories enrolled an additional 3,675 international students in colleges, which had the effect of quadrupling overall enrolment in the territories over 2010–11 rates.[44] However, recent data from Ontario indicate that a long-expected structural decline in enrolment, due to demographic trends, is beginning to take hold. In 2014, direct-entry first year college enrolments in that province declined by 2 per cent over 2013—consistent with a 2.1 per cent decline in the number of 18-year-olds in the province.[45] This trend will likely emerge in other provinces and territories in the years ahead.

Participation Profile

College education and training is more accessible than university in Canada. For example, in general, colleges, institutes, and polytechnics have greater geographic reach, thus allowing participation by more rural and remote students than is the case for most universities.[46] Moreover, college participation also tends to be more equal across income groups[47] and includes a greater proportion of Indigenous students than

42 See, for example, footnotes 5 and 6, Statistics Canada, CANSIM table 477-0019.

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

44 Statistics Canada, CANSIM table 477-0019.

45 Usher, *Welcome to the Crisis*.

46 See Cheung, Guillemette, and Mobasher-Fard, *Tertiary Education*, 10. Canadian Council on Learning, *Navigating Post-Secondary Education*, 9.

47 Cheung, Guillemette, and Mobasher-Fard, *Tertiary Education*, 12.

the university sector.[48] As many Canadians do not enrol in college until they have been in the workforce for some time, it appears that the college sector plays an essential role in providing PSE access and skills development opportunities to mature learners, those changing occupations, and those who have been unemployed and are looking to re-enter the workforce.[49]

College programs are also a way for some university graduates to obtain further, career-oriented training. The phenomenon of "reverse-transfers" (i.e., of university students or graduates subsequently attending college) has grown.[50] A 2005 survey revealed that 6 per cent of college students had a university degree before their college enrolment,[51] while a 2009 survey showed that 10 per cent of college students had spent at least some time studying at a university at some point within the 12 months before their college enrolment.[52] Colleges Ontario reports that 13 per cent of new college entrants in the province in 2013–14 had previously completed university while 12 per cent had completed college and another 18 per cent had started, but not completed, PSE.[53]

Participation Outlook

If the college sector and its various institutions intend to maintain or increase enrolment in the coming years, they will need to develop different approaches to recruiting and retaining students. Given that Canada's college completion rates are already OECD-leading,

48 Canadian Council on Learning, *State of Learning in Canada 2009–2010*, 33. McMullen, *Postsecondary Education Participation*.

49 A 2009 survey revealed that 43 per cent of college students were not involved in any academic pursuit, including high school or PSE, in the year prior to college enrolment, with three-quarters of them being employed either full or part time. Saskatchewan Institute of Applied Science and Technology, *Preliminary Report*, 11.

50 Birchard, "Canadian University Graduates Are Going Back"; Cheung, Guillemette, and Mobasher-Fard, *Tertiary Education*.

51 This survey was completed by almost 30,000 students in over 100 colleges across Canada. Association of Canadian Community Colleges, *Pan-Canadian Study of First Year College Students*, 25.

52 Saskatchewan Institute of Applied Science and Technology, *Preliminary Report*, 11.

53 Colleges Ontario, *Student and Graduate Profiles*, 14.

further increases would require even greater efforts to engage under-represented groups, including Indigenous persons, mature students, students with disabilities, and those from families with "low incomes and/or no history of PSE."[54] As one of the unique features of the college sector is its geographical reach and inclusiveness, the sector is relatively well positioned to expand access to these groups given the right policy innovations and efforts—provided expansion is a goal.

Private Career Colleges

Private career colleges also contribute to the number of college students in Canada. The data are limited so it is difficult to identify trends. In 1993, Statistics Canada found that only 155,500 people held a private college credential (with no other PSE credential).[55] By 2006, there were just as many individuals currently *enrolled* (156,107) in private career colleges across Canada—and many more with credentials—according to a survey by Malatest and Associates.[56] But another study conducted in 2005 by the C.D. Howe Institute, in partnership with several provincial training authorities, found that between 1999 and 2004, the number of private college students declined in four of six provinces surveyed. Only Ontario and Prince Edward Island witnessed growth in enrolment (of 11 and 167 per cent, respectively).[57] At a national level, enrolment growth has also been uneven over the years, with periods of significant market contraction.[58] (See box "Private Colleges and Vocational Schools.")

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

55 Statistics Canada, *Canada's Private Colleges*, 4.

56 Malatest and Associates, *Survey of Canadian Career College Students—Phase II*, 6.

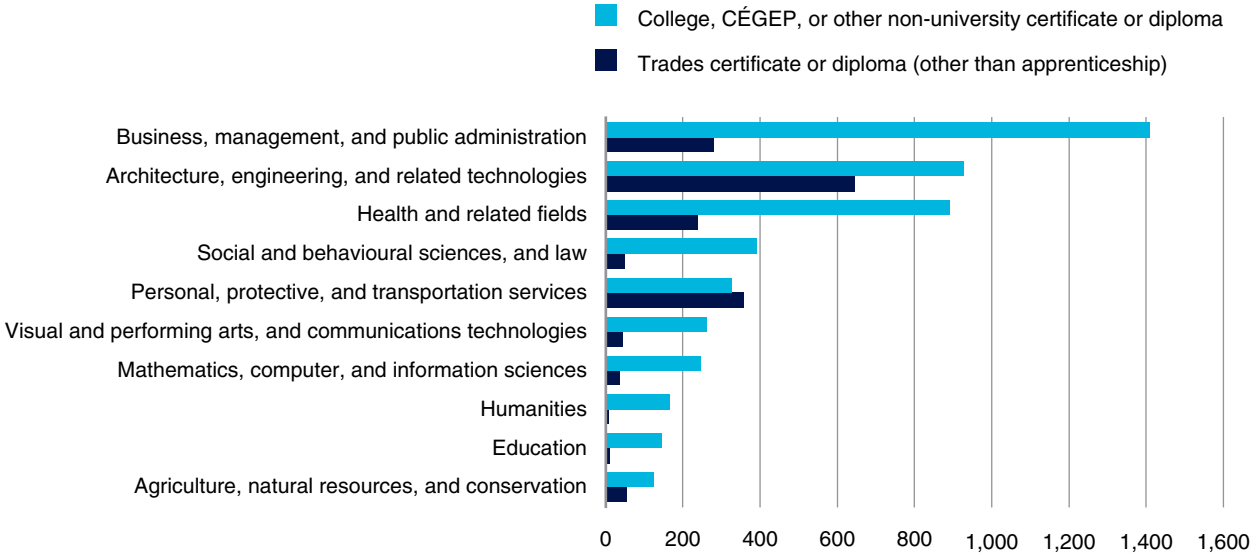
57 Provinces surveyed were Saskatchewan, Manitoba, Ontario, Quebec, Prince Edward Island, and New Brunswick. Auld, *Selling Postsecondary Education*, 26.

58 Statistics Canada, *Canada's Private Colleges*, 4.

Credential Outputs

In 2011, 21.3 per cent of Canadians aged 25 to 64 held a college diploma or certificate—up from 20.3 per cent in 2006.[59] Nearly two-thirds of all college credentials have been obtained in just three fields: business, management, and public administration (28 per cent); architecture, engineering, and related sciences (19 per cent); and health and related fields (18 per cent).[60] (See Chart 15.) Additionally, 7.1 per cent of Canadians reported having a *trades* certificate or diploma obtained through a college.[61] The top three fields of study for *trades* certificates

Chart 15
Highest College Credentials by Major Field of Study, 2011, Canada
(000s)



Sources: Statistics Canada, *2011 National Household Survey*; The Conference Board of Canada.

59 Statistics Canada, *Education in Canada*, 7.

60 Unfortunately, the data do not distinguish between college certificates and diploma attainments, which entail differences in educational experience and level of skills attainments.

61 This is not the same as the total number of certified tradespeople in Canada (see Chapter 4). Statistics Canada, *Education in Canada*, 7.

or diplomas earned at colleges are architecture, engineering, and related sciences (37 per cent); personal, protective, and transportation services (21 per cent); and business, management, and public administration (16 per cent).[62]

Private Career College Credentials

Although less is known about educational attainment in the private career college sector, a 2008 survey of 13,721 students offers some clues.[63] Although enrolments are not equivalent to completions, with an apparent 98 per cent completion rate, the survey provides a reasonable proxy for understanding credential outputs in the sector.[64]

The greatest proportion of credentials undertaken by surveyed students are in the area of health or personal care-related programs (38 per cent)—specifically, health care and services (17.9 per cent), hairdressing (7.4 per cent), and beauty and esthetics (7.1 per cent). A further 13 per cent studied office administration and nearly 5 per cent studied computers. Seven per cent were enrolled in trades or technical training, including construction. The remainder were enrolled in performing arts (4.5 per cent), radio/television/film/music (3.9 per cent), bible/theological studies (3.8 per cent), hospitality/tourism/travel (3.6 per cent), and law and security (3.3 per cent).[65]

Skills Outputs

Educational and learning outcomes of college programs have generally been conceived in terms of the development of practical, applied competencies—the ability "to do" a number of tasks that have direct application in work environments. Nevertheless, identifying measures of

62 Statistics Canada, *Education in Canada*, 7.

63 Malatest and Associates, *Survey of Canadian Career College Students—Phase II*, 25–6.

64 Malatest and Associates, *Survey of Canadian Career College Students—Phase III*, 25–6.

65 Malatest and Associates, *Survey of Canadian Career College Students—Phase III*, 25–6.

skills attainment among college sector graduates is no less problematic than finding them for university graduates. What do we know about college graduates' skills acquisition?

Programme for the International Assessment of Adult Competencies

Although PIAAC does not distinguish between college and other PSE institutions, a rough proxy for college graduates is available using the category "PSE below bachelor's." To be sure, many colleges offer degrees and these graduates would be excluded from the category. Additionally, some university attendees who obtain credentials other than a bachelor's, master's, and/or doctorate would be included in this category, as would university graduates who attend college after university and who subsequently attain a non-degree college credential. Setting these issues aside, what do the data tell us?

As we saw in the previous chapter, college graduates score higher in literacy, numeracy, and PS-TRE than high school graduates and those who did not complete high school, but lower than university graduates. On average, college graduates score:

- 276 on *literacy* (versus 267 for high school graduates and 273 for all Canadians)
- 269 on numeracy (versus 257 for high school graduates and 265 for all Canadians)[66]

Only 6 per cent of college graduates score at the highest level in PS-TRE, which is equal to the proportion of high school graduates who achieve that level, but slightly lower than the 7 per cent of all Canadians who score at Level 3.[67] A slightly greater proportion of college-sector graduates than high school graduates score at the *lowest* level of PS-TRE attainment (below Level 1)—16 per cent compared with 15 per cent, respectively. In some respects, this result is puzzling given that

66 Statistics Canada, *Skills in Canada*, 13, 32.

67 Ibid., 33.

colleges focus on skills development in applied, often technologically based, areas. But it may simply reflect the fact that college participants include many mature learners and that PIAAC skills performance, especially in PS-TRE, deteriorates with age.[68] Additionally, the "PSE below bachelor's" category in the PIAAC test includes a diversity of credential types, ranging from graduates of two-year intensive programs to graduates of three-month certificate programs. Thus, the aggregate scores are affected by those who have spent only a short time at a college.

The Impact of Immigration

There are substantial differences in PIAAC performance between immigrant and non-immigrant college graduates. In general, PIAAC participants who took the test in a language other than their first language scored below those taking the test in their first language. In Canada, "native-born, native-language" college graduates scored, on average, 281 in literacy—below the OECD average of 287 for college grads, but above the average of 273 for all Canadians. By contrast, "foreign-born, foreign-language" graduates scored only 251.[69] By virtue of admitting more immigrants with college credentials into Canada, and enrolling more immigrants into the college sector than the OECD norm, relatively lower skills attainment among Canada's college graduates reflects, in part, success on the access agenda. Still, in terms of literacy, numeracy, and PS-TRE, Canada's college graduates are, at best, only average in the OECD.

Provincial and Territorial Variation

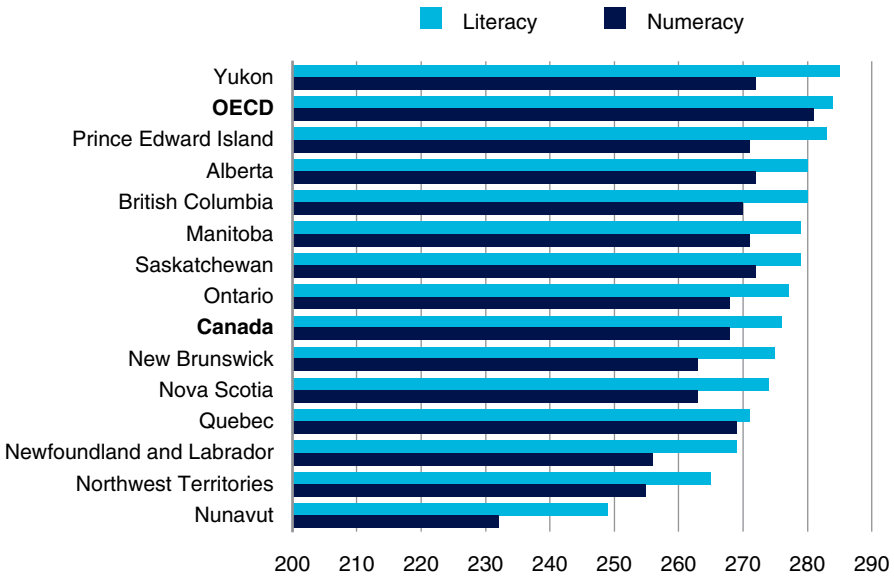
Among Canadian provincial and territorial jurisdictions, college graduates in Yukon have the highest average literacy score at 285 (one point higher than the OECD average). College graduates in Nunavut have the lowest average score at 249. Provincial scores vary more in terms of numeracy, where there is a 42-point difference between the highest scoring

68 Ibid.

69 Parkin, "Is Canada's Post-Secondary System Prepared?"

provinces and territories (Yukon, Alberta, and Saskatchewan) and the lowest scoring (Nunavut). No Canadian jurisdiction exceeds the OECD college graduate numeracy average of 281. (See Chart 16.)

Chart 16
Average Literacy and Numeracy Scores Among College Graduates
(score)



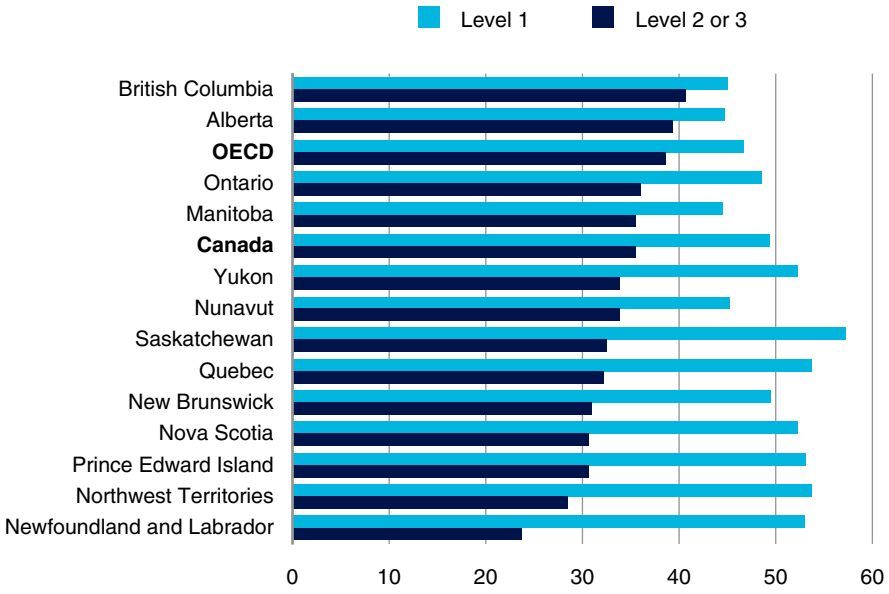
Sources: Statistics Canada, *Skills in Canada*, Annex D; The Conference Board of Canada.

In terms of PS-TRE, British Columbia and Alberta have the greatest proportion of college graduates who score within the ranges of Level 2 or Level 3 PS-TRE proficiency (40.7 and 39.4, respectively). (See Chart 17.) They are also the only provinces with scores above the OECD average of 38.6. College graduates in the remaining provinces and territories score near the Canadian average of 35.5. Newfoundland and Labrador's college graduates, however, trail considerably, with only 23.7 per cent scoring at the Level 2 or Level 3 skills range.

Chart 17

PS-TRE Skill Level Among College Graduates

(per cent scoring at each level)



Notes: Data for Yukon and Nunavut Levels 2 or 3 should be interpreted with caution. Levels 2 and 3 indicate high-level skills; Level 1 is lower-level skills attainment.
Sources: Statistics Canada, *Skills in Canada,* Annex D; The Conference Board of Canada

Skills Attainments Internationally

As noted earlier, Canada leads the world in college completions per capita. Unfortunately, this does not translate into an equal level of skills attainments in the key area of literacy among college graduates. College graduates in Canada lag international peers in terms of literary proficiency, ranking 14th among 20 comparator countries. (See Chart 18.)

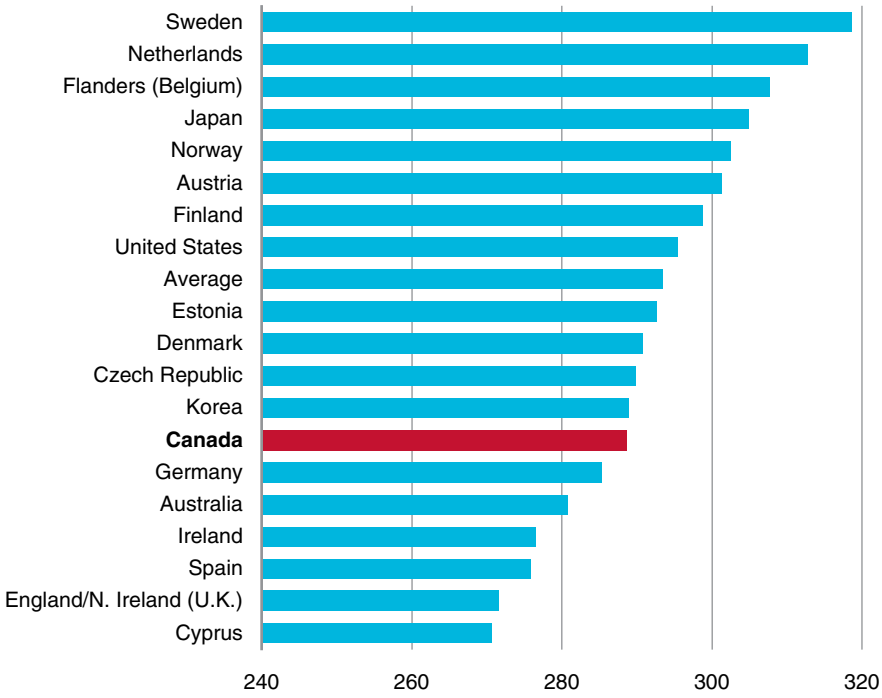
Essential Skills Training

Colleges and institutes are aware of the critical role of essential skills training and build it into their programs. While there are little data that would allow for a comprehensive assessment of essential skills

Chart 18

Literacy Proficiency Among Young Adults (16 to 29) With College Credentials

(average score)



Source: OECD, *Skills Outlook 2013*.

outcomes across the entire sector, a number of pilot initiatives and institution-specific assessments reveal that essential skills development in colleges and institutions can be fruitful.

An essential skills project completed in 2013, for example, demonstrated the potential value and impact of essential skills training at the college level. Seventeen college pilot projects assessed learners and workers across Canada and found that 65 per cent of the 1,308 participants tested poorly for literacy (i.e., below Level 3 on the scale used by the International Adult Literacy and Skills Survey [IALSS]). After receiving between 24 and 40 hours of essential skills training and individual coaching, college students who had scored below Level 3 gained

an average of 27 points on the IALSS scale (of 500) while worker participants gained an average of 18 points. Additional tests six months later on a sample of participants showed that many had maintained the learning gains.[70]

What is not known is the extent to which such intensive essential skills training is available at all institutions and to all learners in the sector, or whether the gains are or would be achieved by other participants. At a minimum, however, the results show that colleges and institutes are capable of improving essential skills development for students and graduates.

Conclusion

The college and institute sector in Canada serves the needs of a great diversity of people in terms of income, age, geography, and Aboriginal identity. With world-leading rates of completions, the sector does well in meeting many of the objectives it was created to achieve—namely, increasing PSE access and meeting the increasing skills needs of a growing range of middle-level occupations in the economy. Yet there are concerns. The sector's performance in producing graduates with foundational skills that contribute to employability and future learning—including literacy, numeracy, and problem-solving—could be better. And as the sector's institutions take on different roles and functions—such as applied research and granting degrees—there is a need for discussion about what the role of colleges, institutes, polytechnics, and CEGEPs should and will be in the years ahead and how this fits with the roles and activities of other sectors of the PSE system.

70 Association of Canadian Community Colleges, *ACCC National Framework*.

CHAPTER 4

Apprenticeships and Skilled Trades Training

Chapter Summary

- Apprenticeship training in Canada plays an important part in developing skill sets that contribute to economic, social, and individual well-being.
- Younger workers are less likely than older workers to hold a trade certificate, but more research is required to determine whether this could lead to shortages in skilled trades.
- Challenges related to interprovincial mobility of apprentices who have not completed training, and the poor labour market outcomes of some apprenticeable trades, call for reflection and possible reform in the sector.

The apprenticeship sector is an industry-driven skills development platform which oversees the exchange of labour for practical training in the skilled trades.[1] Although the sector has been responsive to economy-wide and sector-specific needs, there are challenges. Younger workers are less likely than older workers to hold a trade certificate, which could have implications for the flow of skilled workers as the older cohort retires. Non-completion also limits the employment and income prospects of individual workers. Constraints on interprovincial mobility of apprentices who have not yet completed training create challenges for both employers and workers, though there are efforts under way to improve this.[2] And, while apprenticeships lead to higher employment prospects and incomes for many, apprenticeships in some areas produce weak outcomes. Modernizing the apprenticeship sector must be a key focus in enhancing Canada's overall skills and PSE system.

The Apprenticeship Sector—Overview

Apprenticeships are formal agreements by which:

- employers agree to provide on-the-job training and paid employment, and to release apprentices periodically for classroom training;

1 Steedman, *Overview of Apprenticeship Systems and Issues*, 4.

2 See Boothby and Drewes, *Returns to Apprenticeship*, 1; Sharpe and Gibson, *The Apprenticeship System in Canada*, 6.

- apprentices agree to work for the employer during the on-the-job training periods and undertake to learn trades.[3]

Provinces and territories determine which trades offer apprenticeships, but they do so with considerable help from industry stakeholders. Colleges, institutions, and polytechnics play a central role in apprenticeships, frequently providing the in-class technical training component. The 11-member institutions of Polytechnics Canada alone provided in-class training to 40,000 people in 2011–12, while Canada's many other colleges provided opportunities for tens of thousands more.[4] For guidance and expertise on apprenticeship policy and training programs, most provincial and territorial ministries of education, training, and labour generally look to apprenticeship boards, such as Alberta's Apprenticeship and Industry Training Board.[5] These boards, in turn, draw on the expertise of sectoral committees whose members include both employers and labour. The model in Quebec is somewhat different in that technical training is often completed over one to two years in *Centres de formation professionnelle*—before engaging in the workplace component.

Apprenticeships generally do not have the same public profile in the broader PSE system as the university and non-apprenticeship college sectors because, in large measure, apprenticeships are a smaller part of the system. In 2011, about 12 per cent of Canadian adults held trade certificates, compared with 21 per cent for college diplomas and 26 per cent for university degrees.[6]

Apprenticeships generally have a nominal program duration of between two and five years, during which time individuals alternate between on-the-job training (about 80 to 85 per cent of the program) and classroom-based technical training undertaken through a college or

3 The Conference Board of Canada, *Navigating Risk and Uncertainty*, 9.

4 Polytechnics Canada, *Positive Action*.

5 Alberta Innovation and Advanced Education, *Alberta Apprenticeship and Industry Training Board*.

6 Statistics Canada, *Education in Canada*, 8.

other provider (e.g., union training programs).[7] This approach to training has a number of advantages, including a focus on "know-how" over "formal" or theoretical knowledge, while also contributing to learners' general employability skills.[8] The apprenticeship experience may also help to confer in participants a sense of "professional identity" that supports further investments in training.[9]

To some extent, apprenticeship and skilled trades training operates like a market, driven by the forces of supply and demand for apprentices in a given region and occupation. But, since the market or markets are regulated by provincial and territorial authorities, there is significant variation across jurisdictions.[10] As the Canadian Apprenticeship Forum notes, "Each apprenticeship sector responds to the unique needs and expectations of their jurisdiction, and differences in geography, population, industry and economic reality create fundamentally different challenges and opportunities."[11] (See box "Key Terms.")

Key Terms

Total Registrations—Refers to the total number of registered apprentices in a given year. This includes apprentices at all stages from first year to the final year.

New Registrations—Refers to newly registered apprentices. For this report, the term also includes apprentices who previously discontinued their apprenticeship, but were reinstated during the reporting period.

Completion—To complete their program, apprentices must attend all technical training sessions, work the prescribed number of hours, meet the required competencies, and pass all required exams. Upon completion, apprentices

7 Steedman, *Overview of Apprenticeship Systems and Issues,* 5; Canadian Apprenticeship Forum, *Apprenticeship in Canada*.

8 Sharpe and Gibson, *The Apprenticeship System in Canada*, 20.

9 Ibid., 20.

10 Ibid., 7.

11 Canadian Apprenticeship Forum, Apprenticeship Systems.

receive a Certificate of Apprenticeship and become eligible to write the Certificate of Qualification examination.

Certifications—Refers to apprentices who have completed their training, and have passed a provincial or territorial Certification of Qualification exam; at this point, individuals become certified journeypersons. For some trades, called *compulsory trades*, this certification (or proof of registered apprenticeship) is required for legal employment; for *voluntary* or *non-compulsory* trades, certification is not required but is often encouraged.

There are two paths to certification:

- *Completion*—See above.
- *Trade qualification*—A trade qualifier is a tradesperson with significant experience, who is assessed by the provincial or territorial apprenticeship authority and allowed to write the final trade certification exam without having completed an apprenticeship program.

Sources: Canadian Apprenticeship Forum, *Apprenticeship 101*; Service Canada, *Apprenticeship Grants Program Definitions.*

Types of Trades and Certification

Statistics Canada tracks 24 major trade groups—including automotive service, carpenters, and machinists—covering numerous individual trades.[12] Within each category are any number of specific trades. In Ontario, for example, the "automotive service" category includes many trades, such as motorcycle technician and automotive painter.[13] Because apprenticeships are closely related to industry needs, the creation of new trades can outpace research classification. As such, Statistics Canada includes a sizable "other major trade groups" category, which includes

12 Statistics Canada, CANSIM table 477-0053.

13 Ontario College of Trades, *Membership Fee FAQs.*

apprenticeable trades and occupations introduced since the 1990s that have not yet been categorized under existing categories or for which new categories have not yet been created.[14]

Since apprenticeships fall under provincial and territorial jurisdiction, there is no single, unified system but rather a collection of 13 different systems. The Red Seal Program—an "interprovincial standard of excellence for the skilled trades"—provides a harmonized set of standards for 57 "Red Seal" trades. In most cases, to obtain Red Seal certification, apprentices must first complete their training and pass a Certificate of Qualification exam before completing a corresponding examination through their provincial apprenticeship authority.[15]
The main benefit of the Red Seal Program is that it allows certified tradespeople to have their credentials recognized across jurisdictions. Although the Agreement on Internal Trade (AIT), passed in 1995, facilitated interprovincial mobility for certified tradespeople regardless of Red Seal designation, the credential is still widely recognized and improves employability in the trades.[16] It is also one of the few nationally harmonized elements of apprenticeship training in Canada.

Despite the benefits of the Red Seal designation, certification is not a requirement to work legally in all trades. Trades that offer apprenticeship training and certification, but which do not require it for employment, are called "non-compulsory" or "voluntary" trades. Those who require certification, in the form of a journeyperson's certificate or proof of apprenticeship registration, are called "compulsory" or "mandatory" trades. The latter group falls under a broader grouping called "Regulated

14 Statistics Canada notes that some of these "other major trade groups" could include "pork production technician and those related to motion picture and theatre, such as assistant cameraperson, grip and set dresser." Statistics Canada, CANSIM table 477-0053.

15 Red Seal Program, *About the Program.*

16 Ontario Ministry of Training, Colleges, and Universities, *Agreement on Internal Trade.*

Occupations," which require licensing or certification to protect the health and safety of clients and the public, and to maintain high professional and ethical standards.[17]

Benefits and Challenges of Apprenticeships

The most direct benefits of apprenticeship training go to apprentices themselves, including improved employment prospects, higher income, increased job security, and further opportunities for training and development. There are, however, a number of costs and challenges related to apprenticeship training, including the costs of training and tools, lower wage rates during training, separation from family and community during classroom training, and difficulty finding an employer that adequately and consistently supports an apprentice's training.[18]

Apprenticeships also provide a number of benefits to employers. They help employers attract, recruit, and retain employees, and allow them to ensure that new hires learn valuable skills from those approaching retirement. Additionally, given the targeted training in a specific trade, apprenticeship training tends to enhance productivity and work quality. By acting as mentors to less experienced workers, journeypersons also benefit from apprenticeships by enhancing their knowledge of specific skills.[19] Investing in apprenticeship training also brings a financial return to employers. According to the Canadian Apprenticeship Forum, employers see a net average return of between $0.38 and $0.44 for every dollar invested.[20]

In some cases, however, the possibility that apprentices will either fail to complete their training or leave an employer once they do complete, creates reluctance among some to offer apprenticeships at all.[21] Other

17 In addition to compulsory skilled trades, regulated occupations include professions such as medicine, nursing, and law.

18 The Conference Board of Canada, *Navigating Risk and Uncertainty*, 12.

19 Ibid., 13.

20 Canadian Apprenticeship Forum, *Apprenticeship*.

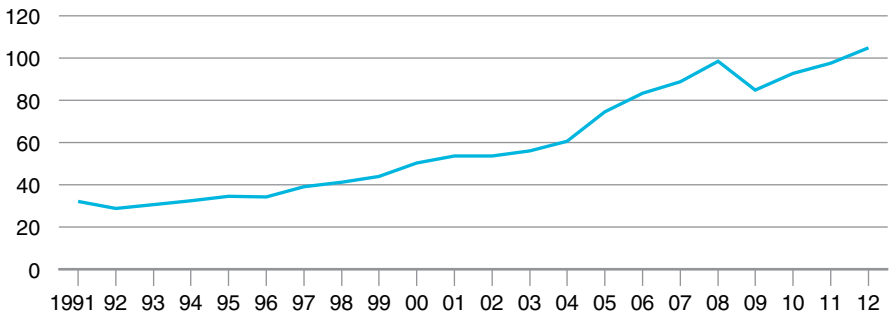
21 The Conference Board of Canada, *Navigating Risk and Uncertainty*, 13.

factors that may influence employer involvement include their inability to find suitable candidates, a lack of resources, and their inability to mitigate the risk that other employers will "poach" apprentices once training is complete. Moreover, as we note below, employer willingness to take on apprentices is tied to the business cycle. With downturns in the economy, fewer apprenticeships are offered and training budget cuts often hit apprentices trying to complete their programs.[22]

Trends in Registration, Completion, and Certification

In the past 20 years, Canada has experienced substantial growth in the number of apprentices. (See Chart 19.) In 2012, there were 444,672 registered apprentices in Canada—about 24 per cent more than in 2007 and more than double the number in 1991. This growth far outpaces population growth of 4.4 per cent since 2007 and 22.5 per cent since 1991.[23]

Chart 19
New Apprentice Registrations
(000s)



Source: Statistics Canada, CANSIM table 477-0053.

22 The Conference Board of Canada, *Navigating Risk and Uncertainty*, 13.

23 Statistics Canada, CANSIM table 477-0053.

Although some trades experienced a dip in new apprenticeship registrations during the mid-1990s, overall registrations continued on a steady climb until the most recent recession when new registrations fell by 14 per cent from 2008–09, before rebounding by 2012. In general, businesses tend to reduce spending on apprenticeship training, cutting placement numbers and training hours. Apprentices are among the first employees to be laid off during downturns.[24] By 2012, however, nearly all of the ground lost had been regained and the long-term trend still showed steady growth.[25]

Particularly strong growth in registrations over the past decade can be attributed, in part, to the demand for skilled trades in oil sands related occupations. Growth is most apparent in the early- to mid-2000s, when oil sands extraction expanded. Electrician apprenticeships, for instance, saw registrations more than double from 2000 to 2012. Similarly, steep increases from 2000–12 occurred in plumbing, steamfitting, and pipefitting (168 per cent); carpentry (129 per cent); and automotive service (50 per cent). Welding apprenticeship registrations rose 97 per cent between 2004 and 2011. (See charts 20 and 21.)

Uneven Flow in the Skilled Trades?

On some measures, there appears to be an uneven flow of Canadians in and out of the apprenticeship and skilled trades sector. In 2011, for example, 10.7 per cent of adults aged 25 to 34 held trades certificates, compared with 12.8 per cent of adults aged 55 to 64. The popularity of university and college education among young adults is also apparent here as the percentage of young adults (those aged 25 to 34) compared with older adults (those aged 55 to 64) was higher for both university degrees (31.9 vs. 20.2 per cent) and college diplomas (22.1 vs. 18.3 per cent).[26] Yet, despite there being proportionally fewer certified

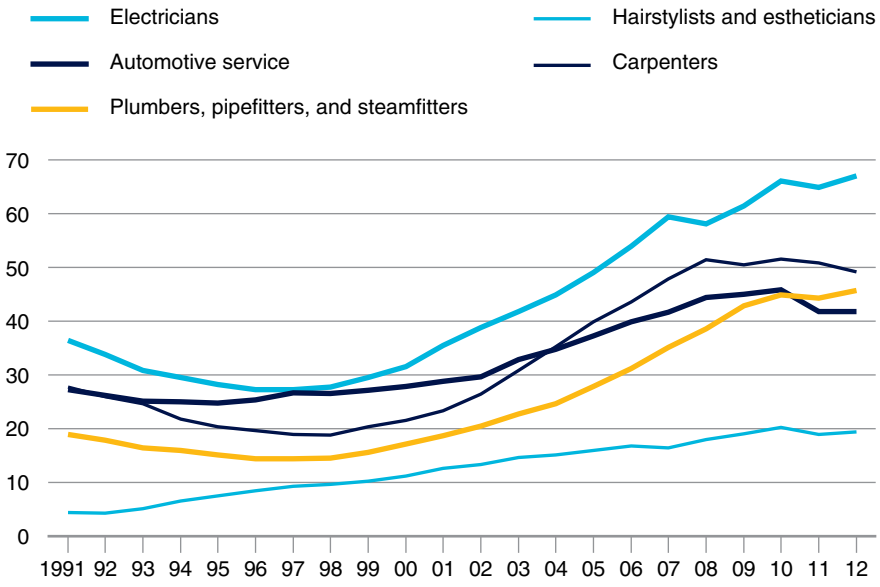
24 Sharpe and Gibson, *The Apprenticeship System*, 88.

25 Statistics Canada, CANSIM table 477-0053.

26 Statistics Canada, *Education in Canada,* 12.

Chart 20

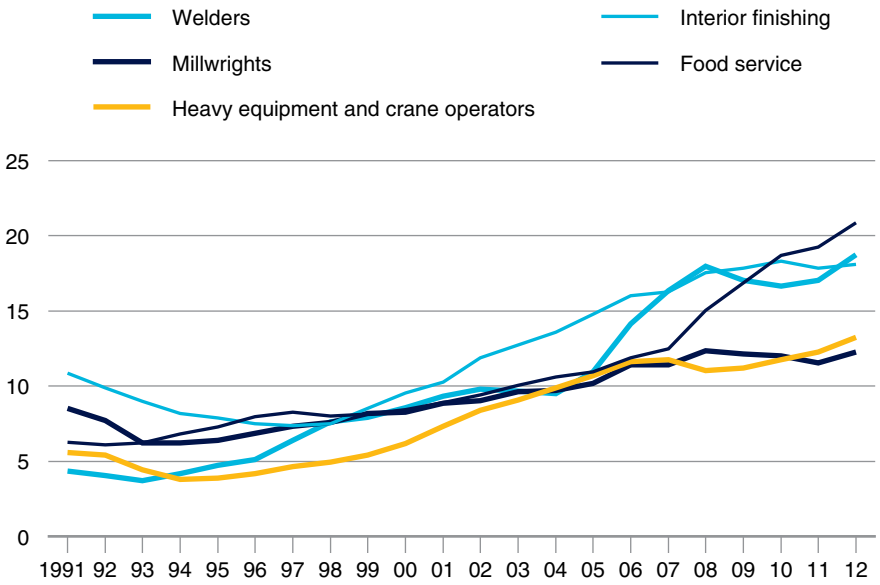
Apprentice Registrations, Top Five Trades, 1991–2012
(000s)



Source: Statistics Canada, CANSIM table 477-0053.

Chart 21

Apprentice Registrations, Trade Groups Ranked 6 to 10, 1991–2012
(000s)



Source: Statistics Canada, CANSIM table 477-0053.

tradespeople and proportionally more college and university graduates among the younger cohort, the absolute number of certified tradespeople in the younger cohort is higher than those in the cohort about to retire.

At the level of specific trades, the picture is mixed. For instance, in 2011, 36,350 fewer young Canadians held trade certificates in "mechanic and repair technologies" than older Canadians. There were also notable certificate deficits for younger Canadians in precision production (12,925) and engineering-related fields (5,320). Yet, whether deficits in certification in these specific trades entail risks for the Canadian economy depends on the demand for workers in these fields. More study is required to determine if these changes in the supply of skilled workers is problematic.

Similarly, although fewer people have attained trade certification in fields such as "business, management, marketing, and related support services" and "health professions and related programs," these deficits have been more than compensated by increases in university and college credentials in these fields.[27] (See Table 1.)

Table 1
Adults Aged 25 to 34 Minus Adults Aged 55 to 64 With PSE in Selected Fields, Canada, 2011

Field of study	Trades certificate	College diploma	University degree
Mechanic and repair technologies/technicians	–36,530	–1,690	n.a.
Construction trades	5,600	–810	n.a.
Personal and culinary services	10,025	15,825	0
Business, management, marketing, and related support services	–34,760	–17,455	134,745
Health professions and related programs	–11,440	–13,790	58,745
Precision production	–12,925	–85	–35
Engineering technologies and engineering-related fields	–5,320	645	60
Transportation and materials moving	1,160	1,540	430

(continued …)

27 In these cases, much stronger numbers for young Canadians in university programs balance weaker numbers in trades certificates and college diplomas.

Table 1 (cont'd)

Adults Aged 25 to 34 Minus Adults Aged 55 to 64 With PSE in Selected Fields, Canada, 2011

Field of study	Trades certificate	College diploma	University degree
Transportation and materials moving	1,160	1,540	430
Family and consumer sciences/human sciences	–1,975	24,415	3,965
Agriculture, agriculture operations, and related sciences	1,970	3,515	320

n.a. = not applicable
Note: The fields selected for comparison are those that make up the top 10 fields in which trades certificates are held.
Source: Statistics Canada, *Education in Canada: Attainment, Field of Study and Location of Study.*

Completions and Certifications

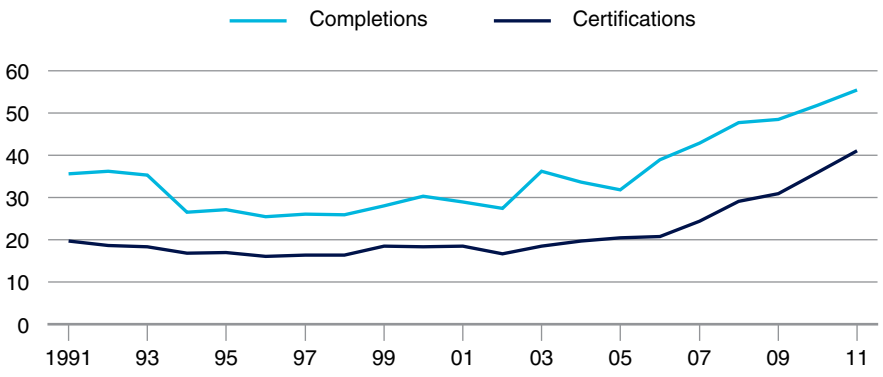
Examining what happens to apprentices after they complete their training provides at least a proxy measure of how effectively, and how completely, the apprenticeship sector is preparing young Canadians for work in the trades. Given the close connection between apprenticeships and the demands of businesses, post-apprenticeship metrics provide an indication of how responsive the sector is to changes in the overall economic environment, and to sector-specific demands.

Apprenticeship completions more than doubled from 1991 to 2011, with most of the increase occurring in the latter eight years of that period. (See Chart 22.) In the 1990s, completions and certifications dropped

Chart 22

Apprenticeship Completions and Certifications 1991–2012

(000s)



Source: Statistics Canada, CANSIM tables 477-0054 and 477-0055.

and stalled due to the recession. In fact, it was not until 2004 when completions recovered enough to match those recorded in 1991. The lag between the end of the recession and recovery in apprenticeship completions is largely explained by the fact that apprenticeships generally take between three and five years to complete—in some cases longer—so a boost in new registrations will not show up in completion numbers for some time.

The increase in completions in the 2000s can be attributed in part to oil sands development and economic growth generally in the West (which also spurred new registrations, as noted earlier). Moderate gains in completion in 2004 (4 per cent) and 2005 (1.4 per cent) were followed by dramatic increases in 2006 (17 per cent) and 2007 (19 per cent). With the onset of the recession in 2008, completions slowed to 5.9 per cent but quickly gained speed again in 2009 (16.5 per cent) and 2010 (14 per cent). The general trend for certifications was similar throughout the period, but with much more annual volatility.

If we look at trends in trades closely associated with the oil sands, we see an interesting pattern. For example, from 2007–11, completions in welding rose by approximately 120 per cent. Increases in completions were similar for heavy-duty equipment mechanics (73 per cent); plumbers, steamfitters, and pipefitters (65 per cent); carpenters (64 per cent); and electricians (43 per cent). The effect was also present in certifications, with the top 10 trade groups each growing by at least 20 per cent from 2007–11. Eight of these groups were relevant to the oil sands, and increases were particularly sharp among welders (120 per cent), heavy-duty equipment mechanics (73 per cent), and plumbers, steamfitters, and pipefitters (65 per cent). (See Table 2.)

Table 2
Growth in Certifications, Top 10 Trade Groups, 2007–11

Trade group	Number of completions (2011)	Growth rate 2007–11 (per cent)
Electricians	6621	43.6
Automotive service	4125	21.4
Plumbers, pipefitters, and steamfitters	4104	65.4
Carpenters	4035	64.4
Hairstylists and estheticians	2508	20.5
Welders	2661	120.6
Millwrights	1353	32.6
Heavy-duty equipment mechanics	1434	73.2
Machinists	852	22.4
Food service	1980	70.2

Source: Statistics Canada, CANSIM table 477-0054.

The importance of oil sands development to Canada's economy is also reflected in the data on the province or territory of completion. In 2011, most provinces and territories in Canada held shares of total apprenticeship completions that were slightly lower (by 0.1 to 1.0 per cent) than their share of the total population. (See Table 3.)

Table 3
Share of Population and Share of Completions, by Province and Territory, 2011

Province/territory	Share of population (per cent)	Share of completions (per cent)	Difference (percentage points)
Newfoundland and Labrador	1.5	1.1	–0.4
Prince Edward Island	0.4	0.3	–0.1
Nova Scotia	2.7	1.5	–1.2
New Brunswick	2.2	1.8	–0.4

(continued …)

Table 3 (cont'd)
Share of Population and Share of Completions, by Province and Territory, 2011

Province/territory	Share of population (per cent)	Share of completions (per cent)	Difference (percentage points)
Quebec	23.0	25.2	2.2
Ontario	38.8	24.8	–14
Manitoba	3.5	2.9	–0.6
Saskatchewan	2.9	3.4	0.5
Alberta	11.2	22.0	11.0
British Columbia	13.4	16.6	3.2
Yukon	0.1	0.1	–
Northwest Territories	0.1	0.2	0.1
Nunavut	0.1	0.0	–0.1

Source: Statistics Canada, CANSIM table 477-0054.

There are some exceptions to this. The first is Ontario, with a share of completions (24.8 per cent) that was 14 percentage points lower than its share of the population. While some of these deficits are offset by higher proportions in British Columbia and Quebec (3.2 and 2.2 percentage points higher than their population shares, respectively), most of Ontario's completion deficit was offset by completions in Alberta which, in 2011, had a share of completions (22 per cent) that was twice as high as its share of the population.

In general, the data and trends on registrations, completions, and certifications suggest that the apprenticeship sector is responsive to industry demand in the short to medium term. Less clear, however, is whether Canada has the right number and quality of apprentices, and apprentices in the right fields of study and practice. Further skills and post-secondary education (SPSE) research on the apprenticeship sector will examine these issues in greater depth.

Women in the Trades

Women have been under-represented among apprentices and tradespeople in nearly all categories of skilled trade. While the situation has improved slightly, the overwhelming majority of apprentices and tradespeople are still men.

In terms of apprenticeship completions, the proportion of completers who are women increased slightly from 11.1 per cent in 2001 to 14.9 per cent by 2012. If we exclude completions in hairstyle and esthetics, and early childhood education—fields dominated by women—the proportion of women apprenticeship completers in 2001 was a mere 3.2 per cent and by 2012, only 9.1 per cent. Along with growth in hairstyle, esthetics, and early childhood education, the bulk of growth in apprenticeships completed by women came in only three other trade categories—community and social service workers, food services, and user support technicians.[28] While growth in completions by women in some of the traditionally male-dominated trades have very high rates (e.g., more than 200 per cent growth in electricians from 2001–12), the proportion of completers who are women remains very low (e.g., only 2.5 per cent of electrician completers in 2012 were women).[29]

In short, while some barriers to women's participation in the skilled trades may be weakening, the reality is that with the exception of five relatively small fields, the skilled trades continue to be dominated by men.

Funding

The funding model for apprenticeships is distinct from that of universities and colleges. One way of describing the model is as a modified employment model. The premise remains the same as for regular employment, except that apprentices are normally paid a portion of a journeyperson's wage to account for their status as students of the

28 Statistics Canada, CANSIM table 477-0054.

29 Ibid.

trade. Additional modifications to the employment model come in the form of a number of financial supports from government. To bolster forgone income during periods of classroom training, for instance, apprentices may apply for employment insurance (EI), provided they meet eligibility requirements.[30]

Funding for Apprentices

While there are fewer major scholarships and awards for apprentices than for university and college students, the fact that apprentices are paid (albeit at lower-than-standard rates) during the workplace portion of training may offset their costs, while EI eligibility during in-class training helps during that phase. In addition, there are also a variety of taxable and non-taxable grants available to apprentices. The most common are the Apprenticeship Incentive Grant (AIG) and the Apprenticeship Completion Grant (ACG), both available to a maximum of $2,000. However, the AIG and ACG are available only to students in Red Seal trades.[31]

There are financial supports available to non-Red Seal tradespersons. British Columbia, for example, offers a completion tax credit that begins at $1,000 for the first level of training and increases to $2,500 at the end of the fourth.[32] This contrasts with one-time completion incentives in Ontario, Nova Scotia, and Alberta, valued at $2,000, $1,000, and $1,000, respectively.[33] Alberta also offers 500 $1,000 scholarships to high school apprentices for continuing trades training past high school graduation, as well as more than 300 trade-specific completion scholarships of $1,000 each.[34] Also of note are substantial tuition rebates of up to $20,000 offered by Saskatchewan and New Brunswick, made conditional

30 Sharpe and Gibson, *The Apprenticeship System*, 42.

31 Apprentice mechanics may also access the Tradespersons Tools Deduction, available for federal income tax returns. See Canada Revenue Agency, *Employed Tradespersons*; Government of Canada, *Apprenticeships.*

32 Industry Training Authority, *Grants and Tax Credits.*

33 Ontario Ministry of Training, Colleges, and Universities, *Apprenticeship Completion Bonus*; Province of Nova Scotia, *Additional Financial Incentives.*

34 Alberta Apprenticeship and Industry Training, *Scholarships.*

on recipients living and working in the province.[35] While the latter rebates do not specifically target apprentices, they could, in the absence of provincial grant programs, provide substantial financial support that equals the apprentice-specific support of other provinces.

In its most recent budget, the federal government announced the creation of a new Canada Apprentice Loan program which will offer interest-free loans of up to $4,000 per period of in-class training for apprentices registered in Red Seal trades.[36] Details of the program will be developed and announced by Employment and Social Development Canada in the months ahead. It remains to be seen what impact the program will have on apprentices' financial burdens, and trends in registrations and completions.

Funding for Employers

Most government support for employers takes the form of tax credits. At the federal level, for instance, the most common support is the Apprentice Job Creation Tax Credit, available at a maximum of $2,000 per year (for the first two years) for each eligible apprentice in the Red Seal trades. Among the provinces and territories, Ontario offers the largest tax credit, valued at a maximum of $10,000 per year for four years. Newfoundland and Labrador also offers a $10,000 incentive except that, unlike Ontario, it comes in the form of a direct wage subsidy. Manitoba and British Columbia offer credits ranging from $2,000 to $7,000 per apprentice.

Many employers, however, are unaware of these financial supports. Two recent surveys conducted by the Canadian Apprenticeship Forum (CAF) found that only 50 per cent were aware of government support

35 Government of Saskatchewan, *Graduate Retention Program*; Government of New Brunswick, *Tuition Rebate*.

36 Government of Canada, *The Road to Balance*, 70.

programs and only 36 per cent had applied.[37] If more employers were aware of the financial support available to them, they might be more receptive to the idea of hiring apprentices. However, it is not clear whether employers would view the above-mentioned supports, relative to the costs associated with hiring an apprentice and running a business, as sufficient to motivate them to hire more apprentices.

Assessing Performance

While we have seen that the number of apprentice registrations is responsive to changes in economy-wide and sector-specific conditions, it is important to ask whether Canada is producing enough apprentices to meet its needs.

According to Sarah Watts-Rynard of the CAF, the registration numbers would be appropriate if only more apprentices completed their training. Just over half of Canadian apprentices complete their training—a rate far lower than universities and colleges.[38] Many apprentices who complete often take on managerial roles or assist with training, leaving them with less time to do work. Low completion rates mean that fewer people can take on these roles and fewer highly qualified tradespeople are available to complete more advanced tasks.[39]

Ultimately, however, answering the question of whether the number and rate of apprentice registrations and completions are right for Canada depends on which analytical lens one adopts. When viewed through an education lens—with the goal of having students complete training and attain certification—the sector's performance might be considered very weak. A completion rate of slightly more than 50 per cent would be cause for serious concern in the university and college sectors. But

37 Canadian Apprenticeship Forum, *Employers and Apprenticeship in Canada,* 5. Note that Survey B included a smaller sample size (225 respondents, from the Forum's database) compared with Survey A. Most of those queried in Survey B were in the construction industry.

38 Canadian Apprenticeship Forum, *Investigating Apprenticeship Completion in Canada*, 2.

39 Sarah Watts-Rynard (Executive Director, Canadian Apprenticeship Forum), telephone interview by The Conference Board of Canada, January 30, 2014.

when viewed through a workforce development lens, the low completion rate may be less troubling. If an individual acquires sufficient training and skills for gainful employment, a low formal completion rate may not be a major concern.[40] In fact, if this is what is occurring, we should ask whether the system, as currently operating, provides more training than is needed by the labour market. By contrast, it may be that many employers are simply picking apprentices out of the system just before those workers achieve the certification that is associated with higher wages, thereby keeping wage costs lower than they otherwise might be. These issues will be examined further in a future SPSE report on apprenticeships. In any case, there are still unanswered questions about quality and whether sufficient numbers of people are being trained in the skilled trades.

Skills and Quality of Training

There are little general, Canada-wide system-level data that directly assess the skills of apprentices. Presumably, if an apprentice passes a certification exam, this indicates sufficient skills development to meet industry standards. Or, if a non-completer obtains a full-time position in his or her field, this is also an indication of a certain level of skills attainment. But beyond that, what is known about apprentices' skills attainment?

In terms of general skills development, OECD's Survey of Adult Skills provides some clues about the apprenticeship sector's contribution to literacy, numeracy, and problem-solving skills. The relevant category, ISCED level 4C, covers not only those who have completed apprenticeships, but also those with other trade/vocational and skills upgrading experience, so results should be viewed with caution. Adults at this level scored at the same level as those with only a high school level on literacy and numeracy, and slightly below high school graduates on PS-TRE.[41]

40 Sarah Watts-Rynard (Executive Director, Canadian Apprenticeship Forum), telephone interview by The Conference Board of Canada, January 30, 2014.

41 OECD, *PIAAC Data Explorer.*

Further clues about skills development and the quality of apprenticeship training can be taken from the 2007 National Apprenticeship Survey. According to the survey, Canadian apprentices were generally satisfied with their training. Approximately 80 per cent of apprentices rated the equipment and technology used in training as excellent or good. A minority of students reported being "lost" at some point in their classroom training, either due to an uncomfortably fast pace of instruction (14 per cent) or difficulty understanding in-class and online written material.[42] Overall, 13 per cent of those surveyed found the technical training too difficult.

While the survey did not ask survey respondents to rate the quality of on-the-job supervision, indications are that the quantity of supervision was appropriate. Four-fifths of apprentices reported being supervised at all times during their program. Among the fifth who said that they were left unsupervised at some point in their training, 34 per cent (or 6 per cent of all respondents) were unsupervised for 15 weeks or more, while 24 per cent (or 4 per cent of all respondents) were unsupervised for less than one week. Note that in some jurisdictions, however, low-level apprentices can be supervised by fourth-year superiors.[43]

Labour Market Outcomes

Labour market outcomes (i.e., employment and wages) provide an indirect measure of the effectiveness of apprenticeship training.

Employment and Unemployment

In Canada, the employment rate for those with trade certificates or diplomas from a vocational school or apprenticeship training was 79 per cent among Canadians aged 25 to 64—3 percentage points above the average across all education levels in Canada.[44] The employment rate ranges from a low of 68 per cent in Newfoundland and Labrador to a

42 Adapted from Chan, Menezes, Ménard, and Walker, *National Apprenticeship Survey*, Table A.1.8.2, 61.

43 Ibid., tables A.1.8.1.1 and A.1.8.1.2, 60.

44 Council of Ministers of Education, *Education Indicators in Canada*, 93.

high of 86 per cent in Saskatchewan among provinces, and among territories from a low of 73 per cent in Nunavut to a high of 90 per cent in the Northwest Territories. By comparison, the employment rate for Canadians aged 25 to 64 with a college credential was 81 per cent and for those with a university bachelor's degree, it was 82 per cent.[45]

In terms of unemployment rates, the difference by educational attainment is somewhat more pronounced. In 2011, the overall unemployment rate for Canadians was 7.8 per cent while those with registered apprenticeship certificates had an unemployment rate only slightly lower at 7 per cent. By contrast, Canadians with college and university credentials had unemployment rates of 5.9 and 5.1 per cent, respectively.[46]

Wages

Another indicator of apprentices' success in the workforce and, by proxy, the quality and value of the skills acquired during an apprenticeship, is the hourly wage they are paid. The completion rate for apprenticeships is significantly lower than for other sectors of PSE, but those who complete and/or gain certification experience a substantial wage premium. For instance, although there is significant variation across provinces and trades, on average certified tradespeople earned 17 per cent more than non-certified tradespeople. Those who complete an apprenticeship *and* become certified earn, on average, over 20 per cent more than those who neither complete nor achieve certification. (See Table 4.)

45 Ibid.

46 Statistics Canada, *Education in Canada.*

Table 4
Wage Premiums for Certified Completers

Certification/completion status	Hourly wage ($)	Wage premium (per cent)
Certified		
Completers	28.07	20.4
Non-completers	27.25	14.5
Non-certified		
Completers	23.92	2.7
Non-completers	23.3	n.a.

n.a. = not applicable
Source: Laporte and Mueller, *Certification, Completion, and the Wages of Canadian Registered Apprentices*.

Interestingly, although the wage difference between certified and non-certified tradespeople is substantial, the differences between completers and non-completers *within* each group (certified and non-certified) are minimal. This raises serious questions about whether apprenticeship training itself provides real benefits that could not be gained and certified through other means. However, because apprenticeships are the primary path toward certification (i.e., the majority of certified tradespeople have at least some apprenticeship training), it is reasonable to conclude that the apprenticeship experience does contribute to better labour market outcomes for participants.

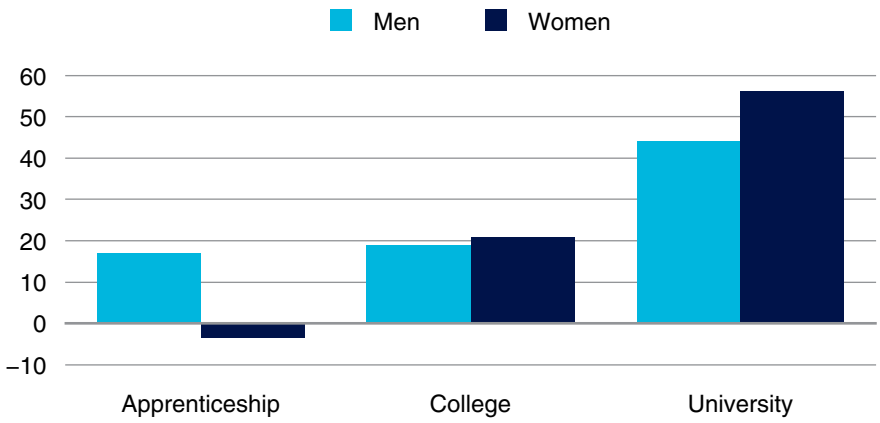
Wages of apprentices can also be compared with those of graduates of other forms of education. On average, apprentices generally earn more than high school graduates, but less than college or university graduates. As of the 2006 Census, the average earnings premium for apprentices over high school graduates was 17 per cent for men, but a *loss* of 3.5 per cent for women. (Note that in 2006, 90 per cent of apprentices were men.) The especially dismal situation for women, on average, seems to be a result of many completing apprenticeships in hairstyling and esthetics, where the benefits of completing an apprenticeship do not cover the cost and forgone wages while training. Overall, the wage premium for apprenticeship completers lags that of college graduates

(between 19 and 21 per cent) and those with a bachelor's degree earned primarily from universities (between 44 and 56 per cent).[47] (See Chart 23.)

Chart 23

Income Premium for Selected Levels of PSE Over High School Graduate Level

(per cent)



Source: Boothby and Drewes.

Pursuing an apprenticeship in many (but not all) trades produces benefits for many. Although the benefits for many trades are not comparable to obtaining college or university credentials in most fields, having a trades certificate significantly improves employment and income prospects over high school education or less. Given rising skilled trades needs in certain sectors and regions of the economy, strategies to increase apprenticeship participation and especially completion should be considered.

47 Boothby and Drewes, *Returns to Apprenticeship*, 20.

International Comparisons

Registration Rates

As a percentage of the labour force, Canada's apprentice registration rate appears to lag that of some international peers. Apprentices account for 2.2 per cent of the labour force in Canada, which is far ahead of the United States (0.2 per cent), and comparable to England (2.5 per cent). But Canada's rate is well below those of Switzerland (4.9 per cent), Australia (3.7 per cent), and Germany (3.5 per cent). (See Table 5.)

Table 5
Apprenticeship Registration Rates, Selected Countries

Country	Registrations	Labour force	Registrations as percentage of labour force
Switzerland	236,600	4,834,000	4.9
Australia	448,000	12,054,960	3.7
Germany	1,508,328	42,289,395	3.5
England	806,500	31,642,550	2.5
Canada	426,283	18,759,285	2.2
United States	398,000	154,859,137	0.2

Sources: OECD, *Stat Extracts—ALFS Summary Tables*; OECD, *Stat Extracts—Population*; State Secretariat for Education Research and Innovation; Swiss Federal Statistical Office; Department of Industry, Innovation Science, Research and Tertiary Education; Federal Institute for Vocational Education and Training; Data Service; Statistics Canada, *Registered Apprenticeship Training Programs; United States Department of Labor, Employment and Training Administration.*

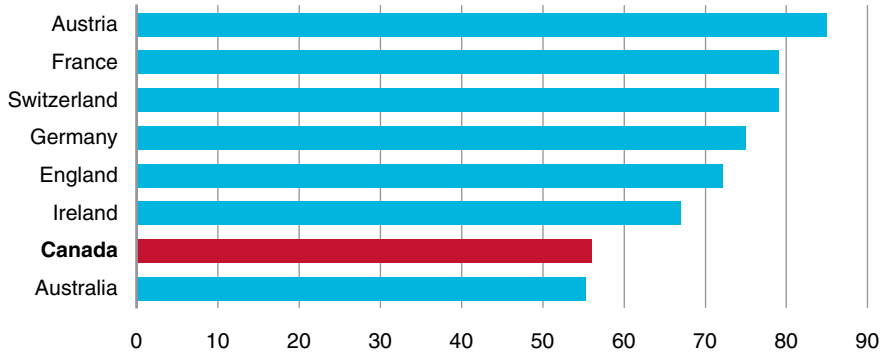
However, it is important to put these rates in perspective. In many of the comparator countries, the scope of apprenticeable trades is much wider than in Canada, covering a number of "non-traditional" areas such as retail and banking. In fact, only 2 out of the 10 trades with the most registrants in Germany were so-called "traditional trades"—with a comparable apprenticeship offering in Canada. Similarly, in Australia, only 4 out of the 10 most subscribed trades were traditional trades. To be sure, it is reasonable to ask whether Canada's scope is broad enough (i.e., whether more trades and occupations might benefit from

apprenticeship training) or whether the kind of training covered by apprenticeship in other countries is covered by college education in Canada. But in areas where both comparator countries and Canada already offer apprenticeships, Canadian registration rates may be in line with international norms.

Completion Rates

The completion rate for apprentices in Canada—56 per cent—lags that of international competitors. (See Chart 24.) While Canada's completion rate is similar to that of Australia (55 per cent), it is far below other comparator countries, such as France (79 per cent), Switzerland (79 per cent), and Germany (estimated at 75 to 80 per cent). (See box "Comparisons With Germany.") Austria has the strongest completion rate among the countries selected, at an estimated 85 per cent—30 percentage points higher than Canada. Given the importance of apprenticeship completion for a person's employment and income prospects, as an indicator of skills development, and as a contributor to safety and productivity, these differences put Canada at a disadvantage.

Chart 24
Apprenticeship Completion Rates, 2009, or Most Recent Year
(per cent)



Note: French data refer to apprentices taking NVQ Level 2 examinations. For Vocational Bac examinations, the pass rate was 79.4 per cent.
Sources: Canadian Apprenticeship Forum, *Investigating Apprenticeship Completion*; Department of Industry, Innovation Science, Research and Tertiary Education; Steedman, *The State of Apprenticeship in 2010*.

However, as previously noted, these differences take on more or less importance depending on whether apprenticeships are viewed as an educational strategy or as a workforce development strategy.

Comparisons With Germany

The German apprenticeship system is often regarded as a best-practice example for Canada and other systems worldwide. Some suggest that there is much Canada could learn from the superior coordination of Germany's vocational training system across a federal political system, stronger investment in and commitment to training by German employers, and the broader scope and higher completion rates of the system.[48] The lack of harmonization of training standards and requirements across provinces, the consequent mobility challenges for apprentices, and relatively weaker employer investment in training in Canada suggest that studying the German model could be useful.

Yet, there are reasons why Canada should be careful about assessing German lessons and models. First, given the high proportion of small and medium-sized enterprises (SMEs) in Canada, it is not clear that many Canadian firms have the resources and capacity to consistently engage apprentices. Not only do smaller firms lack resources for training, they are also less able to release employees for long periods of in-class technical training.[49] Additionally, the German practice of streaming students at an early age is in tension with the Canadian cultural preference for freedom of educational choice.[50] Still, given the need for new ideas, future SPSE research will consider what can be learned from Germany.

Sources: Watts-Reynard; Steedman; Lee; The Conference Board of Canada.

48 Watts-Rynard, interview; Steedman, *The State of Apprenticeship in 2010*, 2, 14. Deanna Rexe (Faculty of Education, Simon Fraser University), telephone interview by The Conference Board of Canada, January 27, 2014.

49 Lee, "Should Canada Import Germany's 'Dual System' Training?"

50 Watts-Rynard, interview; Lee, "Should Canada Import Germany's 'Dual System' Training?"

Challenges

There are a number of challenges to maintaining and enhancing the effectiveness of the apprenticeship sector's contribution to skills development. These include challenges related to block release, inter-jurisdictional mobility, and journeyperson-to-apprentice ratios.

Block Release

Apprenticeships in Canada generally operate on a "block release" system for technical training, where students spend up to 10 weeks in classroom instruction, away from the demands and distractions of the workplace.[51] Block release arguably helps apprentices improve their focus and provides opportunities for "add-on" training in other subjects in the college or institute environment in which much in-class work takes place. It also has the advantage of keeping apprentices working full, rather than part, time during their workplace training. By contrast, a day release model would likely reduce apprentice hours from full time thereby creating financial challenges for many of them.[52] When on release for in-class training, most apprentices are eligible to receive EI. As many employers are unwilling to pay for apprentices' classroom training, EI payments allow apprentices to maintain relatively consistent income levels year-round.[53]

However, because block release entails breaks of up to 10 weeks from the workplace, which some employers and apprentices want to avoid, it can act as a barrier to completion. Employers must do without a valued employee or find and pay a temporary replacement and therefore are often averse to block release.[54] Many apprentices are unenthusiastic about in-class training and worry that time away from the workplace could lead to loss of employment. Future SPSE research on

51 Rexe, interview by The Conference Board of Canada, January 27, 2014.

52 Watts-Rynard, interview.

53 Rexe, interview.

54 Watts-Rynard, interview.

the apprenticeship sector will examine the benefits and challenges of block versus day release, as well as other training delivery models, in greater depth.

Inter-Jurisdictional Mobility

Although the Canadian Council of Directors of Apprenticeship provides some national-level coordination, Canada's apprenticeship sector is, in fact, a collection of 13 different provincial and territorial systems—each with its own standards and requirements. Although the Agreement on Internal Trade has effectively eliminated barriers to inter-jurisdiction mobility for skilled tradespeople who have acquired certification, for those apprentices who have not completed or been certified there are major barriers to interprovincial mobility.

Specifically, given provincial and territorial differences relating to required hours, apprentice–journeyperson ratios, health and safety training, and credit and curricula recognition, apprentices often find that when they cross provincial borders their accumulated training may not be fully recognized in the new province. In some cases, the receiving jurisdiction will recognize a lower credential or fewer hours worked and require the apprentice to enter the program at a lower level or complete additional on-the-job training.[55] This adds to apprentices' time to completion, thereby delaying expected wage gains and reducing employment prospects. The problem can be especially acute for apprentices who move to rural or remote areas where particular segments of classroom training may not be readily available.

As a result, some apprentices may choose not to move—thereby hampering employers' efforts to attract the skilled labour they need—while those who do face increased financial and non-completion risks. A more harmonized system could reduce these challenges, though coordinating the various training authorities, vocational institutions, trade associations, and other stakeholders across jurisdictions is a

55 Rexe, interview.

major challenge in itself.[56] Fortunately, the Forum of Labour Market Ministers has indicated that it will work to address these issues in the coming months.[57]

Journeyperson-to-Apprentice Ratios

In almost all jurisdictions, the required ratio of journeypersons to apprentices is fixed by legislation and generally favours a low ratio (e.g., 1:1) on the expectation that closer supervision increases the safety of apprentices and the public as well as the quality of the goods and services enjoyed by Canadians.[58] Some provinces make exceptions to the 1:1 norm in certain trades, often in the direction of requiring more journeypersons per apprentice, but occasionally allowing for more apprentices than journeypersons.[59]

Making changes to these ratios would have both benefits and drawbacks. On one hand, requiring more journeypersons per apprentice can sometimes act as barriers to entry to the skilled trades for many younger workers.[60] Employers facing a 1:1 ratio requirement and which already have an equal number of journeypersons and apprentices would have to hire a new journeyperson for every new apprentice they wish to take on. On the other hand, requiring fewer journeypersons per apprentice could impair the safety and quality of the apprenticeship training experience. A very experienced journeyperson may be able to handle more apprentices than less experienced colleagues, and a fourth-year apprentice may not require the level of supervision that a less-experienced first-year apprentice requires, but outlier cases should not drive policy.[61]

56 Ken Doyle (Director of Policy, Polytechnics Canada), telephone interview by The Conference Board of Canada, January 24, 2014.

57 Forum of Labour Market Ministers, *Federal, Provincial and Territorial Governments*.

58 Brydon and Dachis, *Access Denied*, 3.

59 Petkov, *How Many Is Too Many?*

60 Brydon and Dachis, *Access Denied*, 2.

61 Rexe, interview.

Renewing the Role and Scope of the Apprenticeship Sector

In addition to thinking about ways to address the challenges outlined above, a more effective apprenticeship sector in Canada—one that works for individuals, employers, and the economy—will also require discussion about its role and scope. In particular, consideration should be given to apprenticeships' role in school-to-work transitions for younger students and workers, as well as to the range of occupations covered by apprenticeship training.

School-to-Work Transitions

Although apprenticeship systems in many countries, such as Germany, play a major role in school-to-work transitions, this is not the case in Canada.[62] In 2011, 40 per cent of new apprentice registrants in Canada were 30 years of age or older, about half were between the ages of 20 and 29, and less than 7 per cent were 20 or younger[63]—one of the lowest rates of registration by young adults in the G20.[64] Apprenticeships in Canada are much more likely to be a way of "up-skilling" adults already in the labour force than they are a path for high school graduates directly into the workforce and skilled trades training.[65]

If Canada is serious about using apprenticeships to achieve better education-to-employment outcomes for young Canadians, then greater attention must be paid to the links between high schools and the apprenticeship sector. While it is important that apprenticeships remain

62 See, for example, O'Grady, "Apprenticeship in Canada," 1.

63 Statistics Canada, CANSIM table 477-0053.

64 Sharpe and Gibson, *The Apprenticeship System in Canada*, 5.

65 Ibid.

a skills development platform for older individuals, possibly entering the PSE system for the first time, efforts should also be made to improve the school-to-work transition function.[66]

Occupational Coverage

Apprenticeship training covers a narrower range of occupations in Canada than those in other international peer countries. The percentage of certificates awarded in the 10 most common fields of study is greater in the trades (92 per cent) than it is for colleges (80 per cent) or universities (76 per cent).[67] Given the benefits to participants and employer of a training model that combines workplace experience and in-class instruction, we should ask whether expanding apprenticeships to cover other occupations would be worthwhile. Other countries, such as Australia, Germany, and Finland, offer apprenticeships in a wider range of sectors, including agriculture, business, arts and media, information and communications technologies, health care, retail, tourism, and others.[68]

Still, while wider occupational coverage may have some benefits, consideration of potentially negative consequences is required. As the dismal income prospects for women who complete apprenticeships in esthetics shows, not all occupations make sense as apprenticeable trades in the Canadian context. Indeed, while some countries offer apprenticeship training in retail, it is not immediately clear that this would be valuable for many Canadians.[69] In short, the potential for expanding coverage of apprenticeship training should be considered on an

66 Some work has been done exploring the challenges and mechanisms for improving school-to-work transition. See, for example, Canadian Apprenticeship Forum, *High School to Apprenticeship Transition.*

67 Statistics Canada, *Education in Canada*, 11.

68 A review of the types of apprenticeships offered in the U.K., for example, reveals a wide range of apprenticeships in a diverse range of sectors. See National Apprenticeship Service, *Types of Apprenticeships.*

69 Watts-Rynard, interview.

occupation-by-occupation basis, rather than approached as a general policy. The relevant question is whether, given the structure and nature of a particular occupation, apprenticeship training makes sense.

Conclusion

Up to now, Canada has been generally well served by its apprenticeship sector. Participation in apprenticeships has increased markedly over the past 20 years, responding rapidly to industry demand for skilled labour, and more apprentices are completing their training, achieving certification, and reaping the benefits they bring. Moreover, barriers to inter-jurisdictional mobility for certified tradespersons have fallen thanks to the Red Seal Program and the Agreement on Internal Trade. And, despite some differences, Canada's performance relative to international peers is not weak.

Yet, there are persistent challenges—and opportunities—for the apprenticeship sector. While registrations have doubled since 1991, completion rates are low compared with the university and college sectors and apprenticeship systems across the globe. Given the benefits that completion brings to individuals and employers, more attention needs to be paid to this issue. Additionally, in some trades, there is a growing gap in the flow of certified tradespeople that should be investigated further, especially as retirements are occurring.

In terms of labour mobility, although the situation has improved for certified tradespeople, it remains a challenge for apprentices who have not completed their training, thereby limiting their opportunities as well as employers' ability to attract labour across provincial and territorial borders. Low essential skills development generally, and poor employment and income prospects for some apprenticeable fields, also demand attention. Finally, to enhance the apprenticeship sector's contribution to economic, social, and individual well-being, serious thought should be given to improving its effectiveness in facilitating school-to-work transitions for younger workers and, possibly, to a gradual expansion of the model to other occupations.

CHAPTER 5

Adult Learning and Education

Chapter Summary

- Adult learning and education programs offer Canadian adults, who have completed or did not pursue a conventional PSE path, opportunities to improve their skills for employability, workplace effectiveness, future learning, and overall well-being.
- Despite the importance of adult learning to individuals, employers, the economy, and society more broadly, the supply and quality of such opportunities are limited and tend to provide greater benefits to already high-skilled, rather than low-skilled, Canadians.
- Canadian employers, governments, and learners should design, pursue, and evaluate learning initiatives with a view to overcoming individual and institutional barriers and ensuring that investments produce good returns for all stakeholders.

Adult education and training, beyond the conventional PSE system, are necessary elements of effective skills development. As the skills demands of occupations change, new sectors and jobs emerge, and workers move between occupations and sectors, there is an ongoing need for education and training to refresh and enhance skills. Moreover, because skills tend to atrophy when not used, adult learning and education (ALE) provides opportunities for adults to refresh and exercise skills that they may need in future. For Canadians who attended a formal PSE institution, ALE offers a useful extension of their skills development. For Canadians who did not attend a PSE institution, ALE programs may provide the only post-secondary training and education they will receive.

What is the state of ALE in Canada? With a multiplicity of organizations offering a variety of education, learning, and skills development pathways and opportunities, describing and assessing this part of the skills development system presents special challenges.[1] Yet, given the importance of ALE to skills development, generating a picture of the sector and how well it performs is imperative. In this chapter, we focus on two parts of the ALE sector—employer-sponsored or workplace training; and employment and skills development programs offered to the unemployed or those transitioning between occupations or sectors.

1 The United Nations Educational, Scientific and Cultural Organization (UNESCO) defines adult education broadly as including "the entire body of organized educational processes undertaken by adults, whatever the content, level, or method of instruction, whether formal or otherwise, *that prolongs or replaces initial education in schools, colleges, universities, and apprenticeship programs*." Cited in Council of Ministers of Education Canada, *The Development and State of the Art of Adult Learning and Education*, 6.

Employer-Sponsored Training

A key way that adults acquire new skills, even after they leave the formal PSE system, is through training and education offered by employers. This can include initial training for recently hired employees; additional training to enhance the skills of existing employees to meet changing skills requirements of their jobs or to take on new roles in the organization; and, in some cases, learning and education opportunities for employees who are not directly tied to current occupational or organizational needs. In all three cases, training is often offered to employees not simply for the sake of developing specific skills for specific tasks and roles, but also because training "strengthens corporate culture, morale, and the potential to attract and retain high-quality staff."[2]

Employer-sponsored training is delivered in a variety of ways, including on-site training sessions, workshops, and mentoring, as well as by off-site training and education institutions in the community. On-site training can be delivered by organizations' own staff, or by external instructors. In some cases, workplace training results in a formal credential for the employee (especially when an external institution is involved), but frequently it does not. Learning that occurs in an "organized, structured setting and leads to a recognized credential" is often labelled formal learning.[3] Learning that does not take place in conventional education and training institutions and that does not lead to a recognized credential is often labelled non-formal learning.

Participation in Employer-Sponsored Training

Despite evidence that shows that learning and training has benefits for individuals, as well as "concrete improvements in business performance and productivity,"[4] Canada's record on employer-sponsored training is weak. In 2008, 31 per cent of adult Canadians aged 25 to 64 participated

2 Canadian Council on Learning, *Securing Prosperity Through Canada's Human Infrastructure*, 27.

3 Ibid., 26.

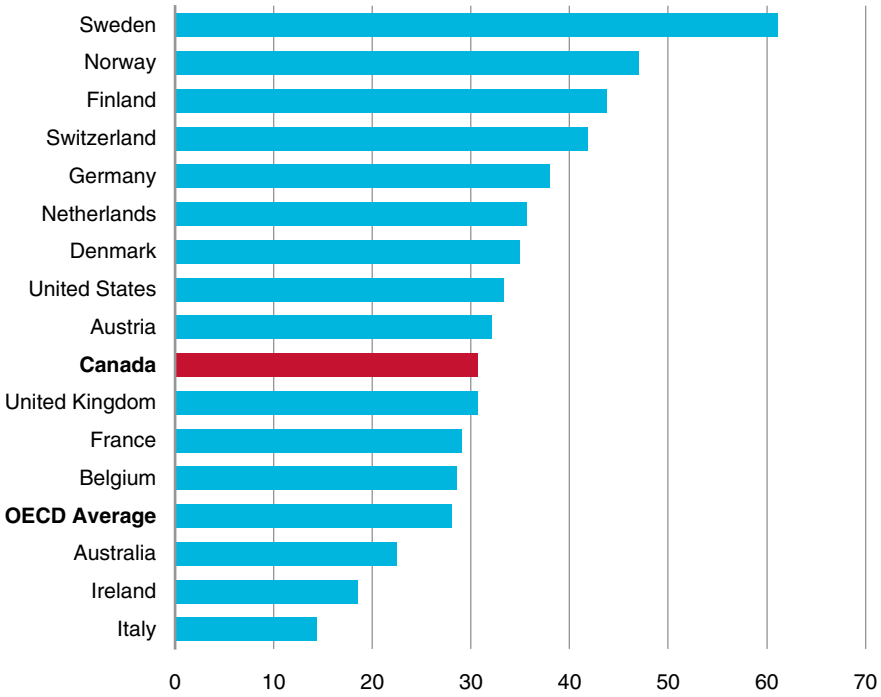
4 Ibid., 27.

in some form of non-formal job-related education.[5] This is slightly higher than the OECD average (28 per cent), but well behind some of Canada's international peers such as Sweden (61 per cent), Norway (47 per cent), Finland (44 per cent), Switzerland (42 per cent), and Germany (38 per cent). (See Chart 25.)

Chart 25

Adult Participation in Non-Formal Job-Related Education, 2009, or Most Recent Year

(per cent)



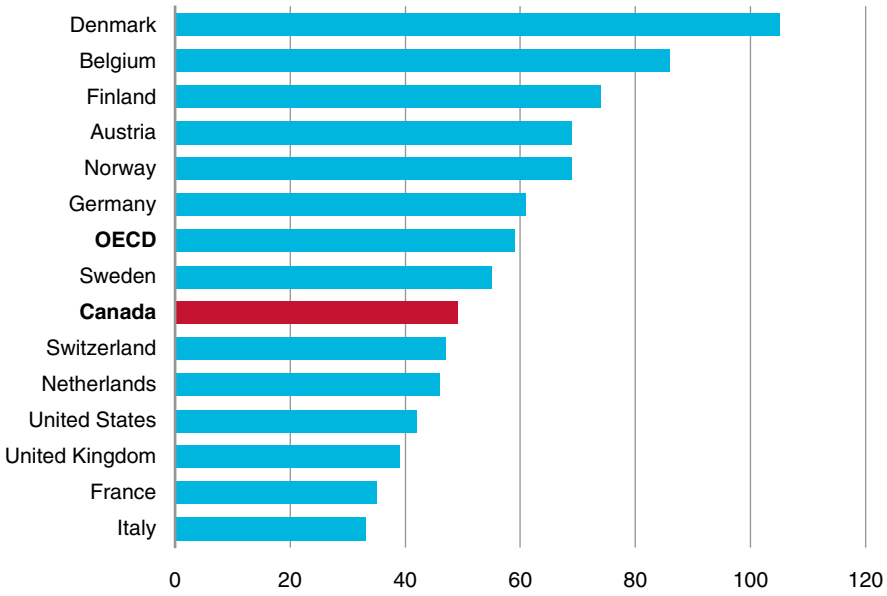
Source: OECD, *Education at a Glance 2011*, Indicator C5.

5 The Conference Board of Canada, *How Canada Performs: Education—Adult Participation in Education*.

Although a higher percentage of Canadian adults participated in non-formal job-related education in 2008 (31 per cent) than in 2003 (25 per cent), our performance relative to international peers has slipped. The average participation rate for 13 comparator countries for which data were available in 2003 was 23 per cent—a rate that Canada exceeded by 2 percentage points. But by 2008, those same 13 countries had an average participation rate of 33 per cent—a rate that Canada lagged by 2 percentage points. Consequently, Canada's grade in the Conference Board's report card on adult participation in non-formal education fell from "B" in 2003 to "C" in 2008.

Moreover, those Canadians who participate in non-formal job-related training receive fewer hours of instruction than their peers in leading countries. Canadian adults received 49 hours of job-related non-formal education in 2008 versus the OECD average of 59 hours. This represents less than half the hours received by adults in Denmark

Chart 26
Hours of Non-Formal Education per Participant
(hours)



Source: OECD, *Education at a Glance 2011*, Indicator C5.

(105 hours) and well behind Belgium (86 hours), Finland (74 hours), Austria (69 hours), Norway (69 hours), and Germany (61 hours). (See Chart 26.)

If we take the adult population as a whole (i.e., both those who do and those who do not participate in non-formal job-related training), Canadians receive, on average, only 15 hours of instruction per year. Adults in only 4 of 13 other comparator countries receive less—Italy (6 hours), France (10 hours), the United Kingdom (13 hours) and the U.S. (14 hours)—while adults in nine comparator countries receive more—including Denmark (39 hours), Finland (38 hours), Sweden (38 hours), and Norway (35 hours).

Inputs in Employer-Sponsored Training

The low rates and intensity of workplace training for Canadians are not surprising. Other Conference Board work has shown that employer spending on training and development has declined significantly over the past two decades. Employer investment in learning and development has declined 13 per cent since 2008. Since 1993, it has dropped by nearly 40 per cent, from approximately $1,116 to $688 in 2011, before edging up slightly in 2013 (to $705). Moreover, learning hours per employee declined from 28 in 2008 to 25 by 2011, before returning to 28 in 2013, according to the Conference Board's Learning and Development survey.[6]

U.S. employers have also decreased spending on employee learning and development in recent years, which suggests that Canada is not alone in terms of its trend in spending. However, as of 2010, U.S. employer spending was still significantly higher ($1,071 per employee) than spending by Canadian employers ($688 per employee).[7]

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

7 Lavis, *Learning and Development Outlook 2011*, 15.

Outcomes and Impact of Employer-Sponsored Training

Employer-sponsored training is not always tracked, and often does not lead to a credential, making it difficult to obtain an exact measure of skills attainment. Only 46 per cent of employers that responded to the Conference Board's 2011 Learning and Development survey reported that they evaluate the effectiveness of their learning and development activities. Among those who do, the most common metrics were inputs rather than measures of effectiveness (i.e., total number of employees trained annually and costs of training). Only 13 per cent made an attempt to link their learning initiatives to employee competence, while no respondents appear to have directly assessed skills acquisition.[8] Still, workplace training initiatives can lead to improvements in many general and technical skills. For example:

- A five-year study assessed the impacts of 18 workplace education initiatives in Manitoba (10) and Nova Scotia (8) on participants' literacy and essential skills. The study revealed significant improvements in participants' confidence in and practice of work-relevant skills (e.g., technical and math skills) and everyday skills (e.g., reading, writing, and computer use).[9] The initiatives also improved firm productivity, learning culture, and relations between co-workers, customers, and managers, and saw reductions in costs and errors.[10]
- Respondents to the 2011 Learning and Development survey reported improvements in employees' skills and performance due to workplace education initiatives. Leaders in organizations with strong learning cultures were more likely to say that their employees' overall performance had improved over the previous year (47 per cent) than leaders of organizations with moderate (35 per cent) or weak (21 per cent) learning cultures.[11]

8 Lavis, *Learning and Development Outlook 2011*, 15, 34–5

9 The Centre for Literacy, *Meeting Expectations*, 33–40.

10 Ibid., 45–52.

11 Lavis, *Learning and Development Outlook 2011*, 12.

- Another study on workplace education programs reveals both positive impacts on employees' skills and organizational benefits. Ninety-eight per cent of leaders in the 45 organizations examined reported at least one skill gained by employees who participated. This included greater willingness and ability to learn for life (85 per cent); improved understanding and ability to use documents (85 per cent); and increased understanding and ability to use numbers by themselves or in charts and tables (76 per cent).[12] Organizational benefits included improved employee morale/self-esteem (87 per cent); increased quality of work (82 per cent); and improved capacity to solve problems (82 per cent).[13]
- Finally, a recent major study of over 100 firms and nearly 1,500 workers in the accommodations sector of the tourism industry in eight provinces found that "workplace LES [Literacy and Essential Skills] training does, indeed, have large positive impacts on workers' skills, job performance, and a range of economic and social outcomes for workers and firms."[14] The study also found positive return on investment for firms.

Although research on specific initiatives shows a causal link between employer-sponsored training and employee skills development, there is no evidence available to assess the extent to which Canadians' skills as a whole are the result of employer-sponsored training. OECD's recent Survey of Adult Skills, for example, collected data on skills attainment and reveals an *association* between workplace education participation rates and levels of literacy, numeracy, and problem-solving skills among Canadians. But most of the association is likely explained by the fact that already highly skilled people participate more often in training and education than those with lower skills, rather than that training provides a major boost to skills levels.[15]

12 Bloom and Lafleur, *Turning Skills Into Profit*, 6.

13 Ibid.

14 Social Research and Demonstration Corporation, *UPSKILL*, 1.

15 OECD, *OECD Skills Outlook 2013*.

Still, based on the evidence cited above it is reasonable to conclude that employer-sponsored training makes some contribution to skills development, even if most of the benefits are achieved by those who already have higher skills attainment and even if the precise magnitude of effect is unclear. The key questions, then, are how to increase opportunities for employer-sponsored training, and how to ensure that they are distributed in ways that make sense for all employees, employers, and the economy as a whole. To do that, it is important to ask what factors or barriers limit the amount, quality, and distribution of workplace learning in Canada.

Obstacles to Effective Employer-Sponsored Training

If employer-sponsored training has benefits for learners, firms, and the economy, why do we not see more being offered and pursued in Canada? Indeed, why has there been a downward spiral in investments in employer-sponsored training? Why do more than a quarter of all adult Canadians report that they have training needs or desires that go unmet every year?[16] There are firm- and individual-level factors that help to explain trends in employer-sponsored training.

Challenges for Employers

The weak provision of training opportunities by Canadian employers can be explained by various factors.

Cost

Investing in employees' skills development requires time and resources, which are scarce in most organizations. Although many employers recognize the potential returns, the upfront costs for tuition or instructors (for formal learning opportunities) and employees' time to participate (as learner or instructor) can be prohibitive. In fact, concerns about costs help to explain why small firms (with fewer resources) are much

16 Peters, *Working and Training*, 20.

less likely than larger firms to offer training. And, it helps to explain why small firms, when they do offer training, frequently turn to less-costly, on-the-job options rather than formal classroom training. Over 90 per cent of firms with more than 500 employees, but less than half of firms with fewer than 20 employees, offer some kind of workplace training to their employees.[17]

Investment Risks

Employers that invest in employee skills development face the risk that those employees may be "poached" by other employers, including competing firms. A recent study of information and communications technology firms' strategies to address skills shortages, for example, reveals that although 62 per cent trained current employees to meet gaps, nearly half (47 per cent)—including some who also trained—hired talent away from competitors.[18] A labour market in which some employers choose to poach rather than invest in the skills of their own staff—or even where there is simply a *belief* that poaching occurs—"often leaves other employers unwilling to provide training too, and can result in an overall underinvestment in skills development."[19] When employers do invest, the incentives and risks they face encourage investments in specific skills for particular tasks and jobs rather than more general and transferable skills.[20]

Information Gaps

Many employers, particularly SMEs, often lack necessary information to initiate effective workplace learning opportunities for employees. In the first place, many do not know what their employees' learning needs are,

17 Canadian Council on Learning, *Securing Prosperity*, 26.

18 Nordicity, *Labour Supply/Demand Dynamics*, 22.

19 OECD, *Better Skills, Better Jobs, Better Lives*, 36.

20 Halliwell, *No Shortage of Opportunity*, 27.

or how to assess them rigorously.[21] Second, among those employers that are interested and ready to invest in employee skills development, some do not know what programs are available and which would be most effective. In light of these information challenges, some employers simply give up altogether.

Availability of Alternatives

Finally, employers are increasingly calling on the formal PSE system to produce graduates who are more job-ready—a tendency that may reflect a desire among some employers to externalize the direct costs of, and responsibility for, training. In fact, many PSE institutions and policy-makers are responding to that call either by incorporating more work-related skills training into the curriculum and/or by demonstrating how existing approaches produce employment-relevant skills.

To the extent that employers believe this externalizing strategy may be successful, it may lead them to further reduce their investments in workplace training. Indeed, there is a suspicious correlation between increasing investment and participation in PSE, on the one hand, and declining employer investment in workplace training on the other. Although a causal relationship is hard to establish, it is worth asking whether employers think the PSE system can provide a skills development substitute for workplace training.

Challenges for Learners

Even if workplace training is offered, employee participation is affected by a number of factors.

21 A Centre for Workplace Skills report found that few SMEs were aware of organizational needs assessment tools and models and rarely conducted formal needs assessments. SMEs that conducted organizational needs assessments usually did so in informal, ad hoc ways with lower benefits for the firm and employees. Bailey and Gillis, *Making the Connection,* 3.

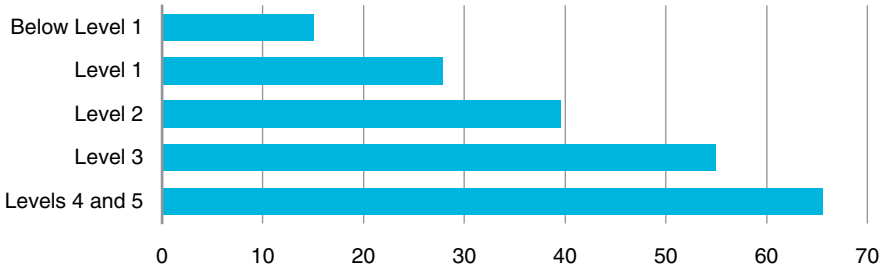
Prior Education and Skills Attainment

Those who participate in employer-sponsored skills development are more likely to already have relatively high educational attainment and skills levels compared with those who do not participate. In terms of educational attainment, for example, in 2008 "more than two-thirds of [Canadian] workers with university degrees took part in formal work-related training, while only 22 per cent of workers without a high-school diploma took part."[22] From a skills (as distinct from education) perspective, the story is much the same. OECD's Survey on Adult Skills shows that participation in job-related adult education and training increases with literacy proficiency. In Canada, only 15 per cent of those who scored below Level 1 in literacy proficiency participated in job-related education and training. By contrast, over 65 per cent of those who scored at Level 4 or Level 5 received some kind of job-related education or training.[23] (See Chart 27.)

Chart 27

Participation of Canadians in Job-Related Education or Training by Literacy Level

(per cent)



Source: OECD, OECD *Skills Outlook 2013*, Figure 5.7.

22 Canadian Council on Learning, *Securing Prosperity*, 26.

23 OECD, *OECD Skills Outlook 2013*, 208, Figure 5.7 (L).

Simply put, the more skilled and educated one is, the more likely that person is to receive even more skills training, and vice versa. This can have pervasive, lifelong effects—good or bad, depending on the path one is already on. As OECD notes, "High-skilled adults will be more likely to participate in learning activities that enhance their skills—which makes these individuals more likely to continue to benefit from learning opportunities. Conversely, low-skilled adults risk being trapped in a situation in which they rarely benefit from adult learning, and their skills remain weak or deteriorate over time—which makes it even harder for these individuals to participate in learning activities."[24]

Resources

Even if employers offer training opportunities to employees, and employees want to pursue them, many are hampered by limited time and resources. In a survey of European employees, the main obstacles to participating in adult education and training were time-related. Between 28 per cent (Denmark) and 39 per cent (U.K.) of respondents cited time-related obstacles as a key barrier.[25] Among Canadians who did not participate in job-related training in 2002, the main obstacles were cost (45 per cent) and one or more time-related obstacles, including being too busy at work (35 per cent), family responsibilities (27 per cent), and conflicts between training and work schedules (27 per cent).[26] Many respondents cited more than one obstacle.

Union Membership

Unions provide a source of support for and partner in job-related learning, including offering or supporting courses, events, and workshops; assisting with the development of training facilities; and partnering with PSE institutions to improve access to skills development opportunities and credentialing.[27] As a result, unionized workers are more likely to participate in workplace learning than non-unionized

24 OECD, *OECD Skills Outlook 2013*, 210.

25 OECD, *Better Skills, Better Jobs, Better Lives*, 34.

26 Peters, *Working and Training*.

27 Canadian Council on Learning, *Securing Prosperity*, 61.

workers and, moreover, unionized businesses are more likely (76 per cent) to support employee training than non-unionized businesses (53 per cent).[28]

Information Gaps

Lack of information appears to be a minor barrier for some. About 7 per cent of non-participants reported that they couldn't find the training they wanted to take while 6 per cent were not sure that the training available was worth it.[29]

Health and Confidence

A small but not insignificant proportion of candidate learners cite health reasons (4 per cent) or lack of confidence (3 per cent) as reasons for not pursing skills training.[30] Although the percentage reporting is small, these kinds of barriers may be much more rigid than other kinds of barriers (such as time pressures). In that case, they may contribute to persistent lack of training and skills development for some which, as we saw above, is itself a strong predictor of participation in further education and training.

In its review of adult learning in Canada, OECD observed that geographic factors may also play a role in accessibility to learning opportunities.[31] Accessing training and expertise can be especially challenging for those who live in sparsely populated northern or rural areas. Even those employers willing to support training and skills development may find that their communities lack options and that bringing in expertise from elsewhere can be prohibitively expensive. To be sure, online learning can help to address this to some extent. But for hands-on learning and mentoring, online technologies have limited value.

28 Canadian Council on Learning, *Securing Prosperity*, 61.

29 Peters, *Working and Training*.

30 Ibid., 21.

31 OECD, *Thematic Review on Adult Learning*, 4.

Skills Training for the Unemployed and Low-Skilled Employed

For many adults, skills development through conventional PSE paths and/or employer-sponsored training is not an option. Unemployed and precariously employed Canadians rarely have the resources to participate in any of these skills development paths.[32] Recognizing these realities, governments across the country offer a range of "active labour market measures," which include "job search assistance, career counselling, wage subsidies and, especially, skills development."[33] Although responsibility for education and adult learning rests with the provinces and territories, both the provinces and territories as well as the federal government have historically provided a range of support and programs. These can be categorized into programs that involve federal–provincial/territorial partnerships, federal–Aboriginal partnerships; and sole federal programs. (See Table 6.)

Table 6
Active Labour Market Programs With Skills Development Components, 2011–12

Program or agreement	Allocation ($ millions)
Federal-provincial programs and agreements	
Labour Market Development Agreements (LMDAs)	1,939.70
Labour Market Agreements (LMAs)	543.4
LMAs for Persons With Disabilities (LMAPDs)	222
Targeted Initiative for Older Workers (TIOW)	79.8
Federal-Aboriginal programs and agreements	
Aboriginal Skills and Employment Training Strategy (ASETS)	245.6
Skills and Partnerships Fund (SPF for Aboriginal persons)	57.5

(continued …)

32 OECD, *Better Skills, Better Jobs, Better Lives*, 47.

33 Halliwell, *No Shortage of Opportunity*, 29. Although participants do not follow conventional PSE *paths* (e.g., to university or college from high school), skills training is often provided by conventional PSE institutions.

Table 6 (cont'd)
Active Labour Market Programs With Skills Development Components, 2011–12

Program or agreement	Allocation ($ millions)
Aboriginal Skills and Employment Partnership (ASEP for Aboriginal persons)	67.1
Federal programs	
Youth Employment Strategy (YES)	239.6
Opportunities Fund (OF) (for disabled persons)	26.8
Pan-Canadian Programming (sectoral initiatives, literacy and essential skills, credential recognition, pathways to education)	76.3
Total	**$3,497.80**

Source: Adapted from Wood.

To be sure, only a portion of the funding allocated to each program is used for skills development and training initiatives, so this should not be taken as an estimate of federal spending on skills development for unemployed or low-skilled workers. Moreover, although we have listed a full range of programs, the analysis that follows focuses primarily on training associated with Labour Market Development Agreements (LMDAs) and Labour Market Agreements (LMAs). A detailed analysis of the federal–Aboriginal programs will be conducted as part of an SPSE study dedicated solely to skills and PSE for Aboriginal people.

LMDAs and LMAs

LMDAs are bilateral agreements between the federal government and provincial or territorial governments which can include provisions for skills development programs for individuals—particularly as part of the EI program. LMAs allow provinces and territories to develop programs and services to assist low-skilled employed individuals and unemployed individuals who are not EI clients to improve their skills, employability,

and labour market participation.[34] Often, the programs funded by LMAs are especially focused on increasing labour market participation among under-represented groups such as immigrants, Aboriginal people, youth, women, and people with disabilities.[35]

The LMA signed in 2008 between the federal and Ontario governments, for example, gave rise to the Ontario government's Skills to Jobs Action Plan. The plan included a $355-million Second Career Strategy, which aimed to help approximately 20,000 unemployed workers "obtain long-term training for new and better careers."[36] It provided up to $28,000 to assist with tuition, books, and other training costs; skills training courses; income supports; and career-planning services.[37] Other examples include elements of British Columbia's Canada Starts Here: The BC Jobs Plan, which, in 2013–14, will provide $93 million to support skills development, upgrading interventions, and work experience opportunities for approximately 16,000 people, including unemployed and low-skilled employed participations.[38] (See also box "Canada Job Grant.")

Canada Job Grant

The federal government's Canada Job Grant program will alter the landscape of skills development programs. The program will provide grants of up to $15,000 for employer-sponsored training for unemployed and underemployed Canadians, with costs shared by the federal government and an employer. The program is premised on the idea that tying training to specific job openings would make it more relevant to a specific occupation and thus better align the goals of

34 Canadian Council on Learning, *Securing Prosperity*, 50; Government of British Columbia, *2012/13 Annual Plan*, 6–7.

35 Government of British Columbia, *2012/13 Annual Plan*, 7.

36 Canadian Council on Learning, *Securing Prosperity*, 50.

37 Ibid.

38 Government of British Columbia, *2013/14 Annual Plan*, 25–8.

improving labour market outcomes for individuals and addressing skills needs of employers.[39] Future Conference Board work will examine its implementation, operation, and outcomes.

Sources: Government of Canada; The Conference Board of Canada.

Availability and Access

Investments in LMDA and LMA programs are sizable in terms of investment per participant and overall cost—provincially and federally. Yet, Canada's spending on active labour market measures (0.3 per cent of GDP in 2011) is only half of the OECD average (0.6 per cent).[40] To be sure, these data do not distinguish between spending on skills development initiatives specifically and other labour market measures, but they do provide an important clue. In addition, it is worth noting that while the LMDAs (for EI-eligible individuals) and LMAs (for non-EI individuals) assist, or aim to assist, the skills development of many people, the number actually assisted is small relative to the total number of people who are unemployed or employed and low-skilled and who may want or need training and skills upgrading.

Among Canadians who are unemployed or not in the labour force, participation in adult education (of all kinds) is lower than participation rates in other countries. (See Chart 28.) Although 57 per cent of employed Canadians aged 16 to 65 participated in some form of adult education or training in 2003, only 31 per cent of unemployed and 24 per cent of those not in the labour force participated.

The participation rate of unemployed Canadians (31 per cent) lags the U.S. (34 per cent) and is far behind leading nations like Switzerland (58 per cent) and Norway (49 per cent). The participation rate of Canadians not in the labour force (24 per cent) is nearly 10 percentage points behind the U.S. (33 per cent) and very low compared with

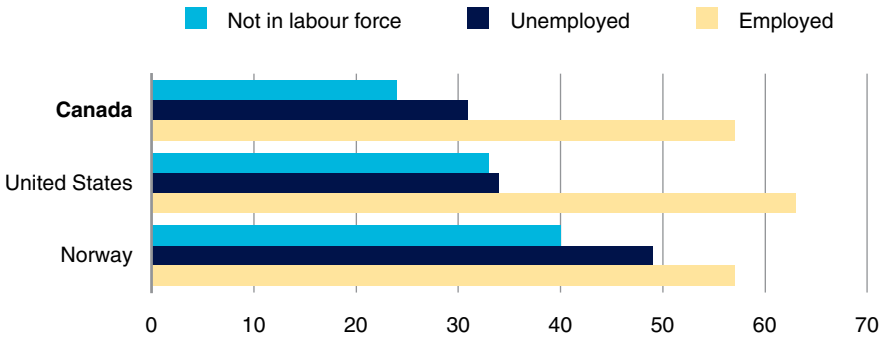
39 Government of Canada, *Canada Job Grant*.

40 Halliwell, *No Shortage of Opportunity*, 29.

Chart 28

Participation in Adult Education and Training by Labour Force Status

(percentage of population aged 16 to 65, 2003)



Sources: Statistics Canada, *International Adult Literacy Survey*; OECD, *Adult Literacy and Lifeskills Survey.*

Switzerland (48 per cent) and Norway (40 per cent).[41] In short, Canada lags international peers considerably in terms of skills development opportunities for the unemployed and those not in the labour force.

Effectiveness

Given the wide variety of training programs that are offered to unemployed and low-skilled employed Canadians across the country, it is difficult to make general statements about their effectiveness. The few studies that try to provide a general assessment based on available evidence reach mixed conclusions. One report states, for example, that "although studies have repeatedly found that most government job-training programs are ineffective, there are examples of success, and the rewards from effective programs are potentially large."[42] Another observes that "evaluations of training programs have often found them to be fairly ineffective at improving employment or earnings

41 Rubenson, Desjardins, and Yoon, *Adult Learning in Canada*, Table A.3.3, 93.

42 Warburton and Warburton, *Measuring the Performance*, ii.

outcomes" but subsequently notes that "the perception of failure might be too pessimistic: training and active measures do work under certain conditions."[43]

The consensus appears to be that the programs can and sometimes work, but only under certain conditions. A key challenge is precisely identifying these conditions of success. Variations in "program design and delivery, individuals' needs and capabilities, and broader structural features of the policy and economic environment" complicate efforts to measure and report on effectiveness, and subsequently on improved design.[44] For example, skills development outcomes from a single program may vary widely depending on whether a participant is high or low skilled upon entry (i.e., returns to the already high-skilled tend to be higher than returns to low-skilled participants).[45] It can also vary depending on the various barriers an individual faces outside the program—such as those related to geography, time and resources, cultural differences, and broader community support.[46]

Given the large amounts spent on such initiatives, better strategies are needed to assess effectiveness, to identify general principles of success, and to identify the variables that produce different results for different participants. And, based on those findings, future programs should be designed and implemented with attention to the characteristics of participants; specific, measurable objectives and outcomes; and accumulated wisdom about the features of effective programs. In all likelihood, learning programs for unemployed and low-skilled workers can succeed in improving skills and labour market outcomes, but more should be done to distinguish between effective and ineffective initiatives.[47] Future SPSE research will shed light on these issues.

43 Halliwell, *No Shortage of Opportunity*, 29.

44 Palameta, Myers, Gyarmati, and Voyer, *Understanding Training Program Effectiveness*, 1. See also Warburton and Warburton, *Measuring the Performance.*

45 Palameta, Myers, Gyarmati, and Voyer, *Understanding Training Program Effectiveness*, 6–7.

46 Ibid., 3.

47 Gunderson, *Active Labour Market Adjustment Policies.*

Conclusion

For adults who have completed a conventional PSE path and entered the workplace—and for those who did not and find themselves unemployed or employed in low-skilled work—Canada supports a very broad range of adult learning and education opportunities. Yet, as the analysis reveals, the supply of opportunities may be lower than demand and those that are available frequently benefit the already skilled more than the low-skilled who may need them the most. Additionally, given a lack of clarity about the effectiveness of many programs—especially those targeted to unemployed or low-skilled workers—even as large amounts are spent on such programs, there is a pressing need for better data collection and analysis of this part of the skills development system. Future research will make headway in these directions.

CHAPTER 6

Stimulating Skills Development: Strategies for Success

Chapter Summary

- Although Canada's PSE sector is among the most successful in the world in contributing to the development of a highly educated and skilled population, there are many areas for improvement.
- Despite very large investments in the sector, not enough is known about the quantity and quality of skills produced, which gives rise to the need for better, and nationally comparable, skills attainment data.
- Attention should be given to clearly differentiating institutions, programs, and respective roles; improving performance in employer-sponsored training and development; clarifying the scope of apprenticeship training; and improving mobility of apprentices and tradespeople.

Skills are essential to Canada's economic prosperity and social well-being, and to the health and welfare of individuals. Those who have acquired advanced skills and credentials are able to make greater contributions to the economy, society, and cultural life of the communities in which they live and work than those without such skills and credentials. Moreover, education and training are critically important to the financial, physical, and psychological well-being of individuals and families.

Although Canada's PSE sector is among the most successful in the world in contributing to the development of a highly educated population, there are many areas for potential improvement. Some worry that the sector is not producing enough, or the right kinds, of skilled graduates to sustain and enhance the country's economic competitiveness and social well-being. There are barriers to participation and mobility for some learners which negatively affect both them and their potential employers. Opportunities for adult learning and education to maintain and enhance skills, including workplace training, are limited and their impact is mixed. And while discussion and policy have focused primarily on *quantity* and *access* issues in recent decades, there is a critical need to focus more attention on the *quality* of skills being produced to meet and address current and future economic and social opportunities and challenges.

Key Findings and Areas for Action

In providing both an account and assessment of the PSE sector and its skills development performance, the report has identified several areas of concern where action could yield improvements. In some cases, the actions could be taken immediately; for others, further research and discussion are required to specify exactly what can and ought to be

done. The multi-year research agenda of the Centre for Skills and Post-Secondary Education will continue to contribute to these research and discussion needs.

Skills Attainment: An Incomplete Picture

There is generally good information about inputs to the institutions that make up Canada's PSE sector (e.g., enrolments, funding, academic and administrative staff) and some of its outputs (e.g., credentials earned)—though there is room to improve how these data are collected and reported. The Conference Board will continue to examine and convene discussions about how to improve the data.

But despite having generally good information in those areas, the picture of actual *skills* attainment is murky—for workplace learning and training programs as well as for PSE. Although some indicators are available, precise and comprehensive information about which skills are developed, to what extent, by whom, and how is limited. Given the significant investments being made in PSE institutions by governments, individuals, and others, it would be especially worthwhile to identify and adopt mechanisms to obtain better, and nationally and internationally comparable, skills attainment data.

Need for Skills Improvements

Despite the limitations, there are enough data to suggest that there is room and opportunity to improve skills attainment among participants of the various sectors of the PSE sector. Skills in literacy, numeracy, and problem-solving in technological environments are fairly good, but could be much better. Many employers express concerns about the essential skills of recent job candidates and hires. And graduates' subjective assessments of the extent to which university education, in particular, has contributed to their skills and knowledge are less than ideal. At a minimum, institutions—and distinct programs within institutions—could be much clearer about what they are trying to achieve in terms of skills development, and better mechanisms should be established to test

performance and guide improvement. As some observers have noted, it is time for Canada's PSE sector to shift emphasis away from a quantity agenda and toward a quality agenda.[1]

Changes and Challenges in Participation

At the same time, issues of access and quantity cannot be ignored as participation and completion trends in parts of Canada's PSE sector present some challenges. The sector as a whole is facing a smaller pool of traditional student-aged candidates from which to draw, relative to older cohorts who have already graduated. And the distribution of students into university, college, and apprenticeship paths is changing. College and university attainment in Canada is rising. Among young adults (aged 25 to 34), nearly 32 per cent held university degrees and 22 per cent held college credentials, versus 20 per cent and 18 per cent, respectively, among older adults (aged 55 to 64). Meanwhile, there is a different trend in the skilled trades where in 2011, 10.7 per cent of adults aged 25 to 34 held trades certificates compared with 12.8 per cent of adults aged 55 to 64.[2] While being careful not to constrain student choice, there is a need to think broadly and systematically about whether Canada has the right mix of university, college, and apprenticeship participation and credential attainment to meet future economic, social, and individual needs.

Differentiation and Institutional Mix

The report also shows that changes in the higher education landscape have made it increasingly difficult to distinguish neatly between institutional types and roles. Traditionally, universities were distinguished by their degree-granting authority and research focus, but many colleges and polytechnics have acquired degree-granting authority and expanded their applied research activities in recent years. At the same time,

1 Weingarten, "Time to Say No"; Fallis, *Rethinking Higher Education*, 2, 8; Munro, *Skills and Higher Education*.

2 Statistics Canada, *Education in Canada,* 12.

professional, vocational, and employment-oriented activities and training have been incorporated into university programs, further blurring the distinctions between institutional types.

To avoid duplication, and to ensure that PSE institutions can achieve excellence, consideration should be given to efforts to differentiate institutions—and programs within and across institutions—in terms of unique roles, responsibilities, and contribution to the full range of skills requirements. At the same time, achieving greater clarity should neither unduly constrain student choice, nor limit PSE participants' opportunities to develop foundational and transferable skills, such as literacy, numeracy, critical thinking, and communication.

Adult and Workplace Education and Training

Employers make up a key part of Canada's skills development system—the report shows that attention is needed not only to the quantity and quality of workplace and other training, but also to identifying what employers' skills development roles are relative to other parts of the PSE and skills development system. Employers and others increasingly expect universities and colleges to produce work-ready graduates. But this expectation risks underemphasizing the essential role that employers themselves must play in training a skilled workforce, and risks overemphasizing the economic function of higher education, particularly in the universities. A broad, admittedly difficult, conversation about the respective roles of employers and conventional PSE institutions is needed.

Apprenticeships and Skilled Trades: Scope and Mobility

Canada has been generally well served by its apprenticeship sector. Participation has increased markedly over the past 20 years, responding rapidly to industry demand for skilled labour, and more apprentices are completing their training, achieving certification, and reaping the benefits. Yet, there are concerns. In some trades, there is a growing gap in the flow of certified tradespeople that requires further study. Additionally,

it is not clear that Canada's various apprenticeship systems have achieved the right scope of coverage. In some cases, apprenticeships are offered in trades that produce no—or even negative—income benefits to participants. In other cases, there are some trades and occupations where participants' skills development could be enhanced if apprenticeships were part of the training system. Additionally, although the Red Seals Program and the Agreement on Internal Trade have improved mobility for certified tradespeople, it remains a challenge for apprentices who have not completed their training. Fortunately, the Forum of Labour Market Ministers has indicated that it will work to address these issues in coming months.[3] Further efforts to broaden the number and portability of apprenticeship qualifications could be made to improve labour mobility.

Closing the Education and Skills Divide

In sum, Canada is doing quite well in producing people with university, college, and trades credentials, but our actual skills attainment is underwhelming and there are challenges to sustaining and enhancing the performance of the system. Given the importance of knowledge, technical skills, and employability or essential skills for individual and national success, and as a foundation for further learning, the results are worrying. This study shines light on some areas where action could usefully be taken or considered and points out areas that require further investigation to inform decisions about subsequent action. Indeed, to continue achieving the economic and social benefits we have come to expect of higher education, and to obtain the skills outcomes we require as a nation, a combination of serious reflection and determined action is needed.

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3 Forum of Labour Market Ministers, *Federal, Provincial and Territorial Governments*.

APPENDIX A

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