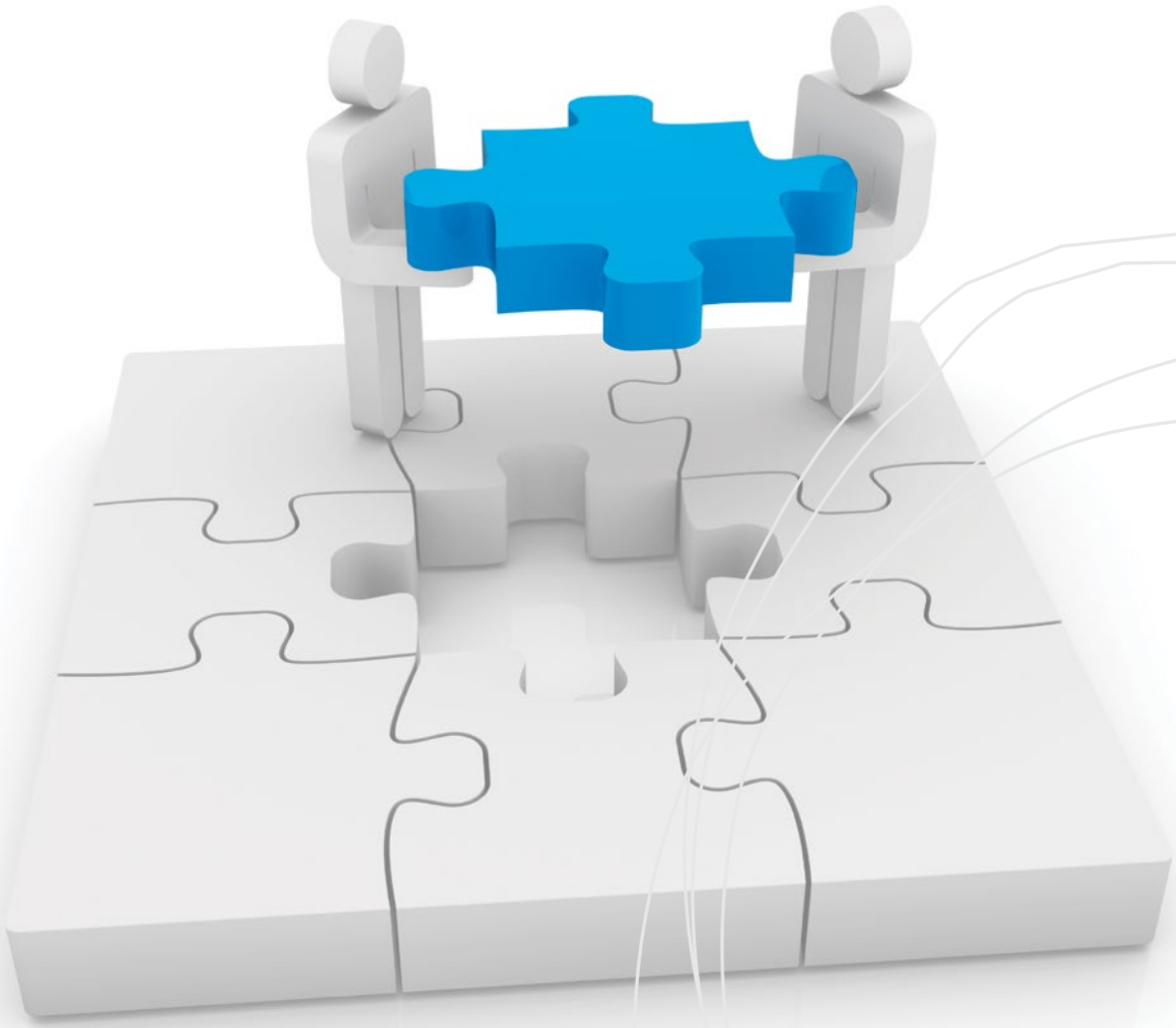
The Conference Board of Canada®

THE NEED TO MAKE SKILLS WORK

The Cost of Ontario's Skills Gap.



REPORT JUNE 2013

The Conference Board of Canada®

The Need to Make Skills Work: The Cost of Ontario's Skills Gap
by *James Stuckey* and *Daniel Munro*

About The Conference Board of Canada

We are:

- The foremost independent, not-for-profit, applied research organization in Canada.
- Objective and non-partisan. We do not lobby for specific interests.
- Funded exclusively through the fees we charge for services to the private and public sectors.
- Experts in running conferences but also at conducting, publishing, and disseminating research; helping people network; developing individual leadership skills; and building organizational capacity.
- Specialists in economic trends, as well as organizational performance and public policy issues.
- Not a government department or agency, although we are often hired to provide services for all levels of government.
- Independent from, but affiliated with, The Conference Board, Inc. of New York, which serves nearly 2,000 companies in 60 nations and has offices in Brussels and Hong Kong.

Preface

Skills gaps cost the Ontario economy up to $24.3 billion in forgone GDP—a result of too many Ontarians not obtaining enough education to find employment in today's economy. Skills gaps are projected to worsen if action is not taken to address them, and fears about a future of "jobs without people" and "people without jobs" are widespread. However, little has been done to examine the true economic costs of Ontario's skills gaps and what can be done to prevent a skills crisis. To address a lack of information, the Conference Board undertook a major study of skills gaps in Ontario, including a survey of over 1,500 Ontario employers.

Contents

Acknowledgements

This report has been prepared by The Conference Board of Canada under the direction of Dr. Michael Bloom, Vice-President, Organizational Effectiveness and Learning.

The report was written and researched by James Stuckey and Dr. Daniel Munro, with contributions from Christa Ross, Joe Haimowitz, and David Rosé.

The report was reviewed internally by Douglas Watt, Director, Organizational Effectiveness and Learning; and Michael Grant, Director of Research, Organizational Effectiveness and Learning.

We extend our thanks to the two external reviewers of this report: Trish Dryden, Associate Vice President, Research and Corporate Planning, Centennial College; and Dane Berry, Research Associate, The Council of Canadian Academies. Their helpful insights and feedback greatly contributed to this report.

The report was prepared with financial support from Colleges Ontario.

The Conference Board of Canada is solely responsible for the content of this document, including any errors or omissions.

Executive Summary

The Need to Make Skills Work: The Cost of Ontario's Skills Gap

At a Glance

- The Conference Board of Canada estimates that skills gaps cost the Ontario economy up to $24.3 billion in foregone GDP—as well as $4.4 billion in federal tax revenues and $3.7 billion in provincial tax revenues—annually.
- The Conference Board conducted a survey of 1,538 Ontario employers—covering over 760,000 employees or 13.5 per cent of provincial employees—to find out what occupations, skills, and credentials employers require to bridge skills gaps.
- There is much that Ontario's skill stakeholders—employers, educators, governments, and students—must do to address looming skills gaps and power business growth, innovation, and prosperity in the province.

ONTARIO'S SKILLS GAPS AND LOST OPPORTUNITIES

Ontario faces skills gaps in many areas of its economy, as employers are unable to find people with the skills they need to sustain and grow their businesses. The Conference Board estimates that skills gaps cost the province up to $24.3 billion in foregone GDP and $3.7 billion in provincial tax revenues, annually—a result of too many Ontarians not obtaining adequate levels of education to find employment in today's economy. This is money that could provide substantial economic and social benefits to Ontarians, including reducing public debt or investing in much-needed infrastructure improvements. Consider, for example, that a proposed expansion of public transit in the Greater Toronto Area would require an estimated $2 billion annually over 25 years, to complete.[1]

Ontario faces skills gaps in many areas of its economy, as employers are unable to find people with the skills they need to sustain and grow their businesses.

Not only do skills *shortages* have negative impacts, there are also lost opportunities due to skills *mismatches*. Although Ontarians are among the most highly educated in the OECD—with many having obtained post-secondary diplomas and degrees—too few are employed in occupations that utilize the full extent of their education and skills. In some cases, individuals have been educated and trained in areas for which there is little labour market demand. In other cases, individuals may work for employers who are unsure about how to engage the full range of their skills. Altogether, these types of skills mismatches cost Ontario's economy and workers up to $4.1 billion in foregone GDP and $627 million in provincial tax revenues annually.

1 CBC News, "Ontario Transit Proposal."

Skills gaps are projected to worsen if action is not taken to address them, and fears about a future of "jobs without people" and "people without jobs" are widespread.[2] However, while much has been written about Ontario's skills challenges, little has been done to examine the true economic costs of Ontario's skills gaps and what can be done to prevent a skills crisis. Stakeholders require better information about specific occupations, skills, and educational credentials that employers and individuals need to thrive in the emerging economy. It is important that the views of employers themselves be considered in order to fill gaps in labour market forecasting with data on actual issues and needs being experienced.

ADVANCING THE SKILLS DISCUSSION

To help address the lack of information, and to provide stakeholders with a strong foundation for action, the Conference Board undertook a major study of skills gaps in Ontario drawing on a variety of perspectives and methods:

- Original economic analysis undertaken by the Conference Board found that both skills deficits and mismatches (where employees' skills are underutilized) cost the province billions in foregone GDP and tax revenues.
- The Conference Board designed and conducted an Ontario Employer Skills Survey of over 1,500 Ontario employers, representing more than 760,000 employees, or 13.5 per cent of total employment, in various sectors of the provincial economy. The survey fills gaps in labour market forecasting by revealing the actual issues and real needs of a large number of Ontario employers that have a significant employment footprint. It found that skills gaps are serious, are located in some of the province's most important economic sectors, and emerge in many communities across Ontario.
- Nearly 40 interviews with employers and labour market experts, as well as consultations with over 80 Ontario students, provided a clear window into potential strategies to address skills gaps and the kinds of resources and collaboration required to ensure their effectiveness.

KEY FINDINGS

Key findings from the report provide all stakeholders with both clear information and motivation to act immediately to secure Ontario's future prosperity. In particular, it reveals the following:

THE ECONOMIC COSTS OF SKILLS GAPS ARE HIGH

- Between 1990 and 2012, the employment rate for individuals whose highest educational attainment is only some post-secondary education or less dropped from 58 to 48 per cent. If more people in this cohort of workers attained the higher education and skills necessary for employment in today's economy, the contribution to GDP could amount to as much as $24.3 billion annually. An additional $4.4 billion in federal tax revenues and $3.7 billion in provincial tax revenues annually could also be achieved.[3]
- At the same time, skills *mismatches*—where employees' skills and talents are underutilized by employers—cost Ontario as much as $4.1 billion in foregone GDP annually, and a further $747 million and $627 million in foregone federal and provincial tax revenues, respectively.

SKILLS GAPS AFFECT MAJOR SECTORS

- Skills gaps currently affect many areas of Ontario's economy, including sectors that account for almost 40 per cent of employment: manufacturing; health care; professional, scientific, and technical services; and financial industries. Moreover, skills gaps and mismatches threaten to worsen, with shortages projected to increase in some areas (generally high-skilled work) and unemployment expected to rise in others (low-skilled work).

2 See, for example, Miner, *People Without Jobs, Jobs Without People.*

3 See Appendix A: Explaining the Economic Analysis.

- Results from the Ontario Employer Skills Survey show that employers are in greatest need of post-secondary credentials in the subject areas of science, engineering, and technology; and business and financial professions. In terms of the types of credentials required, the greatest needs are for employees with two- or three-year college diplomas (57 per cent); four-year degrees (44 per cent); and trades (41 per cent).

MORE CAN BE DONE TO BUILD WORK-RELATED SKILLS

- Employers, educators, and students agree that strategies to address the skills gaps require better linkages between employers and post-secondary institutions. Experiential learning provides students with applied learning opportunities in industry environments and contributes to their job-ready skills, attitudes, and behaviours. Seventy-six per cent of employers make some use of experiential learning strategies—such as internship, apprenticeship, and co-op work placements—and many are interested in becoming more involved. But employers face challenges in doing so, including a lack of time and resources.
- Post-secondary institutions provide a key role in supporting workplace-based experiential learning—more resources should be put toward designing, organizing, and facilitating these opportunities and tracking learning outcomes. They also provide a much-needed complement to workplace-based experiential learning by giving students training on industry-relevant equipment and technology. With more resources, more could be done. (Colleges spend $69.28 per full-time student equivalent on leading-edge equipment and technology—1.3 per cent the amount spent by Ontario industry.)

How to Fill Skills Gaps—Recommendations for Skills Stakeholders

EMPLOYERS

1. To ensure that they are benefiting as much as possible from the capacities and potential of current employees, employers should increase investments in employee training and development.
2. To ensure that students and future workers receive workplace-relevant training, employers should increase experiential learning opportunities for students in the workplace.
3. To improve weak innovation performance, employers should identify underutilized skill sets among existing employees and explore opportunities for skilled and motivated employees to help improve products, processes, and services.

STUDENTS

4. To ensure that students develop skills that find a home in the labour market of tomorrow, they should be attentive to labour market trends and become active consumers of education.
5. To improve employment prospects and resiliency in case of labour market shifts, students should pursue educational pathways that equip them not only with skills for specific occupations, but also with employability, essential, and innovation skills.

EDUCATORS

6. To ensure that students have skills that will help them contribute to organizational success and their own well-being, post-secondary institutions should assess and make adjustments to programs and curricula to better reflect the current and future realities of the labour market and economy.
7. To ensure that students can make informed choices about their educational paths and employment prospects, educators at the secondary and post-secondary levels should collect, and communicate to current and prospective students, information about employment and income prospects for graduates of specific programs and disciplines.

GOVERNMENTS

8. To support planning and decision-making by educators, students, and businesses, federal and provincial governments should collect and share richer and more accurate labour market information.
9. To support well-organized and well-designed workplace-based experiential learning opportunities for students, government should allocate additional resources to colleges and universities to better design, organize, facilitate, and track outcomes of experiential learning opportunities.
10. To ensure that colleges are able to contribute to industry-relevant, employment-ready training, the Ontario government should allocate additional funds to colleges' equipment and technology budgets.
11. To support effective responses to Ontario's labour market challenges, the federal and provincial governments should coordinate their investments in labour market strategies.

FROM UNDERSTANDING TO ACTION

Ontario cannot afford the skills gaps it faces. Action to address the challenge must be taken by Ontario's skills stakeholders, and it must begin immediately. Even if policies are implemented now, some will only bear fruit after a lag of many years, as future graduates enter the workforce. We make several recommendations to employers, educators, governments, and students about steps that can be taken now to help achieve concrete progress over the medium term (see above). In addition to steps that stakeholders can pursue individually, there is also much that must be done by stakeholders working together to build a higher performing skills development system—one that can power future business growth, innovation, and prosperity in the province.

Chapter 1

Introduction

Chapter Summary

- The Conference Board of Canada estimates that skills gaps cost the Ontario economy up to $24.3 billion in foregone GDP—as well as $4.4 billion in federal tax revenues and $3.7 billion in provincial tax revenues—annually.
- The Conference Board conducted a survey of 1,538 Ontario employers—covering over 760,000 employees or 13.5 per cent of total provincial employment—to find out what occupations, skills, and credentials employers require to bridge skills gaps.
- This report sheds light on the economic costs of Ontario's skills gaps; identifies the specific occupations, skills, and educational credentials needed to address it; and recommends additional actions to close the skills gaps.

Much has been written about Ontario's skills gaps as the economy continues to emerge from the recession. Many workers have been left out of the recovery and some recent graduates face difficulties finding employment. At the same time, many employers say that they cannot find people with the skills they require to sustain and grow their businesses. But despite increasing concern about Ontario's skills gaps, very little is known about its true economic cost or the specific occupations, skills, and educational credentials that employers and individuals need to thrive in the emerging economy. Stakeholders require better information to take strategic, targeted action to address the worsening skills challenge.

ADVANCING THE SKILLS DISCUSSION

Changes in the labour market and the nature of work are outpacing changes in education and skills training. As previous Conference Board research has shown, Ontario's population is aging and growth rates are slowing, contributing to looming labour shortages.[1] Moreover, technological advances in the workplace are raising skills and knowledge requirements, while many Ontarians are receiving insufficient or poorly matched education and skills training. These trends lead some observers to warn of a future of "people without jobs" and "jobs without people."[2] Miner projects that by 2016, without corrective measures, Ontario will have "almost 450,000 unskilled workers" who cannot find employment, combined with "500,000 skilled vacancies."[3]

Ontario's skills gaps have far-ranging economic, social, and individual consequences. Businesses could find themselves without the people they need to generate new economic value and contribute to employment

1 See The Conference Board of Canada, *Ontario's Looming Labour Shortage Challenges*.

2 Miner, *People Without Jobs, Jobs Without People*, 11.

3 Ibid., 11.

and tax revenues. At the same time, many Ontarians could find themselves without employment and the economic and social benefits that it provides.

In fact, the economic and social impacts of skills gaps are already being felt. The Conference Board estimates that skills gaps and mismatches are costing Ontario billions of dollars in foregone GDP and tax revenues. Over the past two decades, Ontarians who have only some post-secondary education or less are increasingly less likely to find employment. Had these individuals been adequately educated, trained, and employed, Ontario could have gained an estimated $24.3 billion in additional GDP, as well as $4.4 billion in federal tax revenues and $3.7 billion in provincial tax revenues, annually. This is money that could provide substantial economic and social benefits to Ontarians, including reducing public debt or investing in much-needed infrastructure improvements. Consider, for example, that a proposed expansion of public transit in the Greater Toronto Area would require an estimated $2 billion annually over 25 years to complete.[4]

The Conference Board of Canada estimates that skills gaps and mismatches are costing Ontario billions of dollars in foregone GDP and tax revenues.

In addition to the impacts of skills *shortages*, there are also lost opportunities due to skills *mismatches*. Although Ontarians are among the most highly educated in the OECD—with many having obtained post-secondary diplomas and degrees—too few are employed in occupations that utilize the full extent of their education and skills. In some cases, individuals have been educated and trained in areas for which there is little labour market demand. In other cases, individuals may work for employers who are unsure about how to engage the full range of their skills. Altogether, these types of skills mismatches cost Ontario's economy and workers up to $4.1 billion in foregone GDP, and $627 million in provincial tax revenues, annually. (For further details and analysis of these estimates, see Chapter 3 and Appendix A.)

FROM UNDERSTANDING TO ACTION

Ontario cannot afford the skills gaps it faces. Overcoming major social and economic challenges—including rising demand for and cost of health care, increased global competition, and persistent public debt—demands a highly skilled population, strong economic growth, and the benefits it brings. Improving productivity is an important component of economic growth. But, as former Bank of Canada Governor Mark Carney has noted, Canada has "a productivity deficit versus virtually every other advanced economy—our productivity is 70 per cent of the U.S.—and we have massive opportunities."[5] To raise productivity, and realize these opportunities, Ontario companies must become more innovative—depending, in turn, on better access and utilization of highly skilled, creative, and motivated employees.

Action by business, government, education, and students is needed. A strategic approach must build on a clear understanding of the shape of the issue and the range of options available to address it effectively. This report contributes to that understanding by:

- highlighting the urgency of Ontario's skills challenges;
- estimating the economic consequences of a failure to address skills gaps;
- clarifying where skills mismatches exist, what is driving them, and where action should be focused; and
- identifying strategies for business, government, educators, and students that would help to alleviate Ontario's skills gaps.

REPORT METHODOLOGY AND STRUCTURE

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

- a survey of 1,538 Ontario employers to solicit their views about their skills needs and issues (see box "About the Conference Board's Ontario Employer Skills Survey");

4 CBC News, "Ontario Transit Proposal."

5 Cattaneo, "Invest or Risk Missing 'Massive Opportunities.'"

About the Conference Board's Ontario Employer Skills Survey

The Conference Board of Canada conducted an online survey of 1,538 Ontario employers from April to May 2013. Employers were asked to respond to questions detailing how skills needs have changed in their organizations, the impacts of these skills gaps on their businesses, what skills and post-secondary credentials they will require in the years ahead, and what strategies they undertake to address their skills needs and issues.

Survey participants were identified and contacted with the assistance of sector representatives of Ontario's Workforce Shortage Coalition and 22 Ontario colleges. Responses were obtained from firms of all sizes, in a wide range of sectors, and from regions across Ontario. Large firms (500 or more employees) made up 20 per cent of the sample, while small and medium-sized enterprises (SMEs) constituted 78 per cent. The remaining 2 per cent were self-employed respondents. This differs from the make-up of the Ontario economy, in which only 0.3 per cent are large firms and 99.7 per cent are SMEs. Although large firms are oversampled, this has the virtue of producing results that cover a larger proportion of total employment in the province. The Conference Board estimates that the organizations surveyed employ a minimum of 765,000 Ontarians—or 13.5 per cent of the provincial labour force. The actual number may be significantly higher due to responses from some very large firms with more than 20,000 Ontario-based employees each that did not provide precise data on employee numbers.

Employer respondents represent a cross-section of industry in Ontario, including primary industries (e.g., mining, agriculture, and forestry); manufacturing (e.g., machinery, textiles, and food); and services (e.g., accommodation, food services, and financial services). The industry sectors with the highest number of responses are listed below:

1. Manufacturing (239)
2. Construction (146)
3. Professional, Scientific, and Technical Services (144)
4. Health Care and Social Assistance (125)
5. Educational Services (79)
6. Acccommodation and Food Services (68)
7. Finance and Insurance (58)
8. Forestry and Forest Industries (49)
9. Public Administration (44)
10. Retail Trade (43)

The survey provides an important lens into the skills needs and concerns of a wide swath of Ontario industry. However, it is important to note that because the sample population is not statistically representative of Ontario's employer base, the survey does not provide a complete picture of skills issues in the province. The results do provide important insights into the kinds of challenges firms face, and allow us to characterize and qualify the nature of these skills challenges, which other analyses have quantified to some extent.

- an analysis of the economic impacts of skills gaps;
- a review of relevant Ontario and Canadian documents and data sources to supplement original survey findings and economic analysis;
- 27 in-depth telephone interviews with survey respondents to more fully explore skills needs and issues and to provide qualitative findings for the series of industry "skills snapshots" presented throughout the report;
- 7 in-depth telephone interviews with experts on Ontario's skills and labour market needs to help provide context and situate research findings;
- a consultation session with student leaders of the College Student Alliance, conducted May 11, 2013, to gather student views on effective skills development strategies.

REPORT STRUCTURE

The remainder of the report is structured as follows. Chapter 2 examines the evidence for skills gaps in general, details the drivers of gaps, and considers the educational trends that shape the supply side of skills issues. The impacts to the economy, firms, and individuals of skills gaps are presented in Chapter 3. Chapter 4 details the particular sectors and occupations where there are skills gaps in Ontario and reveals which educational credentials employers will be looking for to fill them. Promising strategies to address skills gaps are analyzed in Chapter 5, and Chapter 6 offers recommendations to all stakeholders on how best to address skills gaps and secure Ontario's economic potential.

Chapter 2

The Shape of Skills Gaps in Ontario

Chapter Summary

- Ontario is facing major skills gaps in critical sectors of the economy—including manufacturing; health care; professional, scientific, and technical services; and financial industries.
- Mismatches between the skills and education employers need and those that employees and graduates have are growing due to technological change, demographic change, and persistent misalignment between the labour market and parts of the post-secondary education system.
- Three-quarters of surveyed employers said that skills requirements in their businesses had increased over the past decade, and another three-quarters said they will increase further over the next decade.
- A majority of respondents said that they are concerned or very concerned about employees retiring in the next decade.
- Fifty-seven per cent of Ontarians hold either a university or college credential—significantly higher than the OECD average—but the quantity and quality of graduates still lags Ontario employers' needs.

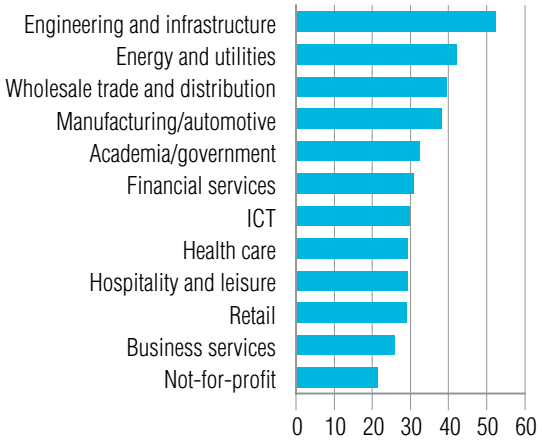
Employers in Ontario report already feeling the pinch of skills gaps, and many are concerned that the situation will worsen. They worry that they will be unable to find adequately skilled replacement employees for the many baby boomers who are beginning to retire. But exactly how big is the problem facing Ontario employers? Are employers' concerns supported by evidence of skills gaps and mismatches? And what factors are driving the skills challenge in Ontario?

This chapter outlines the broad shape of Ontario's skills challenge. It examines employers' perspectives as well as economic evidence regarding skills issues and reveals that, although not all employers face skills gaps, serious mismatches exist in some of the largest and most important sectors of Ontario's economy. We identify what is behind these skills gaps, and whether trends in education and training stack up to the challenge of meeting the province's future workforce needs.

THE SHAPE OF THE CHALLENGE

Worldwide, many employers say that skills shortages are affecting their businesses. A 2012 global survey of CEOs by Pricewaterhouse Coopers found that one in four were unable "to pursue a market opportunity or have had to cancel or delay a strategic initiative because

Chart 1
Employer Skills Concern by Industry
(percentage of respondents)



Source: Ontario Chamber of Commerce, *Ontario Chamber of Commerce 2013 Pre-Budget Submission*.

of [a lack of] talent."[1] In Canada, approximately 30 per cent of businesses indicate they face skills shortages.[2] And in Ontario, the Ontario Chamber of Commerce reports that, depending on the sector being surveyed, between 21 and 52 per cent of employers report "difficulty hiring someone with the right qualifications."[3] (See Chart 1.)

Of course, the fact that many employers *say* they face skills shortages does not mean that there is in fact a broad skills shortage challenge.[4] Some employers may have poor recruitment strategies or employment practices that attract only mediocre candidates. Additionally, there are incentives for employers to overstate the challenge if they believe other stakeholders will take steps to increase the supply of skilled labour, thereby keeping wage inflation in check and driving higher performance among existing employees who face a competitive labour market. In light of these issues, it is useful to examine evidence from non-employer sources as well, including labour market economists in the private and public sectors.

ECONOMIC EVIDENCE

Recent economic evidence shows that the magnitude of skills gaps varies by industry sector and that many employers face skills shortages. In fact, while the data show that, in the aggregate, there is presently no economy-wide labour shortage in Ontario, there is strong evidence of *skills* gaps in industries and occupations that make up a large share of total employment in the province.

While the data show that there is presently no economy-wide labour shortage in Ontario, there is strong evidence of skills gaps in industries and occupations.

This problem is common across Canada. A recent analysis from Benjamin Tal of CIBC shows that, nationally, at least 25 occupations are experiencing both "rapidly rising wages and low or falling unemployment rates"[5]—a combination of indicators that points to skills shortages. This group of occupations has an unemployment rate of just over 1 per cent and wages that are "rising by an average annual rate of 3.9 per cent—more than double the rate seen in the economy as a whole."[6] Together they constitute 21 per cent of total employment in Canada.[7] The analysis also reveals 20 occupations in Canada experiencing a surplus of workers. These occupations are characterized by higher and/or rising unemployment and decelerating wage growth. They account for 16 per cent of total unemployment and "their real wage growth was nil over the past year."[8]

At an aggregate level, relative unemployment rates and relative wages by skill level have remained fairly stable in Canada since the 1990s. This suggests that "there was enough labour to fill the required demand for all broad

1 PricewaterhouseCoopers, *Delivering Results*, 20.

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

3 Ontario Chamber of Commerce, *Ontario Chamber of Commerce*, 7

4 Interviews conducted by the Conference Board. See also Tal, *The Haves and Have Nots*, 2.

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

6 Ibid., 2.

7 Ibid., 2.

8 Ibid., 2.

skill levels."[9] However, data about job openings, job seekers, and recent labour market conditions at the occupational level show evidence of imbalances—labour shortages or surpluses—in a number of occupations. In particular, 23 occupations show evidence of shortages, mainly in high-skill areas (including some areas of business, finance, and administration; natural and applied sciences; and health occupations).[10] Together these constituted 15 per cent of employment in 2010.[11] At the other end of the spectrum, 51 occupations show signs of surpluses, mainly in low-skill areas (including some areas of manufacturing and primary production), constituting 25 per cent of employment in 2010.[12]

In particular, 23 occupations show evidence of shortages, mainly in high-skill areas. Together these constituted 15 per cent of employment in 2010.

Both analyses focus on the national picture: The precise mix of occupations and the severity of shortages and surpluses differ province by province. For example, skills and labour shortages in certain sectors are much more acute in Alberta than they are in Ontario. Nevertheless, the occupations facing the most severe skills shortages nationally—i.e., occupations in health, mining, advanced manufacturing, and business services—are very prominent in the Ontario economy. The question of precisely where skills gaps are projected to become most acute in Ontario is taken up in greater detail in Chapter 4.

WHAT IS DRIVING SKILLS GAPS IN ONTARIO?

If skills gaps were only a temporary phenomenon brought about by the regular economic cycle, there would be less reason for concern. The reality, however, is that skills gaps in Ontario are being driven by fundamental, long-term trends in society and the economy—most notably, changes to the province's industrial and technological profile—that create a need for a more skilled and educated workforce. Down the road, the challenge of *skills* shortages will be compounded by *labour* shortages, as many Ontarians retire and population growth slows.

INDUSTRIAL AND TECHNOLOGICAL CHANGE

The nature of work is changing in ways that make skills even more important than in the past. Over the last century, Ontario's economy has transitioned from being primarily agricultural, to largely manufacturing, and finally to one that is 80 per cent focused on services—giving rise to what some call the "creative economy."[13] And just as the industrial mix has changed, technological changes in all areas of the economy have created new skills and knowledge requirements. Indeed, in a 2009 report, Martin and Florida suggest that up to 70 per cent of new jobs in Canada will require a post-secondary credential of some kind. Another report suggests that this figure could be as high as 77 per cent.[14] In either case, the conclusion is that skills and knowledge requirements for employment are increasing.

Evidence about increasing skills requirements are reflected in responses to the Conference Board's Ontario Employer Skills Survey. (See charts 2 and 3.) About three-quarters of employers said that, over the past decade, skills requirements in their workplaces had increased to a moderate or significant extent—fully a third reported that they had increased to a significant extent. Looking to the next 10 years, about three-quarters of employers expect that skills requirements will continue to increase to either a moderate (43 per cent) or significant (33 per cent) extent.

DEMOGRAPHICS

Although recent data suggest that labour shortages are not yet occurring, demographic trends point to a future in which they will become a problem for Ontario. A

9 Human Resources and Skills Development Canada, *Canadian Occupational Projection System 2011 Projections*, 6.

10 Ibid., 11–12.

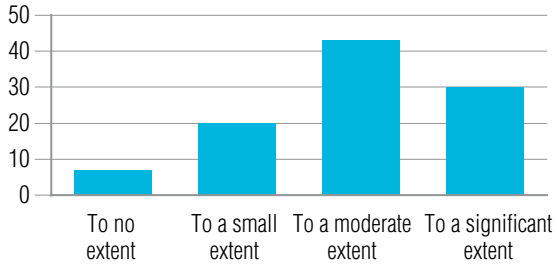
11 Ibid., 12.

12 Ibid., 11, 15.

13 Martin and Florida, *Ontario in the Creative Age*, 9.

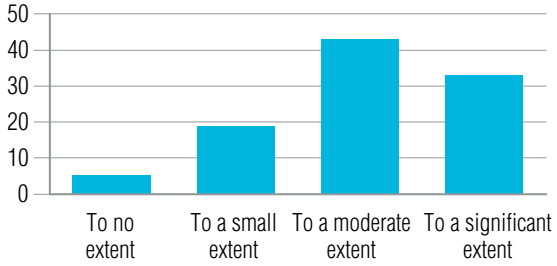
14 Miner, *People Without Jobs, Jobs Without People*, 1.

Chart 2
Have Skills Requirements Increased Over the Past Decade?
(percentage of respondents)



Source: The Conference Board of Canada.

Chart 3
Will Skills Requirements Increase Further Over the Next Decade?
(percentage of respondents)

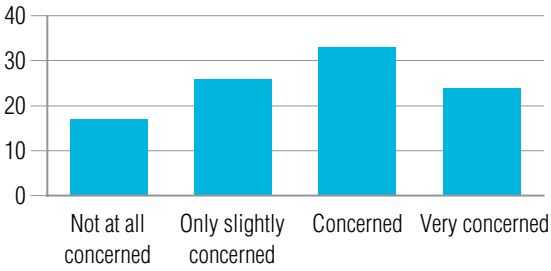


Source: The Conference Board of Canada.

recent Conference Board projection of labour supply and demand in Ontario concluded that the province could face a labour shortage of 364,000 workers by 2014 and a shortage of 564,000 by 2030.[15] The key drivers of this projection are an aging population and slowing population growth.[16] In short, employers will have fewer candidates for jobs because population growth and immigration are not keeping pace with the number of workers expected to retire in the years ahead.[17] These demographic trends have implications not only for labour supply, but also for skills supply. Many employers will be drawing from a small pool of workers to replace the skilled and experienced workers they will lose to retirement.

In fact, results from the Conference Board's Ontario Employer Skills Survey show that employers are already concerned about looming retirements. A majority of employers said that they are concerned or very concerned about employees retiring in the years ahead—including 24 per cent who reported being "very concerned." (See Chart 4.) Interviews with employers confirm these results and point to the challenges they pose for business performance. An interviewee from HydroOne, for example, expressed concern about the impact that retirements will have on the company's workforce: 36 per cent of Hydro One employees are eligible to retire in the next five years.[18] Powering future economic growth requires a new cohort of skilled and capable professions to replace these retirees.

Chart 4
Employers' Concerns About Retirements in the Years Ahead
(percentage of respondents)



Source: The Conference Board of Canada.

Demographic change—particularly an aging population—affects not only the supply of skills, but also the demand for certain services whose delivery requires skilled people. In particular, health-related occupations are among those most likely to experience skilled labour shortages, because as the population ages the demand for health care and health services rises. The health sector, then, experiences something of a double whammy—grappling with skills supply shortages to sustain operations while needing to attract additional skilled workers in order to grow to meet the rising demand for its services among the elderly.

15 The Conference Board of Canada, *Ontario's Looming Labour Shortage Challenges*, 5.

16 Ibid., 1.

17 Ibid., 6.

18 Hydro One, *Hydro One Announces Women.*

EDUCATION AND TRAINING TRENDS

The preceding analysis shows that there are skills gaps in certain sectors of Ontario's economy and that fundamental demographic and technological drivers will make matters worse. Addressing the skills challenge will depend critically on how well education and training is delivered to meet labour market needs. Data about trends in education and training in Ontario are presented below, and provide context for the discussion about skills mismatches in the chapter that follows.

EDUCATIONAL ATTAINMENT

Ontario has a highly skilled and educated population, and all signs point to an even more highly educated population in the future:

- Ontario has the highest aggregate post-secondary education completion rate in Canada.[19] Thirty per cent of Ontarians have a university credential—the highest proportion in Canada—and 27 per cent have a college credential.[20]
- Ontario's level of post-secondary education is also considerably higher than the OECD average. In 2010, the OECD average for tertiary educational attainment was 30 per cent, compared with 57 per cent in Ontario.[21]
- Educational attainment has been increasing over time. About 57 per cent of Ontarians aged 25 to 64 had some level of tertiary education in 2010, compared with about 45 per cent in 2000.[22]
- Post-secondary education among all Canadians is anticipated to increase. Human Resources and Skills Development Canada (HRSDC) projects that of the 6.3 million job seekers expected to enter the labour market in the next 10 years, 71 per cent will have a post-secondary credential.[23]

19 Norrie and Lin, *Postsecondary Education*, 10.

20 Canadian Education Statistics Council, *Education Indicators in Canada*, 31.

21 Ibid.

22 Ibid, 33.

23 Human Resources and Skills Development Canada, *Canadian Occupational Projection System (COPS).*

Despite such strong performance, Ontario is experiencing skills challenges. One issue appears to be that although Ontario does well in educating a large proportion of its population, a sizable minority is being neglected. Moreover, despite positive trends in education and training, skills demands in certain areas are still outpacing supply. Additionally, there is evidence of misalignment between credentials and labour market needs. HRSDC notes that 58.7 per cent of the new job seekers in the next decade with post-secondary credentials will not work in fields that "usually require post-secondary education" as a result of "occupational mismatch."[24]

Employers who employ "overqualified" individuals may want to explore ways that these individuals can contribute to innovation and growth in their organizations.

While Ontario's educational performance is strong, and further efforts should be made to continue to produce a highly educated and skilled population overall, more attention may be required to the kinds (not just the levels) of education acquired. At the same time, employers who employ "overqualified" individuals may want to explore ways that these individuals can contribute to innovation and growth in their organizations. In short, strategies for better alignment and utilization are required. These issues are considered in greater detail in the following chapters.

EMPLOYER TRAINING

One of the most striking aspects of the skills challenge relates to employers' investments in employee training. Just as concerns about skills shortages are on the rise, employer investments in learning and development are falling. In 2011, the Conference Board found that direct learning and development expenditures had fallen to an average of $688 per employee—a 13 per cent decrease since 2008.[25] The recession can only partly explain the

24 Ibid.

25 Lavis, *Learning and Development Outlook 2011*, ii.

drop—learning and development expenditures have fallen by nearly 40 per cent since 1993, with most of the decline occurring between 2004 and 2010.[26]

Some employers may be concerned that higher spending on training and development will put them at a disadvantage in relation to competitors who do not incur these costs. But spending on training and investment is not simply a cost; it is an investment that can contribute to better employee and organizational performance. One expert notes that to do a job well there will always be a need for on-the-job training to learn the organization's specific skills and systems, regardless of the college or university training employees have. If employers want to avoid many of the negative impacts associated with skills shortages, this is an area where their own performance must improve.

26 Lavis, *Learning and Development Outlook 2011*, 13.

CONCLUSION

The evidence shows that, although Ontario does not currently have a *labour* shortage and post-secondary educational attainment is very strong, there are *skills* gaps in important areas of the economy, owing largely to changes to the province's industrial and technological profile. Moreover, given longer-term demographic trends, skills gaps will widen and labour shortages may begin to emerge. As such, the province cannot afford a failure to maximize its human capital potential through insufficient or poorly aligned training and education. Even with Ontarians' high level of post-secondary education, more is needed, along with better efforts to align skills development with skills requirements. As the next chapter shows, failure to take action on skills gaps is having, and could continue to have, enormous impacts on the economy, firm performance, and individual economic well-being.

Chapter 3

The Impact of Skills Gaps in Ontario

Chapter Summary

- The Conference Board of Canada estimates that skills gaps associated with low educational attainment among many Ontarians cost the provincial economy up to $24.3 billion annually in foregone GDP—as well as $4.4 billion in federal tax revenues and $3.7 billion in provincial tax revenues.
- Underutilization of the skills of highly educated Ontarians may cost the province nearly $4.1 billion in foregone GDP.
- Firm-level impacts of skills gaps include lower productivity, sales, and profits; lost opportunities; inconsistent product quality; higher costs; and weaker innovation capacity.
- Individual-level impacts of skills deficits include higher unemployment, lower wages, and lower rates of labour force participation.

Skills gaps have major consequences for individuals, firms, and the Ontario economy as a whole. Not only are there negative impacts from skills *shortages*, there is also lost opportunity due to skills *mismatches*. While Ontarians have high rates of post-secondary education, a significant part of this education is underutilized, either because individuals are highly trained in areas for which there is little labour market demand or because some employers are unfamiliar with or unsure about how to engage the full range of their employees'skills. Altogether, these types of skills mismatches may be costing Ontario's economy and workers billions in lost revenues and wages.

ECONOMIC IMPACTS

The evidence suggests that Ontario's economy is experiencing major performance gaps due to misalignment between employers' skills needs and the educational and skills attainment of key segments of the labour force.

LEAVING MONEY ON THE TABLE: THE ECONOMIC IMPACT OF LOW EDUCATION AND SKILLS ATTAINMENT

Although Ontarians as a whole are much better trained and educated now than in the past, there is still a sizable cohort of individuals who do not have the necessary skills or competencies to participate effectively in a more highly skilled economy. Many workers whose skills levels would have been adequate in the past are now challenged to find and maintain regular employment even as employers struggle to find skilled employees.

Economic analysis by the Conference Board shows that those with a high school education or some college and/or university—but who have not obtained a diploma or degree—are 10 percentage points less likely to be employed today than their similarly qualified peers two

decades ago. Between 1990 and 2012, the employment rate for individuals whose highest educational attainment is only "some PSE or less" dropped from 58.4 to 47.9 per cent. To be sure, there are many possible reasons why those with only some PSE or less are participating in the workforce at lower rates, and higher educational attainment and skills levels are no guarantee that all of these individuals would find and maintain employment to close the performance gap. Nevertheless, the trend toward more highly skilled workplaces and lower participation among this cohort reveals a potential performance gap that cannot be ignored.

The Conference Board estimates that the economic impact of the lower employment rates of these less-skilled workers may be as high as $24.3 billion annually. In other words, had more people in this cohort of workers attained the higher education and skills necessary for employment in today's economy and assuming that, as a result, the employment rate for this cohort had returned to 1990 levels, the contribution to GDP could amount to as much as $24.3 billion. This GDP gain would yield an additional $4.4 billion in federal tax revenues and $3.7 billion in provincial tax revenues annually.[1]

MISSED OPPORTUNITIES: THE IMPACT OF SKILLS MISMATCHES

While some Ontarians lack the skills and education to participate in the labour market, others find that the education and skills they have obtained exceed the requirements for the occupations they hold. Conference Board analysis confirms that there are many employees who are underemployed and whose skills are being underutilized in the economy. How much better could the economy fare if these individuals were employed in jobs that matched their education and skills profiles?

The Conference Board estimates that skills mismatches, in the form of the underutilization of skills, are costing the province as much as $4.1 billion in foregone GDP. If all employees were in occupations that required the higher levels of education that they have obtained, GDP in Ontario would be lifted by $4.1billion, generating additional federal tax revenues of $747 million and provincial tax revenues of $627 million annually.

1 See Appendix A: Explaining the Economic Analysis.

Jobs that match the education and skills levels of graduates cannot be created out of thin air, so the full impact may not be achievable in reality. However, the analysis reveals two important insights. First, it shows that some students' educational paths—as academically rigorous and demanding as they may be—are misaligned with labour market realities. While there are very good reasons to pursue degrees and diplomas for non-economic reasons—such as to improve critical thinking, citizenship, culture, and non-economic aspects of well-being—there may not always be jobs that align with these educational paths. In short, there may be economic waste even if such educational experiences produce great value in non-economic terms.

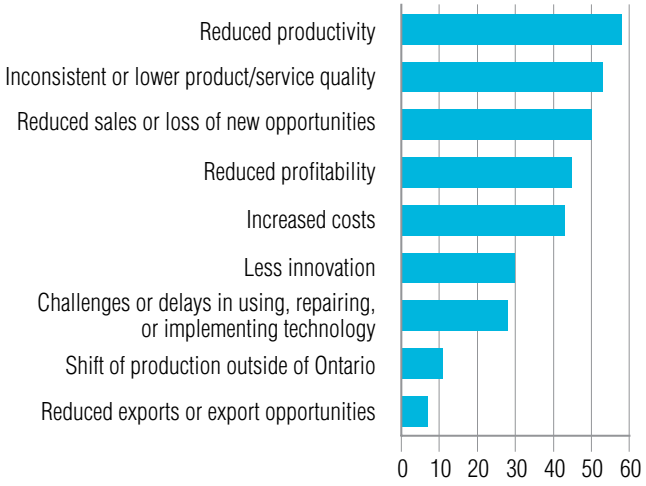
While some Ontarians lack the skills and education to participate in the labour market, others find their education and skills are not well aligned for the jobs they hold.

Second, calculating the impact of the underutilization of skills may highlight a weakness on the part of business with respect to innovation and productivity. Successful innovation—drawing on knowledge to implement new or improved products, processes, or services that generate economic or social value—requires doing things differently. This means that, although routine occupations have certain skills needs, innovation requires employees with skills that can disrupt and exceed the routine. Consequently, evidence of underutilization of skills may in fact be an indirect indicator of a business or an industry that is not realizing its innovation potential. Given the chronic underperformance in business innovation in Canada and Ontario over the past two decades, it would not be surprising to learn that many businesses are not providing employees with opportunities to exercise their skills and realize the firm's innovation potential.

FIRM-LEVEL IMPACTS

Skills mismatches also affect individual businesses. Results from the Conference Board's employer survey reveal concerns about a wide range of potential impacts. (See Chart 5.) A majority of employers expect that, if they are unable to find or develop employees with the

Chart 5
Anticipated Firm-Level Impacts of the Skills Gaps
(percentage of respondents)



Source: The Conference Board of Canada.

skills they require, they will likely experience lower productivity (58 per cent) and inconsistencies in the quality of the products or services they produce (53 per cent). About half of all firms also anticipate poorer sales or loss of opportunities (50 per cent), lower profitability (45 per cent), and increased costs (43 per cent). Finally, just under a third of businesses expect negative impacts to their innovation capacity, including weaker innovation performance (30 per cent) and challenges in implementing, using, or repairing technology (28 per cent). Given Ontario's and Canada's already weak innovation performance, it is troubling to learn that this many businesses expect the situation could worsen for their organizations.

A handful of respondents noted that skills gaps may prompt them to be more, not less, innovative and more likely to invest in additional training for employees to avoid some of the other potential impacts. Thus, some employers recognize that they share responsibility for addressing the problem. But as the previous chapter revealed, the overall trend in employers' investments in learning and development suggests that few organizations have reached the same conclusion.

Some employers are concerned that higher spending on training and development will put them at a disadvantage in relation to competitors who do not incur these costs. But spending on training and investment is not simply a cost; it is an investment that can contribute to better employee and organizational performance. One expert interviewee noted that to do a job well there will always be a need for on-the-job training to learn the organization's specific skills and systems, regardless of the college or university training employees have. If employers want to avoid many of the negative impacts associated with skills shortages, this is an area where their own performance must improve.

INDIVIDUAL IMPACTS

The skills mismatch also has significant implications for the financial well-being of individuals. Individuals with lower levels of education and training tend to have greater difficulty finding and maintaining employment and earn lower wages on average than those with higher educational attainment and skills.

EMPLOYMENT PROSPECTS

In general, employment prospects increase with higher levels of educational attainment. As Table 1 shows, there is only a 55 per cent employment rate for those with less than a high school diploma. But employment rates steadily increase as higher educational credentials are obtained. Holding university degrees or college diplomas offers the best opportunities for employment, at 82 and 81 per cent, respectively.[2] However, unemployment levels remain persistently higher for Aboriginal individuals, indicating that education alone is not enough and that other strategies may be needed to boost workforce participation among under-represented groups.

2 The lower employment rate for trades (77 per cent) relative to college and university graduates might be explained by the fact that the 2009 data reflect the effects of recession, which tend to affect the more trades-dependent construction and building sectors particularly hard. In fact, emerging from the recession, jobs growth between January 2011 and January 2012 has been highest for those in the "trades, transport and equipment operators and related occupations" category. Ministry of Training, Colleges, and Universities, *Ontario Labour Market Statistics for January 2012*, 2.

Table 1
Employment and Unemployment Rates in Canada by Educational Attainment
(per cent)

	Employment Rate, 2009	Unemployment Rate, 2006 Census			
	Total	Total	Male	Female	Aboriginal
Less than high school	55	11.1	10.8	11.5	22.5
High school or equivalent	72	7.3	7.2	7.3	12.8
Apprenticeship or trades certificate or diploma	77	6.2	6.1	6.3	13.9
College diploma	81	5.0	4.9	5.0	9.9
University degree	82	4.5	4.1	5.0	6.4

Sources: Statistics Canada; Berger and Parkin, "The Value of a Degree."

Not only do higher education credentials improve employment prospects, they also improve an individual's ability to weather economic shocks and downturns. For example, an estimated 81 per cent of the jobs lost during the recent recession affected those without post-secondary skills.[3] Moreover, Ontario labour market statistics show that between January 2012 and January 2013, "[all] the job gains were concentrated among those with postsecondary education."[4] Employment increased by 136,700 for adults with university degrees and by 29,800 for those with a certificate or diploma.[5] Meanwhile, for adults without any post-secondary credentials whatsoever, 85,400 jobs were lost between January 2012 and 2013.[6]

The long-term unemployment rate—defined as unemployment that persists longer than 27 weeks—confirms the relevance of skills to employment. Ontario's long-term unemployment rate remains above pre-recession levels. In January 2013, 142,000 Ontarians had been out of work for more than 27 weeks, compared with 51,200 in January 2008, and long-term unemployment now accounts for 22.6 per cent of total unemployment in the province (up from 11.4 per cent pre-recession).[7] Although long-term unemployment rates generally take longer to improve following recessions, Phillipe Bergevin of the C.D. Howe Institute notes that the presence of "a large number of individuals who have persistent difficulties rejoining the workforce" probably indicates that "their skills are not well suited to the new economic environment."[8]

Canadians with higher education and skills training earn higher incomes than those with only a high school education or less. Over 40 years, those with higher education can expect significant earnings premiums.

RETURN ON EDUCATIONAL INVESTMENT

Canadians with higher education and skills training earn higher incomes than those with only a high school education or less. In 2005, the median income for Canadians with less than a high school diploma was $32,029, while for college graduates it was $42,937. For university graduates, it rose to $56,048. (See Table 2.) Over 40 years, those with higher education can expect significant earnings premiums.

3 Ontario's Workforce Shortage Coalition, *Advanced Workforce Skills*, 2.

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

5 Ibid.

6 Ibid. As of January 2013, the unemployment rate for adults without post-secondary credentials was 8.6 per cent, compared with 5.6 per cent for those with post-secondary credentials.

7 Ibid.

8 Bergevin, *Who Is Still Standing in Line?* 2.

Table 2
Median Earnings and Earnings Premiums by Educational Attainment ($)

	Median earnings for full year, full-time earners aged 25–64, 2005	Earnings premium relative to a high school graduate over 40 years
Less than high school	32,029	n.a.
High school	37,403	n.a.
Trades or apprenticeship	39,996	103,720
College	42,937	221,360
University below bachelor	47,253	394,000
Bachelor	56,048	745,800
Post-bachelor (e.g., MA, PhD)	66,535	1,165,280

n.a. = not available
Source: Berger and Parkin, "The Value of a Degree."

However, a college or university degree is not a guarantee of higher earnings. According to research conducted by the OECD and Statistics Canada, there is a uniquely Canadian "paradox" in that, among OECD countries, "Canada has had the highest percentage of tertiary-educated workers who earned less than half of the national median employment income."[9] In 2006, nearly 18 per cent of university-educated and 23 per cent of college-educated adults aged 25 to 64 earned less than half the national median employment income.[10] Statistics Canada notes that the same findings apply to Ontario.[11] This is a reminder that the challenges are as much about a skills *mismatch* as they are about skills *gaps*. As Jim Stanford notes, "[I]f nothing is done, you will have a lot of people out there who want meaningful work and have invested large amounts of time and money in their education and still find themselves unable to use their skills."[12]

9 OECD, *Education at a Glance 2012*, 146.

10 Zeman, McMullen, and de Broucker, *The High Education/Low Income Paradox*, 7.

11 Ibid., 7.

12 Jim Stanford (economist, Canadian Auto Workers), interview by Christa Ross, March 20, 2013.

Data on earnings premiums for post-secondary graduates across a range of fields provide another lens into the underutilization of skills. Although there is some earnings premium for virtually all fields of higher education up to the bachelors level, the variation across fields of study is striking, further suggesting that there is an underutilization of skills in some areas of the economy that leads to significant economic costs. A working paper from the Department of Finance Canada shows that some fields of study achieve significant returns on average at the bachelors level, including:

- engineering (12.6 per cent for women; 12.1 per cent for men);
- math and physical sciences (13.6 per cent for women; 11.1 per cent for men);
- health professions (14.4 per cent for women; 9.7 per cent for men);
- commerce, management, business, and administration (14.2 per cent for women; 12.2 per cent for men).[13]

In fact, graduates in commerce, management, business, and administration who complete a master's degree in their field earn an additional 19.5 per cent (women) or 16.3 per cent (men) over and above the bachelor's premium. By contrast, rates of return in other fields are much lower, including:

- humanities and related disciplines (3.3 per cent for men);
- fine and applied arts (3.9 per cent for women); and
- education (5.0 per cent for men).[14]

Remarkably, men who pursue a master's degree in a humanities or related discipline actually experience a 6.2 per cent loss on the investment in additional education. In some ways, these findings may be a reflection of the underutilization of skills challenge described above. That is, the lower earnings of graduates in certain fields may be the individual-level manifestation of the $4.1 billion gap in GDP experienced due to the underutilization

13 Stark, *Which Fields Pay, Which Fields Don't?*

14 Ibid.

of skills—what would be earned if all employees were in occupations that required the higher levels of education that they have obtained.

Of course, the evidence shows that individuals with higher education and skills fare better in the labour market than those without higher education and skills training. When individuals' education and training are aligned with the needs of the labour force, there are sizable benefits for them, the organizations that employ them, and the economy as a whole. The challenge is in finding the right alignment between labour market needs and individuals' educational paths.

CONCLUSION

A failure to align skills with labour market needs has negative implications for Ontario's economy, businesses, and individuals. Achieving a better alignment would bring improvements for all. But where are the gaps, exactly? Which occupations, skills, and educational credentials will be needed in the coming years? The next chapter addresses these questions before turning to consider the strategies that employers, government, educators, and students can use to address skills gaps.

Chapter 4

The Occupations, Skills, and Credentials Employers Need

Chapter Summary

- Skills shortages affect many sectors of Ontario's economy, including those that account for almost 40 per cent of employment: manufacturing; health care; professional, scientific, and technical services; and financial industries.
- To fill their skills needs, respondents to the Conference Board's Ontario Employer Skills Survey said that they will be looking for employees with two- or three-year college diplomas (57 per cent), four-year degrees (44 per cent), and trades training (41 per cent).
- The fields of study that will be in highest demand include science, engineering, and technology; and management, business, and finance.

Ontario faces skills challenges that have had negative impacts on the economy, businesses, and individuals. Given underlying demographic and economic trends driving skills gaps, the impacts will worsen without clear and concerted action by a range of stakeholders. But where is action needed most? Which occupations are experiencing the greatest challenges? In which parts of the province are the challenges most pressing? And what kinds of skills, training, and credentials are required to address the problems? This chapter takes a closer look at these questions in order to provide a stronger and clearer foundation for a discussion of targeted strategies to address Ontario's skills challenge.

OCCUPATIONS AND SKILLS IN DEMAND—A CURRENT SNAPSHOT

At an economy-wide level, the evidence for current *labour* shortages is weak. Indeed, recent data show that, on average, Ontario has eight people unemployed for every job vacancy. However, labour market statistics at the sector and occupational levels reveal a more nuanced picture of labour tightening in particular sectors. (See Chart 6.)

The health care and social assistance sector in Ontario has an unemployment-to-vacancy ratio of only 1.2—the smallest of any sector and clear evidence of a very tight labour market.[1] Moreover, this reflects a decline from the already low ratio of 1.5 recorded in 2011. These results are in line with observations that health-related occupations will be in high demand as Ontario's population

1 Unemployment-to-job vacancy ratios—the number of people actively looking for one job opening in a given industry—are tracked by Statistics Canada.

ages.[2] Other sectors exhibiting low unemployment-to-job vacancy ratios include finance and insurance, wholesale trade, and transportation and warehousing.

Nearly every sector has experienced some labour tightening over the past year. Occupations in the arts, entertainment, and recreation sector, for example, had a high ratio of 8 unemployed individuals per job vacancy in 2012, but this represents an almost 50 per cent reduction in the ratio since 2011, when it sat at 15. Similarly, manufacturing had the second-highest at just over 6, but this is down from a ratio of over 8 in 2011.

Tal's analysis (see Chapter 2) corroborates the evidence that skills shortages are present in economically important sectors of the economy. Among the 25 occupations with skills shortages that constitute 21 per cent of total employment in Canada, Tal found the highest skills shortages in "health-related occupations, the mining industry, advanced manufacturing, and business services."[3] (See box "25 Occupations Showing Signs of Skills Shortages in Canada.")

We see signs of skills gaps in a variety of sectors, including manufacturing; health care; professional, scientific, and technical services; and financial industries.

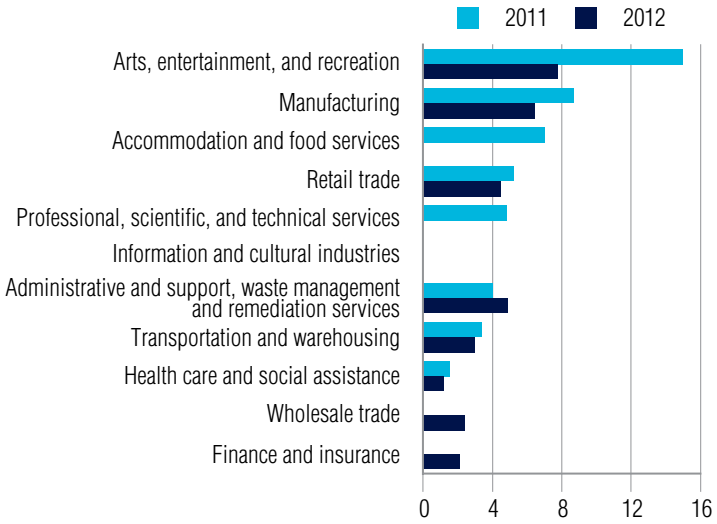
Putting the evidence together, we see signs of skills gaps in a wide variety of sectors in Ontario. However, weak labour market information makes it very difficult to quantify precisely how serious the skills gaps are in these areas. Improving systems of labour market information is therefore a priority for governments. Still, skills gaps are evident in sectors that account for 38 per cent of Ontario employment: manufacturing; health care; professional, scientific, and technical services; and financial industries.[4] (See box "Skills Gaps in Major Sectors.")

2 Statistics Canada, *Job Vacancies, Three-Month Average Ending in December 2012*.

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

4 Ministry of Training, Colleges, and Universities, *Ontario Labour Market Statistics for January 2012*, 8.

Chart 6
Ontario's Unemployment-to-Job Vacancy Ratios by Sector
(ratio of unemployed to job vacancies, per cent)



Note: Missing bars indicate areas where data are considered too unreliable to be published.
Sources: Statistics Canada, CANSIM Table 284-0004; The Conference Board of Canada.

25 Occupations Showing Signs of Skills Shortages in Canada

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

Source: Tal, *The Haves and Have Nots*, 4.

Skills Gaps in Major Sectors

Economic and labour market statistics point to skills gaps in four sectors that together make up 38 per cent of Ontario employment: manufacturing; health care; professional, scientific, and technical services; and financial industries.[1] The nature of skills issues in these sectors is briefly explored below.

MANUFACTURING

Manufacturing is Ontario's second-largest employer, employing about 781,000 people.[2] Since the recession, it has become common to think about manufacturing as a sector with high unemployment. Unemployment persists, but largely in areas of lower-skilled manufacturing. In areas of advanced and emerging manufacturing, there are skills shortages. A labour market study conducted by a Southwestern Ontario workforce training board shows that skills shortages are threatening business growth in a wide range of manufacturing sectors, including "automotive; aerospace; communications and electronics; along with emerging opportunities in ship-building; mining; and oil and gas production."[3]

HEALTH CARE

The health care and social assistance sector is Ontario's third-largest employer, employing about 758,000 people.[4] The sector shows signs of skills gaps in some areas. A 2012 report by the Ontario Ministry of Labour notes that health care employers "face recruitment and retention challenges, an aging workforce, a shortage of skilled professional staff, and an increase in casual and part-time workforce."[5] Some estimate there is already a shortfall of nurses, masked only by "delayed retirements and heavy workloads"[6]—a shortage that is worse in rural and northern areas.[7] A labour market report by Dietitians of Canada to the Senate Standing Committee on Human Resources, Skills and Social Development and the Status of Persons with Disabilities notes that "[d]ietitians have reported many difficult-to-fill vacancies, especially in rural and remote areas."[8]

PROFESSIONAL, SCIENTIFIC, AND TECHNICAL SERVICES

The professional, scientific, and technical services sector is Ontario's fourth-largest employer, employing about 567,000 people.[9] According to Industry Canada, the sector includes a wide range of industries whose production processes "are almost wholly dependent on worker skills" and that are primarily engaged in selling expertise.[10] These include legal services, architectural and engineering services, scientific and technical consulting, advertising services, and others.[11] Given the high degree of skills and education needed for these occupations, it is no surprise that many are projected to face shortages in the coming years. For example, a recent report reveals a shortage of experienced engineers that is becoming "more serious" in Ontario, particularly in the areas of aerospace and construction.[12]

FINANCIAL INDUSTRIES

The financial industries sector (finance, insurance, real estate, and leasing) is Ontario's sixth largest employer, employing about 480,000 people.[13] Employers in this sector already experience skills gaps in a number of areas, with the greatest shortages in areas that "require significant quantitative sales capabilities—e.g., account management, accounting and actuarial, credit risk and compliance, financial analysts/planners/advisors and technical specialists."[14] One financial institution human resources director observed that "there just isn't enough talent to meet our current demand. Key positions are incredibly hard to fill—we currently have a 37 percent vacancy [rate] in key roles and these have been vacant for a long time."[15]

1 Ministry of Training, Colleges, and Universities, *Ontario Labour Market Statistics for January 2012*, 8.

2 Ibid., 8.

3 Southwestern Ontario, *Report Indicates Region's Manufacturing Sector Faces Skills Shortage*.

4 Ministry of Training, Colleges, and Universities, *Ontario Labour Market Statistics for January 2012*, 8.

5 Ministry of Labour, *Health Care Sector Plan 2012–13*, 4.

6 Canadian Federation of Nurses Unions, *The Nursing Workforce*, 3.

7 Ibid., 3.

8 Dietitians of Canada, *Fixing the Skills Gap*, 2.

9 Ministry of Training, Colleges, and Universities, *Ontario Labour Market Statistics for January 2012*, 8.

10 Industry Canada, *Canadian Industry Statistics*.

11 Ibid.

12 Klein, *Engineering Shortages*.

13 Ministry of Training, Colleges, and Universities, *Ontario Labour Market Statistics for January 2012*, 8.

14 Deloitte, *Talent Matters*, 21.

15 Ibid., 21. Toronto's financial industry alone will require about 1,980 new entrants into the workforce each year. At the same time, the industry faces a coming "exodus" of retiring baby boomers of about 2,500 to 4,500 per year.

OCCUPATIONS AND SKILLS IN DEMAND—THE LOOMING SHORTAGES

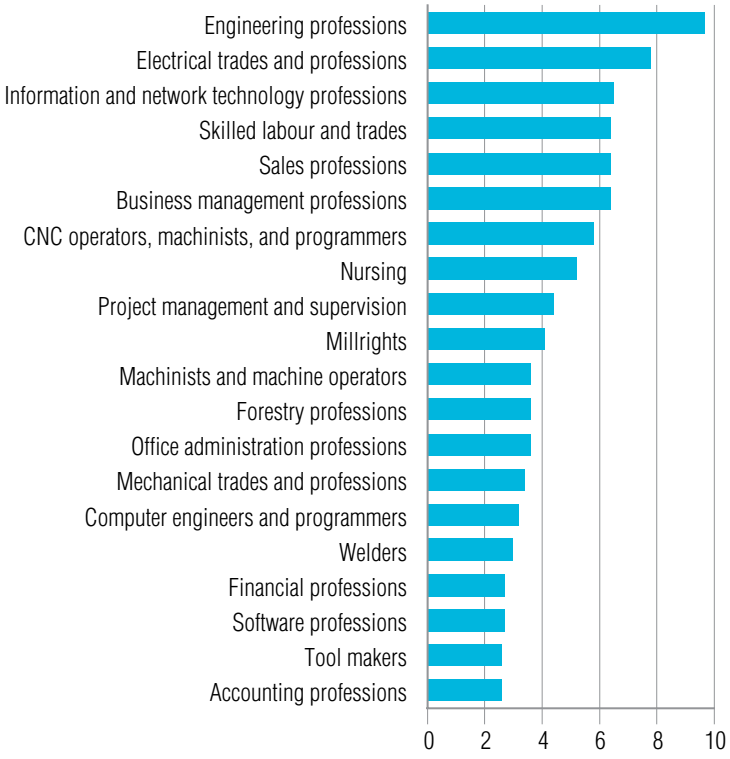
The previous section provides a current snapshot of skills shortages in specific sectors as well as a sense of trends to date. But the critical question facing Ontario employers is where the skills gaps will be in the years ahead. Projecting future skills gaps and needs is critical, given that many of the strategies required to address them—such as changes in educational paths—produce results only after a lag of two to four years or more. So what are the occupations and skills that employers will need in the future?

In our Ontario Employer Skills Survey, we asked organizations to specify which occupations they expect to have difficulty filling in the coming years. The most frequently cited occupations are listed in Chart 7. Nearly 10 per cent of employers anticipate that engineering occupations will be the most difficult to fill, followed by electrical trades and professions, information and network technology professions, and skilled labour and trades in general.

The results of our survey show where many Ontario employers anticipate difficulties, but whether a skills gap will exist in any given area depends also on the supply of skilled labour in the demanded areas. Moreover, an employer's location in the province may affect their access to the skilled labour they need. For example, several employers located near the Greater Toronto Area described challenges with relocating and retaining software developers from smaller communities—a profession that is projected to be in surplus at the national level. In other words, even if skills supply exceeds actual demand in overall terms, local skills gaps may persist.

Other labour market information sheds light on projected occupational shortages (and surpluses). HRSDC's Canadian Occupational Projection System (COPS) provides an important complement to employers' perspectives.[5] Although the results are for Canada as a whole, many of the trends apply to Ontario. Table 3 provides a breakdown of anticipated shortages by skills type and occupations, while Table 4 shows anticipated surpluses. On the whole, skills gaps are projected in many high-skill occupations that require a post-secondary credential[6] and surpluses are projected in areas of low-skill occupations that require less than a post-secondary credential.[7]

Chart 7
Top 20 Occupations Employers Expect to have Difficulty Filling
(percentage of respondents)



Source: The Conference Board of Canada.

EDUCATION AND TRAINING REQUIREMENTS

The previous section considered which occupations are projected to be in higher demand, from both an employer and an economic perspective. Proactively addressing skills gaps requires tackling the challenge at the level of post-secondary education. Based on their expectations of which occupations and skills they will need in the

5 Human Resources and Skills Development Canada, *Canadian Occupational Projection System (COPS)*.

6 Human Resources and Skills Development Canada, *Canadian Occupational Projection System 2011 Projections*, 11.

7 Ibid., 15.

Skills Snapshot #1

Industry: Mining

Skilled Occupational Needs: Mine engineers and mine ventilation specialists

Contributing Factors: The work is becoming more specialized and educational requirements have increased. Many of the workers who entered the industry when they were 18 years old—when all that was required was a high school diploma—are now nearing retirement age and taking a lot of corporate knowledge with them. There is also much competition for these skills from Alberta and the oil sands.

Skills Strategies:

- Four-month summer co-op placements that are also treated as an informal probationary period with the objective of retaining those students who perform well.
- Apprenticeships.
- Working with recruitment agencies and head hunters
- Extensive recruitment activities, such as billboard, radio, and newspaper ads.
- Job fairs.
- Offering retention bonuses and other incentives to stay with the company.

Impacts: Skills gaps will make it difficult for companies to fulfill projects and meet deadlines. This situation also makes it difficult to do any longer-term planning, as companies become consumed with the day-to-day and just trying to stay afloat. Persistent gaps may also force companies to increasingly look for skills outside of Canada.

Source: The Conference Board of Canada.

future, what are Ontario employers saying about the specific educational credentials they will look for, and in what subjects? Their responses, summarized as follows, can help to inform the choices that are made by Ontario youth, parents, and education policy-makers.

EMPLOYER PERSPECTIVES

Employers will have a significiant need for employees with two- or three-year college diplomas, followed by those with four-year degrees and those with trades training. In total:

- 57 per cent of employers surveyed are looking for employees with two- or three-year college diplomas;
- 44 per cent will require employees with four-year degrees—usually, though not exclusively, from universities;
- 41 per cent indicated that they need employees with trades training.

Employer responses varied between regions of the province, though only in a couple of cases is the variation especially significant. (See Chart 8.) One exception is that employers from Greater Toronto are almost 10 per cent more likely to say they will require four-year degree credentials than those in other parts of the province and are less likely than other employers to say that they will require employees with trades training. Still, about a third of GTA employers indicate they will need employees with trades certification.

Employers will have a significant need for employees with two- or three-year college diplomas (57 per cent), followed by those with four-year degrees (44 per cent) and those with trades training (41 per cent).

More significant differences emerge when results are examined by employer size. (See Chart 9.) Large firms (500+ employees) are less likely to need graduates with trades training—though a third of them said they will need some.[8] By contrast, large firms are somewhat more likely than others to need employees with two- or three-year college diplomas, and much more likely to need employees with four-year degrees—in fact, the larger the firm size, the greater the interest in four-year degree credentials. Smaller firms (1–19 employees) have the greatest need for two- or three-year college diplomas, followed by trades and four-year degrees.

8 Although the largest firms are less likely to say they require trades certifications, their large size means that the absolute number of tradespeople required by large firms may still be very high.

Table 3
Projected Canadian Occupational Shortages

Skills type	Occupations in shortage
Business, finance, and administration occupations	◆ Human resources and business service professionals ◆ Administrative and regulatory occupations
Natural and applied sciences and related occupations	◆ Other engineers ◆ Architects, urban planners, and land surveyors ◆ Mathematicians, statisticians, and actuaries
Health occupations	◆ Managers in health, education, social, and community services ◆ Physicians, dentists, and veterinarians ◆ Optometrists, chiropractors, and other health diagnosing and treating professionals ◆ Therapy and assessment professionals ◆ Nurse supervisors and registered nurses ◆ Medical technologists and technicians ◆ Assisting occupations in support of health services
Occupations in social science, education, government service, and religion	◆ Judges, lawyers, and Quebec notaries ◆ College and other vocational instructors ◆ Policy and program officers, researchers, and consultants
Sales and service occupations	◆ Managers in protective services ◆ Insurance and real estate sales occupations and buyers ◆ Police officers and firefighters ◆ Other occupations in protective service
Trades transport and equipment operators and related occupations	◆ Managers in construction and transportation
Occupations unique to primary industry	◆ Supervisors in logging and forestry ◆ Supervisors in mining, oil, and gas ◆ Contractors, operators, and supervisors in agriculture, horticulture, and aquaculture

Source: Human Resources and Skills Development Canada, *Canadian Occupational Projection System (COPS)*.

Credential requirements vary significantly across and within industry sectors. (See Chart 10.) In some sectors—such as construction and manufacturing—employers have greater need for trades certificate holders; others seek more two- to three-year diplomas (e.g., accommodation and food services; arts, entertainment, and recreation) or four-year degrees (e.g., public administration; health care, and social assistance). Nevertheless, every industry sector requires a mix of employees with trades certification, diplomas, and/or degrees.

SUBJECT AREAS IN DEMAND

Among those employers who indicated a need for trades, the greatest demand is in the areas of construction and technology, with fewer indicating a need for trades in business and hospitality (See Chart 11.)[9] Demand for technology-based trades shows strong correlation with firm size, with large firms about 20 per cent more likely

9 This may reflect, in part, the fact that there are fewer trades in the areas of business and hospitality than in construction and technology. Most of these are in areas relating to food preparation, such as cook, retail meat cutter, and baker. See Ontario College of Trades, *Trades in Ontario*.

Table 4
Projected Canadian Occupational Surpluses

Skills type	Occupations in surplus
Business, finance, and administration occupations	◆ Managers in communication ◆ Secretaries, recorders and transcriptionists ◆ Clerical occupations, general office skills ◆ Office equipment operators ◆ Library, correspondence, and related information clerks ◆ Recording, scheduling, and distributing occupations
Natural and applied sciences and related occupations	◆ Computer and information systems professionals ◆ Technical occupations in physical sciences
Occupations in art, culture, recreation, and sport	◆ Managers in art, culture, recreation, and sport ◆ Technical occupations in libraries, archives, museums, and art galleries ◆ Athletes, coaches, referees, and related occupations
Sales and service occupations	◆ Chefs and cooks ◆ Retail salespersons ◆ Occupations in travel and accommodations ◆ Occupations in food and beverage service ◆ Cashiers ◆ Other sales and related occupations ◆ Food counter attendants, kitchen helpers, and related occupations ◆ Security guards and related occupations ◆ Other elemental service occupations
Trades, transport and equipment operators, and related occupations	◆ Facility operation and maintenance managers ◆ Machinists and related occupations ◆ Metal forming, shaping, and erecting trades ◆ Carpenters and cabinetmakers ◆ Masonry and plastering trades ◆ Other construction trades ◆ Upholsterers, tailors, shoe repairers, jewellers, and related occupations ◆ Heavy equipment operators ◆ Other transport equipment operators and related workers ◆ Other installers, repairers, and servicers ◆ Longshore workers and material handlers ◆ Trades helpers and labourers ◆ Public works and other labourers
Occupations unique to primary industry	◆ Fishing vessel masters and skippers ◆ Logging and forestry workers ◆ Agriculture and horticulture workers ◆ Other fishing and trapping occupations ◆ Primary production labourers

(continued …)

Table 4 (cont'd)
Projected Canadian Occupational Surpluses

Skills type	Occupations in surplus
Occupations unique to processing, manufacturing, and utilities	◆ Supervisors, assembly and fabrication ◆ Central control and process operators in manufacturing and processing ◆ Machine operators and related workers in metal and mineral products processing ◆ Machine operators and related workers in pulp and paper production ◆ Machine operators and related workers in textile processing ◆ Machine operators and related workers in food, beverage, and tobacco processing ◆ Printing machine operators and related occupations ◆ Mechanical, electrical, and electronics assemblers ◆ Other assembly and related occupations ◆ Machining, metalworking, woodworking, and related machine operators

Source: Human Resources and Skills Development Canada, *Canadian Occupational Projection System (COPS)*.

Skills Snapshot #2

Industry: Finance and Insurance

Skilled Occupational Needs: Independent financial advisors

Contributing Factors: Professional standards and expectations have increased for the profession, placing a greater emphasis on formal education and certification.

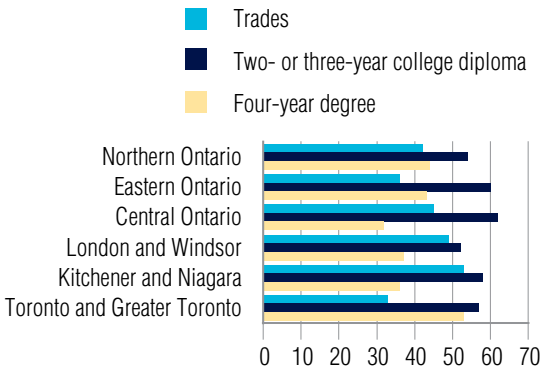
Skills Strategies:

- Succession planning by matching up senior advisors nearing retirement with new advisors just entering the profession.
- Strategic recruitment by marketing this profession as a second-career option.
- Participating in a university job fair that also provides a matching opportunity for students to go to the workplace for one day a week for three months. Students keep a journal on what they learned, submit a final report, and are given a course credit.
- Talking directly to students at universities and colleges about career opportunities and what they need to start doing now to set them on the path to being a successful financial advisor.

Impacts: There will be many lost opportunities, as retiring senior advisors will be unable to transfer their client base to new advisors.

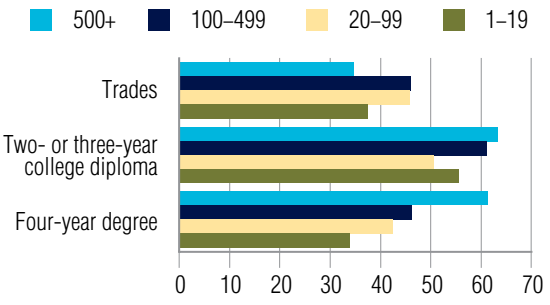
Source: The Conference Board of Canada.

Chart 8
Ontario Employer Credential Needs by Region
(percentage of respondents)



Source: The Conference Board of Canada.

Chart 9
Ontario Employer Credential Needs by Firm Size
(percentage of respondents)



Source: The Conference Board of Canada.

Skills Snapshot #3

Industry: Wholesale Trade

Skilled Occupational Needs: Business analysts

Contributing Factors: The work is becoming more complex and diverse across companies, making it difficult to find people with all of the skills needed.

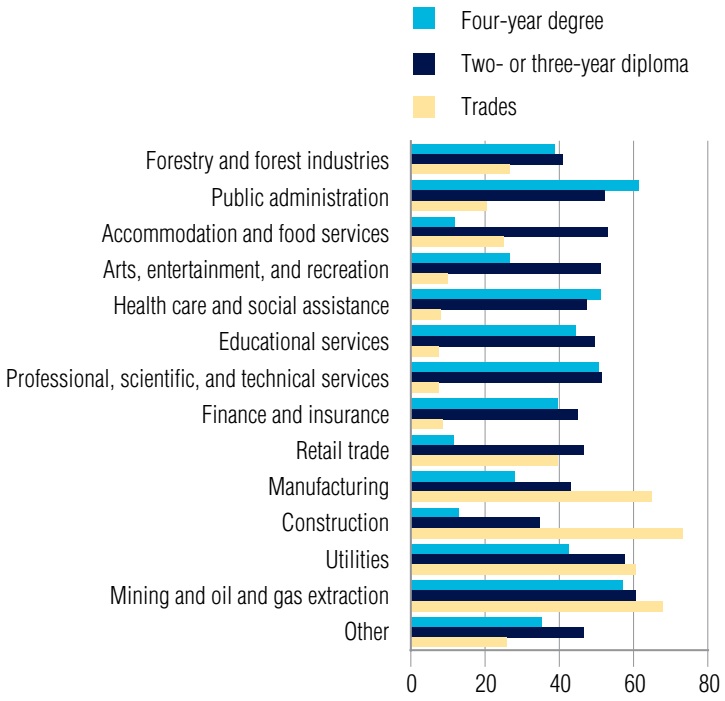
Skills Strategies:

- Employing consultants for short-term projects.
- Focusing more on transferrable skills rather than previous work experience.
- Participating in university internships.
- Introducing new recruitment tools to support a more rigorous screening process (for example, candidates must do case studies that they then present to senior company executives).

Impacts: There have been missed opportunities to better understand numbers and make better-informed decisions. In some cases, deliverables have been delayed, impacting overall client satisfaction.

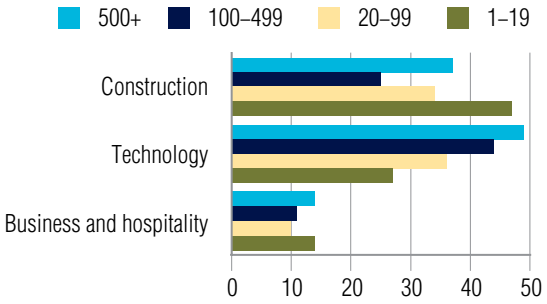
Source: The Conference Board of Canada.

Chart 10
Ontario Employer Credential Needs by Industry Sector
(percentage of respondents)



Source: The Conference Board of Canada.

Chart 11
Ontario Employer Trade Needs by Firm Size
(percentage of respondents)



Source: The Conference Board of Canada.

than small firms to need trades credentials in technology. Construction trades, on the other hand, are in greatest demand among the smallest category of firms.

Among employers seeking two- or three-year diplomas, most report the greatest need for diplomas in engineering and technology, except for the smallest firms, which most need diploma-holders in business, finance, and administration. The next highest need in the largest firms is for diplomas in business, finance, and administration; for firms in the second- and third-largest categories, it is for diplomas in business, finance, and administration, or in professions and trades. (See Chart 12.)

Among firms requiring four-year degree-holders, a majority of firms of all sizes anticipate demand for degrees in science and technology, followed by degrees in business. (See Chart 13.) Only the smallest firms differ, indicating a slightly greater need for degrees in business than in science and technology. By contrast, graduates with liberal arts degrees (and to a somewhat lesser extent, social sciences degrees) are in demand by only a handful of those employers surveyed. Less than 10 per cent of large firms and about 5 per cent of firms with between 100 and 499 employees project a need for individuals with liberal arts degrees.

On the whole, these findings agree with labour market analysis of skills gaps considered at the beginning of the chapter: Ontario faces skills gaps in important economic

sectors such as advanced manufacturing and financial services, which is reflected by employer demands for credentials in the areas of science, engineering, and technology; and business and financial professions. The relative lack of demand in employer survey responses for qualifications in health and social assistance is explained by the fact that most respondents were private sector entities, with only a few representing health-related organizations.

BEYOND CREDENTIALS—ESSENTIAL AND INNOVATION SKILLS

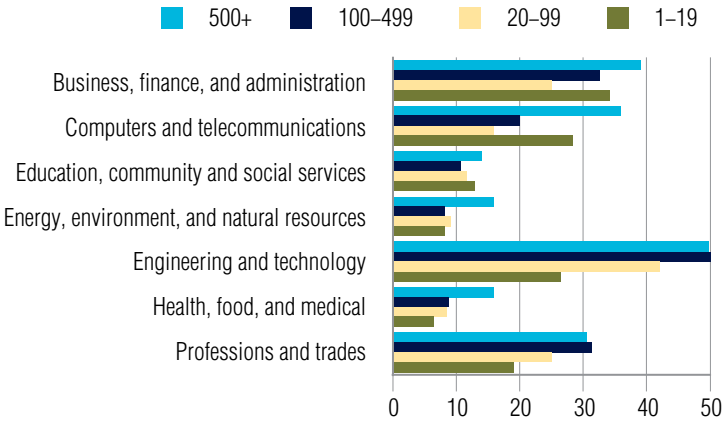
Looking further down the road, there is no way of knowing precisely what occupations, skills, and knowledge will be required to build the businesses of the future. The reality is that the creation of new job categories (and the specific skills needed for those jobs) often outpaces attempts to understand and classify them. A 2003 report from the U.S. Council of Economic Advisors, for example, observed that "a quarter of today's workforce is in jobs that were not even listed among the Census Bureau's Occupation codes in 1967, and technological change has only accelerated since then."[10]

The reality is that the creation of new job categories (and the specific skills needed for those jobs) often outpaces attempts to understand and classify them.

Even some of Canada's traditional industries, such as forestry, are evolving—and with that come changes in the skills and education required to work in these fields. One interviewee noted that the growth of occupations in urban forestry has created many different skills requirements than are needed for traditional forestry, which have not yet become well-represented in the education

10 Council of Economic Advisors, *Preparing the Workers of Today*, 22.

Chart 12
Ontario Employer Diploma Needs by Firm Size
(percentage of respondents)



Source: The Conference Board of Canada.

Skills Snapshot #4

Industry: Public Administration—Engineering and Construction Services Division

Skilled Occupational Needs: Civil engineering technologists

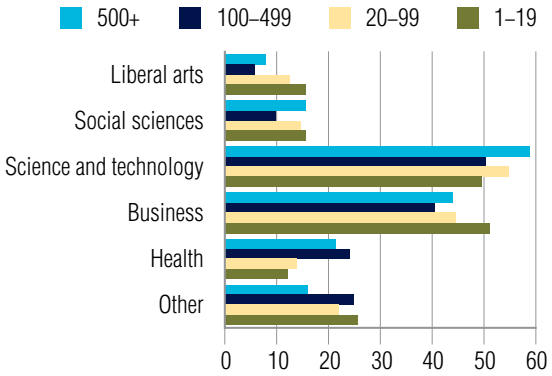
Contributing Factors: Skills needs are changing with technological developments. Retirements will have a significant impact at the senior and management levels. Retention is a challenge because incentives are limited, which makes it tough to compete with private firms.

Skills Strategies:
- Hiring summer students from colleges and universities.
- Reducing the technologist workforce and increasing the project management workforce to allow more contracting out of work.
- Introducing new tools, like Skype, into the interview process to expand the pool of candidates.
- Broadening the recruitment strategy to advertise nationally and be more strategic on communicating the opportunities with the organization.

Impacts: Contracting more work out will drive up costs, to both the organization and to taxpayers.

Source: The Conference Board of Canada.

Chart 13
Ontario Employer Degree Needs by Firm Size
(percentage of respondents)



Source: The Conference Board of Canada.

Skills Snapshot #5

Industry: Construction

Skilled Occupational Needs: Architectural engineers

Contributing Factors: The industry has become more technically oriented and less experience-based. This is due, in part, to new technologies, but also to an increase in the size and complexity of the types of work clients want done.

Skills Strategies:

- Co-op placements for college and high school students.
- Cross-training of existing employees who express an interest in learning other aspects of the business.
- Joint ventures with other firms to complement each others' skill sets.

Impacts: Business efficiency suffers. Senior staff are working on too many projects at once and junior employees are being given too much responsibility. The number of projects is not decreasing, but the ability to meet demands will continue to decrease, opening the door to greater foreign competition.

Source: The Conference Board of Canada.

system.[11] Given the pace of technological change, cultural and demographic shifts, and globalization, the job market will introduce many more surprises over the coming decade.

Because we cannot predict exactly what skills will be required in the future, it is important that the next generation of job seekers possess a broad range of skills and competencies that supports their ability to think, learn, communicate, collaborate, and innovate—in addition to the specific, task-related skills that have an immediate function in the labour market.

ESSENTIAL SKILLS

Essential skills are those that "provide the foundation for learning all other skills and enable people to evolve with their jobs and adapt to workplace change."[12] Indeed, these skills are basic to an employee's ability to function effectively in the workplace and provide a foundation for continuous learning. The Conference Board has conducted previous work that looks at employability skills and their main characteristics.[13]

It is important that the next generation possess a broad range of skills that supports their ability to think, learn, communicate, collaborate, and innovate.

Unfortunately, the Ontario employers surveyed noted that there are essential skills deficits among even their current employees. (See Chart 14.) Over 70 per cent said that there are gaps in 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 employers' perspectives, then, there is clearly a need for improved essential skills in the workforce.

Although it is not a guarantee, research shows that individuals with some post-secondary education are more likely to possess essential skills than others.[14] Still, as a representative of an engineering firm noted, it is

11 Interview conducted by the Conference Board.

12 ABC Life Literacy Canada, *9 Essential Skills*.

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

14 Council of Economic Advisors, *Preparing the Workers of Today*, 11.

common to attend campus career events and not find individuals with the communication skills the firm requires—even among highly educated engineers. Although the students are very bright, he observes, many were able to get through high school and university focusing entirely on technical credits, to the detriment of other employability skills or essential skills. As such, he notes, "they have a *lop-sided skill set.*"

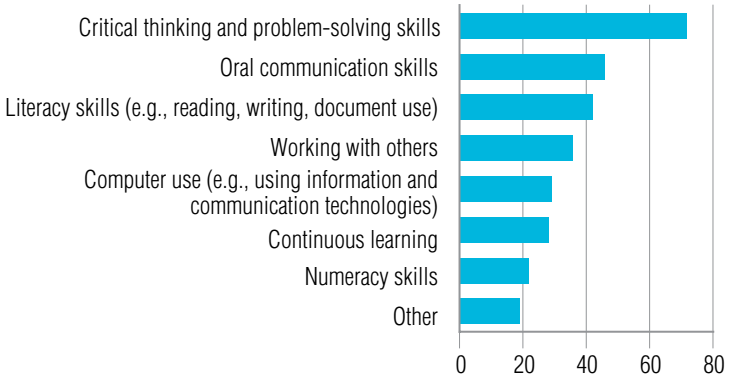
A representative of a telecommunications sales firm noted that since it is impossible for anyone to understand their custom sales software before being trained on it, it is important that new hires have not only basic computer skills, but also employability skills and attitudes such as an "open mind" and the "ability to learn." Given that individuals often move between jobs, and that the skills involved in performing a job are often specialized within a firm, the "ability to learn" will be at least as important as what is learned in any given post-secondary program.

INNOVATION AND COMMERCIALIZATION SKILLS

Many businesses also need employees with innovation skills to contribute to organizational performance and growth. Having employees with innovation skills is vitally important to organizations looking to develop and implement new and improved products, processes, and services. Indeed, the Conference Board's Centre for Business Innovation 2012 industry survey revealed that about 40 per cent of firms view "employees' skills, attitudes, and behaviours" as a "critical competitive attribute" for innovation.[15] In particular, innovating firms will require a mix of employees with *innovation skills* in a range of areas, including:

- creativity, problem solving, and continuous improvement;
- risk-assessment and risk-taking;
- relationship-building and communication;
- implementation.

Chart 14
Essential Skills Gaps
(percentage of respondents)



Source: The Conference Board of Canada.

Additionally, firms require employees with a range of *commercialization skills* that ensure that ideas are taken all the way to implementation, including:

- business management;
- capital-raising;
- collaboration and networking;
- sales and marketing.[16]

Having the right skills is vitally important to achieving innovation both in products and processes. Unfortunately, many firms in Ontario, Canada, and elsewhere report serious innovation skills gaps and negative consequences resulting from these gaps. A lack of skills is a detriment to innovative capacity, in almost equal measure, across organizations of all sizes. (See Table 5.) In fact, in firms of all sizes, lack of skills is a barrier to between a fifth and a quarter of all firms, and the second or third most critical barrier to innovation.

15 See The Conference Board of Canada, *Innovation Skills Profile 2.0.*

16 Ibid.

Table 5
Barriers to Innovation
(percentage of respondents)

	Large	Medium	Small
Uncertainty and risk	Insignificant	44.4	35.0
Lack of skills	19.7	26.7	26.3
Internal financing	Insignificant	22.2	22.1
Market size	Insignificant	22.2	16.0
External financing	Insignificant	18.7	15.2
Regulatory issues	20.2	27.8	13.8
Agreements with external collaborators	Insignificant	8.7	10.8
Intellectual property	10.5	3.2	4.2
Government competition policy	3.6	3.9	4.0

Source: Government of Canada, *Business Innovation and Strategy*, 59.

Skills Snapshot #6

Industry: Utilities

Skilled Occupational Needs: Electrical and electronics engineers

Contributing Factors: Changes in technology demand new skills, including IT skills. Many retirements are pending even as the organization is restricted in its ability to hire.

Skills Strategies:

- Co-op placements with college students.
- Working directly with a local college to evaluate its courses and make recommendations on changes to course content that will help co-op students and graduates be more workplace-ready.

Impacts: Firms will have to learn how to do more with fewer skilled, qualified people, which may compromise the quality of work and overall workplace morale.

Source: The Conference Board of Canada.

CONCLUSION

Ontario faces looming occupational and skills gaps in major sectors of its economy, including manufacturing; health care; professional, scientific, and technical services; and financial industries. Reflecting this, employers anticipate a greater need for post-secondary credentials in the areas of science, engineering, and technology, as well as those relating to business and finance. The larger the firm, the more likely the requirement for individuals with four-year degrees—however, firms of all sizes report a greater need for two- or three-year college diplomas than for four-year degrees. At the same time, trades in the areas of construction and technology remain in high demand. Looking beyond credentials, employers also have a greater need for employability skills, essential skills, and innovation and commercialization skills. These skill sets power organizational performance and growth and provide individuals with the broad competencies needed to succeed across a range of occupations.

Having considered where employers experience skills needs, what strategies are being adopted to address the challenges? What else can be done? The next two chapters consider these questions.

Chapter 5

Strategies to Meet Skills Needs

Chapter Summary

- To attract and develop the workforce they require, employers can improve recruitment strategies; provide in-house training and development; increase compensation, wages, and benefits; and urge educators and governments to play a greater role.
- Experiential learning—such as paid internships, co-op positions, mentoring, and apprenticeships—is a very promising strategy to address future skills gaps, as it provides students with applied learning opportunities that contribute to their job-ready skills, attitudes, and behaviours.
- Employers report that they face challenges to providing meaningful experiential learning opportunities—including not having enough time or resources, excessive administration and "red tape," and a lack of awareness and understanding of the benefits.
- Colleges and universities want to enhance and expand industry-relevant education, such as experiential learning, but find that they lack sufficient resources to nurture relationships with employers; manage placement logistics and track outcomes; or invest in leading-edge, industry-relevant equipment and technology that students can use in labs and classrooms.

The availability of skilled labour depends on many factors outside the control of employers. This includes demographic realities; policies related to education, immigration, and retirement; and individual choices. However, employers can take steps to compete effectively for the skilled employees they require. This chapter considers some of the strategies that employers (and others) adopt to achieve these ends, as well as the challenges they face in doing more. Understanding these strategies and their current and potential contributions to skills development is an important component of understanding and addressing skills gaps in the province.

EMPLOYERS' STRATEGIES

Employers have always had a number of ways to attract and develop workers. Our survey reveals that foremost is utilizing in-house training and development programs—even though, as noted earlier, employers need to spend more on training and development. Another primary strategy is to increase compensation, wages, and benefits to improve the attractiveness of occupations to potential employees. Other strategies include:

- hiring from overseas or out of province;
- attending job fairs;
- developing and promoting enjoyable or flexible workplace cultures and environments;

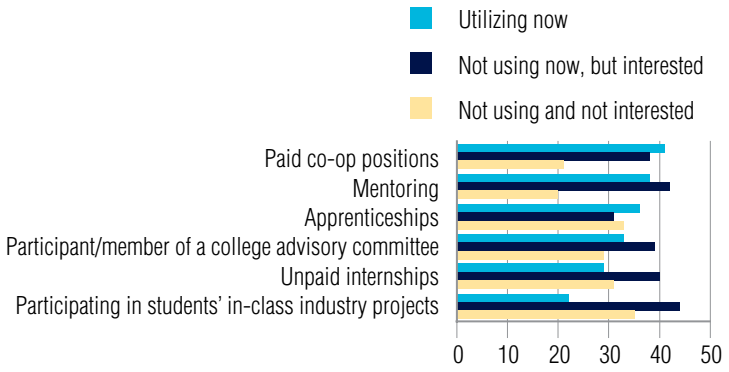
- making use of employee referrals;
- utilizing head-hunters and recruitment agencies;
- advertising through social media; and
- focusing on employee retention and promoting from within.

Most of these strategies are geared toward locating, and further developing, individuals who have already exited the education system and entered the labour force—critical components, to be sure, of meeting workforce demand. However, the nature of looming skills issues is such that linkages between employers and post-secondary institutions—the major pipelines for future cohorts of workers—are increasingly important. As we consider below, experiential learning collaborations involving employers, students, and educational institutions are helping to meet this need—though more can be done to overcome challenges that limit their uptake and to improve their effectiveness.

MAKING THE SKILLS CONNECTION: EXPERIENTIAL LEARNING

At its core, experiential learning involves placing students in workplaces, or in environments that simulate workplaces, so that they can learn while doing. In partnership with employers, this includes apprenticeship training, co-op placements, mentoring, and internships. The primary virtue, from a skills supply perspective, is that this approach gives students workplace-relevant skills as part of their education. As a representative from the financial sector observed: "In a relatively short period of time co-op students are able to learn a variety of skills, such as working with different systems, learning business etiquette, and networking, that they would never learn in the classroom." The gap between classroom and workplace, in other words, can be reduced.

Chart 15
Ontario Employer Skills Strategies
(percentage of respondents)



Source: The Conference Board of Canada.

The Conference Board's employer survey revealed widespread use of experiential learning strategies. (See Chart 15.) In fact, 76 per cent of employers said that they participate in at least one of the experiential learning approaches listed, and many are interested in becoming more involved. The most frequent include paid co-op positions (41 per cent); mentoring (38 per cent); and apprenticeships (36 per cent). Many employers participate in college advisory committees to help with curricula development (33 per cent), and many utilize unpaid internships (29 per cent). Collaborating with students through in-class industry projects—for example, through applied research collaborations that give students hands-on experience and industry exposure[1]—is a strategy employed by 22 per cent of respondents.

Although only 22 per cent of respondents are involved in students' in-class industry projects, this strategy was of interest to more employers than any other (44 per cent). These results suggest that employers recognize the value of adopting experiential learning strategies, but encounter challenges that impede their ability to pursue them. These challenges largely relate to lack of time or resources to take on individuals in experiential learning partnerships or to handle the necessary administration and "red tape." (See Chart 16.)

EXPERIENTIAL LEARNING AND POST-SECONDARY EDUCATIONAL INSTITUTIONS

Post-secondary educational (PSE) institutions play important roles in offering and facilitating experiential learning opportunities. Student–employer experiential learning partnerships generally emerge from the ongoing efforts of colleges and universities to nurture links with employers, and depend on logistical support from PSE institutions to succeed. In some cases, however, the

1 Munro and Haimowitz, *Innovation Catalysts and Accelerators*, 44.

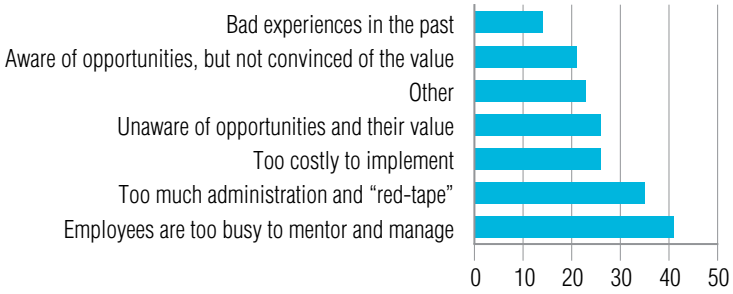
number of workplace-based opportunities is insufficient to meet student demand. In that case, schools will often try to simulate workplace environments by creating spaces with industry-relevant equipment and technology that students can use to apply their skills. Yet, in terms of both logistical support and providing equipment, PSE institutions are pressed for resources.

Colleges find it difficult to provide students with access to leading-edge, industry-relevant equipment and technology. The Conference Board estimates that in 2012, Ontario industry investments in machinery and equipment averaged $5,267 per full-time employee equivalent. This amount is higher in some sectors (such as manufacturing) and much lower in others (such as accommodation and food services)—but also lower than spending by industry as a whole in many competitor countries. By contrast, Ontario colleges managed to invest only $69.28 per full-time student equivalent—merely 1.3 per cent of the spending by Ontario industry. Ontario college students do not have enough access to the equipment and technology that constitute key elements of industry-relevant experiential learning.

Ontario college students do not have enough access to the equipment and technology that constitute key elements of industry-relevant experiential learning.

There are a number of reasons why colleges cannot, and perhaps should not, invest the same amount as industry. Colleges do not face the same competitive pressures to invest and, logically, must be industry-followers rather than leaders since what counts as an industry-relevant technology will always be determined and acquired by industry first. But there are also a number of reasons why colleges should be able to provide better access. One reason relates to the provincial mandate for colleges that requires them to "offer a comprehensive program of career-oriented, post-secondary education and training to assist individuals in finding and keeping employment, to meet the needs of employers and the changing work environment."[2] The need to provide industry-relevant training to students speaks in favour of greater investments.

Chart 16
Barriers to Adopting Skills Strategies
(percentage of respondents)



Source: The Conference Board of Canada.

In 2012, Ontario's Jobs and Prosperity Council—a group of experienced leaders from business, labour, and other sectors formed to "provide advice on what actions are needed for the province to seize new opportunities"—called on the private sector to "step up and provide more experiential learning opportunities for our youth."[3] Another group—Ontario's Workforce Shortage Coalition—called on the government to "establish a multi-year fund to co-invest with industry in startup funding for new or substantially modernized post-secondary skills training programs."[4] In light of the skills gaps and the importance of experiential learning to address it, the Conference Board feels that both recommendations deserve careful consideration.

STUDENTS' PERSPECTIVES

For students, skills gaps and the strategies adopted to address them have direct and personal implications. Students have a major stake in the issues and important perspectives that can help to ensure that strategies and

2 Government of Ontario, *Ontario Colleges of Applied Arts and Technology Act, 2002*.

3 Jobs and Prosperity Council, *Advantage Ontario*, i, 18.

4 Ontario's Workforce Shortage Coalition, *Advanced Workforce Skills*.

policies are effective. To capture students' views about how to improve skills development strategies, the Conference Board conducted a consultation session with approximately 80 members of the College Student Alliance—student leaders representing a variety of programs from colleges across Ontario—in May 2013 in Toronto.

Students agreed that workplace-based experiential learning is an important component of college education. Many noted that theory-based coursework sometimes deals only with the "fundamentals," which require hands-on experience to fully understand and to develop employability skills. Experiential learning provides a space for applied learning. Placements with employers also provide networking opportunities and insight into the types of careers available to students and how to prepare for them.

KEYS TO SUCCESSFUL LEARNING PARTNERSHIPS

Of course, applied learning can be executed well or poorly. Students were asked to identify factors that, in their experience, help make experiential learning effective:

- **Begin early.** Placement opportunities that begin in students' first or second year, as opposed to their third year, were regarded as more valuable. Early opportunities give students more time to reflect on and learn from the experience, as well as enough time in their programs to build on what they have learned with additional coursework or other placements.
- **Set clear objectives.** Like coursework, experiential learning should have clear skills development objectives. One student mentioned that a competencies-based approach—wherein a checklist of hard and soft skills is created at the outset and then serves as an assessment standard toward the end of a placement—provides clearer purpose and direction to the experience. Competencies that are acquired can be acknowledged with credentials or badges that can be added to a student's resumé.
- **Connect the classroom.** Experiential learning that runs concurrently with coursework provides for an effective "blended learning approach." For some students, this involves undertaking coursework before and after placement work—to prepare for the placement beforehand and to review and reflect on the experience afterwards. Communication between employers and teachers also helps to make connections between classroom and hands-on learning components.
- **Take responsibility.** Giving the student some responsibility for developing their own experiential learning opportunities (e.g., by researching placement opportunities, making connections with placement agencies, reaching out to employers in the community) can be a valuable experience that helps to develop the job-finding and other employability skills that students will need throughout their careers.

CREATING OPPORTUNITIES

Experiential learning opportunities connected to coursework have many benefits, but these opportunities are not always available and the organization and operation of those that do exist require resources. Many students observed that more needs to be done not only to create more opportunities, but also to provide colleges with the resources necessary to design, organize, and follow up on experiential learning placements for students.

In addition, students noted that there is much that they can do individually, without collaborating with businesses, to help achieve experiential learning objectives—for example, through "co-curricular" activities that are pursued outside of college programs. For one media and design student, this involved undertaking a number of small projects, including developing content for YouTube channels, running blogs, and starting clubs around campus. These activities also help build marketable experience that stands out on a resumé. As one student noted, "When you graduate, you have a skill set on paper that does not capture your unique experiences." He added that finding "unique ways to show what you're personally gifted with is the most valuable thing to take out of your education."

As the nature of learning changes alongside the skills and knowledge needs in the economy, it is more important than ever that colleges (and other education stakeholders) take into account students' views when developing and implementing a skills development strategy. Students—for whom the implications of skills gaps are direct and personal—have an immediate interest in ensuring that

skills strategies support employability potential, and first-hand understanding of what makes these strategies work or not work. It is clear that experiential learning is a key component of college education—but there are ways of improving these opportunities that will deliver more value for students as well as Ontario businesses.

ENGAGING STUDENTS IN HIGH SCHOOLS

In follow-up interviews with the Conference Board, employers from a range of industries expressed concern that youth are receiving inadequate information about career options, earnings potential, and the education and training paths that lead to these opportunities. As one employer noted, industry may face skills challenges because "we are not getting to the potential workforce early enough in their secondary education to start to formulate what they want to do, what they want to become." Interestingly, college students voiced many of these same concerns.

Some employers are acting on this themselves by engaging directly with youth. The strategies adopted include attending career fairs at local high schools and colleges. For example, one employer has made arrangements with a high school to establish a regular time to meet with a class to talk about his industry and its different career options. Some employers provide an opportunity for high school students to do a short co-op placement to get a first-hand introduction to the work.

CONCLUSION

Although employers and other stakeholders adopt a variety of strategies to address the skills challenge, experiential learning and connecting students with labour market information are prominent. Yet, both employers and students agree that much more can be done to improve upon these strategies. Moreover, as the Conference Board's analysis reveals, colleges can be better equipped and resourced to provide both college-based experiential learning and facilitate employer-based opportunities for students. With these concerns in mind, the final chapter offers recommendations for employers, government, educators, and students about how to build on effective strategies and take other effective measures to address Ontario's skills gaps and prepare the province for sustained prosperity and growth.

Chapter 6

How to Fill Skills Gaps: Recommendations for Skills Stakeholders

Chapter Summary

- Skills gaps already take a heavy economic toll on Ontario's economy, businesses, and residents and will worsen in coming years unless immediate action is taken.
- Although each sector will need to tailor strategies to address its unique occupational, skills, and credential needs, addressing Ontario's skills challenges overall and securing future prosperity will require coordination, as well as additional resources and information.
- Addressing the skills challenge and providing Ontario with a more secure path to innovation, prosperity, and well-being requires action by employers, educators, government, and students.

Ontario urgently needs strategies to address current and looming skills gaps. A highly skilled and engaged workforce is essential to economic prosperity and social well-being. As long as Ontario employers lack access to sufficient well-educated, highly skilled people, the province will continue to face weak innovation and productivity performance and the economy as a whole will perform well below its potential.

Many stakeholders in Ontario have a role to play. Employers can increase their investments in training and development and provide more experiential learning opportunities. Educators can better align programs to the realities of the economy. Federal and provincial governments can show leadership by investing in programs that provide skills training to under-represented groups and underutilized workers. And students can be more attentive to labour market needs and align their own education and training to labour market realities.

RECOMMENDATIONS FOR EMPLOYERS

1. To ensure that they are benefiting as much as possible from the capacities and potential of current employees, employers should increase investments in employee training and development.

   Employer spending on training and development in Canada has dropped 13 per cent in recent years and nearly 40 per cent over the past two decades—at a time when employers are increasingly worried about skills shortages. If employers are experiencing skills shortages, a good place to start addressing them would be to identify areas where existing employees might be better trained to meet business needs. Increasing spending on training and development would also demonstrate to other stakeholders that employers are sincere about their needs and committed to collaborative efforts to meet the skills gaps challenge.

2. To ensure that students and future workers receive workplace-relevant training, employers should increase experiential learning opportunities for students in the workplace.

   Although many employers report challenges in offering experiential learning opportunities to students, the need for these opportunities is critical to help address skills gaps. Employers with interest should contact colleges or universities to receive expert advice and support. Employers who already offer experiential learning opportunities should promote the benefits to other firms in their industries and communities.

3. To improve weak innovation performance, employers should identify underutilized skill sets among existing employees and explore opportunities for skilled and motivated employees to help innovate and improve products, processes, and services.

   Many employees have education and training that exceed the requirements of their jobs as currently configured. This leaves many feeling undervalued and underpaid. But given persistent weak innovation performance, businesses should be exploring all possible ways to improve. Employers can begin by conducting education and skills assessments of their current workforce to identify untapped areas of strength and potential. In addition, they can begin conversations with employees about how they could contribute to innovation, including new and improved products, processes, services, marketing, and business strategies.

RECOMMENDATIONS FOR STUDENTS

4. To ensure that students develop skills that find a home in the labour market of tomorrow, they should be attentive to labour market trends and become active consumers of education.

   Obtaining almost any kind of post-secondary education improves individuals' employment and income prospects, but specific types of education are in higher demand and generate higher returns. Although the data are not easy to find, students can be more attentive to occupations in demand, the skills they require, and the employment and income outcomes of different educational pathways. Current and prospective students, and their parents, can be more active in informing themselves about the opportunities that are available, including obtaining information from colleges, employers, the Internet, peers, and family.

5. To improve employment prospects and resiliency in case of labour market shifts, students should pursue educational pathways that equip them not only with skills for specific occupations, but also with employability, essential, and innovation skills.

   Employability and essential skills are in high demand by employers, and employers point to serious deficiencies in critical thinking and problem-solving skills. Even students who obtain robust technical skills may find their employement prospects challenging if they do not also develop and refine their essential skills, including literacy, numeracy, problem solving, communication, and teamwork, among others. In addition to classroom-based instruction, students should explore workplace-based learning opportunities that can help to further develop these skills.

RECOMMENDATIONS FOR EDUCATORS

6. To ensure that students have skills that will help them contribute to organizational success and their own well-being, post-secondary institutions should assess and make adjustments to programs and curricula to better reflect the current and future realities of the labour market and economy.

   Many educators are beginning to carefully examine employment outcomes for graduates and develop strategies to incorporate skills and learning outcomes assessments into curricula design and pedagogy. But more can be done. Too many students are graduating with skill sets that do not allow them to make relevant contributions to the economy, society, and their own well-being. An outcomes-based approach would allow educators to guide students in more fruitful and satisfying directions. The challenge, of course, is that it is not always clear what kinds of

skills will be necessary in a rapidly changing economy. In light of this, educators should be attentive both to immediate skills needs and to the employability skills, essential skills, continuous learning, and innovation skills that prepare students to adapt and thrive under changing conditions. In addition, education and training opportunities to *upgrade* individuals' skills and knowledge throughout their working careers—such as continuing education and professional development programs—should be supported alongside other program curricula.

7. To ensure that students can make informed choices about their educational paths and employment prospects, educators at the secondary and post-secondary levels should collect, and communicate to current and prospective students, information about employment and income prospects for graduates of specific programs and disciplines.

   Many educational institutions provide students with information about employment outcomes at an aggregate or institutional level, but few provide that information at the level of individual disciplines or subject areas (such as engineering, philosophy, or carpentry) and few provide income information. Students should be encouraged to make their own choices about what educational paths are meaningful to them, but in making those choices they should have access to robust information about the economic prospects that may await them. And this should begin at the high school level—before post-secondary education paths are chosen. As such, PSE institutions should be encouraged to share information with high schools across the province.

RECOMMENDATIONS FOR GOVERNMENT

8. To support planning and decision-making by educators, students, and businesses, federal and provincial governments should collect and share richer and more accurate labour market information.

   One of the key challenges facing all stakeholders struggling with skills gaps issues is the lack of clear, comprehensive, and specific information about the occupations, skills, and credientials needs and supply across the economy and in particular sectors. Indeed, the ongoing debate about whether there is, in fact, a skills challenge in Ontario reflects the paucity of good information about what is happening in the labour market. A well-designed labour market information (LMI) model would allow educators and students to make more informed decisions about program and curricula design and selection, and would provide businesses with a clearer sense of which areas should be the focus of their skills strategies and training efforts. Ideally, a revised labour market information model would identify trends in occupations, but also patterns and trends in the specific skills and educational credentials required *across a variety of occupations*. This would help students identify and acquire skills required for a range of opportunities and not simply a subset of specific skills for particular occupations.

   At the local level, Ontario's workforce planning boards[1] offer a model for regions to identify their local labour market needs and issues—though more could be done to integrate this information into province-wide reporting and projection systems.

9. To support well-organized and designed workplace-based experiential learning opportunities for students, government should allocate additional resources to colleges and universities to better design, organize, facilitate, and track outcomes of experiential learning opportunities.

   The benefits of experiential learning to students, firms, and the economy are clear, but achieving the benefits depends on programs being well-designed, organized, and monitored for outcomes. These tasks

1 Information about Ontario's workforce planning boards, and links to 25 boards across Ontario, can be found at www.workforceplanningontario.ca/.

require resources and expertise that neither students nor employers can provide. As the intermediary institutions between students and employers, Ontario colleges and universities have a critical role to play in ensuring the success of experiential learning opportunities. Performing that function requires significant resources, which the Ontario government should provide to ensure success for all.

10. To ensure that colleges are able to contribute to industry-relevant, employment-ready training, the Ontario government should allocate additional funds to colleges' equipment and technology budgets.

    Given the lack of sufficient workplace-based experiential learning opportunities for students, and the need to provide industry-relevant training, colleges require some workplace-relevant equipment and technology. As the Conference Board's analysis shows, spending on equipment in Ontario colleges occurs at a mere 1.3 per cent the rate of industry spending in Ontario—a reality that appears worse when one considers the fact that Ontario firms are already laggards in machinery and equipment spending compared with international competitors. If college students' education and training is to be considered genuinely industry-relevant, the government should provide new resources to the colleges.

11. To support effective responses to Ontario's labour market challenges, the federal and provincial governments should coordinate their investments in labour market strategies.

    To improve labour market information and the capacity of educational institutions to provide workplace-relevant learning to students, government strategies should be coordinated to optimize effectiveness and efficiency. Governments at the federal and provincial levels should ensure that investments in skills development programs and initiatives are mutually supportive and aligned toward the same objectives.

BUILDING AN EFFECTIVE SKILLS DEVELOPMENT SYSTEM

There is much that Ontario's employers, educators, government, and students can do to fill the skills gaps that impede economic performance and individual prosperity. In addition to the steps they should take individually, all stakeholders should work together to refine the province's skills development *system*—including the education system, experiential learning, and employee learning and development opportunities. Promising models for effective collaboration already exist: employers partner with post-secondary institutions to provide students with industry-relevant training; and governments, employers, PSE institutions, and students are making efforts to share information about their needs, resources, and challenges.

Meeting the challenges posed by the province's skills gaps will require further efforts in these directions—but it also requires new ways of thinking. Ontarians are beginning to understand and confront the challenges that looming skills gaps present for individuals, firms, and the economy as a whole. They are thinking more often through a skills lens—one that emphasizes the skills that individuals need to achieve better outcomes in the economy and society as a whole, while contributing to their own well-being in turn. Building on these efforts and this perspective will help to secure a prosperous future for Ontario.

> Tell us how we're doing—rate this publication.
www.conferenceboard.ca/e-Library/abstract.aspx?did=5563

Appendix A

Explaining the Economic Analysis

CALCULATING THE IMPACT OF LOW EDUCATIONAL ATTAINMENT

The Conference Board's estimate of $24.3 billion foregone GDP due to low educational attainment is based on a multi-step calculation. We measured the "access gap" as the reduction in the employment rate since 1990 for those without PSE credentials multiplied by the current relevant Ontario population 15 years and older. We then used equations from our Ontario and Canadian forecasting models to estimate the foregone Ontario GDP and foregone Ontario and federal tax revenues, under the assumption that policies and programs could be implemented to reduce the "access gap" by 10 to 20 per cent. The final estimates are reported in 2002 dollars.

The final estimates rely on some key assumptions and, as such, constitute estimates of the highest *potential impact*—not projections of actual impacts. For example, the estimated gap does not account for the impact on wages of closing the gap. Theoretically, employers would employ more people if the wage rate of full-time workers declined, but then the "impact" of a higher employment rate would be lower overall due to the effects of a lower wage rate in the calculation. Another assumption worth noting is the use of the 1990 employment rate as the potential employment rate of this cohort of workers. At 58.4 per cent, the employment rate of people with some PSE or less in 1990 was relatively high in historic terms. The average employment rate for this cohort between 1990 and 2008 was 52.4 per cent. As a result, the $24.3-billion figure likely overestimates the actual impact if the employment rate achieved was closer to the historical average. But given our aim to estimate the *potential* impact—i.e., the impact that could be achieved if the best policies, practices, and conditions were in place—using the 1990 employment rate (a rate that was at one point *actually*, and not simply theoretically, achieved) is consistent with this aim.

CALCULATING THE IMPACT OF UNDERUTILIZING SKILLS

To calculate the economic impact of the underutilization of skills, the Conference Board used estimates of the underutilization of skills from the Certified General Accountants Association of Canada's report *Youth Unemployment in Canada: Challenging Conventional Thinking?*, based on its analysis of 2005 census data.[1] We then calculated the increase in income (to the average income level for each age group and credential cohort), as well as the additional Ontario and federal tax revenues, that could be obtained if the underemployed were working in jobs that actually required the educational credentials they hold. The final estimates are reported in 2002 dollars.

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

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

CALCULATING THE EXPERIENTIAL LEARNING/EQUIPMENT FUNDING LEVELS

To calculate the machinery and equipment (M&E) spending per employee in Ontario firms, the Conference Board used data from Statistics Canada on M&E investment (CANSIM Table 031-0002) and employment (CANSIM Table 282-0008). Dividing investment by employment produced estimates of M&E spending per employee and per full-time equivalent employee in Ontario firms for all industry and by industry subsectors in current prices. To calculate the equipment spending per student in Ontario colleges, the Conference Board used data from Colleges Ontario on total investment (i.e., $8 million from the Colleges Equipment Renewal Fund in 2011–12 and $12 million from the Apprenticeship Enhancement Fund in 2011–12) and divided this by the number of full-time equivalent students in 2011–12 (288,692).

Appendix B

Bibliography

ABC Life Literacy Canada. *9 Essential Skills*. 2013. http://abclifeliteracy.ca/nine-essential-skills (accessed May 6, 2013).

Berger, J., and A. Parkin. "The Value of a Degree: Education, Employment and Earnings in Canada." In *The Price of Knowledge: Access and Student Finance in Canada*, eds. Joseph Berger, Anne Motte, and Andrew Parkin. Montreal: The Canada Millennium Scholarship Foundation, 2009. http://contactpoint.ca/wp-content/uploads/2013/01/pokvol4_ch1_e.pdf (accessed April 30, 2013).

Bergevin, P. *Who Is Still Standing in Line? Addressing a Mismatch of Skills and Jobs in the Canadian Labour Market.* Toronto: C.D. Howe Institute, 2013.

Canadian Education Statistics Council. *Education Indicators in Canada: An International Perspective.* Toronto: Canadian Education Statistics Council, 2012.

Canadian Federation of Nurses Unions. *The Nursing Workforce: Canadian Federation of Nurses Unions Backgrounder*. 2012. www.nursesunions.ca/sites/default/files/2012.backgrounder.nursing_workforce.e_0.pdf.

Cattaneo, Claudia. "Invest or Risk Missing 'Massive Opportunities,' Carney Tells Cash-Rich Energy Firms," *Financial Post*, September 7, 2012.

CBC News. "Ontario Transit Proposal Could Cost Each Household $477 a Year." *CBC News*, May 27, 2013. www.cbc.ca/news/canada/toronto/story/2013/05/27/toronto-ontario-metrolinx-revenue-tools-gtha.html.

Certified General Accountants Association of Canada. Youth Unemployment in Canada: Challenging Conventional Thinking? 2012. http://ppm.cga-canada.org/en-ca/Documents/ca_rep_2012-10_youthunemployment.pdf

Council of Economic Advisers. *Preparing the Workers of Today for the Jobs of Tomorrow.* Council of Economic Advisers, 2009.

Deloitte. *Talent Matters: Shaping Talent Strategies in a Changing World.* Toronto: Deloitte & Touche LLP, 2007.

Dietitians of Canada. *Fixing the Skills Gap: Dietitian Workforce Shortage in Canada: Submission to the Standing Committee on Human Resources, Skills and Social Development and the Status of Persons with Disabilities (HUMA).* Toronto: Dietitians of Canada, 2012.

Drummond, D. *Working Together to Build a Better Labour Market Information System for Canada.* Advisory Panel on Labour Market Information, 2009.

Government of Canada, *Business Innovation and Strategy: A Canadian Perspective*. http://publications.gc.ca/collections/collection_2011/ic/Iu173-3-2011-eng.pdf.

Government of Ontario. *Ontario Colleges of Applied Arts and Technology Act, 2002*. Government of Ontario. www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_02o08f_e.htm.

Hydro One. *Hydro One Announces Women in Engineering University Partnership.* News release, Toronto: Hydro One, March 8, 2013.

Human Resources and Skills Development Canada. *Canadian Occupational Projection System (COPS).* 2013. www23.hrsdc.gc.ca/l.3bd.2t.1ilshtml@-eng.jsp?lid=16%20&fid=1&lang=en (accessed May 2, 2013).

Human Resources and Skills Development Canada. *Canadian Occupational Projection System 2011 Projections: Imbalances Between Labour Demand and Supply 2011–2020*. Ottawa: HRSDC, 2011.

Industry Canada. *Business Innovation and Strategy: A Canadian Perspective.* Ottawa: Industry Canada, 2011.

—. *Canadian Industry Statistics*. www.ic.gc.ca/cis-sic/cis-sic.nsf/IDE/cis-sic54defe.html (accessed June 1, 2013).

Jobs and Prosperity Council. *Advantage Ontario*. Toronto: Government of Ontario, 2012.

Klein, Mark. *Engineering Shortages Lead Ontario Job Seekers to Go Where the Action Is*. March 5, 2013. http://blog.randstad.ca/news/bid/272518/Engineering-shortages-lead-Ontario-job-seekers-to-go-where-the-action-is.

Kuepfer, C. *Report Indicates Region's Manufacturing Sector Faces Skills Shortage*. December 28, 2012. www.southwesternontario.ca/news/report-indicates-regions-manufacturing-sector-faces-skills-shortage/ (accessed May 21, 2013).

Lavis, C. *Learning and Development Outlook 2011: Are Organizations Ready for Learning 2.0?* Ottawa: The Conference Board of Canada, 2011.

Martin, R., and M. Florida. *Ontario in the Creative Age.* Toronto: Martin Prosperity Institute, 2009.

Miner, R. *People Without Jobs, Jobs Without People: Ontario's Labour Market Future*. Toronto: Miner Management Consultants, 2010.

Ministry of Labour. *Health Care Sector Plan 2012–13*. Toronto: Ministry of Labour.

Ministry of Training, Colleges, and Universities. *Ontario Labour Market Statistics for January 2013.* Toronto: Labour Market Information & Research, 2013.

—. *Ontario Labour Market Statistics for January 2012.* Toronto: Labour Market Information & Research, 2012.

Munro, D., and J. Haimowitz. *Innovation Catalysts and Accelerators: The Impact of Ontario Colleges' Applied Research*. Ottawa: The Conference Board of Canada, 2010.

Norrie, K., and S. Lin. *Postsecondary Education Attainment and Participation in Ontario*. Toronto: Higher Education Quality Council of Ontario, 2009.

OECD. *Education at a Glance 2012*. Paris: OECD, 2012.

Ontario Chamber of Commerce. *Ontario Chamber of Commerce 2013 Pre-Budget Submission*. 2013. http://occ.on.ca/assets/2013_Pre_Budget.pdf (accessed April 28, 2013).

Ontario College of Trades. *Trades in Ontario*. 2013. www.collegeoftrades.ca/trades/trades-in-ontario (accessed May 7, 2013).

Ontario Ministry of Economic Development and Innovation. "Ontario's Business Sector Strategy: Financial Services Sector." www.ontariocanada.com/ontcan/1medt/downloads/ofb_tfsa_onepager.pdf (accessed May 25, 2013).

Ontario's Workforce Shortage Coalition. *Advanced Workforce Skills for a Sustained Recovery*. OWSC. www.workforcecoalition.ca/PDFs/Ontario%20Workforce%20Shortage%20Coalition%20submission%20to%20Jobs%20+%20Prosperity%20Council.pdf.

PricewaterhouseCoopers. *Delivering Results: Growth and Value in a Volatile World.* PricewaterhouseCoopers, 2012.

Rollin, A.-M. *The Income of Immigrants Who Pursue Postsecondary Education in Canada.* Ottawa: Statistics Canada, 2011.

Southwestern Ontario. *Report Indicates Region's Manufacturing Sector Faces Skills Shortage*. December 28, 2012. www.southwesternontario.ca/news/report-indicates-regions-manufacturing-sector-faces-skills-shortage/ (accessed May 21, 2013).

Stark, A. *Which Fields Pay, Which Fields Don't? An Examination of the Returns to University Education in Canada by Detailed Field of Study*. Ottawa: Department of Finance, 2007. www.fin.gc.ca/pub/pdfs/wp2007-03e.pdf.

Statistics Canada. CANSIM Tables 031-0002, 282-0008, and 284-0004 (accessed May 20, 2013).

—. *Education Indicators in Canada, 2011*. Statistics Canada Catalogue No. 81-604-X. Ottawa: Statistics Canada, 2011. www.cmec.ca/Publications/Lists/Publications/Attachments/271/education-indicators-canada-international-perspective-2011.pdf.

—. *Job Vacancies, Three-Month Average Ending in December 2012*. May 20, 2013. www.statcan.gc.ca/daily-quotidien/130320/dq130320a-eng.htm (accessed May 3, 2013).

—. *Skilled Trades and Employment*. Ottawa: Statistics Canada. www.statcan.gc.ca/pub/75-001-x/2008110/article/10710-eng.htm (accessed June 1, 2013).

—. *Trade Qualifiers in the Skilled Trades in Canada: An Overview*. Ottawa: Statistics Canada. www.statcan.gc.ca/pub/81-004-x/2010005/article/11367-eng.htm (accessed June 1, 2013).

Tal, B. *The Haves and Have Nots of Canada's Labour Market.* Toronto: CIBC World Markets Inc., 2012.

Tether, B., A. Mina, D. Consoli, and D. Gagliardi. *A Literature Review on Skills and Innovation. How Does Successful Innovation Impact on the Demand for Skills and How Do Skills Drive Innovation?* Manchester: UK Department of Trade and Industry, 2005.

The Canadian Chamber of Commerce. *Canada's Skills Crisis: What We Heard: A Canadian Chamber of Commerce Report on Cross-Country Consultations in 2012.* The Canadian Chamber of Commerce, 2012.

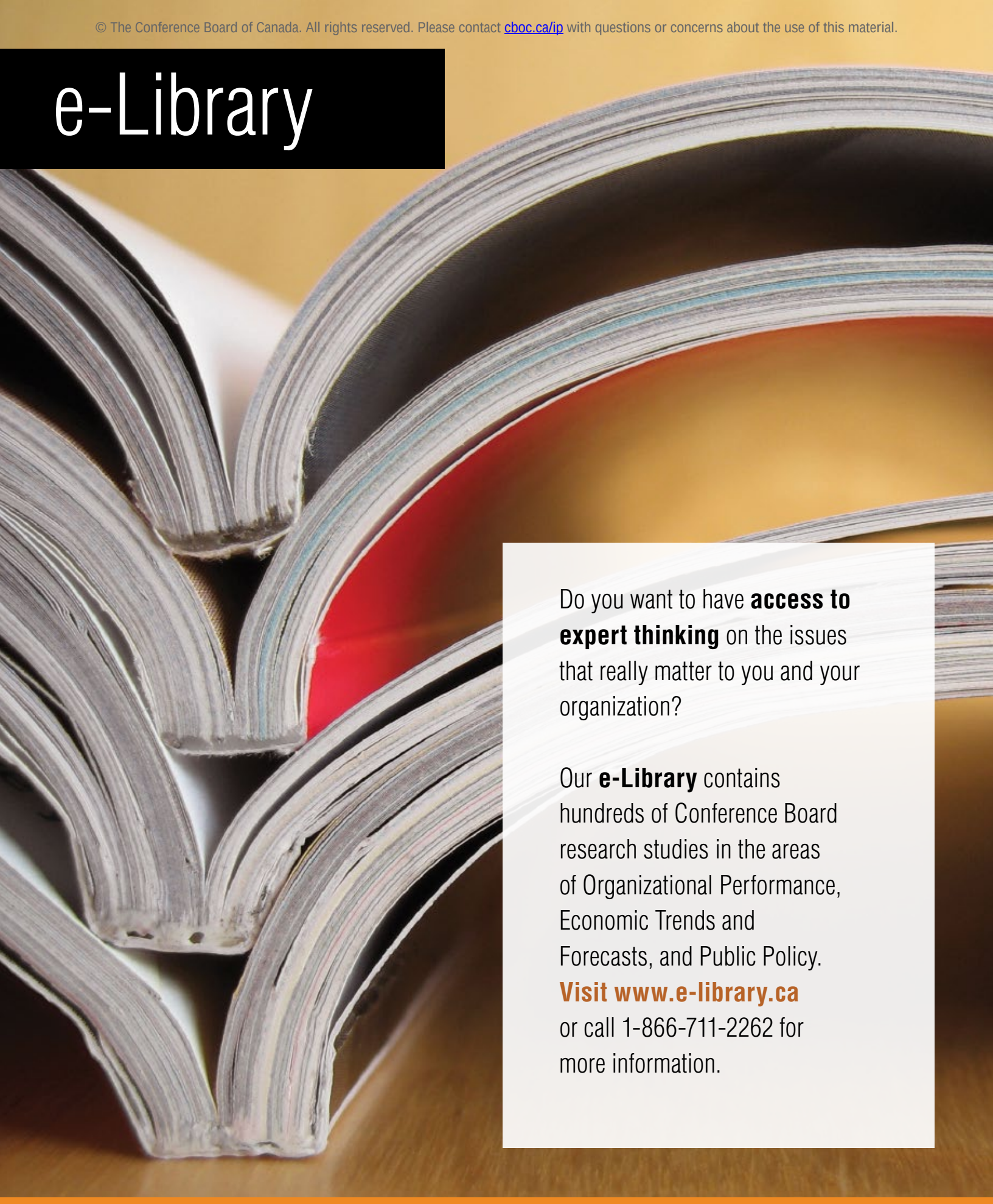
The Conference Board of Canada. Employability Skills 2000+. www.conferenceboard.ca/Libraries/EDUC_PUBLIC/esp2000.sflb

—. *Innovation Skills Profile 2.0: The Skills, Attitudes, and Behaviours You Need to Contribute to Innovation in the Workplace.* www.conferenceboard.ca/Libraries/PUBLIC_PDFS/InnovationSkillsProfile.sflb.

—. *Ontario's Looming Labour Shortage Challenges: Projections of Labour Shortages in Ontario, and Possible Strategies to Engage Unused and Underutilized Human Resources*. Ottawa: The Conference Board of Canada, 2007.

Zeman, K., K. McMullen, and P. de Broucker. *The High Education/Low Income Paradox: College and University Graduates With Low Earnings, Ontario, 2006.* Ottawa: Statistics Canada, 2010. www.statcan.gc.ca/pub/81-595-m/81-595-m2010081-eng.htm.

e-Library



Do you want to have **access to expert thinking** on the issues that really matter to you and your organization?

Our **e-Library** contains hundreds of Conference Board research studies in the areas of Organizational Performance, Economic Trends and Forecasts, and Public Policy.

Visit www.e-library.ca or call 1-866-711-2262 for more information.

Insights. Understanding. Impact.

The Conference Board of Canada®

255 Smyth Road, Ottawa ON
K1H 8M7 Canada
Tel. 613-526-3280
Fax 613-526-4857
Inquiries 1-866-711-2262
conferenceboard.ca

PUBLICATION 14-032
E-COPY: Complimentary