



# LESSONS IN LEARNING

The skills gap in Canada:  
The knowledge intensity of  
Canadians' jobs is growing rapidly

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The knowledge requirements of Canadians' jobs are growing rapidly. Changes in production technologies and in the nature and organization of work in general have fuelled the demand for workers equipped with solid literacy and numeracy skills. Despite the successes of Canadian schools and post-secondary institutions in producing graduates with such skills, a gap remains between the demand for workers with strong literacy and numeracy skills and the supply of Canadians who possess them.

## The demand for skills is increasing

The rising level of competition facing Canadian firms, changes in production technologies, and changes in the nature and organization of work are all driving increases in the knowledge intensity of jobs in Canada. Foreign outsourcing has reduced the domestic demand for unskilled workers, thereby increasing the relative demand for skilled workers. The growing prominence of information–communication technology industries has also fed the demand for skilled workers who can thrive in a knowledge-based economy.<sup>1</sup>

Industries are categorized as high, medium or low-knowledge on the basis of research and development measures (e.g., the ratio of R&D personnel to total employment) and human capital measures (e.g., the ratio of workers with post-secondary education to total employment). A list of industries and their knowledge intensity classifications can be found on p. 18 of Kanagarajah (2003).

Between 1991 and 2003, the number of businesses in Canada grew by 12%, fostering an 8% increase in the number of workers. There was a related rise in the demand for skills over the same period: as the number of high-knowledge businesses increased by 78%, the number of medium-knowledge businesses increased by 14% and the number of low-knowledge businesses fell by 3%.

## Canadian workers have not kept up with the growing demand for skilled labour

Various educational indicators show that Canadians are better educated than ever before. For example, high school dropout rates have been steadily declining across Canada. In the early 1990s, the Canada-wide dropout rate was 16%. In recent years, that rate has fallen to 10%.<sup>2</sup> During the same period, more and more Canadians enrolled in post-secondary education. Between 1990 and 2005, the proportion of Canadians with at least some post-secondary education increased from 42% to 57%.<sup>3</sup>

### PISA

The Programme for International Student Assessment is a survey of 15-year-olds conducted every three years in 41 industrialized countries. PISA tests students' reading, math, science, and problem solving skills and is designed to determine whether students in these countries are well prepared to meet the challenges of the future as they reach the end of their compulsory education.

There is also evidence that Canada's elementary and secondary schools are providing a solid foundation for the skills needed in the workforce. Based on PISA scores, Canadian 15-year-olds rank among the top industrialized nations in reading, science, mathematics, and problem-solving skills.

However, there are other indications that the Canadian labour force does not have adequate skills to keep up with demand as high-knowledge industries play a progressively larger role in Canada's economy. The data from the 2003 Adult Literacy and Life Skills Survey (ALL) indicate that 40% of Canadian adults do not have literacy skills at "the level considered by experts as a suitable minimum for coping with the increasing demands of the emerging knowledge society and information economy."<sup>4</sup> A comparison of the 2003 results with those of the 1994 International Adult Literacy Survey (IALS) indicates that the average level of literacy skill remained virtually unchanged, despite the fact that the average quality and duration of education rose rapidly over that same period.

This lack of progress may reflect a phenomenon best described as skill loss. In other words, individuals can lose skills that they once had—through forgetting and lack of use. This skill loss may account for the finding that average Canada-wide levels of adult literacy have not increased even though educational attainment has improved.

Detailed analyses of the 1994 IALS and the 2003 ALL reveal that many adults appear to have lost considerable skill—ranging from 5% to 25% of the skill they possessed in 1994, depending on their province of residence, their socioeconomic status and their level of educational attainment. In general, skill loss is higher for individuals with lower educational attainment or who have occupations requiring fewer skills. At their worst, these losses are equivalent to losing the average literacy skills gained through three years of schooling.<sup>5</sup>

Canada is unique in having developed a tool to monitor the demand for literacy, numeracy and a range of other skills for each of the occupations in our national system of occupational classification. The Essential Skills profiles make it possible to compare the skills needed to fulfil job requirements with the skills that Canadian workers actually possess and thereby identify any skills gaps. For example, the Canadian Trucking Human Resources Council compared the literacy skills required by truck drivers (as described by the Essential Skills profile) with the skills available in the current truck driver workforce (as measured by IALS). It concluded that there is a gap between the skills required to understand documents needed

#### Skill Loss

Literacy skill, as measured by IALS/ALL, decreases with increasing age among Canadian adults. As a group, younger Canadians have better literacy skills than their older counterparts. Canadians aged 26 to 45 scored 20 points higher than those aged 46 to 65 on the 2003 ALL. As well, 53% of those in the older age group scored below the level considered adequate, while 38% in the younger group scored below this level.

This age-related decrease in skill has two causes:

1. **Generation Effects.** Older generations had lower initial levels of skill when they entered the labour force. As Canadians become more highly educated, succeeding generations enter the labour force with higher and higher initial levels of skill.
2. **Skill Loss.** Some Canadians experience skill loss over the years following their entry into the workforce. As a result, some older Canadians have lower levels of skill than was previously the case.

Skill loss accounts for approximately 60% of the differences in Prose Literacy between 35- and 65-year-old Canadians. The remaining age-related differences can be attributed to generational effects (see Figure 1).

for the job, such as the Transportation of Dangerous Goods Act, and the available level of skill.<sup>6</sup> Comparisons across a number of different industries indicate that similar gaps exist for a broad range of occupations.<sup>7</sup>

These findings point to the existence of a growing skills gap in Canada's labour market.

### **Implications of a skills gap**

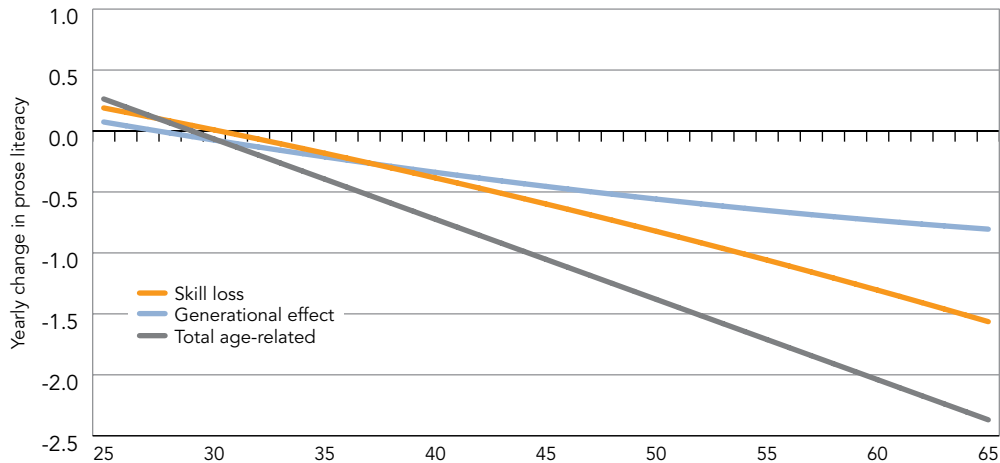
The skills gap is a problem for individual Canadians and for the country as a whole. For individuals, differences in literacy and numeracy skills are associated with large differences in employability and wage rates, particularly in occupations that demand high levels of knowledge and skill.<sup>8,9,10</sup> Other analyses of IALS data have shown that skill—independent of educational attainment—has a large effect on earnings.<sup>11</sup> These findings suggest that literacy and numeracy skills are economically important and one of the key determinants of economic inequality. In other words, skill creates economic winners and losers as employers select and reward workers with the required skills, leaving behind those without.

On a larger scale, a country's long-term economic success is largely dependent on the literacy skills of its population. Detailed analyses of IALS and ALL data show that a large proportion of differences in economic growth between countries and between provinces can be attributed to differences in average literacy and numeracy skills.<sup>12,13</sup> Thus, unmet labour-force demand for solid literacy and numeracy skills—the skills gap—limits Canada's economic potential.

The skills gap reduces the competitiveness of Canadian firms, largely by limiting rates of technical, process and organizational innovation upon which productivity growth depends. Large numbers of adults with low literacy levels limit the rate at which technologies that increase productivity can be adopted.

**Figure 1:**

Age-related changes in literacy skill can be attributed to skill loss and generational effects.



Source: Cartwright, F. (2006). *The relative effects of cohort and skill loss on age-related differences in literacy*. Unpublished manuscript, Canadian Council on Learning.

The skills gap also plays a less direct role in the economic fortunes of individuals and of the country. There is a strong link between individual physical health and literacy levels: more literate adults have fewer spells of illness, their illnesses cost less to treat and require less recovery time.<sup>14</sup> Thus, not only do higher literacy rates contribute to personal quality of life, these findings also suggest that low literacy levels impose greater societal costs by increasing the demand for health services and the expense and duration of treatment. There is also a strong relationship between literacy and the receipt of social transfers; low skilled individuals are far more likely to receive these benefits.<sup>15</sup>

## Lessons in learning: Increasing skill levels among Canadian adults

Many of Canada's competitors have recognized the need to increase the level and equitable distribution of adult literacy and numeracy skills. The U.K., Sweden, Ireland and the Netherlands have all increased their level of investment in adult skills, including literacy and numeracy.<sup>16</sup>

Canada needs to develop a coordinated strategy designed to close the literacy and numeracy skills gap. Such a strategy should take into consideration the factors relevant to skill loss. Analyses suggest that skill loss is greater among adults whose parents are from lower educational backgrounds.<sup>17</sup> Additionally, a significant fraction (75%) of the inter-provincial differences in the magnitude of skill loss between 1994 and 2003 can be explained by differences in:

- **Age:** skill loss is more pronounced in provinces with higher average ages.
- **Educational attainment:** skill loss is less pronounced in provinces with higher average levels of educational attainment.
- **Skill use on the job:** higher intensities of skill use at work reduce skill loss.
- **Skill use at home:** higher intensities of skill use at home reduce skill loss.
- **Weeks of work:** higher numbers of weeks worked reduces skill loss.<sup>18</sup>

In short, the probability that a group will gain or lose skills appears to depend on a variety of factors over which individuals, employers or governments may be able to exert some control. Post-secondary education, the amount of reading on and off the job, and stable employment all appear to have an impact on the stock of literacy skills in the population.

Progress toward closing the skills gap can be made by increasing the average skill levels of graduating students, ensuring that fewer students leave the system with inadequate literacy and numeracy skills. The provincial and territorial governments are working together through the Council of Ministers of Education to develop coordinated strategies to achieve this goal. Progress can also be made by encouraging larger numbers of Canadians to take courses to improve their skills.

Individuals can help to raise the level of adult literacy by evaluating their own learning needs and investing in their own adult learning.

Employers can help to raise the level of adult learning by providing higher levels of workplace training. Ironically, employers are more likely to provide additional training to employees who already have higher levels of education. Employers need to recognize the benefits of fostering better skills for individuals with a wide range of skills and educational backgrounds. For example, employers should be aware that that employees are motivated to take training in order to perform more effectively in their current jobs. According to CCL's Survey of Canadian Attitudes toward Learning, released October 2006, 69% of Canadians reported this to be the case, compared with less than a third who reported it was for more money or a better job.

Educational institutions can develop and disseminate effective curricula and diagnostic tools, and create institutional mechanisms for the rapid transmission of skills training best practices. For example, Bow Valley College has developed the Test of Workplace Essential Skills (TOWES), which uses real-world workplace tasks to measure text reading, document use and numeracy. This tool allows employers to identify specific skills gaps among their employees. This information can be used by employers and training providers to develop workplace training programs. It can also be used to foster relationships between employers and community colleges so that programs can respond to specific skill shortages.

Governments also have a range of strategies at their disposal. They can use public awareness campaigns to encourage behavioural change (i.e., participation in and provision of training). They can employ tax incentives to encourage individuals to participate in adult learning and to encourage businesses to offer training. They can also use tax incentives to encourage businesses to acquire skill-intensive technologies—Canadians who work with these technologies will be more likely to acquire and maintain strong skills. Governments can also eliminate tax disincentives to the adoption of technologies requiring high levels of skill.

Investments in skill development will foster economic growth more effectively when a large proportion of the labour force—rather than a small number of highly talented individuals—benefits from additional skills training.<sup>19</sup> Canada's efforts to close the skills gap must include the broadest possible cross-section of Canadians.

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