

Leveraging the Skills of Knowledge Workers



BY **GRAHAM S. LOWE**

ABSTRACT ► Human capital now occupies centre stage in public policy. Across the industrialized world, governments have adopted a human resource-based model of economic development. However, as Canada moves in this direction so do all our competitors. Enabling citizens to acquire knowledge, skills and education is a necessary but no longer sufficient condition for economic success. Equally crucial, then, is ensuring that past investments have the intended social and economic payoffs. The next generation of policy must strive to create the enabling conditions for the *use and further development* of human capital at the point where it can be most fully realized—within workplaces. The focus here is on the demand for human capital, assessing how well Canada is doing to maximize the returns on existing human capital investments among the highly educated. In the lexicon of the “new economy,” are we leveraging the skills of knowledge workers? This question takes us to the intersection of social and economic policy, because the same workplace conditions supportive of individuals’ productivity also nurture life-long learning and all its human benefits.



RÉSUMÉ ► Le capital humain est actuellement au centre des préoccupations en matière de politiques gouvernementales. Les gouvernements des pays industrialisés ont adopté un modèle de développement économique basé sur les ressources humaines. À l’instar de tous ses concurrents, le Canada a choisi cette voie. Le succès économique ne dépend plus uniquement de la capacité d’un pays de permettre à ses citoyens d’acquérir des connaissances, des compétences et de s’instruire. Il faut absolument s’assurer que les investissements rapportent les gains sociaux et économiques escomptés. Les nouvelles politiques doivent s’efforcer de mettre en place les meilleurs cadres pour permettre l’utilisation et l’accroissement du capital humain, là où il peut entièrement se développer— le lieu de travail. Le point central de cette étude est la demande en capital humain, plus particulièrement la performance du Canada à maximiser le rendement des investissements en capital humain chez les plus instruits. Pour employer la terminologie de la nouvelle économie, accroissons-nous les compétences des travailleurs du savoir ? Cette question souligne les rôles respectifs des politiques sociales et économiques. Les conditions en milieu de travail, qui favorisent la productivité des individus, soutiennent également l’apprentissage à vie et tous les avantages qui en découlent pour eux. (Traduction www.isuma.net)

THE IDEA THAT KNOWLEDGE contributes to economic development is not new.¹ Economic and social innovations are generated by the creative application of knowledge and skill (“how-to” knowledge). So it is important to document how, and under what conditions, well-educated workers are able to develop and apply their knowledge. If they are active learners on the job, these workers will contribute new ideas that improve the services or products of the organization and simultaneously expand their skills.

Who are the knowledge workers?

Which groups of workers engage in high-skill, knowledge-based work? One way to approach this question is to identify knowledge-intensive occupations. The National Occupational Classification (NOC), which uses four basic skill levels, reflects an education-based hierarchy. Thus, jobs in skill level “A” are mainly professional occupations requiring a university degree. Another approach focuses on workers’ human capital, embodied in their formal educational attainment.

Both approaches identify a university degree as a credential with significant payoffs for individuals and the economy. University degrees are in good supply in Canada. This country’s educational attainment is the highest among OECD nations, measured as the proportion of adults having completed post-secondary education.² By 1995, 48 percent of the Canadian population aged 25 to 64 had a post-secondary education, compared with the OECD average of 23 percent.³ Currently, 20 percent of the employed labour force have a university degree. In addition, many of the 25 to 54 year olds with post-secondary, non-university education participating in job-related education and training are working toward a degree.⁴

For this discussion, then, I define workers with university degrees as “knowledge workers.” This group has the potential to make substantial contributions to economic outcomes, given the high level of public and private investments in their human capital.

There are two limitations to this analytic strategy. First, this is an exclusive definition of knowledge workers. As I argue later, it must give way to an inclusive approach that looks at all workers’ knowledge. This is how human capital as an economic policy concern intersects with the social policy goal of life-long learning. Second, despite being the most widely used indicator of human capital, educational attainment does not fully capture relevant experience, formal training and informal learning. But these caveats do not detract from the basic point that a crucial, yet overlooked, policy issue is the extent to which individuals have full opportunity to apply their talents within work contexts.

The dynamics of skills

We need a dynamic view of skills to understand how the knowledge acquired in particular university programs is transformed into economic and social value. Many researchers have advocated better information on changing skill requirements for specific occupations.⁵ However, for many university graduates, these static occupational boundaries fail to capture

their diverse careers or the wide applicability of their knowledge.

Given that some employability skills required by employers are not widely taught in university programs,⁶ a related issue is how this applied knowledge is acquired after graduation. Leadership and teamwork skills are less likely to be developed in post-secondary programs, compared with cognitive, communication skills. Individuals with high-level technical skills often lack management skills, which are more likely acquired through experience.⁷ This underscores the importance of workplaces as sites for on-going learning.

Information technology (IT) contributes to the increasingly fluid nature of skills. IT is considered the foundation of the new economic paradigm. By accelerating the rate of knowledge diffusion, IT affects skill requirements, usually raising them. In the 1990s, the changing skill requirements resulting from the adoption of IT were met through the traditional channels of schooling and on-the-job training.⁸ However, high rates of IT obsolescence also affect human capital, raising the bar for skill upgrading. This is an eco-

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economic argument for promoting continuous learning within organizations.

In short, a dynamic view of skills highlights the role of individuals in developing and using ideas productively. Yet our understanding of the learning processes among adults is far from complete. To address these gaps, the most appropriate research venues for examining the links between productivity and workers' human capital is not the whole economy or society but the workplace or work group.⁹

The demand for knowledge workers

A focus on the workplace moves us from the supply to the demand side of the human capital equation. The changing strategies and structures of industry shape the demand for knowledge workers. While aggregate skill requirements in the economy have been rising for decades, not all labour market trends move in this direction. Some trends pose barriers to the optimal use of knowledge workers; other trends raise concerns about looming shortages of such workers.

Most new jobs in Canada since the mid-1980s have been created in small firms or in self-employment, and most job destruction has been in large public and private sector organizations.¹⁰ In 1999, 34 percent of the employed labour force was in firms with 20 or fewer workers, compared to 12 percent in firms with 500 or more workers.¹¹ The problem is that small firms invest less in training compared with large firms. This makes it difficult for small firms to attract, retain and develop skilled staff—a particular problem in growth sectors. For example, one third of employees in the software industry are found in firms with 10 or fewer employees, which is higher than average for other industries.¹² In workplaces of this size, relatively few (15.5%) workers have university degrees.¹³ If small firms are expected to be incubators of economic innovation, then their low percentage of knowledge workers could be a limitation.

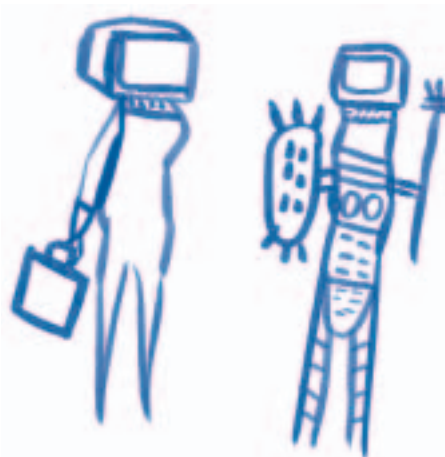
Self-employment has been another source of new jobs, increasing from 14.1 to 16.2 percent of all employment between 1990 and 2000.¹⁴ The solo contractors and small business owners

among the self-employed include many university graduates, which gives rise to popular images of independent knowledge workers.¹⁵ However, other than the fact that the self-employed must rely on their own resources for skill development, we know little about how their working conditions affect learning opportunities.

Demographic trends also significantly affect knowledge workers. Canada's labour market is expected to tighten as baby boomers retire. The relatively small size of the youth cohorts and current levels of immigration will be inadequate to meet what is expected to be an unprecedented demand. Knowledge-intensive industries are the most likely to encounter labour shortages. The public sector will feel the demographic crunch first, and it has relatively high proportions of university-educated workers. In the private sector, 35 percent of workers in the fastest growing industries in the 1990s (professional, scientific, technical and management services) are university educated.¹⁶

Not surprisingly, there is growing concern among employers about staff recruitment and retention. Research-

There is growing evidence of underused human capital.



ers have only begun to examine employer responses to these human resources challenges among knowledge workers. Among the possible strategies is increased use of existing talent. Employers have been slow to respond to the need to expand and better utilize existing human capital, even though workforce ageing has increased the experience pool they have to draw upon.¹⁷

Knowledge workers' employability skills

It also is useful to situate knowledge workers within the employability skills discourse. This raises practical questions about the supply-demand chain for skills, as well as policy questions about who is responsible for skill development and which skills should receive priority.

The Conference Board of Canada's¹⁸ Employability Skills Profile (ESP) launched extensive discussions of employers' skill needs, what they would like schools to teach, and what types of skills students and workers should acquire. The ESP defines the foundational academic, personal and teamwork skills that employers expect of workers, and therefore should contribute to an individual's success in the labour market.

The concept of "employability skills" is an enduring policy prescription because of its implications for both economic growth and individual labour market outcomes. However, an underlying assumption is that workers must bear the responsibility for keeping their skills current. This is their insurance in a precarious, fast-changing labour market. By individualizing skills in this way, far more attention has been given to the supply of specific employability skills than to the empirical assessment of the need for, and use of, such skills by employers.

The Expert Panel on Skills also noted that, while Canada faces no shortage of technical skills required in strategic industries, employers reported that workers—especially new hires—lacked management and essential skills. In addition to the academic, personal, management and teamwork skills identified in the ESP, the

Panel included in its list of “essential skills” literacy and numeracy, computer skills, and analytic and problem-solving skills.¹⁹ All are considered critical to the success of Canada’s knowledge-intensive industries.

But for various reasons, some well-educated workers end up in jobs that do not utilize their skills. Employers’ assessments of their skill requirements may not be reliable. For example, employers may use educational credentials as a screening device, or may inaccurately judge an applicant’s specific skills or educational qualifications. So it is understandable that employers frequently voice contradictory demands for skills, advocating higher standards for general education, while at the same time criticizing schools for not producing job-ready graduates.²⁰ Part of the difficulty is the lack of a common framework for defining and measuring employability skills and their outcomes.²¹

Workplace opportunities to apply knowledge and skills

The Expert Panel on Skills does raise concerns about a shortage of opportunities for high-skilled work, which

could be more serious than shortages of skilled workers. This takes us inside firms, where barriers to using existing knowledge are embedded in management practices, organizational systems and job designs.

Generally, human resource development policies pay little attention to the sources of demand for highly educated workers or the need to reduce low-skilled work. A major policy weakness, then, is the assumption that employers will respond to the growing skills of the workforce and automatically utilize them.

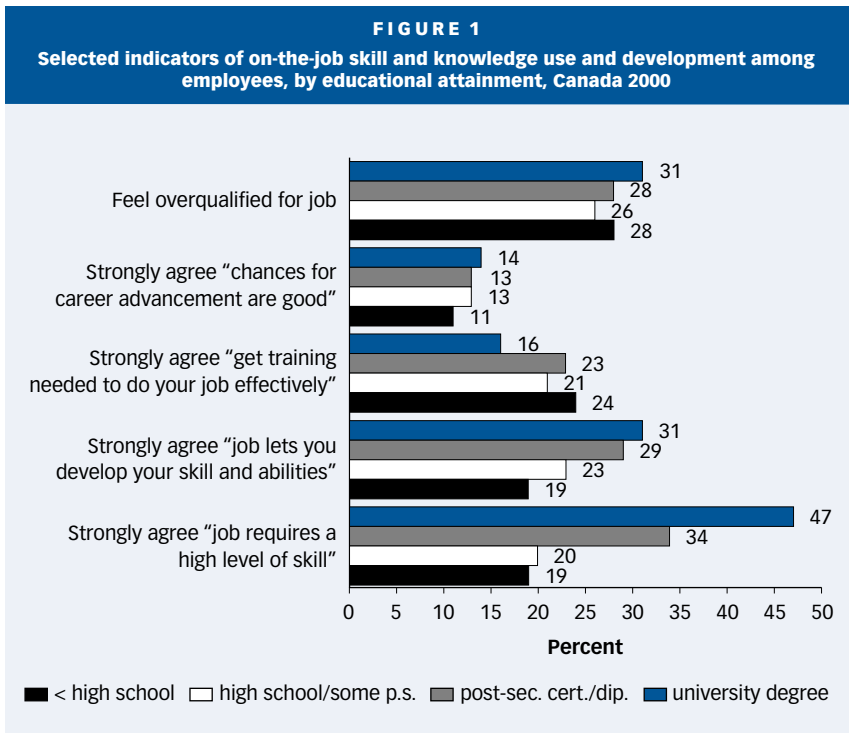
Most research on skill development in Canada examines adult workers’ training activities and outcomes. Studies of university graduates focus on labour market outcomes, especially earnings, and the overall fit between graduates’ programs of study and subsequent employment. There also is growing evidence of underused human capital.²²

Specifically, the National Graduates Surveys (NGS) document sizeable numbers of university graduates with job-education mismatches and underused skills. Between 27 and 48 per cent of college, bachelor’s and doc-

toral grads report being overqualified, based on having a higher level of qualification than required in the job by their employer. Some of this “overqualification” is to be expected, as inexperienced workers settle into jobs, but the NGS follow-up surveys find only minor declines two to five years after graduation.²³

Moreover, the specific skills employers say they want from knowledge workers are not being tapped. The 1997 Alberta Graduate Survey (AGS) of 1994 graduates from Alberta’s four universities examines how the skill content of jobs is a barrier to the use and further development of human resources.²⁴ The survey asked about the use of specific skills that universities see as important learning outcomes. On six skills—speaking, writing, problem solving, creative thinking, computers and information management—overqualified graduates felt less challenged compared to those who were not overqualified. These working conditions also limit the ability of workers to be productive, which should be a major cause for concern among employers and policy makers.

Leveraging the skills of knowledge workers demands fresh approaches for promoting continuous and active learning with jobs.



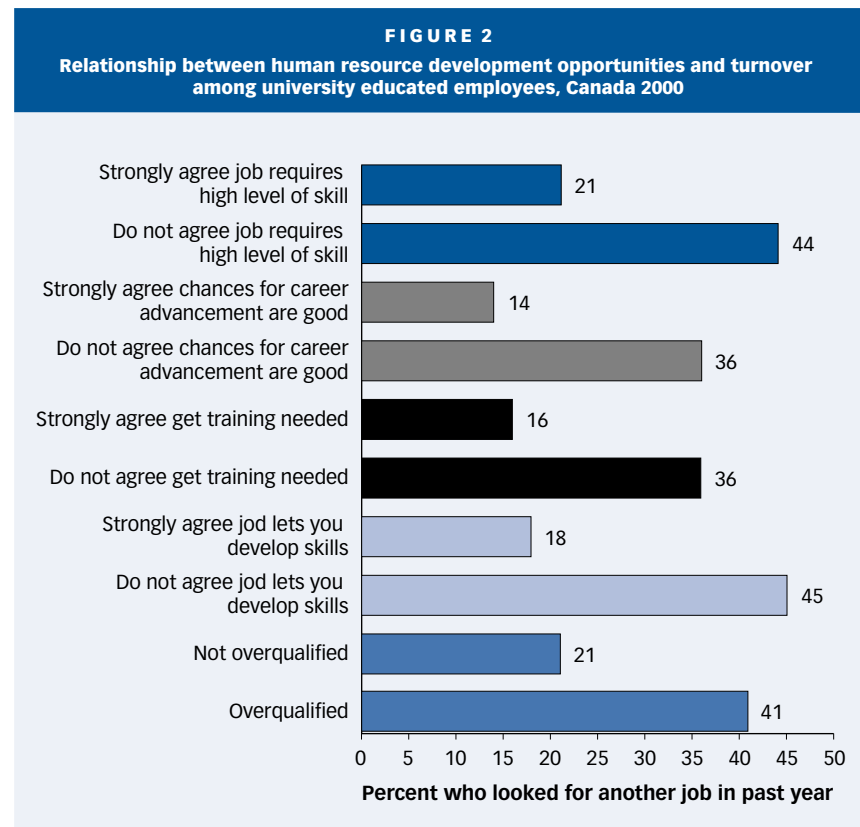
Source: CPRN-Ekos Changing Employment Relationships Survey (n=2100)

A key goal is to improve Canada's rate of employer-sponsored training, relatively low by international standards.



Recent findings from the National Graduates Surveys go further, documenting that a university education adds skill value in areas such as problem solving, thinking, communication and new technology.²⁵ Despite being key employability skills, their use on the job is less than we might expect. Furthermore, teamwork and leadership skills are less likely to be developed in universities, raising the issues of how employers can help new hires acquire these. In short, demand as reflected in actual task content strongly shapes skill use.

There are indications of untapped talent among all knowledge workers, not just recent graduates. Figure 1 shows, for example, that in 2000, 31 percent of workers with university degrees felt overqualified for their job based on their education, training and experience. It appears, as well, that some knowledge workers lack the career advancement, training and skill development opportunities that would enable them to fully contribute to organizational goals. While overqualifi-



Source: CPRN-Ekos Changing Employment Relationships Survey (n=474)

cation drops after age 25, mainly due to increased opportunity for skill development, it levels off at between 21 and 26 percent of older knowledge workers. In short, the underutilization of skills is not unique to young, inexperienced workers.

By not meeting knowledge workers' needs to use and expand their skills, employers could be jeopardizing their ability to attract and keep such workers. As Figure 2 documents, university-educated workers who are unable to realize their potential contributions in the workplace are far more likely to be actively searching for another job. Given growing employer concerns about recruitment and retention, these findings should be an incentive to close the gap between the supply of skill and knowledge in their organization and its utilization.

Learning and workplace innovation

What follows is a consideration of how to better leverage the skills of knowledge workers. However, such a discussion is hampered by a lack of

conceptual clarity. Both the terms "life-long learning" and "organizational learning" lack the clear definitions that could guide implementation strategies.²⁶

Still, there is agreement that lifelong learning requires shifting the emphasis in formal education from front-end loading—getting one's schooling when young—to more open and flexible systems that provide opportunities to obtain education throughout one's adult life. So being a knowledge worker means more than having a university degree. It also means a variety of formal and informal learning activities that build on this foundation.

While job-relevant, life-long learning occurs outside the workplace, it is crucial that work environments enable ongoing learning. Traditional workplace and job designs do not actively promote this. We need changes in work organization, management systems and workplace cultures that enable workers to more readily acquire and apply new knowledge as part of doing their jobs.²⁷ Learning is

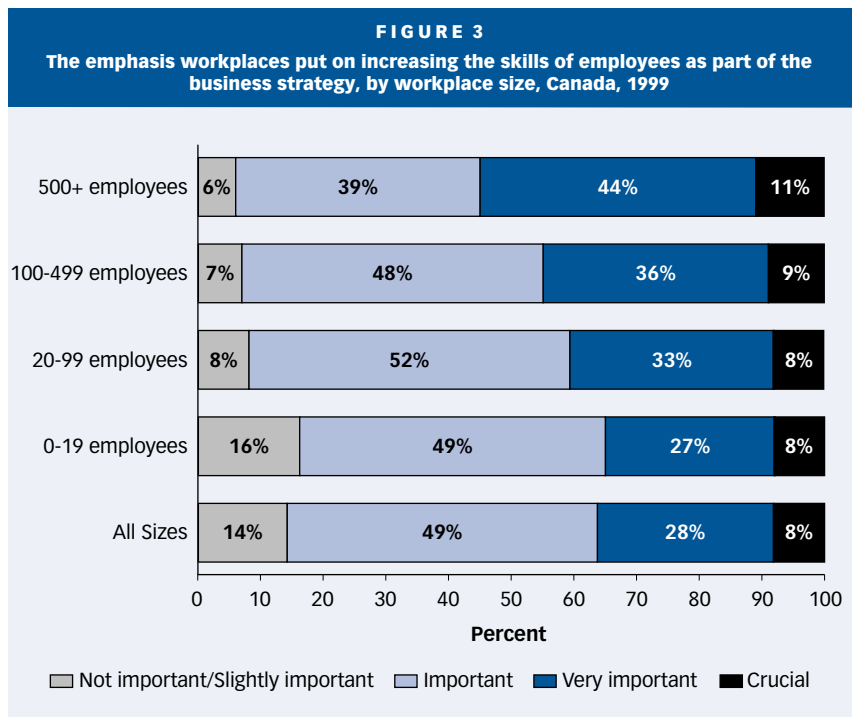
an active process that requires a longer-term perspective on human resource development. This calls for a marked departure from the short-term focus of most current workplace training programs.

Yet no consensus exists on how best to move organizations toward an active learning model, in which the application of knowledge drives productivity. Too often, “learning organization” initiatives end up being technical exercises in “knowledge management,” with an emphasis on new information systems rather than the workers who use them. Even so, the implementation of new technologies often is associated with increased skill requirements and training activity.²⁸ Interestingly, though, the 1999 Workplace and Employee Survey reveals that most employees learn computer skills on their own, or with the help of colleagues.²⁹

Information technology integrates working and learning, making it imperative to support all forms of learning within organizations. Don Tapscott argues that to benefit from technological breakthroughs, “firms must overcome their organizational learning disabilities.”³⁰ This requires new approaches to work organization, job design and human resource management that break with the traditional bureaucratic model. Despite management rhetoric about new organizational paradigms, practice lags far behind. Most organizational change programs tend to emphasize conventional training over active and ongoing learning.

From training to active learning

Organizations that support active learning have a better chance of closing the loop on knowledge acquisition and use. To help move our thinking beyond training, instead of asking “what are the barriers and incentives to training?” the more appropriate question is “what are the barriers and incentives to workplace innovations that support a learning culture and high-skilled work?”³¹ Four sets of factors are crucial: human resource management practices; work organization and job design; workplace culture and leadership; and overall business strategy.



Source: Statistics Canada, 1999 Workplace and Employee Survey, Employer microdata file.

In fact, the latter may be decisive. In 1999 (see Figure 3), only eight percent of Canadian employers viewed employee skill development as a crucial part of their overall business strategy, and another 28 percent considered it very important. Canadian employers with human resource-based business strategies tend to be training-intensive and to engage in more innovative work practices. In short, they provide enabling work environments that support innovation in products and services *as well as* learning and ongoing skill development.

To make the leap from training-intensive to learning-based, an organization’s business strategies must give priority to developing skill-rich job designs that encourage individual and collective learning. Much effort is required to close the gap between rhetoric and practice, however. Take, for example, Canada’s largest employer of university-educated workers: the federal government. As a learning organization, it may be ahead of many employers in terms of leadership and vision, but transforming bureaucratic work systems poses huge challenges.

The federal government “embraces the concept of a Public Service Learning Organization,” recognizing knowledge and learning as core values.³² Yet, results from the 1999 Public Service Employee Survey³³ reveal that substantial proportions of university-educated federal civil servants lack encouragement to be innovative or take initiative in their work, lack a say in decisions affecting their work, receive only moderate support from their supervisor in determining their learning needs, and do not feel there is adequate information sharing by management (crucial in a learning-based or-



ganization). And while 34 percent disagree that they have opportunities to develop and apply the skills needed to enhance their career, far fewer (15%) disagree that they have the initiative they need to take advantage of such opportunities.

Useful insights about how to move from a training-focused to a learning-based organization can be found in research on high performance workplaces (HPW). This literature documents a “robust” relationship between the use of flexible work organization practices (such as teams, multi-skilling, reduced hierarchy, downward delegation of responsibility) and increased training.³⁴ Betcherman and his colleagues elaborate: “Firms can only benefit from the skills employees gain from training where the organization of work allows them to apply these skills in practice. Flexible job designs that encourage employee initiative and innovation are a key condition for effective training programs.”³⁵

The HPW model integrates training, skill requirements and work organization. Workers in more participatory, skill-intensive work systems receive more formal and informal training, and are required to understand and perform a greater variety of tasks, develop better interpersonal and behavioural skills, assume supervisory and co-ordination functions and interact with other employees and managers. Black and Lynch suggest that HPWs “encourage workers to think and interact in order to improve the production process.”³⁶ This is consistent with studies of self-managing work teams. Such teams are more productive, innovative and creative than other forms of worker organization because team members’ talents are more extensively tapped.³⁷

Peter Drucker argues that managers must treat knowledge workers as assets by building into their jobs opportunities for quality innovations through continuous learning and teaching.³⁸ However, further multidisciplinary research is required to determine how the HPW contributes to ongoing learning activities. What are the processes that enable firms providing skill development opportunities to move to other flexible work

practices, and in turn, how will these innovations support active learning?

Public policy issues

The rapid pace at which knowledge and information technology are transforming the economy is pushing traditional forms of work organization into obsolescence. Leveraging the skills of knowledge workers demands fresh approaches for promoting continuous and active learning within jobs. This is a goal for all workers, not just the university-educated.

I have focused on university-educated workers to make the point that human resource development policies and practices must take better account of how work contexts enable the use of skills and knowledge. Knowledge is imbedded in social and political systems.³⁹ Hence the exclusivity implied in the term “knowledge worker” has led sociologists to speak of a “knowledge elite.” This is why policy makers need to adopt an inclusive view of a knowledge-based economy in which all workers are able to contribute and grow their talents. Otherwise, we risk adding to the polarization already evident in the labour market.

In broad terms, how can public policy address the knowledge utilization gap? While it would be unrealistic to aim for a gap of zero, where all workers feel fully engaged, we nonetheless need goals. As a start, organizations must make more effort to track employees’ skill development, knowledge use and learning activities. These benchmarks will make it possible to set targets for improvements in these areas.

For their part, governments can offer incentives for individuals and employers to increase workplace-training activities and sponsor research that documents the benefits, as well as the costs of inaction. A key goal is to improve Canada’s rate of employer-sponsored training, comparatively low when measured by international standards. This coincides with the view in some policy circles that governments should focus on improving the employability skills of the least educated. Other countries are doing this, on the assumption that such investments yield the highest returns in the labour market.

At the same time, we must address the needs of current and future knowledge workers. Public policy could usefully target a range of barriers. Chief among these are rising costs of post-secondary education and outdated forms of program delivery (e.g., a lack of part-time university degree programs). Furthermore, time scarcity is a major barrier to learning that results from long work hours and work-family conflict—issues that require bold initiatives through revised employment standards, a national childcare strategy and family-friendly workplace policies.

Another policy priority, if we are to promote life-long learning, is to create a culture that highly values learning and knowledge use in all spheres of activity. Canadians already have a strong education ethic, to the extent that further education and training are widely considered the means for individual success. Now we need to foster complementary values among employers.

As for the workplace, it has been out of bounds for policy interventions, so employers must take active leadership. Governments could commit to leading by example, adopting more skill-rich and learning-based forms of work organization for their own employees. In the private sector, the business case remains unconvincing to the majority of firms, despite accumulating evidence of the positive business results associated with high-performance workplace practices. Perhaps as new performance measurement tools—such as “balanced scorecards”⁴⁰—are adopted in Canada, it will be easier for managers to see the links between investments in people and results in business. Governments could support the development and use of these tools.

More than anything, building a knowledge-based economy in Canada depends on broadening our policy thinking beyond the supply of human capital to include the enabling contexts and conditions for the use of individuals’ creative potential. This is how to leverage the existing skills of all workers. Doing so will move us toward the goals of an improved quality

of work life and economic innovation—the ideal convergence of social and economic policy.

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