



SKILLSNEXT

Competency Frameworks and Canada's Essential Skills

NOVEMBER 2020

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and Scott Murray





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The word "Canada" is written in a large, black, serif font. A small Canadian flag is positioned above the letter "a".

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ABOUT THE PROJECT

Canadians' needs for skills training are changing rapidly. Through Skills Next, the Public Policy Forum and the Diversity Institute—in its role as a research lead for the Future Skills Centre—are publishing a series of reports that explore a number of the most important issues currently impacting the skills ecosystem in Canada. Each report focuses on one issue, reviews the existing state of knowledge on this topic, and identifies areas in need of additional research. This strong foundation is intended to help support further research and strengthen policymaking. A diverse set of authors who are engaged in the skills ecosystem through various roles, including through research, activism and policymaking, have been carefully selected to provide a broad range of perspectives while also foregrounding the Canadian context. Their varied backgrounds, experiences and expertise have shaped their individual perspectives, their analyses of the current skills ecosystem, and the reports they have authored.

MAJOR THEMES EXPLORED IN SKILLS NEXT INCLUDE

- Digital skills and training;
- Barriers to employment for specific groups and demographics;
- Alternative approaches to skills & training; and
- Offering readers a primer on what we know, what we don't know, and how we can dig deeper on skills training & the future of work.

RELEASES - SUMMER & FALL 2020

- Indigenous skills and employment training;
- Competency frameworks and essential skills;
- Technology-enabled innovations in the skills and employment ecosystem;
- Understanding gig work and the experience of gig work in Canada;
- Barriers to employment based on gender; and
- Skills in small and medium-sized enterprises.

RELEASES - JANUARY 2020

- See the [eight Skills Next papers](#) from the winter 2020 release and the [full series](#).



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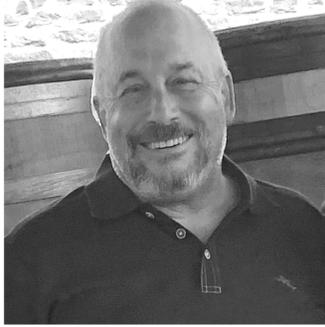
David Gyarmati is President and CEO of the Social Research and Demonstration Corporation (SRDC). He has contributed to social policy and labour market research and evaluation in Canada for more than 25 years, including two decades of pioneering work with SRDC in the design, implementation and evaluation of large-scale demonstration projects. In recent years, he has managed several pan-Canadian projects measuring the economic and social impacts of workplace training, skills development and adult learning initiatives. David has authored studies on workforce and community development, income supports and programs that use financial incentives to help disadvantaged Canadians make the transition to work. He completed an MA in Economics at the University of British Columbia specializing in labour economics and applied econometrics.



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Over the past two decades, as Director of the Canada West Foundation's Human Capital Centre and, before then, as Executive Director of Literacy Alberta, Janet Lane has gained expertise in human capital development and a clear understanding of the economic impact of skills shortages. She became involved in the literacy and essential skills field after a successful career in the financial sector, and has advised and led projects involving sponsors and stakeholders in both the public and private sectors. She has recently concentrated her research and writing on the need to move to training, assessing and hiring on the basis of competencies. Recent papers include *Literacy Lost: Canada's Basic Skills Shortfall*. Learn more about Janet's work at cwf.ca



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EXECUTIVE SUMMARY

Automation, disruptive technologies and globalization are speeding up the pace of change in the workplace. As this happens, Canadians must develop and maintain the skills and competencies necessary to make the country's evolving economy run. But how? One problem is that there is little agreement on skills and competencies nomenclature used by employers, job-seekers and service-providers.

This paper identifies a need for shared approaches to understanding how to define, evaluate and develop skills. Developing an updated competency framework for essential skills is our main recommendation and a necessary first step. This approach would help researchers assess who is best positioned to champion the improvement of skills and competencies—whether government, industry, educational institutions or civil society—to make sure Canada remains globally competitive.

There is growing demand not only for technological skills, but also “soft skills,” such as resilience, emotional stability, flexibility and adaptability. And if skills and competencies are the new workplace “currency,” we need shared approaches to understand how to define, evaluate and develop them.

This paper reviews current approaches to skills and competency frameworks, with a focus on Canada's Essential Skills Framework. It summarizes the research on definitions and frameworks; assesses essential skills levels in Canada; reviews calls for the renewal of Canada's Essential Skills Framework; and suggests areas for further research to support this effort.

Why a competency framework?

A competency framework is a tool used to develop, classify and recognize skills, knowledge and competencies. It gives employers a way to approach their skill needs and accurately judge the ranking of candidates in recruitment. Done well, it can also provide programming information to educational and training institutions.

Employment and Social Development Canada (ESDC) recently developed a skills and competencies taxonomy to help facilitate a pan-Canadian dialogue on skills, a list with descriptors and definitions of 47 skills and 46 knowledge areas as well as physical and personal attributes. But Canada doesn't yet have a credible data source that can show the composition and distribution of skills across jobs and workers. Linking the skills and competency taxonomy with existing occupations in Canada will help close this critical information gap.

The measures that are available provide a wealth of insights. For example, Canada lags behind in adult education and literacy skills training. Canadians also spend less time in training than other countries' workers, due, in part, to a lack of employer investment in essential skills training. Overall, according to one study, Canada's literacy ranking is average; Canada is below average in numeracy and above average in problem-solving in technology-rich environments. Another study found there are six times as many Canadians with Level 2 literacy skills as there are jobs for that level. That means jobs requiring more literacy are being filled by those who don't have enough.

Canada would unlock a vault of valuable information if it were to track all nine core skills in ESDC's Essential Skills Framework. The results could benefit Canadians' earnings potential through their lives, mitigate risks of injury and absenteeism, improve workplace productivity and result in greater returns for GDP.



A competency framework is a tool used to develop, classify and recognize skills, knowledge and competencies. It gives employers a way to approach their skill needs and accurately judge the ranking of candidates in recruitment. Done well, it can also provide programming information to educational and training institutions.



INTRODUCTION

Around the world, there is growing emphasis on the future of work, characterized by automation, disruptive technologies, and continued globalization, but also more contract work and temporary jobs, a growing gig economy, and an increasing need for the workforce to upskill regularly. Understanding the changing nature of work and the gaps between the skills that employers say they want and the skills levels in the workforce has been a priority for organizations around the world, including the Organisation for Economic Co-operation and Development (OECD) and World Economic Forum (WEF) as well as many inquiries in Canada.^{1, 2, 3} While there has been a longstanding emphasis on growing demand for technology skills, which have been the focus of many reports and commissions⁴, there have also been growing demands for “soft skills,” although the term belies the fact that these soft skills are “harder” than the term suggests.^{5, 6} Resilience, emotional stability, flexibility, and adaptability as well as other “soft” skills, many argue, will be critical for individuals to navigate job and career changes, engage in continuous learning, and cope with change. But in spite of the shared concern and sense of urgency, considerable fragmentation and inconsistencies exist in the analysis, description, and assessment of these skills and competencies.⁷ If skills and competencies are the new “currency” in the future of work, we need shared approaches to understanding how to define, evaluate and develop them.

The purpose of this paper is to review the research on current approaches to skills and competency frameworks and assessments, with a particular focus on Canada's Essential Skills Framework. Skills are the currency of the training and employment ecosystem, yet there is little agreement on a nomenclature that provides common language for job-seekers, service-providers and employers. Without a common language, it is difficult to accurately measure the skill needs and gaps in the labour market and design appropriate policies and programs to meet the needs of different stakeholders. Similarly, lack of common definition and measurement will undermine the ability of job-seekers to communicate their skills in relation to employers' requirements.⁸

¹ Organisation for Economic Co-operation and Development (OECD). (2016). [Getting skills right: Assessing and anticipating changing skill needs](#).

² Labour Market Information Council, Employment and Social Development Canada (ESDC) and Statistics Canada. (2019). [Bridging the gap between skills and occupations: A concept note to identify the skills associated with NOC](#).

³ World Economic Forum. (2018). [The future of jobs report](#).

⁴ Shortt, D., Robson, B. and Sabat, M. (2020). [Bridging the digital skills gap: Alter pathways](#).

⁵ Cukier, W., Hodson, J. and Omar, A. (2015). [“Soft” skills are hard: A review of the literature](#).

⁶ Lapointe, S. and Turner, J. (2020). [Leveraging the skills of social sciences and humanities graduates](#).

⁷ Braham, E. and Tobin, S. (2020). [Solving the skills puzzle: The missing piece is good information](#).

⁸ Ibid.

This paper will:

1. Summarize the current research on skills and competency definitions and frameworks;
2. Provide a comprehensive review of approaches to competency frameworks, including international initiatives as well as Canada's new skills and competencies taxonomy;
3. Explore in detail Canada's Essential Skills Framework, and its important role in Canada's skills and training ecosystem;
4. Assess essential skills in Canada and Canada's current results;
5. Review calls for the renewal of Canada's Essential Skills Framework; and
6. Suggest areas for further research to support this effort.

What are skills and competencies?

Definitions

Increasingly, there is a shift from discussing “jobs” to discussing “skills” or “competencies.” While the terms are often used interchangeably, there are some important differences. For example, a competency is generally understood to include skills, but also knowledge, abilities and aptitudes. A competency is something that a person can do and that a person must demonstrate to be effective in a job, role, task or duty.⁹ Competency also implies the capacity to perform tasks consistently and efficiently.

Employment and Social Development Canada's (ESDC) June 2019 version of the skills and competencies taxonomy defines each component separately as follows:

Skills: Developed capacities that an individual must have to be effective in a job, role, function, task or duty;

Knowledge: Organized sets of information used for the execution of tasks and activities within a particular domain;

Abilities and attributes: Innate and developed aptitudes that facilitate the acquisition of knowledge and skills to perform at work¹⁰ (e.g., deductive reasoning, body flexibility and judgment); and

⁹ Lane, J. and Griffiths, J. (2017). [Matchup: A case for pan-Canadian competency frameworks](#).

¹⁰ Labour Market Information Council, Employment and Social Development Canada (ESDC) and Statistics Canada. (2019). [Bridging the gap between skills and occupations: A concept note to identify the skills associated with NOC](#).

Competency: The combined utilization of personal abilities and attributes, skills and knowledge to effectively and reliably perform a job, role, function, task or duty.

Competencies

While there are various ways to parse the skills needed to enter, stay in and progress in the Canadian workforce, the underlying message is that skills can be defined and measured, as well as taught and built-upon, allowing workers and employing organizations to identify with precision what skills they need in a certain job or what types of on-the-job training they should offer to support employee success in particular occupations. Whereas competencies can refer to the convergence of knowledge, abilities and skills, the identification and articulation of individual skills is necessary, especially in the recruitment process.

Competencies, like skills, are often transferable between occupations rather than tied to one particular workplace. However, by definition, competencies include knowledge components that are contextual. Thus, competencies are not often completely transferable.

Skills

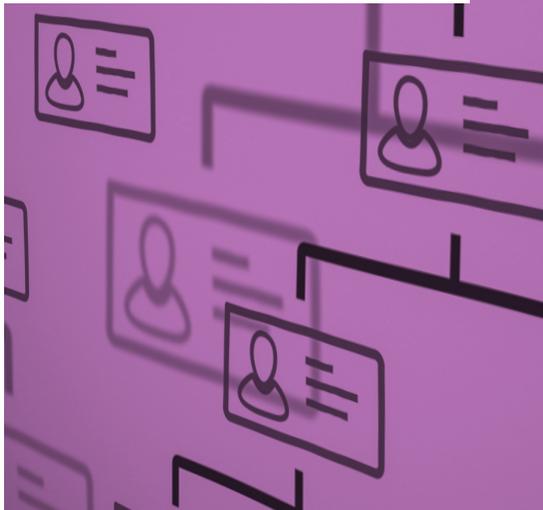
Skills are often required for a specific job and form the foundational building blocks for acquiring and applying additional skills and competencies. Burning Glass technologies has identified three types of skills required to perform jobs: necessary, defining and distinguishing skills, ranked in terms of specificity and specialization.¹¹ The Conference Board of Canada has described skills required for the Canadian workforce as “employability skills,” which it has further categorized as fundamental skills, personal-management skills and teamwork skills.¹² These represent the basic skills one needs to enter, stay in and progress in the world of work.¹³ Before developing to the taxonomy introduced above, ESDC also conducted research and established a framework of nine literacy and essential skills required for work,

¹¹ Burning Glass Technologies. (2018). [Changing the way we think about skills](#).

¹² Conference Board of Canada. (n.d.). [Employability skills](#).

¹³ Ibid.

Competency frameworks also improve the efficiency and transparency of internal labour markets through which most employees are promoted. Given the emerging labour and skill shortages facing Canadian employers, competency frameworks will become more advantageous.



which serve as the basis for all further learning.¹⁴ It is worth noting that essential skills also exert a profound impact on educational success, health and social engagement.

Skills are often discussed in different contexts—literacy and essential skills (LES), professional, vocational—and include very broad concepts. Essential skills, for example, are those everyone needs, whereas regulated professions will have a very specific collection of skills often accompanied by a defined body of knowledge. Another important distinction is between skills and tools or techniques. For example, in spite of common usage, we would generally distinguish between having digital literacy (a skill) and using Microsoft office (a particular tool), or between having advanced written communications abilities (a skill) and writing a press release (a technique). In the current discourse, skills can be erroneously used to apply to many things—from a psychology degree to the use of a software application such as Excel. In this paper, skills refer to discernible capacities and not to specific tools or techniques.

Competency frameworks

Building on skills and competencies, a competency framework is “an instrument for the development, classification and recognition of skills, knowledge and competencies.”¹⁵ Fully formed frameworks itemize the competencies and level of competence associated with jobs or occupations in an industry sector, location or economy.^{16, 17} Competency

¹⁴ Employment and Social Development Canada. (2015). [Understanding essential skills.](#)

¹⁵ Lane, J. and Griffiths, J. (2017). [Matchup: A case for pan-Canadian competency frameworks](#), p. 23.

¹⁶ Ibid.

¹⁷ Braham, E. and Tobin, S. (2020). [Solving the skills puzzle: The missing piece is good information.](#)

frameworks are important tools to allow shared understanding among key stakeholders in the skills and training ecosystem. They provide a common language for collection of data on labour-market information, for job design and recruitment and for the design of training opportunities and assessment.

In the labour market, fully developed competency frameworks provide employers with an explicit way to think about their skill needs and to judge the relative ranking of candidates in recruitment and selection processes. These frameworks serve to reduce the risk that true skill needs will be overstated and that qualified candidates will be unfairly excluded. They also provide employers who hire partially qualified workers with an explicit understanding of any skill gaps, what is needed to fill them and how their skill demands are likely to evolve in response to changes in market conditions. Competency frameworks also improve the efficiency and transparency of internal labour markets through which most employees are promoted. Given the emerging labour and skill shortages facing Canadian employers, competency frameworks will become more advantageous.

If they are well defined, up-to-date and include accurate criteria by which to measure levels of competence, competency frameworks provide information for education and training systems to improve the efficiency with which additional skill supply is created. By enabling the accurate pinpointing of knowledge and skill gaps, competency frameworks can reduce the time needed to achieve full certification and the cost of the credentialing process, while improving the validity, reliability and consistency of credentials being issued. The resulting improvement in the efficiency of the market and associated productivity gains more than offset the costs of assessing competency directly throughout educational processes.

To realize the full economic benefits of applying a competency-based approach, the elements and levels of competence, both on the demand/employer side and on the supply/employee side, need to be assessed. Many of the competency-based classification systems that are available infer, rather than observe, skill level. Labour market information tools that use proxies for competence—such as field of study, degrees, diplomas and occupations—are less useful and more prone to error than those based on competency frameworks.¹⁸ More directly, estimates based upon these proxies are averages that obscure the most interesting sources of variance in true skill demand and supply.

¹⁸ Braham, E. and Tobin, S. (2020). [Solving the skills puzzle: The missing piece is good information.](#)

Effective public policy depends on having a clear understanding of:

1. The economic demand for competencies, including how firm structure and strategies influence demand;
2. How demand is likely to change with time;
3. Where the supply of competencies stands;
4. How the supply is likely to evolve with time in response to skill gain and loss; and
5. How efficiently the markets match workers' skills with the actual demands of employers.

Skill demand is highly variable among employers in the same industry, and skill supply varies significantly among workers with identical qualifications and experience. As a result, the markets that match skill supply and demand will be relatively inefficient except in cases where worker skills are objectively assessed by each employer.

Current approaches to competency frameworks

International context

The development of competency frameworks is an area of research and investigation around the world as governments at the national and regional level, along with international organizations, consultants, employers, post-secondary institutions and others in the ecosystem, try to define more clearly what information is required. The taxonomies that have evolved vary considerably in their goals, complexity, scientific rigour, utility and application. For example, the U.S. government's system, [O*Net](#),¹⁹ links skills, knowledge and attributes to the occupations in the economy. Every year about 100 of the O*Net job profiles are updated. The European Union has a framework, ESCO—European Skills, Competencies, Qualifications and Occupations—used by all member countries to facilitate labour mobility throughout the EU.²⁰

In addition to O*Net and ESCO, there are many well-established taxonomies and frameworks in use internationally, as well as several national and provincial frameworks in Canada. Table 1, in the Appendix, outlines some of the most frequently referenced, including:

- Canada's National Occupational Standards;²¹

¹⁹ O*Net Resource Centre. (n.d.). [About O*Net](#).

²⁰ European Commission. (2020). [European skills/competencies, qualifications and occupancy](#).

²¹ Employment and Social Development Canada. (2020). [About the sectoral initiatives program](#).

- The Australian Core Skills Framework;²²
- Competencies for Lifelong Learning: A European Reference Framework;²³
- The Atlantic Canada Framework for Essential Graduation Competencies;²⁴
- The World Economic Forum 21st Century Skills Every Student Needs;²⁵ and
- The FutureWorx Soft Skills Framework.²⁶

Most of these frameworks are defined for a specific purpose and with a specific audience in mind. Individually, the frameworks may be sufficient for their purpose, but they do not allow for the widespread coherence required for analyzing and assessing impact across larger systems. The absence of a common framework in Canada has led to the development of multiple classifications by governments and private firms alike. Having multiple classification systems is confusing for learners, educators and employers who often have to decide for themselves which specific skills they should develop (or, in the case of educators and employers, which types of training they should offer). There is no universal standard by which these frameworks have been evaluated. Such a standard would judge a framework by its validity, reliability, statistical fitness for intended purposes, comparability and interpretability, i.e., its capacity to provide insight into appropriate educational responses and their relationship to outcomes.

The Council of Ministers of Education, Canada (CMEC), a group that brings together provincial and territorial ministers of education, has also endorsed six pan-Canadian global competencies:

- 1. critical thinking and problem solving;**
- 2. innovation, creativity and entrepreneurship;**
- 3. learning to learn, self-awareness and self-direction;**
- 4. collaboration;**
- 5. communication; and**
- 6. global citizenship and sustainability.**

²² Commonwealth of Australia. (2012). [Australian core skills framework](#).

²³ Council of the European Union. (2018). [Council recommendation of 22 May 2018 on key competences for lifelong learning](#).

²⁴ Council of Atlantic Ministers of Education and Training. (2015). [Atlantic Canada framework for essential graduation competencies](#).

²⁵ Soffel, J. (2016). [What are the 21st-century skills every student needs?](#)

²⁶ Futureworx. (2019). [Building a pan-Canadian soft skills framework](#).

These global competencies represent “overarching sets of attitudes, skills and knowledge that can be interdependent, interdisciplinary and leveraged in a variety of situations, both locally and globally.”²⁷ This competency framework, like others in the early stage of development, will become more useful as associated pedagogical approaches and more reliable measures are developed over time.

Some of Canada’s industry and professional associations are also developing frameworks for use within their own sectors. Governments have a significant role to play in supporting these efforts and ensuring there is a common language of skills, knowledge and attributes, making it easier to link frameworks together over time. Recently, ESDC has also taken up this challenge.

ESDC's Skills and Competency Taxonomy

Employment and Social Development Canada (ESDC) has recently developed a Skills and Competencies Taxonomy to help facilitate a pan-Canadian dialogue on skills. This taxonomy clarifies common terminology that is used across various competency domains and concepts (e.g., skills, personal abilities and attributes, knowledge, interests), occupational work contexts, work activities and tools and technology information. It aims to complement other ESDC labour-market information products, such as the Canadian skills profiles.²⁸ Currently it is a list, with descriptors and definitions of 47 skills and 46 knowledge areas as well as physical and personal attributes.²⁹

Much of Canada’s labour-market information is organized around occupation, including the quinquennial profiles of employment from the Census of Population, monthly profiles from the Labour Force Survey and quarterly profiles of job vacancies from the Job Vacancy and Wage Survey.

A natural next step in the skills and competency taxonomy initiative involves connecting the taxonomy with the occupations. The Labour Market Information Council (LMIC), ESDC and Statistics Canada are working on a joint project to explore the best ways to link ESDC’s new skills and competencies taxonomy to the 930 occupations in ESDC’s Career Handbook, building on the O*NET system developed by the

U.S. Bureau of Labor Statistics. In a recently published joint report, these partners introduced a phased approach to mapping skills to occupations.³⁰

²⁷ Council of Ministers of Education. (n.d.). [Global competencies](#).

²⁸ Labour Market Information Council, Employment and Social Development Canada (ESDC) and Statistics Canada. (2019). [Bridging the gap between skills and occupations: A concept note to identify the skills associated with NOC](#).

²⁹ Employment and Social Development Canada (ESDC). (2019b). [Skills and competencies taxonomy](#).

³⁰ Labour Market Information Council, Employment and Social Development Canada (ESDC) and Statistics Canada. (2019). [Bridging the gap between skills and occupations: A concept note to identify the skills associated with NOC](#), p. 2.

Canada does not yet have credible data sources that can show the composition and distribution of skills across jobs and workers. Linking the skills and competency taxonomy with existing occupations in Canada will help close this critical labour-market information gap.³¹ This linkage will be useful for supporting some of the uses of this information, starting with an understanding of which skills, knowledge and aptitudes are most commonly used by each occupation. Users of this information would include students making decisions about their future careers, job-seekers and career developers. At the macro-level, there is also the potential to gain a better understanding of the size of the national and regional demand for skills, knowledge and attributes through the survey data collected. This, over time, would allow education and training providers to adjust aggregate levels of supply to reduce the size of occupational skill shortages.³²

The Essential Skills Framework

Background

Developed in the early 1990s, the department of Human Resources and Skills Development Canada (HRSDC) consulted with more than 3,000 employers, practitioners and other stakeholders leading to the development of a framework of nine skills that were needed at some level in almost every job in the economy.³³ The essential skills were categorized then, as now, as the skills most commonly needed to better prepare for, get and keep a job, and adapt and succeed at work. They are also the foundation for learning all other skills. In short, they are needed for work, learning and life.

ESDC's nine essential skills are shown in Table 1 and skill level is further delineated in Table 2.

³¹ Labour Market Information Council, Employment and Social Development Canada (ESDC) and Statistics Canada. (2019). [Bridging the gap between skills and occupations: A concept note to identify the skills associated with NOC](#).

³² Organisation for Economic Co-operation and Development (OECD). (2016). [Getting skills right: Assessing and anticipating changing skill needs](#), p. 55-69.

³³ Stewart, G., Geraci, K. and Nagy, P. (2004). [Essential skills and Canadian language benchmarks: Considerations in comparing conceptual frameworks](#), p. 3.

Table 1: The Nine Essential Skills Defined

Essential Skills are those most commonly needed to better prepare for, get and keep a job, and adapt and succeed at work. They are also the foundation for learning all other skills. In short, they are needed for work, learning and life.

Name	Definition
 Reading Text	Understanding material in the form of sentences or paragraphs
 Using Documents	Reading/interpreting and writing/completing/producing of documents, including graphs, lists, tables, blueprints, schematics, drawings, signs and labels
 Numeracy	Use of numbers and capability to think in quantitative terms
 Writing	Writing texts and writing in documents, including on a computer
 Oral Communication	Use of speech to give and exchange thoughts and information
 Thinking	Six different types of interconnected cognitive functions: problem solving; decision making; critical thinking; job task planning and organizing; significant use of memory; and finding information
 Working with Others	Working with others to carry out tasks. Working co-operatively with others and having the self-discipline to meet work targets while working alone
 Continuous Learning	Knowing how to learn; understanding one's own learning style; and, knowing how to gain access to a variety of materials, resources and learning opportunities
 Computer Use/ Digital Skills	Handling the variety and complexity of computer use required in the workplace

Source: Employment and Social Development Canada (ESDC). (2015). [Understanding essential skills](#).

The ESDC Essential Skills Framework has been adopted in many contexts to frame important programs that close skills gaps. Some examples include the provincial program delivery organizations co-ordinated by Skills/Compétences Canada that promote essential skills for skilled trades and technologies amongst youth, as well as the innovative Essential Skills for Aboriginal Futures (ESAF) program, offered as part of the Access (Aboriginal Community Employment Services Society) program designed to close literacy and essential skills gaps amongst First Nations, Métis and Inuit youth and adults.^{34, 35} Identification of this framework has proven useful across levels of government and non-governmental organizations.

As with all skills, adults accumulate varying levels of essential skills, gaining and losing them over the course of their lives. Since the development of the Essential Skills Framework, ESDC has spent considerable time and financial resources to determine the best way to measure the level of ES any given individual possesses, as well as the skill levels required by individual jobs. For the latter, ESDC developed more than 350 essential skills profiles.³⁶ The essential skills profiles describe the skill demands that workers confront in occupations—based on the National Occupation Classifications (NOCs)—for each of the nine skills. The profiles include a brief description of the occupation, examples of how each essential skill is applied at work and an approximate indication of the level of difficulty required by the tasks of the job. ESDC's provincial and territorial partners were active in the development of the Essential Skills Framework and the profiles, and incorporated them into or adapted them for use in their own adult-learning systems.

A large number of skills frameworks have been developed to capture the emerging needs in employability skills and education and training contexts. Many of them include soft skills, with a subset of skills consistently emerging as important constructs. The OECD has also launched several measurement initiatives to collect international data on soft skills from representative populations of adults (PIAAC cycle 2), students (2018 and upcoming PISA) and youth (social and emotional skills study), underscoring growing recognition of soft skills internationally.^{37, 38, 39} Canadians will want to ensure that Canada's Essential Skills Framework dovetails with other evolving skills frameworks, including incorporating insights from international assessment initiatives as results become available.⁴⁰

³⁴ Skills/Compétences Canada. (n.d.). [Homepage](#).

³⁵ ACCESS. (n.d.). [Home page](#).

³⁶ Employment and Social Development Canada (ESDC). (2019a). [Essential skills profiles](#).

³⁷ Organisation for Economic Co-operation and Development (OECD). (2019a). [OECD programme for international student assessment \(PIAAC\) 2018 results](#).

³⁸ Organisation for Economic Co-operation and Development (OECD). (2019b). [OECD skills survey, second cycle](#).

³⁹ Organisation for Economic Co-operation and Development (OECD). (2019c). [OECD study on social and emotional skills](#).

⁴⁰ It is worth noting the NCES, the statistical arm of the US Department of Education with the largest skill assessment program in the world, has decided not to participate in this work because of concerns about the lack of supporting research. Additionally, the 2021 PIAAC soft skills measures are simply too limited to support many of the uses to which assessment results need to be put.

Measuring Essential Skills

In the pursuit of measurability, the challenge that can perplex policymakers as much as training practitioners is the vast, complex and constantly evolving array of measures that exist—measures that vary by format and administration, by population, by context, by industry and in their precis. In 2019, the Social Research and Demonstration Corporation (SRDC) conducted a comprehensive review of essential skills measures that highlighted the unevenness of measurement options across the current nine skills.⁴¹ Reading, document use and numeracy demonstrate the strongest foundation and history of measurement, thanks to multiple rounds of international literacy assessments, starting with the OECD International Adult Literacy Survey (IALS) in 1994 and followed by the Adult Literacy and Lifeskills Survey (ALL) and the Programme for the International Assessment of Adult Competencies (PIAAC).⁴²

These initiatives led to a robust, standardized methodology and a results framework for the three core domains that informed the development of subsequent instruments, many of which use similar objective test items and score individuals using five levels (Table 3).⁴³ Level 3 is internationally accepted as the level most needed by workers in jobs within a knowledge-based economy and the level at which the negative impact of skill on employment, health and social outcomes is attenuated.⁴⁴

⁴¹ Social Research and Demonstration Corporation. (2018). [A comprehensive review and development of measurement options for Essential Skills initiatives: Phase 1 - Inventory of measures](#).

⁴² [The International Adult Literacy Skills Survey \(IALSS\)](#) (1993); [the International Adult Literacy and Life Skills Survey \(ALL\)](#) (2004); [Programme for the International Assessment of Adult Competencies \(PIAAC\)](#) (2013); [The International Survey of Reading Skills \(ISRS\)](#) (2005) provided measures of oral fluency in Canada's two official languages and a detailed portrait of low-level readers and their learning needs.

⁴³ Organisation for Economic Co-operation and Development (OECD). (2013). [OECD skills outlook 2013: First results from the survey of adult skills](#).

⁴⁴ Lane, J. and Murray, T. (2018). [Literacy lost: Canada's basic skills shortfall](#).

Table 2: Literacy skills on the 500-point scale

Level	Tasks
Level 1 0-225 pts	Tasks require the respondent to read short pieces of text to find a single piece of information. Knowledge and skill in recognizing basic vocabulary, determining the meaning of sentences and reading paragraphs is expected.
Level 2 226-275 pts	Tasks require basic matching between the text and information, along with some paraphrasing and making low-level inferences.
Level 3 276-325 pts	Texts are lengthier and dense. Tasks require interpreting and evaluating multiple pieces of information.
Level 4 326-375 pts	Tasks are usually multi-step, requiring a synthesis and integration of information, as well as making complex inferences.
Level 5 376-500 pts	Tasks require a search for, and integration of, information from a variety of sources and making high-level inferences. Application and evaluation of conceptual ideas may also be required.

Source: Developed from Organisation de coopération et de développement économiques (OCDE). (2013).

[OECD Skills Outlook 2013: First results from the survey of adult skills.](#)

There is great value in having what is now longitudinal data about the skill levels of Canadian adults.^{45, 46,}

⁴⁷ A key finding in literacy research is to demonstrate that low literacy levels predict low earnings and also more acute levels of skills loss after leaving education and throughout a person's career.⁴⁸ The 2013 PIAAC Survey revealed that Canada ranks at the average in literacy, below the average in numeracy and above the average in problem solving in technology-rich environments (PS-TRE).⁴⁹ This information can be used to direct and justify investment and policy prioritization in the development of basic literacy and numeracy skills, which in turn should result in greater returns on investment for individuals as well as for overall GDP.^{50, 51}

⁴⁵ Murray, S. (2009). Longitudinal research related to the acquisition and maintenance of literacy, p. 105-124.

⁴⁶ Willms, J. and Murray, T. (2008). [Gaining and losing skill over the lifecourse.](#)

⁴⁷ Murray, T. (2020). Literacy in Canada: Trends in skill supply and skill demand, skill shortages and surpluses and skill loss.

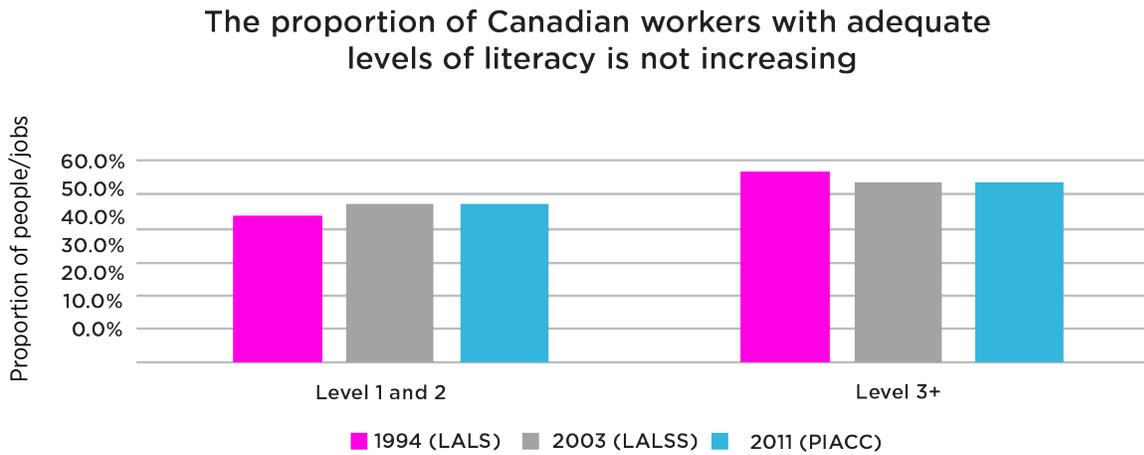
⁴⁸ Green, D. and Riddell, W. (2007). [Literacy and the labour market: The generation of literacy and its impact on earnings for Native-born Canadians.](#)

⁴⁹ Statistics Canada. (2013). [Skills in Canada: First results from the programme for the international assessment of adult competencies \(PIAAC\)](#), p. 56.

⁵⁰ Green, D. and Riddell, W. (2007). [Literacy and the labour market: The generation of literacy and its impact on earnings for Native-born Canadians.](#)

⁵¹ Coulombe, S. and Tremblay, J. (2004). [Literacy, human capital and growth.](#)

Figure 1: Proportion of working-aged Canadians with varying levels of skill



Source: Lane, J. and Murray T. (2018). [Literacy lost: Canada's basic skills shortfall](#); Organisation for Economic Co-operation and Development (OECD) and Statistics Canada. (2000). [Literacy in the information age: Final report of the international adult literacy survey](#); Statistics Canada and Organisation for Economic Co-operation and Development (OECD). (2005). [Learning a living: First results of the adult literacy and life skills survey](#).

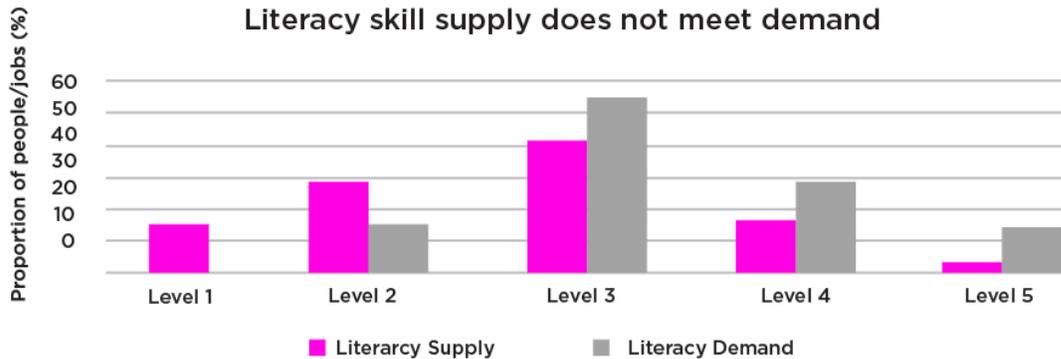
Assessing Essential Skills in Canada: How are we doing?

The scale of the literacy challenge in Canada

The average literacy skills of Canadian adults (age 16-65) are consistent with the average level in the OECD. However, in Canada as compared with other OECD countries, there are proportionally more people at the lower end of the scale in terms of literacy and numeracy. Additionally, in Canada there is a wider variation from the average than in some other countries.⁵² It is estimated that half of working-aged Canadian adults are without the literacy skills required to perform well in the majority of jobs in the economy or to learn the skills required for new ones (Figure 1).⁵³

⁵² Statistics Canada. (2013). [Skills in Canada: First results from the programme for the international assessment of adult competencies \(PIAAC\)](#).

⁵³ Lane, J. and Murray, T. (2018). [Literacy lost: Canada's basic skills shortfall](#).

Figure 2: Literacy demand and supply in Canada, 2011

Source: Lane, J. and Murray, T. (2018). [Literacy lost: Canada's basic skills shortfall](#).

In short, the literacy skill demands of the Canadian economy are not being met. There are six times as many people with Level 2 skills as there are Level 2 jobs in the economy, and too many jobs at Levels 3, 4 and 5 are being filled by people without the skills to do them well (Figure 2). This contributes to Canada's low productivity and competitiveness compared with other OECD countries. Other studies identify major skills gaps amongst post-secondary graduates, although the scale and even existence of this problem is a source of great debate.^{54, 55, 56, 57} Currently, the lack of valid, reliable and comparable measures for other skills precludes an objective analysis of skill shortages and their impact on performance.

The importance of improving essential skills

The positive relationship between literacy and essential skills (LES) and both labour market and social outcomes of individuals is well established, as are the institutional and macro-economic benefits of higher literacy rates.⁵⁸ A large volume of research has demonstrated that literacy skills are directly correlated with large differences in employability and wage rates of workers.

Those with higher literacy skills earn more, experience less unemployment rely less on government transfers. Adults on the lower end of literacy proficiency (at Levels 1 and 2 on the five-level scale) have significantly higher risks of experiencing poor labour market, health and social outcomes in the future

⁵⁴ Dion, N. and Maldonado, V. (2013). [Making the grade? Troubling trends in postsecondary student literacy](#).

⁵⁵ Borwein, S. (2014). [The Great skills divide: A review of the literature](#).

⁵⁶ Lane, J. and Murray, T. (2019). [What now? Ready or not? The need to improve this gen literacy](#).

⁵⁷ Lapointe, S. and Turner, J. (2020). [Leveraging the skills of social sciences and humanities graduates](#).

⁵⁸ Riddell, W. C. (2006). [The impact of education on economic and social outcomes: An overview of recent advances in economics](#).

(compared with those at Level 3 or higher).^{59, 60} For businesses, research indicates that productivity declines substantially with lower literacy of workers, increasing labour and production costs, raising risks of injury and absenteeism, and, ultimately, reducing firm profitability.^{61, 62} This also manifests itself at the aggregate level, where differences in countries' average literacy and numeracy skill levels are associated with large differences in the average growth of gross domestic product per capita and of labour productivity, as measured by the rate of growth in output per hour worked.⁶³

Existing evidence on the inequality caused by low literacy skills and the differences in macro-economic growth rates are large enough to suggest that investments in adult skills upgrading would have significant returns in Canada.⁶⁴ Beyond public-sector investment, there is further compelling evidence that justifies private-sector employer investments in LES training.⁶⁵ The positive relationship between literacy levels of workers and business outcomes has been shown to be causal, and investments in LES training can produce large positive returns for firms.^{66, 67} For example, from 2010 to 2014, the government of Canada sponsored a ground-breaking large-scale randomized control trial to measure the impacts and return on investment from LES training. More than 100 firms and 1,500 workers participated across the country in eight provinces, testing a workplace-based training model with a modest 10 to 40 hours of instruction. The findings indicate that LES training does, indeed, have large positive impacts on workers' skills, job performance and a range of economic and social outcomes for workers and firms. A benefit-cost analysis also revealed an average 23 percent return on investment for participating firms within the first year alone after the program, in addition to firms experiencing gains in revenue, cost savings from increased productivity and reductions in hiring costs.⁶⁸

While addressing existing skills gaps in literacy justifies further investments in literacy upgrading, there are other equally pressing challenges that provide further rationale. Technological advances, the globalization of markets and a rapid increase in the global supply of key skills appear to be driving rapid increases in the firm-level demand for, and the wage premium associated with, higher levels of literacy

⁵⁹ Lane, J. and Murray, T. (2015). [Smarten Up: It's time to build essential skills](#), p. 17-18.

⁶⁰ Murray, T. and Binkley, M. (2002). [The adult literacy and life skills survey: New frameworks for assessment](#).

⁶¹ Coulombe, S. and Tremblay, J. (2005). [Public investment in skills: Are Canadian governments doing enough?](#).

⁶² Lane, J. and Murray, T. (2018). [Literacy lost: Canada's basic skills shortfall](#).

⁶³ Schwerdt, G. and Wiederhold, S. (2018). [Literacy and growth: New evidence from PIAAC](#).

⁶⁴ Murray, T. and Shillington, R. (2014). The efficiency of Essential Skills markets in Alberta: Initial results from PIAAC.

⁶⁵ McCracken, M. and Murray, T. (2010). [The economic benefits of literacy: Evidence and implications for Policy](#).

⁶⁶ Cukier, W. (2020). [Return on investment: Industry leadership on upskilling and reskilling their workforce](#).

⁶⁷ Gyarmati et al. (2014). [UPS KILL: A credible test of workplace literacy and essential skills training](#).

⁶⁸ Ibid, p. 3.

and numeracy.^{69, 70, 71} This increase in demand is expected to continue for the foreseeable future, something that will increase the size of skill shortages and their negative economic impact.⁷² What's more, literacy and essential skills are a prerequisite to the efficient acquisition of new skills and knowledge and in realizing improved worker performance on technical tasks. The existing shortage of LES skills makes it difficult to overcome any shortage of other skills.⁷³

Despite of substantial evidence of the positive impacts and return on investment from literacy and essential skills upgrading, private rates of investment in upskilling are not sufficient to address current skills gaps nor to keep up with the rising demand for literacy skills.^{74, 75, 76} Canada lags behind a number of countries in participation in many forms of adult education and literacy skills training.^{77, 78}

Not only do Canadians report lower training participation rates, they also spend less time in training than other countries. A lack of employer investments in essential skills training is a particularly important barrier for many adults with low literacy skills. Evidence suggests that the average Canadian employer invests as little as 10 percent of training budgets in basic skills such as literacy, numeracy and communication.^{79, 80} The workplace remains one of the most important underutilized channels for adult skills upgrading and one of the only means to realize the rapid increases in aggregate skill demanded by technical advance and globalization.

Research suggests that many employers are either unaware of, or do not fully grasp, the literacy skill demands of their jobs, nor of those they have hired. While employers increasingly speak of the growing demand for “soft skills,” including communication, teamwork and problem solving or social-emotional

⁶⁹ DataAngel. (2008). [Addressing Canada's literacy challenge: A cost-benefit analysis](#).

⁷⁰ Educational Testing Service. (2002). [Digital transformation: A framework for ICT literacy. A report of the international ICT literacy panel](#).

⁷¹ Dolphin, T. (2015). [Technology, globalisation and the future of work in Europe: Essays on employment in a digitised economy](#).

⁷² Lane, J. and Murray, T. (2018). [Literacy lost: Canada's basic skills shortfall](#).

⁷³ Ibid.

⁷⁴ Harwood, C. (2012). [State of the literacy and essential skills field](#), p. 35.

⁷⁵ Brennan et al. (2019). [Social finance pilots on essential skills training - Evaluation report](#).

⁷⁶ Schwerdt, G. and Wiederhold, S. (2018). [Literacy and growth: New evidence from PIAAC](#).

⁷⁷ Rubenson, K, Desjardins, R. and Yoon, E. (2005). [Adult learning in Canada: A comparative perspective. Results from the adult literacy and life skills survey](#).

⁷⁸ Statistics Canada and Organisation for Economic Co-operation and Development (OECD). (2005). [Learning a living: First results of the adult literacy and life skills survey](#).

⁷⁹ Hughes, P. and Grant, M. (2007). [Learning and development outlook 2007: Are we learning enough?](#)

⁸⁰ National Research Council. (2012). [Education for life and work: Developing transferable knowledge and skills in the 21st century](#), p. 53.

Existing evidence on the inequality caused by low literacy skills and the differences in macro-economic growth rates are large enough to suggest that investments in adult skills upgrading would have significant returns in Canada.



skills, they often lack the tools to define and assess them.⁸¹ Research has indicated that with changing technologies, these skills are increasingly important.^{82, 83, 84, 85, 86, 87}

Research has also suggested that financial constraints continue to be a major barrier to training investment for some employers, particularly among small and medium-sized enterprises (SMEs), which often have the highest need for training, particularly in literacy and essential skills (LES).⁸⁸ Furthermore, though the returns to firms may be substantial, they are realized only as long as the trained employee remains with the firm. Thus, the risk of competing firms “poaching” newly trained employees is a deterrent for smaller firms in highly competitive contexts.⁸⁹ Co-financing mechanisms such as pay-for-performance models are a promising strategy for governments to encourage employer training investments, while having strong guarantees of results.^{90, 91, 92, 93}

Beyond funding, there is a lack of well-designed curricula and tools to support equitable access and high-quality skills training delivery in many sectors

⁸¹ Cukier, W., Hodson, J. and Omar, A. (2015). [“Soft” skills are hard: A review of the literature](#), p. 6-10.

⁸² Clapperton, M. (2015). [L'implication sociale et personnelle, un savoir-être essentiel en milieu de travail](#), p. 129-131.

⁸³ Chartered Professional in Human Resources (CPHR). (2014). [Competency framework](#).

⁸⁴ Sutton, N. (2002). Why can't we all just get along? Computing Canada, p. 20; Borowski, T. (2019). [The Battelle for Kids P21 framework for 21st century learning](#).

⁸⁵ Fleming et al. (2019). [The future of work: How new technologies are transforming tasks](#).

⁸⁶ Dean, S. A. (2017). [Soft skills needed for the 21st century workforce](#).

⁸⁷ Autor, D. and Price, H. (2013). [The changing task composition of the US labor market: An update of Autor, Levy, and Murnane \(2003\)](#).

⁸⁸ Kelly et al. (2009). [Canada's training ground: SMEs' \\$18 billion investment in the nation's workforce](#).

⁸⁹ Mohrenweiser, J., Zwick, T. and Backes-Gellner, U. (2019). Poaching and firm-sponsored training, p. 143-181.

⁹⁰ Brennan et al. (2019). [Social finance pilots on essential skills training—evaluation report](#).

⁹¹ Ziderman, A. (2016). [Funding mechanisms for financing vocational training: An analytical framework](#), p. 11.

⁹² Advisory Council on Economic Growth (2017). [Learning nation: Equipping Canada's workforce with skills for the future](#), p. 11-18.

⁹³ Echenberg, H. (2015). [Government of Canada and social finance](#), p. 3.

and occupations within the Canadian economy. While there is strong evidence of high positive returns from training, those returns will vary by industry, dependent on the quality of the “infrastructure” available to support training for a given occupation. When that infrastructure is absent, uncertainty in returns from training is higher—and employers are less likely to invest. Governments have a role to play in supporting the development of this infrastructure, including investing in robust tools for sufficiently granular assessments of the needs of workers and businesses, curricula that is well aligned to those needs, the presence of well-trained and supported instructors and accurate measurement of the results.⁹⁴

Renewing the Essential Skills Framework

Updating the framework to respond to current and future needs

With the pace of change in the labour market, Canadians are challenged to adapt to new skills and requirements in the workplace. To help overcome these hurdles, several calls have been made for the renewal of Canada's Essential Skills Framework to help Canadians adapt and measure its relevance to employers and changes in the market.⁹⁵

Another important motivation for a renewal of Canada's Essential Skills Framework is to maintain its connection with other evolving skills frameworks, including international assessment initiatives. Indeed, there is broad recognition and mounting evidence across disciplines and sectors that “soft skills” are critical to the current and future workforce. There are a large number of skills frameworks developed to capture the emerging needs in employability skills, and education and training contexts. All of these frameworks include soft skills, with a subset of skills consistently emerging as important constructs. The OECD has also launched several measurement initiatives to collect international data on soft skills from representative populations of adults (PIAAC cycle 2), students (upcoming PISA) and youth (social and emotional skills study), underscoring growing recognition of soft skills internationally. It is an important time to reevaluate, refine and reorganize the Essential Skills Framework to ensure it reflects the realities of an evolving labour market and nature of work. It also needs to meet the changing needs of employers and job-seekers, as well as take into account the latest evidence and research on skill-development and its link to employment and other socio-economic outcomes.

Guiding principles and criteria to consider in renewing the framework

In 2019, ESDC's Office of Literacy and Essential Skills (OLES) launched an engagement and consultation process with a wide range of stakeholders in the skills ecosystem to explore a process for renewal of the

⁹⁴ Hughes, P. and Campbell, A. (2009). [Learning and development outlook 2009: Learning in tough times](#).

⁹⁵ Employment and Social Development Canada (ESDC). (2017). [Evaluation of literacy and essential skills](#).

Essential Skills Framework. The expressed goal is to “modernize the ES framework by defining, developing, communicating and recognizing a common set of skills to help Canadians get and keep a job, in alignment with priorities of employers, provincial and territorial labour-market programming and service-delivery organizations.”⁹⁶

To narrow the scope and effectively target those skills most likely to meet the needs and priorities of employers and stakeholder groups, several key guiding principles developed to support the IALS and ALL studies should guide the renewal efforts and criteria for the selection of new skills for possible inclusion in the framework.⁹⁷ New skills should be:

- **Work-focused and transferable**—convergent evidence from multiple sources show that the skill is required or important to a broad range of workplaces or occupations;
- **Durable and enduring**—the skill is important today and will likely continue to have relevance as the labour market evolves to meet the needs of future work;
- **Teachable**—the skill can be learned and trained;
- **Flexible and inclusive**—the skill is applicable across contexts (e.g., workplace and life skills), roles (e.g., employees, managers and supervisors) and individuals (e.g., cultures, genders and abilities);
- **Broadly recognized**—the skill is supported or endorsed by other important/relevant Canadian or international skill frameworks; and
- **Measurable**—the skill can be measured with evidence of links to labour-market outcomes.

Measurability and evidentiary links to outcomes

When it comes to discussing skills, one of the most important criteria to consider is measurability. There is a need for skills to be validly and reliably measured with enough precision to support the full range of intended uses:

1. **policy and program design;**
2. **program monitoring;**
3. **knowledge generation;**
4. **program evaluation; and**

⁹⁶ Employment and Social Development Canada (ESDC). (2017). [Evaluation of Literacy and Essential Skills](#).

⁹⁷ Murray, T., Clermont, Y. and Binkley, M. (2005). [Measuring adult literacy and life skills: New frameworks for assessment](#).

5. making administrative decisions about individuals or administrative units.

The last three of these uses impose the highest statistical demands upon the measures since classification error translates directly into inequitable distribution of benefits and economic inefficiency.

Relatedly, there should be evidence demonstrating that the measured skills are associated with labour-market outcomes. Indeed, the other criteria can be implemented within a measurability and evidence lens—e.g., look for evidence that a skill has been measured and associated with labour-market outcomes across different occupations (transferable) and populations and contexts (inclusive) and shown to be malleable and trainable (teachable). The first criterion for new skills additions might be that the skill is associated with labour-market outcomes; the second that the skill is malleable and trainable; and the third that gains in the skill are associated with subsequent improved outcomes of interest. Fourth, we must have a sense of where the instructional production frontier is because, without this latter knowledge, there is ample evidence that many training providers will fall victim to the moral hazard associated with a market that offers neither incentives nor sanctions related to performance.^{98, 99}

Measurability and evidentiary links to 'soft skills'

A scan of soft skills beyond those covered in the current Essential Skills Framework revealed that many have been measured outside of literacy and industry contexts.^{100, 101, 102, 103} The strongest psychometric, conceptual and theoretical evidence comes from personality and organizational research, which has a long and rich history in defining and measuring personality attributes/skills. The most broadly recognized and researched framework is the “Big Five,” which captures an almost full range of human personality within five dimensions, each with its own subdimensions. Work is underway at the OECD and large assessment organizations, such as Educational Testing Services and ACT, to validate context-specific measures. It remains to be seen if the available measures are sufficiently precise to support administrative uses, such as recruitment, selection or promotion of workers.¹⁰⁴

⁹⁸ Gyarmati et al. (2014). [UPSILL: A credible test of workplace literacy and essential skills training](#).

⁹⁹ Alberta Workforce Essential Skills and the Association of Canadian Community Colleges. (2015). [Guided pathways: Integrating essential skills](#).

¹⁰⁰ Social Research and Demonstration Corporation. (2018). [A comprehensive review and development of measurement options for essential skills initiatives: Phase 1 – inventory of measures](#).

¹⁰¹ Guerra, N., Modecki, K. and Cunningham, W. (2014). [Developing social-emotional skills for the labor market: The PRACTICE model](#).

¹⁰² Futurework. (2019). [Building a pan-Canadian soft skills framework](#).

¹⁰³ Conference Board of Canada. (n.d.). [Employability skills](#).

¹⁰⁴ Payne, A. (2018). [Assessing post-secondary graduates' soft skills, job search and employment outcomes](#).

Critical areas for further research on skills and competencies

While much is known about competency frameworks, many questions remain and further research is needed in several areas, including measurement.^{105, 106, 107} Below we identify six priority areas for further research.

1. **How are social and emotional skills best measured?** The measurement of social and emotional skills has become an increasing priority internationally, and several countries (including Canada) have included short personality inventories in longitudinal follow-ups with their original PIAAC samples. These expanded measurement frameworks allow for the exploration of the importance of both literacy skills (in the form of objectively assessed essential-skills competencies) and personality dimensions in predicting a variety of life outcomes (e.g. labour market, education, training and health) in large representative samples of adult populations.
2. **Which measures best predict education and labour-market outcomes?** While several meta-analyses of the research literature have confirmed that measures of social and emotional skills—especially those derived from personality dimensions—are broadly predictive of educational and labour-market outcomes, several questions remain. For example, it is unclear how important soft skills are related to other essential or literacy skills. While evidence from international measurement initiatives such as IALS and PIAAC has consistently shown links between literacy skills and employment, until recently few studies had included soft skills in such measurement frameworks.
3. **How well do Canada's level of social and emotional skills compare to other countries?** In Canada, PIAAC follow-ups consist of three waves of the Longitudinal and International Study of Adults (LISA). Preliminary results from other countries have yielded striking results, showing that personality traits—especially in the “big five” dimensions of conscientiousness and emotional stability—predict life outcomes as well as, and independent of, literacy skills.^{108, 109} It is worth noting, however, that the generation of comparable proficiency scales in these domains requires complex statistical adjustment to remove significant response error among people of different backgrounds. These findings confirm a key insight offered through analysis of data from the Wellington longitudinal study of child development (i.e. that communication, curiosity and perseverance—key aspects of the big five—condition the acquisition of key higher-order skills).¹¹⁰ Similar analyses have yet to be conducted with existing Canadian adult data.

¹⁰⁵ National Research Council. (2012). [Education for life and work: Developing transferable knowledge and skills in the 21st century](#).

¹⁰⁶ Levin, H. (2012). [More than just test scores](#), p. 5.

¹⁰⁷ Binkley et al. (2010). [Defining 21st century skills](#), p. 71.

¹⁰⁸ Heineck, G. and Anger, S. (2010). The returns to cognitive abilities and personality traits in Germany.

¹⁰⁹ Heckman, J., Stixrud, J. and Urzua, S. (2006). [The effects of cognitive and noncognitive abilities on labor market outcomes and social behavior](#).

¹¹⁰ Wylie, C. and Hogden, E. (2007). [Competent learners @ 16: Competency levels and development over time - Technical report](#).

4. What is the relevance and impact of these skills on employers and job success of workers?

Investigations into the importance of social and emotional skills should also exploit other data sets, for example large-scale measurement efforts headed by employers and industry associations focused on linking soft skills at pre-employment with subsequent job performance metrics. Leveraging existing data sets to better understand which measures of soft skills perform best in terms of predicting key outcomes for a variety of key subpopulations and in a variety of employment contexts will help to support and inform ongoing efforts to renew the Canadian Essential Skills Framework, while maintaining comparability with international assessment initiatives. We also need to be aware that some employers may use a subjective measure of soft skills as a cover to justify their discriminatory employment and promotion practices.¹¹¹

5. What models, approaches and practices work in developing these skills? Another key piece will be to build a better evidence base around the malleability of social and emotional skills in order to inform further investments in training and curriculum development. While there is substantial evidence that soft skills can be fostered through comprehensive early childhood interventions and that these interventions are subsequently associated with long-term positive outcomes, less research has been focused on changes through intervention in adulthood.^{112, 113, 114} There are a few existing training and measurement initiatives in Canada focused on soft skills, but we need to better understand not only their impacts, but also their program models. We need to better understand how learners can most effectively approach tasks, respond to stress and engage and collaborate with others. In general, we need more extensive efforts to identify best practices in training and measuring social and emotional skills with diverse populations and in a variety of learning contexts.

6. Ultimately, what is the utility of competency frameworks in bridging “skills gaps”? There is considerable scope for research on assessing the utility of these frameworks to different stakeholders—including service-providers as well as employers—and there’s a business case for more attention. Research is emerging that considers the extent to which these skills and their assessments relate to employment and earnings. Recent work on, for example, on immigrant employment outcomes and PIAAC scores are, at best, inconclusive and, at worst, suggest other factors are at play. Finally, further and ongoing work on skills frameworks and their assessments is critical to inform the evaluation of programs—from post-secondary to ESL—to promote effectiveness, heighten impact and maximize return on investment.

¹¹¹ Mong, S. and Roscigno, V. (2010). [African American men and the experience of employment discrimination](#), p. 1-21.

¹¹² Cantor et al. (2019). [Malleability, plasticity, and individuality: How children learn and develop in context](#), p. 307-337.

¹¹³ Hoeschler, P., Balestra, S. and Backes-Gellner, U. (2018). [The development of non-cognitive skills in adolescence](#), p. 40-45.

¹¹⁴ Doidge, N. (2016). The brain's way of healing: Remarkable discoveries and recoveries from the frontiers of neuroplasticity.

REFERENCES

ACCESS. (n.d.). Home page. ACCESS. <http://www.accessfutures.com/>

Advisory Council on Economic Growth. (2017). Learning nation: Equipping Canada's workforce with skills for the future. Government of Canada. <https://www.budget.gc.ca/aceg-ccce/pdf/learning-nation-eng.pdf>

Alberta Workforce Essential Skills (AWES) and Association of Canadian Community Colleges. (2015). Guided pathways: Integrating essential skills. AWES. <https://awes.ca/about-us/our-projects/guided-pathways-integrating-essential-skills/>

Autor, D. and Price, H. (2013). The changing task composition of the US labor market: An update of Autor, Levy, and Murnane (2003) (MIT Working Paper, June 2013). <https://economics.mit.edu/files/9758>

Berdrow, I. and Evers, F. (2010). Bases of competence: An instrument for self and institutional assessment. *Assessment and Evaluation in Higher Education*, 35(4), pp.419-434. <https://www.tandfonline.com/doi/full/10.1080/10888691.2017.1398649>

Binkley, M., Erstad, O., Herman, J., Raizen, S., Ripley, M. and Rumble, M. (2010). Defining 21st Century skills. Draft White Paper (Part of a report to the Learning and Technology World Forum 2010, London). https://oei.org.ar/ibertic/evaluacion/sites/default/files/biblioteca/24_defining-21st-century-skills.pdf

Borowski, T. (2019). The Battelle for kids P21 framework for 21st Century learning. Establishing Practical Social-Emotional Competence Assessment Work Group. <https://measuringse.casel.org/wp-content/uploads/2019/08/AWG-Framework-Series-B.9.pdf>

Borwein, S. (2014). The Great skills divide: A review of the literature. Higher Education Quality Council of Ontario. <http://www.heqco.ca/SiteCollectionDocuments/Skills%20Part%201.pdf>

Braham, E. and Tobin, S. (2020). Solving the skills puzzle: The missing piece is good information. Public Policy Forum, Future Skills Centre and Diversity Institute. <https://fsc-ccf.ca/research/solving-the-skills-puzzle-the-missing-piece-is-good-information/>

Brennan, K., Carriere, B., Currie, S., Hui, T., Palameta, B. and Voyer, J. (2019). Social finance pilots on essential skills training-evaluation report. SRDC Publication. <http://www.srdc.org/media/553020/social-finance-final-report.pdf>

Burning Glass Technologies. (2018). Changing the way we think about skills. <https://www.burning-glass.com/blog/changing-the-way-we-think-about-skills/>

Cantor, P., Osher, D., Berg, J., Steyer, L. and Rose, T. (2019). Malleability, plasticity, and individuality: How children learn and develop in context. *Applied Developmental Science*, 23(4), pp.307-337. <https://www.tandfonline.com/doi/full/10.1080/10888691.2017.1398649>

Chartered Professionals in Human Resources (CPHR). (2019). Competency framework. CPHR Publication. https://cphr.ca/wp-content/uploads/2019/09/hrc22_170217_competency-framework_expansion_190915.pdf

Clapperton, M. (2015). L'implication sociale et personnelle, un savoir-être essentiel en milieu de travail. *Documentation et bibliothèques*, 61 (2-3), pp.129-131. <https://doi.org/10.7202/1032821ar>

Commonwealth of Australia. (2012). Australian core skills framework. https://docs.employment.gov.au/system/files/doc/other/acsf_document_01-05-2019.pdf

Conference Board of Canada. (n.d.). Employability skills. Conference Board of Canada.

<https://www.conferenceboard.ca/edu/employability-skills.aspx>

Coulombe, S. and Tremblay, J. (2004). Literacy, human capital, and growth (Working Paper No. 0407E). University of Ottawa. <http://aix1.uottawa.ca/~scoulomb/pages/Coulombe-Tremblay-UOWP0407E.pdf>

Coulombe, S. and Tremblay, J. (2005). Public investment in skills: Are Canadian governments doing enough?. C.D. Howe Institute.

https://www.cdhowe.org/sites/default/files/attachments/research_papers/mixed/commentary_217.pdf

Council of Atlantic Ministers of Education and Training. (2015). Atlantic Canada framework for essential graduation competencies. https://www.ednet.ns.ca/files/curriculum/atlantic_canada_essential_grad_competencies.pdf

Council of Ministers of Education, Canada (CMEC). (n.d.). Global competencies. CMEC Publication.

https://www.cmec.ca/682/Global_Compencies.html

Council of the European Union. (2018). Council recommendation of 22 May 2018 on key competences for lifelong learning. Official Journal of the European Union, 189(1). [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018H0604\(01\)&from=EN](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018H0604(01)&from=EN)

Cukier, W. (2020). Return on investment: Industry leadership on upskilling and reskilling their workforce. Public Policy Forum, Future Skills Centre and Diversity Institute. <https://ppforum.ca/wp-content/uploads/2020/01/ReturnOnInvestment-PPF-JAN2020-EN-2.pdf>

Cukier, W., Hodson, J. and Omar, A. (2015). "Soft" skills are hard: A review of the literature. Diversity Institute.

https://www.rverson.ca/content/dam/diversity/reports/KSG2015_SoftSkills_FullReport.pdf

DataAngel. (2008). Addressing Canada's literacy challenge: A cost-benefit analysis. DataAngel Policy Research Incorporated. <http://www.dataangel.ca/docs/CanadasLiteracyChallenge2009.pdf>

Dean, S. (2017). Soft skills needed for the 21st century workforce. Dissertation, Walden University ScholarWorks. <https://scholarworks.waldenu.edu/cji/viewcontent.cgi?article=4772&context=dissertations>

Dion, N. and Maldonado, V. (2013). Making the grade? Troubling trends in postsecondary student literacy. Higher Education Quality Council of Ontario.

<http://www.heqco.ca/SiteCollectionDocuments/HEQCO%20Literacy%20ENG.pdf>

Doidge, N. (2016). The brain's way of healing: Remarkable discoveries and recoveries from the frontiers of neuroplasticity. Viking.

Dolphin, T. (2015). Technology, globalisation and the future of work in Europe: Essays on employment in a digitised economy. Institute for Public Policy Research. https://www.ippr.org/files/publications/pdf/technology-globalisation-future-of-work_Mar2015.pdf

Echenberg, H. (2015). Government of Canada and social finance (Background Paper No. 2015-140-E). Library of Parliament, Ottawa.

<https://lop.parl.ca/staticfiles/PublicWebsite/Home/ResearchPublications/BackgroundPapers/PDF/2015-140-e.pdf>

Educational Testing Service. (2002). Digital transformation: A framework for ICT literacy. A Report of the International ICT Literacy Panel. <https://www.ets.org/Media/Research/pdf/ICTREPORT.pdf>

Employment and Social Development Canada (ESDC). (2015). Understanding essential skills. Government of Canada. <https://www.canada.ca/en/employment-social-development/programs/essential-skills/definitions.html>

Employment and Social Development Canada (ESDC). (2017). Evaluation of Literacy and Essential Skills. <https://www.canada.ca/en/employment-social-development/corporate/reports/evaluations/literacy-essential-skills.html>

Employment and Social Development Canada (ESDC). (2019a). Essential skills profiles. Government of Canada. <https://www.canada.ca/en/employment-social-development/programs/essential-skills/profiles.html>

Employment and Social Development Canada (ESDC). (2019b). Skills and competencies taxonomy. Government of Canada. <https://noc.esdc.gc.ca/SkillsTaxonomy/SkillsTaxonomyWelcome/6038151b3f744cba92002eeda89260e3>

Employment and Social Development Canada (ESDC). (2020). About the sectoral initiatives program. Government of Canada. <https://www.canada.ca/en/employment-social-development/programs/sectoral-initiatives-program.html>

European Commission. (2020). European skills/competencies, qualifications and occupancy. <https://ec.europa.eu/esco/portal/home>

Fleming, M., Reddy, P. and Subhro, D. (2019). The future of work: How new technologies are transforming tasks. MIT-IBM Watson AI Lab. <https://www.ibm.com/blogs/research/2019/10/mit-ibm-watson-ai-lab-future-of-work/>

Futureworx. (2019). Building a pan-Canadian soft skills framework. Futureworx Publication. <https://futureworx.ca/wp-content/uploads/2019/01/Soft-Skills-Framework-Report.pdf>

Green, D. and Riddell, W. (2007). Literacy and the labour market: The generation of literacy and its impact on earnings for Native-born Canadians. Statistics Canada. <https://www150.statcan.gc.ca/n1/en/pub/89-552-m/89-552-m2007018-eng.pdf?st=RctKlKqZ>

Guerra, N., Modecki, K. and Cunningham, W. (2014). Developing social-emotional skills for the labor market: The PRACTICE model. The World Bank. <http://documents.worldbank.org/curated/en/970131468326213915/pdf/WPS7123.pdf>

Gyarmati, D., Leckie, N., Dowie, M., Palameta, B., Hui, T., Dunn, E. and Hébert, S. (2014). UPSKILL: A credible test of workplace literacy and essential skills training. Social Research and Demonstration Corporation (SRDC). <http://www.srdc.org/media/199774/upskill-technical-report-en.pdf>

Harwood, C. (2012). State of the literacy and essential skills field. Canadian Literacy and Learning Network. http://en.copian.ca/library/research/clln/state_of_es/state_of_es.pdf

Heckman, J., Stixrud, J. and Urzua, S. (2006). The effects of cognitive and noncognitive abilities on labor market outcomes and social behavior. *Journal of Labor Economics* 24(3), pp.411-482. http://jenni.uchicago.edu/papers/Heckman-Stixrud-Urzua_JOLE_v24n3_2006.pdf

Heineck, G. and Anger, S. (2010). The returns to cognitive abilities and personality traits in Germany. *Labour economics*, 17(3), pp.535-546.

Hoeschler, P., Balestra, S. and Backes-Gellner, U. (2018). The development of non-cognitive skills in adolescence. *Economics Letters*, 163, pp.40-45. http://repec.business.uzh.ch/RePEc/iso/leadinghouse/0138_lhwpaper.pdf

Hughes, P. and Campbell, A. (2009). Learning and development outlook 2009: Learning in tough times. Conference Board of Canada. <https://www.conferenceboard.ca/e-library/abstract.aspx?did=3162>

Hughes, P. and Grant, M. (2007). Learning and development outlook 2007: Are we learning enough? The Conference Board of Canada. <https://www.conferenceboard.ca/e-library/abstract.aspx?did=1995>

Kelly, D., Azoulay, A., Debus, A., George, B., Parent, L. and Petkov, P. (2009). Canada's training ground: SMEs' \$18 billion investment in the nation's workforce. Canadian Federation for Independent Business. <https://www.cfib-fcei.ca/sites/default/files/pdf/rr3361.pdf>

Labour Market Information Council, Employment and Social Development Canada (ESDC) and Statistics Canada. (2019). Bridging the gap between skills and occupations: A concept note to identify the skills associated with NOC. LMIC Insights No. 16, pp.1-41. <https://lmic-cimt.ca/wp-content/uploads/2020/01/LMI-Insights-No-16.pdf>

Lane, J. and Griffiths, J. (2017). Matchup: A case for pan-Canadian competency frameworks. Canada West Foundation. <https://cwf.ca/research/publications/matchup-a-case-for-pan-canadian-competency-frameworks/>

Lane, J. and Murray, T. (2015). Smarten Up: It's time to build essential skills. Canada West Foundation. http://cwf.ca/wp-content/uploads/2015/10/CWF_HCP_SmartenUp_Report_JUN2015.pdf

Lane, J. and Murray, T. (2018). Literacy lost: Canada's basic skills shortfall. Canada West Foundation. http://www.dataangel.ca/docs/CWF_LiteracyLost_December2018.pdf

Lane, J. and Murray, T. (2019). What now? Ready or not? The need to improve this gen literacy. Canada West Foundation. <https://cwf.ca/research/publications/what-now-ready-or-not-the-need-to-improve-this-gen-literacy/#pdf>

Lapointe, S. and Turner, J. (2020). Leveraging the skills of social sciences and humanities graduates. Public Policy Forum, Ryerson University's Diversity Institute and Future Skills Centre. <https://fsc-ccf.ca/wp-content/uploads/2020/01/UniversityGraduateSkillsGap-PPF-JAN2020-EN-FINAL.pdf>

Levin, H. (2012). More than just test scores. *Prospects*, 42(3), pp.269-284. https://www.researchgate.net/publication/257641220_More_than_just_test_scores

McCracken, M. and Murray T. (2010) The economic benefits of literacy: Evidence and Implications for Policy, CLLRN, Ottawa. <http://www.dataangel.ca/docs/EconomicBenefitsofLiteracy2010.pdf>

Mohrenweiser, J., Zwick, T. and Backes-Gellner, U. (2019). Poaching and firm-sponsored training. *British Journal of Industrial Relations*, 57(1), pp.143-181.

Mong, S. and Roscigno, V. (2010). African American men and the experience of employment discrimination. *Qualitative Sociology*, 33(1), pp.1-21. <https://link.springer.com/article/10.1007/s11133-009-9142-4>

Murray T. (2008). Longitudinal research related to the acquisition and maintenance of literacy. In S. Reder and J. Bynner (Eds.), *Tracking adult literacy and numeracy skills: Findings from longitudinal research*. Routledge.

Murray, T. (2020). Literacy in Canada: Trends in skill supply and skill demand, skill shortages and surpluses and skill loss. Council of Ministers of Education, Canada (CMEC).

Murray, T., Clermont, Y. and Binkley, M. (2005). Measuring adult literacy and life skills: New frameworks for assessment. Catalogue no. 89-552-MIE, no. 13. Statistics Canada. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.120.4652&rep=rep1&type=pdf>

Murray, T. and Shillington, R. (2012). Understanding Aboriginal Literacy Markets in Canada: A Segmentation Analysis. DataAngel Policy Research Incorporated. <http://www.dataangel.ca/docs/UnderstandingAboriginalLiteracy2012.pdf>

Murray, T. and Shillington, R. (2014). The efficiency of essential skills markets in Alberta: Initial results from PIAAC. DataAngel Policy Research Incorporated.

National Research Council. (2012). Education for life and work: Developing transferable knowledge and skills in the 21st century. National Academies Press. https://hewlett.org/wp-content/uploads/2016/08/Education_for_Life_and_Work.pdf

O*Net Resource Centre. (n.d.). About O*Net. O*Net. <https://www.onetcenter.org/overview.html#applications>

Organisation for Economic Co-operation and Development (OECD). (2013). OECD skills outlook 2013: First results from the survey of adult skills. OECD Publishing. [https://www.oecd.org/skills/piaac/Skills%20volume%201%20\(eng\)-full%20v12--eBook%20\(04%2011%202013\).pdf](https://www.oecd.org/skills/piaac/Skills%20volume%201%20(eng)-full%20v12--eBook%20(04%2011%202013).pdf)

Organisation for Economic Co-operation and Development (OECD). (2016). Getting skills right: Assessing and anticipating changing skill needs. OECD Publishing. https://read.oecd-ilibrary.org/employment/getting-skills-right-assessing-and-anticipating-changing-skill-needs_9789264252073-en#page7

Organisation for Economic Co-operation and Development (OECD). (2019a). OECD Programme for international student assessment (PISA) 2018 results. OECD Publishing. <https://www.oecd.org/pisa/publications/pisa-2018-results.htm>

Organisation for Economic Co-operation and Development (OECD). (2019b). OECD skills survey, second cycle. OECD Publishing. <https://www.oecd.org/skills/piaac/about/piaac2ndcycle/>

Organisation for Economic Co-operation and Development (OECD). (2019c). OECD study on social and emotional skills. OECD Publishing. <http://www.oecd.org/education/cei/social-emotional-skills-study/>

Organisation for Economic Co-operation and Development (OECD) and Statistics Canada. (2000). Literacy in the information age: Final report of the international adult literacy survey. OECD and Statistics Canada. <https://nces.ed.gov/surveys/ials/results98.asp>

Payne, A. (2018). Assessing post-secondary graduates' soft skills, job search and employment outcomes. Thesis, University of Guelph. https://atrium.lib.uoguelph.ca/xmlui/bitstream/handle/10214/14131/Payne_Alyssa_201808_Ma.pdf?sequence=3&isAllowed=y

Riddell, W. C. (2006). The impact of education on economic and social outcomes: An overview of recent advances in economics. Canadian Policy Research Networks. http://oaresource.library.carleton.ca/cprn/44362_en.pdf

Rubenson, K., Desjardins, R. and Yoon, E. (2007). Adult learning in Canada: A comparative perspective. Statistics Canada. <https://escholarship.org/uc/item/14f5n68r>

Schwerdt, G. and Wiederhold, S. (2018). Literacy and growth: New evidence from PIAAC. DataAngel Policy Research Incorporated. http://www.dataangel.ca/docs/LiteracyandGrowth_revised_October2018.pdf

Shortt, D., Robson, B. and Sabat, M. (2020). Bridging the digital skills gap: alternative pathways. Public Policy Forum, Future Skills Centre and Diversity Institute. <https://fsc-ccf.ca/wp-content/uploads/2020/01/DigitalSkills-AlternativePathways-PPF-JAN2020-EN.pdf>

Skills/Compétences Canada. (n.d.). Home page. Skills/Compétences Canada.
<https://www.skillscompetencescanada.com/en/>

Social Research and Demonstration Corporation (SRDC). (2018). A comprehensive review and development of measurement options for Essential Skills initiatives: Phase 1 – Inventory of measures. SRDC Publication.
<http://www.srdc.org/media/553000/oles-measurement-phase-1-report.pdf>

Soffel, J. (2016). What are the 21st-century skills every student needs? World Economic Forum.
<https://www.weforum.org/agenda/2016/03/21st-century-skills-future-jobs-students/>

Statistics Canada. (2013). Skills in Canada: First results from the programme for the international assessment of adult competencies (PIAAC). Statistics Canada. <https://www150.statcan.gc.ca/n1/en/pub/89-555-x/89-555-x2013001-eng.pdf?st=z6qd8Cn8>

Statistics Canada. (2005). Building on our competencies: Canadian results of the international adult literacy and skills survey. Catalogue no. 89-617-XIE. Statistics Canada. <https://www150.statcan.gc.ca/n1/pub/89-617-x/89-617-x2005001-eng.pdf>

Statistics Canada and Organisation for Economic Co-operation and Development (OECD). (2005). Learning a living: First results of the adult literacy and life skills survey. OECD Publishing.
<https://www.oecd.org/education/innovation-education/34867438.pdf>

Stewart, G., Geraci, K. and Nagy, P. (2004). Essential skills and Canadian language benchmarks: Considerations in comparing conceptual frameworks. Centre for Canadian Language Benchmarks, p.3. https://www.language.ca/wp-content/uploads/2018/03/01ESclbConsiderations_e.pdf

Sutton, N. (2002). Why can't we all just get along?. Computing Canada, 28(16), p.20.

Willms, J. and Murray, T. (2008). Gaining and losing literacy skill over the lifecourse. Catalogue no. 89-552-MIE - No.16. Statistics Canada. <https://www150.statcan.gc.ca/n1/en/pub/89-552-m/89-552-m2007016-eng.pdf?st=uQq7dlac>

World Economic Forum. (2018). The future of jobs report. Centre for the New Economy and Society.
http://www3.weforum.org/docs/WEF_Future_of_Jobs_2018.pdf

Wylie, C. and Hogden, E. (2007). Competent learners @ 16: Competency levels and development over time - Technical report. New Zealand Council For Educational Research. <https://www.nzcer.org.nz/system/files/cc-overtime-16.pdf>

Ziderman, A. (2016). Funding mechanisms for financing vocational training: An analytical framework. Policy Paper No. 110. Institute for the Study of Labor. <http://ftp.iza.org/pp110.pdf>

APPENDIX: PROVINCIAL, NATIONAL AND INTERNATIONAL FRAMEWORKS

Frameworks	Salient Characteristics	Online URL or Print Reference
National Occupational Classification	Five-tiered hierarchical structure classifying occupations into 10 broad occupational categories; 40 major groups, 140 minor groups, 500 unit groups and 939 unit sub-groups, based on the type of work performed.	https://noc.esdc.gc.ca/Structure/Hierarchy/a2cd3642650844089a50153b749dc283
Career Handbook	Details worker characteristics and other occupation indicators including: aptitudes, interests, relation with data, people, things, physical activities, education/training and work settings.	https://noc.esdc.gc.ca/CareerHandbook/ChAbout/85891e4329f04bc0861594698c224af1
Essential Skills Profiles	Descriptions of how workers in more than 350 occupations use each of the key essential skills in their job tasks and to which level of skill.	https://www.canada.ca/en/employment-social-development/programs/essential-skills/profiles.html
Red Seal Occupational Standards	Establishes essential skill requirements and assessments for each trade from apprenticeship to journeyman level. Provinces can then build their training around the standards so trades people can meet the requirements to work interprovincially.	http://www.red-seal.ca/resources/n.4.1-eng.html
SIP-funded National Occupational Standards	Labour market representative groups were provided federal grants and contributions for the development of national occupational standards and skills certification and accreditation systems specific for the sector the group represents.	https://www.canada.ca/en/employment-social-development/programs/sectoral-initiatives-program.html
O*Net: U.S. Department of Labor's Occupational Information Network	Provides an online database of occupational profiles with skill requirements for each occupation set out.	https://www.onetonline.org/skills/
Australian Core Skills Framework	This framework sets out how five core skills (learning, reading, writing, oral communication and numeracy) can be benchmarked and applied within a variety of contexts (including personal, workplace and educational) given an individual's skill level and performance variables present at the time.	https://docs.employment.gov.au/system/files/doc/other/acsf_document_01-05-2019.pdf

Key Competencies for Lifelong Learning: A European Reference framework.	Establishes the rights of individuals to lifelong learning and training to develop skills. The framework identifies the eight key competences and their essential skills, provides a reference tool and supports governments at various levels in their skills development initiatives.	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018H0604(01)&from=EN
Singapore: The Skills Framework	As part of the Industry Transformation Maps, this framework provides information on sectors, including overall information, pathways, occupations, existing/emerging skills and training programs for each sector. The framework was developed with government and sector stakeholders.	https://www.skillsfuture.sg/skills-framework
Programme for the International Assessment of Adult Competencies (PIAAC)	Looks at how literacy, numeracy and problem-solving skills in technology-rich environments are distributed within and between countries. The data is collected in a survey comprised of direct skills assessment, a background questionnaire and module on the use of skills.	http://www.piaac.ca/
Atlantic Canada Framework for Essential Graduation Competencies	Highlights the essential competencies (citizenship, communication, personal-career development, technological fluency, critical thinking and creativity and innovation) and what components of each skill should be present in individuals upon completion of secondary studies to inform curriculum development. These skills then form the basis for advanced education/lifelong learning.	http://www.ednet.ns.ca/files/curriculum/atlantic_canada_essential_grad_competencies.pdf
21 st Century Competency Framework (Ontario Expert Panel) – most provinces have something similar	The framework establishes the core competencies for the 21 st century (critical thinking, communication, collaboration, creativity and innovation), how they can be applied in a 21 st century Ontario context and what this will mean for teaching/policymaking in the future.	http://www.edugains.ca/resources21CL/About21stCentury/21CL_21stCenturyCompetencies.pdf
Canada West Foundation	A discussion of how the use of competency frameworks would better match people with jobs and jobs with people and how to build them.	http://cwf.ca/wp-content/uploads/2017/02/HCC_Matchup_Report_J1FEB2017_WEB.pdf

World Economic Forum 21 st Century Skills Every Student Needs	The report identifies the 16 skills needed for the future and breaks them into three categories, foundational, competencies and character qualities. The skills are developed with a focus on social and emotional learning (SEL) through technology.	https://www.weforum.org/agenda/2016/03/21st-century-skills-future-jobs-students/ http://www3.weforum.org/docs/WEF_New_Vision_for_Education.pdf
Council of Ministers of Education (CMEC) Global Competencies	The Ministers identified six global competencies for Canadians (critical thinking, innovation, learning to learn, collaboration, communication, global citizenship) which provinces can use to develop new curriculum/programming. The Ministers also recommended that these competencies be developed in a context that includes Indigenous knowledge/perspectives.	https://www.cmec.ca/682/Global_Competencies.html
SRDC Competencies Frameworks for Frontier College	Report on how essential skill development, primarily literacy, can lead to poverty reduction in Canada. Key findings inform policy and program/service delivery recommendations to set a path forward.	https://www.frontiercollege.ca/getattachment/6705c18a-981e-4c4f-ad83-e51bf70079e9/Poverty_Reduction_Full.aspx
SIP-funded National Occupational Standards ¹¹⁵	Labour market representative groups were provided federal grants and contributions for the development of national occupational standards and skills certification and accreditation systems specific for the sector the group represents.	https://www.canada.ca/en/employment-social-development/programs/sectoral-initiatives-program.html
Futureworx Soft Skills Framework	This framework establishes the steps for building a pan-Canadian soft-skills framework by reviewing existing work on soft skills and conducting surveys/panel discussions. Recommendations for the development of a pan-Canadian soft skills framework include mapping out soft skills, building a library of agreed upon essential skills and establishing a series of indicators/measures for the skills.	https://futureworx.ca/wp-content/uploads/2019/01/Soft-Skills-Framework-Report.pdf

¹¹⁵ Murray, T., Clermont, Y. and Binkley, M. (2005). [Measuring adult literacy and life skills: New frameworks for assessment.](#)

The Bases of Competence	Establishes 17 skills and four base competencies and develops a tool for student self-assessment as well as institutional outcomes assessment. ¹¹⁶	Evers, F. T., Rush, J. C. and Berdrow, I. (1998). The bases of competence. San Francisco: Jossey-Bass Publishers.
The Conference Board of Canada	Identifies the fundamental, personal management and teamwork skills needed to enter, stay in and progress in employment and also provides a tool kit for additional learning.	http://www.conferenceboard.ca/spse/employability-skills.aspx
Council for the Advancement of Standards in Higher Education (CAS)	Establishes standards for student learning outcomes in six categories and identifies specific learning dimensions within each category.	http://standards.cas.edu/getpdf.cfm?PDF=D87A29DC-D1D6-D014-83AA8667902C480B
Human Resources and Skills Development Canada	Nine essential skills for work, learning and life. Literacy; numeracy; oral communication; document use; writing; thinking; digital skills; continuous learning; working with others.	https://www.canada.ca/en/employment-social-development/programs/essential-skills/tools/what-are-essential-skills.html
Ontario Ministry of Training, Colleges and University's 11 Essential Employability Skills (EES)	The framework sets out six skill categories with each skill category assigned a set of skill areas for graduates to demonstrate in each category. Each skill category then has an identified learning outcome.	http://www.tcu.gov.on.ca/pepg/audiences/colleges/progstan/essential.html
National Association of Colleges and Employers (NACE)	The framework identifies eight competencies for career readiness, uses for the competencies and resources.	http://www.naceweb.org/career-readiness/competencies/career-readiness-defined/
Ontario Ministry of Education: Ontario Skills Passport	The passport identifies and describes essential skills, provides tools for assessment/building/documenting/tracking skills and provides occupational profiles with applicable skills.	http://www.skills.edu.gov.on.ca/OSP2Web/EDU/Display/EssentialSkills.xhtml
World Economic Forum's Top 10 Skills in 2020	The framework assesses the top 10 skills in 2015 and then projects what the skills will be for 2020 based on industrial disruption.	https://www.weforum.org/agenda/2016/01/the-10-skills-you-need-to-thrive-in-the-fourth-industrial-revolution/

¹¹⁶ Berdrow, I. and Evers, F. (2010). [Bases of competence: An instrument for self and institutional assessment](#), p. 419-434.

