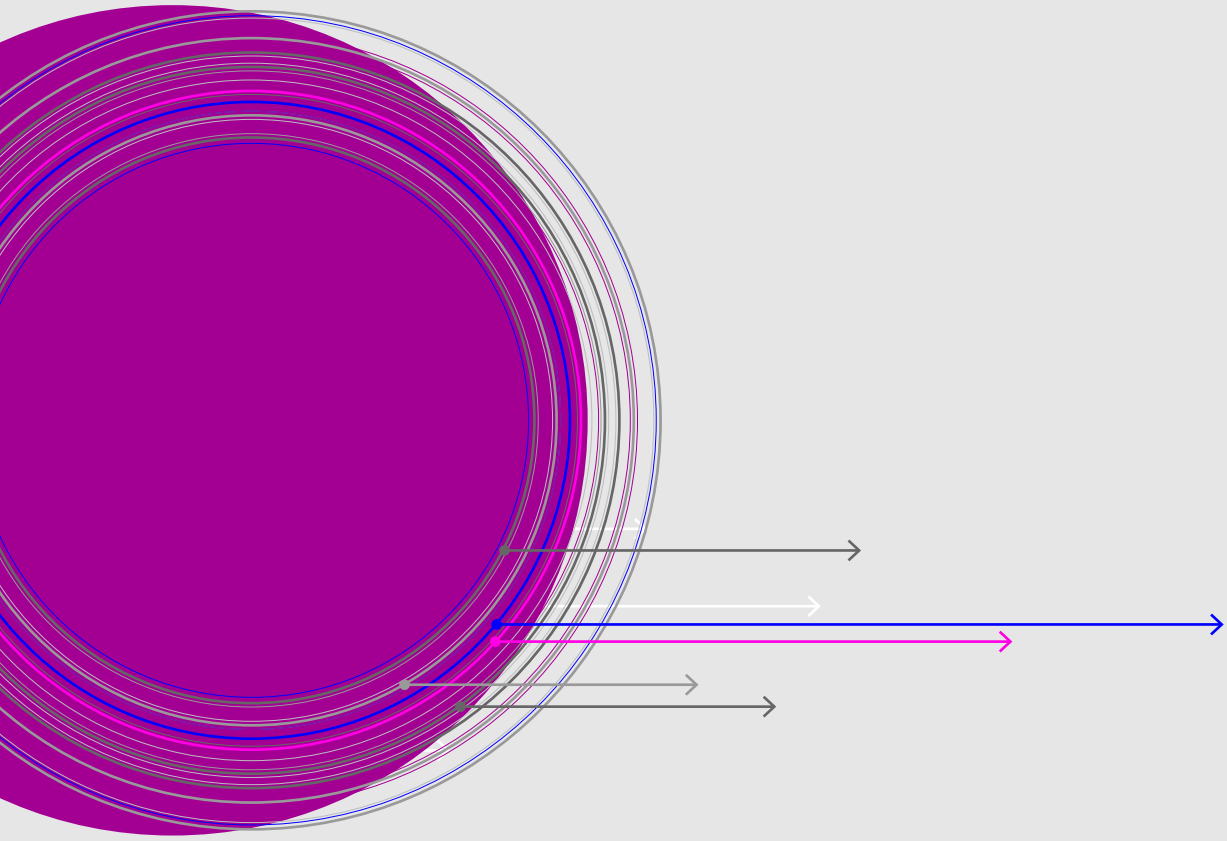

November 2021

Navigating Canada's Messy Education and Training Marketplace for Career-Focused Learning

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Future Skills Centre | Centre des Compétences futures

Blueprint

Acknowledgements

About the Authors

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Jake Hirsch-Allen works with North America's governments, workforce development organizations, colleges and universities, to leverage LinkedIn's Learning Solutions and Economic Graph data to close skills gaps. Jake is passionate about supporting disadvantaged groups such as newcomers and refugees, indigenous populations, the formerly incarcerated and people with disabilities.

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About Blueprint

Blueprint was founded on the simple idea that evidence is a powerful tool for change. We work with policymakers and practitioners to create and use evidence to solve complex policy and program challenges. Our vision is a social policy ecosystem where evidence is used to improve lives, build better systems and policies and drive social change. Our team brings together a multidisciplinary group of professionals with diverse capabilities in policy research, data analysis, design, evaluation, evaluation, implementation and knowledge mobilization. As a consortium partner of the Future Skills Centre, Blueprint works with partners and stakeholders to collaboratively generate and use evidence to help solve pressing future skills challenges.

About The Future Skills Centre

The Future Skills Centre is a forward-looking organization that prototypes, tests and measures new and innovative approaches to skills development and training. It is passionate about building a resilient learning nation, backed by an agile and responsive skills ecosystem that equips everyone with the skills they need to thrive in a rapidly changing economy and share in Canada's prosperity.

As a Pan-Canadian organization, FSC works with partners across the country to understand how global trends affect the economy, and to identify what skills working-age adults need to thrive within an ever-evolving environment. FSC is funded by the Government of Canada's Future Skills Program and was founded as a partnership between Ryerson University, Blueprint and the Conference Board of Canada.

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Executive Summary

The education and training landscape in Canada is becoming increasingly diverse, fragmented, and complex. This is particularly the case for adult learners, who require learning to enter the workforce, upskill and advance in their careers, or transition to new occupations. The result: a growing 'learning transparency' problem, which limits the ability of learners and career practitioners to navigate the program options to choose from, and to assure the quality, outcomes and value of those learning choices as Canadians seek to progress along their career pathways. This paper takes a first step in assessing the state of education and training information, and its utility for navigating career-focused learning choices. It presents a snapshot of the learning marketplace, the informational infrastructure for understanding it, and a scan of the tools and resources available to assist with navigation of learning opportunities. It also provides a close look at one user group, that of career practitioners working primarily in publicly-funded employment services,[1] to assess the context in which they support clients navigating career-focused learning opportunities. The paper concludes with practical findings and opportunities for consideration by the Future Skills Centre (FSC) and the Canadian policy, education and workforce communities.

Promising Opportunities and Innovative Ideas

A central conclusion of the paper is that our capacity to understand and navigate this learning marketplace hinges on an adequate education and training information infrastructure that does not currently exist in Canada. *But it could.*

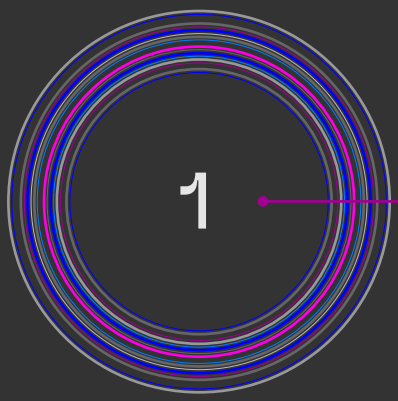
We see a big opportunity for breakthrough innovation — built around an **open-access Learning Data Trust for Canada** — to catalyze efforts to build responsive career pathways. It would serve as a kind of public utility, mapping education and training data to other key information. It would enable an ecosystem of public, private and non-profit users to develop career navigation tools, inform research and policy, or find other creative uses. It could be incorporated within existing initiatives like the FSC-LMIC Data Hub for Canada. Governments could use funding and regulatory levers to compel data from education and training providers, potentially as an eligibility requirement for student grants and loans.

Other, related opportunities could **improve the impact of learning navigation tools** through a standards framework designed with behavioural research and user testing; and **develop tools and supports for career practitioners**, addressing informational needs for assisting clients and for capacity-building professional development and training.

1 Hyperlinked terms throughout the paper connect to the Glossary.

Key Findings

The marketplace for education and training is evolving to meet the demands of workers, employers, governments and labour markets. This is good, but is also making "first mile" educational decisions trickier.	An important constraint has been the absence of a common foundation for education and training in Canada, with primary jurisdictional responsibility at the provincial and territorial level. A consequence is that information about education and training in Canada is inconsistent, fragmented, inaccessible or even non-existent.
Fixing the learning information and data gap is essential to solving the navigation problem.	A solution will require focus in two areas: generating *provider- and program-level information* to inform basic learning choice decisions; and generating program-level *quality, outcomes and value* information to empower learners and career practitioners to make the right choices. This should include basic outcomes information, such as completion rates, and post-completion employment and income levels to allow for thorough assessments.
Many different players are introducing tools and resources to help people and career practitioners with pathways and learning choice navigation. But this space is still nascent.	There is a wide and diverse array of government websites, digital wayfinding apps and other resources being offered, typically integrated with other career resources such as labour market information (LMI). Yet, there are no established methods for evaluating these tools, and it is difficult to assess their usage. The effectiveness of navigation tools is limited by the gaps in Canada's learning data, particularly program-level information on options and outcomes for public post-secondary institutions. This could limit learners' awareness of public program options versus private competitors.
For career practitioners, there are still many barriers to effectively assisting clients.	Helping clients explore learning options is just one of several areas of support offered by practitioners, often subservient to the goal of connecting people to work. Where they do assist with learning navigation, practitioners commonly conduct research about programs on clients' behalf using tools like local college websites. The cost of training, and access to supports for basic client needs are common barriers to accessing career-related learning.



1 Introduction

Introduction

A Messy Marketplace for Learning is Getting Harder to Navigate

Responsive career pathways involve integrated, flexible steps along a personalized journey toward an individual's career objectives, from discovery and goal-setting to job readiness, recruitment and ongoing progression through work. Learning and skills development through formal education and training programs (to be referred to throughout as "learning") form one essential step in this journey. The learning landscape has been undergoing fundamental changes over the last decade, becoming increasingly diverse, fragmented and complex. This is particularly the case in the marketplace for adult learners, who require learning to enter the workforce, upskill and advance in their careers, or to transition to new occupations in different fields.

As a result, learners and career practitioners are increasingly grappling with how to navigate and choose learning offerings to advance employment and career goals, ensuring those choices are high quality and will deliver outcomes. This is tricky. Recent policy research described an emerging *lifelong learning marketplace* for working-age adults in Canada, with a growing breadth and diversity of learning providers, program models, credential types and learner pathways (Côté & White, 2020). In the United States, Credential Engine has found the number of unique credentials has grown in recent years to nearly one million, with more than half in non-traditional formats such as digital badges (Credential Engine, 2021). **Yet in Canada there is no comprehensive mapping or inventory of providers, programs or credentials — much less of their alignment to the labour market and in-demand jobs and skills, or other evidence of value or outcomes for learners.**

This presents both opportunity and challenge. The disorderly growth in offerings and consumer choice holds promise for learners, but is also daunting to discern and navigate. They must identify program options that meet and align with career objectives while balancing factors like cost, structure and life-fit, and being assured of program quality and the return they will get. It is a difficult task for career practitioners as well, who work with high school students, job seekers, workers in transition, post-secondary learners, employees and others to identify learning opportunities to help them progress in their career pathways.

This "first-mile" problem was perfectly summed up as follows:

> *Today's learners need not just funding, but also better insight into the labor market outcomes and career paths that will allow them to spend their time and educational dollars wisely. The challenge stems from the fact that our disconnected education and workforce systems give individuals the power of the purse, but impose an unfair burden on them to make costly, and potentially life-altering decisions, with scant information. (Flynn & Dawson, 2021)*

This paper provides a high-level snapshot of the evolving education and training marketplace in Canada, and presents a scan of categories and examples of the tools and resources presently available to assist with navigation of education and training opportunities. It then focuses on one user

group of career practitioners working primarily in publicly-funded employment services, and tries to better understand the practices, experiences and challenges of helping adults and youth to access and use available information and tools to support navigation of education and training options.

Pulling these threads together, the paper concludes with practical findings for Blueprint's Responsive Career Pathways (RCP) project and opportunities for the Future Skills Centre (FSC) and others in the Canadian policy, education, and workforce communities to consider.

The research incorporates a number of methods including literature review, marketplace scan, semi-structured interviews with leading thinkers and practitioners on the learning marketplace, and a survey and focus groups with career practitioners working in publicly-funded employment services in various Canadian regions. These are described further in the sections below, and in the Appendices.

Research Questions

The paper addresses three central sets of research questions:

FIRST How is Canada's education and training marketplace evolving, and what resources or tools currently exist to support people and practitioners to understand and navigate this increasingly complex ecosystem? Looking at examples and analysis from Canada and internationally, what are the features of effective or promising navigation supports?

SECOND For career practitioners who support clients charting pathways to jobs and developing their careers, what resources, tools and practices do they currently use to help clients navigate the education and training landscape and marketplace? What does this user group need to better assist clients to make learning choices in an effective career pathways system?

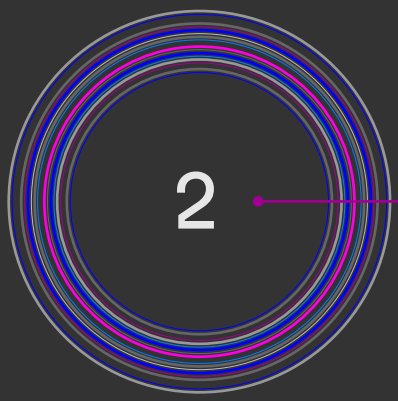
THIRD For Blueprint's RCP project and the FSC, what are the implications and actionable opportunities for supporting a navigable system and marketplace for education and training in Canada? What resources, tools and capacity do career practitioners require to create a learner-focused, responsive career pathways system?

Key Terms

Education and Training Marketplace: We define this as the competitive ecosystem of post-secondary education, workforce training and adult learning providers across Canada, divided across various provider- and credential-type segments as described in Section 3.

Information Infrastructure: In our context, the technological and human networks, systems, policies and processes for the collection, curation and access of data and information about education and training in Canada.

Learning Navigation: The informational tools and resources that assist learners or career practitioners to understand and choose among education and training provider and program options, in order to lead to informed decisions.



An Expanding Education and Training Marketplace

An Expanding Education and Training Marketplace

An increasingly diverse and competitive environment for learning programs is emerging globally. An array of forces — changing economies, labour markets and technology, public policies and funding, and learner needs and expectations — accelerated by COVID-19, are sparking change in at-times ossified education and training systems. Reflecting a shift toward serving the growing needs of adult learners, new programs often feature shorter, flexible, virtual, skills-oriented and work-integrated instructional models, aimed at meeting industry demand and learners' focus on job and financial outcomes. **Many Canadians are taking advantage of such programs,[2] yet in spite of rapidly changing skills needs and automation risk in work, adults most in need tend to be least likely to participate.[3]**

Driven by these trends and demands, the new marketplace is growing well beyond the traditional boundaries of post-secondary education and training, with new categories of credentials, providers and programs. Across Canada, this is reflected in various provider segments: from public higher education to workforce training to private vocational colleges to online-only global platforms. New entrants and offerings add not just diversity but also competition to traditional providers. Yet, as one interviewee quipped, "'marketplace' is too structured a term for what is happening." Faced with this increasingly messy domain, a report published in early 2021 calls for comprehensive mapping of Canada's learning ecosystem. The authors note that large government skills development investments "may have little impact without actionable data on the learning options that can connect workers to in-demand jobs" (Bonen & Oschinski, 2021). This limitation in Canada's education and training information infrastructure poses a major obstacle in helping learners navigate both what program options to choose from, and assuring their quality and likely outcomes.

In spite of these intelligence gaps about Canada's learning marketplace, a range of tools and resources have been developed for learners and workers, career practitioners and others to navigate the available options. From government websites and digital wayfinding apps to data dashboards and PDF-format guides, these learning navigation supports are often part of broader resources focused on career development, job search, labour market information (LMI), occupation and skills profiles and other functions. This ecosystem of tools and resources — described as the "JobTech Market" by US-based Canadian investor Ryan Craig — is meant to help, but it also adds another layer of complexity. Isolating only for learning navigation, it is not obvious what types of tools and resources exist for learners and career practitioners, or what key features, functions and models work best.

This section tries to make sense of this expanding marketplace and the tools and resources for navigating it. The analysis in two subsections is informed by literature review, a marketplace scan and nine interviews with thought-leaders from Canada and the US (see Appendix 1 for details). The first presents a snapshot of Canada's evolving market, describing the categories of education and training, and their various credentials, providers, program types, quality frameworks and other characteristics. It also reflects on the gaps in Canada's data and information infrastructure, and highlights leading practices in other jurisdictions. The second establishes a definition for learning navigation tools and resources, and presents a scan of tools available in Canada and abroad. Both subsections conclude with sets of key findings.

2 The OECD's (2019) survey of adult skills found that half of adults (25 to 65) in Canada participated in job-related training.

3 The most recent Canadian surveying of adult participation in formal education and training, Statistics Canada's Access and Support to Education and Training Survey (ASETS), has not been updated since 2010 (data from 2008 accessed here).

A Snapshot of the Education and Training Marketplace in Canada

While the mapping exercise proposed by Bonen and Oschinski (2021) is beyond the scope of this paper, we take a first step in that direction: a snapshot of Canada's evolving learning marketplace. To do so, we borrow from US-based Credential Engine's widely recognized approach. Describing the current state of affairs as confusing and inefficient for learners, governments, educators and employers, Credential Engine's aim is "making all credentials transparent and revealing the marketplace of credentials." In partnership with federal and state governments, learning providers and others, they established an open access Credential Registry. Their recent report categorized 16 different types of credentials in the US marketplace, conferred by an array of providers and tracked through a variety of data sources (Credential Engine, 2021).

Recognizing the differences in the structures, language and data architecture for Canada's education and training system (really, a set of provincial / territorial systems), we adapted the Credential Engine approach to produce the snapshot below. It is not intended to be comprehensive, but rather to provide a general basis for understanding the various elements of the market (and a starting point for a more thorough mapping). Below, we then provide further descriptions of each of the four categories in the snapshot and their component parts.

FIGURE 1:
Snapshot of Canadian Education and Training Marketplace

Public Post-Secondary Institutions*

Qualification / Credential Type	Advanced Degree (Doctoral/ Masters)	Bachelor Degrees** (incl. Honours)	Diploma	Certificate	Micro-credentials (credit & non-credit)	Continuing education completion certificate (non-credit)
Typical Duration	3+ for Doc., 1-2 years for Masters	3-4 years	2-3 years	1 year or less	3 months or less	Semester / Variable
Provider Type	University	University, some college	College**	College	College, University	College, University
Examples	Doctor of Philosophy - Biochemistry	Bachelor of Arts - Architectural Studies	Advertising and Graphic Design	Clinical Research	Certified Agile Project Manager	Course in Building Operations & Maintenance
Quality Framework	Provincial / Territorial (P/T) Qualification Frameworks				No	No
Provider Count	143 public universities (incl. 30 theological) 209 public colleges					

* Adapted from provincial qualifications frameworks and other sources.

** In BC, there is a 2-year associates degree. In Ontario, Indigenous Institutes also issue certificates, diplomas and bachelors degrees.

*** Quebec offers more secondary school-to-work transition options, including pre-work and trades training certificates, and vocational diplomas through the CEGEP system.

Private and Non-Academic Providers

Qualification / Credential Type	Certificate of Apprenticeship (national Red Seal & provincial)	Diploma, Certificate from Private Provider	Occupational Certificate, License or Registration (for legal right to practice or to use reserved title)	Variable types of recognition of completion
Typical Duration	2 - 5 years (inc. on-the-job & classroom training)	Typically 3 - 12 months	Highly variable (from training requirements to testing / assessment)	Highly variable - typically shorter
Provider Type	Apprenticeship Training Delivery Agents (public colleges, unions, other TDAs)	Private Career Colleges (PCCs) & Vocational / Technical Schools (VTSs)	Provincial (and in Some Cases National) Licensing/Regulatory Bodies	Private and non-profit providers, public colleges and universities
Examples	Trades in construction, automotive, industrial, service	Vocational training programs in business, health services, coding bootcamp, etc	Professions inc. law, early childhood education, accounting, nursing	Employment services, literacy and basic skills (LBS), language training, immigrant bridging
Quality Framework	P/T Qualification Frameworks (distinguishes compulsory and voluntary trades)	P/T Qualification Frameworks (for approved programs)	Specified by licencing / regulatory body (e.g. Law Society of Alberta)	Variable**
Provider Count	~200 TDAs* (estimate)	1,438 PCCs and VTSs	Uncertain (CICIC identifies 159 regulated occupations; others with voluntary certification)	Uncertain***

* No national figures for apprenticeship training providers; estimate extrapolates Employment Ontario data that identifies 81 TDAs.

** For instance, French and English language training providers are accredited; training through employment service providers is not.

*** There are 195 language schools (CICIC), but no national figures available for other provider categories.

Ontario data from 2016-17 reports 320 publicly-funded employment service sites, 314 LBS delivery sites, and a couple dozen unique providers of provincial bridge training programs - with some providers in offering multiple types of training.

FIGURE 1: Cont'd

Global Online Platforms

Qualification / Credential Type	Course completion certificates	Course certificate, micro-credential, degree
Typical Duration	>1-100s of hours (a la carte)	4 weeks - multi-year
Provider Type	Private Providers of Course Repositories	Private MOOC / education platforms, hosting university and industry provider content
Examples	1-2 hour courses in Excel Essential Training, Building Resilience as a Leader	Business Foundations course (UBC), Master of Public Health (University of Michigan)
Quality Framework	No	No
Provider Count	Small #, e.g. Udemy, LinkedIn Learning, SkillSuccess	Small #, e.g. Coursera, edX, Udacity, FutureLearn

* Massive Open Online Course (MOOC) providers are platforms through which universities, companies and other providers deliver courses and programs.

Secondary Schools

Qualification / Credential Type	Sec. school diplomas
Typical Duration	Typically 12 years
Provider Type	Public, Private Schools
Examples	N/A
Quality Framework	Provincial curricula
Provider Count	15,500 elementary, secondary, mixed (CMEC)

Sources:
Canadian Information Centre for International Credentials (CICIC), Credential Engine (CE), Council of Ministers of Education of Canada (CMEC), Languages Canada, Canadian Immigrant, Employment Ontario Geo Hub

Public Post-Secondary Institutions

The most long-established and understood of the categories, the public post-secondary sector has produced interesting if peripheral innovations. Across the country, hundreds of short new **micro-credential programs** have recently been introduced at colleges, polytechnics and universities. Other institutions have focused on building shorter course and program options through **continuing education** schools (such as programs leading to certificates or degree pathway, or intensive bootcamp models), or expanding pricey executive education. While Canadian institutions have been slower to follow the international trend of partnering with private online program manager (OPM) companies,[4] Laurier University and University of Ottawa have been first movers in doing so to develop **custom-built, online degree programs in high-demand fields** (described as "macro-credentials"). Carleton and York Universities have pioneered a work-integrated Dev Degree in partnership with Shopify. Upstart universities, such as Toronto-based International Business University (IBU) and Northeastern University's Canadian satellites, are introducing provincially-approved, professionally-focused degree program options.

Most public post-secondary credentials — from **multi-year advanced degrees to certificate programs of under one year** — are approved under provincial / territorial qualification frameworks (QFs). These establish requirements for program design, duration, admission and generic competencies graduates should expect. While there are differences across provinces, notably with Québec's CEGEP system and secondary school-to-work transition options, there is much commonality across qualification types. Yet, the new micro-credentials, introduced under nascent and bespoke policy and funding frameworks in some provinces, are not yet captured under QFs. Nor are the growing array of continuing education and other non-credit programs. Sector associations and intermediaries such as Colleges and Institutes Canada (CICan) and eCampusOntario have introduced micro-credential definitions and frameworks in an effort to establish common language and quality standards, but there is not broad understanding or recognition of these new programs.[5]

Despite existing within public regulatory and funding arrangements, commonly accessible **pan-Canadian information sources at provider and program-level** are difficult to find. The Canada Job Bank, probably the most widely used public resource, offers a career planner function that links to an education program search tool, but with minimal information about the provider and credential-type. CICan provides a search tool for their members' degrees and post-graduate programs. The Canadian Information Centre for International Credentials (CICIC) offers a searchable directory of recognized, registered and/or licensed educational institutions in Canada. None of these sources allow users to compare programs across key factors like price, duration and instructional format or, critically, the program's graduate outcomes.

4 For background on OPMs, see, for example Hodge, 2020.

5 See Higher Education Strategy Associates & The Strategic Counsel, 2020. It includes opinion research from Canadian employees and employers about various topics in skills acquisition, including awareness of and interest in micro-credentials.

As a consequence, transparency around quality assurance and program outcomes is mixed. As one interviewee noted, the QFs and program approval processes do offer a significant level of ex ante (i.e. prior to enrolment) quality assurance. Yet, they do not assure ex post graduate outcomes. This data, where it is collected and shared publicly, is typically hard to find, out of date, and covers a small set of measures including completion, post-grad employment, and student loan default.[6] The most significant effort to develop longitudinal outcomes information has been the creation of Statistics Canada's ELMLP.[7] Linking post-secondary and tax data, it enabled the widely recognized "Barista or Better" research initiative and LMIC's post-secondary graduate earnings data dashboard.

Private and Non-Academic Organizations

Another well-established segment of the market, registered **apprenticeship training** is recognized under provincial QFs as well as the national Red Seal designation for a select group of trades, with completion leading to a certificate of apprenticeship under a common assessment process. Training delivery agents (TDAs) include public colleges, unions and trade associations, with classroom learning accompanying on-the-job training in the fields of construction, automotive, industrial and services. National data is available through Statistics Canada's Registered Apprenticeship Information System (RAIS) on the number of registered apprentices, how many are in Red Seal and compulsory (versus voluntary) trades, and the number of certificates granted. Using RAIS with linked tax data, LMIC has recently introduced a data dashboard and research presenting trade-level certificate holder earnings and growth over the 10 years since completion.

Private Career Colleges and technical / vocational schools (PCCs) have a large presence in Canada, with many programs eligible for student financial aid. In recent years, new providers and models have sprouted such as tech-focused bootcamps.[8] Also governed under provincial QFs for diploma and certificate programs, PCCs are competing in the marketplace for shorter vocational programs with public colleges and with universities where they are introducing micro-credentials. While regulated for consumer protection by provinces and required to report on graduate outcomes in some cases, there is typically limited transparency for learners about quality assurance or value. For example, Ontario does provide information comparing provider graduation, employment, OSAP default and learner satisfaction with sector averages, but the website is hard to access, with the latest data only from 2016. Private sources sometimes fill this gap, such as Course Report's impressive mapping and reviews of bootcamps that include career outcome data.

There is also an array of **licensing and regulatory organizations**, governed under provincial / territorial law (sometimes federal) that bestow credentials on the regulated professions requiring occupational licences (certificate, licence or registration) in order to practice.[9] Approximately 20% of jobs in Canada are in these professions. Licensing typically involves competency assessment, linked to educational

6 For example, the BC Government provides student outcomes survey data updated to 2019, with a BC Student Outcomes Data Viewer tool; and Ontario makes available similar graduate survey key performance indicators for colleges and universities, though in a less accessible format.

7 The Education and Labour Market Longitudinal Linkage Platform, accessible via the Canadian Research Data Centre, links datasets about post-secondary students and registered apprentices with tax files to better understand how their education and training affected their career prospects.

8 For full transparency, Jake is the co-founder of one such Canadian bootcamp, Lighthouse Labs.

requirements and sometimes with direct training provision. One segment, captured above, is in skilled trades credentialled through apprenticeship certification. There are 17 major types of regulated professions, from accounting and architecture to nursing and teaching, each typically with a unique provincial licensing body (Canadian Immigrant, 2019). While all require entry-to-practice education as a prerequisite, licensing requirements are bespoke for each occupation, with no known information source tracking learning, testing, annual renewal or various other requirements.

There are large numbers of **private and non-profit training providers**, funded and coordinated through provincial workforce systems. In employment services, change has resulted from provincial reforms focusing on increasingly industry demand-driven and pathways-focused service and training models. Multinational firms Maximus, WCG Services and FedCap have entered the market in British Columbia and Ontario through performance-based provincial contracts to coordinate services. Non-profits such as NPower Canada have introduced industry-partnered training programs with pathways to in-demand jobs. FSC is supporting many other new models. Still, this training is not regulated or assessed against a QF, with outcomes generally linked to a client's reattachment to work rather than learning or skills development outcomes.

Other types of pre-employment adult education offerings, often delivered or referred through employment services, include **language, literacy and basic skills (LBS), and bridge training** for internationally trained newcomers. Languages Canada, the association and accrediting body for over 200 French and English language education programs delivered by public and private providers, offers a searchable list of providers and programs on their website. LBS training and academic upgrading are delivered by school boards, community agencies and colleges. Bridge training is delivered by a mix of universities and colleges, occupational regulatory bodies, community agencies and employer associations.[10] As the snapshot illustrates, information about providers and programs is highly fragmented, available through provincial government websites, private intermediaries[11] and / or through the CICIC Directory of Educational Institutions.

9 See the Canadian Information Centre for International Credentials (CICIC) description of regulated occupations, as well as their searchable Directory of Occupational Profiles.

10 See the Government of Ontario's website displaying a variety of providers, as well as funding programs.

11 See for example Canadian Immigrant online publication's list of immigrant bridging programs.

Global Online Platforms

An entirely new category of providers has emerged over the past decade that takes two forms. The first is private **online course repositories** like Degreed, Udemy and LinkedIn Learning,[12] which offer access to thousands of courses through a variety of subscription services. Typically short, skills-focused online learning for professional learners, Credential Engine now counts nearly 125,000 unique online course completion credentials. **Courses focus on practical workplace tools and skills and are often designed for corporate professional development with limited learning assessment and no common quality framework.** While relatively new, they have tended to serve more as supplements than competitors to higher education and workforce training programs and are increasingly integrated into these programs.

The second is **Massive Open Online Course (MOOC) providers** such as edX and Coursera. These private platforms host full courses delivered asynchronously by a wide range of international universities (some Canadian) and some multinational companies. **Initially launched to offer free, open education to global cohorts of thousands, the MOOC models have evolved in program offerings and with the introduction of modest fee structures.** Credential Engine counts nearly 10,000 unique MOOC credentials, still predominantly course certificates but with various forms of micro-credentials and full online degree programs growing quickly. While delivered by recognized educational institutions, there is no common quality framework for MOOC credentials. Global firms — from tech giants Google and Salesforce to consultancies PwC and BCG — are offering MOOC courses and contributing to online course repositories such as those listed above. These courses are geared to learning for their products and services and lead to corporate-branded alternative credentials, with disruptive potential for higher education.[13]

Secondary Schools

While not a primary focus of the Responsive Career Pathways project, secondary school diplomas are nevertheless the key building block credential and transition point into higher education, career-oriented learning and the workforce. Diploma completion requirements are standardized through curricula in each province and territory, with adult education leading to general educational development (GED) certificates of high school equivalency or completion.

12 For full transparency, Jake is the North America Higher Ed and Workforce Development System Lead for LinkedIn Learning.

13 For example, Google recently introduced Career Certificates: Six-month credential programs, hosted on Coursera, that they claim will be "the equivalent of a four-year degree."

The Education and Training Information Infrastructure

A recurrent theme across all the categories above is the limitations and gaps in information and data about education and training. Our particular focus is in two areas: **basic provider and program information for comparing options, and program-level quality and outcomes information to assess those options.** Compounded by the increasing fragmentation and messiness of the evolving marketplace, the gap in data will significantly limit the capacity for learning navigation.

It is important to note that there are many reliable national education and training data and information sources. Statistics Canada and CMEC produce an annual report of pan-Canadian education indicators, providing access to a range of data tables. Statistics Canada also provides an Open Database of Educational Facilities, a Classification of Instructional Programs (a taxonomy of field of study), and post-secondary student and registered apprenticeship databases. Other trusted intermediaries described above, like CICIC and LMIC, offer searchable databases of educational institutions, occupational profiles and job postings. JobBank and CICan both offer search tools for specific learning programs, but with limited program information.

There are also exciting, budding initiatives in Canada. LMIC and FSC have partnered to launch a Data Hub, an online data repository that enables open access to LMI for intermediaries and third-party users.[14] Guided by the principle that the data provider (publicly curated, open and trusted) should be distinct from the solutions providers (a public, private and non-profit ecosystem, serving a variety of user groups), the cloud-based data repository will compile a variety of public and private sources of LMI and skills data, under a common ontology. With a launch target of early 2022, the initial aim is to support career practitioners to prototype and build innovative digital tools drawing from the common data. While initially focused on LMI, the Data Hub roadmap could be expanded to include education and training data as another key pillar. This would ideally be broken down to the level of skills and tied to employment LMI.

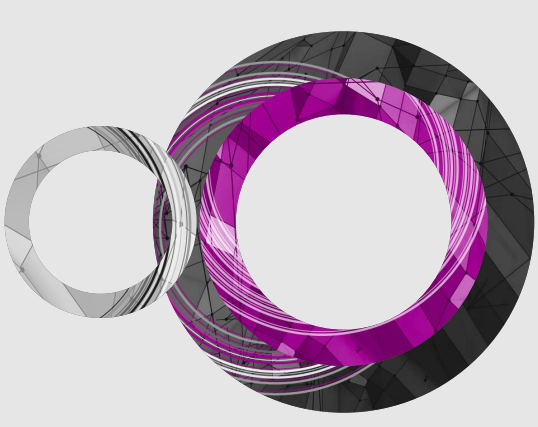
Still, Canada's information infrastructure for labour market, learning and career navigation lags peer countries. In the UK, the LMI For All portal funded by the Department of Education integrates government datasets to provide high quality information to inform career decisions, with a database and API model enabling easy access for designers, developers and others to build tools for a variety of users. In the US, the National Student Clearinghouse Research Centre, a trusted non-profit partner to the education sector, provides objective data and insights about student enrolment, completion and other outcomes, leveraging federally mandated public reporting from 3,600 public and private post-secondary institutions. Their data powers dozens of state and local training navigation tools. Australia has recently launched Jobs and Education Data Infrastructure (JEDI), an initiative of the federal government and National Skills Commission to create a data engine on labour market and skills that can feed multiple applications to help many audiences. The common thread: reliable, consolidated, integrated information and data sources, operating on open principles that enable access to a broad spectrum of users and innovators.

Our analysis and interviews revealed three core issues in Canada, to be tackled in sequence.

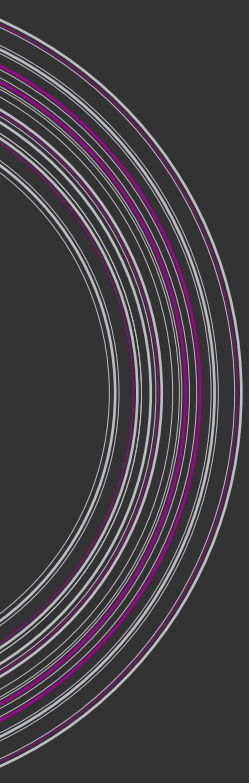
FIRST With education and training fragmented across 13 provinces and territories, the inconsistent system structures, taxonomies and terminology make it difficult to gather and connect information. While aligning provincial systems is unrealistic in our federal system, *standard methods for cross-referencing taxonomies* is essential to any pan-Canadian effort.

SECOND With education and training fragmented across 13 provinces and territories, the inconsistent system structures, taxonomies and terminology make it difficult to gather and connect information. While aligning provincial systems is unrealistic in our federal system, *standard methods for cross-referencing taxonomies* is essential to any pan-Canadian effort.

THIRD There is *no common, comprehensive and open repository* of education information. Statistics Canada, CMEC, LMIC and others have made progress consolidating some education data and information, but Canadian efforts can go much further.



14 See LMIC website for further description of the Data Hub and career services initiative: https://lmic-cimt.ca/projects/equipping-career-services-with-lmi-tools-and-data/.



There is no common, reliable and accessible source of basic information about learning at the provider and program level

Quality Assurance and Program Outcomes Information

A career pathways system that enables learners and career practitioners to effectively navigate learning options demands more than just the program-level "tombstone" information: it must also inform about the *quality and outcomes* of those programs to protect learners and best equip them to achieve their goals.

The debate over quality and outcomes in higher education and workforce training extends far beyond this narrow focus on navigation, and we do not aim to fully explore it here. In general, however, there are three main objectives in tracking quality and outcomes information:

1. Transparency to provide learners, and career practitioners assisting them, with the information they need to make informed decisions about education and training options.

2. Improvement to equip education and training providers with the information they need to enhance program delivery, learner experience and post-completion success.

3. Accountability to establish and enforce, typically through government policies and funding mechanisms, provider standards for quality assurance, consumer protection and performance in achieving learner outcomes.

Our focus here is primarily the first objective. The snapshot of Canada's learning marketplace reveals that quality frameworks (like provincial QFs or licensing standards for regulated occupations) take many forms and do not cover all types of providers, programs and credentials. While they are a rough proxy for factors like provider or instructional quality, they do act as an important ***ex ante* quality assurance mechanism** for program design, learner competencies or occupational standards across much of the market. Efforts to establish competency- or skills-based programs also offer potential. There could be risks to consumer protection where these quality or competency frameworks do not exist, for example, higher cost or online private programs leading to alternative credentials like certificates or digital badges.[16]

It is the ***ex post* learner outcomes information** — such as completion / graduation, student aid default, employment and retention in field of study, earnings and incomes — that are the more significant gap. Our research finds this data is limited, fragmented, usually outdated and hard to find. Even the ELMLP longitudinal tax-linking initiative, while promising, is limited in important ways: for instance, data can only be accessed by researchers through Statistics Canada research data centres (RDCs), with long lead times; and the data is aggregated to field of study, and *not* made available at the provider or program level. The consequence for learners and career practitioners making important, often costly, learning choice decisions is that beyond anecdote or experience, they have little ability to understand which programs are likely to deliver better outcomes or value.

By contrast, in the US there is an established infrastructure for collecting this information, dating back to 1966. Federal legislation has gradually increased reporting requirements on thousands of public

16 The OECD has defined alternative credentials as: "credentials that are not recognised as standalone formal educational qualifications by relevant national education authorities." See Kato, et al., 2020.

and private institutions, from inputs (such as admissions information) initially to outcomes (graduation, employment), down to a program level. The US reporting system, considered a top performer internationally,[17] is nevertheless described as burdensome on institutions and inadequate in some ways (advocates are now seeking *student-level* reporting) (Whistle, 2017). Yet, it enables prospective learners to access program-level information on enrolment, cost and typical debt load, retention, graduation, post-completion income and other information that is not accessible in Canada. The US College Scorecard, described below, is a tool that demonstrates the scope of available information.

Access to this data and information has also spurred research and active debate in the US about quality, outcomes and, more recently, the concept of "value" for learners (and funders). For instance, think tank Third Way has introduced a "price-to-earnings premium" as a new metric for assessing the return on higher education. By linking out-of-pocket price of education to post-completion earnings, they are able to assess the number of years it takes for a learner to recoup the cost (Itzkowitz, 2020). Others like the Lumina Foundation are proposing quality metrics such as a minimum 10% earnings improvement over minimum wage as an education outcome.[18] Perhaps the highest profile recent initiative is the Postsecondary Value Commission, backed by the Gates Foundation, whose final report sought to define value with a particular focus on economic mobility and advancing racial justice.[19]

In Canada, this type of analysis is simply not possible at this time. As one interviewee, adopting an international lens, put it: **"The way you measure matters, and you can take different approaches. But you have to measure."**

17 Interview.

18 Expert interview. See also Lumina Foundation (2021). "A Stronger Nation." Report and website with online data tools.

19 See the website of the Postsecondary Value Commission, which features proposed definitions, measurement, actions and supporting reports.

Key Findings

With primary jurisdictional responsibility at the provincial and territorial level, there is no common foundation for education and training in Canada.	While there are many similarities across the country and some common information and data sources, there are so many distinct factors that it is difficult to establish a common understanding of the learning marketplace across the country.
Data about education and training in Canada is inconsistent, fragmented, inaccessible, lagging or, in some cases, non-existent.	While there are some common sources, it remains very difficult to understand what information and data exists, and where it can be accessed. Further, what does exist is typically aggregated to national or provincial levels, by broad field of study or qualification type. To aid learner and client navigation, addressing the *provider- and program-level* data and information gap is particularly critical.
Provider- and program-level information is necessary, but insufficient: information about program-level quality, outcomes and value is also essential.	Pathways navigation to learning programs requires knowing not just that a program exists and can be accessed, but whether it is likely to be effective in helping the learner to achieve their goals. This can include *ex ante* indicators, but it should also include basic outcomes information, which can allow for assessments of value indicators like returns on the costs of taking a program.
There are immediate opportunities to develop a flexible, skills-aligned, open education and training information infrastructure.	This provides a more promising route than trying to create comprehensive pan-Canadian taxonomies or credential systems; research and interviews reinforced that such efforts are typically lengthy and fraught in Canada's federal context. While efforts should focus on translating across provincial / territorial systems and taxonomies, a key priority should be seizing opportunities to build on existing Canadian initiatives and / or adapting models from other jurisdictions. We describe these opportunities in Section 5.

20 Both examples offer great visual representations of the marketplaces and categories of providers and tools they are depicting.

Navigation Tools and Resources for Education and Training

With a clearer picture of the learning marketplace, this section examines the existing tools and resources available to help prospective learners and career practitioners navigate and inform learning choices. This is not an entirely novel endeavour. The OECD recently published a report that compared study choice and career guidance websites across member countries, scanning for a wide range of factors including target audience, information customization and inclusion of LMI, amongst other things (Hofer et al., 2020). Ryan Craig's JobTech Market mapping provides another lens, with various categories of tech companies that connect job seekers to employment. In Canada, Project Integrate, a collaboration to explore future employment pathways for youth led by the Ontario Tourism Education Corporation (OTEC) and supported by FSC, developed a data visualization map of about 350 digital tools used by employment services providers.[20]

Our analysis, however, zooms in specifically on the tools, resources and supports used for *education and training* navigation, recognizing that most offer other functions as well.

Defining and Categorizing Navigation Tools and Resources

Common descriptors or a taxonomy for education and training navigation tools and resources are not common; we understand them to be tools and resources that help users to understand and navigate education and training provider and program options, in order to make informed decisions.

These can be in various analog, digital or data formats. They can also be exclusively for learning navigation, or incorporate other functions (for example, career exploration and guidance, job search, LMI, skills and competency alignment). They can be offered by a range of entities, including governments, agencies and public workforce systems; providers of public education and private training; intermediaries such as non-profit agencies and think tanks, the education sector and industry associations, and niche information brokers for international and domestic students; and large multinational firms, education companies, and JobTech startups.

Based on the research and scanning, we group these education and training tools and resources in five categories. No attempt is made at this stage to evaluate the tools in any formal sense.

Figure 2:
Summary of Navigation Tools and Resources Scan

Category	Description	Examples
Government, provider and intermediary websites	Online information, usually with search functions, offered by governments, universities, colleges and other providers, post-secondary application centres and other non-profit or private intermediaries.	• Canada Job Bank • Education Planner BC • alis (Alberta) • Canadian Information Centre for International Credentials (CICIC) • US College Scorecard • My Colorado Journey • OnwardCA (California and other states) • NASWA National Labour Exchange (NLX)
Career pathways navigation and matching applications	Digital tools, algorithmically-driven, that allow users to input personal profile, skills and career preferences to be directed toward high-match occupations with related education and training offerings.	• Career Cruising (CDA) • FutureFit AI (CDA) • MaRS planext (CDA) • Bob Emploi (France) • LinkedIn Career Explorer • Emsi SkillsMatch • SKILLUP (US)
Raw and curated data resources	Resources that provide access to data about education and training, in downloadable and accessible formats, as well as web-based search tools, dashboards and supplementary data analysis.	• Statistics Canada & CMEC, Education Indicators in Canada Report • Education and Labour Market Longitudinal Linkage Platform (CDA) • LMIC Post-Secondary Graduate Earning Interactive Dashboard (CDA) • National Student Clearinghouse Research Centre (US)
Searchable skills and qualifications classifications	International, national or otherwise validated repositories of occupations, skills and competencies, credentials and qualifications and / or learning opportunities.	• Canada's National Occupational Classification (NOC) • European Skills, Competences, Qualifications and Occupations (ESCO) classifications (EU) • Credential Engine registry Finder Tool (US) • O*Net Online (US)
Published guides and analysis	Documents and related tools, typically downloadable and printable PDFs, that present career navigation resources, think tank analysis or other resources.	• BC guide to careers, training and education pathways in BC • Ryerson University Career Compass (CDA) • Brookfield Institute Employment in 2030 App (CDA) • Nesta Career Causeways mapping tool (UK)

Scan of Canadian and International Navigation Supports

The previous section highlighted a selection of the examples of **government, provider and intermediary websites**. The Job Bank is notable as the Government of Canada's job board, which provincial employment services commonly refer clients to, that has added features for labour market trends analysis, hiring and career planning, through which there is the education search tool. Provincial sites, like Alberta's alis, similarly offer a suite of features for career planning, job search and guidance support, in addition to information for exploring education and training. The US College Scorecard is a tool for searching and comparing education options, with features for searching schools and fields of study, as well as for identifying career pathways and learning about financial aid options. Many US state sites offer compelling examples. My Colorado Journey (built by provider Pairin) caters to a mix of user groups (students, job seekers, career practitioners), with personalized accounts, pathways navigation and digital education search tools, and links to in-person services.

A more nascent set of tools, **career pathways navigation and matching applications** (or alternatively, "RCP tech") apply various data with algorithmic software to provide customized advice to users. In Canada, Career Cruising's self-exploration and planning service is more widely used by some career practitioners and educators, offering career development tools and a library of resources. Our survey suggests it is commonly used among Canadian employment services practitioners.[21] FutureFit AI, an earlier stage Canadian company is the backend navigation tool for RBC's free Upskill service and the enabling technology powering their FutureLaunch's career navigator. It is used by OTEC's SkillsPath in Canada, the US National Association of Workforce Boards' (NAWB) Workforce Compass, and Boeing in the US, and it has been rolled out across 12 countries by ManpowerGroup, one of the largest staffing firms globally. Describing itself as an "end-to-end career transition platform," it brings together AI-powered skill and psychometric profiling, career pathing, skills, learning and work opportunity recommendations, and is supplemented with an intelligent coaching interface for career practitioners. The Conference Board's recently launched OpportuNext app, which allows users to explore skill-based career pathways, is another Canadian example, though it does not yet appear to offer a learning navigation feature. In France, online employment coaching tool Bob Emploi, built by a nonprofit called Bayes Impact, guides unemployed users through a rigorous virtual assessment that leads to algorithmically generated learning and work options.

The examples in the **raw and curated data resources** category are described in the previous section.

Searchable classifications are national or international taxonomies of skills, qualifications, competencies and / or occupations that are applied across labour markets and learning systems, with user-facing search features. In Canada, the National Occupational Classification (NOC), which underpins the country's LMI, offers an occupation search feature that is commonly used in career guidance (though without information on learning options). The European Commission's ESCO is more comprehensive, classifying occupations, skills / competencies and qualifications, with a Europass feature that enables users to search for courses across a number of European countries. O*Net Online, sponsored by the US Department of Labor, offers a classification of occupations and skills,

21 As Career Cruising is a subscription service, we were not able to assess its features in any detail.

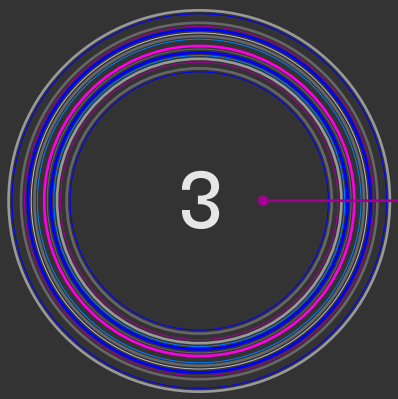
with career exploration and occupation search features. O*Net is in use in Canada as well, cross-referenced to the NOC to inform Employment and Social Development Canada's (ESDC) Skills and Competencies Taxonomy.

The final category of **published guides and analysis** includes resources in the form of documents, whether as career or learning guidance materials, or in the form of think tank reports and related tools. For instance, WorkBC publishes a 25-page guide to careers, training and education pathways, which focuses primarily on guiding clients toward high opportunity occupations in the province identified through LMI analysis, and the learning pathways to them. Some universities and colleges also offer career development publications, such as Ryerson University's Career Compass. While a different type of publication, think tank reports like Brookfield Institute's Employment in 2030 analysis uses expert insights and machine learning to try to forecast what Canadian occupations will look like in 2030, and provides an app to help users explore these possible changes. In the UK, the Nesta Career Causeways mapping tool also aims to support learning choice decisions.

See Appendix 4 for an annotated scan of additional tools and resources identified through our research.

Key Findings

There is a wide and diverse array of education and training navigation tools and resources being used in Canada.	Federal government tools such as Job Bank and NOC tools are commonly used and referred to clients in some provinces, with governments such as BC, Alberta and Quebec offering their own robust tools. Algorithmic digital pathways apps are increasingly common, though less mature in Canada. Data resources or classifications are likely less practical for navigation activities, but are essential as the backend to navigation tools. Published guides typically incorporate learning information within career navigation guidance.
The scope and breadth of learning navigation functions is dependent upon the availability of information and data.	The education information infrastructure is more limiting in Canada than in jurisdictions like the US. In the absence of common program-level information for public post-secondary offerings, navigation tools are limited in the data they can access and recommend. For example, FutureFit AI's career navigation tool only currently recommends MOOC and other private provider programs for which data is accessible, omitting public university and college program options. Program-level information gaps exist for other types of private and non-academic program types.
There are no established methods for evaluating the effectiveness of tools and resources, and it is difficult to assess their usage.	The OECD review of study choice website offers helpful examples of good practice, such as tailoring information to target user groups, personalizing and simplifying content, and breaking large decisions into smaller choice sets. Still, a practical framework for evaluating the effectiveness of these types of tools and resources would be valuable. This is made more difficult by the absence of publicly-available information to understand if these tools are actually being used, and by whom (for example, web analytics, survey information or other sources).
Learning navigation information is typically integrated with other career resources.	Most tools and resources have multiple functions, such as profile, aptitude and interests discovery and assessment; self-directed or supported career development; LMI and occupational profiles; job and learning alignment to skills and competencies; and job search, matching, application and placement and preparation. This contributes to the difficulty in categorizing and evaluating these tools and resources.
There are interesting and innovative practices in other jurisdictions to learn from in Canada.	For example, as outlined above, Bob Emploi's virtual assessment concierge service guides users to learning options; navigation tools used by workforce systems in US states chart education-inclusive paths; and the European Commission's ESCO classifications service and course search offers the common informational infrastructure to support an ecosystem of learning navigation providers.



A Practitioner Lens: Learning Navigation through Career Services

A Practitioner Lens: Learning Navigation through Career Services

In Canada, a significant portion of available services that support people to navigate the learning marketplace exist within a broader employment services delivery model, often designed with the primary goal of helping people to attach to employment, and only secondarily to re-train or upskill to secure employment. Furthermore, helping clients to navigate the learning marketplace is typically only one of the many functions of practitioners working in publicly funded employment services (services found most often outside of formal educational institutions).

To illustrate this point, the Canadian Career Development Foundation's PRIME assessment tool[22] identifies six client service Employability Dimensions within the scope of work: **pre-employability** support to help a client deal with systemic issues that prevent them from focusing on work, such as safe housing, dependent care or transportation; support around **other influences on employability** such as personal challenges like low self-esteem, motivation and resiliency, and feelings of hopelessness; **career decision-making** to help clients establish self-awareness and identify a career goal; **skills enhancements and navigating the learning marketplace** to help clients understand the skills and education required in a specific career and to access the appropriate up-skilling; **work research and entrepreneurship** to help clients pursue employment or entrepreneurship, including resume development and interview preparation; and **employment maintenance** to help clients retain employment and troubleshoot issues in the workplace.

Only the fourth service area is directly focused on skills development and learning navigation. Additionally, the challenges and needs that many clients experience in moving toward education and training are often related to issues beyond information and navigation of the education and training marketplace. For this reason, the feedback from practitioners in this section addresses a much broader suite of challenges and services that impact their clients' ability to navigate and access the education and training marketplace.

Our analysis in this section is informed by engagement with practitioners from different parts of Canada through a survey and focus groups, a selection of key informant interviews, jurisdictional review, and a scan of academic and grey literature. The practitioner-focused recommendations that emerge in Section 5 from this analysis align with the key findings in Section 3 above.

22 This tool promotes quality services and demonstrates the impact of career services. See CCDF website for details: https://ccdf.ca/training-resources/

Practitioner Survey and Focus Groups

Survey Approach

In order to learn about the current practices of career practitioners, a survey was distributed using professional networks and through advertisements on social media. The results shared below and in Appendix 3 were systematically screened for inclusion based on location and job functions, and then analyzed for insights.

The survey results included 188 complete responses (note that the total survey included 296 responses, however, incomplete responses were excluded). Survey respondents were from seven provinces: Alberta, British Columbia, Manitoba, New Brunswick, Ontario, Quebec and Saskatchewan. Over 61% were from Ontario, followed by Alberta (13%) and Manitoba (10%). We recognize that the survey is not representative of all provinces and based on the sample size may not be fully representative of the practitioner experience.

Focus Group Discussions Approach

In addition to the survey, four focus groups with career practitioners sourced from the survey were completed. Participants were purposely chosen based on screening questions to ensure subject-matter eligibility, and additional survey responses were assessed to promote a broader representation of primary functions and types of populations served. The focus groups were one and a half hour semi-structured discussions consisting of three to six practitioners, allowing them to further explain the current challenges of clients, outline the tools and practices they use to support clients, and identify their priorities and recommended solutions.

Practitioner Profile

Of the 188 complete responses, the majority were from practitioners who are employed in non-profit organizations that provide employment services and are funded by the government; however, they also included private (for-profit) career / employment services providers. A majority (66%) identified as Employment Counsellors / Advisors with the primary task of helping clients improve their employability and self-sufficiency in the labour market, while 13% identified as Career Counsellor / Advisors with the primary task of helping clients understand and develop their career-life direction. Just over half of respondents (55% and 52% of each group respectively) indicated that as part of their roles they help clients select learning programs to advance their career goals. A majority serve clients across the age spectrum, with adults in early to middle ages (30–45 years) served at the highest rate (76%), and older adults (over 45 years) at the lowest (53%).

Survey respondents represented a range of experience and tenure, from less than one year of experience to individuals who have been working in career services for more than 10 years (30% of respondents). In this sample, practitioners who have been in the profession for six or more years were more likely to have a college degree or some form of accredited training or certification in employment or career development than practitioners who have worked for five years or less, while a large proportion (42–49%) indicated that their highest level of related education is through workshops and conferences.

Service Delivery: Trends and Practices

Helping Clients to Select a Career or Employment Pathway

Selecting a career or employment pathway goal is an important step and precursor to choosing among education and training options; as such, we wanted to understand the tools and practices most commonly used by practitioners.

When supporting clients to select a career or employment pathway, the majority of practitioners indicated that they most commonly use individual service delivery methods (81%), followed by online or paper based self-assessment tools (74%) and LMI about in-demand occupations (63%). Correspondingly, a vast majority (90%) find individual service delivery effective or very effective. In comparison, only 39% and 56% find paper-based and online assessment tools to be effective or very effective, respectively.

Practitioner feedback aligns with research findings, which indicate that in-person interventions with career practitioners used in combination with online tools is consistently found to be a best practice. Services that were solely online-based, or those which did not include the support of staff, have consistently been found to be less effective in achieving successful outcomes for clients (O'Mally, & Antonelli, 2016).

Many practitioners report using **general self-awareness and career exploration tools** to assist clients, though there is not one common tool or set of tools that is used by a majority of them. Those most commonly identified were the Myers-Briggs Type Indicator (20%), Career Cruising (12%) and Strong Interest Inventory (12%).[23] Many of these tools do not directly support learners to identify potential careers, but rather focus on personal qualities, which requires practitioners and users to then compare the analysis to occupational descriptions and LMI. The lack of a dominant tool reflects a low level of consistency among the tools and methods used by career practitioners.

Regarding the **use of LMI**, some practitioners indicated that they use the National Occupation Classifications (NOCs) and government websites, and also encourage clients to look at current job postings. Others noted that LMI resources can be out of date or inaccurate at times. Still, research suggests that it is important that clients are able to see career paths, trajectories, incomes, futures, necessary skills and attributes when selecting a career and learning program. According to Hofer et al. (2020), information to support career decision-making should be presented or accessible in ways that are tailored to the needs of different groups.

Connecting Clients to Education and Training Pathways

As part of their work with clients, practitioners identified two key practices and tools that they use most often in connecting clients to career-focused learning programs: one-on-one work to conduct research about available training programs and to select a program (72%); and using websites that list local skills training and education programs in the community (69%). Practitioners also referenced using local college websites, and provincial or federal government resources to help clients select skills training and education programs.

23 Less commonly identified tools included: Personality dimensions (5%), 16 personalities (3%), Align (3%), True Colours (2%), Career Occupational Preference System Interest Inventory (2%), and Holland Code assessment (2%)

The majority of practitioners (78%) indicated that they always or in most cases **assess the quality and suitability of the training programs** before recommending it to a client. Only 5% of respondents indicated that they rarely or never do this themselves. When assessing the fit of a training program for clients, practitioners indicated that they use publicly available information about the training program and its outcomes (54%), past client experiences in the training program (51%), learner supports available in a program (45%) and the reputation the program has amongst employers (45%) to make decisions about whether to recommend a training program.

Similarly, 79% of practitioners indicated that they always or usually **assess the client's skills against specific training or education program prerequisites**. This included assessing academic credentials (51%), language skills (40%) and schedule availability (37%). Approximately half of the respondents indicated that they also assist their clients in gaining the prerequisite skills required by their preferred training program. To do so, they often refer clients to other programs, which are mainly non-profit low- or no-cost offerings. Prerequisites mentioned most frequently were literacy / English language programs.

Another challenge identified in the survey and focus groups, which is particular to small communities, is that local schools often do not offer the programs or training required for some specific careers. In these cases, the practitioners might also have to assess and help clients find training elsewhere, or to relocate.

Service Delivery Challenges

Through both survey responses and focus group discussions, practitioners cited a range of challenges their clients experience when choosing a career goal and pursuing a learning program to advance their goal. Challenges ranged from issues related to confidence and motivation for exploring career alternatives, limited knowledge of available career options, limited essential skills, limited program funding and not meeting the minimum education qualifications of existing training and education programs aligned with their career goals. Some clients also find navigating the amount of information and misinformation available overwhelming. Practitioners try to help clients by breaking down the available information, explaining job and education requirements and outlining the steps needed to prepare for or attain a job or learning opportunity. Practitioners described this as a labour- and time-intensive process. Details of survey responses can be found in Appendix 3.

Other identified challenges included the **costs of training and education and other financial barriers** related to childcare, transportation, housing and accessing technology. There is also need for additional wrap-around supports (like settlement and mental health services) that are perceived by practitioners to be requirements to support success in pursuing career-related learning. As described earlier, practitioners often fulfil multiple roles by helping clients navigate not only career and education and training options, but also the services to support their basic needs. Growing **mental health needs among client populations** was identified as a key issue in focus group discussions and survey comments, as well as the practitioners' lack of preparation and ability to respond adequately to client mental health needs.

Aligned with findings from practitioners, research indicates that there are important factors that impact individuals' career path choices, including "individual attributes or traits, family expectations, and rapidly

evolving cultural influences such as poverty, addiction, conflict, displacement, and discrimination" that can render certain career choices inappropriate or inaccessible (Borgen & Edwards, 2019, p. 60).

It is noteworthy that "detailed information that assists clients in making choices" was ranked by practitioners as the lowest of the primary challenges experienced by clients. Ranked highest were "making a decision" followed by "cost of training." **This reinforces the idea that clients need support interpreting information and making decisions based on their life situation and goals.**

Practitioner-Identified Needs and Opportunities

We were also interested in what could help career practitioners improve their capacity and effectiveness, and asked them **what would improve their ability to assist clients** in navigating the learning marketplace and connecting to education and training programs based on their goals.

The practitioners we surveyed did not report overwhelming preferences, but **professional development (training)** was prioritized (for improving capacity to coach clients about their education and training pathway goals and decisions, and for assessing training program suitability). **User friendly informational resources** for clients, **comprehensive lists of available learning options** (and their prerequisites), and more **local skills training and education options** were also priorities.

We also asked them **what tools or resources would best support *them* in performing their jobs.** Among the top priorities were tools and resources that provide **information and lists of career options** related to labour market projections, training **for career practitioners themselves about career guidance tools and practices**, and better tools to provide career guidance services and to **assist clients in assessing interests and skills.**

When asked specifically about their professional development priorities, practitioners identified the topics of building motivation in clients and working with clients with mental health challenges as the two most in-demand.

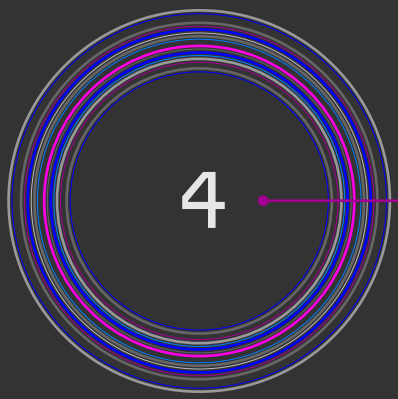
Key Findings

Most career practitioners are not solely or even primarily focused on helping clients connect to further learning.	This is only one of several skills and areas of expertise that they must have to support their clients. The majority of survey respondents and focus group participants do not support learning pathways as their primary roles.
Practitioners most commonly conduct individual research about available education and training programs on behalf of their clients, often consulting local college websites.	Many spend a lot of time conducting this individual research about training options, as well as programs related to financial aid, eligibility requirements, and required wrap-around supports.
Personality assessment tools are most commonly used to support clients to select a career or employment goal.	In some cases these tools are combined with a review of occupational information from the NOC service. These tools are typically not combined with information about training pathways.
Financial barriers related to the cost of training and other required support are identified as a primary barrier to access further career-related learning	Helping clients to navigate these services can be time-consuming for practitioners.
Practitioners identified training for themselves as the most in-demand solution to support their ability to serve their clients.	This was followed by additional tools and methods to support their clients to make career pathway decisions. **In many cases, practitioners work with clients who have difficulty meeting basic needs.** Their time is often occupied by helping clients to navigate services to meet their needs. Access to computers and the internet can also be a barrier for these clients.
Practitioners identified mental health needs among their clients as a growing area of need.	In most cases practitioners are not equipped to provide this support, and this is a barrier to clients advancing toward their career learning goals.

Areas for Further Research

A key gap in our research and analysis is in understanding and assessing the effectiveness of career guidance and learning navigation services from the perspective of the client, and the service outcomes and value for money. Further research about the efficacy and impact of specific approaches and interventions that connect people to in-demand learning pathways, focused on client short-term and long-term outcomes, would serve to inform the development of scaled solutions and policy.

Useability and accessibility of career learning program information and resources are critical factors in their effectiveness; engaging both service providers and end users in the development of informational and career pathway navigation tools would thus help to improve their uptake and likelihood of success.



Promising Opportunities and Innovative Ideas

Promising Opportunities and Innovative Ideas

Building on the analysis and findings in the previous section, we present a set of opportunities for consideration through the Blueprint RCP project and for FSC.

Establishing an Open-Access Learning Data Trust for Canada

As part of a breakthrough innovation project for career pathing, FSC could support a coalition to lead the creation of a common, open education and training information infrastructure for Canada. The elements of such a project could include:

Creating a common Education and Training Data Trust. This could act as a public utility for education and training data, with a data trust governance model for stewarding, maintaining and managing the collection, use and sharing of data for collective benefit.[24] Guided by the principle of separating data from solutions, it should have structured open data architecture that providers can contribute to. The ecosystem of public, private and non-profit users should be able to access, download, and integrate data to develop career and navigation tools, products or services, inform research and policy, or find other creative uses. It could build on or be incorporated within existing initiatives like the FSC-LMIC Data Hub for Canada (potentially as a "learning data" pillar, alongside LMI and skills data pillars), and could be supported through partnerships with leading players in the learning data space such as Credential Engine and FutureFitAI.

Design feature priorities could include:

- **Applying a low-barrier to contribute data schema.** Adapting models like the Credential Engine registry, the common data schema should include a small number of "tombstone" program description data fields (provider, program, duration, cost, format, eligibility requirements, information about available financial support) and program outcomes (such as completion rates, post-employment and income levels), along with a larger number of fields for supplementary data points. Providers could be mandated or encouraged to submit for priority fields to set common baselines, but otherwise apply best effort for other fields, recognizing that information will be inconsistently available across institutions, jurisdictions and provider types.
- **Populating the trust quickly, and over time.** Work should begin by incorporating Statistics Canada and other publicly accessible datasets, and through purchase of private data where appropriate. Through public funding and regulatory requirements, many education and training providers should be required to submit institution and program-level information (see details below); others, such as private providers that do not receive public funding, could be encouraged to contribute voluntarily with the benefit of inclusion in this widely used repository. Publicly available provider information can also be incorporated through course catalogue APIs, or scraping of websites. It would be continuously updated through annual or more frequent reporting cycles.

24 For an overview of data trusts, see Wylie & McDonald, 2018.

- **Aligning learning information with skills and jobs.** As the Bonen & Oschinski (2021) mapping paper proposes, this program-level information can be linked to classifications of skills, jobs and work requirements further along a learner's pathway. Rather than creating new, made-in-Canada classifications, this could be best done through alignment with existing international standards and best practice (as is happening with skills frameworks like O*NET (US) and ESCO (EU), or with qualification frameworks in Australia and New Zealand). This step could be a part of the FSC initiative, or an unplanned outcome as third parties use the database to do this work.
- **Engaging career service organizations and practitioners early in the process.** These stakeholders should be included from the beginning to ensure that the architecture and data schema will address their informational needs for learning navigation, and that frontend features are designed for accessibility and usability.

Parallel initiatives for building Canada's learning information infrastructure could include:

Engaging governments to use funding and regulatory levers to increase learning transparency. As in the US, federal and provincial / territorial governments can endorse the model and data schema, and require providers to report via regulation or as a requirement for receipt of public funding (for university and college operating grants, program eligibility for student financial aid or Canada Training Benefit, or skills development funding under federal and provincial programs). For those providers that fall outside of these categories, further regulatory levers could be used to mandate reporting of program and outcomes data for consumer protection purposes.

Addressing other information and data shortfalls in the learning marketplace. As this information infrastructure takes shape, complementary initiatives can fill other gaps as they are identified. For example, easier access to tax-linked higher education data, at the program level, through the ELMLP platform, and resurrection of the Statistics Canada ASETS survey, which provides information one interviewee described as essential to understanding the participation of adult workers in formal education and training.[25]

25 The Access and Support to Education and Training Survey (ASETS), last collected in 2008, provides a valuable picture of the participation of adult workers in formal, job-related training activities or education (i.e. learner profile, participation, employer support, training objectives, unmet needs / wants).

Improving and Building Navigation Tools and Resources

In addition to the proposed Data Trust, there are opportunities for FSC and other system actors to support more robust growth of learning resources and navigation tools in Canada:

Establish an ecosystem of solutions providers in Canada to leverage the Learning Data Trust to improve learning transparency and navigation. The availability of, and open access to, common, centralized, trusted learning data and information can enable a competitive market to form around it for provision of the highest quality tools and resources. This could include searchable websites (for example, a Canadian College Scorecard), algorithmic navigation tools (enhanced OpportuNext), ad campaigns and storytelling, with potential for innovations not yet imagined.

Invest in an initiative to establish a standards framework for navigation tools and resources. Through more robust behavioural research and user testing of navigation tools with various categories of users, a framework could establish basic good practice standards that governments, career service providers, career practitioners and others can apply when choosing which tools to use. To take this a step further, service providers or tools that meet framework criteria for good practice could be validated: a process that Credential Engine is undertaking with service providers in their ecosystem.

Navigational Tools and Supports for Practitioners

Building on the above proposals, the following strategies would leverage program-level learning data, LMI and broader resources to create navigation tools that address the specific needs of career practitioners and their clients (as identified in Section 4). These solutions could be supported by government and other solution providers:

A tool that maps available, in-demand jobs and associated learning programs using learning data and LMI, including occupational descriptions, wages and educational requirements. This tool could help clients make informed decisions about which programs of study will have the greatest return for them based on their goals and circumstances.

Increased availability of programs that provide industry-specific training based on partnerships with employers on the frontend so that clients have an assurance that completion of a program will result in connections to employment.

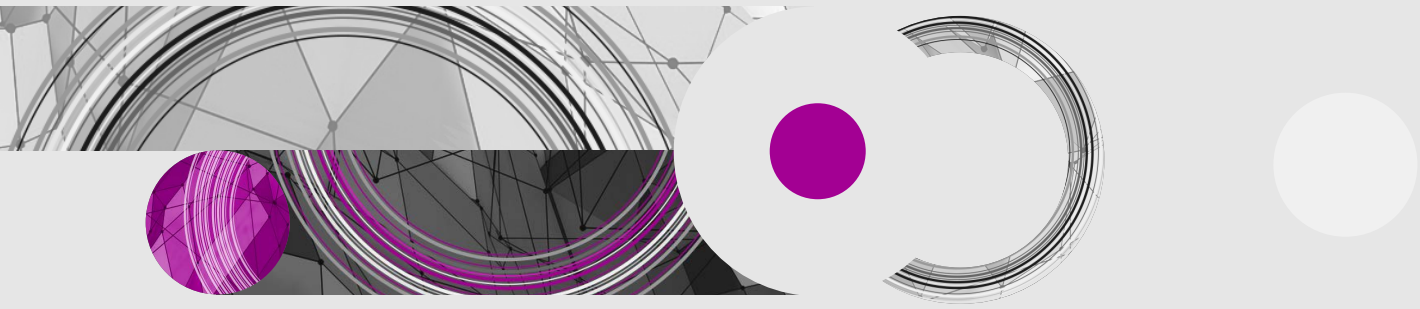
Increased availability of, and access to, professional development and training for career practitioners so they are able to develop competencies ranging from supporting clients to make career and learning navigation decisions to assisting clients with mental health challenges.

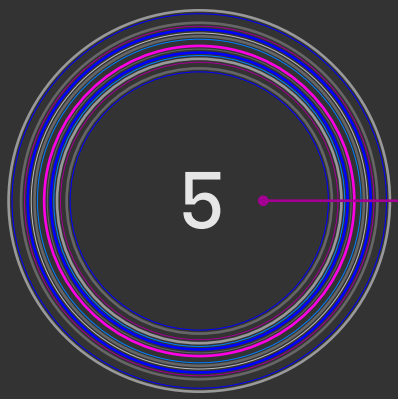
A centralized data and information resource of available local wrap-around supports, to provide information about available services to help meet clients' foundational needs and enable learning participation, including funding sources for such needs. This would likely exist outside of the Data Trust, but could utilize some information from it.

Initiatives that address challenges adult learners experience in relation to basic unmet needs resulting from poverty, acknowledging that many programs already must devote resources to this. Addressing these foundational needs is crucial for establishing responsive career pathways.

Rethinking the Foundations of Canadian Employment Services

Typically, the primary goals and output measures of employment services programs are related to attaching people to employment as quickly as possible. In many cases, activities that can support clients to explore and pursue further learning toward a potentially better suited career are given less weight in funding contracts, which can deprioritize these activities in service delivery. Fundamentally, for publicly-funded agencies to enhance their capacity to help clients navigate career related learning and upskilling **the central mandate and financial incentives established by government programs need to be re-assessed.**





5 Conclusion

Conclusion

This paper covers a lot of ground, but can be boiled down to a few simple ideas.

FIRST The marketplace for education and training is changing and growing to meet the demands of workers, employers, governments and labour markets. This is good, but is also making "first mile" educational decisions trickier to navigate.

SECOND An array of players — governments, workforce systems, large firms and tech startups, philanthropists and non-profits — are introducing tools and resources to help people and career practitioners with pathways and learning choice navigation. But this space is still nascent and, as the experience of the employment services practitioner user group demonstrates, there remain many barriers to using these tools and developing the competencies to effectively support navigation.

THIRD The essential point is that our capacity to understand and navigate this learning marketplace hinges on an adequate information infrastructure for education and training that does not currently exist in Canada. *But it could.* Many of the key pieces and institutional players are in place. There are exciting initiatives underway, and great international models to learn from or partner with. We see a big opportunity for breakthrough innovation — centred around an open-access Learning Data Trust for Canada — that could act as the information engine to catalyze efforts to build responsive career pathways for Canadians.

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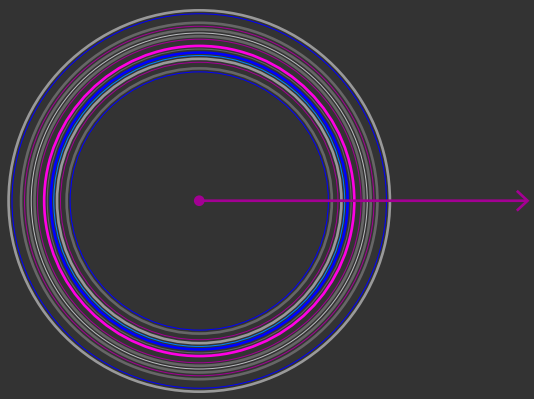


Appendices

Appendix 1:

Marketplace Thought-Leader Interviews

A set of targeted interviews supplemented research in Section 3, seeking perspectives and insights of leading thinkers and practitioners from across the education and training ecosystem.

While a small sample and not intended to be comprehensive, the interviews informed efforts to understand and describe the evolving education and training marketplace for adults, and to survey the tools and resources for helping learners and career practitioners to navigate education and training options.

The interviews were up to 45 minutes in length, conducted via Zoom, with a Discussion Guide circulated in advance. The discussions were informal but anchored in a set of structured questions. Interviewees agreed to be identified in the report, but without attribution.

Interview List (in the order they were conducted)

1. **Noel Baldwin**, Director Government and Public Affairs;
   Fiona Deller, Chief Operating Officer, Future Skills Centre
2. **Patricia Mangeol**, Higher Ed Policy Analyst / Lead, OECD
3. **Elisabeth Rees-Johnstone**, Executive Director, Continuing and Professional Learning, University of Toronto OISE; Co-Creator, InnovED
4. **Tony Bonen**, Director of Research, Data and Analytics, Labour Market Information Council (LMIC)
5. **Chris Holling**, Director of Labour Market Forecasting, Government of BC
6. **Hamoon Ekhtiari**, CEO, Future Fit AI
7. **Scott Cheney**, CEO; **Deb Everhart**, Chief Strategy Officer; and **Jeff Grann**, Credential Solutions Lead, Credential Engine
8. **Ryan Craig**, Managing Director, University Ventures
9. **Anna Toneguzzo**, Director Government Relations and Policy Research; Marketa Evans, Vice President Government and Stakeholder Partnerships; Tresanna Hassanally, Senior Policy Advisor, Colleges and Institutes Canada (CICan)

Interview Questions

Part 1: Understanding the Education and Training Marketplace

How do you understand the evolving education and training marketplace (i.e. including higher education, private training, bootcamps, etc.)?

Are there taxonomies or models for understanding this marketplace in your jurisdiction or professional domain? Or leading jurisdictions that we should look at?

Part 2: Surveying Career Guidance Resources and Tools for Navigating

What career navigation tools and resources are currently in use in your jurisdiction or professional domain that guide to education and training options?

What features or characteristics should these resources or tools have?

What are the "leading practices" or "promising innovations" we should be looking at, in Canada, the US or internationally?

Part 3: Looking Ahead to Promising Solutions or Opportunities

If you were advising education and workforce leaders in Canada, what types of solutions would you recommend to the challenge of navigating the rapidly expanding education and training marketplace for adults?

Are there people, organizations or initiatives we should be looking at, or talking to?

Any concluding thoughts or questions?

Appendix 2:

Practitioner Landscape Key Informant Interviews

A small number of key informant interviews supplemented the research, survey and focus group activities to better understand the landscape for employment services that career practitioners described in Section 4. The interviews were informal, 30 to 60 minutes in length, with interviewees agreeing to be identified in the report without attribution.

Interview List

1. **Sareena Hopkins**, Executive Director, Canadian Career Development Foundation
2. **Akosua Alagaratnam**, Executive Director, First Work
3. **Valérie Roy**, Directrice générale, Axtra
4. **Carrie Axten**, Senior Manager, Employment Services, Prospect Now
5. **Monika G. Feist**, Chief Executive Officer, Success Skills Centre

Appendix 3:

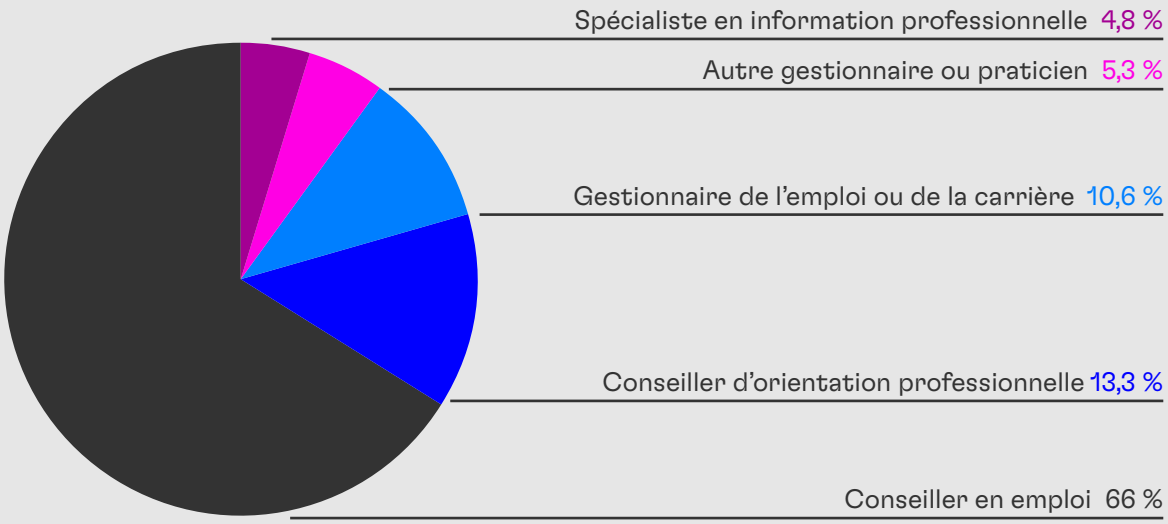
Practitioner Survey – Additional Charts and Tables

The following tables and charts supplement the practitioner survey discussion provided in Section 4.

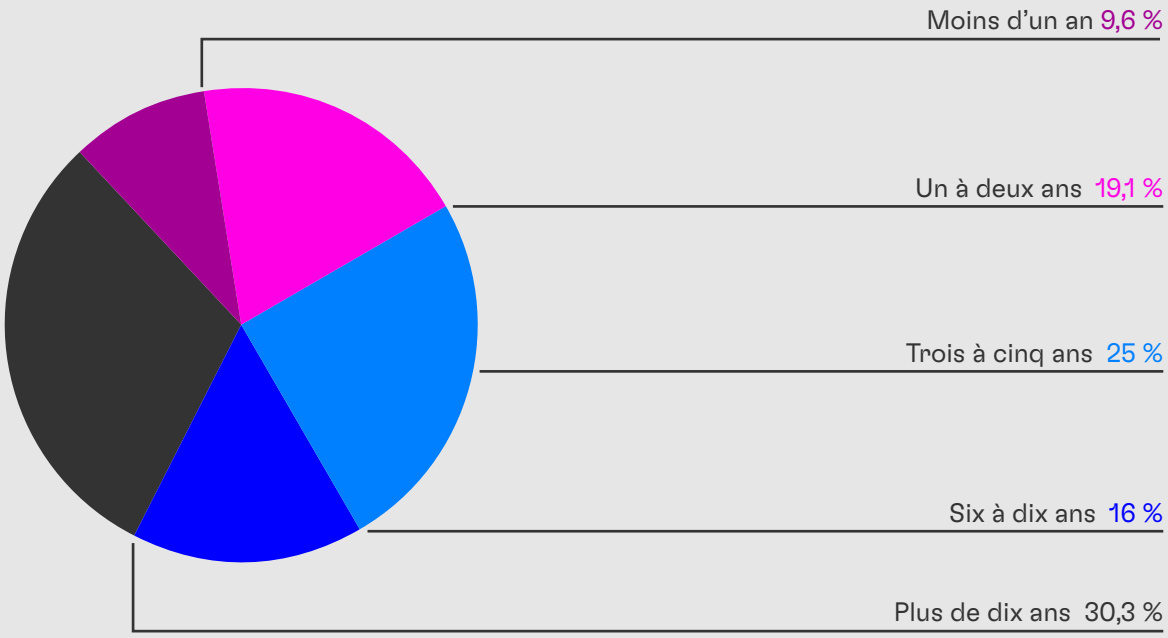
Practitioner Survey:
Agency type

Type of Agencies	Count	Percentages
Third-Party Employment Services Provider funded by Government	100	53.2
Other Non-Profit Community-Based Agency	47	25
Post-Secondary Educational Institution	13	6.9
Private (for-profit) Career / Employment Services Provider	10	5.3
Primary or Secondary Educational Institution	4	2.1
Indigenous (First Nations, Métis or Inuit)	3	1.6
Aboriginal Human Resources Development Agreements Agencies	3	1.6
Career Services / Human Resource Unit within a Company	3	1.6
Other	2	1.1
Municipal Government Agency	2	1.1
Vocational Training School	1	0.5

Practitioner Survey:
Role that best fits practitioner's primary function (%)



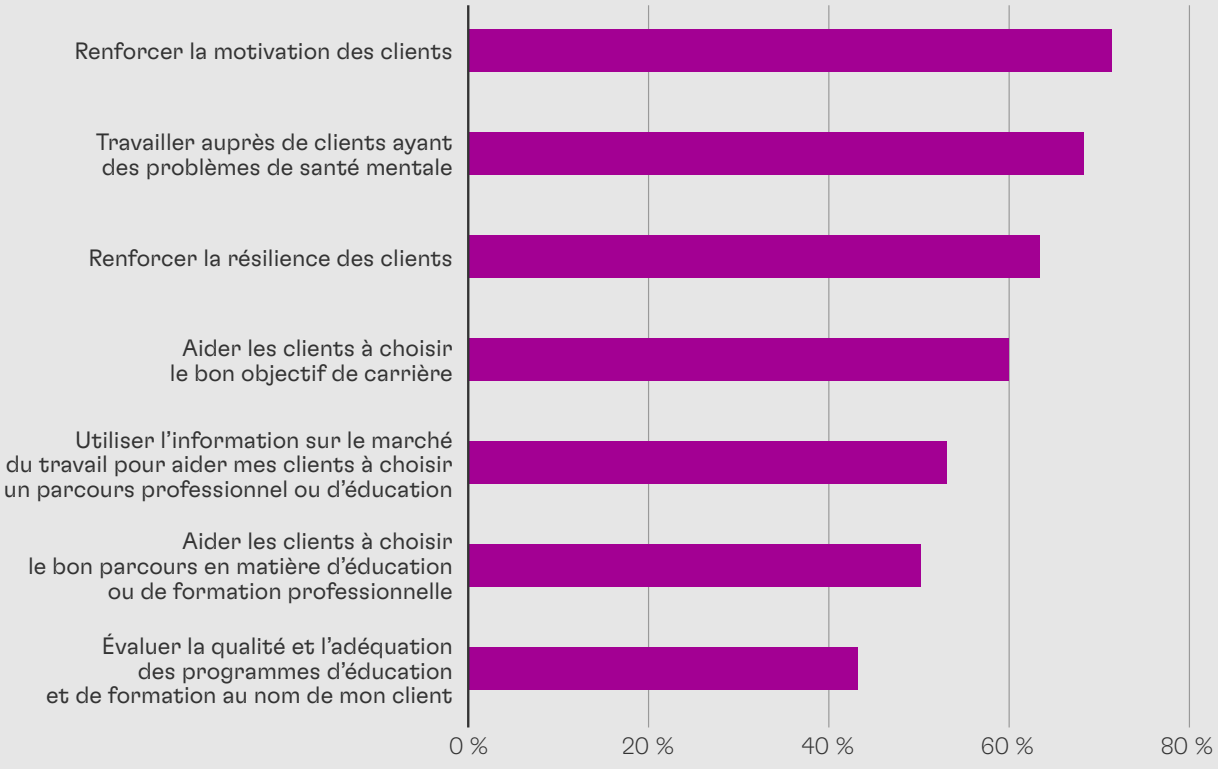
Practitioner Survey:
Years of experience in employment services or career counselling (%)



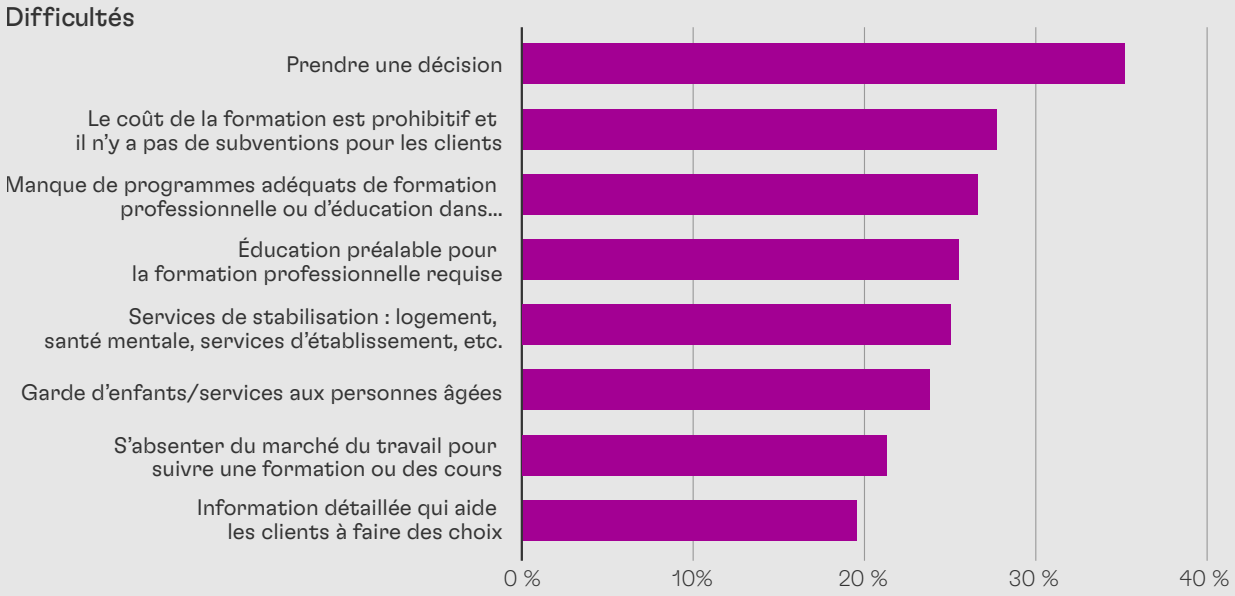
Practitioner Survey:
Highest form of formal training or education by experience (%)

Experience (years)	0 to 5 years		6 or more years	
Topic of training	Employment Counselling	Career Counselling	Employment Counselling	Career Counselling
Workshop/Conference	49%	42%	21%	22%
Accredited Training or Certification	19%	22%	34%	33%
College Diploma	16%	15%	23%	26%
Bachelor's Degree	8%	8%	14%	12%
Master's Degree or Higher	3%	4%	7%	6%
N/A	6%	9%	1%	2%

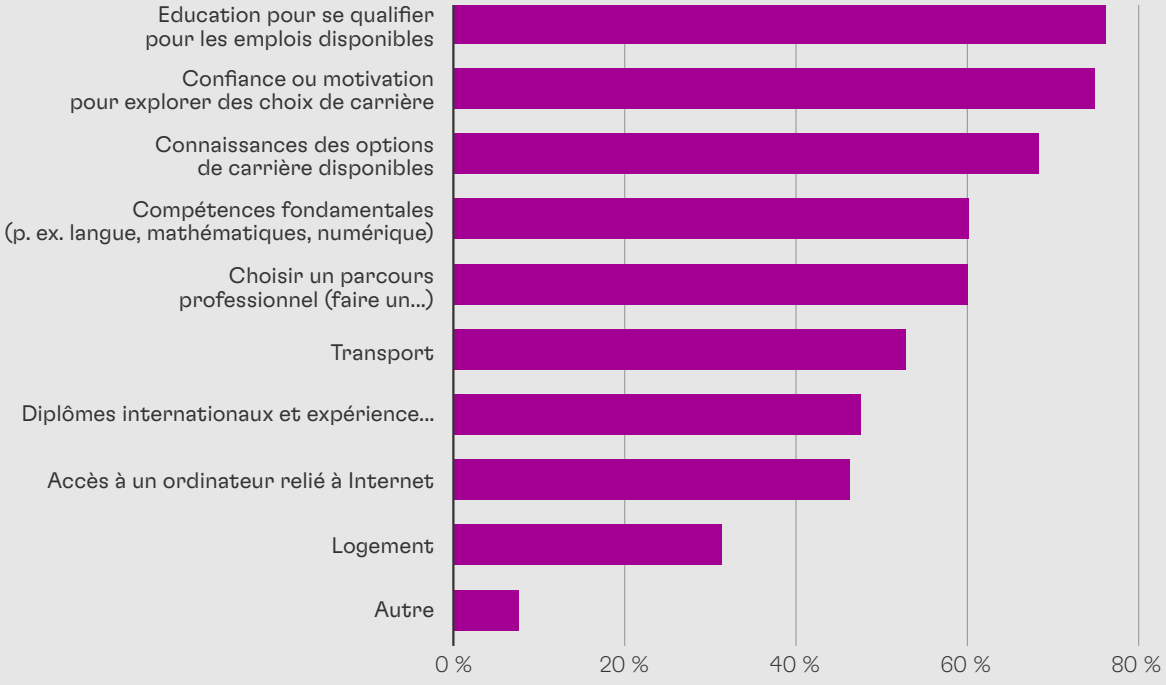
Practitioner Survey:
Primary training / professional development needs of practitioners (%)



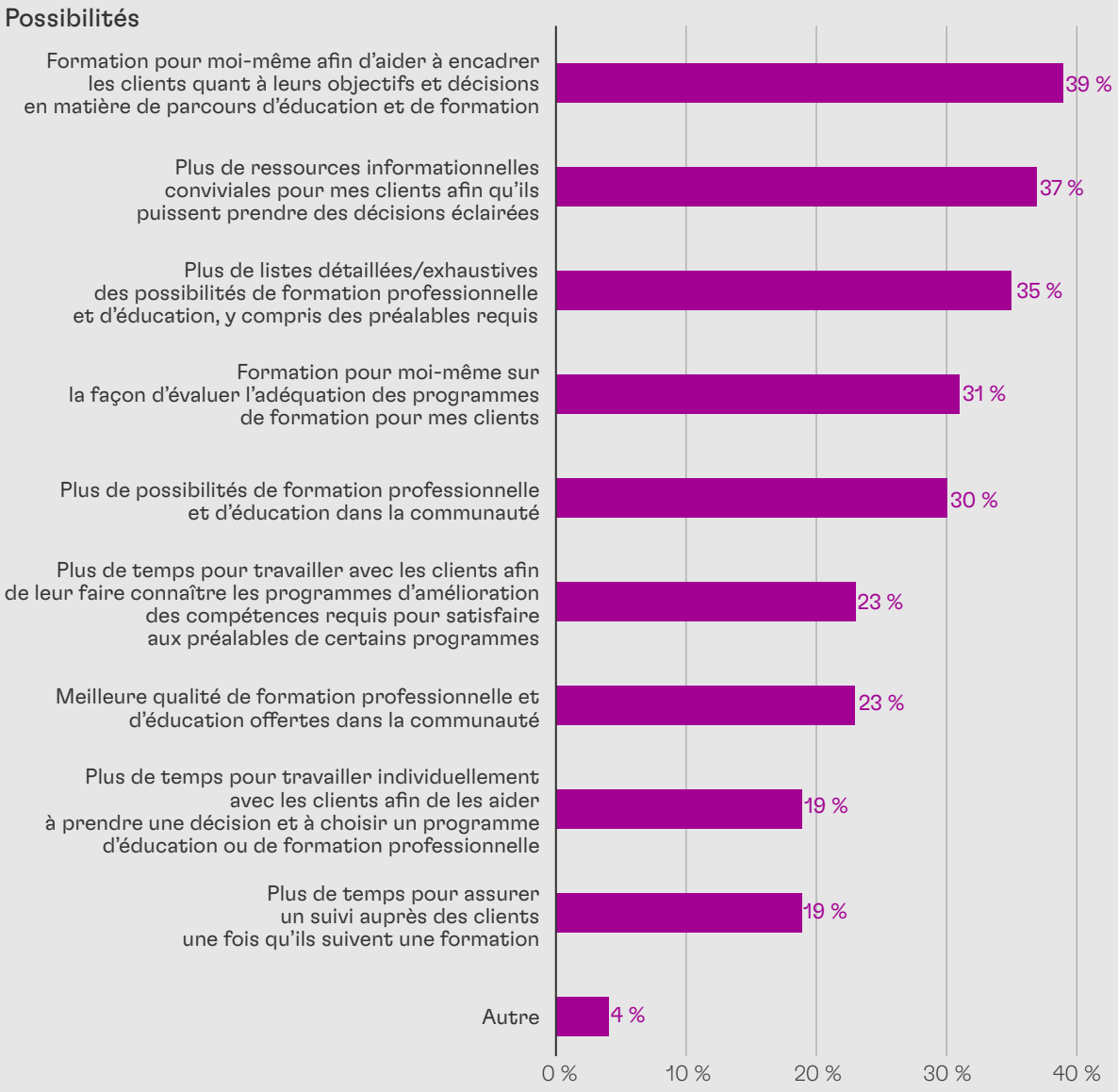
Practitioner Survey:
Primary challenges, from a practitioner's perspective, that clients face when pursuing skills training or education related to selecting a career option (%)



Practitioner Survey:
Primary challenges, from a practitioner's perspective, that clients face regarding selecting a career (%)



Practitioner Survey:
Type of support that would assist practitioners in helping their clients choose the right education and skills training pathways (%)



Practitioner Survey:
Type of support that would assist practitioners in improving the performance of their career development services (%)

Appendix 4:

Annotated Scan of Learning Navigation Tools and Resources

The Scan was intended to identify prominent and representative examples of learning navigation tools and resources. It is not intended to be comprehensive. The examples are grouped in five categories (each ordered alphabetically), and add to those outlined in Section 3.2. Greyed examples are identified in Figure 2 of Section 3, and italicized text is taken from the respective websites.

Government, Provider and Intermediary Websites

DESCRIPTION

Online information, usually with search functions, offered by governments, universities, colleges and other providers, post-secondary application centres and other non-profit or private intermediaries.

Canadian federal and provincial governments

Canadian Information Centre for International Credentials (CICIC) website: An authoritative source of information about education in Canada, provided by the Council of Ministers of Education of Canada (CMEC). The Directory of Educational Institutions in Canada is described as *the only authoritative list of CURRENTLY recognized, authorized, registered and/or licensed educational institutions in the provinces and territories of Canada*. Includes a comprehensive page of definitions of categories of public and private education providers and credential types.

Education Planner BC, Government of British Columbia: Features functions for planning the educational journey, searching for a program, and applying to post-secondary institutions through one account.

WorkBC also offers a Career Transition Tool: *Looking for a new career? Find out what careers you may be able to transition to based on your current occupation.*

Employment Ontario website, Government of Ontario: Website directs to various resources including apprenticeship, adult education and retraining programs, with Ontario's Labour Market page linking to 500 job profiles and Search for Private Career College webpage providing information by provider, program, duration, cost / fees, etc.

Explore Careers website, Government of Nova Scotia: A *career planning site to find job prospects, wages, education, training paths, and demographic profiles*, LMI, education and training, and compare jobs functions. The province also offers SkillsonlineNS, *a partnership between the Department of Labour and Advanced Education, CBDC & Bluedrop that gives every resident of the province access to thousands of FREE online courses on the most important workplace topics to improve their skills and career prospects.*

Training website, Gouvernment de Québec: Links to a variety of training services, and further information about vocational training (with searchable options via inforouteFPT.org), college education and university education in the province.

United States and International

CareerOneStop local training finder: Sponsored by the US Department of Labour and linked to network of American Jobs Centres, *a source for career exploration, training and jobs... [t]o deliver integrated, easy-to-understand workforce information that helps job seekers, students, workers, workforce intermediaries, and employers develop their capacity and make sound economic decisions in the new economy.*

Chicagoland Career Pathways: A searchable directory to find education and training program options that: *Fit your career interests; Are located nearby; Prioritize recruiting candidates like you; and are free, or even provide a paycheck.*

HRD-Net Service, Human Resource Development (HRD) Service of Korea: South Korea government ministry site for employment services, with information on training programs and outcomes at quite detailed levels (incl. graduation rate, employment outcome, etc.). Has been referenced by the OECD.

National Labour Exchange (US), *by the National Association of State Workforce Agencies (NASWA): The NLx is an electronic labor-exchange network, created in 2007... [a] public-private partnership that leverages private non-profit-owned technology... the NLx collects and distributes job openings exclusively found on over 25,000 corporate career websites and state job banks... All NLx services are offered at no cost to state workforce agency customers — both jobseekers and employers — as well as to state workforce agencies and federal partners.*

OnwardCA: *One-stop resource for the people of California impacted by job loss during the COVID-19 Pandemic*. An initiative of a coalition of companies and foundations, it matches clients with life essentials (money, food, shelter, child care), training, and job search. It has been offered in other states as well, in different forms.

Washington Career Bridge: *One-stop source for career and education planning, with features to: Explore Careers (See how your talents align with a career by taking a quiz); View Job Trends (discover if a career is growing and how much it pays); Find Education (search nearly 6,000 education programs to find locations and costs, whether students got jobs, what industries they went to work in, and how much they were paid).*

Career Pathways Navigation and Matching Applications

DESCRIPTION

Digital tools, algorithmically-driven, that allow users to input personal profile, skills and career preferences to be directed toward high-match occupations with related education and training offerings.

Canadian (or widely used in Canada)

Magnet: *a not-for-profit social innovation platform with a mission to accelerate inclusive economic growth in Canada. [It offers] intelligent matching technology [and] connects job seekers to career opportunities that reflect individual goals and skills,* geared to individuals, businesses and community service organizations.

myBlueprint: *A comprehensive education and career/life planning program with the tools students need to make the most informed decisions about their future* for learners in grades 7–12 and post-secondary. Canadian tool includes discovery and job compatibility assessment, course planner, PSE and career planning (with databases) and portfolio for progress tracking.

OTEC Tourism Skillsnet Ontario Job Transition Tool: Search tool for selecting current job title and location, which then identifies possible job transitions (based on StatsCan NOC jobs classifications) and skills overlaps (from O*NET), and average wages, with downloadable options.

planext, MaRS Discovery District: *Built with support from Google.org and MaRS, planext is a career information tool... Bringing together census data and industry research, planext helps individuals navigate the future of work*. It focuses in three areas: career transition occupations, upskilling training and education options, and jobs that are future-proof from automation.

United States and International

Astrumu (US): Aims to help students, colleges and universities, and employers leverage trusted data to identify the most predictable pathways to take from education to high-impact employment.

Emsi SkillsMatch (US): *Identify your skills and receive personalized career and educational recommendations... We'll show you educational opportunities that pinpoint the skills you want or need to give you a leg-up in the job hunt. No searching through course catalogs!*

LinkedIn Career Explorer (int'l): *LinkedIn's data uncovers career paths by matching your skills to thousands of job titles. There are over 36,000 unique skills we measure across more than 6,000 unique job titles on LinkedIn.*

LinkedIn Skills Path (int'l): A new tool to help companies hire. *Managers at participating companies identify the core skills for a role; candidates then... close any skills gaps with free LinkedIn Learning Courses; demonstrate their skills by passing a multiple choice LinkedIn Skill Assessment and a video assessment; secure a recruiter conversation if they pass.*

PAIRIN Career Planning Tools (US): *Chart a path to a bolder future for the people you serve. Personalized, science-based technology that supports skill development and career services across workforce development, governments and educational institutions – all in one unified platform*. One function is as Government Workforce Management software for states.

SKILLUP, from CareerOneStop (US): A free digital tool for job search (*Explore in-demand jobs that are hiring now in your area*) and career discovery (*Explore careers recommended for you*), incorporating information from O*NET and sponsored by the US Department of Labor.

Sokanu CareerExplorer: *The world's leading career advancement platform. Platform provides assessment (survey), matches (customized path based on strengths, interests, and personality, and library (explore over 1,000 careers and degrees).*

Workforce Compass by National Association of Workforce Boards (US): NAWB, which represents over 500 Workforce Development Boards (WDBs) in the US, partnered with FutureFit AI to create a new navigation platform exclusively for WDBs.

Raw and Curated Data Resources

DESCRIPTION

Resources that provide access to data about education and training, in downloadable and accessible formats, as well as web-based search tools, dashboards, and supplementary data analysis.

Canadian

Access and Support to Education and Training Survey (ASETS), Statistics Canada: Last collected in 2008, the analysis provides a picture of Participation of Adult Workers in Formal, Job-related Training Activities or Education (i.e. learner profile, participation, employer support, training objectives, unmet needs / wants). Related Resources provide other good products.

Canadian Online Job Posting Dashboard, Labour Market Information Council (LMIC): *An interactive tool allowing users to explore timely detailed labour market information related to online job postings by occupation, geography, time period and work requirements.*

Classification of Instructional Programs (CIP) Canada 2016, Statistics Canada: Provides a taxonomy of fields of study, rather than qualifications themselves, at a significant level of detail.

Designated Learning Institutions list, Immigration and Citizenship Canada: Government of Canada list of schools approved by provincial or territorial governments to host international students. To apply for a study permit, a letter of acceptance from a DLI is required.

Education and Labour Market Longitudinal Linkage Platform (ELMLP), via Statistics Canada Research Data Centre website: *A Platform... to unlock access to more information about past cohorts of postsecondary students and registered apprentices, to better understand how their education and training affected their career prospects. Includes securely linked datasets* (PSIS, RAIS & T1 Family File Tax records), longitudinal data, and open data.

Education Indicators in Canada, Statistics Canada and Council of Ministers of Education of Canada (CMEC): Presented as the annual report of the Pan-Canadian Education Indicators Program (latest May 2021), provides a series of data tables updated annually on the following topics: school-age population; financing education systems; elementary-secondary education; post-secondary education; and transitions and outcomes.

Open Database of Educational Facilities (ODEF), Statistics Canada: *A collection of open data containing the names, types, and locations of education facilities across Canada, and is made available under the* Open Government Licence - Canada (with related Metadata Document).

Postsecondary Graduate Earnings Interactive Dashboard, LMIC: *LMIC partnered with the* Education Policy Research Initiative *to provide in-depth research on the earnings of university and college graduates. Data from the ELMLP (see above) allow us to track the earnings of graduates by credential and field of study.*

Postsecondary Student Information System (PSIS), Statistics Canada: A data holding of all public college and university enrolments and graduates by type of program and credential, and field of study for each school year. The ELMLP currently consists of PSIS data from 2009 to 2016 for all provinces and territories and from 2005 to 2016 for the Maritime Provinces.

Registered Apprenticeship Information System (RAIS), Statistics Canada: Compiles data (records from 2008 through 2017) on the number of registered apprentices taking in-class and/or on-the-job training in trades that are either Red Seal or non-Red Seal and where apprenticeship training is either compulsory or voluntary. It also compiles data on the number of provincial and interprovincial certificates granted to apprentices or trade qualifiers (challengers).

United States and International

Australian Jobs and Education Data Infrastructure: *Developing intelligence on Australia's labour market, workforce changes and current and emerging skills needs. JEDI is a flagship enabler of this intelligence.* Functions include: *Skills data enables us to find opportunities and link jobs to training and education.*

Brighthive (US): *Helps organizations and networks discover potential data collaborations and seamlessly share data with one another.* Leading private data company, with a number of clients and partners in the education and workforce sector.

Course Report: A searchable database of coding bootcamps (including in Canadian cities), it was the primary source used by Credential Engine.

LMI For All (UK): A service funded by the UK Department for Education, provides an online data portal, database and widget called Careerometer. The service seeks to make high-quality and reliable LMI data freely available, with the first version released in May 2013 after extensive testing and evaluation.

National Student Clearinghouse Research Centre (US): *Objective data and insights about student enrollment, mobility, completion, and other important student outcomes through the Clearinghouse data; nationwide network of nearly 3,600 postsecondary institutions provides up-to-date student-level data that represents 97 percent of the postsecondary enrollment today.*

OECD Skills for Jobs database (int'l): *Provides country-level (and subnational) information on the alignment between the demand and supply of a wide range of dimensions, including cognitive, social and physical skills disaggregated into more than 150 job-specific Knowledge areas, Skills and Abilities.*

Searchable Skills and Qualifications Classifications

DESCRIPTION International, national or otherwise validated repositories of occupations, skills and competencies, credentials and qualifications, and/or learning opportunities.

Canadian

Alberta Credentials Framework (ACF): Provides credential "descriptors" and "standards" for 14 credential types, grouped by graduate, apprenticeship and undergraduate level.

Digital Standards: Playbook, Treasury Board Secretariat: A Government of Canada digital Competency Framework (166 total), developed with Credential Engine and accessible through the Credential Finder tool linked to the Registry.

Ontario Essential Employability Skills (EES): Provincial government website outlining essential skills in six categories that college graduates must reliably demonstrate, which are still used and adapted by Ontario colleges.

Ontario Qualifications Framework (OQF): Probably the most detailed provincial QF, it identifies 13 different types of credentials.

United States and International

Australian Qualifications Framework (AQF): The national policy for regulated qualifications in Australian education and training, encompassing higher education, vocational education and training and schools. Includes 10 levels, from certificate to doctoral degree.

Australian Skills Classification: *Intended to be a 'common language' for skills, the ASC identifies the range of skills linked to occupations, and enables the exploration of the connections and transferability of these skills*. Linked to the Jobs and Education Data Infrastructure (JEDI).

Credential Engine (US): *Credential transparency can help align our efforts across education and training to provide more efficient and effective pathways to and through these education and training opportunities.* Credential finder tool pulls from their credential registry; 2021 research papers on counting credentials, training and education expenditures, and system visualization.

European Commission competency frameworks: for example, Digital Competence, Entrepreneurship, Personal Social and Learning

European Qualifications Framework (EQF): *The European Union developed the EQF as a translation tool to make national qualifications easier to understand and more comparable. The EQF seeks to support cross-border mobility of learners and workers, promote lifelong learning and professional development across Europe.... The EQF is an 8-level, learning outcomes-based framework for all types of qualifications... closely linked to national qualifications frameworks.*

IEEE Standards Association (int'l): The Defining Competencies Working Group *supports a technical standard for competency definitions data, with recommended practices for defining the kinds of information that the standard encodes as interoperable data, i.e. data that defines a skill, knowledge, ability, attitude, habit of practice, behavior, or learning outcome.*

International Standard Classification of Education (ISCED): *A comprehensive framework for organising education programmes and qualification by applying uniform and internationally agreed definitions to facilitate comparisons of education systems across countries.*

New Zealand Qualifications Authority (NZQA): Government entity that oversees the Evaluative Quality Assurance Framework, which is applied to all qualifications both secondary and tertiary. They have the most developed application of micro-credentials as part of the framework.

Open Skills Network (US): *A coalition of employers, education providers, military, and other stakeholders dedicated to advancing skills-based education and hiring. [It is] implementing Rich Skills Descriptors (RSDs); Developing Open Toolsets (OSMT); Creating a National Network of Skills Libraries; and Developing a Skills Community of Practice.*

T3 Innovation Network, US Chamber of Commerce: *Aims to define what a competency-based lifelong learner record should be... ; Modernize technology and advance data standards to achieve seamless sharing of data throughout a person's education and career pathway; and empower individuals with a validated record of their skills and competencies in a way that all employers can understand.*

Published Guides and Analysis

DESCRIPTION Documents and related tools, typically downloadable and printable PDFs, that present career navigation resources, think tank reports or other resources.

Canadian

Brookfield Institute Employment in 2030 App as part of a multi-phase research project for ESDC that blends foresight, expert insights, and machine learning to create a forecast of what Canadian occupations may look like in 2030.

George Brown College Career Services: Includes Resources for resumes, interviews, job search, networking and (career) exploration, as well as Career Services including Peer Support Coaching and Advising through one-on-ones, workshops and other formats.

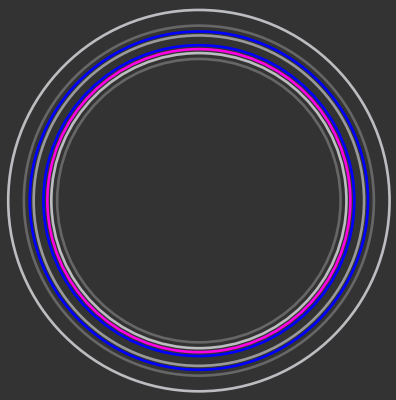
Ryerson University Career Compass: A career and job search guide provided by the institution's Career and Co-Op Centre, in the form of a 90-page PDF. One of the Career Development Resources, which also includes job search (Magnet and other boards), career advice, workshops/events and appointments with Career Education team member

WorkBC Good Jobs for Today and Tomorrow Guide: A guide to careers, training and education pathways in British Columbia, taking the form of a 25-page PDF document. It includes a labour market outlook, training and post-secondary information, and in-demand skills and occupations.

United States and International

Lumina Foundation *A Stronger Nation* website for report (2021) and online goal exploration tool: Interactive data tool tracks the post-high school educational attainment of working age Americans 25-64. Since 2008, the share that hold a post-secondary certification has increased by 10 percentage points, to 51.9% (still well below 60% target).

Nesta Career Causeways report and mapping tool (UK): Launched in 2020 as an analytic report (*Mapping Career Causeways: Supporting Workers at Risk*) and tool for navigating the labour market, the UK-based think tank is seeking partners to verify and test the tool's data-driven measures of occupational-similarity on job transition pathways.



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