

Project Integrate: A Blueprint for a Technology-enabled Employment Pathway for Youth

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Project Partners:



FIRST WORK
ONTARIO'S YOUTH EMPLOYMENT NETWORK

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FSC is a forward-thinking centre for research and collaboration dedicated to preparing Canadians for employment success. We believe Canadians should feel confident about the skills they have to succeed in a changing workforce. As a pan-Canadian community, we are collaborating to rigorously identify, test, measure, and share innovative approaches to assessing and developing the skills Canadians need to thrive in the days and years ahead. The Future Skills Centre was founded by a consortium whose members are Toronto Metropolitan University, Blueprint ADE, and The Conference Board of Canada

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Background:

This document has been prepared as a supplement to the Final Project Report submitted. It highlights the strategic findings, design considerations and recommendations for a technology-enabled employment pathway. While the Final Project Report presents the overall activities conducted, outputs and accomplishments, this document aims to synthesize the findings from the range of systems discovery and field-testing research activities and to inform a blueprint of how new and emerging tools can be converged in ways that build employment services capacity and empower job seekers.

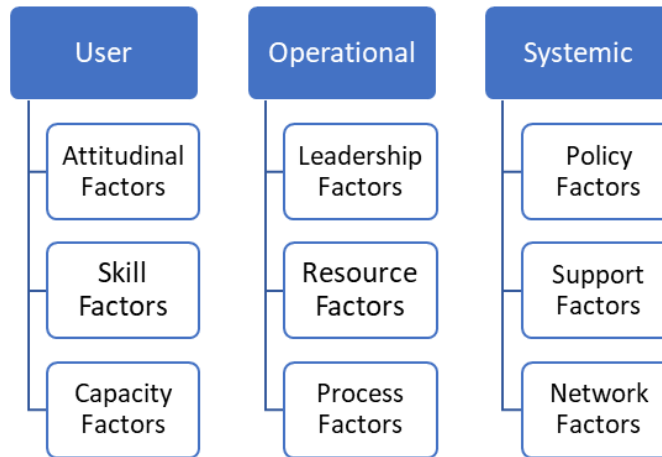
The current and future realities present many challenges and opportunities for the employment services ecosystem. Today's digital tools make it possible to develop an improved, systematic integration approach to adopting and leveraging technology. The team applied a systems lens to understand the key drivers and leverage points for the sector to integrate new technologies in ways that can be impactful for the sector and improve resilience of their clients. The strategic insights that follow serve as a foundation for understanding the main factors in blueprinting and prototyping a technology-based solution that can be applied and adopted throughout Canada.

Strategic Insights

1. Applying an ecosystem-centric approach is critical for transformational technology adoption

While the employment services sector recognizes the potential of tools and technologies there are a variety of factors that hinder the sector's optimism to adopt them. Identifying the benefits of technology and how they outweigh the risks will lead to the progress of acceptance.

A major component of Project Integrate's research was aimed at understanding the factors that influence adoption of intake/assessment tools among employment service providers. A wide variety of factors were identified based on consultations with management and frontline staff of employment service providers. Enablers and barriers were categorized into the framework shown below:



These enablers and barriers from the perspective of a user, operational and systemic level have informed the design considerations for a future state digital prototype. Ultimately, each of the factors identified above have a significant influence on the success or failure of ESP technology adoption. The table below highlights user, organizational and systems-based factors that were identified due to their potential for significant impact on technology adoption.

User Level	Enablers	Barriers
	<ul style="list-style-type: none"> • Relevance & Functionality • User Friendly Design • Service Expertise • Product-Specific Training • Internal Support • External Support 	<ul style="list-style-type: none"> • Unclear Value-Add • Increased Administrative Burden • Lack of Vendor Credibility • Perceived Complexity • Lack of Digital Skills • Training Time • Ongoing Service Time • Profile / log-in set up and accessibility
Organizational Level	Enablers	Barriers
	<ul style="list-style-type: none"> • Management Commitment • Consistent Communications • Funding • Planning • Inclusion • Monitoring 	<ul style="list-style-type: none"> • Strategic Misalignment • Fear of automation • Organizational Silos • Physical Infrastructure • Digital Maturity • Lack of information on tools' utility and purpose
System Level	Enablers	Barriers
	<ul style="list-style-type: none"> • Sector Investment • Commitment to Innovation • Incentives for Technology Adoption • Government-Led Technology Development • Vendor Service • Inter-Agency Sharing 	<ul style="list-style-type: none"> • Privacy & Data Security Legislation • Off-the-Shelf Solutions • Lack of Collaboration • Lack of Coordination • Inter-Agency Competitiveness • Monopolistic funder ecosystem

2. Leverage points on the employment journey can support adoption of complementary tools

Often youth do not have a clear sense of the path to employment, the opportunity to help educate youth on the overall path to employment will better equip youth to select tools and technologies that are most appropriate for their individual journey.

Based on the insights gained from the engagement of 160+ ESP staff at a series of national roundtable consultations, a youth employment pathway was developed. The youth employment pathway is comprised of five key phases. This non-linear pathway could start at any stage for a given job seeker and not necessarily start with the Discovery phase. For instance, youth could begin their journey at the “Application” Phase before returning to the “Discovery” phase to clarify their goals and aspirations. Additionally, youth may simultaneously complete actions related to a variety of phases.



1. Discovery: Youth engage in self-reflection, identify employment opportunities, and create plans (either explicit or implicit) for pursuing their employment goals.

2. Development: Youth seek to improve their eligibility for employment through the cultivation of a variety of skillsets. This includes technical skills as well as essential and employability skills. This phase may include robust forms of education and training, including formal degree and diploma programs. However, increasingly, youth are also incorporating more targeted and efficient training opportunities outside of traditional channels.

3. Positioning: Youth explore mechanisms to build their personal brand and communicate their value, aptitudes and skillsets. In this phase, youth generate their profile (including resumes, cover letters, business cards, portfolios and other tangible products) as well as engage in networking opportunities.

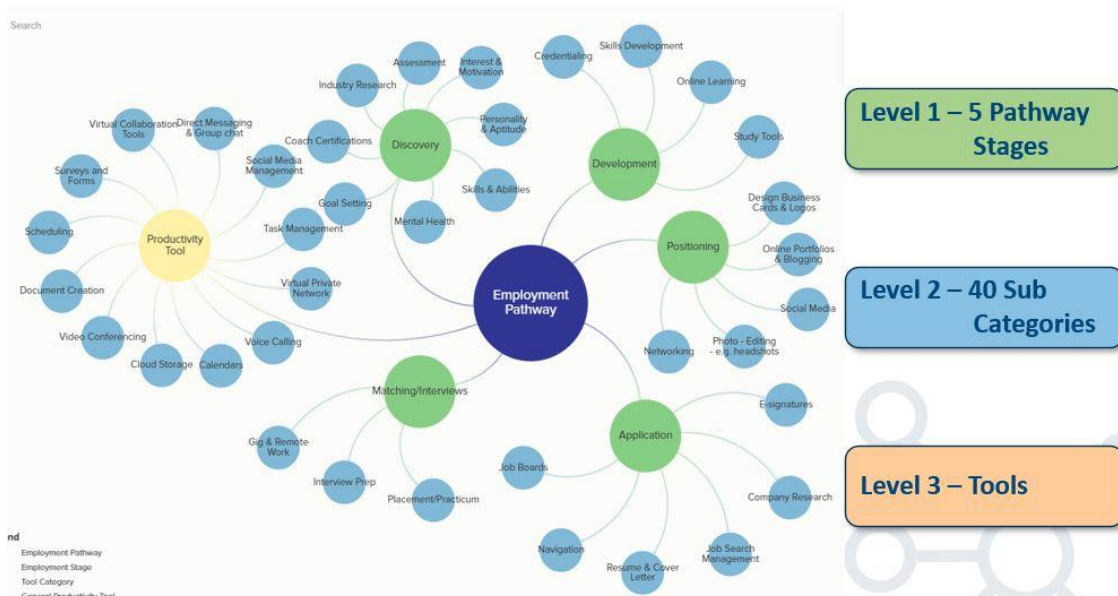
4. Application: Youth seek out and target specific job opportunities. This phase may include a wide variety of job search tools. Once opportunities are identified, job seekers engage in research on the target company followed by refining and submitting their application.

5. Matching: Youth engage in various styles of employer interviews and assessments. This phase ranges in intensity, and increasingly includes both human and automated screening techniques.

3. Multiplicity of tools, an opportunity for convergence

Equipping ESPs with the information and knowledge necessary to access and leverage appropriate tools and technologies, will encourage the exploration and adoption of new technologies and effective approaches for their job seeking clients.

As part of the exploration of systems navigation, establishing a strong understanding of digital employment tools currently being used by workforce development organizations was needed. A scan of digital employment tools was conducted in the form of Nationwide pre- and post-consultation surveys aimed at uncovering the tools, technologies and systems currently being used by employment service providers. As a result, over 350+ digital employment tools were identified and mapped across the 5 phases of the employment pathway where they are typically used. The inventory of digital tools was also used to develop further sub-categories within the five phases. An interactive data visualization map was developed and published on the project microsite (www.YouthEmploymentPathways.ca), the map serves as an information resource, raising awareness of the multiplicity of tools used to reduce fragmentation for those in the workforce development sector.



4. Complementary tools provide a holistic and value-added job seeker experience

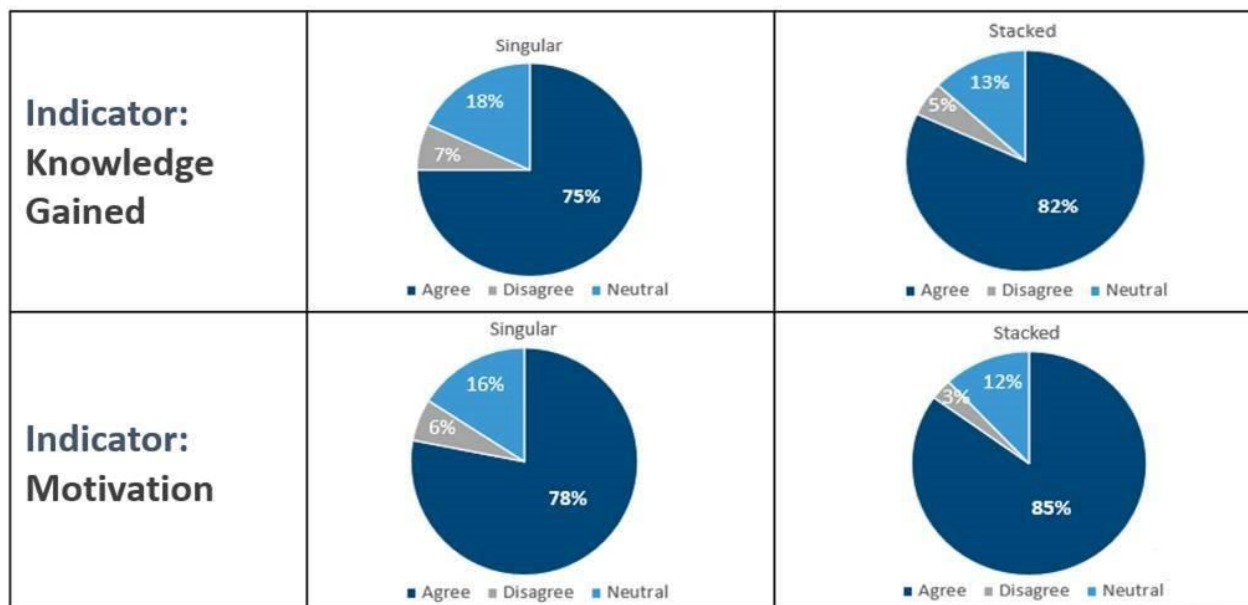
The career navigation process is iterative and nonlinear, requiring a well-researched and tested stacked solution that leverages complementary technologies designed with both youth and ESPs in mind.

In parallel with systems research within the workforce development sector, the project's second phase involved implementation of a stacked deployment of psychometric assessment and labour market analytics tools within the employment services context. 830 youth job seekers participated in these pilots through their pre-employment program at their employment service provider. The evaluation of these test pilots focused on whether the value of experiencing two tools is greater than the value of any singular tool. In both testing pilots, youth job seekers were asked to complete a feedback survey after they experienced the tools. The responses from both surveys were synthesized and categorized to measure value indicators that conveyed the value perceived by a job seeker. As a result, the survey responses deemed the value of the stack of tools was greater than the value of a single tool. As an outcome of experiencing the stack of tools, 82% vs 75% of youth job seekers walked away with more knowledge than they came in with, they were able to discover their personality strengths, discover career paths based on interests and plan career ladderling.

"I believe that the in-depth insight allowed me to truly reflect on what type of position is best suited for me. Making career paths with planext also opened my eyes to future possibilities I didn't think of beforehand."
– Youth Job Seeker

85% vs 78% of youth job seekers felt more motivated in their employment journey and towards finding an employment opportunity that is a good fit for them as result of using the stack of tools.

"The fact they both inspire you to find a job and will help you to do it." – Youth Job Seeker (Experienced Stack of Tools)



5. Prioritizing Technology that Adapts



No one technology alone can improve the entire employment services system. Technology exists today to enable a fully integrated system with the capability for each ESP to choose modular features to suit their requirements. The principles of adaptive architecture (see box below) will ensure a level of customization and support shared best practices across the system.

Building on the foundational work done in Phase one, the project investigated design considerations for technology adoption by the employment services sector. As a key design pillar, adaptive architecture (see box) recognizes the need to connect all components of the employment ecosystem. Singular tools often restrict informative data sharing, minimize data capture to short-term use and fail to address the full range of what youth need.

Box 1: Adaptive Architecture as a Key Design Pillar

Adaptive architecture is a key design pillar that seeks to incorporate all factors of the employment services systems, including technology, organizational and policy design, in enabling the system to respond to changes in demand or resources available over time. Adaptive architecture prioritizes adaptability in being able to respond quickly and effectively to an uncertain environment. Technology design implications of adaptive architecture include modular back-end infrastructure, predictive algorithms and layered database systems enabled at a foundational level to serve the system, while being able to respond to localized needs without disrupting that same system. This may enable features such as secure data flows between ESPs, standardized platforms and graphical user interfaces to serve common needs and flexible integrations through Application Programming Interfaces (APIs) to serve local labour markets.

Through the ecosystem navigation exploration, a set of enabling factors were identified (see table below). It is critical that any digital solution for employment services is anchored on the enabling factors.

Enabling Factors for Digital Employment Tools		
User	Operational	Systemic
<ul style="list-style-type: none"> • Relevance and functionality • User friendly design • Product-specific training • Service expertise • Internal support • External support 	<ul style="list-style-type: none"> • Management commitment • Consistent communications • Funding • Planning • Inclusion • Monitoring 	<ul style="list-style-type: none"> • Sector investment • Commitment to innovation • Incentives for technology adoption • Government-led technology development • Vendor service • Inter-agency sharing

Informed by the enabling factors identified during the project, outlined below are core design principles that emerge from the principle of adaptive architecture applied to the ESP context:

1. Holistic and Connected

Although young people want formal education to lead to a good job, it is no longer seen as a ticket to a good career. Recent research shows only a third of students believe they will graduate with the skills they need to be successful. While some attain formal academic degrees, some do not have the kind of launching pad that higher educational environments can offer. While higher education and training certainly still have their place in supporting career development, personalized assessment and learning tools are now available to deliver more specific guidance beyond a one size fits all approach. These types of tools can also aid ESPs in synthesizing information on available careers and opportunities as it relates specifically to each youth's needs. By incorporating factors such as personality, interests, values and skills, holistic career navigation systems can serve as "digital career coaches" available on demand.

2. Mobile and Flexible

Today's youth are digital natives. A great way to incentivize user adoption of digital tools among ESPs is to start with low-hanging fruit – tools easily available through mobile with formats that are most familiar. This includes text, email, social media and messaging (e.g., WhatsApp, Slack, etc.). Considering career navigation tools that allow for flexibility and mobility in communication can go far in lowering the bar to adoption by both youth and ESPs and allows digital services to meet people "where they are at."

3. Adaptive and Informed

Before COVID-19, research showed that skills today may lose up to half their relevance in just over five years. Up to one-third of workers may need to learn entirely new skills and find work in new occupations by 2030. This has made it increasingly difficult to rely on static sources of information on jobs and their requirements. Fortunately, technology also holds part of the key to accessing more relevant, timely information from digital sources. Today, many tools and technologies integrate these sources through machine translation methods and API systems.

4. Seamless and Trusted



While the back-end architecture of an integrated technology stack may be complex or cutting edge, user-friendliness supported by a seamless user experience and trust is key



to successful technology adoption. Maintaining trust in the brand and a simplified navigation experience is critical to both ESPs and youth to continue to use an employment tool. Such experiences can be easily supported through single sign-on (SSO) and data-sharing agreements between technology partners without sacrificing data privacy and security. This allows an uninterrupted flow between platforms offering different services from assessments to labour market data to skills training to job opportunities. Accommodating different access protocols through social media integrations can also enable adoption by allowing youth to access employment services from their mobile device. Above all, both youth and ESPs want a reliable tool they can trust and one that complements their service expertise.

6. Data matters: An intentional holistic approach to data is critical for success

At its very core, data tells us what needs to be done next. It will be the anchor for creation of value for the ESP and the job seeker. Protecting and managing the data responsibly and in compliance will be a major determinant of trust in the adoption and use of the technology solution.

In an increasingly digital and data economy, personal information increasingly flows across local and international borders and is the basis of most economic activity. Project Integrate explored the convergence of multiple applications within a cohesive digital ecosystem. In the context of the employment ecosystem, workers are increasingly faced with digital interactions. One test of a robust system will be how well the various applications address emerging trends and meet fundamental data compliance obligations. Here are some areas for further investigation and consideration.

	<p>Data Privacy</p> <p>It is a reasonable expectation that any technology solution maintains privacy of data and builds trust. It is an obligation to follow global and Canadian privacy regulations and standards for the protection of personal information collected.</p>
	<p>Data Security</p> <p>An integrated robust data governance framework will be a critical driver of user acceptance and trust. Convergence of data and digital tools will mean data from multiple source systems will be combined, each with a different owner for each source system to create a new combination of datasets within the application. Setting the framework of data governance, stewardship and compliance is critical.</p>

	<p>Data Biases</p> <p>Algorithm biases are not limited to any one data platform and creep up unintentionally or sometimes just based on the source of data. In a labour market context, it may mean the exclusion of opportunities for job seekers. By addressing built-in algorithm biases, we can open up employment opportunities for all job seekers particularly those vulnerable groups that face multiple barriers to employment. Unbiased inclusive navigation, self assessment and training tools can ensure equitable sharing of skills development and employment opportunities to ensure the job seeker is not becoming more vulnerable but rather more resilient through securing those opportunities.</p>
	<p>Data Portability</p> <p>Job seekers that access employment services over multiple programs and services might need to provide the same data at different points or to different ESPs. Further multiplicity of tools and lack of standardization leads to multiple logins, resulting in disengagement. The ultimate goal will be to provide the jobseeker the sole control over their own information containing their education, experience, competencies and training information. They can control and draw on this personal 'navigator' to plan and manage their career path and identify reskilling / training opportunities through the various milestones in their working life.</p>

Blueprint of a Technology-enabled Employment Pathway

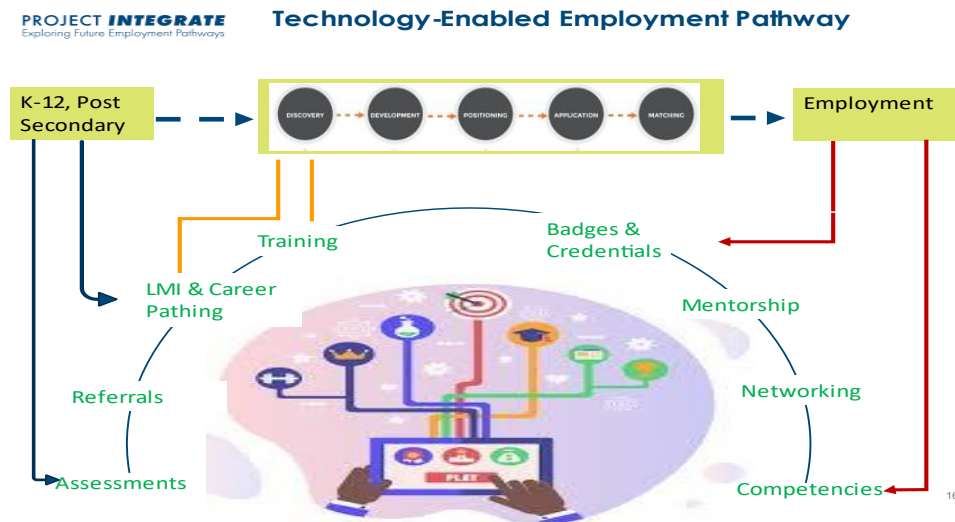
The impact of automation and adoption of digital technologies is expected to have far-reaching changes in the labour market. While jobs will be lost, new jobs will be created. All this means workers will need to constantly upskill and employers will need to play a critical role in equipping their workers with ongoing skills development. In 2017, the Advisory Council on Economic Growth recommended that the skills development infrastructure in Canada be fortified with a new third pillar – skills development and training for working adults (see box below).

Our system today rests primarily on two pillars. The first one supports the development of skills before people enter the workforce, through K-12 and post-secondary education. The second pillar supports individuals when they leave the workforce, by providing assistance to the unemployed and the retired. That leaves a large gap in institutional support and training during Canadians' most productive years—and it is in this phase that workers will be most affected by the labour market turmoil. While our system has served us well in a relatively stable environment to date, it is not set up to address the coming labour-market disruptions - Learning Nation: Equipping Canada's Workforce with Skills for The Future Advisory Council on Economic Growth - December 1, 2017

The pandemic accelerated the adoption of new technologies in all spheres of workforce development in Canada. Consultations with the project's Advisory Committee validated many new technology-based ideas have gained momentum to address the needs of workers and employers – micro-credentials, digital badges, certifications, etc. To be successful, all of these would need to provide the worker privacy, portability and control of their personal information,

and support skills transferability. Any new solution or approach in the sector will need to be holistic and adaptable to emerging trends in the workforce ecosystem.

The learnings and findings arrived at through the project's systems discovery and field-testing of promising employment-related technologies has informed the blueprinting of a technology-enabled employment pathway prototype (see diagram below). The idea is to provide lifelong support ranging from K-12 to post-secondary and beyond.



The prototype of the pathway recognizes that most Canadians will follow a pathway through the three pillars, though not strictly sequentially. It is designed to be relevant to those that have stepped away from education; workers that have lost their jobs looking to re-enter the workforce; or workers looking to upskill and for lifelong learning opportunities. The prototype is designed to include a range of digital tools that embed adaptive architecture by:

1. Considering a variety of factors that influence career navigation through assessment integrations (interests, personality, values, etc.) so individuals can receive what they need when they need it.
2. Supporting multiple interfaces and communication methods for different stakeholders (for ESPs, youth, funders, partners, employers, etc.) like online portals, SMS, chatbots, etc.
3. Enabling timely adaptation to shifting labour market conditions, including real-time labour market analytics.
4. Developing a focus on personalization and scalability to increase capacity for ESPs to focus on additional support for those most in need.
5. Provide a seamless process for employers to support their workers to achieve the appropriate certifications and skills needed to stay competitive.

In conclusion, the work undertaken by Project Integrate has laid a strong foundation in arriving at a blueprint and design recommendations for a technology-enabled employment pathway for

digital employment services that may be applied throughout Canada. The project team is very encouraged and excited about the impact of the project. Learning and findings from the project have informed the design considerations for the new technology application called SkillsPath (see box below) which is integral to the emergency response and recovery projects funded by the Future Skills Centre for the Tourism and Hospitality sector.

The SkillsPath application provided an opportunity for Project Integrate to leap ahead from just developing a blueprint to the ability to seek user-testing feedback on an early prototype of a technology-enabled employment pathway.

SkillsPath: With support from the Government of Canada's Future Skills Centre (FSC), a **virtual services platform** is being developed by OTEC to triage job seekers and workers to direct them to Employment Service Providers (ESPs) and to the most appropriate support they need as quickly as possible. The application named SkillsPath is being tested initially to support recovery of the Tourism and Hospitality sector. But while it will directly connect and support workers from the sector, the goal is that it will help us develop a roadmap for sustainable solutions that can help with the long-term rebuild of our economy. *"This rapid response initiative is one of the ways we will lay the groundwork for recovery. We are steadfast in supporting talent and skills development for workers as a key part of our plan as we emerge from the shutdown."* Ontario's Minister of Labour, Training and Skills Development Monte McNaughton.