An Apprenticeship Skills Agenda – Executive Summary

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INTRODUCTION

In the period October 2016 to March 2017, Maxim Jean-Louis, President-Chief Executive Officer of Contact North | Contact Nord was requested by the Ontario Skilled Trades Alliance to carry out an engagement process with its members to help determine a transformative vision for apprenticeship training in Ontario.

These leaders are from the construction industry, which employs a significant number of skilled tradespersons and help build Ontario's future. The engagement process focused on exploring innovative ways of closing the skills gaps that exist in the province. A discussion paper entitled *Closing the Skills Gaps: A Way Forward for Apprenticeship and Skills Development in Ontario*, which is attached as Appendix 1, was used to stimulate responses and to focus attention on the challenge and opportunities for change.

Maxim Jean-Louis undertook this on a volunteer basis as its contribution to this timely conversation about apprenticeship between the different stakeholders of this critical sector of Ontario's economy.

The report of the engagement process is entitled An Apprenticeship Skills Agenda, and includes three sections:

- Executive Summary
- What We Heard
- A copy of *Closing the Skills Gaps: A Way Forward for Apprenticeship and Skills Development in Ontario*

While the project was funded by the Ontario Skilled Trades Alliance, the findings and recommendations are solely the thoughts of the author.

Maxim Jean-Louis
May 2017

THE SKILLS CHALLENGE

The skills gaps in Ontario continue and are becoming more complex[1]. It has a direct impact on the ability of firms and organizations to compete and impairs their productivity. It also inhibits the growth of the Ontario economy. The Conference Board of Canada estimates the impact of the skills gap in Ontario at $24.3 billion GDP in foregone company revenues, with an additional $3.7 billion lost in foregone taxation. According to Skills Canada, 40% of the jobs which will be created in Canada over the coming decade will be skilled trades positions. Just in construction, the forecast for the next decade is that there will be some 86,100 retirements and over 80,000 new recruits needed by 2026 to sustain the sector. We are all challenged to do more, but just doing more of the same will not be sufficient.

There are five other factors which will impact the demand for and supply of skills:

- It is widely accepted that some 65% of students who started elementary school in 2016 will eventually occupy jobs that do not yet exist – the nature of work and new kinds of skills are appearing all the time[2].
- The skills people acquire outside formal education – online, at work, through professional courses, social activities or volunteering – can often go unrecognized, yet may be relevant.
- The digital transformation of the economy is reshaping the way people work and do business. Digital skills are needed for all jobs, from the simplest to the most complex. They are also needed for everyday life, and a lack of digital skills may lead to social exclusion.
- The Ontario workforce is ageing and shrinking, leading in some cases to skills shortages; yet labour markets do not draw on the skills and talents of all. For example, the rate of employment for women remains below that of men and Indigenous peoples find it difficult to secure and complete skills training.
- The quality and relevance of the education and training available varies widely, increasing disparities in regional economic and social performance. In particular, mastery of essential skills is problematic, especially for those without a great deal of skills-based learning and social supports.

1 For a summary of the skills gaps, see Appendix 1 at pages 9 to 11.
2 Source: World Economic Forum *The Future of Jobs* available at http://reports.weforum.org/future-of-jobs-2016/

What is needed is a comprehensive, future-focused rethink of our approach to the skilled trades and to apprenticeship. It is time for major change.

THREE DOMAINS FOR ACTION

In the period October 2016 to March 2017, Maxim Jean-Louis, CEO of Contact North | Contact Nord, carried out an engagement process with members of the Ontario Skilled Trades Alliance (OSTA). These leaders are primarily from the construction industry which employs a significant number of skilled tradespersons and helps build Ontario's future.

The consultations were aimed at exploring specific and concrete ways of closing the skills gaps that exist in the province. The conclusion of these discussions is there are three levels of the skills gap challenge to be addressed:

1. **Reputation.** The first is reputational. The trades do not appear to be appealing to those aged 13-24, yet the rewards of working in the skilled trades are many. To name a few, pride in craftsmanship, the ability to be entrepreneurial and to manage the work-life balance, and to foster the communities of practice for their trade. Trades are a second choice for most, with routes to university or college seen by students and parents as the preferred route. Much more needs to be done to position the trades as a route to personal success and satisfaction – as an equal first choice. Learning about trades, developing practical and applied skills need to be positioned throughout the K-12 system and our approach to trades education needs to change to better position the trades as vital to Ontario's future.

2. **Skills and Qualifications.** The second relates to our current models of apprenticeship and learning for skills. The model of apprenticeship now widely in use is no longer suitable for the current situation. Discrete and distinctive boundaries around skills are being replaced by more complex demands for multi-skilled and multi-layered tradespersons. Combinations of skills are required for new forms of work and all trades will need to master the ability to work in partnership with existing and emerging technologies. New approaches to skills education are emerging in other jurisdictions which move beyond time-based, journeyperson-supervised apprenticeship to a competency-based, assessment driven and technology-enabled learning system. Ontario has both the capacity and the opportunity to show leadership in rethinking apprenticeship across Canada.

3. **Lifelong Learning and Continuous Skills Development for Trades (CSDT).** At one time, becoming a journeyperson or achieving a Red Seal was the end of the "learning period" in a trade. This is no longer the case. As technologies change, materials change and new skills are required, a skilled tradesperson needs to continually update and develop their skills and abilities. Without continuous learning, productivity stagnates. The 21st century tradesperson needs to make investments in their learning to stay current and be able to complete tasks and projects effectively and efficiently.

THREE RECOMMENDED ACTIONS

Our responses to these three opportunities for rethinking skills and apprenticeship are:

1. Changing Mindsets – Trades as top of mind option

It starts at the elementary school…

The approach to skills and practical knowledge required for the trades needs to begin in elementary school. Work-related projects, project-based work, and school visits are all activities which bring young minds in contact with the need for trades – working with wood, water, glass, fibre, food, tools. There must be more opportunities for practical learning at the elementary school level.

There is also a need through the education system to strengthen essential skills – literacy, numeracy, and social skills. Many in the Canadian workforce do not have literacy skills at a level required to be high performing in their trade, profession or career. Improving essential skills is a vital component of a skills strategy for Ontario.

In junior high and high school…

Opportunities to learn basic trade skills from fashion, cosmetology, culinary arts, welding, automotive, carpentry, permaculture and others – routes for career and technical studies (CTS) which permits the learner to explore a trade, master basic level understanding and complete (at the high school level) some components of apprenticeship. Students are currently required to undertake forty hours of community service – at least twenty of these should require the demonstration of trades or practical skills.

For college and university students…

Ensuring college students can see the value of trades through connecting them on campus with trade opportunities linked to their interests.

The development of degree apprenticeships, which combine full-time work with part-time online study also needs to be considered. In the United Kingdom[3], applied apprenticeship degrees are primarily targeted at 18- to 19-year-olds leaving school as an alternative route to gaining a more traditional degree, especially for those from disadvantaged backgrounds who are deterred from studying a traditional full-time program by high tuition fees and student debt. The qualification is suitable for anyone, including 16- to 18-year-olds and mature students. The degree apprenticeship is designed to strengthen the 'vocational pathway', and support progression from craft and technical roles into management. This means programs are suitable for those who have completed apprenticeships or the equivalent but who now wish to advance their career through further study.

The recent announcement, in Budget 2017, of 40,000 new work-related learning opportunities with employers for students and recent graduates through Ontario's Career Kick-Start Strategy, providing real-world experiences while enabling employers to help train and equip them for jobs, is a strong start.

The government needs to continue to build on this momentum and aim for a comprehensive repositioning of the skilled trades as a route to pride, prosperity and personal satisfaction. This needs to be reinforced for all learners in Ontario.

There also needs to be investment and support for bold, creative and imaginative uses of learning and related technologies to support apprenticeship. New approaches to video-based assessment, new uses of e-apprenticeship systems, the widespread adoption of e-portfolios which capture what an apprentice can do, creative uses of online learning to accelerate completion of skills modules, and the greater use of peer-to-peer and social networks to support apprenticeship are all opportunities for Ontario to show bold, courageous leadership for skills in Canada.

For a wider public

Using media, advertising, social media and other materials to actively encourage young people to consider a route to trades as a life choice – showcasing the benefits of trades work or work in different fields – construction, electrical, hairdressing and other trades. This could also

3 For a description, see https://www.prospects.ac.uk/jobs-and-work-experience/apprenticeships/degree-apprenticeships.

include an annual Premier of Ontario Skills Award, recognizing individuals in different trades who had an impact on how the trade operates or who have developed innovations which are transformative for the trade.

For seniors

Seniors with trades skills are a significant asset to the future of the trades. There is an opportunity to maintain an engagement with young people through links with schools, or through the identification of community-based projects in which retired tradespersons can partner with school students. Experienced tradespeople should be mentors and help those considering the trades by coaching a younger generation in their work towards a vocational qualification.

A Chief Training and Skills Officer

To support a creative and innovative approach to trades education and the positioning of trades, a new government position – Chief Training and Skills Officer – who champions the skilled trades across a range of government ministries (Labour, Advanced Education and Skills Development, Education, Research and Innovation) and agencies (Ontario College of Trades) is needed. This role champions the skilled trades at the highest levels of government and promotes the skills agenda. The person appointed should report directly to the Minister, Advanced Education and Skills Development on the status of skills employment and trades training in Ontario. This position should include specific targets for recruitment, retention and completion for apprenticeships; a mandate to accelerate success for skills development in the skilled trades; support for the reduction of bureaucracy and complexity related to apprenticeship and the role of oversight of the skills agenda. Such centralized accountability would ensure fast-action on the Governments skills agenda.

A Skills Guarantee

The European Union, in its skills agenda, proposed the development in each member country of a skills guarantee. Such a guarantee has three components: offering to every adult who does not possess a post-school certificate, diploma or degree: (a) a skills assessment, enabling them to identify their existing skills and their upskilling needs in a skills domain of interest to them; (b) a package of education or training tailored to the specific learning needs of each individual; and (c) opportunities to have their skills validated and recognized. This enables "gap-based" personalized learning agendas to be developed as well as increasing the pipeline of people wishing to pursue skills.

Ontario's skills guarantee, using anytime assessment systems which leverage emerging technologies for assessment, would enable those with

skills to be certified whether or not they have completed formal programs of study. It would also enable many to complete apprenticeships they long ago abandoned.

Such a guarantee could create new, flexible routes to completion for apprenticeship programs and enable Ontario to significantly improve productivity and competitiveness of those companies and organizations which depend on the skilled trades.

2. Rethinking Apprenticeship

Changing the Model of Apprenticeship and Developing Flexible Routes to Certification

The model of apprenticeship is based on a traditional and now dated model of discrete trades[4] and limited understandings of how individuals master skills. This model is no longer suitable for the modern trades. Skills are more complex, involve a range of technical and soft skills as well as layers of competence and capabilities. Our understanding of how adults learn and our ability to use technology to support learning also changed. There is a need to both rethink the skills needed for 21st century trades work in terms of the competencies and capabilities required for each skills domain and to rethink the learning and development routes by which an individual can become a Red Seal or certified tradesperson.

Rather than focus on time, journeyperson - apprenticeship ratios and whether or not a specific trade requires compulsory or voluntary certification, there is a need to develop a modular, stackable approach to skills and capabilities training and developments which permit greater flexibility and more rapid progress to certification. Focusing on the assessment of capabilities and competencies and the work needed to enable a successful capability assessment gives us a different lens for this work.

There is also a need to be more open to varied routes for entry. Rather than insist on the completion of Grade 12, individuals who demonstrate commitment and interest and complete skills and capability modules relevant to their specific trade interest should be able to progress, no matter what their age or prior education. In this regard, it is worth noting the youngest Microsoft Certified Professional was just five years old when he qualified[5]. Openness, flexibility, transparency and quality assessments of capability should drive our approach to the mastery of the skills required for each trade.

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4 For a review of the history of apprenticeship in Canada, see Stewart, G. and Kerr, A. (2014) A Backgrounder on Apprenticeship Training in Canada. HEQCO.

5 For more information about this young man, see http://www.bbc.com/news/technology-30054140.

There is also a need for a skilled tradesperson, after they secure their "ticket", to continuously improve and upgrade their skill, to master emerging technologies and improve productivity and performance. Every skilled trade changes over time – this should be reflected in the model of learning and certification. Lifelong learning for trades should be a cornerstone of the Ontario way. We outline a strategy for this below.

Building on success and leveraging our skills training and development infrastructure, together with Ontario's national leadership in college education, online learning and technology supported assessment, Ontario needs to be bold and chart a new pathway for the mastery of skills.

Attracting New Apprentices

There also needs to be a systematic and focused effort to attract more women to the trades and to provide significant support to Indigenous students who wish to enter the trades. Just as the Government of Ontario has pursued a systematic approach to increase the number of traditionally under-represented individuals in higher education – students from low income families, first in the family to attend university or college, Indigenous, disabled, sons or daughters of immigrants, rural students – it needs to do the same for apprenticeship and entry into the skilled trades.

Strengthening financial incentives for apprentices, focused tax incentives for employers, support for essential skills development targeted at these groups together with dedicated coaching and mentoring support at a local and regional level are all approaches to be considered. The 2017 budget commitment to expanding access to skills and essential skills learning is a strong indication of the Government's commitment to this work.

Of considerable importance are role models and success stories of individuals from these backgrounds who have not only completed apprenticeship but secured the rewards of having done so. The suggested annual Premier of Ontario Skills Awards could provide an opportunity to showcase and celebrate these achievements.

3. Lifelong Learning for Skills and Trades

Requiring Continual Professional Development for Trades (CPDT)

Almost all who work in any profession or trade see their work change and transform because of new understandings of best practice, the development of new materials for use in their trade and new technologies and tools. Continuous learning and development is no longer an option, it is essential both for improving the technical capability of an individual tradesperson but also for productivity and competitiveness.

A requirement for a tradesperson to complete ongoing learning needs to be a part of the understanding of what it means to be a journeyperson. This requirement varies by trade, but the adoption of a modular approach to learning would enable flexible use of modules for both apprentices and those seeking to undertake CPDT.

Resilient and Adaptive Trades

As change occurs – some suggest 40% of existing Canadian jobs will be replaced by emerging technologies such as 3D printing, new materials, robotics and artificial intelligence[6] – there is need to build into our understanding of trades a need for adaptability and resilience. Strengthening entrepreneurial mindsets, enabling the development of innovative and creative capacity and deepening the change and coping skills of each tradesperson needs to be a part of our understanding of the skills agenda. The future is not a straight line from the past – a qualified tradesperson needs to be able to adapt to the changing nature of their work and to use that adaptability to strengthen and build their practice.

INTENDED OUTCOMES

The aim is to close the gap between demand and supply of labour, to increase employee engagement in learning and to increase the productivity and competitiveness of Ontario firms. These proposals will also speed and increase completion of apprenticeship, provide greater flexibility and opportunities for apprentices and position the journeyman as a mentor, coach and guide, as well as an instructor. For colleges, these proposals create new opportunities to respond to industry needs, new support for the assessment of skills and a new approach to modular, stackable learning.

There is a need to change the model of apprenticeship, to increase commitment to vocational education, increase the flow of individuals into the skilled trades pipeline, provide more flexible routes to entry and certification, and to sustain the quality of qualified tradespersons.

The challenge is not primarily a fiscal one – the Government of Ontario already makes significant investment in skills development and learning – the challenge is about the allocation, reallocation and incentivization of existing resources. The challenge is to be creative, innovative and bold in responding to a problem that has been with us for some time.

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6 See The Advisory Council on Economic Growth for the Government of Canada First Report: *The Path to Prosperity – Resetting Canada's Growth Trajectory* (2016) available at http://www.budget.gc.ca/aceg-ccce/pdf/summary-resume-eng.pdf.

Current actions, while demonstrating support for the work of trades and the development of apprenticeship, are not moving quickly enough in solving the problem of the skills gaps. New approaches are needed. It is time for Ontario to lead, not follow and to be bold in doing so. There are strong commitments to apprenticeship across the trades and in communities throughout Ontario. All now look for leadership and innovation. It is time to liberate, not constrain and to develop a more flexible apprenticeship system that has many pathways to success.

What We Heard

WHAT WE HEARD

In the period October 2016 to March 2017, Contact North | Contact Nord carried out an engagement process with members of the Ontario Skilled Trades Alliance. These leaders are from the construction industry, which employs a significant number of skilled tradespersons and help build Ontario's future. The engagement, developed at the invitation of these leaders, was aimed at exploring specific and concrete ways of closing the skills gaps that exist in the province. A discussion paper entitled *Closing the Skills Gaps: A Way Forward for Apprenticeship and Skills Development in Ontario*, which is attached as Appendix 1, was used to stimulate responses and to focus attention on the challenge and opportunities for change.

Maxim Jean-Louis, President-Chief Executive Officer of Contact North | Contact Nord undertook this on a volunteer basis as its contribution to this timely conversation about apprenticeship between the different stakeholders of this critical sector of Ontario's economy.

What is clear from these discussions with the employers is the issue of the skills gap generates a great deal of focused, intense and insightful comment observation and recommendations.

In this snapshot, we describe what we heard in these discussions. We seek to capture the conversations undertaken at individual and group sessions with Ontario Skilled Trades Alliance members of construction, hairstylist, electrical, carpentry and other trades.

THE THREE MAJOR QUESTIONS

In the engagement process, we explored three major questions:

1. What is your understanding of the challenge?
2. What is working now, but with some tweaks, could be much better?
3. What bold ideas do you have which, if implemented, would be "game changers" for skills in Ontario?

These questions permitted open observations as well as comments on the specific ideas contained in the paper circulated widely in October 2016 (Appendix 1). My reporting on this work includes this paper, capturing what we heard, and a second document providing a summary of the key observations from the entire process.

THE CHALLENGES

Challenge 1: Mindset

All respondents positioned the challenge in terms of trades not being top of mind for young people –not the first choice for students in schools, colleges and universities, and not a preferred route for personal success and career. This despite the clear evidence of the rewards of being a successful tradesperson and the pride and fulfillment a career as a skilled tradesperson can deliver. As one observer suggested, **"the pipeline is drying up because there are no longer many points of contact with physical labour, skills and trades in our schools"**.

Others made similar suggestions:

"My children, currently in elementary school, have no introduction at all to any of the skills trades but have all sorts of introductions to other industries and professions."

"Our kids are spending their time in their bedrooms with handheld devices, they're not doing any kind of physical work, not doing any physical things at school, anything physical out, but even the willingness to enter into the trades, [to] work with our hands, is diminishing. I think it's at crisis proportions, our mindset is definitely important."

"I have found that there is a cultural indifference in this country and North America specifically around what it means to be a skilled tradesperson."

"Few of our students in schools understand that a career in trades is a rewarding career that provides a lot of lifelong transferable skills and if they were to hear of some of the money that can be made, they might find the trades a much more attractive proposition."

"Many young people want to have more control over their lives and career – we need to position work in the trades as providing that opportunity."

"Barriers are being arbitrarily put up and part of that culture, our parents' generation believed that working with your hands meant you were lower class. And we've raised a generation of kids who believe that university is the only way to go."

This observation, shared by many, suggested the key challenge for a skills strategy is to enable a mind-shift for Ontario's young people. While work experience for high school students is a valuable addition to the

positioning of skilled trades, the work needs to begin much earlier in elementary school.

This requires:

- Increasing project-based learning where skills are required.
- Broadening the focus of crafts, technology and skills to embrace the work of the skilled trades.
- Community-based projects in which K-12 students can work alongside skilled tradespersons in solving real world problems where trades skills are involved.
- Rethinking the career and technology studies of the K-12 school system focused on an expansion of vocational education from elementary to high school, involving work-based learning and community projects to help shift the student mindset.
- Something which several other jurisdictions are developing is the direct laddering of apprenticeships to degrees, which also helps shift the mindset. While this is occurring in Ontario, it needs to be given systematic encouragement.

In the United Kingdom, the apprenticeship degree was launched in 2017 as a means of shifting the mindset but also creating a clear pathway between a commitment to apprenticeship as a career decision and advanced learning. The degreed apprentice works for 30 hours a week in paid employment and uses online and face-to-face studies to acquire both their journeyman ticket and part of the degree[1].

Challenge 2: The Skilled People Pipeline

As Ontario's demography changes – to more seniors, fewer people in the workforce, more immigrants, more Indigenous youth – so the skills pipeline becomes more problematic. Added to this is the challenge of technology – not only will there be fewer people in the skills pipeline, but the skills they require for work are becoming more complex.

"Four years from now, there will be more seniors than kids in high school... And by 2030, there will be just two people in the workforce for every one that is not. Right now it's four to one. So these demographics are going to get worse, not better... [and] another version of the problem is we have to think of who does what in our economy, because we don't have the people, unless we

1 For more information, see https://www.prospects.ac.uk/jobs-and-work-experience/apprenticeships/degree-apprenticeships

drastically increase immigration. So just the demographics speak for themselves."

In some trades, skills shortages are already forcing the closure of small firms and businesses. In others, new ways of working have to be found to compensate for the lack of skilled tradespersons. As new materials begin to find their way to the marketplace, and new technologies change the way work is done, those who are already certified need to update their skills to compete.

Examples of this include new forms of glass for glazing, new solar roof panels for energy efficient houses, the use of graphene in plumbing, 3D printing of houses and buildings, machine intelligent systems used in "smart buildings", and sensors built into pipelines and electrical systems.

Our models for certification – Red Seal and apprenticeship – need to be fundamentally re-examined for a different set of socio-economic conditions. Apprenticeship as now practiced is no longer producing the pipeline of skilled tradespersons needed for Ontario to be a competitive and highly efficient economy. Indeed, our current approach to apprenticeship restricts rather than encourages entry into the skilled trades. Some of the comments made this clear:

"Our current approach is too restrictive and stops us from accessing the talent that is out there."

"There is no acceptance across our current system of what the reality is in our workforce – the continuum of education and growing as a tradesperson. There are many with excellent skills doing excellent work who cannot or have not secured certification – we need to find a way of recognizing their skills."

"There are 350,000 grade 11 and 12 students in the province of Ontario – 350,000 17- and 18-year-olds. Of that 350,000, less than 40% are going to go on to post-secondary [school]... That is almost 200,000 students coming out of secondary school that could take advantage of programs like OEAP or just enter into an apprenticeship if they really had more support."

"I can't imagine a young person or an unemployed person trying to navigate the minefield that we call apprenticeship."

"I think we've got the beginnings of [a] regional and even provincial series of supporters for the notion of apprenticeship, but again they're all working either alone, or against themselves."

"If you want to become a skilled trade crane operator, elevator operator, electrician, plumber... unless you know somebody, it

doesn't matter if you want to be an electrician or a licensed trade worker, you are not allowed in. You have to pass some blood tests."

Further, no single approach to apprenticeship fits all trades. Each has its own dynamic, conditions of practice and core capabilities. And many new trades are emerging which require blends of existing trades. Mechatronics is a good example. This emerging skill domain requires a combination of mechanical engineering, electronics, computer engineering, telecommunications engineering, systems engineering and control engineering. It is an example of a 21st century skill domain which is no longer a discrete, narrow range of capabilities.

Challenge 3: The Understanding of the Skills Gap as a Wicked Problem

The Closing the Skills Gap discussion paper identifies six components of the skills gap – it is not a simple supply and demand problem (see Appendix 1 at pages 9 to 11).

Gap 1: The Basic Gap: The Gap Between What Employers are Seeking and What they Can Find

Gap 2: The Expectations Gap – The Gap Between What an Employee Expects to Experience at Work and What they Actually Find Themselves Doing

Gap 3: The Productivity Gap – The Skills We Need to Develop to Significantly Improve Productivity

Gap 4: The Leverage Gap – The Underutilization of Skills in the Workforce

Gap 5: The Futures Gap – The Gap Between Current Skill Sets and the Skills We Need to Become Competitive in the 4th Industrial Revolution

Gap 6: The Innovation Gap - The Skills We Need to Build a More Innovative and Sustainable Economy

The consultation confirmed all six components are present as part of the challenge. These are thrown into sharp relief in the many small companies that exist in the trades. Indeed, 90% of all Canadian businesses are small and medium-sized organizations and the challenge of matching employee expectations with reality is very real.

A CHIEF TRAINING AND SKILLS OFFICER

There needs to be greater awareness of the reality of the business world amongst those making decisions across a range of government ministries or departments – Education, Advanced Education and Skills Development, Labour, Research and Innovation – so strategic thinking and investment decisions are informed by on-the-ground realities. There is a need for a Skills Champion – a Chief Training and Skills Officer – who represents the interests of the skills trades across government and amongst its agencies.

"I'd like to centralize the combined efforts of service providers, promote recruitment and retention. I'd like to create a chief training officer in Ontario... I do believe we need to have some sort of central clergy. I agree that there are some issues with the College of Trades. Maybe that falls on the Ministry of Advanced Education and Skills Development, but again, I'd like to see a chief training officer appointed in the province of Ontario who has some sort of authority to work within most ministries. To make apprenticeships become more of a first choice option."

"I would like to see a chief training officer in the province of Ontario. Not necessarily attached to one ministry. Maybe three ministries that are all working together to benefit workers in Canada."

Challenge 4: Simplicity on the Other Side of Complexity

All of those engaged in the conversation found the current systems for apprenticeship and skills certification to be overly complex, bureaucratic, time-consuming and expensive. In some cases, the bureaucracy was itself enough to deter companies from engaging an apprentice and in others this same concern was enough to deter apprentices from continuing. Rather than simplifying, streamlining and championing the opportunities for expanding the skills trades, the Ontario College of Trades is seen by many engaged in this conversation to be imposing complexity and regulation. Some of the comments make this clear:

"The more you build barriers, the more you build structures and the more structures we have, the fewer people can get past the barriers. We need to remove barriers, stimulate innovation and develop flexibility."

"If Ontario wants to become more competitive, improve productivity, build greater pride in work, really become a great place to work, then we need to change how we train and develop skills which young people need to work in the trades. We have clung on to an

old model for too long and it's time to change. Some aspects are strong – mentorship and coaching are critical as is some formal learning and essential skills – but we can use new approaches to design and delivery to get these skills. What we are doing now is just not solving the problem."

"There have been some improvements in the past 5 years, especially with the arrival of the College of Trades... It has, in theory, started developing metrics and started discussing how we measure achievements in all the trades that it governs... [but] the challenge that now the College of Trades faces is the reality that the completion rates haven't changed one iota since the arrival of the College of Trades."

The potential of the College of Trades was recognized, its current practices, however, were seen as making it more difficult to enter and complete an apprenticeship.

In the current review of the changing workplace being undertaken by the Ministry of Labour, the Government of Ontario may wish to look at how complex the workplace is to administer and whether existing structures and activities are responding to the real challenge – the skills gaps.

WHAT WORKS NOW, BUT COULD BE IMPROVED?

In this part of the conversation, the focus was on what was working but, with some adjustments, could be much more impactful in terms of closing the skills gaps identified above.

Working 1: The Scale of the Government of Ontario Investment

The scale of the Government of Ontario's investment in skills is seen by those consulted here as significant. It invests over $1 billion annually in skills training and development through Employment Ontario; it is lowering the costs of college education through free tuition for low income families (starting in 2017-18) and invests over $300 million annually in over 360 Bridge Training Programs – all in addition to its expenditures on colleges and related initiatives. It also supports the work of the Ontario College of Trades.

The challenge is not the scale of expenditure, but how this expenditure is invested. The recommendations made later suggest new approaches to the uses of this investment, which build on the recommendations

of the Premier's Highly Skilled Work Force Expert Panels report and recommendations[2].

"I think that there's enough money being dedicated to the trades, to close the skills gap... And so it's not a resource problem, it's an allocation problem and therefore it's a problem of incentives."

"[W]e're not really asking for more money. I think they put a lot of money into education, into training, but it's the allocation that's an issue. And I think that there's a lack of emphasis on outcome, when they do send the money to TDAs. So the point of this is that I don't think we need another bucket of 5 billion dollars to go into it, it's really, look at the system that we have today. Is there a way of allocating that's more efficient? Are TDAs doing a good job of tracking outcomes?"

Working 2: Specialist Skills Programs in High Schools (OYAP)

Some high schools developed, with the support of specific trades and colleges, skills programs which permit the student to complete part of their apprenticeship while still at school. With some modest admission requirements (aged 16, 16 high school credits, full-time and attendance), students can engage in skills development, work experience and explore apprenticeship.

These programs needs to be expanded and connected to prior work in elementary and junior high schools – high school programs are almost too late.

New programs also need to leverage the focus on STEM and the need for creativity, innovation and problem-solving to be a part of such programs. Project-based work, where a journeyperson can work with students on an authentic learning task, can make a lot of difference to a student's commitment to enter the skilled trades and continue their learning.

"School is where the skills trades mindset starts. The sooner we engage the hearts and minds of young people, the better. We need to show them the pride trades people have in their work and engage them in work that builds this pride for them."

"I don't want to see us losing sight of the 350,000 students that are sitting in high school and the grades schools that we have there and not... focusing enough on them. We need to get back to the cradle. I think we're trying to work at the medium level but we have to get right to the grass roots... let's get them interested early on."

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2 For more information, see https://news.ontario.ca/opo/en/2016/06/premiers-highly-skilled-workforce-expert-panel-releases-final-report.html

"There's a movement across North America called the STEM movement (Science, Technology, Engineering, and Mathematics) and we need to piggyback on that particular initiative because within that there is technological innovation and the notion that you want to sexy up the trades, it does raise the profile of skills. It can be done in elementary at the earliest level and proceed on up into secondary school."

"I would like to see a significant expansion of technological education and learning opportunities in elementary and secondary [school]. I think we need to start distinctly describing not trades, we shouldn't use the word trades because that's a word that folks don't always understand, but we should be using the word technological education. And technological education should be available, formally, in elementary and secondary... it needs to start in elementary and it needs to be early and often."

Working 3: The Ontario College of Trades

When the province created the Ontario College of Trades in 2013, it was intended to be an organization that championed the skilled trades, helping to change the mindsets of young people, and offering a centralized information source. It was tasked with modernizing the skilled trades and protecting the public interest.

The College is in its early stages of development. Even so, the work of the College is already seen by some employers to be restricting entry and progression to the trades, not doing enough to champion the trades or to shift mindsets and not showing courage in modernizing the apprenticeship system. The College has potential but is not seen by those consulted here to be effective in responding to the opportunity to rethink apprenticeship so as to solve the skills gap problem.

A review conducted in 2015 (the Dean Review) suggested some modifications to its functions. There seems to be a collective wish to see the College be successful and it will be if it refocuses on its task: modernize the apprenticeship system and position the trades as a top-of-mind opportunity for young people in Ontario and that this task is increasingly urgent.

Some of the comments make this clear:

"Time is of the essence. The longer the Government or the College hesitates or delays bold action, the worse the situation will get – we have to act now to make a difference."

"We are not suggesting that we make it easy to secure a ticket, we are saying that the College needs to be much more innovative,

creative and imaginative to create flexible, varied routes to entry and develop variety of routes to success. More complexity, more rules, more certified trades is not the way to go."

"I look at this [issue] as an expectation gap and a leadership gap. And again it's only exacerbated by this demographic [shift], if you will. And the barriers, in my mind, fall underneath all that. And the notion that we need a centralized service... I totally agree with that. I am hoping that at some level the Ontario College of Trades would be that entity. I'm not sure that it is or is to be."

"I think [of] the notion of technological education as more than just a career path. It's a learning style and it's a learning strategy... I also personally believe that the Ontario College of Trades, now don't get me wrong, I'm not sure if it's done growing or not, but I think that's a step in the right direction in centralizing the way we deliver our services and information around the trades... I was kind of hoping that it would be a bright light for the skills trade."

Working 4: Small Contractors and Apprenticeship

Many small construction trade contractors and small business owners, who require certified tradespersons, successfully support and manage apprentices. Whether it is a small local carpenter, plumber, electrician, glazier or hair salon, they are able to support an apprentice through their skills journey.

However, these businesses are finding that supporting apprentices is becoming more complex and bureaucratic, more demanding in terms of supervision, support and time and more expensive. They seek greater flexibility in how apprentices secure their ticket, ease of administration and reporting and a greater understanding of how multi-tasking across skills boundaries is essential for small business success. The more restrictive the trade, the more difficult it is to sustain entry into apprenticeship and ongoing support.

"Finding placements is hard. But once a small contractor hooks up with an apprentice and there is a good fit, they cherish these relationships and opportunities. They build lifelong relationships".

"Small enterprises don't have a lot of the capacity to do all the work that they need and that's why a centralized concierge would be helpful."

Working 5: A Focus on First Nations, Inuit and Métis by Ontario's Public Colleges

Indigenous peoples are a major resource for communities and trades and a renewed focus on both recruiting them into the trades and supporting their journey through apprenticeship is welcome. Much more needs to be done to enable them to secure their ticket, especially with respect to essential skills development and improved flexibility with respect to how skills are mastered.

These learners benefit greatly from one-to-one journeyman-apprentice ratios, since traditional learning is through elders mentoring and coaching the next generation. In many cases, they do not have ready access to advanced technologies. Creative solutions are being sought and, in several cases, found by Ontario's public colleges working with the trades to increase completion of apprenticeship by Indigenous peoples.

"This is a great opportunity we are not doing enough to leverage – First Nations youth is a fast growing population, [and] we need to find creative, supportive and direct ways of working with them to help them be successful in the trades."

Working 6: Recruitment is Improving, Placement is Hard

In all of the conversations, it was noted that even though the skills pipeline remains problematic, there were slight improvements in some regions in recruitment. The challenge is placement. Finding a sustainable base from which an apprentice cannot only maintain their work status but complete their program is hard and becoming more difficult. Some innovation in placement management is emerging (see below), but this needs work.

"We need to look at some new approaches to centralizing placement supports – helping apprentices find placements and helping firms find apprentices. We may even need to start thinking like Uber and develop an app for that!"

"I think that one thing that's coming out is that training is easy but placements are hard... We know how to train but we don't know how to place."

"Something that focuses on placements needs to be stand-alone. It cannot be done centrally, because we're too far removed from actual employers on the ground. I think that's part of the problem... you have someone in an ivory tower, way too far away with no individual connection with employers or the students. I don't think there's a secret to placements. I think it's just a lot of hard, on-the-ground work."

Some employers have created a non-profit charitable organization focused on placement and support for small firms. Acting as a kind of concierge service for apprentices, it matches firms willing to hire with those seeking to be hired and undertakes some of the administrative and record keeping work for placement.

Working 7: Community Partnerships

In some parts of Ontario, but not all, there are strong and effective partnerships between community organizations focused on skills – especially essential skills – and employers and the trades. These need to be strengthened and funded in sustainable ways, provided they continue to deliver to outcomes and have the impact intended. In this regard, Skills Ontario needs to be supported and encouraged to continue its outreach and creative work.

BIG IDEAS FOR CHANGE

There is no shortage of creative and imaginative ideas for change generated throughout the engagement process. What follows is a catalogue of the key ideas developed during the conversations.

1. A Chief Training and Skills Officer for Ontario

The idea here is that a Chief Training and Skills Officer who champions the skills agenda across government and its agencies. Working from the Premier's Office and reporting to the Premier, this individual and a small staff seek to influence policy and decisions so measurable progress can be made on changing the mindset of young people, improving the pipeline of apprentices and narrowing the skills gaps. While not all of this work relates to government – some of it relates to the ways in which schools, colleges and universities position vocational education and the ways in which the trades function. A vocal champion helps ensure the issues confronting the trades are top on mind when key decisions are made.

2. Rethinking the Work of Skills with Respect to K-12 Education

Students at elementary school can begin to think about vocational decisions, reinforced by role models and the kind of activities in which they are engaged as students. More needs to be done from elementary through high school to position the skilled trades as a desirable first choice and equal to other choices they have. Active project work, focused on authentic tasks requiring the experience of skills used by the trades as well as an expansion of OYAP, would help strengthen the pipeline.

3. Rethink Apprenticeship in a Fundamental Way

The current model of time-based, ratio driven and restricted practice-based definition of a trade is the historical approach to apprenticeship in Ontario, across Canada and around the world. But this approach is changing in many jurisdictions and it is felt that now is the ideal time for change here in Ontario.

There is strong support among employers for a bold, imaginative rethink of how a trade is defined (more multitasking, reflecting the current realities of the workplace and emerging practice), how skills are acquired, how learners are supported, how competency and capabilities are assessed. There is also encouragement for the use of e-learning, new approaches to e-assessment of skills, competencies and capabilities and for a modular, stackable approach to learning (see Appendix 1).

The Closing the Skills Gap discussion paper (Appendix 1 attached) explores the proposition of a modular, stackable approach to apprenticeship in which skills and capabilities are identified, offered as a module and assessed. Individuals who can demonstrate competence and capability can be certified for that skill. To secure a specific ticket, they need to "stack" a specific set of modules. Some Red Seal programs are already experimenting with this approach with great success. It should be expanded to all Red Seal and all trades.

This requires a rethinking of how learning is delivered. In some jurisdictions around the world, significant use is being made of simulations, serious games, online learning and video-based assessment technologies. In the United Kingdom, the apprenticeship degree was launched to enable apprenticeship to be automatically laddered into an undergraduate or Masters level degree. If Ontario wants to close the skills gap, and position itself as a leader in North America in doing so, it will not achieve success by doing what it has always done with tighter restrictions. Now is the time for bold, new thinking.

Ontario's colleges are well positioned to respond to these new approaches to flexible, modular, stackable credentials. They are amongst Canada's leaders in online learning and, as can be seen from many of the projects currently underway, they are leveraging simulation and gaming technologies, virtual reality, new approaches to assessment in their work. The proposals here are intended to enable the Colleges to offer more flexible routes to success, not to inhibit their work.

Related to this is the recent recommendation of the European Commission in its skills strategy to provide a skills guarantee. Such a guarantee has three components: offering to every adult who does not possess a post-school certificate, trades ticket, diploma or degree: (a)

a skills assessment, enabling them to identify their existing skills and their up-skilling needs in a domain of interest to them; (b) a package of education or training tailored to the specific learning needs of each individual, and (c) opportunities to have their skills validated and recognized. This enables "gap-based" personalized learning agendas to be developed as well as increasing the pipeline of people wishing to pursue skills. This is exactly in line with the thinking in the attached Closing the Skills Gap discussion paper.

4. End the Monopoly Position of the Training Delivery Agent (TDA)

Training is a marketplace. There should not be a market monopoly over training delivery: skill seekers deserve choice and, to meet the skills gap, provision through TDAs needs to be expanded, not limited.

Expanding the number of TDAs and their reach can increase the flexibility of such offerings through modular, flexible and stackable approaches to training, focusing on assessing capabilities and competencies in rigorous and systematic ways can create new routes to success for those seeking to enter the skills trades.

Once approved, an apprentice can choose their TDA and the money available to support that training should follow the apprentice.

The Ontario College of Trades should encourage collaboration, variety in approach and innovation in the work the MAESD approves.

"Right now, they [the TDAs] have a monopoly in several trades... And so getting rid of the monopoly status of the TDAs, I think, would be a very good step forward. Because it would create competition, and competition in theory would improve the service, both to trainees, or to eventual employees as well as employers who could potentially start new partnerships with those TDAs."

"I think we all agree that the TDA structure is part of the monopoly that's restricting things in Ontario."

"It's time to revisit the whole notion of what a TDA is and who holds the seat of that."

5. Expand the Work of Support Ontario Youth

This charitable organization was created to make it easier for both individuals seeking apprenticeship and those willing to offer placement to do so. It seeks to centralize support for firms, reduce red tape and enable placement. The work is sponsored by the electrical trades, but could quickly be expanded or replicated by other trades.

6. Be Aware of the Future

We need to be acutely aware of the growing pace of change and its implications for both what we do and how we do it. Seeking to reinforce a model of apprenticeship rooted in a past age is not a response we seek to encourage for a future-ready, highly skilled Ontario.

The Government of Canada's Advisory Council on Economic Growth is acutely aware of the skills gap and is concerned that Canada is not moving quickly enough to position itself for a rethinking of what skills it needs to be competitive and how it can close the current and future skills gap. It proposed the creation of a FutureSkills Laboratory to support innovations in skills development[3]. It suggests this work is urgent.

There was strong support for this analysis – it is urgent we enable innovation and change in skills development. In our view, Ontario is well positioned to show national leadership through bold and courageous innovation.

WHAT NOT TO DO

Our conversations also generated a catalogue of what needs to be avoided and what not to do.

Do not...

1. ...make accessing the trades and skills learning more difficult by introducing more regulations and more bureaucracy.
2. ...lose focus on the 350,000 young people in high school – seek to change their minds nor reinforce their bias against skilled trades. Showcase the possibilities and do so with pride. Nor forget the unemployed or underemployed adults who could benefit.
3. ...focus on completion rates for the existing apprenticeship system – focus on what needs to happen to change the system and reinvent learning for skills.
4. ...increase the number of compulsory certified trades, reduce them and focus instead on competencies and capabilities.
5. ...favour one trade over another and see the future as being about multi-tasking not restrictive trades.
6. …favour unions over employers or large employers over small employers – see the future as an opportunity for collaboration and co-operation.

3 For more information, see http://www.budget.gc.ca/aceg-ccce/pdf/skills-competences-eng.pdf

7. …neglect investment in essential skills – our young people need level 4 and 5 literacy skills and strong numeracy skills to be effective and successful.
8. …wait to follow the lead of other jurisdictions, be courageous and lead and show true Ontario innovation.
9. …see apprenticeship as an end in itself – see it as a starting point for a lifelong commitment to skills development and learning.
10. …forget that this work is about the future of every citizen in Ontario – a competitive, highly productive economy depends on the quality of the skilled workforce.

A COMMITMENT TO ACT AND BE CHAMPIONS FOR SKILLS IN ONTARIO

These conversations were characterized by a high level of engagement and commitment to change and for a different future for skills education and development in Ontario. The support for innovation and change is strong as is the recognition that the path forward will require all to change and to co-operate. There is a willingness to act and to be champions for skills.

WHAT WE DID NOT HEAR

While we address in this paper many of the aspects of the apprenticeship system as it exists presently in Ontario, it is not an exhaustive study. It represents the feedback from a consultation with leading employers and their suggestions as to what is needed.

There are many aspects of the system in Ontario that are tangentially commented upon. For example, the admission to and control of placements of apprentices is clearly a major concern. What is implied is that it must be more open, transparent, flexible, inclusive, adaptive. Some innovations are already taking place but more is needed.

The various roles of all of the key stakeholders have not been addressed or given "equal" air time in this paper, which is a summary of what employers engaged in this process said.

But it is clear that, if we are to be successful in closing the skills gaps, a more open market place must exist. Youth should be able to start early, be able to accumulate an understanding of the value of a trades career, plus develop skills and competencies. They must be able to be assured

that their pathway will open up opportunities, not only for training but also employment. Adults must be encouraged to enter a field of choice from a broad range of trade options.

Most of all we need an apprenticeship system that serves the needs of the citizens and economy of Ontario.

APPENDIX I

Closing the Skills Gaps: A Way Forward for Apprenticeship and Skills Development in Ontario

A Discussion Paper

Closing the Skills Gaps: A Way Forward for Apprenticeship and Skills Development in Ontario

A Discussion Paper

Accountant to CEO: "*What happens if we invest in our people and then they leave us?*"

CEO replies: "*What happens if we don't and they stay?*"

THE PURPOSE OF THIS DISCUSSION PAPER

This paper is intended to encourage and enable an inspired conversation about the future of skills development, especially apprenticeship. It is provided so that the stakeholders – learners, employers, unions, educational providers and government – can focus on what needs to happen for effective skills development aligned with the future of the province and its workforce. There is a strong commitment to action on skills amongst all stakeholders. This paper suggests what these actions could be like and where Ontario could engage in breakthrough innovation in skills development to support its future.

Indeed, there is a real opportunity for Ontario to show significant leadership in North America with respect to skills. The recent report of the Premier's Expert Panel on Skills sets the stage for the next stage in the skills innovation journey. This leadership comes from:

- The substantial investments in skills development made by all engaged in skills within Ontario.
- The innovative approaches to skills seen in pockets within firms, colleges, communities and by learners themselves.
- Emerging technologies for learning – fed by a strong educational technology sector based in Ontario – which would enable more rapid and effective deployment of both learning and skills assessment.

- The strong commitment of the Government of Ontario to the skills agenda, exemplified by the renaming of the Ministry of Training, Colleges and Universities – now called Advanced Education and Skills Development – and by its substantial fiscal investment in skills-focused programs in higher education.
- The strong partnerships between employers, colleges and universities in Ontario focused on the skills agenda.

The paper includes a range of action items provided as suggestions to advance the potential of Ontario as a leader in skills.

People need to develop skills today that will allow them to succeed in jobs that in some cases do not yet exist, to use technologies that have not yet been fully developed or invented, and to solve both known problems and problems that have not yet been identified. While none of us knows for sure what challenges and opportunities the future holds, what is certain is that we will face them with the skills we develop today. The individuals developing these skills need to be adaptive, capable and willing to learn.

SETTING THE CONTEXT

At the moment, there are 156 apprenticeship skilled trades in Ontario, 22 of which are designated as "compulsory", which means those practicing these trades must either be a registered apprentice or hold a Certificate of Qualification (C of Q). Ontario also has 47 Red Seal trades, some of which are compulsory. Individuals holding a Red Seal qualification may practice their skilled trade anywhere in Canada – the Red Seal examination being the only assessment such an individual is required to complete to secure both their C of Q and their Red Seal certification.[1]

During the last decade, employers, unions, colleges, government and other bodies have worked diligently to expand apprenticeship, promote their value and increase the outputs from apprenticeship programs. New investments have been made by all concerned so that Ontario can build a modern, focused and effective apprenticeship system. Ontario has created a College of Trades, supported significant tax incentives for employers to take on apprentices, increased investments in colleges to better equip them to provide skills and trades education, encouraged

Real investments in skills by all

1 The Red Seal is determined by a Federal-Provincial organization known as the Canadian Council of Directors of Apprenticeship. For more information, see http://www.red-seal.ca/about/ccd.1-eng.html

public/private sector partnerships around skilled development and increased both employer and public investments in the apprenticeship system. Unions have encouraged their members to act as mentors and coaches for apprenticeship, and more firms have come on board to offer places for apprenticeship. A significant and sustained effort has been made to find and sustain a common understanding, interest and commitments amongst these stakeholders to secure the skills needed for the future of Ontario.

There have also been significant efforts to improve access to apprenticeship for women, improve quality and to innovate in the process of learning and assessment for apprenticeship. The growth of high school apprenticeship programs across Ontario through the Ontario Youth Apprenticeship Program (OYAP), in which over 24,000 students are involved is a testimony to such innovation and commitment.

The Dean Report and the College of Trades

The College of Trades, established in 2009, has become a focal point for the development of apprenticeship. A recent review of the College of Trades - the Dean Review (November 2015) – suggested modifications and improvements to some aspects of the College's operations. In particular, it makes 28 recommendations for change to the Ontario College of Trades, including:

- A robust system for future trade classification reviews that take place outside of the college structure.
- New criteria for journeyman-to-apprentice ratio reviews that incorporate data related to demographic and labour market information, economic impact and the demand for skilled trades in different regions across the province.

1. **New options for employers and workers to appeal college enforcement actions so that the way in which the College enforcement works can target the underground economy (people working in regulated trades without the appropriate training) and high-risk activities (people undertaking work they are not appropriately trained to do).**

The Dean recommendations are in the process of implementation. While not all welcomed the recommendations[2], they have been endorsed by a number of employer organizations and trade unions.

The Dean Review was a major milestone in the work of the College and in the field of apprenticeship in Ontario. It confirmed the general strategic

2 See a summary of reaction here: http://ontarioconstructionreport.com/who-wins-who-loses-with-dean-report-on-ontario-college-of-trades/

direction of the College and made recommendations which will improve its performance.

More recently, the Premier asked an expert panel to look critically at the skills agenda and strategy being pursued by Ontario. Their report *Building the Workforce of Tomorrow: A Shared Responsibility*[3], published in June 2016, focuses attention on several aspects of the skills agenda, which require the attention and commitment of all stakeholders working together. In particular, the report calls for:

Low participation rates in apprenticeships

- New planning partnerships between government, employers, unions and educational providers to rethink the design, development, deployment and delivery of skills and support for learning.
- Significant improvements in workforce planning and information for all engaged in the employment, education and planning.
- Significant expansion of experiential and work-based learning for all in high school, college and university so that there is a stronger opportunity for young people to understand and engage with the world of work and are more aware of the opportunities available to them.

The report, which has been well received, suggests that significant changes are needed to the design and delivery of apprenticeships and skills and that there needs to be a focus on the win-win opportunities for all – employers, learners, communities, educational institutions, unions and government – in any redesign and reimagining of the skills supports and infrastructure.

A strong signal has also been sent re the renaming of the former Ministry of Training, Colleges and Universities (MTCU), which is now called the Ministry of Advanced Education and Skills Development. This strong commitment to a skills-focused agenda could not be clearer.

Many now want the College of Trades to more aggressively promote trades and skills apprenticeship and education so that the "skills gap" can be narrowed and apprenticeship be seen as a valued route to employment – just as valuable as a university education. Although the number of individuals who are learners in apprenticeship programs has doubled in Canada since 2000, the participation rates across Canada are much lower than in several other countries (e.g. Germany, Austria, Switzerland)[4]. Indeed, participation rates (% of apprentices within the

3 Available at https://www.ontario.ca/page/building-workforce-tomorrow-shared-responsibility?_ga=1.136817911.658069412.1463076350

4 Source: Campbell, J. et al (2011) Apprenticeship Training in England - Closing the Gap? Journal of Contemporary European Studies, Volume 19(3), pages 365 – 378. Available at https://www.academia.edu/1094235/Modern_Apprenticeships_in_the_UK_and_Germany_with_Emily_Thompson_and_Jim_Campbell

labour force) in Ontario is low at 2.2% when compared to other Canadian provinces, such as Alberta (3.6%) or British Columbia (2.9%)[5]. Worse, more coming into apprenticeship does not mean more apprentices coming out of the system – retention and completion rates are low, as we shall show later in this paper. Just 37% of the Canadian workforce are classified as employees in skilled trades, yet just one quarter of these hold a certification appropriate for the work they undertake and this number is falling, not rising[6].

There is always much to do to improve both take-up rates, program quality and engagement in learning, completion rates and the speed of completion for those seeking trade certification. The challenge is to equip Ontario with a skilled workforce that is both capable and ready to grow the Ontario economy but also to adapt and support gains in productivity through effective and efficient working and innovation.

Apprenticeship is about preparing the workforce for both the current and the next economy, which is why this present paper asks: what do we need to do to engage and help more apprentices succeed and what changes do we need to make for a forward looking apprenticeship and skills development system?

Demand for skills outstrips supply for some skills

Some occupations – truck drivers, skilled trades, registered nurses, dental technicians and hygienists, cooks, financial managers, healthcare technicians – are in constant high demand in Canada[7]. Just one of these sectors – trucking – illustrates the challenge. Canada is looking at shortages in the supply of qualified truck drivers of 25,000 and an additional 50,000 are being sought in the US by 2020[8]. Construction workers are also in high demand – 85,000 new hires are needed to cope with new demand and retirements by 2024 in Ontario alone[9].

New skills are emerging requiring new skills training

All this before we begin to explore new skills and trades which are emerging in the light of advances in technology. For example, the Siemens Mechatronic Systems Certification Program[10] is an industry skills certification offered together with partner schools worldwide. Mechatronics is the integration of mechanics, electronics, control and systems theory, and computers into a single system used within production and manufacturing, to optimize its efficiency, productivity, and

5 Fuller, A. and Unwin, L. (2014) *Contemporary Apprenticeship- International Perspectives on an Evolving Model of Learning*. London: Routledge.
6 ibid at page 78
7 15 in Demand Jobs in Canada That Are Waiting to Be Filled Right Now, October 2015 http://careers.workopolis.com/advice/15-in-demand-jobs-in-canada-that-are-waiting-to-be-filled-right-now/
8 http://www.conferenceboard.ca/topics/energy-enviro/truckdrivers.aspx
9 The Driver Shortage is Real – Ontario Trucking Association at http://ontruck.org/exec-panel-the-driver-shortage-is-real/
10 For a description see http://www.siemens-certifications.com/content/0/9131/9147/

quality. First developed at Siemens' *Technik Akademie* Berlin in Germany, Siemens Canada can now provide a three–tier mechatronics certification program to students in collaboration with universities and colleges across Canada. The University of Waterloo, McMaster University, Mohawk College, Sheridan and Seneca College are partnering with Siemens to provide this program in Ontario[11]. This is just one of many new skills and trades emerging in Canada. Our skills system has to respond quickly and effectively to the need for emerging skills and competencies in an age of robotics, artificial intelligence and new products and materials. Otherwise our skills gaps will get worse, not better.

High educational attainment in Ontario

Selected trades in the labour supply are likely to continue to experience greater shortages than might be expected from Canada's workforce growth and change data[12] – we have a skills gap between available employees and the skills employers are looking for in certain industry sectors and occupations[13]. In particular, there is a skills gap given Ontario's inability to match available skilled employees with available work opportunities to an extent that falls behind that of other provinces[14]. This is despite the very high post-secondary attainment rate of Ontarians. A high proportion (53.6%)[15] of the Canadian workforce holds a post-secondary qualification which, when compared to many other jurisdictions, places Canada at the top of the OECD league table for this measure[16]. Quebec and Ontario lead Canada with an attainment rate of 74% and 69% respectively. Indeed, if Ontario were a country it would rank third in the world for educational attainment for its 25- to 34-year-olds behind Korea and Japan[17].

In Ontario, 33.2% of the workforce holds a college diploma, Red Seal or a Provincial Trade Certificate. While this compares well with the US (10.4%)[18], it is below the rate in the rest of Canada. A part of the reason for this is the low rate of graduation from apprenticeship programs – Ontario has the second lowest rate of the major provinces in Canada at just 46.8%. Much more needs to be done to increase

11 See more at: http://www.automationmag.com/education/news/5031-siemens-partners-with-seneca-sheridan-college-for-mechatronics-training#sthash.7BIyu0W7.dpuf
12 See http://www.statcan.gc.ca/pub/11-010-x/2011008/part-partie3-eng.htm
13 The State of the Canadian Labour Market (2014) http://www.budget.gc.ca/2014/docs/jobs-emplois/pdf/jobs-emplois-eng.pdf
14 Graduates in the Economy – Environmental Scan 2015. Colleges Ontario. Available at http://www.collegesontario.org/research/2015_Environmental_Scan/CO_EnvScan_15_Gradsin-theEconomy_WEB.pdf
15 Statistical data set available at https://data.oecd.org/eduatt/adult-education-level.htm - dated 2014.
16 Statistical data set available at https://data.oecd.org/eduatt/adult-education-level.htm - dated 2014.
17 Source: Colleges Ontario at http://www.collegesontario.org/research/2015_Environmental_Scan/CO_EnvScan_15_GradsintheEconomy_WEB.pdf
18 See http://www.manpowergroup.com/wps/wcm/connect/db23c560-08b6-485f-9bf6-f5f38a-43c76a/2015_Talent_Shortage_Survey_US-lo_res.pdf?MOD=AJPERES

completion, accelerate program activity and secure strong commitment from employers.

Essential skills level declining in Canada

A second reason is the ongoing challenges within Canada around essential skills – Canada ranks 10th in literacy and 13th in numeracy on the OECD's survey of adult skills[19] – an offshoot of the Program for the International Assessment of Adult Competencies (PIAAC). While better than its major competitors (the US and the UK), it is declining rather than rising. Firms that have workers with higher essential skills report higher employee retention rates, lower absenteeism, better health and safety records, increased customer satisfaction, reduced need for supervision, increased production quality and increased productivity. All of these contribute to improved profitability. One recent study found a 23% rate of return on a high-quality essential skills training investment of $2,500 per employee, in the first year. Workers also benefit from having higher essential skills. They find it easier to learn, have higher incomes and fewer periods of unemployment, and are in better health[20].

Underrepresented groups in the workforce

A third reason is the lack of employment by underrepresented groups in the workforce - aboriginal, immigrant and individuals with disabilities. They remain challenged, even when they hold a post-secondary qualification, with 20% or higher unemployment rates.[21] All of these issues affect Canada's productivity and competitiveness. In the most recent (2015-16) analysis of global competitiveness, Canada ranks 13th in the world, up two places from the 2014-15 rankings[22]. Problem areas that keep us down the rankings – Canada was 8th in 1999[23] – are our poor scores on measures of company investment in R&D and innovation capacity, as well as our low scores on business sophistication[24]. Firms need to invest more in their own processes and capacities so as to improve their competitive position – skills represent one of the areas for these inward investments.

Productivity

A related problem area is the productivity of Canadian firms. Canadian productivity growth has lagged the productivity performance of United States and many other major industrial countries for nearly three decades

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19 See http://www.universityaffairs.ca/news/news-article/canada-at-the-middle-of-the-pack-in-oecd-adult-skills-survey/

20 Lane, J. and Murray, T.S. (2015) *Smarten Up – Its Time To Build Essential Skills*. Calgary: Canada West Foundation. Available at http://cwf.ca/wp-content/uploads/2015/10/CWF_HCP_SmartenUp_Report_JUN2015.pdf

21 See http://www.nsf.gov/statistics/wmpd/2013/pdf/nsf13304_digest.pdf

22 The Global Competitiveness Report, 2015-16 http://www3.weforum.org/docs/gcr/2015-2016/Global_Competitiveness_Report_2015-2016.pdf

23 Annual Competitiveness Report, 1999 available at http://www.competitiveness.ie/Publications/1999/Annual-Competitiveness-Report-1999.pdf

24 See tables at pages 8-14 and more detailed analysis in the country profiles at The Global Competitiveness Report, 2015-16 http://www3.weforum.org/docs/gcr/2015-2016/Global_Competitiveness_Report_2015-2016.pdf

– it averaged 88.58 index points from 1981 until 2015[25] while the US average was 106[26]. As a result, there is a significant income gap between Canadians and Americans – estimated at $7,000 per capita, and rising[27]. Underlying this productivity challenge is our business sophistication[28] and the skill sets of employees – we need to ensure we have the right tools used in the right way by people with the right skills to enable productivity gains[29]. This shows itself in Canada's continued poor showing on the World Economic Forums competitive index, where Canada now ranks 15th in the world, down two places from our position in 2015-16[30].

Canada in general and Ontario, in particular, needs to rethink its approach to skills development, lifelong learning, and workplace design so that we can increase productivity, competitiveness and the adaptive capacity of firms and organizations to innovate. So as to enable social and economic development, securing and sustaining investment in skills by the Provincial Government, employers, unions and industry associations is essential. This is not someone else's problem – it is all our problem.

Here is how we can summarize the context in which we explore what we need to do to close the various skills gaps we identify below:

1. Business needs skilled workers and over time needs workers to continue to upgrade their skills. In this context, apprenticeship has to be good for business for it to be valued.

2. Investing in skills development is intended to improve firm and organizational performance, productivity and competitiveness while at the same time creating the conditions in which firms and organizations can innovate to compete. Apprenticeship is a starting point for closing the skills gaps which firms and organizations face.

3. Apprenticeship benefits workers – it helps them increase earnings, secure sustainable employment and provides a skills base which can be a starting point for entrepreneurship.

4. Apprenticeship and investment in skills must produce a return for Government, firms and unions if it is to be successful.

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25 See Statistics Canada productivity data sets at http://www.tradingeconomics.com/canada/productivity

26 ibid

27 See Productivity in Canada – Opportunities and Challenges at https://hillnotes.wordpress.com/2015/11/25/productivity-in-canada-opportunities-and-challenges/

28 ibid, but also look again the World Economic Forum analysis of Canada's competitiveness referenced above.

29 See Globe and Mail, September 17th 2015 at http://www.theglobeandmail.com/news/we-asked-10-canadian-economics-experts-onequestion/article26384723/

30 See World Economic Forum Competitiveness Index 2016-17 at http://www3.weforum.org/docs/GCR2016-2017/05FullReport/TheGlobalCompetitivenessReport2016-2017_FINAL.pdf
See Productivity in Canada – Opportunities and Challenges at https://hillnotes.wordpress.com/2015/11/25/productivity-in-canada-opportunities-and-challenges/

To reinforce this general need for change, a recent study by McKinsey suggests that, while 83% of Canadian educational providers believe they are developing high performing graduates with relevant skills, only 44% of their graduates agree and just 34% of firms share this view[31]. More needs to be done to bring the stakeholders into alignment on both what needs to be done and how. There is a need to leverage the skills, resources and commitment of the stakeholders and to focus and align the energies available to improve skills outcomes for Ontario.

Discussion

1. Do you agree with this set of context issues – what would you add, change or remove?
2. Do you think this gives a fair picture from which to launch a discussion of skills and how we might respond to the skills challenge?

WHAT ARE THE SKILLS GAPS?

The claim that there is a skills gap – a gap between the skills potential employees possess and those needed by employers – is a reasonable claim. But the skills gap is in fact more complex. It is a "wicked" problem with several different layers. We capture the elements of complexity in the following list of six skills gaps:

Gap 1: The Basic Gap: The Gap Between What Employers are Seeking and What they Can Find

This is the gap everyone talks about – "we can't find workers with the skills we need". According to the Conference Board of Canada's Ontario Employer Skills Survey[32], a significant percentage of employers are currently seeking employees with trades training. Survey data from the Ontario Chamber of Commerce (2013) reveals that 30 percent of businesses in Ontario have had difficulty filling a job opening over the last 12 to 18 months, due to the fact that they could not find someone with the right qualifications. This shortage is most prominent in those sectors that rely most on skilled trades—transportation, infrastructure, manufacturing, engineering, and the situation may be deteriorating - between 2013 and 2016 there was a 9%increase to the number of

31 McKinsey & Company. Youth in Transition: Bridging Canada's Path from Education to Employment. 2015.

32 Source: http://www.conferenceboard.ca/e-library/abstract.aspx?did=5563

employers having a hard time trying to recruit the right person for a position[33] [34] - a number of new strategies are emerging which may help alleviate this pressure.

Gap 2: The Expectations Gap

This is the gap between what employees expect in the workplace and what employers offer. This is a complex gap, most often related to the very different expectations for the nature of work held by millennials and those held by an older generation[35]. But it can also be related the difference between how an individual was trained in a particular way of working and how that work is undertaken in the organization they now work for – different methods, technologies, business processes.

Gap 3: The Productivity Gap – The Skills We Need to Develop to Significantly Improve Productivity

The skills needed to practice adaptive and agile management, lean manufacturing, efficient and effective service need improvement. Leadership, communication and strategic human resource management are all skills which need strengthening. Skills Canada reports that 40% of new jobs created in the next decade will be in the skilled trades. However, currently only 26% of young people aged 13 to 24 are considering a career in these areas[36]. Once on the job, they also need investment in their skills so as to significantly improve Canada's productivity, which is significantly lower than in many other jurisdictions around the world[37].

Gap 4: The Leverage Gap – The Underutilization of Skills in the Workforce

Once employees are in the workplace, do we fully leverage the skills they have? This is fundamentally a problem about the way we design work and how human resource management functions in the workplace, but it also reflects our lack of focus on employees as people with needs for learning and development. We might also ask if we are underutilizing the apprentices within the workplace – for training, productivity improvement and the development of their collaborative skills.

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33 Ontario Chamber of Commerce (2016) Emerging Stronger 2016 available for download at http://www.occ.ca/issue/emergingstronger/

34 Sullivan, K. (2016) Passport to Prosperity. Toronto: Ontario Chamber of Commerce

35 Dill, K. (2015) *Broken Ladders – Why Millennials Can't Find Work and How we Get Them Hired.* New York: Forbes. See also PriceWaterhouseCooper (PWC) 2015 – Milennials at Work – Reshaping the Workplace. Available at https://www.pwc.com/gx/en/managing-tomorrows-people/future-of-work/assets/reshaping-the-workplace.pdf

36 Spence, R. (2012) Skilled trades talent shortage is next crisis for Canadian business. Financial Post 3 Sept. http://business.financialpost.com/2012/09/03/skilled-trades-talent-shortage-is-next-crisis-for-canadian-businesses

37 See various editions of the Canada Productivity Review at http://www.statcan.gc.ca/pub/15-206-x/15-206-x2014037-eng.htm

Gap 5: The Futures Gap – The Gap Between Current Skillsets and the Skills We Need to Become Competitive in the 4th Industrial Revolution

The World Economic Forum suggest that the 4th Industrial Revolution now underway and that it requires different skills from the last IT driven revolution and we are not really developing these skills well[38]. In addition to "hard" technical skills required for a trade or occupation, the emerging industries require creativity, collaboration, emotional intelligence, judgment and adaptive capacity. These "soft" skills, according to the World Economic Forum, are critical for new enterprises and for the reinvention of existing industry sectors. New trades are emerging all the time – e.g. Mechatronics[39]. We need learning systems which are quickly adaptable to emerging skill needs. In this context, it is worth noting that four out of five positions lost in manufacturing in North America since 2000 have been lost to automation[40].

Gap 6: The Skills We Need to Build a More Innovative and Sustainable Economy

Canada's ability to innovate is declining, not growing. We need the skills to problem-find, develop new products and services and get them to market faster than our competitors. There are a variety of profiles of this skill set, such as those suggested by the Conference Board[41], but the key is to build the adaptive capacity of firms and organizations and to develop a problem-solving, growth oriented mindset for all employees.

So as to respond to these six skills gaps, there are several actions that need to be taken and all will involve each of the educational providers, regulators, unions, the Federal and Provincial Government, employers, unions and individual learners starting to think differently about skills and their acquisition. There needs to be stronger collaboration and coordination of effort, currently fragmented and undertaken in many different siloes, aimed at rethinking apprenticeship and accelerating skills acquisition.

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38 See https://www.weforum.org/agenda/2016/01/the-10-skills-you-need-to-thrive-in-the-fourth-industrial-revolution

39 Siemens launches mechatronics programs at Ontario Colleges – available here: http://www.canadianmanufacturing.com/technology/siemens-launching-mechatronics-program-ont-colleges-145517/

40 See Financial Times, December 2nd 2016 at https://www.ft.com/content/dec677c0-b7e6-11e6-ba85-95d1533d9a62

41 See http://www.conferenceboard.ca/cbi/innovationskills.aspx

Discussion

1. Do you agree with this list of skills gaps – would you add, take away or refine this list?
2. Which of these gaps affects your organization the most?
3. Of these gaps, which is the most urgent for us to attend to?

RESPONDING TO THE SIX SKILLS GAPS

We have suggested that the skills gap is a complex, wicked problem with a variety of layers. One particular range of issues relates to trade skills – essential to a robust, growing economy. Whether we are looking at compulsory trades (those with set standards which have to be met so as to be able to work as a journeyman – Red Seal and Provincial standards of practice)[42] or unregulated trades where no licence, certificate or registration is required to work, we need to understand what the challenges are before we can determine how best to respond.

Low apprentice completion rates

Ontario has a large apprentice program with some 172,686 participants in 2013 and growing each year. Though by far the largest program in Canada, it also has one of the lowest completion rates in the country and a low participation rate by women (23.5%)[43]. According to the Higher Education Quality Council of Ontario, less than half of Ontario's apprentices are completing the requirements of their program within two years of their expected completion date. In fact, the average completion rate across all trades in Ontario (2000-2012) was 37%, though it reached 46.8% in 2012. Many other jurisdictions – Manitoba (68%), New Brunswick (65%), Saskatchewan (61%) and Nova Scotia (61%) – have much higher completions, albeit for smaller enrolments[44]. As an international comparison of apprenticeship (Steedman, 2010)[45] also shows, many other jurisdictions also have much higher completion rates – Austria, for example, has a completion rate of 85% and Switzerland 91%. Data for the US is difficult to capture, since States record program activities differently.[46] However, in construction trades completions are at 39%[47] and

42 For a list of regulated trades, see http://www.collegeoftrades.ca/wp-content/uploads/Trades-with-C-of-Q-Examinations-ENG-2015-12-01.pdf

43 See *Women in Apprenticeship Education* at http://www.oyap.ca/students/women-in-apprenticeship

44 See Refling, E. and Dion, N. (2015) *Apprenticeship in Ontario – An Exploratory Analysis*. Higher Education Quality Council of Ontario.

45 Steedman, H. (2010) *The State of Apprenticeship in 2010*. Available at http://cep.lse.ac.uk/pubs/download/special/cepsp22.pdf

46 But see https://www.doleta.gov/oa/data_statistics.cfm

47 See Bilginsoy, C. (2003) The Hazards of Training – Attrition and Retention in Construction Industry Training Programs. *Industrial and Labour Relations Review*, Volume 57(1) at pages 54-67

in other trades completion rates are similar to those in Ontario.

Given that a key feature of the basic skills gap is the number of individuals who begin apprenticeship and do not complete, we need to understand why so many start and do not finish. The major reasons for non-completion are many and varied, according to the available literature[48,49], but include:

- Employment-related reasons are the most commonly cited reasons for not completing an apprenticeship. These include experiencing interpersonal difficulties with employers or colleagues, being made redundant, not liking the work and changing career. By contrast, issues with the off-the-job training are the least frequently cited reasons for not completing an apprenticeship.
- There is a large difference in completers' and non-completers' satisfaction with their employment experience overall. The majority of completers seem satisfied with the employment experience overall, compared with a minority of non-completers. This provides further evidence that the employment experience, rather than the off-the-job-training experience, carries greater weight in whether an apprentice stays or goes.
- There is conflicting evidence on the importance of wages. Most studies find that low wages are not the most common reason for non-completion, but they are nonetheless just one of the top factors. An increase in wages alone is unlikely to solve the problem of low completion rates, since multiple factors are often to blame.
- Apprentices generally leave their apprenticeship contract early on: 60% of those who leave do so within the first year. This suggests that there are issues about who becomes an apprentice, who matches apprentices with employers, who supports apprentices in the early stages and what supports apprentices can call on if they are unhappy with their progress.
- The influence of the employer cannot be overstated. Employers with the highest completion rates are generally larger, experienced employers with well-organized systems for managing and recruiting apprentices. Employers with lower completion rates tend to be smaller and have less experience with the apprenticeship system.
- Shifting features of the economy are also at work. Just two years

48 See http://www.statcan.gc.ca/pub/11f0019m/2011333/part-partie1-eng.htm

49 A substantial global literature review was available from the Government of Australia – National Centre for Vocational Research. See Bednarz, A. (2014) *Understanding the Non-Completion of Apprentices*. Canberra: Government of Australia.

ago welding and oil extraction trades were in high demand, but the collapse of oil prices and layoffs in the oil and gas sector are lowering both admissions and completions in these trades: future job prospects shape current behavior.

In Ontario in 2013 some 17,763 individuals did complete their apprenticeship. Further, completion rates in Ontario have been rising steadily since 2009[50] - there is a strong and urgent need to better understand these dynamics.

Despite these challenges, apprenticeship in Ontario is growing. Here are the top 10 apprenticeship areas currently attracting apprentices:

Trade	Registered Apprentices (2012)
User support technicians	26,481
Automotive service	24,285
Electrician	18,801
Hairstylist	11.283
Plumbers, pipefitters and steamfitters	9,786
Food service	9,021
Carpenter	8,892
Early childhood educators and assistants	8,118
Millwrights	5,823
Machinists	5,643

Flexible apprenticeships

While many of these trades have seen significant growth in demand, some trades face declining demand, especially specialist manufacturing trades (machinists and millwrights). The presence of hairstylists on this list reflects the fact that it is a compulsory trade – certification is mandatory for those who wish to practice.

These top 10 skills in demand are very different in each province in Canada and in other jurisdictions, reflecting shifts in their regional economies. Top in Australia, for example, are business services and retail services while in Germany, the top two are heavy goods vehicle mechanic and retail sales. The skills development system, including apprenticeship, has to be flexible and responsive to shifts in Ontario's economic activities and employer demands, which can be very volatile as the economy responds to global pressures.

The majority of apprentices are in the 20- to 29-year-old age group, with a growing number of older apprentices now starting their journey to

50 Ontario Construction Secretariat (2013) Completion Counts – Raising Apprenticeship Completion Rates in Ontario's Construction Industry. Available at http://www.unionizedconstruction-works.com/wp-content/uploads/2015/02/Completion-Counts-Final-Report-OCS-2013-E-Version.pdf

Gap-based apprenticeship

certification – the median age in Ontario is 29.9, similar to that seen across Canada and the US. All are seeking effective, quality and efficient use to certification and flexible approaches to how this can be achieved. The older mature apprentice is also looking for flexibility in how their learning is delivered, value for money, the location of training and job prospects. Most prefer and use block release for the college-based components of their training, but a growing number are also using the challenge route for their skills and certification. In this route, on the basis of their own demonstrable knowledge, skills and capabilities the apprentice can challenge the skills associated with a module or component of their learning by means of both Exemption Testing (for college components) and Trade Equivalency Assessment (for skills component). Successful challenges mean the learner does not have to take more time or complete more courses for that component of their apprenticeship. This flexible, modular, stackable approach to apprenticeship is growing in popularity, especially in the Red Seal trades.

Shift to competency-based skills development

Apprenticeship was historically based on time-served under supervision of a journeyman. Time still plays an important part for many trades, with time on tasks been seen as an indicator of capability. Some trades still have nominal time associated with Certification. In some jurisdictions in the world (e.g. Australia, Germany, Switzerland, Ireland, UK), however, time served has been replaced by a focus on the rigorous assessment of competency and capability. For example, this is what the Queensland (Australia) regulations say:

> *"Queensland apprenticeships and traineeships are competency-based. This means knowledge and skills which the apprentice or trainee attains, and quality of work they produce, are what matter (rather than the length of time served)[51]."*

Ontario, in construction trades for example, still has a time-based, journeyman supervised model for apprenticeship, while many trades and professions (including medicine[52]) in Ontario are or are becoming competency-based.

The challenge for the future of apprenticeships and skills development is threefold:

1. Increase and accelerate completions in the skilled trades.
2. Constantly improve quality of the learning experience for those seeking to enter or already certified by focusing on relevant

51 See http://apprenticeshipsinfo.qld.gov.au/information-resources/info-sheets/is19.html

52 See Medical Education in Canada Moves to a Competency Based Approach. *University Affairs*, September 4, 2013 available at http://www.universityaffairs.ca/news/news-article/medical-education-competency-based/

knowledge, capabilities, and competencies in demand from employers. Quality being defined here by "fitness for purpose" and relevancy. This work requires a focus on effective and focused skills assessment.

3. Increase flexibility in terms of how apprentices and those in the workforce can secure their Certificate of Qualification and maintain the currency of their skills so as to better meet the skills gaps identified here.

All three of these challenges must be connected to job prospects, employability within a geographic region and the transferability of the skills developed within the industry. Quite the challenge, but one which is shared by all stakeholders.

Discussion

1. What issues or concerns do you have with this review of the current state of play with respect to apprenticeship and skills development?
2. What would you add to this summary?
3. What issues would you like to see reinforced in this review?

RETHINKING SKILLS – OPTIONS FOR CONSIDERATION

So as to respond to these challenges and explore ways of increasing completion rates for apprenticeships, accelerating skills certification and encouraging more people to enter the trades, we outline a number of specific options to explore, based on a review of an extensive literature on the future of skills training and development.

The intent here is to focus thinking and action not on the past, but on the future: ***What is it Ontario needs to do to close the skills gaps and invest in a highly qualified labour force?***

Later we will explore more general options for improving skills and work-based learning in Ontario.

For each option, we offer a description and then ask questions. At the end of this section, we ask you to place weightings on each option so that you can select a combination of options which, in your view, would together help to lessen the skills gap.

Option 1: Accelerate the Movement to a Modular, Stackable Competency to Credential Approach to Skills.

Formalized and time-based apprenticeship programs will always have a place in any strategic response to the need for skills. But new approaches are also needed to accelerate skills development, increase completion and retain skills in the workforce.

Following from the successful piloting of the Red Seal Professional Cook Gap Training Pilot Program in British Columbia[53] and other modular, stackable approaches to skills development in Red Seal programs across Canada, this modular approach should be adapted for a broad range of trades. This approach involves:

Learner driven, modular, flexible approach

- A learner driven approach to mapping their pathway for skills development and certification supported by a learning advisor.
- Establishing detailed, rigorous and focused competency frameworks for all aspects of the Certificate or Qualification or Red Seal, breaking these competencies down into discrete, testable modules which are stackable. Modules can be short (1-3 weeks), medium-sized (3-5 weeks) or long (5-8 weeks). Each is designed around discrete and specific sets of competencies and capabilities, which when stacked together constitute all the skills needed to be an effective practitioner of that trade. No one size fits all – each trade may have a different number and variety of modules. The key is that the skills required match those in demand from employers for appropriate skills. New modules can be added to the "base skills set" as needed by firms or by the trade.
- Learners use the competency rubrics they consider themselves to have mastered to challenge the competency module(s) for each level of the trade – using the prior learning and challenge routes already established for most trades. That is, while courses or time with a journeyman can help and support skill development, an apprentice can obtain recognition for their skills and capabilities without having had to spend time in coursework or on the job. If they can demonstrate mastery, they secure the recognition they deserve for that specific skills module.
- Once the prior learning / challenge skills have been identified, learning then focuses on the gaps between the skills the learner has mastery of and what they need to have mastery of so as to secure Red Seal or other trades certification. This gap-based approach

53 See https://bccampus.ca/2015/04/28/professional-cook-gap-training-program-status-report/ for details of this work.

enables each apprentice to have a custom built journey to completion. By tailoring support to apprentices and focusing on what skills and capabilities they need to develop, better use can be made of college and journeyman support.

Multiple routes to competency

Online learning, customized workplace learning and intensive workshops are identified, which would enable the learner to bridge their skills gaps and secure certification. That is, standard classroom programs or fixed time journeyman support can be replaced by intensive, focused workshops or block release time focused on specific skills and capabilities. The journeyman support can focus at each stage on specific skills and competencies required for a skills module – this focusing energies on what the apprentice needs to do to achieve mastery, one skills module at a time.

- Flexible support systems (including an e-portfolio / personalized learning management systems) are used to support learning, assessment and support. What is key is that employers can see what skills and capabilities an individual has. Post-secondary systems are increasingly going beyond formal qualifications and transcripts and offering e-portfolios which contain video of the work performed by an apprentice, still pictures with audio commentary of the stages of a job and other evidence of competence. The National Research Council of Canada (NRC) is engaged in a major project focused on just these kinds of resources for just this purpose. The College of Trades, unions and employers should embrace this work and see it as a cornerstone resource for bridging the skills gap.[54]

These developments would enable the more rapid mastery of skills, faster recognition of foreign credentials, a more efficient and effective competency-based approach to prior learning assessment and a reduction of time and cost for the learner.

Competency not time served

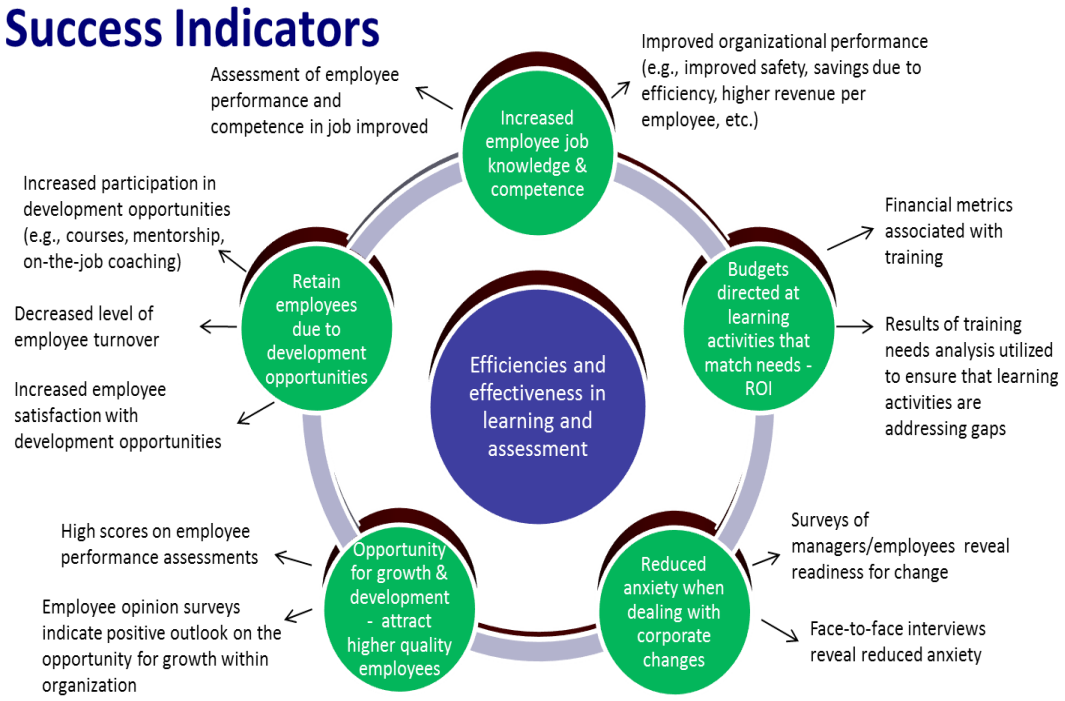
This approach would also enable an individual to devise their own learning pathway to new combinations of skills, enabling new or emerging trades to be pursued with competency-based learning and assessment. New trades comprised of skills from a number of different existing trades are emerging: e.g. mechatronics, 3D design engineers, cyber-therapists.

This approach also marks the beginning of the end of time-based apprenticeships and journeyman: apprentice ratios *as currently practiced* – unions and firms working together need to determine the level

54 For more information about the Learning and Performance Support Systems (LPSS) developments at NRC, see http://www.nrc-cnrc.gc.ca/eng/solutions/collaborative/lpss.html

of coaching each skill set needs for their trade. Rather than focus on time and the current approach to journeyman supervision ratios for the program, each skills module can be viewed as having different support requirements, with different roles for journeymen. Mentoring, coaching and guiding for skills mastery by a journeyman should always be part of this process. The College of Trades, working with its stakeholders, would need to oversee the transformation of apprenticeship this option suggests. The model of the Red Seal programs which are already doing this would provide a starting point for this work.

The value of this approach is captured in this image developed by the Human Resource Systems Group[55], which specializes in competency-based learning:



Discussion

1. What issues or concerns do you have with this option?
2. What would you add to improve this option?
3. What issues would you like to see reinforced in any statements about this option?

55 For more information, see http://www.hrsg.ca/

Option 2: Enable Wider Delivery of Customized Programs.

Expanding access to learning

Some trades require compulsory certification. But many more do not. Approaches to apprenticeship and skills development can differ between compulsory certified and non-compulsory certified trades. A number of jurisdictions – notably England, Wales and Australia – are enabling a much broader development of customized approaches to apprenticeship for trades and skills. Unions, employers (usually medium and large) and professional bodies or industry associations offer training that leads to certification – made easier when this certification is modular and stackable. While subject to oversight by a body such as the College of Trades, a customized program is approved as a means of increasing the number of apprenticeships overall and as a way of ensuring that the skills developed meet the needs of the organization offering the training and those receiving it.

A customized approach enables:

- Governments to stimulate the growth of training provisions where demand is high and supply is low by enabling a greater variety of training providers and encouraging unions, professional bodies and firms to own this training. The example of Siemens and mechatronics, given earlier, and the customized programs from Bruce Power[56] shows how powerful this approach can be.
- Unions, professional associations, regional consortia of firms, clusters of firms based on shared expertise can develop and own training for skills in their region or sector. For example, JPMorgan Chase has created a $250US million fund to support new skills at work and is investing in new and in demand skills developments globally. It is their offer to help close the skills gap. Another example is that of the International Union of Painters and Allied Trades, whose state of the art training facilities are used extensively to ensure that the union membership has the most up to date skills.
- An employer to design training and development activities which they see as meeting the skills needed for a particular trade, given that there are agreed competencies for that trade which are accepted provincially / nationally.
- The growth of local and regionally negotiated partnerships between firms and training providers (public and / or private) to provide training and support for apprenticeships and other skilled occupations.
-

56 The Bruce Power program is described briefly here: http://electricityhr.ca/train/english/profiles/models/PWUT.html

- Less time away from the job site for college and related learning and more time at the job site for learning – making more extensive use of online learning (so-called e-apprenticeship) for the work that would normally be done in college.
- Continued use of block release time for college based learning, but support for the development of more flexible routes to ensuring that the knowledge and skills derived from college learning are acquired through flexible learning.
- Provided the quality assurance is in place for learning, less reliance on journeyman: apprentice ratios or hours or supervised apprenticeship.

Quality is essential

In supporting the broadening of opportunities, the issue of quality is paramount. One criticism of both Britain and Australia is that many of the providers, both public and private, are not offering "best in class" routes to skills and certification. Customized programs which meet the needs of specific industries or firms and are aligned with the values of the unions in those industries need to be driven by quality, effectiveness and efficiency and be held accountable for outcomes. Students need to be satisfied that the customized training they receive has significant transferable skills so that they do not have to retrain when doing similar work in other organizations. Unions need to be satisfied that the range of skills developed in customized programs qualifies the individual for the full status of a journeyman – they do not want the skills base of their union being diluted over time. Holding providers accountable in Ontario would be the responsibility of the College of Trades, supported by unions and industry associations and organizations.

Indeed, unions themselves could expand the training and development work in which they are currently engaged. For example, the United Association of Journeypersons and Apprentices of the Plumbing and Pipefitting Industry of the United States and Canada[57] and the International Union of Operating Engineers[58] are just two examples of unions developing their own programs to support apprenticeship and skills development. There are many more.

57 See http://www.uacanada.net/careers_welder.php
58 See http://www.iuoe.org/training

Discussion

1. What issues or concerns do you have with this option?
2. What would you add to improve this option?
3. What issues would you like to see reinforced in any statements about this option?

Option 3: Significantly Expand High Schools Trades Skills Programs.

In recent years there has been a growth of High School apprenticeship programs across Canada, with the Ontario Youth Apprenticeship Program (OYAP) being a flagship example of these developments. Students are able to work towards becoming certified journeypersons in a trade while also completing their secondary school diplomas. While not all trades are available in all schools in Ontario, for those trades that are, students undertake a co-operative program of study, work placement and assessments. By doing so, they complete part of their apprenticeship and also secure valuable insights into the nature of work.

Some apprenticeship programs require Grade 12 completion for entry into apprenticeship, while in other jurisdictions the same trade requires Grade 10. For example, this is the case for carpentry: in Alberta, Ontario and British Columbia. The required admission is completion of Grade 10, but it is Grade 12 for Atlantic Canada, Manitoba and Saskatchewan. Given a commitment to labour mobility and the harmonization of trades across Canada, such varied admission requirements get in the way of flexible approaches to skills development and learning and mobility.

What matters is that the learner can demonstrate the skills required to complete the work of an apprentice and that they have mastery of functional literacy, numeracy and social skills. Working on a modular, stackable and competency-based approach to certification is a way of overcoming this. Just as some universities and colleges around the world embrace open admission (no entry requirements for admission to first degrees, certificates and diplomas), so too should apprenticeship and skills-based programs.

The recent expert panel report gives additional emphasis to the need for learners in high school to have experience in the community and the workplace so that they have a stronger understanding both of the opportunities and their own talents and skills. The positive reaction of the Ontario Government to this suggestion signals an interest in reshaping learning so that skills and abilities become a stronger focus.

Discussion

1. What issues or concerns do you have with this option?
2. What would you add to improve this option?
3. What issues would you like to see reinforced in any statements about this option?

Option 4: Create an employee right to request training and skills development.

Unions in the UK, supported by the Trades Union Congress (TUC), pushed the UK Government to create a legal right for an employee to request time off for training[59] and, so as to support this right, designated union learning officers across the union movement. These 25,000+ "union-learn" officers coordinate activities within and between unions, design, develop and deploy certificated training and advise employees of their rights and employers of their obligations. They create partnerships and alliances with employers, public sector organizations and bid for customized training resources. They also ensure that policy development listens to the voice of employees. These developments have led to many innovations and improvements in apprenticeship and skills development.

Unions can lead the push for skills

While employees in Ontario have a right to be trained to deal with workplace hazards, they do not have a right to ask for skills development and training. They should have this right, but recognize that employers may not be able to meet all of the training and skills development "asks" of their workforce. Asking and having the request recorded and made available to the union learn officer may be a step to identifying the gap between what the employee knows they need to learn and what the employer is willing to invest in.

One way of supporting these developments would be to expand the range and scope of the Canada-Ontario Job Grant, which provides direct financial support to individual employers who wish to purchase training for their employees[60]. Another would be to support the granting of credit for certificate, diploma and degree programs for work-based training, as is the case in a number of other jurisdictions[61] - thus giving access to other forms of support for learners. An expansion of competency-based prior learning assessment for credit would also support the ways in which

59 This right is highly constrained. See this legal reference note from a major UK law firm: http://www.lawson-west.co.uk/lawyers-for-people/employment/time-off-for-training-employees/

60 For more information, see http://www.tcu.gov.on.ca/eng/eopg/cojg/

61 Open University (2006) Work Based Learning – Models and Approaches. Milton Keynes: Open University, Centre for Outcomes Based Education (mimeo). Available at http://www.open.ac.uk/cobe/docs/COBE-WBL-booklet.pdf

employees can leverage their own investment in skills development.

This action is as much about the productivity, leverage and futures components of the skills gap as it is about the basic skills gap: for high performance, investment in skills development needs to be continuous, not occasional.

Discussion

1. What issues or concerns do you have with this option?
2. What would you add to improve this option?
3. What issues would you like to see reinforced in any statements about this option?

Option 5: Establish Assessment Centres for Skills Across Ontario Which Can Assess Skills, Competencies and Capabilities.

Anywhere, anytime assessment

Moving from time-based training for skills to modular, stackable competency and capability assessment will change the dynamics of skills development, especially for apprenticeship. Key to this work are creative and thorough approaches to skills assessment. These new approaches to assessment need to make use of simulations, games, immersive technologies and other forms of assessment that have been developing which permit skills to be assessed on a large scale, frequently.

If an individual seeks to secure certification or transferable credits, they need to demonstrate that they have mastery of the knowledge and skills required for a specific module for a specific trade for certification. To do so, they need to be assessed locally and this assessment needs to be available when the learner wishes to be assessed – five days a week, fifty weeks of the year.

They also need to demonstrate that they possess the "soft" skills required for the modern workplace. These are the skills of curiosity, initiative, persistence, adaptability, leadership, collaboration, communication, problem-finding and solving, as well as social / cultural sensitivity[62].

To make this possible, there needs to be:

- Investment in simulation, games and immersive assessments where these are appropriate ways of assessing knowledge, skills, capabilities

62 For a detailed description, see Soft Skills for Workplace Success at http://www.dol.gov/odep/topics/youth/softskills/softskills.pdf

and competencies (including the soft skills).

- Investment in new approaches to online assessments of skills, ensuring security and relevance. Skills could thus be assessed 24x7 using video, various forms of simulation and case work. Such a system is about to be deployed in the Maritime Provinces, based on the work of the UK company Vametric[63], whose skills assessment system has enabled time to graduation for apprentices to be reduced by 25% and the costs of skills assessment to be reduced by 75% based on powerful and effective internationally accepted skills frameworks.
- The development of appropriate assessment tools and processes for teamwork, creative problem solving, collaboration and the other "soft" skills needed for effective work in a 21st century workplace. Some of these assessments could be completed in the workplace and others could be undertaken in an assessment lab.
- Invest in machine intelligent item generation for multiple choice and other forms of more traditional assessment[64], so that there are new and different assessments available each time a learner calls for one which meets the rubrics for the module and skill being assessed[65].
- Adoption of new approaches to prior learning assessment for college and university students, based on quality guidelines released in 2015 by the Canadian Association for Prior Learning Assessment (CAPLA)[66].
- Designate assessment centres – Colleges, Schools, Universities, workplaces – which can arrange for assessment five days a week, 50+ weeks of the year.
- Train individuals in the assessment centres to administer effective and efficient skills based assessments (including soft skills) using the available technologies and techniques. In this way, unbiased, independent assessments can take place with the apprentice determining when they are ready for these assessments.
- Develop rubrics and effective methods of assessment of hard and soft skills in the workplace so that the assessment is comprehensive, standardized and provides an effective assessment of capability.

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63 For more information, see http://www.vametric.com/

64 This work is being pursued in Canada by the Centre for Research in Applied Measurement and Evaluation (CRAME) at the University of Alberta – see http://www.crame.ualberta.ca/research.html

65 See also Luckin, R. and Holmes, W. et al (2016) *Intelligence Unleashed: An Argument for AI in Education*. London: Pearson available from https://www.pearson.com/innovation/smarter-digital-tools.html

66 For more information, see 3 http://capla.ca/rpl-qa- manual/ See also the interesting new work from the New Brunswick Prior Learning and Assessment Action Group.

This may appear to be an expensive recommendation – after all, we do assessment now. But rethinking what assessment is, how it is done and how thorough it is and how it can be used to both reduce the need for time-based and much more expensive workplace supervision and training and provide assurance to firms that individuals they are hiring have work-ready skills is worth the investment. Further, the costs of not being able to demonstrate competence or incompetence in the system (insurance costs, workers compensation, work-based injuries and productivity losses) really suggest that we need better and more rigorous assessment of those seeking work, as well as competency assessments for those seeking new roles in the workplace.

Discussion

1. What issues or concerns do you have with this option?
2. What would you add to improve this option?
3. What issues would you like to see reinforced in any statements about this option?

Option 6: Invest in Essential Skills Development in Schools, Colleges and Communities.

"Forty per cent of our workforce does not have the essential skills – including language, literacy and numeracy – needed to apply their technical skills and knowledge at globally competitive levels. Investing in upgrading essential skills would provide Ontario with an opportunity to change the productivity narrative[67]"

Functional adult literacy declining in Canada

Functional literacy in many trades and professions is declining, not rising. International comparisons show that average literacy scores of working-aged Canadians have been declining by as much as one point on the five-point functional literacy scale[68].

When faced with pre-existing essential skills shortages in their workforce, employers may compensate by adjusting production technologies and the way that work is organized to make it easier for workers to complete tasks. For example, they might acquire machinery and equipment that requires lower worker skills or introduce more levels of supervision. Some workplaces are designed to reduce complexity to a very low common

67 See http://www.essentialskillsontario.ca/sites/www.essentialskillsontario.ca/files/Literacy%20and%20Essential%20Skills%20in%20Ontario_Final2_0.pdf

68 For a description of this scale, see http://connection.ebscohost.com/c/articles/19523774/concept-measurement-functional-literacy

denominator – using icons or illustrations to indicate where to place tools, for example. While these processes make work easier in the short run, they do little to make employees capable of being more productive and may make the adoption of production-enhancing technologies more difficult in the future. Rather than increasing skills and adaptability, this lowers the essential skill level within the workforce.

Enhancing essential skills carries many benefits, as the Figure below demonstrates.

Figure 1: Benefits of Investments in Essential Skills Training[69]

New and creative approaches to this work are emerging around the world. For example, Cell-Ed International are using cell phones (entry level and smartphones) to offer essential skills training in very short modules supported by a personal trainer. Available anytime and anywhere, learners using this system have gained up to two years improvement in literacy in four months or less with a completion rate of 75% - much higher than in many conventional classroom approaches[70].

But more conventional approaches are also needed:

- K-12 school systems need to assess and embrace essential skills in their program and assess the competencies of all who graduate

69 With acknowledgement to the Canada West Foundation.
70 For more details of these developments, see www.celled.org

from each stage of the school system for their essential skills on the functional literacy scale.

- Post-secondary systems need to support essential skills development as part of their offer to learners and to provide support and remediation for those not yet able to master the level of literacy and numeracy they require for their chosen trade, profession or career.
- Industry needs to recognize that essential skills need to be enhanced so as to improve productivity, competitiveness and performance. Industry-wide schemes, support for local initiatives and new approaches to literacy and numeracy skills development are needed.
- Industry also needs to examine the way in which work and jobs are designed so that more of its employees develop the skills needed for their current and future work. Skills need to be maintained and developed.
- Journeymen mentoring and support needs to be geared not just to the skills and competencies for the job, but also to essential skills and the soft skills needed for modern work. This may require investment in the development of these capabilities for journeymen and for union officers engaged in learning.
- Government needs to support community based initiatives aimed at developing and enhancing essential skills – expanding the services already supported – e.g. family literacy programs, work-based literacy campaigns, community led literacy networks, company and union sponsored initiatives and other creative responses to this challenge.

Essential skills development poses a significant challenge for Canada. University and college graduates are not performing well on measures of functional literacy and essential skills. A 2013 study by the Higher Education Quality Council of Ontario (HEQCO) found that new university and college grads were lacking essential skills such as problem-solving and math[71]. This is leading to a new project where students will be tested on these skills on entering and again on leaving a college or university to see how their skills are improving (or not)[72]. The study is in response to employer concerns with the lack of these skills seen in graduates they are hiring. Statistics Canada suggests that 16 per cent of Canadian-born graduates showed poor literacy skills and 23 per cent had low levels of numeracy[73].

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71 Dion, N. and Maldonado, V (2013) Troubling Trends in Post-Secondary Student Literacy. Toronto: Higher Education Quality Council available at http://www.heqco.ca/SiteCollectionDocuments/HEQCO%20Literacy%20ENG.pdf

72 See http://www.thestar.com/yourtoronto/education/2016/02/22/young-grads-need-to-brush-up-on-3-rs-employers-say.html

73 See http://www.statcan.gc.ca/pub/75-006-x/2014001/article/14094-eng.htm

Students seeking skills who are disabled are also challenged to complete apprenticeships as currently designed. There have been many suggestions for what needs to happen to accommodate their learning and development needs[74], but key to all of the suggestions are flexibility with respect to time and mentoring. The modular, stackable approach suggested above would facilitate a higher completion rate for learners with disabilities, especially when coupled with just in time assessment through a local assessment centre supported by online assessment tools.

Discussion

1. What issues or concerns do you have with this option?
2. What would you add to improve this option?
3. What issues would you like to see reinforced in any statements about this option?

Option 7: There should be a systematic push by trades organizations, unions and professional bodies to expand access to and success in skills development and apprenticeship and an increased investment by employers in skills development for their employees.

While Government can help stimulate interest and access to formal education in apprenticeship programs at high school, expand college programs and increase tax incentives for employers to hire and work with apprentices, employers also need to recognize that a part of the skills gap relates to their own investment in the ongoing skills and competency development of their workforce. Canada's record on employer paid for training is weak, but improving. A report from the Conference Board of Canada makes this clear:

- Canadian organizations surveyed in the Conference Boards annual *Learning and Development Outlook*[75] spent an average of $800 per employee in 2014–15, a slight increase from the last report.
- The spending gap between Canadian and American organizations appears to be diminishing. Indeed, Canadian spending on learning and development is increasing at a faster rate than the United States, which has remained flat since 2012–13

74 See, for example, https://www.chs.ca/sites/default/files/uploads/apprenticeship_-_accommodation_-_a_win_win_-_2009.pdf

75 OCC Quarterly Policy Survey, N= 649 | Survey Date: April - May 2014

- Approximately 50% of the Canadian organizations surveyed in the *Learning and Development Outlook* identified learning as a top organizational priority. In Ontario, according to a 2014 survey by the Ontario Chamber of Commerce, 56% of businesses are interested in using the Job Grant and other employer-driven training programs to train existing workers.
- Ontario should seek to move up the global league table of the number of firms which support and pay for skills-based training for their employees – seeking to surpass the participation rate achieved in the Nordic countries (78% of firms in Sweden and 77% in Finland) and begin to rival the UK (90% of UK firms)[76].

All firms need to make learning a priority, even small firms. For example, firms in the IT sector or in retail face constant challenges from new entrants, changing technologies, new materials and new offers from competitors. Social marketing is changing how business is done. Firms need to be up to date and able to respond to these challenges, threats and opportunities. This adaptive capacity depends on learning and constant improvement in the skills quotient of firms. Investing in learning is one key to competitive advantage. Indeed, Ari de Geus (former Corporate Planning Director for Shell) once said: "our only competitive advantage is the speed at which our people learn"[77].

The new planning partnerships proposed by the Premiers Expert Panel on Skills seeks to secure strong alignment amongst the stakeholders so that skills and lifelong learning for skills can develop effectively in Ontario, especially in those industries for which the skills gaps are real and substantial. In their work, assuming that these are established, there is a need for both evidence based decision making and boldness in their actions. Speed and impact matter.

Discussion

1. What issues or concerns do you have with this option?
2. What would you add to improve this option?
3. What issues would you like to see reinforced in any statements about this option?

76 Confederation of British Industry (2014) Business Investment in Skills – The Road Back to Growth. Available at http://www.cbi.org.uk/media/1121443/business_investment_in_skills.pdf (see especially page 14 for comparative data on the extent of business investment in skills development).

77 de Geus, A. (1999) *The Living Company: Growth Learning and Longevity in Business*. Boston: Nicholas Brealey Publishing.

Option 8: There needs to be a strong, coordinated effort to increase take-up and completion rates for apprenticeship.

Apprenticeship is growing as are demands for new skills and competencies in the workforce. What matters most is not how many enter apprenticeship, but how many complete and secure certification for work that is in demand or will soon be in demand and how many of these skilled workers find and keep work. Ontario needs to do more to encourage and enable skill development and it needs to do more through collaboration between employers, unions, colleges and the College of Trades to accelerate and secure skills certification. Continuing the role of employers as providing skills opportunities, mentoring and coaching and of learning providers to provide supports for skills development coupled with unbiased assessment is the basis for effective development of apprenticeship and skills.

The good news is that completion rates appear to be improving. But more needs to be done. Rethinking flexible routes to completion, strengthening opportunities for challenge and assessment and investing more in work-based learning and accreditation are all a part of this work. Annual improvements in completion rates for each trade while, at the same time, improving quality should be a preoccupation for all involved in apprenticeship.

The College of Trades, supported by unions, employers, colleges and the Higher Education Quality Council (whose recent work on apprenticeship should be widely read and appreciated), needs to see this as a key task in its business and work plans for the next four years. Employer organizations and unions need to collaborate and champion the growth of apprenticeship and actions to increase completion.

Ontario should have a big, audacious goal of having the highest completion rates in apprenticeship for programs recognized as the highest quality in Canada.

These eight options for action will improve the skills trades and strengthen apprenticeship, giving Ontario one of the most modern apprenticeship programs in the world. But we need to do more. The skills gap is about more than apprenticeship, it is also about a range of developments which need to take place. It is about improving the reputation of pursuing a trade, about compensation for apprenticeship and the development of new job opportunities. It is about quality. It is about a pathway forward from a trade skills job to a prosperous future, either through further credentials and skill acquisition related to a business opportunity. It is about rethinking college programs and the

way in which they ladder to degrees. It is about leadership within industry sectors, unions and government.

Discussion

1. What issues or concerns do you have with this option?
2. What would you add to improve this option?
3. What issues would you like to see reinforced in any statements about this option?

Overall Options Discussion

When you look at all of the options we have suggested:

1. Which two strike you as likely to have the most impact?
2. Which options do you think will be the most difficult to implement and why?
3. If all options were implemented do you think our skills development system in Ontario would be amongst the best in the world? If not, why not?
4. What option is not on this list that you would like to see?

CLOSING THE SKILLS GAP

These options will make a significant difference, but only in the context of broader social and educational policies. Unless these broader developments occur and the educational system as a whole is strengthened, then these initiatives will flounder.

Five broader strategies therefore need to be pursued if Ontario is to close the skills gaps identified here:

1. Improve Overall Educational Attainment

It is clear that we need to leverage our education system to secure more university, college and trades graduates and to do so in ways which accelerate their learning and link that learning to the future of work. But it is not just more of the same. We need to see a different kind of post-secondary student graduating. They need, in addition to their expert

knowledge and skills, to be able to demonstrate these skills, widely seen as essential for an innovative, knowledge driven economy[78]:

- Complex problem anticipation and solving.
- Critical thinking – understanding challenges from several dimensions.
- Creativity – imagining new and different things as well as seeing opportunities for breakout, breakthrough and disruptive ways of working.
- Strong people management and team skills.
- Effective social and personal networking – using networks to make a difference and have impact.
- Resilience and emotional intelligence coupled with a strong array of coping skills.
- Sound judgement and decision making skills.
- A strong service orientation.
- Effective negotiation skills.
- Cognitive flexibility – being able to use cross-boundary learning to look at challenges, problems and opportunities with new eyes.

2. Invest in Workforce Development

Improving educational attainment and strengthening the capacities of those graduating from post-secondary education and trades programs with appropriate skills may provide a starting point for the workforce we need, but employers need to make investments so as to continue to have an effective, productive and innovative workforce:

- Higher per capital investments in training and development.
- Significant investment in new technology and business process re-engineering.
- Adoption of lean and agile approaches to work and business processes so as to improve productivity.
- More investment in research and development so as to spur innovation.
- Investment in strategic human resource management, leadership development and effective communications.

78 See World Economic Forum (2016) *The 10 Skills You Need to Thrive in the Fourth Industrial Revolution* available at https://www.weforum.org/agenda/2016/01/the-10-skills-you-need-to-thrive-in-the-fourth-industrial-revolution

- More public investment in retraining and more public and private partnerships aimed at job creation.
- Greater tax incentives for lifelong learning.
- More college and university recognition for programs and courses of work-based learning – giving credit for work-based training, professional development and competencies.
- More efforts to attract and retain jobs in each region of Ontario.

3. More Flexible Workplaces

So as to broaden workforce participation – more women, more seniors, more First Nations, more part-time workers – our workplaces need to become more flexible:

- Workplace rigidities should be replaced by flexible working arrangements, encouraged by public policy.
- Workplace legislation regarding hours of work, worker's compensation, minimum wage, tax allowances for tools and learning should be aligned with the goals of making real gains in productivity, innovation and employee engagement.
- Systematic efforts need to be made to maximize the value of each employee's contribution so that their skills are fully leveraged. Greater use of the tools available at a Great Place to Work should increase employee engagement and satisfaction – the best predictor we know of improved organizational performance.

4. Build Collaborative Networks of Like Minded Organizations

Firms and organizations need to collaborate, network and share workers and ways of working so that we can improve not just some organizations, but all. New forms of collaboration, new social networks focused on best and next practices and new ways of building a sharing economy need now to be on our agenda. Innovation needs to be seen not just as the activity of one organization or team within it, but of a cluster of organizations working together. The future requires collaboration; Canada should lead the world in terms of how this can be done.

- Build effective, focused and meaningful industry clusters – restore Sector Councils and collaborations where these are seen to be able to make a difference.
- Strengthen the focus on learning within and between trade unions.
- Form clusters around key opportunities for change – productivity,

climate change, skill development – and share resources, best practices and intelligence.

- Governments should focus on creating opportunities to accelerate the adoption of innovation, productivity solutions and new technologies. It shouldn't place "bets" on one sector versus another, but instead should focus on creating capacities for innovation, adaptability and change.

5. A Responsive Education System

Many of our schools, colleges and universities are already world-class and responsive. But we cannot be complacent. Already, our schools are shifting from a content-focused curriculum to one based on competency, as our trades and professions. Great strides have been made in using technology to personalize education and support differentiated teaching, but there is much more we can do:

- More students at all levels need to engage with science, technology, engineering and mathematics (STEAM) coupled with creativity, design and the humanities (when added to STEM the new acronym becomes STEAM – the "A" represents these additional features). Canada should lead the world in adopting STEAM. This requires systematic approach to improving performance on key outcomes, especially in mathematics, science and essential skills.
- More flexible routes to certificates, diplomas, degrees and trades qualifications need to be created at all levels. While online learning can help, rethinking the nature of our assessment systems and systems of credit recognition can also help. We need to change how we think of credit recognition so that we can secure greater access to learning throughout life.
- More work-based learning and more internships, co-op and work placements designed to increase commitment and understanding.
- Faster and easier recognition of the skills and credentials of new immigrants to Canada would strengthen their sense of belonging, ensure that their skills were better used in the service of their communities and impact their livelihoods.
- Easier laddering of programs – from apprenticeship to diploma and from diploma to degree with block credit transfer. Easier transfer of credit between programs and institutions. More effective and efficient assessment of prior learning through competency-based challenge and assessment – rather than focus on equivalency, focus on what capabilities and mastery an individual can demonstrate.

- Strengthen the already strong links between our educational institutions and the world of work – more co-op programs, internships, work-based learning diplomas and degrees, credit for work, joint research and development projects, more opportunities for business leaders to work with schools, colleges and universities.
- More project-based learning around adaptation, innovation and productivity challenges so that the creative minds of our young people are engaged in solving problems that matter.
- More investments should be made in developing resilient and adaptive communities and their learning.

Canada also should lead the world in the sharing economy for learning, creating easy mechanisms for individuals to share and trade skills in exchange for access to learning and the skills they need for themselves, their families and communities.

Some steps have been taken towards some of these suggested developments, but more needs to be done to build a more adaptive, flexible and learner driven learning system. Key to this will be co-operation and partnerships within education, between education and industry and across industry sectors. The new focus should be on partnership, collaboration and cooperation not competition. Ontario seeks to compete in the world and to do so we need to work together.

Discussion

1. What is your reaction to this range of suggestions for social and educational policy?
2. Of the suggestions just made, which are the three most important in your view – the three which will make the most difference to the skills gap?
3. Which group of suggestions here (e.g. improve educational attainment, invest in workforce development, etc.) do you think your organization should champion?

CONCLUSION

The future looks different from the past. It will bring new challenges, new industries, and new ways of working. The key to Canada's response needs to be to build adaptive capacity and resilience for organizations and each individual who works in these organizations. Those who can adapt and change and do so effectively will see the future as full of promise and opportunity. Those who find change difficult and do not adapt will find themselves challenged. As the rate of change in various sectors accelerates, making real personal investments in the developing of knowledge and skills becomes essential.

This paper outlines substantial suggestions for change and development which require bold, courageous and insightful collaboration between government, employers, educational providers and communities. The momentum exists in Ontario for change in the way in which skills are understood and delivered and the way in which skills development can occur. This paper provides some suggestions for the tools needed by a strong coalition for skills determined to lead Canada and North America in reimagining this work.

Imagine an Ontario where an individual can secure new skills, reinforce existing skills or leverage their skills for new opportunities anytime and anywhere. Imagine an Ontario where colleges, unions, employers and community organizations partner to enhance skills, especially essential skills, in new and powerful ways. Imagine an Ontario where knowledge, competence and capabilities matter more than time in class or on the job – where what you can do is what matters.

The suggestions for change outlined in this paper enable this imagined future to become real now: bold and determined actions for a better a future.

V7 August 1, 2016 / MJL