Measuring the Effectiveness of the Enhanced Welder Apprentice Training Initiative

Report prepared by:
Peter Warrian

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Executive Summary

The Canadian Welding Bureau is facilitating collaboration between employers and local training providers to share the responsibility for training apprentices. The program is known as Enhanced Welder Apprentice Training (EWAT). Specifically, by providing apprentices with the opportunity to work with several employers—and exposing them to a variety of different metal fabrication processes, skills, and industry opportunities during their apprenticeship period—the belief is that they will be more motivated to complete their training.

This study seeks to determine if employers are more likely to participate in apprenticeship training when provided with accurate local labour market information (LMI) and economic information in advance to support their decision to hire an apprentice. The goal of the project is to provide both qualitative and quantitative data to evaluate the factors that result in the best training and most effective delivery of shared apprenticeship training for metal fabricators in Hamilton. The following report needs to be understood in context—there are several important factors that are technically outside of the scope of research, but which will be touched upon to help assess the dynamics and impact of the EWAT program.

With the goal of providing formative feedback for the growth of the EWAT program, this study examines the needs of employers and apprentices and the factors that impact their participation in metal fabricator training. A longer-term, follow-up study will be required to evaluate the impact of the EWAT program on employer participation in training as well as training quality in the metal fabricator trade. For example, a longer-term study could track the impact of apprentice rotation between employers in the consortium; in this shorter three-month study, apprentices had not yet had the opportunity to rotate.

Initially, the basic premise put forward was that employers would place a high value on LMI data for supporting their decision-making. Yet in the employer responses, it appears that LMI data have had little if any impact on an employer’s willingness to participate in apprenticeship or skills training in anticipation of additional work due to economic opportunities (e.g., airport development, Light Rail Transit (LRT), GO Train expansion, etc.). In other words, employers hire when they have signed contracts on their desks—not in anticipation of possible additional work as a result of economic information.

The survey results are still very preliminary, but some initial findings have surfaced. Primarily, that employers engaged to date in the EWAT program place relatively little value on LMI information. The underlying assumption in the EWAT program is that new economic incentives can change employer attitudes and behaviours around their willingness to employ and support an expanded number of apprentices. Yet the initial analysis of employers’ responses and their company profiles suggests that they are not always adjusting their workforce for economic reasons, e.g., they tend to be firms with long histories in the welding industry and have personal and family ties to the industry and the trade. As such, their engagement is “values-based” and does not turn on a fundamentally economic motivation. In addition, many
of these employers have cultures and practices that fall on the High Road side of HR philosophies, as discussed below, which are more amenable to employee training.

It is critical to explore these issues more deeply in future research, preferably with in-depth interviews with the individual firms. The long-range success of the program will require further work to frame an economic rationale for engaging in EWAT that can appeal to the broadest range of employers in the industry.
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Introduction: Economic Background Factors Impacting Employment and Training

In seeking to understand the importance of the EWAT program, we should first look at the current economic conditions in the industry for context.

No matter what the outcome of the North American Free Trade Agreement (NAFTA) negotiations—yet to be ratified by the US Congress—Canadian steel manufacturers are facing seriously higher materials prices. Steel prices shot upwards following Trump’s steel and aluminium tariffs, even if they have moderated somewhat in recent months, and they are likely to remain elevated for an extended period.

Why is this so challenging for manufacturers? A recent study of manufacturing input costs revealed the following:
- Materials cost: 54%
- Energy: 1%
- Services: 6%
- Payroll and benefits: 13%
- Other: 22%

As can be seen, materials costs are by far the biggest item in the cost structure of manufacturing—most of which is steel. That is why the trade actions and tariffs have such a big threat on the bottom line of manufacturers.

How is this relevant to Effect Welder Training?

Elevated steel prices will be with us for some time. It will thus be critical for manufacturing employers to improve in other areas to offset the cost pressure from materials costs.

The counter-intuitive nature of economic slowdowns is that the premium or gains from innovation rise, not fall—it is riskier to invest in better technology, skills, and training, but pays better in the long run. Newer technology and improved skills can create positive impacts in all areas of manufacturing, e.g., the efficiency of welding, consumption of materials, down time, etc.

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1 Helper & Martin (2018)

2 The current hearings of the International Trade Tribunal in Ottawa on the impact of the Trump tariffs may provide more up-to-date data when their report is released.
Improved productivity and efficiency from training must be effectively linked to advancements in other operational and administrative areas. In other words, apprenticeship training by itself will not bring about optimal results unless other areas of innovation and improvement also come together.

Overall, this study aims to make the case that the best protection against the fallout of present-day trade wars is to continuously train and innovate to move forward optimally.
Labour Market Information (LMI) Systems

The fundamental assumption (and point of differentiation) of this research project is: that employers and individuals make apprenticeship decisions based on conditions and institutions in local and regional labour market, as well as the current and forecasted economic outlook. For these reasons, the LMI in the Canadian Manufacturers and Exporters (CME) model, conducted by Prism Research, is uniquely appropriate for this study. Whereas national datasets from the Labour Market Survey for occupational projections at the national level have little relevance.

The Purpose and Utility of LMI

The labour market analysis supporting the EWAT initiative is based on the National Manufacturing Labour Market Research Report (2017) sponsored by the Canadian Skills Training and Employment Coalition (CSTEC) and the CME, conducted by Prism Economics.3

Both CSTEC and CME undertook the study because they believed that currently available LMI could be improved and made more relevant to manufacturers. Providing manufacturers with high-quality and relevant data enables them to identify ways to address shortages in skilled trades and technicians that might exist today, or even anticipated in the future.

Industrial Labour Force Outlook

The Hamilton-Niagara region will experience severe recruitment challenges in the manufacturing industry, facing a recruitment gap of over 4,600 workers during the next ten years. The reasons behind recruitment challenges are fourfold:

1) A large demographic challenge: the manufacturing workforce is older than the overall labour force of the region. As these workers retire in the next ten years, the manufacturing industry is projected to have difficulty filling skilled trades and technical positions.

2) Competition from other industries: occupations such as sheet metal workers, electrical and electronics engineers, and industrial mechanics are also highly demanded in other industries such as construction, utilities, and professional services. It will be especially difficult to attract those workers due to faster growth rates experienced by competing industries and higher wages offered in some

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cases (e.g., utilities and mining).

3) Dependence on net migration: Hamilton-Niagara’s recruitment challenges are exacerbated by a low birth rate. The region will critically depend on net migration to fill many manufacturing positions during the next few years.

4) Occupational characteristics: some occupations are harder to fill across the manufacturing industry and the country due to low supply. The Hamilton-Niagara region will be particularly challenged to find construction millwrights, computer networking technicians, steamfitters/pipemakers, drafting technologists, and industrial electricians.

Demographic Outlook

The population in the Hamilton-Niagara region has been slowly growing at an annual rate of 0.4 percent over the past seven years, increasing from about 966,000 in 2006 to an estimated 990,940 in 2013. This trend is expected to pick up in the coming years as the economy recovers rapidly. The population is expected to grow at an annual average rate of 1.6 percent, to reach 1,070,000 by 2018. Persons above 65, and the age group of 25-34, are predicted to have the highest contribution to population growth over the next decade.

Manufacturing Workforce

The manufacturing workforce is significantly older compared to other industries in the region and will face higher replacement demands in the coming years. With 55% of the manufacturing workforce over the age of 45, employers can expect to replace a fifth of their experienced workers over the next ten years.4

Attracting workers to the region is not expected to pose challenges. National Household Survey (NHS) data for 2011 indicate that the jobs provided by employers in the City of Hamilton (employed by place-of-work) are filled not only by residents of Hamilton, but also by residents of many of the regions surrounding Hamilton. In and out commuting of this nature is a common feature of municipalities within the Golden horseshoe. The largest number of commuters to the Hamilton-Niagara region come from Halton, Brant, Haldimand-Norfolk, Waterloo, and Peel communities. A smaller number of commuters reside in Toronto and Wellington.

Youth and Education

The 25-44 age demographic is an important source of new hires for employers. The educational

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attainment of this demographic in the region, which is distinct from the provincial average, provides insight into general qualifications and planned career paths: the share of the population attaining either just high school or an apprenticeship certification was higher compared to the Ontario total in 2011.

Additionally, based on a comparison of data from the 2006 and 2011 Census, the share of individuals aged between 25-44 attaining certificates at the college level remain steady at 28%, above the provincial average. In contrast, the share of people with university education above the bachelor level is well below the provisional average, by 10%.5

Industrial Employment

Employment is expected to recover modestly during the next eight years (2017-2023) with minor increases in select industries. Total manufacturing employment in the region is expected to stay within 38,000-40,000 people by 2023. Primary metal manufacturing and transportation equipment manufacturing will exhibit a modest increase in employment, whereas industrial machinery manufacturing employment will remain flat through the forecast period.

Industrial Employers Profile

Hamilton-Niagara region has a diverse manufacturing sector comprised of Primary Metal, Transportation Equipment, Fabricated Metal Product, Food, and Machinery. Over 50% of the manufacturing bases in the region are small- to medium-sized enterprises (i.e., less than 50 employees). With more than 400 establishments, Fabricated Metal Product manufacturing dominates the region in terms of numbers, followed by Miscellaneous Manufacturing (235 establishments), Machinery (223 establishments), and Food Manufacturing (183 establishments). Beverage and Tobacco Product Manufacturing, although with a relatively lower number of establishments (101 establishments), remains an important segment in the Niagara area.6

Manufacturing Hiring Requirements

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5 More recent information is available from the 2016 Census; however, the funding request to update the data was declined.
Rankings are provided for technical and technologist occupations and managers, as well as for skilled trades separately in the following sections. Normal labour market conditions (signaled by a “3” ranking) are expected across all occupations in manufacturing through 2025.

Most technical and technologist occupations are projected to pose occasional recruitment challenges over the forecast period. These include occupations such as manufacturing managers, electrical and electronic engineers, mechanical and industrial engineers, and manufacturing technologists and technicians. For some technical occupations, such as chemical technologists and computer network technicians, no significant recruitment challenges are expected in the years ahead.7

A number of charts in Prism Economics’ National Manufacturing Labour Market Research Report (2017) are pertinent to this study. In particular, please see the charts on market rankings, hiring requirements for key manufacturing sector occupations, and distribution of employment by occupational category.

Critical Skills Shortages

A number of skilled trades occupations are projected to pose chronic recruitment challenges during the next few years. Professions such as steamfitters, carpenters, transport truck drivers, construction millwrights, and various supervisors will remain difficult to fill—partly due to the lack of interest in skilled trades training in the region. These occupational categories will be harder to fill than others in the manufacturing industry due to competition from other industries, demographic challenges, and a limited labour supply.

7 Ibid.
The Outlook for Welders and Metal Fabricators in Hamilton

In addition to the LMI modelling projections, additional information was gathered specifically for Welding and Metal Fabricator occupations in the Hamilton Region.  

In the past five years, Hamilton has had the highest rate of economic growth and lowest rate of unemployment, while maintaining a level of wages above the other major cities in Ontario. While technological changes have had significant impacts, Hamilton has regained the number of jobs in manufacturing that it had before the recent recession.

Occupational profiles within the welding trades have also been changing. Specifically, the traditional Welder Trade training requirements were:

Apprenticeship training to become a Welder requires around 6,000 total hours.

This is broken down into:

- 5,280 hours of on-the-job training
- 720 hours of in-school training

In a change from the past, employers now prefer a Welder Fabricator and Fitter:

Apprenticeship training to become a Metal Fabricator and Fitter requires around 5,400 total hours.

This is broken down into:

- 4,680 hours of on-the-job training
- 720 hours of in-school training

The median salary for a Metal Fabricator is $22.5/hour in Hamilton. Metal Fabricators with less experience could be making a lower salary—closer to $18/hour—and more experienced Fabricators can be making up to $28.5/hour. The typical tenure for a Metal Fabricator is one to three years.

Scoping the Welder Occupations

Approximately 450 people currently work in this occupation in the region. Hamilton also has the highest concentration of Structural Metal and Platework Fabricators and Fitters in Ontario.

Primary metal manufacturing—specifically steel mills, which are dominant in this area—employ a significantly higher share of these workers than in most of the other areas of the province.

Structural Metal and Platework Fabricators and Fitters mainly work in the following sectors:

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- Primary metal manufacturing (NAICS 331): 21%
- Fabricated metal product manufacturing (NAICS 332): 21%
- Machinery manufacturing (NAICS 333): 15%
- Wholesale trade (NAICS 41): 11%
- Other transportation equipment manufacturing: 7%

The age distribution of any trade is always important in planning for the future, as denoted by the following Occupation Profile chart (Figure 1).

*Figure 1: Occupational Profile, Age*

Structural Metal and Platework Fabricators and Fitters are projected to experience more new job openings than all occupations in general. In addition, there will be a significant need for replacement workers due to an aging workforce.
Wages and annual incomes for the Welding Occupations in the region are also an important factor for all parties.

Figure 3: Wages
What does all this data add up to?

- Workforce investments from large employers and projects have the potential to poach skilled employees from smaller businesses.
- A growing economy, plus new investments and projects could increase opportunities for both large and small- to medium-sized businesses in the region.
- Changing demographics could result in a skills shortage, with more people retiring than entering the workforce.
Section 4: EWAT Participant Survey Results & Analysis

The EWAT program seeks to offer apprentices diverse work experiences by rotating them through three or more employers. While rotation is a valued component of this program in that it builds competencies in different processes and methodologies and various products, there are other known variables which impact their overall skill development and success.

Several studies in the literature identify workplace and personal factors which contribute and possibly predict apprenticeship success. These factors include apprentice attributes, apprentice personal factors, mentor/supervisor attributes, skills and behaviours, and workplace attributes/characteristics.

The CWB Group is committed to the health and sustainability of the Canadian Welding industry. One of the key strategic imperatives for the CWB Group is to address the skills shortage/mismatch in the industry. EWAT is one of the many investments that we are making in support of this priority. Building on the learnings from the initial EWAT design, the CWB Group is investing in developing processes, tools and programs to benefit all those employers in the welding industry who hire welder/fabricator apprentices. To shape and prioritize the development of these new service offerings, we seek to understand the needs of the current EWAT group of participants.

Given that current rotation-focused EWAT program is a multi-year, multi-city program, this study design has two clear objectives:

1. Understand stakeholder perspectives on what attributes matter most within the current participants in the EWAT program to identify any potential misalignments between stakeholders which could impede their success
2. Assess what the stakeholders are currently experiencing in the program to determine if there are any issues which need to be addressed for the apprentice to be successful.

Hence the survey instrument and follow up interviews were designed to support both a baseline evaluation of critical success factors and follow up assessment where we will repeat the study once per year with all EWAT participants. Both parts of the study measure the same attributes for all three areas – owner/manager, mentor, and apprentice – of apprenticeship success.

In assessing what the stakeholders perceive as critical, we will identify if the stakeholders are well informed of the critical success factors. If any of the three stakeholder groups are unaware of the critical success factors, the CWB will help to educate them and also invest in building programs and tools which will help improve the capabilities and characteristics which are essential for apprentice success.

This survey will also identify areas where there are differences in beliefs, because this may result in potential challenges or difficulties in the work environment for any or all stakeholders. By identifying lack of
alignment early on in the program, the CWB can intervene in support of success and work with the stakeholders to align expectations in favour of a high-quality training environment for the apprentice.

EWAT Stakeholder Perspectives on Apprenticeship Success Attributes

To meet the first objective, to assess the stakeholder perspectives on what they feel are the crucial attributes, we asked the three stakeholder groups about three topics of interest: the workplace, the mentor, and the owner/manager. We also asked the owner/managers about which apprentice attributes they believed were important for the apprentice’s success.

The attributes presented to the stakeholders were those most cited in the literature as contributing to the successful apprenticeships measured by completion rates and other skill-based outcomes. While we will not be citing these studies directly, a list of those studies which influenced our study design is contained in the References section at the end of this report. The list of the attributes assessed for all three areas are listed in the Appendix.

Knowing what participants are thinking, and how their experience in the program is unfolding will enable the CWB Group to identify the most immediate education, support, and intervention actions, to support a positive environment for learning and skill development.

The following hypotheses were designed to guide this research:

1. If all three stakeholder groups involved in apprenticeships are knowledgeable of the known success factors for apprenticeships, there will be a higher probability of success;
2. Alignment of expectations between apprentices, mentors, and employers supports positive learning and apprenticeship success in terms of completion rates, depth, and breadth of skills developed; and,
3. Workplaces, including the mentor and owner/manager, which possess more of the known attributes for success will result in higher apprenticeship outcomes, specifically completion rates and skill development.

In tables 1-3 below, we outline the stakeholders’ perspectives on the workplace, the mentor and the workplace attributes which are most important for apprentices’ success. For workplace attributes, it was very encouraging that there was great alignment across all three stakeholder groups. All participants identified five common characteristics as the most important for apprenticeship success: safe, supportive, collaborative, respectful, and professional.

Similarly, for the owner/manager attributes, both apprentices and mentors aligned on the same top five attributes which lead to apprentice success: support for an apprentice, level of support for the mentor,
commitment to apprentice's success, experience with apprenticeship and diversity of products manufactured (variety of materials).

For mentor attributes, we saw great alignment between the apprentices and the mentor where nine of the top ten qualities were identical (see Table 3). However, there was a significant difference between the apprentice and mentor views and the owner/manager respondents’ views on what the critical attributes are for a mentor. The owner/manager only reported three of the same top ten mentor attributes. They agreed that the characteristics “provides the apprentice with valued work assignments, willingness to let apprentice try new skills, and proactive with feedback to an apprentice” were most important. However, owner/managers also cited “skills and expertise in welding and fabricating, help the apprentice build relationships, understand the apprentice's goals and set stretch targets” as essential attributes for a mentor to have to support apprentice success. In the running of the business, the mentors typically report directly to the owner/manager.

With this divergence in views, it would be critical that the mentor and the owner/manager established a common approach and shared priorities for the mentor so that they are working to support the apprentice in a way which the owner/manager agrees with and fully supports. Once the mentor’s priorities, approach and role were defined with the owner/manager, it will help to confirm with the apprentice, so they understand what to expect.

Table 1. Workplace Attributes Impacting the Success of Apprentices -Stakeholder Views (Top 5, scored out of 5)

<table>
<thead>
<tr>
<th></th>
<th>Apprentices</th>
<th>Mentors</th>
<th>Owners/Managers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safe</td>
<td>3.7</td>
<td>Safe</td>
<td>4.0</td>
</tr>
<tr>
<td>Supportive culture</td>
<td>3.7</td>
<td>Professional</td>
<td>4.0</td>
</tr>
<tr>
<td>Collaborative atmosphere</td>
<td>3.7</td>
<td>Respectful</td>
<td>3.5</td>
</tr>
<tr>
<td>Respectful</td>
<td>3.5</td>
<td>Supportive culture</td>
<td>3.0</td>
</tr>
<tr>
<td>Professional</td>
<td>3.5</td>
<td>Collaborative atmosphere</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Table 2. Owner/Manager Attributes Impacting the Success of Apprentices -Stakeholder Views (Top scored out of 5)

<table>
<thead>
<tr>
<th></th>
<th>Apprentices</th>
<th>Mentors</th>
<th>Owners/Managers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support for apprentices</td>
<td>4.0</td>
<td>Support for apprentices</td>
<td>4.0</td>
</tr>
<tr>
<td>Level of support for the mentor</td>
<td>3.8</td>
<td>Level of support for the mentor</td>
<td>3.5</td>
</tr>
<tr>
<td>Commitment to apprentices’ own personal success</td>
<td>3.7</td>
<td>Commitment to apprentice's own personal success</td>
<td>3.5</td>
</tr>
<tr>
<td>Experience with apprenticeship</td>
<td>3.3</td>
<td>Experience with apprenticeship</td>
<td>3.5</td>
</tr>
</tbody>
</table>
Table 3. Mentor Attributes Impacting the Success of Apprentices - Stakeholder Views (Top 5, scored out of 5)

<table>
<thead>
<tr>
<th>Apprentices</th>
<th>Mentors</th>
<th>Owners/Managers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commitment to the apprentice's success</td>
<td>Employ a coaching approach rather than lecturing</td>
<td>Sets stretch goals for the apprentice</td>
</tr>
<tr>
<td>Helps apprentice learn from mistakes</td>
<td>Helps apprentice learn from their mistakes</td>
<td>Receptive to apprentice’s questions</td>
</tr>
<tr>
<td>Supportive when apprentice makes mistakes</td>
<td>Supportive when apprentice makes mistakes</td>
<td>Provides apprentice with valued work assignments</td>
</tr>
<tr>
<td>Constructive and specific with feedback</td>
<td>Proactive with feedback to apprentice</td>
<td>Help apprentice to make relationships with other staff</td>
</tr>
<tr>
<td>Willingness to let apprentice try new skills</td>
<td>Willingness to let apprentice try new skills</td>
<td>Willingness to let apprentice try new skills</td>
</tr>
<tr>
<td>Engaged in apprentices' development</td>
<td>Engaged in apprentice's development</td>
<td>Understand apprentice's career goals</td>
</tr>
<tr>
<td>Provides apprentice with valued work assignments</td>
<td>Provides apprentice with valued work assignments</td>
<td>Proactive with feedback to apprentice</td>
</tr>
<tr>
<td>Proactive with feedback to apprentice</td>
<td>Receptive to apprentice’s questions</td>
<td>Engaged in apprentice's development</td>
</tr>
<tr>
<td>Employ a coaching approach rather than lecturing</td>
<td>Clear on what is expected</td>
<td>Skills and expertise in welding</td>
</tr>
<tr>
<td>Clear on what is expected</td>
<td>Commitment to the apprentice's success</td>
<td>Skills and expertise in fabricating</td>
</tr>
</tbody>
</table>

**Apprentice Attributes**

The decision to hire an apprentice is most often the owner/manager's to make. We expect that owners/managers will select individuals to join their company workforce as apprentices who have specific characteristics and attributes which they believe are necessary for apprentice success.

Many employers in the EWAT program have little to no experience with apprentices working for them. Without experience to draw on, these employers may not know what apprentice attributes are critical for an apprentices’ success. If this is the case, this would be an opportunity for the CWB to help inexperienced
employers by developing a candidate selection framework to support the employers to assess and select high potential apprentices, based on known attributes identified in previous studies.

Table 4 below shows both the highest ranked attributes cited by employers for apprentices as well as the lowest. The three most critical factors identified by employers for apprentice success were about relationships, specifically family and friend support and the mentor relationship. Financial stability, a known predictor of apprenticeship success were also ranked highly. Employers also identified several behaviours conducive to independent self-guided learning in a dynamic work environment.

What employers did not see as valuable attributes was equally as fascinating. Employers did not view as critical, the apprenticeship attributes of motivation for success, passion for welding, having a plan for their skills development, confidence in learning from mistakes/asking for feedback. This suggests that employers appreciate the education journey that apprentices are on will provide the teaching and encouragement that apprentices need to succeed.

Table 4. Apprentice–What Employers see as the MOST and LEAST critical factors for the apprentices’ success (top 10, bottom 10)

<table>
<thead>
<tr>
<th>MOST Critical</th>
<th>LEAST critical factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal support network (family, friends)</td>
<td>Motivated for personal success</td>
</tr>
<tr>
<td>Previous experience with a mentor</td>
<td>Passion for welding</td>
</tr>
<tr>
<td>Personally interested in the mentor</td>
<td>Developed a plan for skills improvements</td>
</tr>
<tr>
<td>Current financial stability</td>
<td>Confident in ability to learn</td>
</tr>
<tr>
<td>Personally interested in the mentor</td>
<td>Confident asking for feedback</td>
</tr>
<tr>
<td>Understanding the roles/responsibilities</td>
<td>Keen to learn from my mistakes</td>
</tr>
<tr>
<td>Commitment to learning</td>
<td>Confident in asking for what is needed</td>
</tr>
<tr>
<td>Familiarly with training standards</td>
<td>Understanding of the role of the apprentice</td>
</tr>
<tr>
<td>Effective at conflict management</td>
<td>Understanding of career opportunities upon graduation</td>
</tr>
<tr>
<td>Proactive in soliciting feedback</td>
<td>Awareness of financial aid available</td>
</tr>
</tbody>
</table>
Current Experience of EWAT Stakeholders with Apprenticeship Success Attributes

The second part of this study was to assess the stakeholders’ current experience of the critical success factors to identify three types of insights:

1. What is going well, to learn more about what the stakeholders are doing and to share these successes with other companies who may be having challenges;
2. Where stakeholders are having a poor experience with factors, they deem critical to success so that we can support a conversation to build greater awareness and mutual understanding of the implications of the current situation to design an improved path forward; and,
3. Where there may be environmental or behavioural challenges which need to be addressed to ensure an environment for apprentice success.

Using this survey instrument with follow up interviews, CWB Group will conduct an assessment of all stakeholders’ experiences which will be an annual exercise as part of the support program that CWB Group is providing these companies. By identifying lack of alignment early on in the program, the CWB Group can intervene in support of success and work with the stakeholders to align expectations in favour of a high-quality training environment for the apprentice.

The highest rated workplace attributes were very similar across all three stakeholder groups. Mentors and owners/managers rated the safety of the workplace higher than apprentices, inviting a conversation to perhaps understand what the apprentice may see that they do not. There was a big difference in the experience of the respectful attribute between the mentor and the apprentice which again may invite a conversation.

Table 5. Stakeholders Experience with Workplace Attributes for Success – HIGHEST SCORES

<table>
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<tr>
<td>Professional</td>
<td>2.8</td>
<td>Respectful</td>
<td>3.5</td>
</tr>
<tr>
<td>Supportive culture</td>
<td>2.7</td>
<td>Professional</td>
<td>3.0</td>
</tr>
<tr>
<td>Collegial</td>
<td>2.7</td>
<td>Collegial</td>
<td>2.5</td>
</tr>
<tr>
<td>Respectful</td>
<td>2.5</td>
<td>Supportive culture</td>
<td>2.5</td>
</tr>
</tbody>
</table>

When mentors reported their performance on mentor attributes, not surprising is that they rated themselves higher than the apprentices and the owner/managers on traits related to their specific ways of engaging with the apprentice. The apprentice’s experience with their mentor was most favourable for both mentor skills as well as the mentor’s support of the apprentice in willingness to let them try new skills, helping them learn
from their mistakes and being proactive with their feedback. While this is positive in general since the average scores for these attributes in all cases were less than 3 out of 5, it suggests considerable room for improvement.

The owners/managers rated their experience with the mentors highest on those same attributes the owners/managers reported as being most critical to apprentice success, mainly those related to the mentor’s skills and expertise.

Apprentices rated their experience on mentor attributes lowest for many critical activities which a mentor should be doing with an apprentice. Specifically, apprentices experience with mentors was lowest with mentors helping them with planning, meeting with them routinely, setting goals and being interested in them. Owners/managers had many of the same attributes listed as the lowest as the appendices reported. Mentors, however, for the most part, rated themselves lowest on their capabilities versus their behaviours with the apprentice.

**Table 6. Stakeholders Experience with Mentor Attributes for Success-HIGHEST SCORES**

<table>
<thead>
<tr>
<th>Apprentices</th>
<th>Mentors</th>
<th>Owners/Managers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Willingness to let apprentice try new skills</strong></td>
<td>2.8</td>
<td>Supportive when apprentice makes mistakes</td>
</tr>
<tr>
<td><strong>Helps apprentice learn from their mistakes</strong></td>
<td>2.8</td>
<td>Receptive to apprentice's questions</td>
</tr>
<tr>
<td><strong>Skills and expertise in welding</strong></td>
<td>2.7</td>
<td>Constructive and specific with feedback</td>
</tr>
<tr>
<td><strong>Skills and expertise in fabricating</strong></td>
<td>2.7</td>
<td>Commitment to the apprentice's success</td>
</tr>
<tr>
<td><strong>Proactive with feedback to apprentice</strong></td>
<td>2.7</td>
<td>Willingness to let apprentice try new skills</td>
</tr>
</tbody>
</table>

**Table 7. Stakeholders Experience with Mentor Attributes for Success-LOWEST SCORES**

<table>
<thead>
<tr>
<th>Apprentices</th>
<th>Mentors</th>
<th>Owners/Managers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interested in apprentice's personally</strong></td>
<td>1.7</td>
<td>Help apprentice to make relationships with other staff</td>
</tr>
<tr>
<td><strong>Sets stretch goals for the apprentice</strong></td>
<td>1.7</td>
<td>Experience with mentoring</td>
</tr>
<tr>
<td><strong>Worked with apprentice to develop a training</strong></td>
<td>1.5</td>
<td>Up to date on current technologies</td>
</tr>
</tbody>
</table>
When apprentices reported their current experience with the successful critical attributes for apprentices, they self-reported very low scores on almost all measures. Only financial resources had a score of 3 or more. In contrast, the mentors rated their experience of the apprentices significantly higher, with a score of 3.5 out of 5 for the top 5 attributes cited. The highest apprentice attributes as measured by the owners/managers were financial and knowledge related attributes. Given mentors provided highest ratings on behavioural attributes, these differences may be the result of the fact that owners/managers have less involvement with apprentices and hence may know the apprentice less or in a different way than their mentors.

When looking at the lowest scoring attributes across the three stakeholder segments, the apprentices scored themselves much lower than both the mentors and the owners/managers. Of concern to the CWB Group is that the apprentices reported lower scores on many critical success factors, highlighting the need for intervention sooner than later. They indicated low personal support, confidence, willingness to try new skills, taking responsibility and having a development plan — coaching and support are needed to support these apprentices.

<table>
<thead>
<tr>
<th>Standards development plan</th>
<th>1.5</th>
<th>2</th>
<th>2.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meet with apprentice to review plan routinely</td>
<td>1.5</td>
<td>Sets stretch goals for the apprentice</td>
<td>Helped develop a plan to meet apprentice's career goals</td>
</tr>
<tr>
<td>Helped develop a plan to meet apprentice's career goals</td>
<td>1.5</td>
<td>Familiarly with training standards</td>
<td>Meet with apprentice to review plan routinely</td>
</tr>
</tbody>
</table>

Table 8. Stakeholders Experience with Apprentice Attributes for Success—HIGHEST SCORES

<table>
<thead>
<tr>
<th></th>
<th>Apprentices</th>
<th>Mentors</th>
<th>Owners/Managers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial resources to meet future training needs</td>
<td>3</td>
<td>Supportive when apprentice makes mistakes</td>
<td>3.5</td>
</tr>
<tr>
<td>Understanding the roles/responsibilities</td>
<td>2.3</td>
<td>Receptive to apprentice's questions</td>
<td>3.5</td>
</tr>
<tr>
<td>Comfortable requesting valued work assignments</td>
<td>2.3</td>
<td>Constructive and specific with feedback</td>
<td>3.5</td>
</tr>
<tr>
<td>Engaged in the development</td>
<td>2.3</td>
<td>Commitment to the apprentice’s success</td>
<td>3.5</td>
</tr>
<tr>
<td>Past experience with fabricating</td>
<td>2.3</td>
<td>Willingness to let apprentice try new skills</td>
<td>3</td>
</tr>
</tbody>
</table>
Table 9. Stakeholders Experience with Apprentice Attributes for Success—LOWEST SCORES

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Apprentices</th>
<th>Mentors</th>
<th>Owners/Managers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal support network (family, friends)</td>
<td>1.3</td>
<td>Up to date on current technologies</td>
<td>2</td>
</tr>
<tr>
<td>Developed a plan for my skills improvement</td>
<td>1.3</td>
<td>Sets stretch goals for the apprentice</td>
<td>2</td>
</tr>
<tr>
<td>Confident in ability to learn</td>
<td>1.3</td>
<td>Familiarly with training standards</td>
<td>2</td>
</tr>
<tr>
<td>Willingness to try new skills</td>
<td>1.3</td>
<td>Worked with apprentice to develop a training standard plan</td>
<td>2.5</td>
</tr>
<tr>
<td>Take responsibility when makes a mistake</td>
<td>1.3</td>
<td>Understand apprentice's career goals</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Comparison of EWAT Stakeholders Perspectives Versus Their Experience

From the apprentice’s view, what is important to them in their experience with a mentor is meeting expectations for what they deem important, except for a commitment to the apprentice’s success, and clarity on what is expected.

Table 10.

<table>
<thead>
<tr>
<th>Current Experience (out of 5)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Top 5 Most Important Attributes of the Workplace versus the Apprentice's Current Experience</strong></td>
</tr>
<tr>
<td>Safe</td>
</tr>
<tr>
<td>Supportive culture</td>
</tr>
<tr>
<td>Collaborative atmosphere</td>
</tr>
<tr>
<td>Respectful</td>
</tr>
<tr>
<td>Professional</td>
</tr>
</tbody>
</table>

<p>| <strong>Top 10 Most Important Attributes of the Mentor versus the Apprentice's Current Experience</strong> (scored out of 5) |
| Commitment to the apprentice's success | 2.0 |</p>
<table>
<thead>
<tr>
<th></th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helps apprentice learn from mistakes</td>
<td>2.8</td>
</tr>
<tr>
<td>Supportive when apprentice makes mistakes</td>
<td>2.5</td>
</tr>
<tr>
<td>Constructive and specific with feedback</td>
<td>2.2</td>
</tr>
<tr>
<td>Willingness to let apprentice try new skills</td>
<td>2.8</td>
</tr>
<tr>
<td>Engaged in apprentices’ development</td>
<td>2.2</td>
</tr>
<tr>
<td>Provides apprentice with valued work assignments</td>
<td>2.2</td>
</tr>
<tr>
<td>Proactive with feedback to apprentice</td>
<td>2.7</td>
</tr>
<tr>
<td>Employ a coaching approach rather than lecturing</td>
<td>2.5</td>
</tr>
<tr>
<td>Clear on what is expected</td>
<td>2.0</td>
</tr>
</tbody>
</table>

**Additional Findings**

In addition to the expectation and experience on the actual Apprenticeship, employers were also asked about the Apprentice Hiring Decision and Labour Market Information data.

1. **Apprentice Hiring Decision:**
   - 50% of employers cite losing work in the past five years because of a lack of qualified/skilled welding or metal fabricating staff.
   - “An apprentice presents themselves with good ethics and is keen to learn”, “known future need for welding/metal fabricating based on current contract”, and “forecasted growth in demand for welding/metal fabricating in our region” are the three most important factors impacting their decision to invest in hiring a new welding/metal fabricator apprentice.
   - 75% reported that there is not enough work for an inexperienced person and 28% cited that likelihood that once trained; the apprentice would leave once they were asked about the factors that most influence their decision now or in the past not to hire a welder/metal fabricator apprentice.
   - 50% reported that availability of skilled individuals’ information would help them make an informed decision as to when to hire

2. **Labour Market Information**
   - Two-thirds cited that knowledge of LMI is vital to their decision to proceed to hire an apprentice or motivate them to participate in apprenticeship training
   - 25% knows where and how to access local labour and economic data which forecasts the future demand for their industry to help determine their companies’ personnel needs for skilled labour
Linking Skills Strategies and Business Strategies

To understand the returns to training—particularly employer motivation to engage in new training initiatives like EWAT—we need to be able to link four variables: management practices, productivity, wages, and profits. In this study, there was not the time or resources to explore more deeply how employer attitudes towards LMI and training are correlated, or not, with overall firm HR philosophies and business models; however, some general context can be gained from reviewing the literature on HR and business strategies.

Osterman (2018) defines the “high road” as “paying or providing a path to an adequate wage in a low wage industry,” a wage that is “typically above the minimum it could get away with and still attract a workforce.” Thus, at the core of the High Road idea is the assertion that within the same industry and product market segment, firms vary in the wages they pay for similar employees.

How is it that firms can stay in business while paying such different wages? Several theories explain how this could be:

a) Firms adopt “high performance” work practices that generate higher productivity. These practices either require or enable them to pay higher wages than do rivals with different types of work organization.
b) Firms have access to some other resource (e.g., a patent) that gives them a favourable position in the product market, and share the rents from this position with their workers; either voluntarily or under pressure from unions or other stakeholders.
c) Firm owners prefer to share some profits with employees, even if it means less for themselves.

The HR High Road

In manufacturing industries, there are clear patterns of the High Road approach associated with generous wages and benefits, training, good working conditions, and high productivity, as compared to the Low Road of a race to the bottom in wages and conditions. For instance, in an industry like automotive manufacturing, the car companies themselves have long been associated with various versions of the High Road approach, whereas the supply chain has a more uneven record.

Researchers have been much interested in why and which companies go in these different directions. It turns out that it has relatively little to do with values or ideology, so why are there so few that take the High Road? These companies most often have comprehensive “production recipes” comprising quality programs, productivity, profit sharing, and training—it is this bundle of policies combined that enable the High Road approach.

For others, there are serious barriers to taking this approach. The direct costs of recruiting and training high-skill employees may not be matched by the realization of productivity gains within a time period that warrants making the investment. Workers may not be able to access the gains from productivity so are not motivated to sufficiently engage. The structure of the supply chain may not allow suppliers to make the required investments. As such, public policy may or may not support this direction in a sustainable way.
A Sketch of Participating Employers

In a preliminary way, we can get an initial assessment of employers' approaches regarding the 'High Road' criteria by simply sampling their websites to see how they express their values and strategies. As a fact check, it is also possible to sample employee experiences of these workplaces through social media sites such as Indeed.ca.

The following are the results for five representative firms currently participating in the EWAT program. To be clear, the following sections do not comprise a scientific sample, and only act as one reference point for our findings.

Company 1: Transportation and industrial machinery company

This company repairs equipment and does custom fabrication. In the industry for 50 years, providing comprehensive industrial machining and mechanical & electrical assembly services to a wide range of industries including steel mills, processing plants, mines, and contractors. They are equipped with a wide range of machining equipment for milling, turning, external/internal grinding, horizontal & vertical boring, drilling, etc. The company provides a full range of welding processes and are fully certified to ISO 9001:2015 as part of their commitment to Quality.

They also provide Engineering Design Services to complement their manufacturing capabilities. The Engineering Design Group utilizes the latest versions of AutoCAD and Solid Edge, a leader in 3D modeling software, to provide an accurate design for customers.

Employee Reviews: Employees report very unprofessional behaviour by supervisors. Overall, Company 1 seems to be on the opposite end of the spectrum from the High Road approach.

Company 2: Infrastructure company

The company was founded over 100 years ago and has been in the family ever since. They have a long history of innovation: they brought the first diesel impact hammer to North America in the early 1950s and started developing their own line of foundation specialty equipment in the late 1960s.

The company believes that they are unique among infrastructure equipment manufacturers in that they are also contractors, allowing them to try new equipment and procedures, field testing modifications and seeking improvements on every project.

Their Project Planning Services unit utilize a unique three-dimensional modeling system to plan, optimize, and present the best construction scheme possible to owners and approval agencies. They also assist the customers’ own workforce in understanding the sequencing of a complicated construction projects.
The company believes that with a challenging and rewarding work environment with opportunities for personal growth and development, it attracts qualified individuals to explore their career opportunities. Recent and pending retirements and continued growth have created opportunities for full-time positions with benefits.

*Employee Reviews:* 1): “The typical day at work is mostly interacting with clients and publications by email and phone. You get to deal with some interesting clients and problems on a daily basis. There are lots of opportunities to come up with creative solutions and work through difficult problems. There is also a lot of collaboration within and between each department to work towards positive outcomes.”

2): “It’s a fun environment with a lot of laughs because of the absurdity of some of the things we encounter at work. The workplace culture is pretty laid back with a super casual dress code and very welcoming.”

3): “For me, the hardest part of the job is just dealing with a difficult client, while the most enjoyable part is working with a great team.”

4): “This company will turn into something great. However, as it stands, they are not there yet. Lots of people get fired, lots of drama among co-workers. The work is interesting but not worth it.”

Overall, Company 2 appears to be a poster High Road workplace.

**Company 3: Transportation Equipment Company**

Family business doing repair and service work founded in 1972, with trust as its critical guiding principle that continues today as the foundation of their work, their growth, and their ongoing business relationships.

In the late 1990s, they established a new manufacturing company aiming to combine the same deep commitment to old-world work ethic, craftsmanship, attention to detail, and genuine customer satisfaction. This company has a solid foundation of good people and a true hands-on understanding of equipment design, integrity, serviceability, and longevity.

The company is committed to continuous improvement of their products by ‘light weighting’—enhancing the equipment’s structural integrity to reduce maintenance costs and engineering design for greater equipment life. The company has produced a new product architecture and utilizes multi-material implementations to eliminate painting, improve wear, prevent rust, reduce maintenance, and provide added value and image to the product.

*Employee Review:* “Perfectly decent to pay bills and maintain life. Lots of grinding very dirty type of work, people are nice generally, but you always have those few that ruin it for everyone.”
Company 4: Materials handling and transportation airport services company

This is a global company that designs, engineers, installs, and supports integrated material-handling systems such as baggage handling systems, Automatic Guided Vehicles (AGVs), conveyor systems, and Automated Storage and Retrieval Systems (AS/RS).

Products manufactured by the company include:

- **Automatic Guided Vehicles (AGVs):** mobile robots used in industrial applications to move materials around manufacturing facilities and warehouses.
- **Baggage Handling Systems (BHS):** a type of conveyor system installed in airports that transports checked luggage from ticket counters through security screening machines to areas where the bags can be loaded onto airplanes. A BHS also transports checked baggage coming from airplanes to baggage claims, or to an area where the bag can be loaded onto another airplane.
- **Conveyors:** systems that move materials from one location to another along a fixed path. Different types of conveyors have been developed for specific applications such as moving light or heavy loads, moving products through paint processing, and moving materials along an assembly line.
- **Automated Storage and Retrieval Systems (AS/RS):** a variety of computer-controlled methods for automatically depositing and retrieving loads from defined storage locations.
- **Automated Guided Vehicles (AGCs):** these move products on an assembly line or transport goods throughout a plant or warehouse. AGCs can move small and large loads along a magnetic tape throughout the working area. Other products can be added to AGCs such as longer tape to enable larger work areas, or larger AGCs for larger loads. Production rates can be modified by adding or removing AGCs from production.

Employee Reviews: 1) “Good working environment and excellent employer. A place with friendly and understanding management, professional attitude, clean and team-oriented, with excellent supply of tool, equipment, and materials to properly and safely perform the work at hand. Enjoyed all co-workers, management, and facility. Excellent benefits and social activities, but often shortage of work (so there are layoffs).”

2) "Every day was different. I repaired, troubleshooted, or maintained various issues day-to-day. Every day, I also changed back-up tapes. I repaired computer, server, and network problems until the issues at hand were solved and completed."

3) "The staff is very helpful with training and very friendly. Never had any problems with management my overall experience was really good and was very pleased."

Company 5: Steel fabricator company for building structures

This is an ISO 9001 quality registered roller, bender & steel fabricator. The business began more than 40 years ago as a steel fabricator by an original founder who is still active today, eventually growing into the
full-service roller bender. The company says that it has been a priority for them to invest in staff and steel-bending technology until it has become their specialty, focusing on heavy, structural steel section rolling and bending.

Architecturally Exposed Structural Steel (AESS) is steel that is designed for structural sufficiency to meet the primary needs of the building, canopies, or ancillary structures, while at the same time some remaining exposed to view. It is therefore a significant part of the architectural language of the building. The design, detailing, and finish requirements of AESS will typically exceed that of standard structural steel and is normally concealed by other finishes.

The company has an official commitment to the Accessibility for Ontarians with Disabilities Act (AODA), with procedures to provide services to persons with disabilities. The company addresses assistive devices, service animals, support persons, and proper communication and training of their employees. The purpose of this policy is to ensure that they provide goods and services to persons with disabilities in a manner that is consistent with the principles of dignity, independence, integration, and equal opportunity.

The company commits to provide training to all employees and others who deal with the public or other third parties on their behalf, as well as all those who are involved in the development and approvals of customer service policies, practices, and procedures. This training will be provided as part of the new hire orientation for all new employees in positions interacting with the public. Where third parties are engaged to perform services on behalf of the company, they may require that the third parties provide acknowledgement that their employees, agents, and volunteers receive any applicable training required by the AODA.

Employee Reviews:
1) “I worked at this shop for 18 years. Nothing bad to say about this company. I would recommend it to anyone looking for a long-term career. Good people there.”

2) “Really laid-back place which has pros and cons, it’s kind of a free-for-all and nobody likes to take responsibility for much or clean up after themselves. Doesn’t seem to be too much incentive to want to advance within the company.”

3) “I could make my own hours. Learned to work independently and in groups. Good work. Great workers on the floor. Management think you don’t have a life or shouldn’t. They don’t care about employees. If you’re good at your job No chance of promotions. Would not recommend this place unless you need a job until you can find better. Pros: coworkers and healthcare. Cons: Management! They hire too many people then have layoffs.”
Conclusions

All modern governments struggle with the future of economic growth, productivity, and innovation. One of the perplexing challenges is the wide disparity in the rates of productivity and profitability within industries. Within manufacturing, it is useful to examine the phenomenon of High Road versus Low Road approaches to skills, training, and human resource management, in order to better inform company policy and inspire the greatest growth possible in the Canadian manufacturing and welding industries.

The clients of the EWAT program are predominantly industrial manufacturing firms. The underlying hypothesis of this report is that employers active in the program who have a holistic High Road policy will benefit most from EWAT training for their employees—particularly when it is integrated with overall business strategies, technological innovation, and viewing training as a long-term investment and not just as a short-term cost. The productivity gains and profitability results will mutually benefit the employers and the workers involved.

Investment in skills development (including new entrants to the labour market) is long-term action and thus the return in terms of cost savings and productivity cannot always be quantified. As such, different kinds of companies have withdrawn from initial training, or reduced their involvement in it. While this drives down costs in the short term, it creates a long-term risk of a shortage of skilled workers.

Regarding the EWAT program in the Hamilton region, several initial conclusions can be made. The economic benefits for employers are clear, yet they have not at this time been fully digested in the industry:

- Added value contributed by the apprentices to production;
- Reduced recruitment and training costs;
- Ability to pay slightly less than the worker’s productivity as a fully trained worker, because of the worker’s familiarity with the firm and the worker’s specific training and knowledge of the intricacies of the firm’s technologies and social interactions;
- Reduced risk of not finding adequately and specifically skilled workers to replace retirees and others leaving the firm;
- The value of extra skilled workers that the firm trained on its own; and
- Gains in innovation accruing from the apprentice’s in-depth understanding of the work processes within the firm and the quality of training.

The survey results are still very preliminary, but some initial findings have surfaced—primarily that employers engaged to date in the EWAT program place relatively little value on LMI information. In addition, many of these employers have cultures and practices that fall on the High Road side of HR philosophies, which are more amenable to employee training. It is critical to explore these findings more deeply in future research, preferably through in-depth interviews with the individual firms. In addition, the long-range success of EWAT will require research that develops an economic rationale for engaging in training that appeals to the broadest range of employers in the industry.
Recommendations

The Canadian Welding Bureau (CWB) embarked on the EWAT project as an industry-led initiative to achieve the following:

• increase apprenticeship enrolment;
• increase completion rates;
• improve skills development; and
• increase employer participation in apprenticeship training

Through the lessons learned in implementing the program, it is our intent to present to both the federal and provincial governments a series of recommendations that will result in the achievement of the above goals.

Over 50 Hamilton-region employers were approached to participate in the Hamilton EWAT program. After much discussion between the CWB and the prospective employers, approximately nine Hamilton and area employers chose to commit to the program by signing the EWAT Letter of Agreement (see Appendix section) and most importantly by hiring an apprentice metal fabricator. It was also interesting to note the number of employers that signed a letter of agreement, but then did not hire an apprentice—even after interviewing one or more candidates.

While on the surface, it appears that the decision to participate in EWAT would appeal to more employers, in fact most employers were reluctant to participate for a wide variety of reasons. The following are some of the most common reasons for non-participation:

• The apprentice will leave once they are trained;
• I don’t want to help train an individual that may then go to my competitors and take ‘trade secrets’ with them;
• They will demand a higher rate than other employees who have not completed an apprenticeship;
• I don’t believe in apprenticeship training, because when I hire someone that has a CWB ticket, they only do that very specific type of work;
• There is no guarantee that I will end up with one of the EWAT apprentices at the end of the program; and
• As the production manager, I see the benefits of the program, but my owner is not convinced it is in the best interest of our company due to the investment in training the apprentice.

In the relatively short period of time that we have been piloting the EWAT program in the Hamilton region, we have learned the following about most employers:

• Employers are inherently resistant to change—certainly not a revelation, but something that has been confirmed through our experiences;
• Most small- to medium-sized employers base their hiring on the number of confirmed work orders on their desk and not as a result of potential future opportunities;
• Employers prefer to hire skilled labour as needed and do not plan for future needs by participating in apprenticeship training (according to Canadian Apprenticeship Forum, only 19% of all employers in all sectors participate in apprenticeship training); and
• Employers do not believe there is a current skills shortage.

If the CWB hopes to change employer perceptions about apprenticeship training and skills development, we must realize that this type of change requires considerably more time and resourcing than we have invested into the EWAT program to date. While the economic benefits of apprentices for employers seems very clear to the CWB, from the perspective of the employer, there needs to be more value added for participating in the EWAT program.

At the time of this study, CWB has fifty employers across five cities in Canada who are willing to participate in the EWAT rotational program. With many employers not willing to allow their apprentice to rotate, the CWB seeks to support these companies be successful with apprenticeships as well. Consequently, to increase successful outcomes for welding fabricator apprenticeship, the CWB is investing in the development of programs, tools, learning and networking opportunities which will be available to support all Canadian companies, and all stakeholders including employers, mentors, and apprentices.
References


## Attributes of Apprentices

<table>
<thead>
<tr>
<th>Attributes of Apprentices</th>
<th>Attributes of Workplace, Mentor and Owner/Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Access to needed transportation</td>
<td>18. Motivated for personal success</td>
</tr>
<tr>
<td>3. Comfortable requesting valued work assignments</td>
<td>20. Past experience with welding</td>
</tr>
<tr>
<td>4. Commitment to learning</td>
<td>21. Personal support network (family, friends)</td>
</tr>
<tr>
<td>5. Commitment to succeed</td>
<td>22. Personally interested in the mentor</td>
</tr>
<tr>
<td>6. Confident asking for feedback</td>
<td>23. Previous experience with a mentor</td>
</tr>
<tr>
<td>7. Confident in ability to learn</td>
<td>24. Proactive in soliciting feedback</td>
</tr>
<tr>
<td>8. Confident in asking for what is needed</td>
<td>25. Receptive to constructive feedback</td>
</tr>
<tr>
<td>10. Developed a plan for skills improvements</td>
<td>27. Successful in making relationships with other staff</td>
</tr>
<tr>
<td>11. Effective at conflict management</td>
<td>28. Takes responsibility when makes a mistake</td>
</tr>
<tr>
<td>12. Engaged in the development</td>
<td>29. Understanding of career opportunities upon graduation</td>
</tr>
<tr>
<td>13. Experience with fabricating</td>
<td>30. Understanding of the role of the apprentice</td>
</tr>
<tr>
<td>14. Familiarly with training standards</td>
<td>31. Understanding the roles/responsibilities</td>
</tr>
<tr>
<td>15. Financial resources to meet future training needs</td>
<td>32. Willingness to try new skills</td>
</tr>
<tr>
<td>16. Keen to learn from my mistakes</td>
<td></td>
</tr>
<tr>
<td>17. Level of math knowledge relative to what is needed in the role</td>
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Attributes of Workplace

1. Collaborative atmosphere
2. Collegial
3. Good facilities
4. Professional
5. Respectful
6. Safe
7. Supportive culture

Attributes of Mentor

| 1. Clear on what is expected | 15. Meet with apprentice to review plan routinely |
| 2. Commitment to the apprentice's success | 16. Proactive with feedback to apprentice |
| 3. Constructive and specific with feedback | 17. Provides apprentice with valued work assignments |
| 4. Demonstrates innovative approaches | 18. Quality time spent with apprentice |
| 5. Effective at conflict management | 19. Receptive to questions from the apprentice |
| 6. Employ a coaching approach rather than lecturing | 20. Sets stretch goals for the apprentice |
| 7. Engaged in apprentices' development | 21. Skills and expertise in fabricating |
| 8. Experience with mentoring | 22. Skills and expertise in welding |
| 9. Familiarly with training standards |
10. Help apprentice to make relationships with other staff
11. Helped develop a plan to meet apprentices' career goals
12. Helps apprentice learn from mistakes
13. Interested in apprentice's personal success
14. Interested in apprentices personally
15. Supportive when apprentice makes mistakes
16. Understands the apprentice' career goals
17. Up to date on current technologies
18. Willingness to let apprentice try new skills
19. Worked with apprentice to develop a training standards development plan

**Attributes of Owner/Manager**

1. Commitment to apprentices' own personal success
2. Diversity of processes used (SMAW, GTAW, GMAW, FCAW)
3. Diversity of products manufactured (variety of materials)
4. Experience with apprenticeship
5. Level of support for the mentor
6. Oversight of the apprentice-mentor experience
7. Support for apprentices
The opinions expressed in this report do not necessarily reflect those of the Government of Canada or the Government of Ontario.