Barriers to Attracting Apprentices and Completing their Apprenticeships



Workforce Planning Board of Grand Erie Commission de planification de la main-d'oeuvre de Grand Erie





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ATN Access Inc. Brant Haldimand Norfolk Catholic District School Board Carrier Centres Conestoga College Employment Services Elgin Excellence in Manufacturing Consortium Fanshawe College Grand Erie District School Board Grand River Employment and Training (GREAT) Inglis Cycle

Joint Apprenticeship Training Committee (JATC) Literacy Link South Central Mohawk College Ontario Ministry of Training, Colleges and Universities Rassaun Steel SCOR (Regional Economic Development) St Leonard's Community Services Thames Valley District School Board The Apprenticeship Network YWCA St. Thomas Elgin In 2011, the Canadian Apprenticeship Forum forecasted a need for 316,000 workers to replace the construction industry's retiring workforce (CAF, 2011A). Meanwhile, worker shortages in the automotive sector are expected to reach between 43,700 and 77,150 by 2021. The Canadian Apprenticeship Forum's 2011 survey data also showed that nearly half of employers report a shortage of qualified staff (CAF, 2011A). With worker shortages already widespread across skilled trades sectors, the attraction of apprentices and the completion of apprenticeships are issues concerning stakeholders involved in worker training, economic development, and workforce planning. Thus, attracting qualified individuals into apprenticeships and supporting them to completion is imperative.

Some studies indicate that in recent years apprenticeship registrations have steadily increased, however the number of completions has been substantially lower than the number of registrations (CAF, 2011A).

The effects of apprenticeship cessation are broad and far-reaching, and highlight a need for stakeholders to attract more apprentices and to support the completion of their apprenticeships in Ontario and indeed in all of Canada.

Attracting more apprentices and enabling the completion of their apprenticeships may increase employment, address a skills shortage in the labour market, and improve the economy.

Barriers to Apprentice Participation

Stigma and limited exposure to the trades.

Many parents, employers, and young people incorrectly assume that trades are seasonal, dirty, dangerous, and do not require a high degree of skill or intelligence (LAPORTE & MUELLER, 2011). Negative attitudes such as these persist when teachers, guidance counsellors, and community providers lack knowledge of the benefits of apprenticeships. Limited exposure to the trades is a problem for young people because employers want to know that the apprentice they are bringing on has been vetted, has at least some related experience, and is capable

The effects of apprenticeship cessation are broad and far-reaching, and highlight a need for stakeholders to attract more apprentices and to support the completion of their apprenticeships in Ontario and indeed in all of Canada. of learning on the job. Further, elementary and high schools often promote college and university over apprenticeships or careers in the trades (CAF, 2004). This bias limits the jobs students are aware of, as well as their perceptions of what trades careers look like. Additionally, many parents that have completed apprenticeships do not encourage their children to follow the same pathway, seeing it as inferior to university, unstable, and offering little possibility of career advancement (SHARPE & GIBSON, 2005).

For individuals actively looking for work or training, it is difficult to connect with an employer that is searching for an apprentice. This challenge is exacerbated by the fact that the most effective marketing for apprenticeships occurs through word-of-mouth and informal recommendations (CAF, 2011D).

Together, these issues present a negative view of the trades, portraying them as tiresome, undesirable, and difficult to get into-prevailing stereotypes based on incorrect assumptions.

Discrimination

Instances of discrimination, such as inequitable hiring practices, are perceived as occurring in the trades frequently thus discouraging women, aboriginals, visible minorities, recent immigrants, and individuals with disabilities from seeking apprenticeships. Members of these underrepresented groups are less likely to access apprenticeship programs, are less likely to complete apprenticeships, and are subsequently less likely to register as skilled tradespersons (CAF, 2011a; STEWART, 2009).

Cost of training

Some apprentices view starting an apprenticeship as a serious financial risk. The costs of training include tuition, tool expenses, lower starting wages than in other careers, and the loss of wages during block release periods. Though grants are available in some jurisdictions, it is common for apprentices to spend up to \$8000 in the first two years of their apprenticeships (Sharpe & GIBSON, 2005). Resultantly, apprentices may come to perceive the costs of apprenticeship as outweighing the benefits of becoming licensed journeypersons.

Essential Skills

In 2010, the Canadian Apprenticeship Forum reported that 10% of employers chose not to hire apprentices because of their low literacy and numeracy levels and their poor communication skills. Many of these employers reported that the lack of these essential skills presented substantial costs in time, money, and energy that were detrimental to their businesses (CAF, 2009, 2010). Employers' concerns about low essential skills are supported by research. For example, essential skills issues contribute to low productivity, reduced safety, and increased error rates (CAF, 2011c). Additionally, apprentices struggling with essential skills have an increased likelihood of abandoning the skilled trades in favour of other careers.

Barriers to Employer Participation

Supporting apprenticeships benefits employers by increasing workplace competitiveness, improving productivity, improving quality of services and products, improving workforce skills, and reducing staff turnover. Recent reports optimistically suggest that employers familiar with apprenticeship have a positive attitude towards it, and that these attitudes continue to improve (CAF, 2011B), however barriers that discourage employer participation persist (e.g., training mentors, regulatory hurdles).

Training mentors

Many journeypersons feel they are unprepared to mentor apprentices and some view the task as burdensome and time-consuming. Additionally, many employers are uninformed on the incentives and resources available to support mentors and mentor training (SAKS & HACCOUN, 2010). Mentorship programs for journeypersons are scarce, however there are a few in Canada (Government of Newfoundland and Labrador, Department of Advanced Education and Skills, 2015). Overall, the lack of journeypersons with adequate mentoring skills is a barrier to employers' hiring of apprentices.

Regulations

Regulatory frameworks, including journeyperson ratios and licensing requirements, can make hiring an apprentice onerous and confusing. Many employers are aware of programs supporting apprenticeships, but they perceive the required administrative procedures as overwhelming (CAF, 2010). Though apprenticeship can be a valuable human resources option for businesses, frequent changes in paperwork and program requirements can discourage employers from providing work placements to potential apprentices (CAF, 2013).

Barriers to Apprenticeship Completion

In 2011, the Registered Apprenticeship Information System reported on Canadian apprentices' continuation rates for apprentices that registered for apprenticeship in 1994 and 1995 and found that, of all Canadian provinces, Ontario's completion rates were the lowest (Laporte & Mueller, 2011). According to the 2007 National Apprenticeship Survey, most apprentices are under 35 years of age and those under 25 years of age are most likely to abandon their apprenticeships prior to completion (Ménard, Menezes, Chan, & Walker, 2008). These data elucidate a problem in Ontario-many apprentices are not completing their apprenticeships. Although research on the specific barriers to the completion of apprenticeships is scarce, a number of factors have been identified as barriers including a lack of essential skills, a lack of adequate mentoring, a number of systems factors, and membership in underrepresented groups.

OVERVIEW OF EXISTING RESEARCH

Essential skills

Several reports have pointed to essential skills as predictors of success and failure in the skilled trades. However, the Canadian Apprenticeship Forum (2004) found that some employers view a lack of essential skills as an individual problem, and some as a sign of a worker unsuitable for skilled work (Lehmann, 2005; Sharpe & GIBSON, 2005). Overall, the lack of essential skills appears to be one of the clearest barriers to the completion of apprenticeships in Canada.

Mentorship

The relationship between the apprentice and the journeyperson is a critical element of apprentice training and one that is deeply rooted in tradition. Apprentices themselves feel that this relationship is meaningful. For example, when asked to identify important characteristics in employers, apprentices rated "having a journeyperson willing to teach them" the highest (CAF, 2011A, 2011D). In summary, a lack of adequate mentoring may discourage apprentices from completing their apprenticeships.

System factors

Many external pressures affect the apprenticeship system, from training delivery methods to the range of skills taught, from industry competition to the length of the apprenticeship. Moreover, inflexible program delivery, such as the "block release" period–where apprentices leave their employer for weeks or months to complete the in-class portion of their training–discourages both employers and apprentices. Employers often see this period as detrimental to productivity, while apprentices often have to relocate and bear an increased financial burden to attend one of the few available accredited training facilities (STEWART, 2009). Moreover, varying economic conditions can lead to an over- or under-supply of workers, and variations in an employer's business cycle can lead to variations in the number of available apprenticeships (SKOF, 2006).

Underrepresented groups

According to the 2007 National Apprenticeship Survey, a "typical apprentice is male, under 35 years old, non-Aboriginal, non-immigrant, non-visible minority, with no history of disability" (MéNARD ET AL, 2008). In other words, Canadian apprentices are typically white, Caucasian, able-bodied men under the age of 35.

Apprentices from underrepresented groups (e.g., women, aboriginals, visible minorities, immigrants, and people with disabilities) are more likely to abandon and/or prolong their apprenticeships (i.e., for longer than 1.5 times the normal length of an average apprenticeship). While the probability of a woman completing her apprenticeship peaks at the age of 41 years, women that are divorced, single, or don't have children are less likely to complete their apprenticeships than women that are married and women that have children (LAPORTE & MUELLER, 2011). Although data on apprentices with disabilities is scarce, the probability of completion for these apprentices is approximately 25% lower than average. Similarly, their likelihood of dropping out is approximately 13% higher than average (Dostie, 2010).

As shown above, several large-scale studies have looked at the barriers to attracting apprentices to the skilled trades. Much of this research, however, has been at the national level and little of it has focussed on the barriers to completing apprenticeships. In the current study, we unearthed the barriers to attracting apprentices and to completing apprenticeships in the Elgin, Middlesex, Oxford, and Grand Erie regions of south central Ontario. Further, we used these findings to generate actions to improve apprentice participation and completion for inclusion in regional implementation plans. To accomplish this we used Trochim's (1989) concept mapping research method and modified focus groups and surveys.

Concept Mapping

Concept mapping is a mixed-methods approach to research that involves qualitative data collection and quantitative data analysis techniques. In this method a large number of participants generate a broad range of ideas on a topic, and then a smaller group of participants organizes these ideas. In many research designs, the researchers organize the data they collect, but in concept mapping the participants are treated as experts and organize the data themselves. After the data is organized, two statistical procedures (multi-dimensional scaling and hierarchical cluster analysis) are used to render the data visually—as a two-dimensional map. Concept mapping is a statistically sound methodology that is valuable in that it minimizes researcher bias and yields an easy-to-understand visual representation of a groups' thoughts and ideas on a topic

(KANE & TROCHIM, 2007).

Procedure

The concept mapping process consisted of two phases of data collection embedded in a five-stage procedure. First, participants brainstormed barriers to attracting apprentices and completing apprenticeships. They were asked to complete the following sentences as many times as they could:

(1) A specific barrier to participating in apprenticeships is...
 (2) A specific barrier to completing apprenticeships is...

Once this *brainstorming* phase was complete, the data was "cleaned" by the research team. The goal of the data cleaning stage was to reduce the large lists of barriers to two succinct lists that would be more manageably organized into categories in the following sorting and rating phase. To clean the data, the primary researcher eliminated obviously redundant ideas and then the research team (n = 2) assigned informal keywords to each statement. In a group of three people (two researchers and the primary

METHOD

project initiator) redundant statements were eliminated. Finally, the primary researcher eliminated vague ideas, combined similar statements, and edited unclear statements yielding final lists of 80 and 81 barriers to attraction and completion respectively.

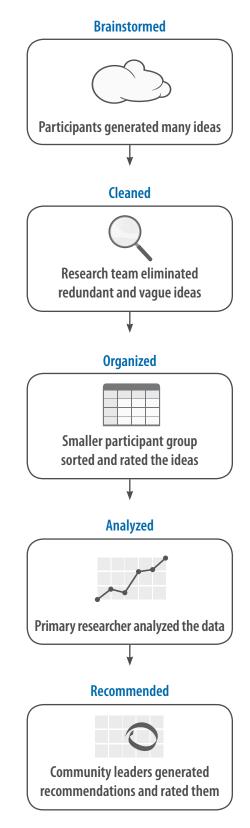
Next, a smaller group of participants sorted the barriers into categories that made sense to them and rated these barriers in terms of strength. Following this sorting and rating phase, the primary researcher generated concept maps using Concept System Global MAX software (Concept Systems, 2013). This process involved deciding on the number of clusters per map, and naming the clusters using suggestions made by sorting/rating participants. Finally, the maps were analyzed and between-groups comparisons were made.

Through this five-step concept mapping procedure we elucidated a large number of barriers to attracting apprentices and completing apprenticeships and narrowed these to a manageable number while maintaining the breadth of ideas captured.

Participants organized the barriers into categories and rated these in terms of strength before we visually rendered the barriers, categories, and ratings as a two-dimensional map.

Participants: Study One

Forty-one potential apprentices, 41 pre-apprentices, 14 teachers, and 18 community providers, totalling 114 people overall, generated ideas on the barriers to attracting apprentices to the skilled trades. Of these, 43 were women, 24 were aboriginals, and eight were persons with a disability. Sixty-four of the 114 participants were from the Elgin-Middlesex-Oxford region, while fifty were from the Grand Erie region (Brant, Haldimand, and Norfolk).



Seventeen potential apprentices, 12 pre-apprentices, 7 teachers, and 12 community providers, totalling 48 participants overall, sorted and rated the barriers to attracting apprentices to the skilled trades generated by the larger group. Among these, 30 were women, 14 were aboriginals, and eight were persons with a disability. Twenty-five of the 48 were from the Elgin-Middlesex-Oxford region while 23 were from the Grand Erie region.

Overall, our first sample consisted of a cross-section of prospective apprentices and the people supporting them, including members of several underrepresented groups typically omitted from the research literature (e.g., women, aboriginals, people with disabilities).

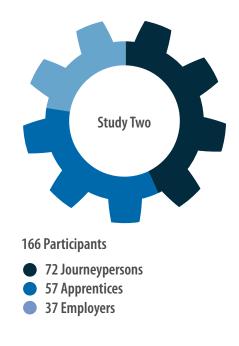
Participants: Study Two

Thirty-seven employers, 72 journeypersons, and 57 apprentices, totalling 166 people overall, generated ideas on the barriers to completing apprenticeships. Of these, 85 worked in the industrial sector and 81 in motive power. From the industrial sector, the journeypersons and apprentices were industrial mechanic millwrights (12), industrial electricians (12), general machinists (5), welders (17), tool and die makers (9), tractor trailer commercial drivers (2), and others (14). In the motive power sector, the journeypersons and apprentices were automotive service technicians (27), truck and coach technicians (12), auto body and collision damage repairers (21), and motorcycle technicians (2). Eighty-one of the 166 participants were from the Elgin-Middlesex-Oxford region while 85 were from the Grand Erie region.

Eleven employers, 12 journeypersons, and 11 apprentices sorted and rated the barriers to completing apprenticeships. Among these, 16 were from the industrial sector and 18 from motive power. Eighteen of the 34 sorters/raters were from Elgin-Middlesex-Oxford (6 from each of Elgin, Middlesex, and Oxford) and 16 were from Grand Erie (6 each from Brant and Norfolk, and 4 from Haldimand).







METHOD

Overall, our second sample consisted of the people most directly involved in apprenticeships in the skilled trades in the Elgin-Middlesex-Oxford and Grand Erie regions.

A broad range of journeypersons and apprentices were represented in our sample, and this range mirrored Ontario's journeyperson and apprentice population in terms of class (i.e., type of trade).

Modified Focus Groups

In the third phase of this study, leaders in apprenticeship in the Elgin-Middlesex-Oxford and Grand Erie regions were invited to view the results from the concept mapping phases and generate recommendations to improve apprenticeship participation and completion.

Procedure

Leaders (e.g., employers, teachers, community providers, government workers, academics) viewed two presentations on the findings from phase one; the first session was on barriers to attracting apprentices and the second on barriers to completing apprenticeships. Next, they independently listed ideas by finishing the following prompts as many times as they could:

1) A specific action to improve apprenticeship participation is...

2) A specific action to improve apprenticeship completion is...

The research team "cleaned" these data following the same procedure used in the concept mapping phase (described above). In this way, the large lists of 176 recommendations to improve participation in apprenticeships and 139 recommendations to improve completion of apprenticeships were reduced to more manageable ones containing 55 and 36 recommendations respectively. Using online surveys, the leaders then rated the suggested actions using 1 to 5 scales of importance and feasibility, with scores of 5 indicating high importance and feasibility and scores of 1 indicating low importance and feasibility. These scores were averaged to yield an overall 'importance x feasibility' score, and ranked lists of recommendations were generated based on this score. Actions are described and rating scores presented in the findings section later in this report.

Participants: Study Three

Forty-six community leaders generated recommendations to attract more apprentices to the skilled trades. Thirty-six were from Elgin-Middlesex-Oxford and 10 from Grand Erie. Further, 15 community leaders generated recommendations to improve apprenticeship completion. Eight were from Elgin-Middlesex-Oxford and 7 from Grand Erie. Subsequently, 36 leaders rated the recommendations to attract more apprentices and 35 to improve retention and completion.

Rendering Statements Spatially

Using Concept System Global MAX software (Concept Systems, 2013), statements were rendered two-dimensionally. A statistical procedure called multi-dimensional scaling determined spatial relationships between statements and plotted these as points in relation to one another. Distances between these points denote the frequency with which statements were sorted together. In this way, statements sorted together are plotted close together whereas statements seldom sorted together are plotted far apart. A stress value was calculated to determine the accuracy of our maps. Stress values range from 0 to 1, with lower values reflecting greater accuracy. We obtained a stress value of 0.265 for our Barriers to Attracting Apprentices to the Skilled Trades map and of 0.238 for our Barriers to Completing Apprenticeships map. In relation to Sturock and Rocha's (2000) benchmark of 0.390, our stress values were very low. As lower values signify increased accuracy, the concept maps yielded by our study are highly accurate.

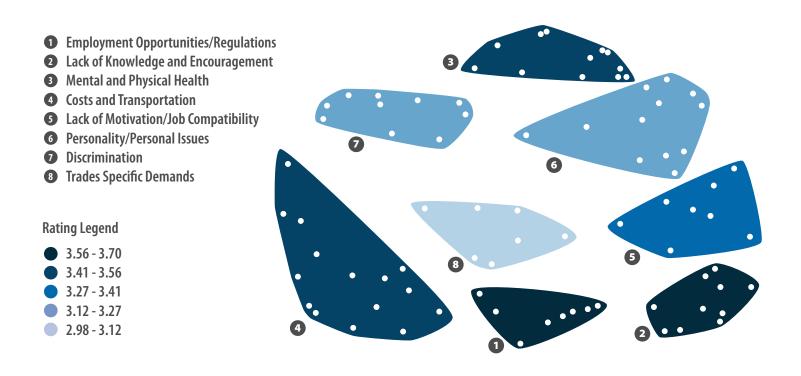
Clustering Statements

Hierarchical cluster analysis categorized the statements into conceptually meaningful groups. Here, each statement is considered its own cluster and merged with other statements in successive iterations until all statements are merged into a single large cluster. The researcher decides which iteration provides the greatest degree of conceptual meaning while maintaining statistical reliability. Bridging indices provide a reliability statistic reflecting the ease with which statements were sorted. Although the aim is to obtain low bridging index averages for the clusters, reducing the bridging index averages by merging clusters sometimes results in losing meaningful distinctions gained by separating clusters. Thus, deciding on a final number of clusters requires both knowledge of the concept mapping method and the topic being investigated (Kane & Trochim, 2007). For the current studies the primary researcher settled on eight-cluster iterations for both maps, finding this number to be the best compromise between conceptual meaning and statistical reliability.

As lower values signify increased reliability, the concept maps yielded by our study are highly reliable.

Map 1: Barriers to Attracting Apprentices to the Skilled Trades

Prospective apprentices and their teachers and community providers organized barriers to attracting apprentices into the following categories (from highest rated to lowest):



Note: In the sections below ratings in parentheses are on a 1 to 5 scale with 5 signifying high importance and 1 low importance. Also, "M" in parentheses abbreviates Mean score (i.e., statistical average).

Cluster 1: Employment opportunities/regulations.

Prospective apprentices and their support (e.g., community providers, teachers, parents) rated barriers in this cluster highest amongst all barriers to attracting apprentices to the skilled trades. They said, "finding an employer to register under" was a barrier and rated it as a very strong one (M = 4.55). This aligns with previous research highlighting the difficulty in connecting with employers looking for apprentices and that finding apprenticeships often occurs through word-of-mouth (CAF, 2011B). Prospective apprentices and their support also cited "lack of opportunities to gain experience" and "employers do not offer a wide enough range of skill development" as strong (M = 3.97) and moderately strong (M = 3.45) barriers. These perceptions may reveal employers' inability to provide opportunities needed for apprentices' skill development.

To address these barriers, community leaders in Elgin-Middlesex-Oxford and Grand Erie suggested that stakeholders in apprenticeship "identify and promote the online job banks that connect skilled trades and employers" and rated this action as both important (M = 4.4) and feasible (M = 4.3). The leaders further suggested that stakeholders "encourage employers to post apprentice jobs in online job banks" and "create an association of businesses (i.e., a consortium) for apprentice sharing." They rated this latter action as important (M = 4.4) but slightly less feasible (M = 3.8).

Cluster 2: Lack of knowledge and encouragement.

Amongst the statements in this category were barriers related to knowledge of apprenticeship and the skilled trades. Participants cited "lack of understanding of a trade or the industry," "lack of knowledge of what apprenticeship is," and "knowledge of where and how to find information" as moderately strong to strong barriers (M = 3.86, 3.66, 3.79). They further stated that "teacher knowledge of apprenticeship," "support workers' knowledge of 'apprenticeable' trades," and "parents unaware of opportunities" were barriers and rated these as moderately strong (M = 3.62, 3.45, 3.41). These perceptions are in accord with previous research showing that stigma persists when teachers, counsellors, and community providers lack knowledge of the trades (CAF, 2004), and expose an access to information problem.

To address these barriers, community leaders in Elgin-Middlesex-Oxford and Grand Erie recommended that stakeholders create information briefs, organize events, engage support providers, and promote apprenticeship in the community and generally rated these actions as important (M = 4.4, 4.4, 4.3, 4.4, 4.2, 4.4) and feasible (M = 4.3, 4.2, 3.9, 3.9, 4.1, 3.8). They suggested that stakeholders "create an online FAQ page to address common questions on apprenticeship," "create and provide information resources with steps, procedures, and requirements for entering an apprenticeship (e.g., website, brochures)," and "partner with local radio and television to promote apprenticeship programs and events." They further suggested that stakeholders "educate the parents of potential apprentices through information sessions and open houses," "plan apprenticeship awareness week that includes a skilled trades day," and "provide guidance counsellors with authentic experiences in the field (e.g., visiting training facilities)."

Cluster 3: Mental and physical health.

Prospective apprentices and their support recognized disabilities and psychological problems as strong and moderate barriers respectively. Specifically, participants focussed on learning disabilities, citing "unaccommodated learning disabilities" and "undiagnosed learning disabilities" as barriers. They also named physical factors such as "physical disabilities," "physical limitations of programs with physical requirements," and "pain from a disability" as moderate to strong barriers (M = 3.79, 3.79, 3.72). Accordingly, previous research shows that members of underrepresented groups such as individuals with disabilities are less likely to participate in apprenticeships and to register as journeypersons (CAF, 2011A; STEWART, 2009). This may be due to a lack of infrastructure directing people with disabilities towards apprenticeships and assisting them once participating.

Addressing these concerns, leaders recommended that stakeholders "attract funds for learning assessments, assistive technology, and skill training/upgrading for people with learning disabilities." They rated this action as important (M = 4.0) but only moderately feasible (M = 3.4). Therefore this action is recommended but may require dedication to implement.

Cluster 4: Costs and transportation.

Participants identified factors related to financial insecurity ("not getting paid for several weeks during training," "lack of money during schooling") and start-up costs ("lack of tools, equipment, and work clothes"), and rated these as strong barriers (M = 4.14, 3.9, 3.86) to participating in apprenticeships. They also cited transportation issues ("lack of transportation," "lack of drivers' license," "transportation cost," "training location") and rated these more moderately (M = 3.79, 3.79, 3.55, 3.41). Participants' perceptions on financial insecurity and start-up costs are supported by previous research showing that apprentices view apprenticeship as a financial risk and that they incur substantial costs in the initial years of their apprenticeships (Sharpe & Gibson, 2005). Interestingly, participants in our study rated financial insecurity issues specific to skilled trades careers ("pay rate," "seasonal work") as relatively weak barriers (M = 3.1, 3.07) indicating less concern about the viability of the trades as a career option than about financial insecurity during the initial years of apprenticeships.

To address these barriers community leaders from Elgin-Middlesex-Oxford and Grand Erie suggested that stakeholders "promote existing financial programs (e.g., Canada Apprentice Loan)" and "provide life skills (e.g., budgeting) coaching at the beginning of apprenticeship." Leaders rated these actions as important (M = 4.3, 4.3) and feasible (M = 4.3, 3.8) thereby making them easy for us to recommend. Participants in our study showed less concern about the viability of the trades as a career option than about financial insecurity during the initial years of apprenticeship.

Cluster 5: Lack of motivation/job compatibility.

Participants rated "lack of grade 12 or specific pre-training required" as a strong barrier (M = 3.72). They also rated lack of interest and other career options ("lack of interest in trades," "uncertainty about career path," "another career option," "fear of career change") as moderate barriers (M = 3.48, 3.48, 3.41, 3.34). Participants' concern over a lack of grade 12 mirrors research showing that employers perceive low essential skills as detrimental to their businesses (CAF, 2009, 2010). Additionally, whereas in some cases a lack-of-fit may be the cause of job incompatibility, in others limited exposure to and lack of encouragement towards the trades may underlie low motivation towards apprenticeship.

To address potential apprentices' lack of necessary skills and uncertainty about career paths, community leaders recommended that stakeholders "create student-centred individualized plans in high schools geared towards entering apprenticeships." This action was rated as highly important (M = 4.4) and feasible (M = 3.9) therefore we recommend it as well.

Cluster 6: Personality/personal issues.

Prospective apprentices and their support rated essential skills ("low math skills," "low literacy level") and personality characteristics ("lack of confidence," "lack of motivation") as moderately strong barriers (M = 3.79, 3.55, 3.52, 3.48) to participating in apprenticeships. Conversely, they cited personal problems ("family issues," "not enjoying it," "no social life") as barriers but rated these as relatively weak (M = 3.31, 3.14, 2.21). Participants' perceptions of lack of essential skills as a fairly strong barrier aligns with previous research showing that employers value essential skills and are often deterred from taking on apprentices because of low essential skills (CAF, 2009, 2010). To address this barrier, community leaders recommended that stakeholders "increase awareness of and access to essential skills upgrading" and rated this action as highly important (M = 4.3) and feasible (M = 4). With such high ratings and support from the previous literature, this suggestion is easy to recommend. It's a "no-brainer".

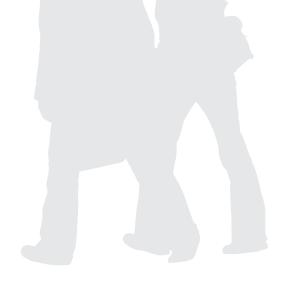
Cluster 7: Discrimination.

Participants cited gender-based discrimination ("gender stereotyping by employers," "stereotypically male dominated field") and harassment of women ("male crudeness") as barriers to participating in apprenticeships, however these were rated as relatively weak (M = 3.48, 3.28, 3.1). They also rated racial discrimination ("racism," "mistrust of first nations people") as weak barriers (M = 3.03, 2.52). These lower ratings are surprising given previous findings that underrepresented groups are less likely to register for apprenticeships (CAF, 2011A; STEWART, 2009). This may signify a recent increase in gender and racial sensitivity in the skilled trades, or conversely that prospective apprentices and their support underestimate the occurrence and effects of workplace discrimination. Regardless of how they rated these factors, participants suggested discriminatory barriers do exist.

To address these issues, community leaders recommended actions related to sensitivity training and to supporting underrepresented groups. They suggested that stakeholders "train employers, journeypersons, and apprentices on appropriate workplace behaviours related to gender and ethnicity," "create support groups for women and other minority groups in the trades (e.g., clubs, events, meetings)," and "market apprenticeship to recent immigrants and ethnic minorities" as well as others (see Appendix A).

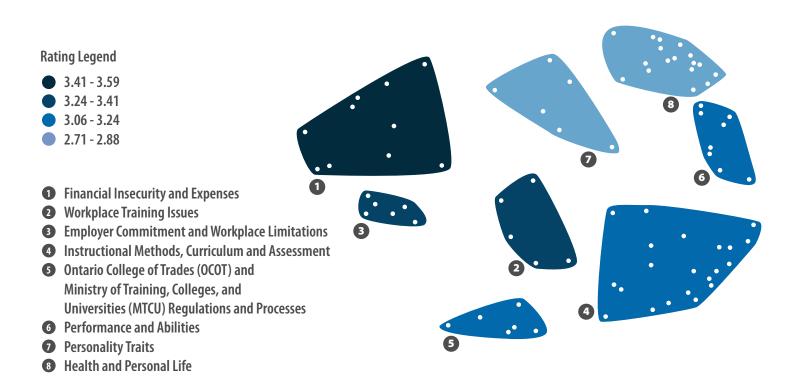
Cluster 8: Trades specific demands.

Prospective apprentices and their support rated trades specific demands lowest of all categories of barriers to attracting apprentices to the skilled trades (M = 2.98). Barriers in this category included the demands of skilled trades careers ("can't be part time," "long hours," "not enough sick days"), the difficulty of getting a job ("takes too long to get hired," "deterrence by application process") and stigma ("perception of 'dirty' conditions in trades"). Elgin-Middlesex-Oxford and Grand Erie community leaders suggested a few actions to address these barriers, however as they rated these as relatively unimportant and unfeasible they are omitted here but are available in Appendix A. Community leaders recommended that stakeholders "increase awareness of and access to essential skills upgrading". This suggestion is supported by previous literature (CAF, 2009, 2010) and was rated as highly important and feasible.



Map 2: Barriers to Completing Apprenticeships

Employers, journeypersons, and apprentices organized barriers to completing apprenticeships into the following clusters (from highest rated to lowest):



Cluster 1: Financial insecurity and expenses.

Employers, journeypersons, and apprentices rated barriers in this cluster highest amongst all barriers to completing apprenticeships. They rated financial insecurity factors such as "long waiting periods for EI," "financial difficulties," and "not receiving pay raises" as strong (M = 4.00, 3.97, 3.74), other opportunities that pay better ("factories offer better benefits and wages," "job opportunities arise outside of the apprenticeship") as moderate (M = 3.71, 3.35), and costs ("expenses and apprenticeship fees," "cost of exam") also as moderate (M = 3.62, 3.24) barriers. Costs of apprenticeship and financial insecurity have been identified in previous research as barriers to participating in apprenticeships (SHARPE & GIBSON, 2005) but less as barriers to completing apprenticeships. Interestingly, in our study participants rated financial insecurity as a stronger barrier than the costs of apprenticeship revealing financial insecurity as a pervasive anxiety occurring during apprenticeships.

To address these barriers, community leaders in Elgin-Middlesex-Oxford and Grand Erie recommended that stakeholders "get Employment Insurance (EI) money to apprentices in a timely manner," "streamline employment insurance application process," and "allow more flexibility on required number of hours an apprentice needs to qualify for EI." These suggestions were rated as highly important (M = 4.5, 4.5, 4.1) but not very feasible (M = 3.2, 3.2, 2.9).

Cluster 2: Workplace training issues.

Employers, journeypersons, and apprentices identified motivation and willingness ("getting apprentices motivated to finish," "lack of willingness to train") and poor mentoring ("lack of mentoring throughout the apprenticeship") as moderately strong barriers to completing apprenticeships (M = 3.59, 3.53, 3.50). They also mentioned "meeting requirements on time while still being productive in the shop" and "tracking hours/progress is not intuitive or easy" as barriers but rated these as moderately weak (M = 3.29, 2.97). Participants' perception of poor mentoring as a barrier aligns with the Canadian Apprenticeship Forum's finding that apprentices value having a journeyperson capable of mentoring them (CAF, 2011A, 2011D).

To address these barriers, community leaders recommended that stakeholders "create a training program for mentors in the trades" and "create a pool of retired journeypersons to act as mentors." They also recommended that stakeholders "create [a] local hours logging system that is intuitive and easy". These suggestions were rated as important (M = 3.9, 3.9, 3.7) but only moderately feasible (M = 3.3, 3.1, 3.4). As shown above, apprentices have previously identified quality mentoring as a priority. Therefore, despite only moderate feasibility scores, leaders' suggestions regarding mentoring are recommended.

Cluster 3: Employer commitment and workplace limitations.

Employers, journeyperson, and apprentices identified lack of work, employer–worker relationships, and system factors as barriers to completing apprenticeships. Specifically, they stated that "employers unable to provide the work to complete all competences" and "having an employer that can supply steady work for approximately five years" are barriers and rated these as moderately strong (M = 3.56, 3.44). Additionally, they mentioned "improper training by employer," "lack of cooperative employee/employer working relationship," "employer not allowing the time off for school and c of q prep courses," and "employers unwilling to do paperwork" as barriers but rated these also as moderately strong. The above perceptions align with previous findings showing that varying economic conditions and variations in business cycles can affect employers' ability to provide work (SKOF, 2006), and that mandatory block release training periods discourage both employers and apprentices (STEWART, 2009).

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To address concerns about employer-side barriers, community leaders recommended that stakeholders "create an apprenticeship manual for employers" and rated this suggestion as important (M = 4.2) and feasible (M = 3.9). Additionally, to address lack of work as a barrier, leaders recommended that stakeholders "allow employers to share apprentices so apprentices can complete their competencies." This latter action was rated as important (M = 4.3) but only moderately feasible (M = 3.4). Thus, we confidently recommend the creation of an employer manual but can only recommend sharing apprentices if stakeholders are particularly determined in their appeals to authorities on this matter.

Cluster 4: Instructional methods, curriculum and assessment.

Participants rated failing academics ("can't pass the C of Q," "failing the in-class part of schooling") as a strong (M = 3.82, 3.76) barrier to completing apprenticeships. They also cited in-school programming factors ("changing technologies," "trade school doesn't teach what is tested for license," "few in-class options for the apprentices") and system factors related to schooling ("time lapse from exam booking to actual exam date," "lack of time off for school"), but rated these as moderate (M = 3.35, 3.32, 3.26) and relatively weak (M = 3.06, 3.03) barriers. The stronger rated perceptions in the category align with previous findings showing lack of essential skills (CAF, 2004) and inflexible program delivery (Steward, 2009) as barriers to completing apprenticeships.

To address barriers related to exam failure, community leaders recommended that stakeholders "offer preparatory courses for certificate of qualification (C of Q)," "provide online C of Q test samples and tutoring," and "increase awareness of incentives to complete/pass exam (e.g., \$2000 completion grant, higher wages, more job opportunities)" and rated these as highly important (M = 4.5, 4.0, 4.3) and highly feasible (M = 4.3, 3.9, 4.1). Leaders further recommended that stakeholders "provide multiple training options for apprentices (e.g., day release or block release)" and "allow apprentices to retake a single course if they don't meet its requirements." They rated both of these actions as highly important (M = 4.3, 4.3) but rated the former as feasible (M = 4.0) and the latter as only moderately feasible (M = 3.6). Our study reveals that employers, journeypersons, and apprentices perceive the C of Q as a substantial hurdle on the track to becoming a licensed journeyperson, and leaders' ratings of C of Q related actions support this. Thus, we also recommend the above exam-related recommendations.

Cluster 5: OCOT and MTCU regulations and processes.

Participants cited a number of bureaucratic processes and system factors related to the Ontario College of Trades (OCOT) and Ministry of Training, Colleges, and Universities (MTCU). They stated that "OCOT doesn't inform employers of changes," "OCOT drops apprentices without informing them of administrative issues," and cited "OCOT and MTCU communication issues" as a barrier as well. These were rated as relatively weak barriers (M = 3.21, 3.03, 3.18), however they read as complaints and reveal a

rift between OCOT and MTCU and those directly involved in the trades. Also, participants stated that "OCOT is a complicated process" and "OCOT takes too long to process paperwork." These perceptions mirror previous research showing that administrative processes and changes in paperwork often overwhelm employers and deter them from providing apprenticeships (CAF, 2010, 2013).

To address these barriers, community leaders recommended that stakeholders "encourage OCOT and MTCU to streamline their processes to make it easier for employers and apprentices to manage paperwork, certification and fees" and "improve communication between OCOT, apprentices, and employers." Leaders rated these suggestions as highly important (M = 4.4, 4.3) but only moderately feasible (M = 3.5, 3.4). Moderate feasibility ratings may signify a lack of confidence in OCOT and MTCU's interest in collaborating and a belief that much effort is required to make these changes. However, these issues appear to be pervasive, warranting attention and action.

Cluster 6: Performance and abilities.

Employers, journeypersons, and apprentices identified low performance as a barrier to completing apprenticeships. They rated "lack of commitment," "poor performance," "fear of failure on tests," and "can't handle workload" as only moderately strong (M = 3.35, 3.32, 3.29, 3.26) and "starting apprenticeship at late age" and "literacy issues" as relatively weak (M = 2.88, 2.68) barriers. Although "literacy issues" were rated as weak, failing in the academics of apprenticeship may be rooted in a lack of essential skills and previous research shows that employers view a lack of essential skills as a sign of a worker unsuitable for skilled work (Lehmann, 2005; Sharpe & Gibson, 2005). Thus, despite weak ratings from participants some performance and abilities factors may still be noteworthy barriers to completing apprenticeships through their interaction with more highly rated barriers (e.g., lack of essential skills).

To address these barriers, community leaders recommended that stakeholders "provide pre-apprentices with readiness guides (e.g., an apprenticeship handbook)" and rated this action as highly important (M = 4.2) and highly feasible (M = 4.2) thereby making it easy for us to recommend as well. To address essential skills deficits, leaders recommended that stakeholders "provide preparatory math courses" and "incorporate an essential skills assessment as part of registering as an apprentice." These recommendations were rated as highly important (M = 4.2, 4.1) and feasible (M = 3.9, 3.7). Essential skills issues have emerged as a recurring theme in our study with community leaders recommending actions to address issues identified as barriers to both attracting new apprentices and completing apprenticeships. Therefore, we recommend that parties interested in improving apprenticeship participation and completion prioritize these actions.

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Cluster 7: Personality traits.

Overall, statements in this category lacked thematic cohesion and were rated as relatively weak (M = 2.84). However, statements such as "poor job fit," "don't follow policies/rules," and "lack of support system" may reveal a specific type of apprentice personality lacking in direction, drive, and motivation that inhibits completion of an apprenticeship.

To address these barriers, community leaders recommended that stakeholders "provide apprenticeship related training modules for service providers" and "create a buddy system (e.g., match a level 1 apprentice with a level 3)" but rated these as only moderately important (M = 3.8, 3.5) and moderately feasible (M = 3.5, 2.8).

Cluster 8: Health and personal life.

In this category, participants identified physical and emotional stress, family and childcare issues, and personal life issues as barriers to completing apprenticeships but rated these as relatively weak (M = 2.71) overall. Specifically they rated "hard on body," "stress," "health issues," "mental illness," and "injuries" as moderately weak (M = 3.26, 3.24, 2.88, 2.79), "starting a family," "childcare logistics during schooling," and "family issues" as relatively weak (M = 2.85, 2.82, 2.76), and "criminal record," "being anti-social," and "divorce" as weak (M = 2.56, 2.50, 2.24) barriers.

To address these issues, community leaders recommended that stakeholders "provide life skills workshops to apprentices" but rated this action as only moderately important (M = 3.5) and moderately feasible (M = 3.4).

Using Trochim's (1989) concept mapping research method, we elucidated the barriers to attracting apprentices and to completing apprenticeships. In our first study, 114 participants generated barriers to attracting apprentices and then 48 sorted these into categories and rated them in terms of strength. This sample consisted of a cross-section of prospective apprentices and the people supporting them (e.g., teachers, community providers), including members of several underrepresented groups (e.g., women, aboriginals, people with disabilities). In our second study, 166 participants generated barriers to completing apprenticeships and then 34 sorted and rated them. This second sample consisted of the people most directly involved in apprenticeships (e.g., employers, journeypersons, apprentices) in the industrial and motive power sectors and was stratified mirroring Ontario's journeyperson and apprentice population in terms of class (i.e., type of trade).

Using Concept Systems Global MAX software (Concept Systems, 2013), we generated two maps accurately depicting how participants organized the barriers, one for each of the studies. Eight categories of barriers to attracting apprentices emerged in our findings. Prospective apprentices and their support focussed on barriers related to Employment Opportunities/Regulations, Lack of Knowledge and Encouragement, Mental and Physical Health, and Costs and Transportation as strong, and barriers related to Lack of Motivation/ Job Compatibility, Personality/Personal Issues, Discrimination, and Trades Specific Demands as moderately strong barriers to attracting apprentices to the trades. Eight categories of barriers to completing apprenticeships also emerged. Employers, journeyperson, and apprentices focussed on barriers related to Financial Insecurity and Expenses as strong, and Workplace Training Issues, Employer Commitment and Workplace Limitations, Instructional Methods,

Curriculum, and Assessment, OCOT and MTCU Regulations and Processes, Personality Traits, and Health and Personal Life as moderately strong barriers to completing apprenticeships. We conclude that participants' perceptions on the barriers to attracting apprentices and completing apprenticeships align with and extend the previous research literature.

Further, community leaders in apprenticeship generated recommendations to attract more apprentices and to improve completion of apprenticeships in the Elgin-Middlesex-Oxford and Grand Erie regions and rated these recommendations in terms of importance and feasibility. The concept maps of the barriers to attracting apprentices and to completing apprenticeships successfully stimulated community leaders to generate high-quality and regionally relevant recommendations to improve apprenticeship participation and completion. These recommendations were broad in scope and many were rated as both important and feasible. We advocate that recommendations rated as both highly important and highly feasible be included in regional plans to improve apprenticeship participation and completion in the Elgin-Middlesex-Oxford and Grand Erie regions and that those rated as either highly important or highly feasible be considered as well. We endorse replicating our process in other regions in Ontario. Specifically, we recommend regional organizations (e.g., planning and development boards) use our lists of barriers to engage prospective apprentices, teachers, and providers, and apprentices, journeypersons, and employers in their communities in sorting and rating the barriers. Based on regional findings, community leaders in apprenticeship can generate relevant recommendations to improve participation and completion of apprenticeships across the province.

Recommendations from our study are included in an Implementation Plan to support and improve apprenticeship in the Elgin-Middlesex-Oxford and Grand Erie regions. Complete lists of recommendations are available in Appendix A (p. 32) and Appendix B (p. 34), and lists of barriers are available in Appendix C (p. 35) and D (p. 38).

Apprenticeship Implementation Plan: Supporting Partners

In our plans to improve apprenticeship in the Elgin-Middlesex-Oxford and Grand Erie regions, the Elgin-Middlesex-Oxford and Grand Erie workforce planning and development boards aim to

- a) recruit community partners to implement actions recommended by community leaders,
- b) aid in the implementation of these actions,
- c) assist community partners in identifying and addressing needs and barriers that arise, and
- d) monitor and evaluate the effectiveness of implemented actions.

We aspire to accomplish these aims through the following six-phase plan wherein we:

- 1. Recruit community partners
- 2. Assess and support program implementation
- 3. Identify program strengths and needs
- 4. Build a best practices guide
- 5. Support partners in addressing needs
- 6. Evaluate program effectiveness

These stages are elaborated in the sections below.

Stage 1: Recruit Community Partners

Our first priority is to recruit community partners to take on specific recommended actions and to reach partnership agreements with them. This process will take place in May 2015 beginning on the first day of the month. To start, we will generate leads on potential partners that may be appropriate and enthusiastic candidates to implement specific actions. Next, we will contact these leads and schedule meetings to discuss their potential role. Once agreed, we will mutually coordinate an evaluation plan tailored to their specific action(s) and the time/energy commitments they choose. To expedite coordination of evaluation plans, the boards will provide a menu of evaluation indicators and data collection methods ordered from least time/energy commitment to most. We will explain that the methods requiring more time/ energy provide a greater degree of useable data and elicit useful information about the implementation of programs, unearthing ways to support them. Throughout this first phase we will build and fill in a spreadsheet style table that will include the list of recommended actions being implemented, community partners that have agreed to implement each, indicators of progress (i.e., factors that provide means to measure achievement of outcomes), and the methods we will use to gather data on these indicators. This table will be the <u>first project deliverable</u>.

Stage 2: Assess program implementation.

Once partners have agreed to participate, the boards will support implementation of actions. The first step in this process involves gathering data on implementation. We will use informal interviews with key informants from our partnering organizations wherein we will ask what they have tried, what is working, and what hasn't worked. Researchers at the workforce planning and developments boards will analyze these interviews using an informal note-taking template (see appendix F).

Stage 3: Identify strengths and needs, Stage 4: Build a best practices guide, and Stage 5: Support partners in addressing needs.

The qualitative interviews will further yield practical information on what works and what does not when implementing programs to improve apprenticeship participation and completion. The information on strengths gathered across programs will be synthesized and compiled in two best practices guides: one of programs to attract more apprentices and one of programs to support apprenticeship completion. The main priority of these guides will be the synthesis of best practices into overarching guidelines for implementing programs. <u>These guides will be the second project deliverable.</u>

Information on what does not work will be used to address programs' needs. To do so the boards will share best practices gleaned from other programs' strengths thereby transferring knowledge that have been successfully implemented actions. Additionally, they will connect programs with partners that can provide support.

Stage 6: Evaluate program effectiveness

Finally, the workforce planning and development boards will analyze data gathered throughout the implementation process to measure program and overall plan effectiveness. A comprehensive evaluation framework is provided in the sections below. A final report summarizing the implementation plan and its effectiveness will be prepared at its conclusion, and will be the <u>third project deliverable</u>.

Approach to Evaluation

The following approach evaluates the process of implementing programs of action and the outcomes of these programs, and has three overarching aims:

- 1. to provide feedback to the workforce planning and development boards, and community partners
- on whether programs are being implemented as planned (i.e., degree of program fidelity)
- 2. to provide feedback and recommendations on best practices for implementation, and
- 3. to provide information on whether the planned actions are effective.

In our approach, we seek to evaluate both the **process** and **outcomes** of our overall plan. We intend to use multiple lines of evidence to meet the above evaluation aims. In other words, we will use data from a variety of sources to build a picture of how implementation unfolds in different settings, to find out what implementation strategies work well, and to determine how effective the planned actions are. In addition, we propose using multiple types of data including both qualitative and quantitative measures. **Qualitative measures** will provide descriptions and interpretations of why and how various elements of the plan are implemented across different settings, as well as insights into best practices. **Quantitative measures** will provide numerical data (e.g., apprenticeship completion rates, satisfaction ratings) that can be analyzed using descriptive statistics (e.g., mean, mode) and tracked over time. More detail on recommended data sources and data collection is provided in a section on evaluation methods further along in this document.

Prior to implementing the evaluation, the boards will collaborate with community partners to develop a broader list of relevant indicators. Indicators measure achievement of an outcome and they will be specific, measurable, and accessible. When possible, these indicators will be tracked throughout the implementation process. During the implementation of the Apprenticeship Implementation Plan, community partners will identify data that is feasible for them to collect consistently.

In Table 1, we summarize the evaluation questions, dimensions of interest, data sources, and methods of data collection that will guide the evaluation. The table shows two types of evaluation questions relating to the evaluation of both the process and outcomes of the plan. For each evaluation question, we have indicated dimensions of interest that specify relevant areas of investigation for each question. Some of the dimensions listed can be used as quantitative indicators (e.g., # of apprenticeships registrations, # of applicants to pre-apprenticeship programs, # of completed apprenticeships). The data sources/methods column lists who will provide the data and the method of data collection. See the table on the following page.

Table 1: Evaluation Framework

Process:

Evaluation Question	Dimensions of Interest	Data Sources (Methods)
What are the characteristics of organizations that have implemented the plan?	Organization type, size, activities Leadership Hiring Training activities	Community partners/ key informants (interviews)
How has the plan been implemented across different organizations? Is there fidelity with program design?	Actions implemented Actions not implemented What was done differently, and why	Community partners/ key informants (interviews)
How are organizations measuring effectiveness of implementation?	Actions implemented Indicators (measures) tracked	Community partners/ key informants (interviews)
What are the barriers to implementation?	Resources Lessons learned	Community partners/ key informants (interviews)
What additional support/guidance is needed to assist with implementation?	Resources Leadership	Community partners/ key informants (interviews) Employers (survey)

Outcome:

Evaluation Question	Dimensions of Interest	Data Sources (Methods)
Are the actions effective in increasing accessibility to apprenticeships?	# of apprenticeships available # of apprenticship jobs posted online	Employers (survey) Online job banks (review of postings)
Are the actions effective in attracting youth into apprenticeships?	# applicants to apprenticeship programs # registrants in apprenticeship jobs Reasons youth become involved	Community colleges (OCAS data) Ontario College of Trades (OCOT data) Employers (survey) Apprentices (survey)
Are the actions effective in supporting apprenticeship completion?	# completed apprenticeships Apprentice satisfaction Employer satisfaction Journeyperson satisfaction	OCOT (OCOT data) Apprentices (survey) Employers (survey) Journeypersons (survey)

Evaluation Methods

The evaluation should include multiple lines of evidence to establish robust findings. Below we describe three key methods and associated data sources that we recommend for the evaluation of the Apprenticeship Implementation Plan:

- key informant interviews
- surveys, and
- review of administrative data,

Interviews with community partners and key stakeholders. Interviews are a useful way to collect in-depth data from individuals who have insights and expertise. We will conduct interviews with key informants from partnering organizations/groups (e.g., Fanshawe College, Grand River Employment and Training) to assess the process of implementing actions. Through interviews, key informants can describe how different actions have been implemented, provide feedback on program strengths, and identify areas of need.

Interviews work best when the interviewer uses a set of guiding questions to structure the conversation and to make sure data is collected consistently. A set of questions will be prepared ahead of time and compiled in an interview guide. The interview guide will include a section on voluntary consent, a brief introduction to the purpose of the interview, main questions focussed on usable data, suggested probing questions, and opportunities for the interviewee to provide additional comments. Interview guides will be tailored to the community partner or key informant. Interview questions could explore aspects such as:

- What actions have your organization implemented from the apprenticeship plan?
- How did your organization implement those actions?
 - What implementation strategies worked well?
 - Were there strategies that didn't work well, or could be improved?
- What additional support is needed to assist with implementation?
- Are you currently tracking any indicators relating to the action(s) you implemented?
- What have these indicators shown?

Interviews vary in length and format: they may take up to an hour to complete, and they can be conducted face-to-face or by phone/Skype. When possible, the interviewee will check the interview notes or transcripts for accuracy before the evaluator analyzes the data. The interviewer will consistently record interview feedback by using a note-taking template. The template is divided into sections that provide spaces to record the following details in point form. See following page.

IMPLEMENTATION PLAN

Section Heading	Notes to be recorded
Details of the interview	Date, time, location, interviewer, and interviewee
Details of the organization	Name of organization, type of organization, activities of organization
Overview of action(s) implementation	Actions implemented, strategies employed
Required board support	Note any areas of need or suggestions for addition support from boards
Indicators tracked	Note any indicators that the organization has tracked.
General Comments	Additional comments
Action items for boards	Record follow-up actions to be taken by the boards (e.g., recommendations to support needs, partners to connect)

Surveys

Surveys are an ideal tool to collect data on opinions and behaviours from a broad range of people. We will use surveys to measure perceptions about the efficiency and effectiveness of the apprenticeship plan from a variety of perspectives, including apprentices, journeypersons, employers, community partners, and others involved in implementing actions. The surveys may include questions that address whether the plan is running efficiently, whether actions have been implemented as intended, and how the plan can be improved. The surveys can also gather data about respondents' experiences and satisfaction with different aspects of the apprenticeship plan.

Surveys may be conducted in a variety of formats such as mailed paper questionnaires, web-based online surveys, emailed forms, or text-based messaging. When choosing the optimal survey format, the evaluation team will consider the costs of conducting the survey, as well as accessibility for respondents; keeping in mind it may be best to use more than one format.

Review of administrative data

Analysis of administrative data (e.g., OCAS and OCOT data) will provide quantitative measures to track and evaluate the outcomes of our plan. Quantitative measures such as number of applicants to pre-apprenticeship programs (tracked through OCAS/accessed by community colleges), and number of apprenticeship completions (tracked and accessed through OCOT) will provide an indication of whether the plan is effective in attracting both youths and adults into apprenticeships. In some instances it may be possible to compare the number of applicants before and after the implementation of specific planned actions.

Evaluation Reporting

The final evaluation report will be clear, concise, and include actionable recommendations. The report will capture a range of viewpoints with participants' identities not revealed. The report will present the data, analysis, and findings in plain language, and will be a tool that provides evidence of the effectiveness of the apprenticeship plan, as well as suggestions for improvements.

Evaluation Resources

These evaluations can:

- ensure accountability
- provide evidence for funding decisions
- assist in future planning and delivery
- involve stakeholders to increase engagement in the plan

Evaluation Terms

Below we define some key evaluation terms used throughout the above evaluation approach: ²

- Evaluation plan: a written document describing the overall design of an evaluation. A comprehensive evaluation plan includes what will be done, how it will be done, who will do it, when it will be done, and why the evaluation is being conducted.
- **Process evaluation:** a type of evaluation that assesses the extent to which a program is operating as it was intended.
- **Fidelity:** the degree of fit between the designed elements of a program, and its actual implementation.
- **Outcomes evaluation:** a type of evaluation that assesses the extent to which a program achieves its objectives.
- **Outcome:** changes or benefits resulting from activities. Outcomes may be short-, intermediate-, or long-term.

^{2.} Adapted from the Evaluation Glossary developed by Kylie Hutchinson of Community Solutions Planning and Evaluation.

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Recommended Actions to Attract Apprentices	AVERAGE	IMPORTANT	FEASIBLE
20. Identify and promote the online job banks that connect skilled trades and employers	4.4	4.4	4.3
22. Create an online FAQ page to address common questions on apprenticeship	4.4	4.4	4.3
17. Create and provide information resources with steps, procedures and requirements for entering an apprenticeship (e.g. website, brochures)	4.3	4.4	4.2
4. Invite speakers with experience in the trades into school board classrooms	4.3	4.4	4.1
33. Promote existing financial programs (e.g. Canada Apprentice Ioan)	4.3	4.3	4.3
14. Educate the parents of potential apprentices through information sessions and open houses	4.2	4.4	3.9
40. Create student-centered individualized plans in high schools geared towards entering apprenticeship	4.2	4.4	3.9
6. Increase awareness of and access to essential skills upgrading	4.2	4.3	4.0
18. Build on currently implemented high school manufacturing tours	4.2	4.2	4.1
26. Plan "Apprentice Awareness Week" that includes a "Skilled Trades Day"	4.2	4.2	4.1
27. Provide recognition and awards to apprentices and employers for excellence in apprenticeship	4.2	4.1	4.3
19. Encourage employers to post apprentice jobs in online job banks	4.1	4.4	3.8
37. Provide guidance counselors with authentic experiences in the field (e.g. visiting training facilities)	4.1	4.4	3.8
30. Partner with local radio and television to promote apprenticeship programs and events	4.1	4.3	3.9
38. Provide life skills (e.g. budgeting, etc.) coaching at the beginning of apprenticeship	4.1	4.3	3.8
3. Provide job shadow opportunities for high school students interested in the trades	4.0	4.4	3.5
50. Train employers, journeypersons and apprentices on appropriate workplace behaviours related to gender and ethnicity	4.0	4.3	3.7
28. Create virtual job fairs that include employers, schools and apprentices	4.0	4.1	3.9
49. Provide hands-on prep courses for women and female youths	4.0	4.1	3.8
2. Promote Skills Canada Elementary Day	4.0	4.0	4.0
7. Build partnerships between schools and employment agencies to increase awareness of available supports and funding options	4.0	4.0	4.0
10. Expand the Apprenticeship Network's role to include connecting potential apprentices with employers	3.9	4.1	3.6
51. Create technology and trades summer camps for girls	3.9	4.1	3.6
39. Invite retirees to become mentors	3.9	4.0	3.8
29. Promote the Apprenticeship Network's mentorship guide	3.9	3.8	3.9
34. Subsidize El payments to apprentice during school periods	3.8	4.3	3.2
23. Create a series of advertisements explaining what apprenticeship entails	3.8	4.1	3.5
5. Develop online module to guide employers on training apprentices	3.8	4.0	3.6
12. Create support groups for women and other minority groups in the trades (e.g. clubs, events, meetings, etc.)	3.8	3.9	3.6
1. Provide test-taking skills tutorials	3.8	3.8	4.1
21. Re-instate the job board on apprenticesearch.com	3.7	4.0	3.4

Recommended Actions to Attract Apprentices

32. Attract funds for learning assessments, assistive technology and skills training/upgrading for people with learning disabilities	3.7	4.0	3.4
25. Market apprenticeship to recent immigrants and ethnic minorities	3.7	3.9	3.4
11. Identify brand ambassadors from under represented groups (e.g., women, ethnic minorities, First Nations)	3.7	3.8	3.5
13. Improve awareness and access to childcare subsidies	3.7	3.8	3.5
53. Create an advertising campaign supporting under-represented groups in the trades	3.6	3.9	3.3
36. Re-examine elements of the European model that may work in Ontario	3.6	3.8	3.3
54. Create partnerships with recent immigrant support offices to develop programs for recent immigrants entering the trades	3.5	3.7	3.3
16. Create an Apprenticeship Network App	3.5	3.6	3.3
24. Create YouTube videos to address discrimination in the workplace	3.5	3.6	3.3
8. Provide employers with incentives for providing accommodations for those with disabilities	3.4	3.8	2.9
46. Develop a local carpool website for people in rural areas	3.4	3.7	3.1
44. Provide subsidy relief for rural commuters	3.3	3.8	2.7
42. Initiate a trades RV program that travels from school to school	3.3	3.7	2.9
9. Create an association of businesses (i.e. a consortium) for apprentice sharing	3.3	3.7	2.8
52. Create micro-lending (i.e. the lending of small amounts of money at low interest) opportunities for women	3.3	3.6	2.9
31. Create an app for Apprenticeship matching	3.3	3.5	3.0
35. Attract funds to support tools library or tool exchange programs	3.3	3.5	3.0
45. Initiate free public transportation programs to apprentices in training	3.2	3.7	2.7
43. Help employers organize transportation for apprentices	3.2	3.7	2.6
41. Incorporate drivers education into high school curriculum	3.1	3.3	2.9
15. Initiate daycare partnerships	3.0	3.2	2.7
47. Promote UBER to gather several people at end of bus route	3.0	3.1	2.8
55. Target clothing and shoe manufacturers to improve the look and feel of the trades	2.9	2.9	2.8
48. Create streamlined process to get a "pardon" for low level criminal convictions	2.7	3.2	2.2

AVERAGE IMPORTANT FEASIBLE

Recommended Actions to Retain Apprentices

 10. Offer preparatory courses for Certificate of Qualification (C of Q) 1. Increase awareness of incentives to complete/pass exam (e.g. \$2000 completion grant, higher wage, more job opportunities) 36. Provide multiple training options for apprentices (e.g. day release or block release) 	4.4 4.2 4.2 4.2 4.2 4.2	4.5 4.3 4.3 4.2	4.3 4.1 4.0
(e.g. \$2000 completion grant, higher wage, more job opportunities)	4.2 4.2	4.3	
36. Provide multiple training options for apprentices (e.g. day release or block release)	4.2		4.0
		4.2	
13. Provide pre-apprentices with readiness guides (i.e. apprenticeship handbook)	4.2		4.2
21. Have the Workforce Planning and Development Board share results of this study with OCOT		4.2	4.1
9. Provide preparatory math courses	4.1	4.2	3.9
30. Create an apprenticeship manual for employers	4.1	4.2	3.9
23. Encourage OCOT and MTCU to streamline their processes to make it easier for employers and apprentices to manage paperwork, certification and fees	4.0	4.4	3.5
35. Allow apprentice to retake a single course if they don't meet it's requirements (as opposed to retaking the entire training)	4.0	4.3	3.6
12. Facilitate information sessions on OCOT processes	4.0	4.0	3.9
34. Provide online Certificate of Qualification (C of Q) test samples and tutoring	4.0	4.0	3.9
4. Get Employment Insurance (EI) money to apprentices in a timely manner	3.9	4.5	3.2
5. Streamline Employment Insurance (EI) application process	3.9	4.5	3.2
24. Identify local experts who can respond to apprenticeship questions and concerns in a personal and timely manner	3.9	4.3	3.5
6. Allow employers to share apprentices so apprentices can complete their competencies	3.9	4.3	3.4
19. Improve communication between OCOT, apprentices, and employers	3.9	4.3	3.4
8. Incorporate an essential skills assessment as part of registering as an apprentice	3.9	4.1	3.7
14. Create MTCU and OCOT information web pages	3.9	4.1	3.7
33. Regulate monitoring of on-site apprentice progress at consistent intervals	3.8	4.2	3.4
32. Provide tutoring support for apprentices	3.8	4.1	3.5
20. Encourage OCOT to communicate the value of membership to apprentices	3.8	4.1	3.4
2. Increase focus on individual learning plans based on learning preferences	3.7	4.1	3.7
22. Regulate passing standard across all colleges and training institutions	3.7	4.1	3.3
26. Provide online learning opportunities to complement classroom training	3.7	3.9	3.5
31. Provide apprenticeship related training modules for service providers	3.7	3.8	3.5
16. Create a training program for mentors in the trades	3.6	3.9	3.3
27. Promote the value on non-monetary workplace incentives (e.g. encouragement, appreciation, etc.)	3.6	3.8	3.3
25. Create local hours logging system that is intuitive and easy	3.6	3.7	3.4
3. Allow more flexibility on required number of hours an apprentice needs to qualify for Employment Insurance (EI)	3.5	4.1	2.9
15. Create a pool of retired journeypersons to act as mentors	3.5	3.9	3.1
29. Incorporate universal design for learning and differentiated instruction into classrooms (i.e. provide opportunities to learn according to individual learning preferences and strengths)	3.5	3.9	3.0
11. Provide life skills workshops to apprentices	3.5	3.5	3.4
7. Regulate employer agreements to include expectations that must be monitored by job coaches	3.4	3.8	3.0
18. Provide bonuses for completing terms of apprenticeship (e.g. year 1, year 2, etc.)	3.4	3.8	2.9
28. Create a buddy system (e.g. match a level 1 apprentice with a level 3)	3.2	3.5	2.8
17. Work with Libro to create a financial management program for apprentices	3.2	3.3	3.1

AVERAGE IMPORTANT FEASIBLE

Barriers to Attracting Apprentices

1. Mental and Physical Health Statements	Average Rating
3. unaccommodated learning disabilities	3.79
34. physical disabilities	3.79
49. physical limitations for programs with physical requirements	3.79
77. pain from a disability	3.72
73. mental disabilities	3.55
6. undiagnosed learning disabilities	3.45
67. drug addiction	3.45
1. anxiety	3.45
19. wear and tear on body	3.38
65. depression	3.38
64. psychological aspect of having a learning disability	3.28
39. stress	3.17
	3.52

2. Discrimination Statements	Average Rating
38. criminal record	3.69
79. gender stereotyping by employers	3.48
42. Not having other women to relate with	3.34
13. language barrier	3.28
27. stereotypically male dominated field	3.28
25. male crudeness	3.10
22. age	3.03
32. racism	3.03
23. mistrust of first nations people	2.52
47. difficulty connecting with the older generation	2.52
	3.13

3. Lack of Motivation/Job Compatibility Statements	Average Rating
78. lack of grade 12 or specific pre-training required	3.72
7. lack of a support network	3.59
21. lack of interest in trades	3.48
35. uncertainty about career path	3.48
82. another career option	3.41
57. fear of career change	3.34
56. not wanting to go back to school	3.28
9. studying takes up time	2.79
	3.39

Barriers to Attracting Apprentices

4. Personality/Personal Issues Statements	Average Rating
44. low math skills	3.79
14. low literacy level	3.55
51. lack of confidence	3.52
50. lack of motivation	3.48
71. overwhelming	3.48
81. family issues	3.31
45. hard to juggle school, work, and homework	3.21
46. not enjoying it	3.14
58. being shy	3.03
76. discomfort with new experiences	2.69
16. not a team player	2.59
60. no social life	2.21
	3.17

5. Trades Specific Demands Statements	Average Rating
43. takes too long to get hired	3.79
48. can't be part-time	3.34
2. perception of "dirty" conditions in trades	3.10
62. deterrence by application process	3.07
17. long hours	2.83
10. lack of recognition for international experience	2.62
75. not enough sick days	2.10
	2.98

6. Employment Opportunities/Regulations Statements	Average Rating
12. finding an employer to register under	4.55
70. not knowing about the funding that's available	4.28
28. lack of opportunities to gain experience	3.97
30. employers do not continue to employ the students after co-op	3.45
66. apprentice/journeyman ratio	3.45
72. employers do not offer a wide enough range of skill development	3.45
5. perception of lower pay than other careers	3.28
59. length of apprenticeship	3.21
	3.70

Barriers to Attracting Apprentices

7. Lack of Knowledge and Encouragement Statements	Average Rating
4. high schools do not promote the trades as a strong option	3.93
80. lack of understanding of a trade or the industry	3.86
52. knowledge of where and how to find information	3.79
31. mentorship - educating employers to be good mentors	3.72
11. lack of knowledge of what apprenticeship is	3.66
74. teacher knowledge of apprenticeship	3.62
24. support workers' knowledge of "apprenticeable" trades	3.45
36. parents unaware of opportunities	3.41
26. expectation for post-secondary education	3.28
41. schools understanding the benefits to teachers	3.24
	3.60

8. Cost/Transportation Statements	Average Rating
53. not getting paid for several weeks during training	4.14
63. lack of money during schooling	3.90
54. lack of tools, equipment, and work clothes	3.86
37. lack of transportation	3.79
61. lack of drivers' license	3.79
33. transportation cost	3.55
69. cost	3.55
40. family expenses	3.48
68. layoffs	3.41
20. training location	3.41
18. lack of tuition funding	3.38
55. bad driving record	3.24
15. pay rate	3.10
8. seasonal work	3.07
29. lack of housing	2.90
	3.51

Barriers to Completing Apprenticeships

1. Health and Personal Life Statements	Average Rating
6. work is hard on body	3.26
1. stress	3.24
69. health issues	3.09
74. lack of maturity	3.09
32. mental illness	2.88
19. starting a family	2.85
29. childcare logistics during schooling	2.82
68. injuries	2.79
73. family issues	2.76
62. disabilities	2.76
61.criminal record	2.56
53. depression	2.53
45. being anti-social	2.50
8. harassment	2.26
14. divorce	2.24
9. bullying	2.18
13. loss of a family member	2.18
	2.71

2. Personality Traits Statements	Average Rating
50. transportation issues	3.00
46. poor job fit	2.97
39. lack of support system	2.91
67. no established career structure	2.76
52. don't follow policies/ rules	2.74
28. harmful work environment (e.g. cancerous substances)	2.68
	2.84

3. Performance and Abilities Statements	Average Rating
15. lack of commitment	3.35
37. poor performance	3.32
23. fear of failure on tests	3.29
65. can't handle workload	3.26
59. expectations are different than reality	3.21
7. fear of failure	3.06
51. starting apprenticeship at late age	2.88
11. literacy issues	2.68
	3.13

Barriers to Completing Apprenticeships

4. Financial Insecurity and Expenses Statements	Average Rating
43. long waiting periods for El	4.00
16. financial difficulties	3.97
48. not receiving pay raises	3.74
26. factories offer better benefits and wages	3.71
76. apprentices are the first to get laid off	3.68
71. expenses and apprenticeship fees	3.62
2. inconsistent pay for same level people	3.59
3. job opportunities arise outside of the apprenticeship	3.35
55. cost of exam	3.24
24. changing workplaces during apprenticeship	3.03
	3.59

5. Employer Commitment and Workplace Limitations Statements	Average Rating
56. employers unable to provide the work to complete all competencies	3.56
21. having an employer that can supply steady work for approximately 5 years	3.44
42. improper training by employer	3.38
75. lack of cooperative employee/ employer working relationship	3.29
54. employer not allowing the time off for school and c of q prep courses	3.26
40. employers unwilling to do paperwork	3.00
	3.32

6. OCOT and MTCU Regulations and Processes Statements	Average Rating
33. moving outside Ontario - registration doesn't transfer to other provinces	3.32
17. OCOT is a complicated process	3.24
4. OCOT doesn't inform employers of changes	3.21
58. OCOT and MTCU communication issues	3.18
12. OCOT drops apprentices without informing them of administrative issues	3.03
79. OCOT takes too long to process paperwork	3.00
	3.16

7. Workplace Training Issues Statements	Average Rating
47. getting apprentices motivated to finish	3.59
27. lack of willingness to train	3.53
31. lack of mentoring throughout the apprenticeship	3.50
64. meeting requirements on time while still being productive in the shop	3.29
5. tracking hours/ progress is not intuitive or easy	2.97
	3.38

Barriers to Completing Apprenticeships

8. Instructional Methods, Curriculum and Assessment Statements	Average Rating
36. can't pass of C of Q	3.82
25. failing the in class part of schooling	3.76
70. getting through the schooling	3.38
10. changing technologies	3.35
38. trade school doesn't teach what is tested for license	3.32
78. maintaining grades	3.32
72. too many steps to get to writing a license	3.32
57. few in class options for the apprentice	3.26
44. low quality of instructors at school	3.18
22. no time frame on completing final exam	3.15
20. lack of incentive to pass final exam	3.12
77. time lapse from exam booking to actual exam date	3.06
18. full time school is enticing	3.06
66. not having help with studies	3.03
30. not learning much about your trade at first	3.03
49. lack of time off for school	3.03
60. poor prep course for exam	3.03
34. IEP's are not addressed promptly	2.94
63. lack of valid exam for specific trades	2.85
41. curriculum differences between schools if transferred	2.71
35. no guide on how to fill out workbook	2.68
	3.16

List of Actions: Apprenticeship Attraction

Recommended Action	Met	Partially met	Unmet	N/A	Comments
Identify and promote the online job banks that connect skilled trades and employers					
Encourage employers to post apprentice jobs in online job banks					
Create an online FAQ page to address common questions on apprenticeship					
Create and provide information resources with steps, procedures and requirements for entering an apprenticeship (e.g. website, brochures)					
Invite speakers with experience in the trades into school board classrooms					
Promote existing financial programs (e.g. Canada Apprentice loan)					
Create student-centered individualized plans in high schools geared towards entering apprenticeship					
Increase awareness of and access to essential skills upgrading					
Plan "Apprentice Awareness Week" that includes a "Skilled Trades Day"					
Provide recognition and awards to apprentices and employers for excellence in apprenticeship					
Provide hands-on prep courses for women and female youths					
Promote Skills Canada Elementary Day					
Incorporate an essential skills assessment as part of registering as an apprentice					
Provide pre-apprentices with readiness guides (i.e., apprenticeship handbook)					
Promote the Apprenticeship Network's mentorship guide					

Interviewers can use these lists to note implementation of actions at different organizations.

List of Actions: Apprenticeship Completion

Recommended Action	Met	Partially met	Unmet	N/A	Comments
Increase awareness of incentives to complete/pass exam e.g. \$2000 completion grant, higher wage, more job opportunities					
Provide multiple training options for apprentices (e.g. day release or block release)					
Provide pre-apprentices with readiness guides (i.e., apprenticeship handbook)					
Have the Workforce Planning and Development Board share results of this study with OCOT (note: this wasn't our idea, it was the leadership teams'!)					
Provide preparatory math courses					
Encourage OCOT and MTCU to streamline their processes to make it easier for employers and apprentices to manage paperwork, certification and fees					
Allow apprentice to retake a single course if they don't meet it's requirements (as opposed to retaking the entire training)					
Facilitate information sessions on OCOT processes					
Provide online Certificate of Qualification (C of Q) test samples and tutoring					
Improve communication between OCOT, apprentices, and employers					
Incorporate an essential skills assessment as part of registering as an apprentice					
Create MTCU and OCOT information web pages					
Encourage OCOT to communicate the value of membership to apprentices					
Work with Libro to create a financial management program for apprentices					

Template for Reporting Interview Feedback Interview Notes on Action Plan Implementation

About the Interview	What worked well and/or could be improved:
Date:	
Time:	
Location:	
Person conducting interview:	,
About the Organization	
Name of organization:	Planned next steps at this organization:
Organization type/activities:	
Overview of Action Plan Implementation	
Actions implemented to date:	
	Indicators tracked
	Note any indicators tracked and what these indicators have shown:
	Poard Current
	Board Support Note any areas of need or suggestions for additional support:
Strategies used:	
	Comments
	Board Action Items
	,

Tips on Conducting Interviews

Preparing for the Interview

- Use a template to keep consistent records of the interviews.
- Arrange a quiet room and uninterrupted time to conduct the interview.
- Let the participant know how long the interview will take.
- Practice the interview by role-playing beforehand.
- Consider sending out the interview questions ahead of time so participants are prepared.
- If possible, audio-record the interview for accuracy.
- Obtain the consent of the participant for both conducing and recording the interview.

Conducting the Interview

- Follow the interview guide to ask questions in a consistent manner.
- Use neutral responses instead of words that approve or disapprove of the participants' comments. For example, say "OK" instead of "good"
- Encourage the participant to elaborate on responses. Use probes such as "Can you tell me more about that", or "Is there anything else you would like to say about that?"
- Jot notes on the interview record.
- At the end of the interview, thank the participants.

After the Interview

- Review the interview notes and jot down any additional details.
- Store interview data, including interview notes and audio files, securely.
- Destroy the audio file after a set period of time.

Adapted from: Edwards, N., Davies, B., Griffin, P., Ploeg, J., Skelly, J., Danseco, E., et al. (2004). Evaluation of Nursing Best Practice Guidelines: Interviewing Nurses and Administrators (pp. 1-32). Ottawa, ON: Community Health Research Unit, University of Ottawa.