



Higher Education  
Quality Council  
of Ontario

An agency of the Government of Ontario

# Evaluating Essential Skills for Ontario's Tradespeople (ESOT) Project

Bea Clark and Marti Jurmain,  
College Sector Committee  
for Adult Upgrading



Published by

## The Higher Education Quality Council of Ontario

1 Yonge Street, Suite 2402  
Toronto, ON Canada, M5E 1E5

Phone: (416) 212-3893  
Fax: (416) 212-3899  
Web: [www.heqco.ca](http://www.heqco.ca)  
E-mail: [info@heqco.ca](mailto:info@heqco.ca)

### Cite this publication in the following format:

Clark, B., & Jurmain, M. (2014). *Evaluating Essential Skills for Ontario's Tradespeople (ESOT) Project*. Toronto: Higher Education Quality Council of Ontario.



## ACKNOWLEDGEMENTS

There were many individuals and organizations that supported this project. Sincere thanks and appreciation are extended to the apprentices in Kitchener, Ottawa and Sudbury who participated either online or in person. We are grateful for the support and guidance provided by the apprenticeship and academic upgrading staff at Conestoga, Algonquin and Cambrian colleges and the Ministry of Training, Colleges and Universities staff in Kitchener, Ottawa and Sudbury. The CSC's Lynne Wallace provided direction and Sandra Hennessey and Michael Herzog provided technical support. The Higher Education Quality Council of Ontario's (HEQCO) Richard Wiggers and the advisors and staff provided positive support and invaluable guidance.

## Table of Contents

|  |    |
|--|----|
| Executive Summary .....  | 3  |
| Introduction and Context .....   | 5  |
| Apprenticeship in Ontario .....  | 5  |
| ESOT Tool and Potential Benefits .....                                   | 6  |
| Literature Review .....  | 6  |
| The Research Project .....   | 8  |
| Research Questions .....   | 9  |
| Methodology.....   | 9  |
| ESOT Logistics, Site Selection and Ethics Approval.....                  | 10 |
| Test 1: Invitation to Apprentices at Registration.....                   | 10 |
| Test 2: Invitation to Apprentices During In-School Level 1 Training..... | 10 |
| Focus Groups .....   | 11 |
| Data Presentation and Analysis.....                                      | 11 |
| ESOT Data.....   | 11 |
| Profile of Test-Takers.....  | 12 |
| Assessment of Results of 106 Identified Test-Takers .....                | 12 |
| Focus Group Data.....  | 13 |
| Overview of Focus Groups .....   | 13 |
| Focus Group Research Questions.....                                      | 14 |
| Focus Group Key Messages.....  | 14 |
| Discussion.....  | 16 |
| Conclusions.....   | 17 |
| References.....  | 19 |

A separate appendix is available in English only from [heqco.ca](http://heqco.ca).

## List of Tables

|   |    |
|---|----|
| Table 1: Assessment Results of 106 Identified Test-Takers ..... | 13 |
|---|----|

## Executive Summary

The goal of the Evaluating Essential Skills for Ontario's Tradespeople (ESOT) project was to investigate whether the availability and use of an online essential skills assessment tool during the first stage of an apprenticeship would result in improved academic performance of the project participants during subsequent in-school training. The ESOT project arose from concerns expressed by college educators that many apprentices lack the foundational math, reading and document use skills that are required for both in-school and on-the-job success. Currently, these essential skills gaps cannot be identified or addressed until the apprentice commences in-school training, and even then is often difficult to do.

Literature reviewed for this study documented major concerns across Canada for low apprenticeship completion rates, with studies attempting to identify the main reasons for which discontinuers did not complete their program. While evidence of a link between foundational ("essential") skills and completion rates was inconclusive, nevertheless there is broad agreement in the literature on a relationship between weak essential skills and non-completion of an apprenticeship program. Numerous organizations, including federal and provincial governments, have identified and validated essential skills as those which are used on the job and which provide the foundation for learning all other skills.

ESOT is an online essential skills assessment tool that provides immediate results for the test-taker. It measures three key essential skills (numeracy, document use and reading text) and compares the test-taker's skills to those needed for any one of the 53 nationally recognized Red Seal trades. The ESOT assessment results identify areas needing improvement and provide the test-taker with a customized training plan and free learning resources to build essential skills. Modeled after the Industry Training Authority (ITA) in British Columbia's assessment tool, ESOT has been contextualized for use in Ontario and is normed and adaptive. It was made available for free to test-takers in this study.

This study was conducted over an 18-month period and asked the research question: Does intervention at apprenticeship registration, using a learner-customized online learning model, result in academic improvements during in-school training? Apprentices in Red Seal trades in three geographic areas (Kitchener, Ottawa and Sudbury) were invited to assess their essential skills at the time of their apprenticeship registration and, if needed, upgrade their skills prior to attending their first level of in-school training. The invitation was extended by Ministry of Training, Colleges and Universities' staff who are responsible for ensuring that the contract between the apprentice, the employer and the Province of Ontario is signed. Subsequently, the colleges in these three areas (Conestoga, Algonquin and Cambrian) invited apprentices attending level 1 training to complete the essential skills assessment. It was assumed that apprentices participating in the study would be tracked from registration (January - August) until their participation in level 1 training in September or October and that learner gains would then be measured. This was not the case, as most apprentices now work for more than six months before attending in-school training.

In addition, focus groups representing the three stakeholder groups (MTCU, colleges and apprentices) were conducted. Information was gathered about apprentices' skill levels and preparation, their motivation to use the online assessment, the methods of assistance provided to them during their in-school training, their use of resources, as well as information about the timing and use of the ESOT tool, its usability and usefulness.

Though a large number of invitations were given to apprentices at registration by MTCU staff, voluntary use of the ESOT tool by apprentices was low. A total of 476 invitations resulted in only 6% of the apprentices formally agreeing to participate in the project and completing a portion or all of the assessment. Most did not agree to any additional follow-up by the researchers. Only 1.3% of the apprentices took the test twice and

generally did so within hours of the first test. In September and October, the three colleges invited 400 level 1 apprentices to take the ESOT assessment. Of this group, 19% took the assessment but none were in the group originally invited to participate. No conclusions can be drawn related to the main research question because of low participation rates and the inability to follow the same cohort of apprentices from registration to their first in-school training period.

Test results for those who agreed to take the test do provide some evidence to support educators' concerns. Results for reading and document use indicated that approximately 20% of test-takers did not meet the minimum skill levels for their trades. 81% did not meet the requirements for geometry and trigonometry for the trades requiring skills in these areas.

Focus group discussions with all three stakeholder groups yielded interesting insights into the level of preparation of incoming apprentices, the nature and use of existing essential skills training assistance, and the usability of the ESOT tool. Participants in all groups strongly recommended mandatory skills assessment at a minimum at the beginning of the in-school portion of the apprentice's training.

Further research that will follow the same apprentices from registration through their in-school training will be required to clearly link the use of the ESOT (or similar) self-assessment tool to in-school success. Strategies to ensure that larger numbers of apprentices agree to participate in the research project will also be needed.

## Introduction and Context

### Apprenticeship in Ontario

According to the Ontario College of Trades, there were 156 identified skilled trades in the province as of April 2013. Of these, 53 were Red Seal trades, meaning that these are recognized credentials that are portable across Canada. The *Ontario College of Trades and Apprenticeship Act, 2009* (OCTAA) sets out the regulatory framework for the trades in Ontario. An Ontario Secondary School Diploma (OSSD) is a requirement for most trades, while grade 10 is the entry requirement for many construction trades, though in reality many employers require more than the minimum.

The traditional apprenticeship pathway begins when an employer hires a candidate with the prerequisite grade 10 or grade 12 credentials as an apprentice. The provincial government registers apprentices through a three-way agreement between the province, the employer and the apprentice. Training for apprentices occurs in two locations: an academic or trade union environment (the in-school portion), and the employer of choice. Apprentices spend only about 10% of their training in the academic or trade union training environments and about 90% of their training with their employers. Most apprentices complete their apprenticeship within two to five years, including the in-school training (level 1, level 2 and, in the case of some trades, levels 3 and 4). Ontario's 24 colleges provide 87% of apprentice in-school training, with unions providing 10% and other groups 3% (Ministry of Training, Colleges and Universities, 2012).

Apprentices attending in-school training focus on the development of technical skills. For many apprentices, in-school training is taken on a part-time basis, one day per week or one or two evenings per week while the apprentice is working. In other cases, the apprentice is excused from work to attend a block release or 8- to 12-week full-time program, which may require travel or lodging in another community for the duration of training. The majority of in-school training is delivered from September to June. The timing of an apprentice's in-school participation can depend on the employer's requirements, the apprentice's financial situation and the availability of training. Apprentices receive information about scheduled training from MTCU staff.

The governments of Ontario and Canada have increased their support for entry into apprenticeships by providing new preparatory and alternative pathways, such as the Co-op Diploma Apprenticeship (CODA) program and pre-apprenticeship programs, as well as significant financial incentives for both apprentices and employers. The Government of Ontario established substantial annual growth targets for apprenticeship in 2005. While the number of apprentices has, in fact, increased, there is still considerable concern about apprenticeship retention and completion rates. Apprentices discontinue their apprenticeship for a variety of reasons which may include employment changes or personal reasons.

There is no mandatory academic testing or assessment of apprentices prior to registration as an apprentice or prior to in-school training in Ontario. In the traditional apprenticeship pathway, the school or training delivery agent (TDA) does not have any specific academic information about incoming apprentices until they commence their in-school training. Increasingly, college educators have been seeking support for apprentices whose technical literacy and numeracy skills require upgrading or refreshing. Many colleges have developed interventions and remedial support, but it is a challenge to provide these concurrently with trade-related training since apprentices are working and infrequently on campus. Educators have been searching for other tools and resources to support apprentices. One such tool is the Essential Skills for Ontario's Tradespeople (ESOT) online self-assessment tool.

## ESOT Tool and Potential Benefits

ESOT is an online essential skills assessment tool that provides immediate results for the test-taker. It measures three key essential skills – numeracy, document use and reading text – and compares the test-taker's skills to those needed for any one of the 53 Red Seal trades. The ESOT assessment results identify areas needing improvement and provide the test-taker with a customized training plan and free learning resources to build essential skills. ESOT, modeled after the Industry Training Authority (ITA) in British Columbia's assessment tool, has been contextualized for use in Ontario and is normed and adaptive.

The ESOT tool can be used at any point during the life cycle of an apprenticeship but the College Sector Committee for Adult Upgrading (CSC) was interested in determining if the tool could be used by apprentices prior to level 1 in-school training. If math or literacy upgrading could be completed prior to level 1 training, it was thought that the apprentice may be better prepared for academic success once he or she enters the program.

## Literature Review

The College Sector Committee (CSC) for Adult Upgrading has been a leader in the development and implementation of college- and community-based initiatives designed to support Ontario apprentices and improve apprenticeship completion rates. CSC members have increasingly been called upon to provide assessment and remedial resources for apprentices who require preparatory and refresher courses or more in-depth remedial assistance in math and reading skills. This recent experience mirrors experiences in other Canadian jurisdictions and has prompted interest in the issue of trade-specific literacy and numeracy requirements and apprenticeship success or completion (Clark & Jurmain, 2013).

Relevant to this study are recent reports, recommendations and developments in the areas of apprentice completion rates, the recognition of the increased requirement for math and literacy skills in the trades, and the suggestion that there is a link between literacy and numeracy supports and apprenticeship completion rates. Increased concern about skills shortages and stagnant apprenticeship completion rates has fuelled the development and implementation of a variety of strategies designed to support apprentices through various stages of the apprenticeship life cycle.

Jurisdictions across Canada have expressed concern about the inability to increase apprenticeship completion rates, which are affected by many and varied factors. Trades require greater skill levels than ever before and the focus on the necessary essential skills has intensified. This has resulted in a great deal of activity occurring around literacy and numeracy assessments and tools, interventions and support mechanisms for apprentices throughout their apprenticeship program. New supports and online tools have emerged, including ESOT.

There is a lack of research that provides reliable evidence on the linkages between literacy and numeracy supports and apprenticeship completion rates. Existing research tends to provide anecdotal or “assumed” linkages based on completion rate data and stakeholder surveys. In Canada, there is increasing interest in how literacy and numeracy levels are relevant to completion rates.

The Canadian government dramatically increased the number of apprenticeship registrations from 200,000 in 2001 to almost 400,000 in 2010 (Canadian Apprenticeship Forum, 2012). Ontario apprentices represented 32% of the provincial concentrations. Canadian apprentice completion rates did not improve over this period. An overview of findings from the 2007 National Apprenticeship Survey attempted to obtain a better



understanding of the demographics of apprentices, the barriers to entry, apprentice experiences in training and the factors that contribute to completion or discontinuation (Canadian Council of Directors of Apprenticeship Research Committee, 2011).

It found that a large majority of apprentices had a high school education or higher, with one-third having completed a college or university program; nine out of ten reported that they had no difficulty with either the technical or on-the-job apprenticeship training. The report noted, however, that despite this finding, one out of four apprentices still reported difficulty with the written material. The report recommended that essential skills components be incorporated into apprenticeship curriculum.

A benchmark study in 2001 by SkillPlan B.C. describes strategies to recruit and select apprentices more effectively, the need to define what essential skills are required for apprentices' success in school and on-the-job, and the supports apprentices need throughout their training (Evetts & Fownes, 2001). The authors of the report acknowledge that apprentices "fail exit tests and simply move out of the apprenticeship system", but are forced by lack of data to infer that "poor test results may be due in part to lack of the skills needed to read and answer knowledge testing questions" (Evetts & Fownes, 2001, p. i). The authors of the report find that "failure rates at each level of the assessment and final certification exams should give us some indication of success... some instructors report that they lose 40% of the apprentices that start out. Others say only 12% don't make it... There is general agreement, albeit unsubstantiated, that essential skills contribute to this situation" (Evetts & Fownes, 2001, p. 15).

An environmental scan conducted in 2004 by the Canadian Labour and Business Centre documents over 120 projects underway dealing with essential skills in apprenticeship across Canada and identifies a clear and growing incorporation of essential skills into the "thinking" about success in apprenticeships. Another 2004 study conducted by the Canadian Apprenticeship Forum entitled "Assessing and Completing Apprenticeship Training in Canada: Perceptions of Barriers" and commonly called the "Barriers Report" identifies nine major perceived barriers to apprenticeship success in Canada, one of which concerns the basic and essential skills of apprentices. The report recommends that governments support the development/upgrading of essential skills (literacy, numeracy, computer skills and other "soft" skills) that enhance success in apprenticeship programs.

By the mid-2000s, studies were attempting to make clear linkages between literacy/numeracy and apprenticeship completion. The Canadian Apprenticeship Forum analyzed current activities and programs in literacy and numeracy in a 2007 report entitled "Link between Essential Skills and Success in Apprenticeship Training." Key recommendations from this report and relevant to the current study include the determination of a clear link between essential skills and increased apprenticeship completions, and the development of "evaluation tools" and methods of ensuring that apprentices can acquire the appropriate essential skills for their chosen trade.

Later reports build on the early studies and the rapid development of literacy and numeracy tools to document what may be described as "eco-systems" of training for apprentices and to develop recommendations and policies based on the findings. In the 2009 report by Graeme Stewart for the Higher Education Quality Council of Ontario, "stagnant" completion rates are identified as a growing concern. In Ontario, the final report of the Compulsory Certification Review (Armstrong, 2008) recommended an exploration of how the apprenticeship system can adapt to the growing importance of "soft skills", particular literacy, numeracy and communication skills, and link these to labour market success through higher entrance requirements, academic upgrading, or other approaches.

Another relevant report conducted for the Canadian Apprenticeship Forum in 2011 documented the main (self-disclosed) reasons for which discontinuers did not complete their apprenticeship program between 2002 and 2004. A very small number (2.1%) indicated that they had difficulty with the in-school training component. “Other” reasons were most often cited as major motivators for discontinuation. While evidence supporting a link between essential skills and completion was vague, the report made recommendations related to such skills. For example, one recommendation involved the clear communication to prospective apprentices of the math and literacy requirements for success in the program.

Finally, a briefing document prepared in 2012 by the Association of Canadian Community Colleges (ACCC) for a meeting with then-Minister Diane Finley of Human Resources and Skills Development Canada presented “A Framework to Address Shortages in Advanced Skills.” This document recommends investment in a pan-Canadian essential skills program, as “more than 40% of Canadians over 18 do not have the literacy and essential skills needed to meet the requirements of their occupations or to acquire post-secondary qualifications for technical and trades professions.” It suggests integrating “essential skills testing and remediation in colleges and institutes to reduce non-completion rates.”

From this review, we can conclude that there exists a large body of literature documenting concerns about apprenticeship completion (success) rates and linking discontinuation to deficient literacy and numeracy (essential skills) levels.

## The Research Project

While apprentices must have their Ontario Secondary School Diploma (OSSD) or equivalent to enter most trades, they may not be aware of the higher level math skills required for some trades and they do not necessarily enter an apprenticeship directly from high school. As a result, some apprentices may not be aware of their skill levels and need for academic upgrading or refreshers. Training delivery agents (TDAs) selected by apprentices normally cannot offer upgrading opportunities until apprentices enrol and begin their in-school training program.

The Evaluating Skills for Ontario's Tradespeople<sup>1</sup> (ESOT) project provided an online, self-managed, self-assessment tool and customized training opportunity for interested apprentices who had signed their apprenticeship contract with their employer and the Ontario government's Ministry of Training, Colleges and Universities (MTCU). The goal of the project was to determine whether the use of this tool would result in gains in essential skills and improved academic performance. The project arose from concerns expressed by college educators that many apprentices lack the foundational math and literacy skills that are required for both in-school and on-the-job success.

Three areas of the province were selected for the study based on apprenticeship activity in Red Seal trades and the cooperation of both MTCU offices and the colleges. MTCU participation was required and key, since this is the organization which has first access to newly registered apprentices. MTCU offices in Ottawa, Sudbury and Kitchener provided new apprentices who registered between April and August 2012 with information on the ESOT resource and invited them at registration to take advantage of it. Participation by apprentices was entirely voluntary.

---

<sup>1</sup> Available at [www.csc.essentialskillsgroup.com](http://www.csc.essentialskillsgroup.com)

In a second phase of the study, apprentices who entered their level 1 in-school college program at Algonquin (Ottawa), Cambrian (Sudbury) or Conestoga (Kitchener) Colleges in September 2012 were introduced to the online assessment tool by their college faculty or administrative staff and were encouraged to use it to assess their literacy, numeracy and document skills related to their specific trade. Again, participation was voluntary.

In addition to these two groups, any apprentice who visited the ESOT website was able to take trade-specific assessments in literacy, numeracy and document use and receive an individualized learning plan complete with online skills upgrading resources whether they participated formally in the research project or not. Participation by those who did not consent to participate in the project was not tracked.

In October 2012, researchers conducted a series of focus groups with three stakeholder groups – level 1 apprentices, college faculty and staff, and MTCU staff working with apprentices – at all three sites. The main research question was augmented by a number of sub-questions that gathered valuable qualitative information about the opinions of stakeholder groups concerning the value of ESOT.

## Research Questions

This study investigated whether the availability and use of an online essential skills assessment tool during the first stage of an apprenticeship would result in improved academic performance of the project participants during subsequent in-school training. Our primary research question was: Does intervention at sign-up or apprenticeship registration using a learner-customized online learning model result in academic improvements during in-school training?

Focus groups allowed us to probe further and investigate additional sub-questions regarding:

- the level of preparation of apprentices at sign-up with MTCU or at entry into the in-school portion of their specific apprenticeship trade
- the services available to apprentices needing skills upgrading for success in their apprenticeship in-school program, and their use of these resources
- apprentice motivation to use the online assessment tool and rate of actual use of the tool (i.e., participation)
- usability of the online tool
- usefulness of the online tool (e.g., ease of access, information required, quality of materials)
- recommendations for timing of the promotion of the online tool and the likelihood of positive impact

## Methodology

The ESOT project was designed to collect both quantitative and qualitative information. Participants' use of the website was tracked and comments on the value and use of the tool were gathered during focus groups. Reaching apprentices as early in the life cycle of their apprenticeship as possible has been a challenge since the apprentice is known only to MTCU and the employer and is not part of a typical postsecondary cohort until in-school training commences.

## ESOT Logistics, Site Selection and Ethics Approval

Given that the ESOT tool was made available online without cost to participants, they had access to it 24/7 and could use it as many times as they wished. The ESOT tool was prepared for the project by creating three distinct project codes, one for each catchment area. Apprentices received this project code in their invitations to participate. Project codes would allow us to track participation by site and aggregate test assessments, although any use of the remedial learning resource materials could not be tracked. The identity of the participant would only be available by consent. A required participant informed consent form was added to the registration process on the website.

Three areas of the province were selected for the project based on interest, levels of apprenticeship activity and co-operation among the partners required for the project. Three colleges – Conestoga, Cambrian and Algonquin – and three corresponding Ministry of Training, Colleges and Universities (MTCU) offices – Kitchener-Waterloo, Sudbury and Ottawa – agreed to participate.

A multi-site/multi-college research ethics application was prepared and submitted to the research ethics board of each of the colleges involved. This application was reviewed by each college and resulted in approval from two colleges, with the third college indicating that approval for this research was not required as it was determined to be a program improvement project.

### Test 1: Invitation to Apprentices at Registration

The invitation to assess essential skills and participate in the project was extended to apprentices at the time of their registration, when an apprenticeship officially commences. Apprentices who registered between April and August 2012 were invited to participate in the project by MTCU staff. Selected staff at each of the three MTCU offices were briefed and oriented to the project and the process. Information and scripts were prepared and provided to the staff.

Participation was voluntary. It was important that apprentices receive this information at registration. The timing was intended to provide apprentices with time to develop skills, if needed, between registration and attendance in level 1 training, typically occurring in September. It was suggested that positive ESOT results would give apprentices confidence as they began their apprenticeship.

New apprentices who decided to participate would log onto the website, use the assigned geographic code, and were then asked to complete the informed consent form online. This consent would allow interaction and follow-up with project staff. Apprentices who did not consent were still allowed access to the site, but no further individual contact was provided. Modest incentives to participate were offered but likely had no effect on participation rates.

### Test 2: Invitation to Apprentices during In-School Level 1 Training

All level 1 apprentices enrolled in training in the Red Seal trades at each of the three colleges were invited to take the ESOT assessment in September 2012. Participation was voluntary. It was assumed that this group would include those apprentices who had been registered during the April to August 2012 period, who had already taken the assessment once and would now be beginning the level 1 in-school portion of their training. Accordingly, they would be invited to complete ESOT for a second time while in school, allowing for a comparison of pre- and post-test results and also for a more general comparison with the scores of the other test-takers. It was not possible to complete these analyses, however, since those apprentices who had

registered during the study window and already written the test once were not included in the in-school group and would likely not attend college before September 2013. As a result, no comparisons could be made between the two groups of test-takers, nor could pre-test/post-test improvement be measured.

## Focus Groups

Nine focus groups were conducted with the stakeholder groups. Level 1 apprentices were invited to attend focus groups at each of the three colleges during October 2012. Questions about the ESOT tool, the process and the challenges encountered were asked during each of the focus groups. Focus groups were also conducted with the MTCU staff that interact with apprentices in Kitchener, Ottawa and Sudbury. College faculty and staff directly involved in apprenticeship teaching, advising or administration at Conestoga, Algonquin and Cambrian colleges also participated in focus groups.

Focus groups allowed us to probe further and investigate additional sub-questions regarding:

- the level of preparation of apprentices at sign-up with MTCU or at entry into the in-school portion of their specific apprenticeship trade
- the services available to apprentices needing skills upgrading for success in their apprenticeship in-school program, and their use of these resources
- apprentice motivation to use the online assessment tool and the rate of actual use of the tool (i.e., participation)
- usability of the online tool
- usefulness of the online tool (e.g., ease of access, information required, quality of materials)
- recommendations for timing of the promotion of the online tool and the likelihood of positive impact

## Data Presentation and Analysis

Below is a summary of the quantitative data from the ESOT project, as well as the qualitative information gathered through focus groups.

Based on the low rate of participation, extremely limited quantitative data are available and the main research question cannot be answered. The focus group discussions, however, did provide valuable insights regarding the poor response and lack of participation, as well as the value of the ESOT tool. Focus group participants were consistent in their recommendations regarding the future promotion and use of the online self-assessment tool.

### ESOT Data

In May 2013, the available data were extracted from the ESOT website and compiled.

- a) Invitations to participate in test 1 were handed out to 476 apprentices at the point of registration by MTCU. Only 6% of those invited took test 1. None of the test-takers gave permission for contact or follow-up.

- b) Invitations to participate in test 2 were given to 400 level 1 apprentices while they were taking in-school training at the three colleges during September and October 2012. Participation was voluntary and 19% of apprentices took test 2. None of these participants had also taken test 1.
- c) Some apprentices from both groups did complete the retest online on their own time. The results from the 1.4% (12 test-takers) who did repeat the tests indicate that all results either remained the same or reflected modest improvements. Most retested within 6 to 48 hours of their original test, which indicates that they likely did not use the learning materials between test sessions. No conclusions concerning the effectiveness of the resources can be drawn from these data.
- d) There were indications that overall ESOT website use increased during the study period, but users did not identify that they were part of the project.

### Profile of Test-Takers

Of the 876 apprentices invited to participate, 12% took the assessment. The test-takers were predominantly male (93%). This is consistent with the profile of registered apprentices in Ontario, of which 76% are male.<sup>2</sup> As expected, the majority of test-takers had attained a minimum of a high school education and more than 30% had achieved some level of postsecondary education. Most of the test-takers were under the age of 35. The test-takers represented 17 different Red Seal trades.

### Assessment of Results of 106 Identified Test-Takers

Each test-taker had the opportunity to complete an assessment of his/her reading, document use and math skills related to the trade each identified. 9% of test-takers did not meet the minimum reading skill level requirements and 22% of test-takers did not meet the minimum document use skill level requirements for their trade. In the case of the more advanced math skills such as geometry and trigonometry, more than 80% did not meet the minimum skill level requirements for their trades. These results indicate a need for additional skill development.

---

<sup>2</sup> According to 2011 Statistics Canada data.

**Table 1: Assessment Results of 106 Identified Test-Takers**

| Type of assessment      | Number of test-takers | Did not meet minimum level |
|-------------------------|-----------------------|----------------------------|
| Reading                 | 95                    | 19%                        |
| Document Use            | 87                    | 22%                        |
| Mathematics             |                       |                            |
| Whole Numbers           | 79                    | 5%                         |
| Algebra                 | 79                    | 37%                        |
| Decimals                | 79                    | 28%                        |
| Fractions               | 79                    | 39%                        |
| Percentages             | 78                    | 40%                        |
| Geometry, Advanced Task | 77                    | 81%                        |
| Geometry, Plane Figures | 79                    | 26%                        |
| Geometry, Solids        | 79                    | 37%                        |
| Measurement             | 79                    | 16%                        |
| Trigonometry            | 52                    | 81%                        |

## Focus Group Data

### *Overview of Focus Groups*

Direct contact with stakeholders was the most valuable method used in this project for assessing the impact (both actual and potential) of the online assessment tool and for gathering relevant opinions, observations and recommendations from the stakeholder groups. Three stakeholder groups were selected to take part in focus groups: MTCU representatives from the three college geographic regions, college representatives from these three colleges, and apprentices currently taking their in-school program at each of these three colleges. As the apprentices who registered with MTCU during the spring and summer of 2012 were at their work placements with employers in the fall of 2012 and were not yet enrolled in college in-school sessions, the apprentices who were present in the college programs during that fall period were offered the opportunity to test out the online tool. These apprentices were in essence acting as a “proxy” for the newly signed apprentices in order to provide feedback on the key sub-questions of the research project.

All focus groups were held in person in October, with the exception of two MTCU focus groups, in Ottawa and Sudbury, which were held using telephone conferencing.<sup>3</sup> A consultant conducted the focus groups and summarized and analyzed findings as they related to the research questions.

<sup>3</sup> A schedule of focus groups, along with the materials used therein and a summary of the data collected, can be found in the appendices.

## Focus Group Research Questions

All focus groups contributed information related to the overall research question, as well as to the various sub-questions. The impact of the use (i.e., effectiveness) of the online tool on apprentices' in-school success could not be measured at this point in time, as the proxy apprentice groups had just begun their in-school training and had not yet received their fall grades. However, the stakeholder groups were able to comment on the likelihood of positive impact and the most effective timing and use of the tool for maximum effect on apprentices with academic deficiencies.

## Focus Group Key Messages

### MTCU Representatives

There were 27 MTCU representatives who participated in focus groups from three locations: Ottawa, Kitchener and Sudbury. In general, MTCU representatives do not gauge apprentice preparedness when they register an apprentice. They may ask about the individual's learning style and review the individual's high school or other transcript. Since apprentices are signed up with the employer present, there is reluctance on the part of both apprentice and MTCU representative to discuss preparedness as it may be embarrassing for the apprentice and may impact the apprentice-employer relationship. In addition, MTCU representatives do not interact with apprentices once they have registered them. MTCU will not know the results of any remedial efforts apprentices undertake and it does not have mechanisms to follow-up on referrals, if any, that it does make.

A key message delivered by a number of representatives was that apprentices are reactive rather than proactive regarding their preparedness: *"At the time of registration, apprentices are reactive, not proactive. They all think they are going to be successful."*

Recommendations from MTCU representatives included the following:

- While none thought that the online tool was best offered in high school, this possibility was mentioned by several: *"Connect with the school boards. Introduce students to trades at grade 7, 8 and earlier"; "It would be nice if they could complete the test before they even apply as an apprentice – OYAP or high school"; "In high school, students could evaluate themselves for the trade."* It was also seen as a tool to help high school staff *"understand the nature of the trade"* and what is required in skill levels. The earlier a potential apprentice realizes academic shortcomings and can receive help in addressing them, the better.
- Some identified sign-up with MTCU as an appropriate time to introduce the ESOT tool. However, even those who did recognize that offering the online tool several times throughout the apprentice's academic and employment history was best.
- The majority felt that when apprentices begin to be *"in school mode"* is probably the best time to introduce a self-assessment tool. It could be promoted when offers for in-school are sent out: *"The TDA sends package of information 2-3 months prior to in-school. This would be a good time to do the assessment and then follow up, and refer to supports."*
- The first week that apprentices attend their in-school program was generally seen as the best time: *"Use (the online tool) as a testing tool, so that if there are some issues, the instructor could identify and tighten up the referral process with student services"; "Identify the problem within the first week of in-school; I'd like to link them up early since they are only in school for such a short time and it"*



*may take four weeks to get accommodation in place.*" Apprentices have access to computers and supports at college and are more ready to respond to assistance.

MTCU representatives also had suggestions for motivating apprentices to use the ESOT tool, including marketing strategies, use of testimonials from apprentices and the possibility of making the assessment mandatory. There was recognition that the research project had provided very little time to orient and motivate apprentices at sign-up. There was some indication that the numbers cited by the project research team did not reflect the number of invitations provided (*"We actually gave out more invitations"*).

### College Representatives

24 college faculty members and administrative staff involved with apprenticeship programs attended the sessions at the three colleges. Most were faculty in apprenticeship programs, although there were also administrators, support staff, and postsecondary communications and math faculty.

Recent secondary school graduates were seen as experiencing difficulties in math and reading comprehension. Respondents cited numerous college resources available for students needing assistance: student support services; Literacy and Basic Skills (LBS) and other academic upgrading programs; peer tutoring, both formal and informal; and *"professor tutoring inside and outside of class (3 hours/week, one-on-one or small groups)."* Various strategies were mentioned to assist students having academic difficulties, including *"recording classes and information online so students can preview and review material"* and having math *"integrated into shop and theory classes."* Clearly, motivation to make use of supports was an issue for many students: *"Some students are willing to fail rather than get help."* Where success was noted, *specific strategies seemed to be most effective: "Informal peer tutoring arrangements have worked best", or "the teacher making themselves available for one-on-one works best."*

Recommendations from college faculty and staff included:

- Faculty responses mirrored those of the MTCU representatives. A variety of times were suggested for the assessment: in high school, prior to graduation; at sign-up with MTCU and the employer (it *"should be mandatory once they are signed up, but not used to determine who should be signed"*); prior to the in-school semester; or during orientation at college.

Some suggestions for increasing motivation to use the tool among apprentices related to making the self-assessment mandatory, such as making it a required part of the first week in class or making *"it a requirement of Certificate of Qualification."*

### Apprentices

In total, 58 apprentices attended four focus group sessions. A variety of trades were represented, including automotive service technician, refrigeration and air conditioning, millwright, metal fabricator, machinist and facilities technician. The majority of apprentices indicated that they *"felt ready for success."* Some indicated that *"they have all been working in their apprenticeship for 2-5 years"*, while others were secondary school graduates and some even postsecondary graduates. A small minority of those offered the online skill assessment tool were willing to try it out.

Those who used the tool *"found the tool easy to follow and the web interface easy"*; *"pretty straightforward, very quick, very easy to use."* Several noted that it took longer than they had anticipated to complete,

particularly the math section. The most frequent positive comment was that the test questions related to their trade (*"for the welding, it was easier and more related to the trade"*).

In response to the question below, recommendations from the apprentices included the following:

*If you had been offered the opportunity to use this online upgrading tool when you first signed up for your apprenticeship with the ministry, would you have used it?*

- The majority of comments were positive. In one location, 22 out of 23 apprentices said that they would at least try to use the online self-assessment tool when they first signed up with MTCU: *"If it's going to help, why not?"*
- Several commented that offering the tool at sign-up would be preferable since apprentices become very busy once they start school. It would also potentially help with their academic work: *"It would have been easier to work on math in advance; then I would have been 'good to go' when school started."*
- Some felt that the tool should be offered or made available more than once: *"Offer the testing twice. First time from MTCU when enrolled in the apprenticeship program and the second time by the professor once in-class portion at [College] begins."*
- Those who were postsecondary graduates had little interest. Many suggested various times for the offer of the online tool: *"If it was offered during the in-school portion, I would be more apt to try it as I am already in the school mentality"; "before you sign up for your co-op in high school"; "Grade 12, because they start an apprenticeship, purchase tools, then quit after 4 months because they are not ready for the trade – don't know enough, don't have the skills."*

## Discussion

In this study, we provided apprentices with a voluntary opportunity to assess and if necessary improve their reading, math and document use skills for their chosen trade. This opportunity was offered to them well in advance of their scheduled in-class training, providing them with ample time to update or refresh skills. We offered apprentices a tool that was free, easy to use, readily accessible, customized and confidential. Using the project codes, we were able to determine that only 6% of the new apprentices took test 1 using ESOT, despite the fact that the invitation to participate was extended to them by MTCU, a key stakeholder. The participation rate for test 2 was somewhat higher at 19%. The reasons for this higher rate are not known but it may reflect interest or concern about essential skills once an apprentice is attending school.

One of our assumptions regarding the timing of a newly registered apprentice's level 1 in-school training proved to be incorrect. Given the significant increase in the number of registered apprentices, many first-year apprentices do not attend in-school training for at least six months, sometimes longer, after registration. This affected the results of the project since it was anticipated that apprentices would attend school within three to six months of registration. Accordingly, the groups of apprentices in their level 1 training at the three colleges who were tested in the fall of 2012 were a different set of apprentices than those who had recently registered and been tested in the spring and summer of 2012. They would have been similar in make-up, however, and could reasonably stand as a proxy group, at least to gather qualitative information.

Though the data are limited by the low voluntary uptake of the ESOT tool, there are indications that some apprentices lack the appropriate level of reading, document use and math skills for their trades, based on the first assessment results. The results indicate that 19% of test-takers did not meet the minimum level of reading skills, 22% did not meet the minimum level of document use skills and, in the case of advanced math skills such as trigonometry and geometry, more than 80% did not meet the minimum skill levels for their trades. Some apprentices improved their results in subsequent assessments, but there is no evidence that the learner plans or learning resources were used to improve these results.

The focus group discussions yielded interesting insights:

1. *Level of preparation of apprentices.* The apprentices most likely to feel prepared for academic success are those who have recently completed a postsecondary program.
2. *Assistance for underprepared apprentices.* There is an impressive array of services available to apprentices needing academic assistance, and new apprentices are referred to them by MTCU and college representatives on a regular basis. The use of these services varies, however.
3. *Motivation and use of the online self-assessment tool.* Use of the tool was low among apprentices. Those apprentices who did try the tool were generally positive about its potential. There was no overall agreement about whether the tool should be mandatory, although apprentices did respond positively to such a requirement, particularly if it was used at the beginning of their in-school apprenticeship component.
4. *Usability of the online self-assessment tool.* Apprentices who tried the online tool found it easy to access and use. There was no serious concern about the types of personal information requested by the online system upon registration. The individual learning plan generated was considered very useful (albeit only by the small minority who used the tool).
5. *Usefulness of the online self-assessment tool.* There was general agreement that future apprentices should find the tool very helpful and that it should be made available. Apprentices were very positive about the potential value of this tool. There were suggestions that the tool might be useful in a high school setting as students seek to make decisions about trades occupations.
6. *Timing of the offer/promotion of the online tool.* There was agreement that the tool should be promoted and available at several points in apprentice careers, including in high school, at sign-up with MTCU, at their in-school approval or in-school start-up, and as Certificate of Qualification preparation. The majority favoured taking the assessment when beginning the in-school portion of their training.

## Conclusions

1. There were insufficient data to answer the research question. Very few newly registered apprentices used the ESOT tool, and few apprentices already taking level 1 in-school training voluntarily used the ESOT tool. It is therefore not possible to determine whether any academic improvements resulted through ESOT use. The small number (12) of apprentices who did take the assessment twice maintained their scores or made modest gains in their scores, but there is no evidence that any remedial work occurred. There are very positive comments on the *potential* for such a tool to make a

difference, and there is strong support from all stakeholders to have the tool used by various stakeholder groups, including high schools.

2. The concerns of college educators that some apprentices lack the foundational math and communications skills were validated by the assessment results of the 106 apprentice test-takers, where fully one-fifth did not meet the minimum skill levels in reading and document use and an even larger group did not meet some of the minimum skill levels in math.
3. Based on the comments of those apprentices who did try out the online self-assessment, the ESOT tool is easy to use and interpret.
4. Unless the assessment of essential skills is made mandatory and/or integrated into the apprenticeship lifecycle, it is unlikely that apprentices will take advantage of tools such as ESOT voluntarily. The fact that apprentices were invited or encouraged to take the assessment by MTCU staff and college staff – important stakeholders in apprenticeship – seemed to have minimal effect.

## References

### Studies and Reports

- Armstrong, R. (2008). Compulsory Certification Project. Retrieved from <http://www.tcu.gov.on.ca/eng/ccr/report.pdf>
- Association of Canadian Community Colleges (2012, December). *Briefing Report for Meeting with Minister Diane Finley, Human Resources and Skills Development Canada*. Ottawa: Author. Retrieved from <http://www.accc.ca/xp/index.php/en/comm/inside-accc/608-inside-accc-20121221>
- Canadian Apprenticeship Forum (2004). *Assessing and Completing Apprenticeship Training in Canada: Perception of Barriers* ("Barriers Report"). Ottawa: Author. Retrieved from [www.caf-fca.org](http://www.caf-fca.org)
- Canadian Apprenticeship Forum (2012, November). *Apprenticeship Analysis: Registration and Completion in 2010*. Ottawa: Author. Retrieved from [www.caf-fca.org](http://www.caf-fca.org)
- Canadian Apprenticeship Forum (2011). *Investigating Apprenticeship Completion in Canada*. Ottawa: Author. Retrieved from [www.cfa-fca.org](http://www.cfa-fca.org)
- Canadian Apprenticeship Forum (2007). *The Link between Essential Skills and Success in Apprenticeship Training*. Ottawa: Author. Retrieved from [www.cfa-fca.org](http://www.cfa-fca.org)
- Canadian Council of Directors of Apprenticeship Research Committee (2011). Overview of Key Findings from the 2007 National Apprenticeship Survey. *Canadian Apprenticeship Journal*, 4. Retrieved from [http://caf-fca.org/index.php?page=volumes&hl=en\\_CA](http://caf-fca.org/index.php?page=volumes&hl=en_CA)
- Canadian Labour and Business Centre (2004). *Essential Skills in Apprenticeship and Skilled Trades: An Environmental Scan*. Retrieved from <http://en.copian.ca/library/research/clbc/essential/05feb15.pdf>
- Clark, B., & Jurmain, M. (2013, April). *Research on Effective Technical Literacy and Numeracy Supports for the Ontario Apprenticeship Context*. Ministry of Training, Colleges and Universities. Unpublished.
- Desjardins, L. (2001). *Completion and discontinuation rates of registered apprentices: Does program duration matter?* Ottawa: Statistics Canada. Retrieved from [www.statcan.gc.ca/pub/81-004](http://www.statcan.gc.ca/pub/81-004)
- Evetts, J., & Fownes, J. (2001, November). *Essential Skills and Success in Apprenticeship*. Vancouver, BC: British Columbia Construction Industry Skills Improvement Council. Retrieved from [http://skillplan.ca/wp-content/uploads/2012/04/Appr\\_Rpt\\_Complete.pdf](http://skillplan.ca/wp-content/uploads/2012/04/Appr_Rpt_Complete.pdf)
- Ministry of Training, Colleges and Universities (2012). *Apprenticeship In-School Training Completion Rates by TDA, 2008/09 to 2011/12*. Unpublished.
- Ontario College of Trades (2013). List of Trades. Retrieved from [http://www.collegeoftrades.ca/wp-content/uploads/tradesOntarioTradesCodes\\_En.pdf](http://www.collegeoftrades.ca/wp-content/uploads/tradesOntarioTradesCodes_En.pdf)
- Stewart, G. (2009) *Apprenticeship Training in Ontario: Literature Review and Options for Further Research*. Toronto: Higher Education Quality Council of Ontario.

## Cited Literacy and Numeracy Assessment Tools related to Apprenticeship

College Sector Committee for Adult Upgrading. *Essential Skills for Ontario's Tradespeople*. Available at [www.csc.essentialskills.com](http://www.csc.essentialskills.com)

Industrial Training Authority (ITA), British Columbia. *ITA Essential Skills*. Available at <http://www.itabc.ca/discover-apprenticeship-programs/ita-essential-skills>



Higher Education  
Quality Council  
of Ontario

An agency of the Government of Ontario