

Promoting Apprenticeship and Careers in the Skilled Trades

Spring 2021

Overview

- Purpose: To gather feedback from educators about how to enhance the Educator's Guide and how to better engage educators in promoting apprenticeship and careers in the skilled trades.
- Time: 1 hour
- Agenda:
 - Introductions
 - The Project
 - Current Resources
 - Discussion and feedback from educators

Key Questions

- What information do you need about apprenticeship and careers in the skilled trades?
- What is the most effective way to present this information to you?

Why?

- Skills shortages
- New research on labour market information and incomes
- Lack of awareness
- Reaffirmed value of common resources by 500 plus stakeholders



Skills Shortages

Summary of Projected Supply and Demand Conditions, by Province, Top 15 Red Seal Trades, 2021 to 2025

Trade	BC	AB	MB	SK	ON	QC	ALC
Automotive Service Technician	●	●	●	●	●	--	●
Boilermaker	●	●	●	●	●	●	●
Bricklayer	●	●	●	●	●	●	●
Carpenter	●	●	●	●	●	●	●
Construction Electrician	●	●	●	●	●	●	●
Cook	●	●	●	●	●	●	●
Hairstylist	●	●	●	●	●	●	●
Heavy Duty Equipment Technician	●	●	●	●	●	●	●
Industrial Mechanic (Millwright)	●	●	●	●	●	●	●
Mobile Crane Operator	●	●	●	●	●	●	●
Plumber	●	●	●	●	●	●	●
Refrigeration and Air Conditioning Mechanic	●	●	●	●	●	●	●
Sheet Metal Worker	●	●	●	●	●	●	●
Steamfitter/Pipefitter	●	●	●	●	●	●	●
Welder	●	●	●	●	●	●	●

Source: Statistics Canada (RAIS), 2019; CANTRAQ Prism Economics (2021)

Focus

- National
- Multiple trades
- Common and consistent messages
- Reflect current research
- Diverse educators and First Nation partners
- November 2021 deadline

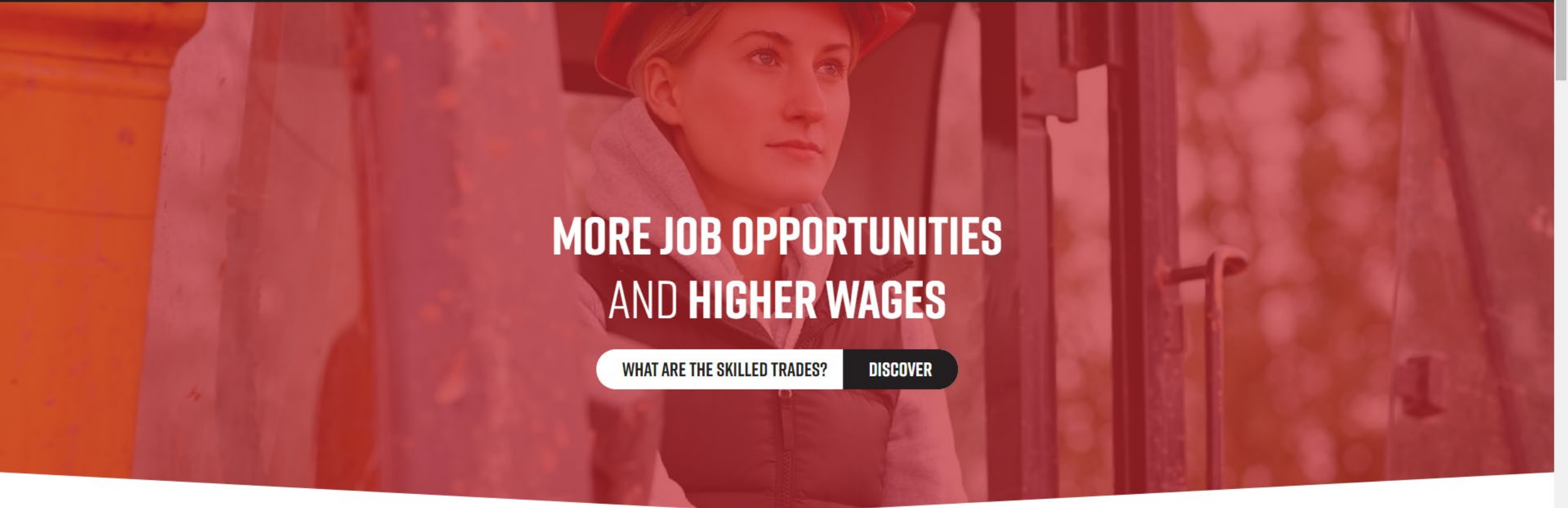
Outcomes

- Enhance and publish an updated Educator's Guide increasing its relevance to today's educators
- Increase awareness about apprenticeship and careers in the skilled trades among educators
- Increase the number of youth and under-represented groups entering apprenticeships and careers in the skilled trades

Current Resources

CAF-FCA provides these resources:

- Careers in Trades with Skills Canada
- Fact Sheets for Educators
- Skilled Trades Network
- Guide to Apprenticeship
- Educator's Guide



MORE JOB OPPORTUNITIES AND HIGHER WAGES

WHAT ARE THE SKILLED TRADES? DISCOVER

RESPECT • OPPORTUNITY • GOOD PAY

WELCOME TO



ANSWER THESE 10 QUESTIONS AND THE **TRADES EXPLORER**
WILL SUGGEST SOME AREAS YOU MIGHT WANT TO EXPLORE.

There are no right or wrong answers, and don't be afraid to try something new—you can
always pick a different one next time!

Across Canada and around the world, skilled tradespeople are in high demand. If you like to work with your hands, see the results of your efforts and are a creative problem-solver, a career in the trades might be right for you.

CONSIDER A CAREER IN THE SKILLED TRADES



If you've been thinking about a career in the skilled trades and want to know first-hand what it's like, check out this series of *Talk to a Trade* videos.



For more inspiration, visit the [Canadian Apprenticeship Forum](#) and [Skills/Compétences Canada](#) YouTube channels.

CAREER INFLUENCERS

FINDING AN EMPLOYER

VIDEOS



What is Apprenticeship?

Apprenticeship is a valuable form of post-secondary education. Apprentices learn on-the-job from an experienced journeyman mentor and then receive additional training at a college or a union training center. At the end of their training, which typically lasts two to four years, they write an examination and become fully certified journeymen. Although many youth and parents prefer university as a "first-choice" post-secondary option, there are many positive benefits associated with completing an apprenticeship program and becoming a journeyman, including good pay.

Apprentice & Journeyman Incomes

Apprentices are paid during their training and their wages increase once they become certified.

FIGURE 1 indicates the median income at the time of certification and the median income two years after certification for the 2008 to 2014 time period. The data is based upon the incomes of 15,650 journeymen in ten Red Seal trades.

The trades included are construction electrician, industrial mechanic, plumber, heavy-duty equipment technician, steamfitter-pipefitter, automotive service technician, carpenter, cook, welder and hairstylist. When individuals became certified, their median income was between \$54,745 to \$61,135. Two years after certification the median income ranged from \$63,590 to \$76,205.

FIGURE 1

Median Employment Income (\$) at Certification and 2 years after Certification for Ten Red Seal Trades, 2008 to 2014¹



¹ Most journeymen who participated in the 2015 National Apprenticeship Survey were satisfied with their pay, job security,

It **PAYS** to be an APPRENTICE



Incomes of Post-Secondary Graduates

There is comparable 2014 information for journeypersons and college and university graduates two years after completion. The median journeyperson income was \$63,590.³ This salary was higher than what college or undergraduate university students earned in fields of study that are known to be high paying. Those who earned a college diploma in architecture, engineering and related technologies had a median income of \$47,600.⁴ For university graduates in the same fields of study, the median income was \$60,000.⁵ See Figure 2. In fields of study such as business, the humanities and the social sciences, the median income was \$41,500.⁶ Another survey from 2013 indicated university graduates worked for six-to-seven years before their median incomes were \$63,000.⁷

FIGURE 2
Median Employment Income for Post-Secondary Graduates 2 Years After Completion, 2014

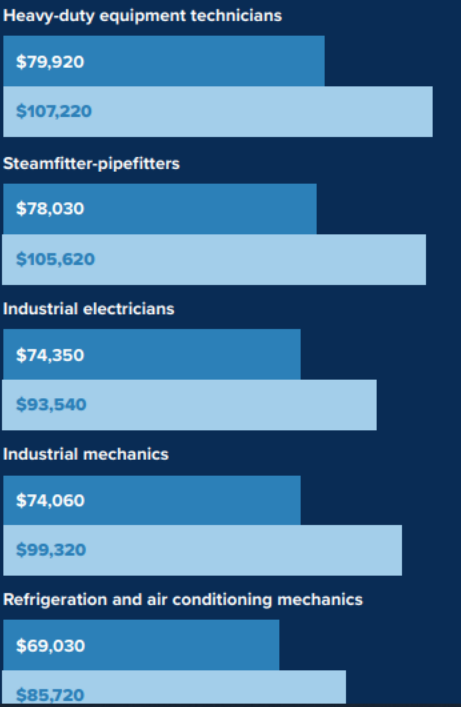


³ CAF-FCA, *Apprentice Demand in the Top Ten Red Seal Trades: A 2019 National Labour Market Information Report*, (Ottawa: CAF-FCA, 2019).
⁴ Statistics Canada, *Labour Market Outcomes for College and University Graduates: 2010 to 2014*, Infographic from Postsecondary Student Information System, 2009/2010 to 2014/2015 and T1 Family File, 2012 to 2016.
^{5,6} Ibid.
⁷ Forty-one Canadian universities conducted a survey of their baccalaureate graduates. Over 21,000 graduates provided information about their current employment situation. See the Canadian University Baccalaureate Graduate

The Highest Paying Trades

Incomes will vary based on economic cycles, the trade and the sector. A 2010 study compared the highest median income at certification to four years post-certification. Heavy-duty equipment technicians had the highest salaries followed by steamfitter-pipefitters, industrial electricians, industrial mechanics and refrigeration and air conditioning mechanics.¹¹ See Figure 3.

FIGURE 3
Median Employment Income (\$) at Certification and 4 Years After Certification, 2010



Apprenticeship and Certification Benefits

FACT SHEET FOR EDUCATORS

What is Apprenticeship?

Apprenticeship is a post-secondary pathway consisting of on-the-job training provided by an employer and journey person mentor and technical training delivered at a college, vocational school or union training centre.

The Apprenticeship Advantage

- ▶ Earn-while-you learn
- ▶ Incur less debt
- ▶ Learn from a journey person mentor on-the-job
- ▶ Use advanced technology

Certification Pays

It pays to complete an apprenticeship. Most apprentice completers who participated in the *National Apprenticeship Survey* were satisfied with their pay, job security and workplace health and safety conditions. They experienced these positive labour market outcomes:



*Journey person income increases over time. Twenty per cent of journey persons in a CAF-FCA survey reported earning **\$100,000** plus annually.*

Exciting Careers

Skilled trades careers offer opportunities to do interesting work. Journey persons experience satisfaction in building something hands-on. They enjoy working on a team, not being in an office all day, travelling and meeting new people.

Future Opportunity

Once certified, journey persons advance their careers by working as forepersons, business owners, union officials, trainers, teachers and managers.

Visit: careersintrades.ca



HOME > SKILLED TRADES NETWORK

Skilled Trades Network

The Skilled Trades Network is a national hub for employers and apprentices in the skilled trades. Access information about training programs and financial supports. Obtain practical tips and strategies. Network and share your experiences with others.

Browse the various categories below to learn more about essential Apprenticeship facts and information



Employer Resources

Apprenticeship is good for business! Access practical tips and strategies, best practices, success stories and information about available financial supports.



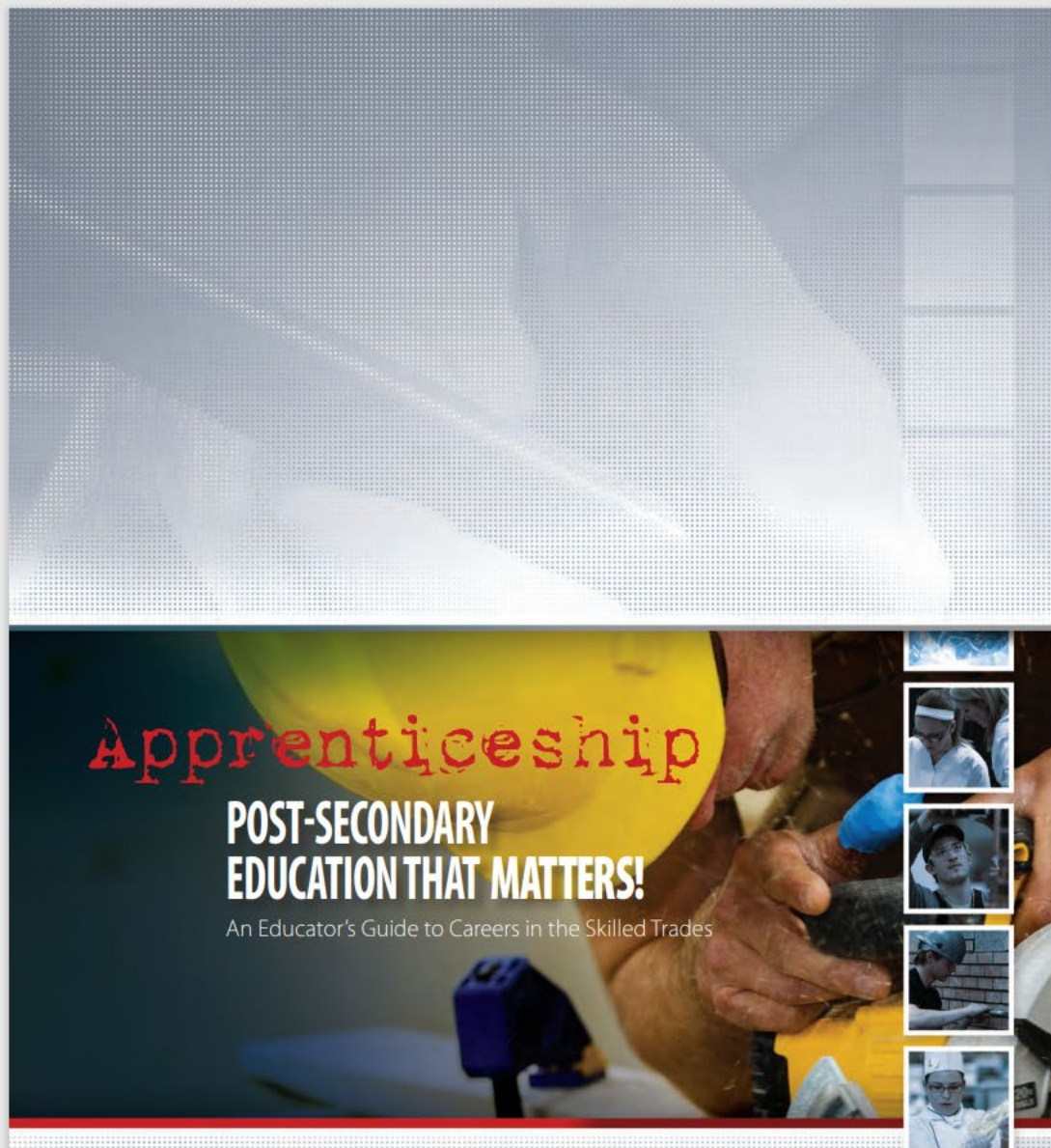
Apprentice Resources

Need some inspiration, information or practical advice? Connect with apprentices, journeypersons and employers while ensuring you are taking advantage of financial supports and



Videos & Podcasts

The apprenticeship community is highly committed to apprentice success. Listen as apprentices and employers share their insights and experiences.





MYTHS AND REALITIES of Skilled Trades

MYTH 1:
Skilled trades are not for students who get good grades

REALITY!

This is simply not true and is probably the most common misperception about skilled trades. The reality is that skilled trades require individuals with strong essential skills such as reading and writing, math and sciences.

Like university and college, successfully completing an apprenticeship takes intelligence, dedication, focus and hard work. Tradespeople are regularly called upon to perform a range of complex tasks, such as:

- Reading and interpreting blueprints for building an office tower.
- Analyzing various elements (such as weather conditions, weight and distance) while operating a crane situated on a 10-story building.
- Identifying the potential volume of water and its resulting pressure when installing a sewage system for a hospital.

MYTH 2:
A university degree is the only post-secondary education that provides a good future.

REALITY!

Achieving a Certificate of Qualification for a skilled trade is a ticket to a good future. Tradespeople are in demand, earn good pay, have the ability to work across the country and benefit from solid job security. With the imminent skills shortage, increased demand for skilled labour and an aging population, the high demand for tradespeople will not diminish. The facts speak for themselves.

CONSTRUCTION

In-migration and a growing population in Manitoba point to the province's projected growth in residential construction by 40% between 2012 and 2016, driving demand for carpenters, plumbers, electricians and plasterers.²

Alberta's oil and gas sector will attract considerable investments in non-residential construction, growing the need for skilled workers across most trade areas and, in particular, boilermakers, ironworkers and structural metal fabricators and fitters, and steamfitters, pipefitters and sprinkler system installers.³

Mining, transportation and utility projects in northern British Columbia will require boilermakers, drillers and blasters, millwrights and pipefitters.⁴

In Ontario's Greater Toronto Area, industrial and utilities projects will lead the call for such skilled workers as construction millwrights and industrial mechanics, boilermakers, electricians, and steamfitters, pipefitters and sprinkler system installers.⁵

First-time new entrants in Nova Scotia's construction industry will not be able to fill expected gaps in labour supply due to retirements and mortality. Further tightening the need for skilled workers are the province's projected growth in non-residential projects and shipbuilding, intensifying demand for boilermakers, electricians, ironworkers and plumbers.⁶

Diversity of Careers in the Skilled Trades

With more than 300 occupations to choose from, there is a skilled trade for everyone!

On pages 11-22 of this guide, we have listed the most common trades for which post-secondary training is available across four key industries –manufacturing/industrial, construction and maintenance, motive power/transportation, and service. In addition, we have selected several trades from each sector to profile.

For more information on these and other trades, visit www.careersintrades.ca.

ON THE JOB: MANUFACTURING / INDUSTRIAL

- Automotive Machinist
- Drillers and Blasters
- Graphic Arts (Bindery, Press or Pre-Press)
- Heavy Equipment Operator
- Hoist Operator (Construction, Mobile Crane, Conventional Crane or Hydraulic Crane)
- Industrial Electrician
- Industrial Instrument Mechanic
- Industrial Mechanic (Millwright)
- Industrial Warehouseperson
- Instrumentation and Control Technician
- Lather (Interior Systems Mechanic)
- Machinist
- Metal Fabricator (Fitter)
- Mould Maker
- Power System Electrician
- Power System Operator
- Rig Technician
- Sawfiler/Fitter
- Stationary Engineer
- Tool and Die Maker
- Welder

TOOL AND DIE MAKER



Any ideas about what a tool and die maker does? It may come as a surprise to you, but they are among the most highly skilled

workers in the economy. They produce tools, dies and special moulds for the machines that make many of the products and equipment we use everyday, like clothes, airplanes, furniture and even candy. Tool and die makers work from drawings, computer-aided designs, and must have a good grasp of the properties of metal, plastic, rubber and composite materials.

TRAITS & TALENTS

Tool and die makers must be excellent problem-solvers. They must also be good with computers and quickly adapt to technological advances in robotics and lasers. Most tool and die makers have a background in mathematics and physics. The work can be physically demanding.

WORKPLACE

Tool and die makers can be found in a variety of workplace settings. Examples include mould shops, shipyards, refineries, mines, smelters and overhaul shops. Some work in large manufacturing settings that produce motor vehicle parts, aircraft parts, machinery and equipment, and hardware, while others may find employment in small custom shops.

KEY BENEFITS of Apprenticeship

There are lots of benefits of taking an apprenticeship:

EARN WHILE YOU LEARN ON THE JOB

Apprentices are given a salary by the employers that hire them. This salary is equitable within the industry and in accordance with provincial standards. The apprentice's salary may increase each year as they progress toward certification.

KEEP STUDENT DEBT LOW

Another big benefit of apprenticeship training is that debt loads after completion of apprenticeships are much lower since apprentices "earn while they learn." On the other hand, the average university student graduates with nearly \$28,000 in debt and takes an average of 14 years to pay it off based on an average starting salary of just under \$40,000.²⁵

A JOB GUARANTEE

Skilled workers are in demand across the country and around the world. A good work ethic, a can-do attitude and a Certificate of Qualification will almost guarantee a job upon completion. The skills gained through apprenticeship are the starting point for exciting, varied careers.

ELIGIBILITY FOR EMPLOYMENT INSURANCE DURING TECHNICAL TRAINING

Apprentices may receive Employment Insurance (EI) during technical training. That's one of the many benefits of apprenticeship training versus other forms of post-secondary education. While in a technical training institution, college or union training centre for block-release, many apprentices collect benefits that represent a percentage of their salary. Some employers will top up EI benefits or continue to pay an apprentice's salary while they're attending school.

RECEIVE PERSONAL TRAINING AND MENTORSHIP

Apprentices have an opportunity to develop their skills through personal, on-the-job training from a highly-qualified journeyperson. These mentors share their experience and pass along valuable insights about how to do their jobs.

ACQUIRE A SKILL THAT WILL LAST A LIFETIME

As a tradesperson, the skills learned will not only last a lifetime; they will also open doors to other opportunities. Journeypersons can take advanced training to continue developing their talent and work their way into challenging and rewarding careers in management or teaching. Many start their own businesses.

Did you know?

- Many provincial/territorial governments have special programs for secondary school students who are interested in apprenticeship. These programs offer early training in the trades and a chance to try working on job sites. Depending on the province/territory, students can earn credits towards their apprenticeship program while completing their secondary school diploma. The provisions of these programs vary by trade and jurisdiction, but they are great opportunities to gain exposure to the trade and see if it will be a good fit. All of these programs highlight the priority that industry and government attach to attracting youth to apprenticeship training. Your local apprenticeship office will have specific information about your jurisdiction's program.
- There were 430,452 registered apprentices in Canada in 2010, an increase of 5.2% from 2009.²⁶

5 STEPS TO AN APPRENTICESHIP

STEP 1

FINISH HIGH SCHOOL

Complete your secondary school education. Like university or college, the entrance requirement for most trades includes Grade 12. A youth apprenticeship program is also an option while you are in high school.

STEP 2

FIND A TRADE

There are more than 300 skilled trades in Canada, but which one is right for you? Assessing your interests, skills, aptitude and the kind of lifestyle you want is never an easy process. You should talk to your career /guidance counsellor at school and your parents, as well as consult your local apprenticeship office. Take some time to consider what trades are in demand in your region.

STEP 3

FIND AN EMPLOYER TO HIRE YOU

Once you have picked a trade, you must find an employer to hire you. Approach this task like any other job search, bearing in mind that up to 80% of all job openings are never advertised. Consider asking employers to meet with you to discuss the trades they need, then expressing interest in any upcoming opportunities.

STEP 4

REGISTER

Once you have found an employer to hire you, you'll need to register as an apprentice. Follow the steps established by the apprenticeship authority in your province or territory and sign the required contract with your employer. The contract outlines:

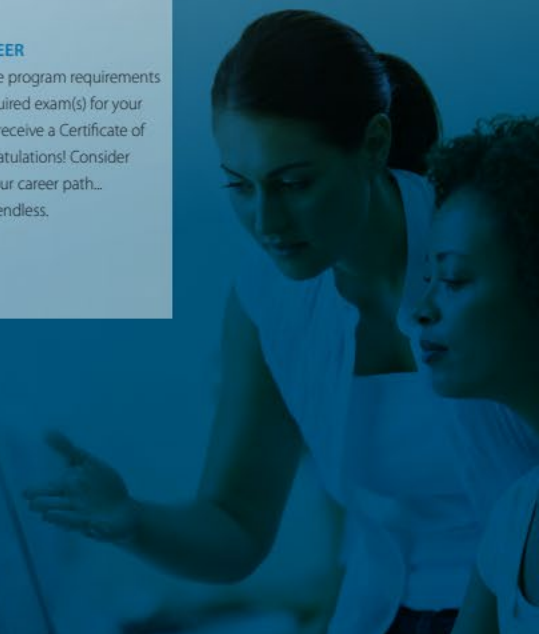
- The length of the training program
- The skills that must be learned
- The wages

STEP 5

START YOUR CAREER

After completing the program requirements and passing the required exam(s) for your chosen trade, you'll receive a Certificate of Qualification. Congratulations! Consider the next steps on your career path... the possibilities are endless.

To learn more about becoming an apprentice, go to www.careersintrades.ca



MORE QUESTIONS? WE HAVE ANSWERS

What is a journeyperson?

A journeyperson is a certified expert in a particular trade. He or she must have provincial or inter-provincial certification in their trade. The journeyperson is responsible for mentoring and training the apprentice in the workplace according to the provincial/territorial government guidelines. Once an apprentice is certified, he/she becomes a journeyperson.

Who is responsible for apprenticeship training?

Regulating apprenticeship training is the responsibility of the provincial or territorial government. Each of the partners in apprenticeship – the employer, the apprentice, the journeyperson and the technical training institute – have specific responsibilities associated with training and certification.

Who can employ an apprentice?

Only employers who have a qualified journeyperson on staff to mentor an apprentice are able to hire apprentices, as well as those who adhere to all health and safety legislation within a jurisdiction.

Does an apprentice need to complete their training with one employer?

No. However, it is necessary that both the apprentice and the new employer notify their local apprenticeship authority about this change. All of the training documentation is required from previous employers to verify the required skills have been obtained by the apprentice.

Where does technical training take place?

The majority of apprenticeship programs involve technical training at community colleges or industry training centres. In some trades, private colleges also provide apprenticeship training. Completing some of the technical training online can be an option, too. Check with your technical training provider or your provincial/territorial apprenticeship authority.

What is certification?

Certification is a term used by most provincial and territorial governments to indicate that an individual has the necessary training requirements and has passed the certification examinations required within their trade. It shows both customers and employers that you have the skills and experience to practice your trade.

Is certification mandatory in all trades?

No, not all trades require certification. However, there are some trades that are compulsory, meaning that they must be practiced only by certified journeypersons and registered apprentices. Certification is voluntary in other trades. Check with your provincial/territorial apprenticeship authority in your region to learn more.

Why is it important to be certified?

Being a certified journeyperson is a real advantage in today's workforce. Certification is proof that a tradesperson has all the training and skills needed to perform tasks – this is important to many employers and to customers.

Is a high school diploma necessary to become an apprentice?

Most apprenticeship programs require a high school diploma. However, there may be exceptions based on the employer and the minimum requirements that are needed to enter into an apprenticeship program which is determined by the province or territory. Employers generally prefer an apprentice that has finished their secondary education, but they also consider the attitude, aptitude and current skills of the youth to perform job requirements.



ACTIVITIES FOR THE CLASSROOM

Test Your Students' Skilled Trades IQ

Discover how much your students really know about skilled trades, and allow them to find out for themselves whether they're an apprentice, a journeyperson or master journeyperson! This fun and interactive quiz can be used to spark a dynamic discussion about skilled trades. The answer guide is on page 39. Good luck and have fun!

TEST YOUR SKILLED TRADES IQ

Skills Shortage

1. By what year will Canada have a shortage of 1 million skilled workers?

- A. 2030
- B. 2025
- C. 2015
- D. 2020

2. By what year will the majority of Canada's population be over the age of 65, and thus less likely to be working?

- A. 2028
- B. 2016
- C. 2036
- D. 2040

Skilled Trades

3. Approximately how many skilled trades occupations are available in Canada?

- A. 150
- B. 300
- C. 50
- D. 100

4. What percentage of apprentices who completed their apprenticeships earned between \$25-\$50/hour in 2005?

- A. 23%
- B. 85%
- C. 11%
- D. 56%

5. Skilled trades fall under four main sectors of the economy. What are they?

- A. Motive power/transportation, manufacturing/industrial, business administration, health sciences
- B. Construction and maintenance, motive power/transportation, earth sciences, service
- C. Service, manufacturing/industrial, construction and maintenance, motive power/transportation
- D. Business administration, construction and maintenance, service, motive power/

Apprenticeship and Education

6. What percentage of Canada's workforce will need to have post-secondary credentials (apprenticeship, university, college, polytechnic, professional or industry-sponsored) by 2031?

- A. 77%
- B. 65%
- C. 40%
- D. 90%

7. What is the average debt of a university student at the end of his or her studies?

- A. \$10,000
- B. \$5,000
- C. \$35,000
- D. \$28,000

8. What is the percentage of students that graduate from university?

- A. 25%
- B. 50%
- C. 70%
- D. 10%

CLASSROOM ACTIVITY 3

KEEP YOUR COOL

Trade Link: Refrigeration and Air Conditioning Mechanic
(An activity on minimizing heat energy transfer)

TEACHER BACKGROUND

- **Duration:** two 45-minute classes (includes taking temperature readings during the day)
- **Group Size:** small groups of 4 students
- **Setting:** indoors (classroom)

RATIONALE

Heat is a form of energy very important to our lives and to our community. Students should have an opportunity to explore properties of heat through discovery. Students at this level learn about the kinetic molecular theory and the particle theory. They can explain heat loss or transfer using these theories.

METHOD

In this activity, students will be asked to design a device to minimize heat loss. Using materials provided by the teacher, students will create a device to hold a container of ice cold water. Although the teacher provides generic materials for this activity, students should be encouraged to be creative and to identify other readily available materials for use in their designs. The students will take the temperature of the ice cold water at the beginning of the activity and after each half hour until the end of the day or until the water's temperature is at room temperature. The data can be displayed in a graph that charts time versus temperature.

GETTING STARTED

Heat is a form of energy that people living in cold climates are very familiar with. In this activity, you will explore heat loss. The goal is to design a container that allows a cold liquid to stay cold for the longest possible time.

MATERIALS

- Container of ice water (plastic bottle, cup with lid, graduated cylinder, etc.)
- Tape (duct tape or masking tape)
- Materials for container could include cardboard, rigid insulation, plastic wrap, tinfoil

THE ACTIVITY

Day One:

- 1 In your group, brainstorm ideas on what your design might look like and what materials you would like to use.
- 2 Once you have a design in mind, make a sketch of it on a piece of paper and list all the materials you will be using on the same sheet of paper.
- 3 Before you build your prototype, have your teacher initial it to indicate that your design has been approved for construction.
- 4 Choose someone from your group to measure out 100ml of the ice cold liquid once you have built your prototype.
- 5 Place the container of ice cold liquid in your newly created design after you take a temperature reading of the ice water.
- 6 Take a temperature reading every half hour for the rest of the day or until you have to go home.

Day Two:

- 7 Plot a graph of temperature versus time to show your data, using your group's temperature readings.
- 8 Once everyone in the class has had a chance to record their data, determine which designs were the most effective.

BRANCHING OUT (EXTENSIONS AND VARIATIONS)

- 1 Try using different materials or improving on your design by combining the best ideas generated in various students designs.
- 2 Create different containers to hold the ice water and repeat the experiment using your original device.
- 3 Organize data in a spreadsheet (use of computer application optional).

INFORMATION BITE

As a refrigeration and air conditioning mechanic apprentice, you would learn about the science related to changes of state, heat and temperature, properties of coolants, compression, heating systems, electricity, equipment controls, gas laws and small engines. Training involves ordering, assembling, installing, calibrating and testing of industrial and commercial equipment. You would work for companies that install and service air conditioning and refrigeration systems.



Key Questions

- What information do you need about apprenticeship and careers in the skilled trades?
- What is the most effective way to present this information to you?

Next Steps

- Additional provincial/territorial focus groups
- Final Version by November 2021
- Virtual event for educators in November 2021