



Developing OALCF Apprenticeship Tasks for the Competency “Use Digital Technology”

Presented
on behalf of
Literacy Northwest
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“It is a characteristic of labour markets that technology can change the nature of work faster than people can change their skills”

**Frank Levy (2010)
How Technology Changes Demands for Human Skills.**

Agenda

Digital technology – Which trades? How?

Digital technology – What does it mean? Skills in the workplace?

Principles for writing digital tasks

What did we learn/recommendations?

Digital technology – which trades?

NOC	Ontario Trade Name	Trade Sector	Grade or Equiv.	Growth Trend (2012)	Strong Activity (2012)	Compulsory in Ontario	C of Q Exam	Red Seal	Number of Registered Apprentices (Ontario) April 1, 2014	Red Seal Top 10 Registrations (Canada) 2012	Statistics Canada Major Trade Group
7233	Sheet Metal Worker	C	10	-	+	Y	Y	Y	1,930		Sheet Metal Workers
7721	General Carpenter	C	10	--	+++	N	Y	Y	6,384	48,870	Carpenters
7251	Plumber	C	10	++	+++	Y	Y	Y	4,278	18,546	Plumbers, Pipefitters and Steamfitters
7241	Electrician (Construction and Maintenance)	C	10	++	+++	Y	Y	Y	9,812	49,611	Electricians
7252	Steamfitter (2)	C	10	++	+++	Y	Y	Y	840	16,077	Plumbers, pipefitters and steamfitters
7327	Welder	I	12	+	++	N	Y	Y	1,615	14,781	Welders
6341	Hairstylist	S	12	+	++	Y	Y	Y	7,209	18,993	Hairstylist and Estheticians
7521	Heavy Equipment Operator	C	12	+	++	N	N	Y			Heavy Equipment and Crane Operators
6322	Cook	S	12	++	++	N	Y	Y	5,393	12,228	Food Service
7311	Industrial Mechanic Millwright	I	12	-	++	N	Y	Y	3,649	11,049	Millwrights
7321	Alignment and Brakes Technician*	M	12	-	+++	Y	Y	N		22,539	Automotive Service
7312	Heavy Duty Equipment Technician	M	12	+	++	N	Y	Y	1,583		Heavy Duty Equipment Mechanics
7321	Transmission/Alignment & Brakes Automotive Service Technician (1)	M	12	--	+++	Y	Y	Y	13,097	22,539	Automotive Service
7313	Refrigeration and Air Conditioning Mechanic	C	10	+	+	Y	Y	Y	1,911		Refrigeration and air-conditioning mechanic
7232	Tool and Die Maker	I	12	-	+	N	Y	Y	959		Machinist
7231	Machinist	I	12	-	+	N	Y	Y	2,141		Machinist

Trades identified for the 2014 project, Developing Best Practices for Increasing, Supporting and Retaining Apprentices in Northern Ontario
 Trades identified based on Canadian Apprenticeship Forum Research

Digital technology – which trades?

Trade Sectors/Trades Impacted by Technology

Sector	Related Trades
Service	Automotive Service Technician
Construction	Carpenter , Construction Electrician, Plumber, Refrigeration and Air-Conditioning Mechanic , Sheet Metal Worker
Manufacturing	Construction Millwright, Machinist, Tool and Die Maker, Welder

Automotive Service Technician			OALCF Reference													
			D Use Digital Technology	A Find and Use Information			B Communicate Ideas and Information				C Understand and Use Numbers				E Manage Learning	F Engage with Others
Task Sets	Sub Tasks	Complexity Level	Task Groups Not Applicable	A1	A2	A3	B1	B2	B3	B4	C1	C2	C3	C4	Task Groups Not Applicable	Task Groups Not Applicable
Locate Auto Parts Online	4	1						B2.1	B3.1b							
		2	D2													
		3		A2.3												
Automobile Codes for Troubleshooting	4	1														
		2	D2						B3.2a							
		3		A2.3												
Automotive Invoice for Service	2	1									C1.2					
		2														
		3	D3						B3.3b							
Automotive Service Technician Industry Trends	6	1						B2.1								
		2	D2	A1.2					B3.2b							
		3									C1.3					
Automotive Road Safety Recalls Database	4	1						B2.1								
		2	D2	A1.2					B3.2b							
		3														
Automotive Vehicle Alignment Machine	6	1														
		2	D2	A1.2				B2.1								
		3				A3										
Automotive Service Technician Exam Preparation	6	1														
		2	D2		A2.2			B2.2	B3.2a B3.2b				C4.2	E2		
		3		A1.3												
Automotive Service Technicians Communicate to Solve Problems	3	1					B1.1									
		2	D2	A1.2	A2.2			B2.2							E2	
		3														
Total	35															

Carpenter			OALCF Reference													
			D Use Digital Technology	A Find and Use Information			B Communicate Ideas and Information				C Understand and Use Numbers				E Manage Learning	F Engage with Others
Task Sets	Sub Tasks	Complexity Level	Task Groups Not Applicable	A1	A2	A3	B1	B2	B3	B4	C1	C2	C3	C4	Task Groups Not Applicable	Task Groups Not Applicable
Carpenter Video Information	7	1						B2.1								
		2	D2													
		3			A3											
Carpenter Industry Trends	5	1						B2.1								
		2	D2	A1.2	A2.2				B3.2b							
		3														
Carpenter Communications	4	1													E.1	
		2						B3.2a B3.2b								
		3	D.3					B2.3								
Saving and Reviewing Instructions for Carpentry Tools	4	1						B2.1								
		2	D2	A1.2	A2.2											
		3														
Carpentry Angles and Tools	6	1														
		2			A2.2											
		3	D.3					B2.3								
Carpenters Use Digital Pictures to Communicate	6	1														
		2	D.2				B1.2	B2.2								
		3														
Carpenters Use the Internet to Solve Problems	5	1							B3.1a							
		2	D.2	A1.2					B3.2b							
		3			A2.3			B2.3								
Carpenter Using Construction Design Software	3	1													E.1	
		2	D2		A2.2											
		3											C3.3			
Total	40															

Refrigeration and Air Conditioning Service Mechanic			OALCF Reference													
			D Use Digital Technology	A Find and Use Information			B Communicate Ideas and Information				C Understand and Use Numbers				E Manage Learning	F Engage with Others
Task Sets	Sub Tasks	Complexity Level	Task Groups Not Applicable	A1	A2	A3	B1	B2	B3	B4	C1	C2	C3	C4	Task Groups Not Applicable	Task Groups Not Applicable
Refrigeration and Air Conditioning Product Knowledge	5	1						B2.1	B3.1b							
		2	D2					B2.2							E2	
		3		A2.3	A3											
Refrigeration and Air Conditioning Installation	6	1						B2.1						C4.1		
		2	D2											E2		
		3	D3	A1.3	A2.3											
Refrigeration and Air Conditioning Troubleshooting	5	1														
		2	D2	A1.2	A2.2			B2.2						E2		
		3				A3										
Comparing Water Heaters	3	1						B2.1								
		2		A2.2					B3.2b							
		3	D3	A1.3												
Refrigeration and Air Conditioning Resources	5	1						B2.1								
		2	D2		A2.2											
		3		A1.3												
HVAC Air Conditioning Replacement Parts	6	1		A2.1										C4.1		
		2	D2					B2.2								
		3		A1.3												
Refrigeration and Air Conditioning Mechanic Apprentices use Digital Technology at School	2	1														
		2	D2	A1.2	A2.2			B2.2	B3.2a B3.2b							
		3											C3.3			
Refrigeration and Air Conditioning Mechanic Career Exploration	5	1												C4.1	E1	
		2	D2	A1.2	A2.2		B1.2		B3.2a							
		3														
Total	37															

Frequency of OALCF Competencies used to write digital tasks

	A Find and Use Information	B Communicate Ideas and Information	C Understand and Use Numbers	E Manage Learning
Automotive Service Technician	10	13	3	2
Carpenter	9	13	1	2
Refrigeration, Air-Conditioning Mechanic	17	13	4	4
	36	39	8	8

Digital technology – Impact?

At Toyota, “to properly diagnose a vehicle you have to use a state-of-the-art computer to see what’s going on. You can’t throw in a set of plugs and say, ‘that should do it’”

- Pace of change
- Web as a primary source
- Information and communication technologies (ICT)
- Online logbooks
- Electronics, diagnostics and programming
- Digital devices/Mobile applications
- Trend to technology training
 - Simulation technologies
 - E-learning
 - Vendor-based training



Digital technology – What is it?

"In this age of information overload, it is easy to feel like a starving person with a can of soup but no can opener"

- Describes both a thing (the technology) and a product or process (knowledge produced)
- Computers, smart phones, tablets, electronics based testing equipment, 3-D technologies and simulators(CAF)
- Computer use (Essential Skills profiles)
- Digital technology (updated Essential Skills profiles)
- Digital Canada (describes how digital technology is used)
- The PIAAC and problem-solving in technology rich environments (PS-TRE)



Digital technology – Skills in the workplace

Tasks that can be computerized

Routine manual tasks

Routine cognitive tasks



Tasks that require people

Non-routine manual tasks

Tasks requiring complex communication

Tasks requiring expert thinking

Digital technology Problem-solving in technology rich environments (PS-TRE)

A task or problem to solve

**Consideration of technologies through
which the problem can be solved**

A process by which the problem is solved

The digital divide may also reflect a literacy divide.

Connectivity alone is insufficient to provide real access to online information and services. Access to the digital world is conditional, to some extent, on **proficiency in literacy and numeracy**. Low levels of proficiency in literacy and numeracy can be significant barriers to using ICT applications effectively to manage information. First, poor literacy may **hinder the acquisition of basic ICT skills**. Second, even for adults with some computer skills, it is **difficult** for those with low levels of proficiency in literacy and numeracy **to handle many of the information management and information processing tasks** encountered in online environments.

...from the OECD Report

Literacy and Numeracy – Average Skills of the population (25-54)

	Average Score	Level
Literacy	277.6	Low level 3 (276-325)
Numeracy	269.7	High level 2 (226-275)

PS-TRE - Percentage of the population (25-54) below level 3

Age Group	% < L3	Non-respondents
25-34	80.3	8.2
35-44	77.5	13.5
45-54	73.6	21.6

PS-TRE - Percentage of the population (16-65) below proficiency level 3 (work sector)

	% < L3	Non-respondents
Service and Support Occupations	78.6	16.3
Trade, Production, and Manufacturing	70.3	27.1
Manual and Other Service Occupations	69.0	27.1

PS-TRE - Percentage of the population (16-65) below proficiency level 3 (labour force)

	% < L3	Non-respondents
Employed	75.7	13.9
Unemployed	75.9	17.3
Not in Labour Force	66.3	28.9

Principles for Writing Digital Tasks

“People will only try what they think they can do, and won’t try what they think they can’t do”

**Tasks use technology
available in the LBS
programs**

Self-efficacy

**Foundational literacy
skills**

**Digital technology is a
tool for managing
information to solve
problems**

PS-TRE

Authentic trade problems

Principles for Writing Digital Tasks

Transferrable across goal-paths

Answer Choices	Responses	
Apprenticeship	33.33%	17
Employment	41.18%	21
Secondary School	7.84%	4
Post-secondary	56.86%	29
Independence	11.76%	6
Total Respondents*		77

What did we learn/recommendations?

Project orientation is crucial

Tasks develop self-efficacy

Professional development for practitioners re: digital tasks

Community of practice

Proliferation of digital materials meant attention to due diligence

Digital skills grounded in problem-solving and foundational literacy skills

Task group A3, extract info from films broadcasts and presentations, is problematic

Reviewer preparation and expectations

Evaluate the process

Northern Literacy Networks Website Project Documents

www.northernliteracy.ca

Webinar

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Your feedback on this Webinar is appreciated

<https://www.surveymonkey.com/s/YXSY9W9>



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