Machinist

Transition Plan v.2

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Abbreviations

CCDA	Canadian Council of Directors of Apprenticeship
CL	Current level (2014)
DA	Direct Access (ITA's registration system)
ER	Employer sponsor
HL	Harmonized level (2019)
IPSE	Interprovincial Red Seal Exam
NOA	Red Seal National Occupational Analysis
RSOS	Red Seal Occupational Standard; replaces NOA
SLE	Standardized Level Exam
TP	Training provider
TT	Technical training
TW	Trade worker
WBT	Work-based training

Harmonization Overview

The Canadian Council of Directors of Apprenticeship (CCDA) is responsible for the Red Seal Program, which develops common interprovincial standards and examinations. The CCDA is undertaking the Harmonization Initiative in 30 Red Seal trades by 2020. British Columbia is an active participant in this initiative.

The goal is to substantively align apprenticeship systems across Canada by making apprenticeship training requirements more consistent in the Red Seal trades.

Harmonization Priorities

1. Use of Red Seal trade name
2. Consistent total training hours (in-school and on-the-job)
3. Same number of training levels
4. Consistent sequencing of training content, including use of most recent Red Seal Occupational Standard (RSOS).

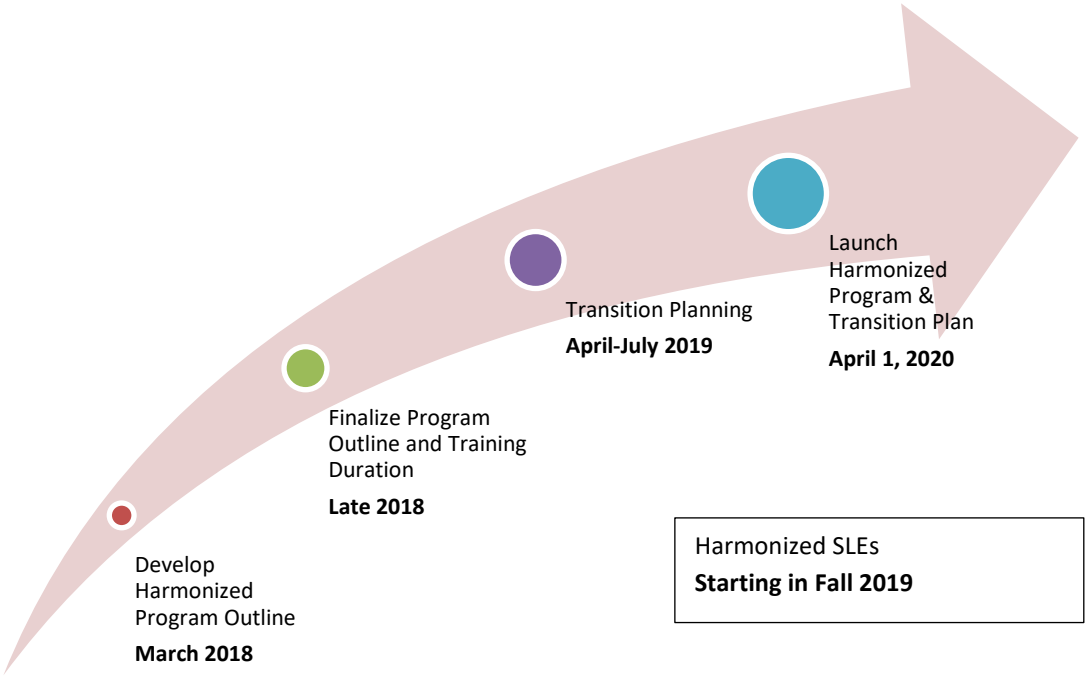
What's changing for **MACHINIST**	Changing in BC?	What will it be?
TRADE NAME	NO	**Machinist**
NUMBER OF TRAINING LEVELS	NO	**4**
TOTAL HOURS technical + work-based training	**YES**	**7200 hours** Decreased by 180 hours
TRAINING SEQUENCE order of subjects taught	**YES**	**Some changes**

Transition Planning Process

The re-sequencing of the Machinist program through the Harmonization Initiative has resulted in changes to the sequencing of technical training for BC.

We consulted with the training provider that delivers the Machinist program and considered the input of other external and internal partners. We evaluated several scenarios, and the transition plan outlined in this document was identified as the best option. We have also ensured that there are options for all current apprentices to complete their apprenticeship.

Program Development and Transition Planning 2018-2019

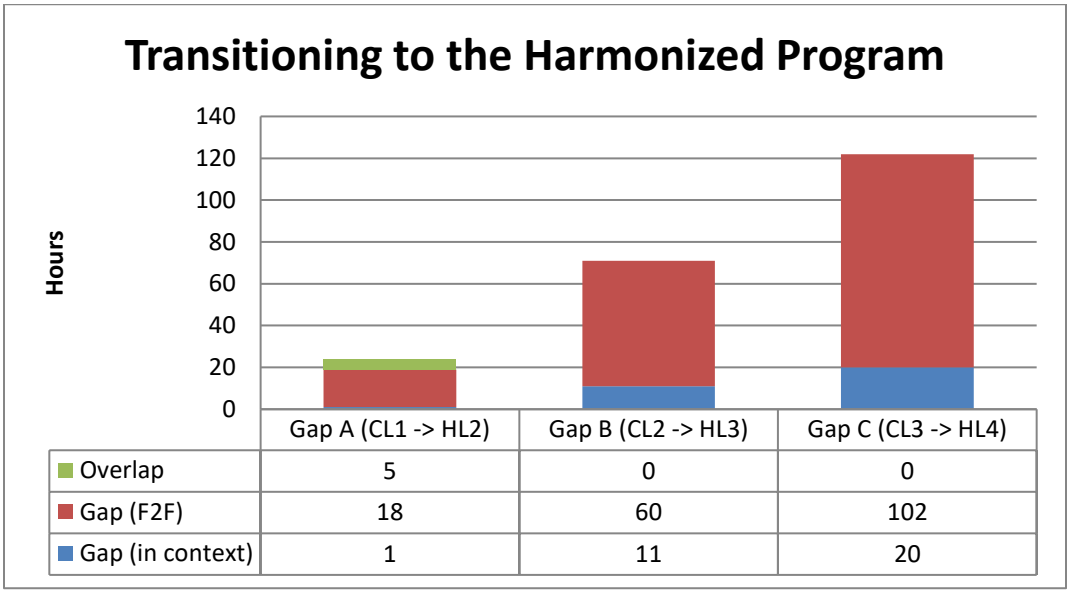


Training Provider (1)

British Columbia Institute of Technology (BCIT)

Note: College of New Caledonia and Selkirk College offer a blended Millwright/Machinist Foundation, but do not offer apprenticeship training.

The Gaps



	Gap A (CL1 -> HL2)	Gap B (CL2 -> HL3)	Gap C (CL3 -> HL4)
Overlap	5	0	0
Gap (F2F)	18	60	102
Gap (in context)	1	11	20

Gap A (CL1→HL2) applies to a student who has completed Current Level 1 and is moving into Harmonized Level 2.

Gap B (CL2→HL3) applies to a student who has completed Current Levels 1&2 and is moving into Harmonized Level 3.

Gap C (CL3→HL4) applies to a student who has completed Current Levels 1, 2 & 3 and is moving into Harmonized Level 4.

Overlap refers to the hours of content that a student who transitions to the harmonized program will be repeating.

Gap is an estimate of the hours of face-to-face instruction a student would need to complete the missing competencies if they transition to the harmonized program.

Note: If a TW completes their training in the current program, they will not face a gap in their training. **Gaps and overlaps only apply to current apprentices who are unable to complete the current program and are transitioned to the harmonized program.**

This information is provided for discussion and analysis only and does not indicate that gap training will be provided as part of the transition plan.

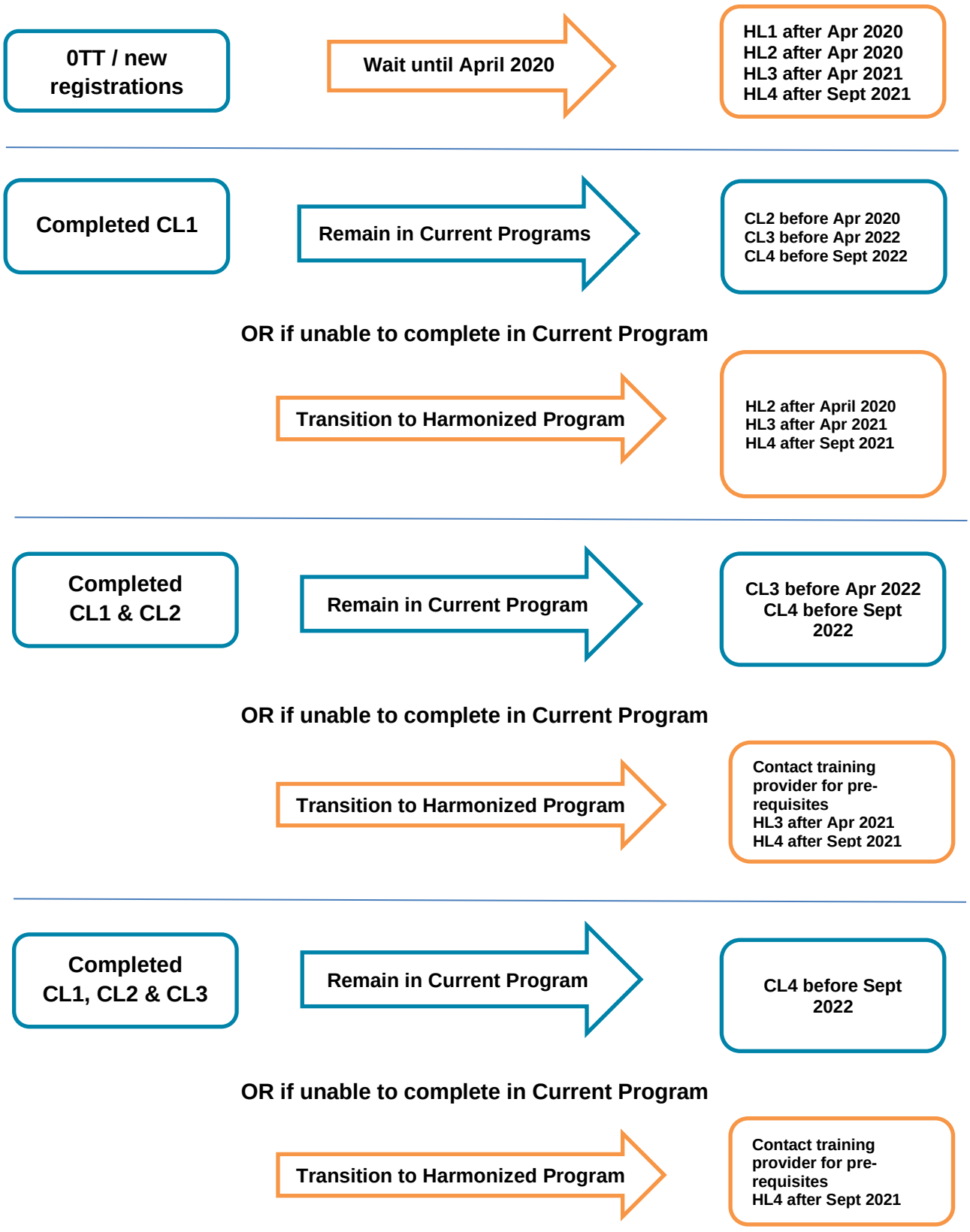
See **Appendix A: Details of Gaps for a list of competencies associated with gaps and overlaps. **

Transition Plan

Implementation Timelines	
HL1	April 1, 2020
HL2	April 1, 2020
HL3	April 1, 2021
HL4	September 1, 2021

	April	April	April	September
Year 0 April 2019	CL1 6 weeks	CL2 6 weeks	CL3 7 weeks	CL4 7 weeks
Year 1 April 2020	HL1 7 weeks	HL2 8 weeks Gap A 3 days (TP support)	CL3 7 weeks	CL4 7 weeks
Year 2 April (Sept) 2021	HL1 7 weeks	HL2 8 weeks Gap A 3 days (TP support)	HL3 8 weeks CL3 7 weeks	HL4 6 weeks (Sept 2021) CL4 7 weeks
Year 3 April 2022	HL1 7 weeks	HL2 8 weeks	HL3 8 weeks	HL4 6 weeks CL4 7 weeks
Year 4 April 2023	HL1 7 weeks	HL2 8 weeks	HL3 8 weeks	HL4 6 weeks

Pathways for Current Apprentices (Summary)



Total Training Hours

The following changes to training time for Machinist will come into effect **April 1, 2020** per the Transition Plan:

- Increased technical training hours to accommodate content added to the Red Seal Occupational Standard (RSOS)
- Decreased work-based training (WBT) hours in order to align with the harmonized standard of 7,200 hours of total training

Apprenticeship Pathway

Please note that the change of technical training hours applies only to Harmonized Levels.

	Current	Harmonized	Change
Level 1	6 weeks 180 hours	7 weeks 210 hours	1 week 30 hours
Level 2	6 weeks 180 hours	8 weeks 240 hours	2 weeks 60 hours
Level 3	7 weeks 210 hours	8 weeks 240 hours	1 week 30 hours
Level 4	7 weeks 210 hours	6 weeks 180 hours	**DECREASE** -1 week -30 hours
Total Technical Training	**26 weeks** **780 hours**	**29 weeks** **870 hours**	**3 weeks** **90 hours**
Work-based Training	**6,600 hours**	**6,330 hours**	**DECREASE** **-270 hours**
TOTAL TRAINING HOURS	**7380 hours**	**7200 hours**	**-180 hours**

Challenge Pathway and Sign-off Authority

Current Program	Hours
Work-based Training Hours	6,600
ITA Formula for Calculating Challenge WBT	X 1.5
Current Challenge WBT Hours	**9,900**

Harmonized Program	Hours
Harmonized Work-based Training Hours	6,330
ITA Formula for Calculating Challenge WBT	X 1.5
Harmonized Challenge WBT Hours	**9,495**

NOTE: If TWs complete in current program, the WBT hours for that program will apply. If they transition, they will complete the WBT hours for the harmonized program.

Exams

Exams for the Harmonized Program

Exam	Exam Development	Exam Launch
HL1	Late 2019	Mid-late 2022
HL2	Late 2019	Mid-late 2022
HL3	Late 2020	Late 2022

The SLEs will need to be revised/re-developed to align to the harmonized program. These SLEs will then be piloted with the first cohort of apprentices that complete the relevant level and then further validated by peer review.

For every harmonized class that finishes before the launch of the relevant SLE, the final mark for the level will be based solely on in-class assessments. **An OPSN will be sent to announce the launch of the harmonized exams.**

It will be crucial to ensure that classes are writing the exam that matches the course they have completed. ***When requesting an exam, training providers must indicate whether it is for a harmonized (HL) or current (CL) class. Please also include session IDs.***

Appendix A: Details of Gaps

GAP A: CL1→HL2

This table lists the content that a student will be **missing** if they have completed CL1 and then take HL2.

Competency	Missing Objectives or Learning Task	Achieve-ment Criteria	Change	Priority	In Context Hours	F2F Hours
F1 Describe principles of metallurgy	Describe the manufacture of iron and steel	No	HL1← CL2/CL4	HIGH	0	3
F2 Describe characteristics of ferrous metals	-Describe the SAE and AISI classifications. -Identify steel characteristics by their designations	No	HL1←CL2/CL3/CL4	HIGH	0	3
F7 Describe the use and maintenance of fuel gas equipment	Describe the operation and maintenance of fuel gas equipment	No	HL1←CL2	HIGH	0	6
K1 Describe milling machines	Describe milling machines and their accessories	No	HL1/HL2←CL2	MED	0	3
K2 Describe cutting tools and holders (MILLING MACHINES)	Describe cutting tools and holders	No	HL1/HL2←CL2	LOW	0	1
J2 Describe cutting tools and holders (LATHES)	Describe tool geometry Describe cutting tools and holders and their applications	No	HL1/HL2←CL2	MED	0	2
L3 Operate and maintain hones and lapping machines	Describe hones and lapping machines	No	HL1/HL2←CL3	LOW	1	0
					1	**18**

Overlap (Repeated Content)

This table lists the content that a student will be **repeating** if they have completed CL1 and then take HL2.

Competency	Repeated Objective or Learning Task	Change	Hours
C3 Solve problems involving geometry	-Points of tangency -Corresponding angles	C1→HL1/HL2	3
M2 Select abrasives	Describe abrasives and their applications	CL1/CL2→HL2	2
			5

GAP B: CL2→HL3

Gap (Missing Content)

This table lists the content that a student will be **missing** if they have completed CL1, CL2 and then take HL3.

Competency	Missing Objectives or Learning Task	Achievement Criteria	Change	Priority	In Context Hours	F2F Hours
D5 Use optical measuring equipment	Use optical comparators	No	HL1/HL2←CL4	LOW	0	2
E2 Determine project requirements	Determine project requirements from a drawing or sample	No	HL1←CL1/CL2/CL3/CL4	LOW	0	0
F1 Describe principles of metallurgy	Describe the manufacture of iron and steel	No	HL1←CL2/CL4 CL4 was review of CL2	N/A	0	0
F2 Describe characteristics of ferrous metals	-Describe the SAE and AISI classifications. -Identify steel characteristics by their designations	No	HL1←CL2/CL3/CL4 CL3 and CL4 were review of CL2	N/A	0	0
F3 Describe characteristics of non-ferrous metals	Describe the characteristics of non-ferrous metals	No	HL2←CL2/CL3/CL4 CL3 and CL4 were review of CL2	N/A	0	0
F4 Describe characteristics of non-metals	Describe plastics	No	HL2←CL2/CL3/CL4 CL3 and CL4 were review of CL2	N/A	0	0
F5 Perform heat treating	Describe heat treating and surface treatment	No	HL2/HL3←CL3/CL4	HIGH	1	6
L3 Operate and maintain hones and lapping machines	-Operate and maintain hones -Describe lapping	Hone a bore to specifications	HL1/HL2←CL3	MED	0	2
N1 Describe CNC turning centres	Describe CNC turning centres	No	HL2←CL4	HIGH	2	10
N2 Establish co-ordinate systems and apply programming codes for turning centres	Create a manual input program	Manually create a program	HL2←CL4	HIGH	4	20
N3 Operate and maintain	Program, operate and maintain CNC turning	Set up and operate a CNC	HL2←CL4	HIGH	4	20

Competency	Missing Objectives or Learning Task	Achievement Criteria	Change	Priority	In Context Hours	F2F Hours
CNC turning centres	centre	turning centre to produce a part to specifications				
					11	**60**

There is no overlap for TWs moving from CL2→HL3.

GAP C: CL3→HL4

Gap (Missing Content)

This table lists the content that a student will be **missing** if they have completed CL1, CL2, CL3 and then take HL4.

Competency	Missing Objectives or Learning Task	Achievement Criteria	Change	Priority	In Context Hours	F2F Hours
F5 Perform heat treating	Describe heat treating processes	No	HL2/HL3←CL3/CL4 CL4 was review of CL3	N/A		0
F6 Perform materials testing	-Describe the physical properties and characteristics of steel -Perform hardness testing	No	HL3←CL3/CL4 CL4 was review of CL3	N/A		0
N1 Describe CNC turning centres	Describe CNC turning centres	No	HL2←CL4	HIGH	2	10
N2 Establish co-ordinate systems and apply programming codes for turning centres	Create a manual input program	Manually create a program	HL2←CL4	HIGH	4	20
N3 Operate and maintain CNC turning centres	Program, operate and maintain CNC turning centre	Set up and operate a CNC turning centre to produce a part to specifications	HL2←CL4	HIGH	4	20
N4 Describe CNC machining centres	Describe CNC machining centres	No	HL3←CL4	HIGH	2	10
N5 Establish co-ordinate systems and apply programming codes for machining centres	Create a manual input program	Manually create a program	HL3←CL4	HIGH	4	20
N6 Operate and maintain CNC machining centres	Program, operate and maintain a CNC machining centre	Set up and operate a CNC machining centre to produce a part to specifications	HL3←CL4	HIGH	4	20

Competency	Missing Objectives or Learning Task	Achievement Criteria	Change	Priority	In Context Hours	F2F Hours
N7 Create 2D and 3D models	Describe 2D and 3D models	No	NEW to HL3/HL4	LOW		1
N8 Program using CAM	Describe CAM	No	NEW to HL3/HL4	LOW		1
					20	**102**

Overlap (Repeated Content)

Competency	Repeated Objective or Learning Task	Change	Hours
A3 Apply safety practices for shop areas	Describe mentoring techniques	CL1→HL1/HL4	0
			0

Appendix B: Communication Plan for Transition

Audience	Purpose	Mode
Training Providers	To announce the changes to training standards and the publication of a new Program Outline and Program Profile on the trade webpage on the ITA website	Official Program Standards Notification (OPSN) via email and posting on trade webpage
Training Providers	To plan for transitioning to the new program	Webinar(s), phone calls and/or face to face meetings
Training Providers	To announce the final transition plan	Program Update and Transition Plan via email and posting on trade webpage
Training Providers	To announce the launch of the harmonized level exams	OPSN via email and posting on trade webpage
Employers	To gather input on transition scenarios	Webinar(s), phone calls and/or face to face meetings
Employers	To inform on the upcoming changes to the program and the pathways to completion for their apprentices	Letters sent through ITA Direct Access (DA)
Employers	To inform on the upcoming changes to the program and the pathways to completion for their apprentices	Presentations at Program Advisory Committees (PAC) and other industry events
Apprentices	To inform on the upcoming changes to the program and their pathways to completion	Letters sent through ITA Direct Access (DA)
Apprentices	To inform on the upcoming changes to the program and their pathways to completion	Targeted outreach via phone and email
Apprentices	To inform on the upcoming changes to the program and their pathways to completion	Classroom visits by Apprenticeship Advisors

Appendix C: Transition Map