

Digital Assessment Tool Pilot (Vehicle Competency Tool)

Digital Assessment Tool Prototype Overview

Product	Subject Area	Objectives
Digital assessment tool	Vehicle Competency Testing	Identify a pilot where work-based learning can be assessed using a digital competency assessment tool, with recognition through badging. Create an employer managed, digital tool prototype to enable wider uptake and consistency across the sector and run a six-week pilot comprising 12 or more new learners across 12 employers. Analyse outcomes, summarise findings and make recommendations.

This pilot, funded by the Food and Fibre Centre of Vocational Excellence (FFCoVE) and project managed by eCampus NZ (eCampus), sought to recruit 12 employers to use the digital competency tool with one or more employees who are new to or still learning to operate selected farm vehicles. Ideally, one or more may have used the existing system, to provide comparative experience observation.

Pilot Outcomes

The Digital Assessment Tool Pilot is the first of a small number of projects needed to test the viability of the Work Integrated Learning model in general and, in particular:

- What do employers need to feel empowered as educators and assessors?
- Does providing employers with the resources/tools developed for the pilot drive better outcomes?
- What is needed to change the employer role from casual observer, to engaged driver of assessment quality and consistency?

The project outputs will be a prototype digital assessment tool, an assessment on whether the approach taken by the pilot is fit for purpose when measured against the needs of the Work Integrated Learning model and recommendations for improvements to that model.

Project Summary - Phases

Phase	Dates	Summary of Activity
Design	1 Dec – 4 Mar	Convert paper-based assessment into an online interactive version
Build	7 Mar – 17 Mar	Create guidance notes to support farmers Adapt Learning Engine functionality to support grading Create user interface that was clear and simple to follow Test with one pilot user

<i>Phase</i>	<i>Dates</i>	<i>Summary of Activity</i>
<i>Recruit</i>	1 Dec – 30 May	Lead generation, email requests and multiple follow-ups to get appropriate farm manager with candidates.
<i>Pilot</i>	25 Mar – 10 Jun	Platform available Weekly activity reports and follow ups as appropriate
<i>Survey / report</i>	13 Jun – 27 Jun	2 Survey forms sent – managers and participants Review of activity data Review of support logs Interview with project members

Solution Description

For expediency, the assessment tool was built within eCampus' Learning Engine based on minor enhancements made to standard features within the Totara Learning Management System (LMS). The primary audience was the farm manager who would be assessing their candidates, with candidates able to view outcomes.

Each type of vehicle had a separate course area with the assessment split into 3 components (oral questions; pre-ride checklist; farm task observation checklist) each with guidance and additional support materials. Assessments were enabled using a marking rubric feature with an enhanced user experience design within the LMS, and the option to generate a printed version.

eCampus worked with Dairy Training NZ to re-design the assessment content to ensure clarity for the farm managers (preparation guidance) and simplify the recording of assessments (marking). Farm managers could choose to use the digital tool to directly record assessments or could use print versions and record the outcomes later. Accounts were created on request and a custom dashboard was created to enable managers and Dairy Training NZ to track learner progress and access assessment details.

Project Research Outcomes Summary

The findings of this pilot are summarised below with recommendations for improvement to any future system with similar capability described in the following section.

Design / Build

- Taking an existing assessment methodology that was based on expert judgement, and converting it into a digital tool led to some difficulties in the design, timing, effort required and eventual outcomes. In summary:
 - o Design – The amount of information needing to be put in front of the participant led to decisions around where and how the content was displayed for ease of access, and yet in a way to ensure the assessment was easy to complete
 - o Effort and Timing – the conversion of the paper template to a digital tool was straightforward, but the 'how to assess' which was not previously documented took 3-4 weeks of effort to complete, which was not in the original timeline

- Outcomes – there was feedback that there was too much information, and it was not simple to work through, which impacted on the pilot outcomes.
- Resources required for the design need to include academic/learning design on top of subject matter and technical expertise

Recruitment of participants

- There was a good level of interest to participate, but it wasn't followed by a good level of activity. Multiple factors were in play, some of which are not fully understood:
 - The onboarding lost participants at this stage, and took longer to get some set-up
 - Some activity was logged – but less farmers completed the assessments than we had planned
 - Time allocation, Covid-19, potentially the lack of incentive to complete
 - New tool and process, no change management communications or management was included in the pilot
 - Limited staff/time available on farm due to industry staffing challenges

Pilot delivery

- Onboarding process is paramount to setting up the pilot to succeed. To do it well requires a significant effort by the project team with a reduction in participation the outcome if it doesn't go well
- One observation was that a lot of activity was done offline, and the online tool completed in evenings – this should be factored into future service offerings.
- Farmers found the tool quick and easy to use (6mins) and those with multiple candidates were able to quickly process assessments.

Project Recommendations

1. For future implementations of digital assessment tools (outside of this particular tool):
 - Start with the end user experience in mind, keep it simple and easy to use
 - Consider the wider change process required for the participants, even for a pilot, not just the implementation of a tool
 - Potentially use a face-to-face introduction to get participants started and engaged in a new tool/technique
 - Recruit participants who have a need for the activity at the time of the pilot
 - Offline activity, out of hours, and use of phone is paramount for this sector and so the offline experience must be factored into a design, eg. a phone app which can be used offline and updates automatically when it is connected.
 - Allow more time for recruiting and for the pilot – time pressure is a key factor in activity (or lack of it)
 - Consider marketing which would appeal to farmers with a need at that point in time
2. For FFCoVE Leadership – improving Work Integrated Learning understanding.
The underlying purpose of this pilot was to test elements of the Work Integrated Learning Model. Particular components were identified (see Appendix 4 for the diagram). To further enhance our understanding of how best to encourage more employer led self-assessment in the sector a second pilot would be useful. The recommendations are based on minimal new investment.

1. Onboarding – Learning Review

Aim: Putting a tool in the hands of the employer, so that they could understand more about the elements that required evaluation, and enable the training to be tailored to the individual learner

Outcome: Largely successful pilot. However, distilling large amounts of information into a digital tool was not as effective as hoped. In any future work, more thought around a different design for this is required.

Recommendation:

- Change the onboarding process – consider video/web call/face to face as well as process redesign
- Revisit the design of the tool to ensure a simple user experience, with additional guidance still available, but less intrusive

2. Learning and Assessment – valuation of evidence and assessment

Aim: Provide a tool that enables a consistent evaluation of evidence (in this case skills and knowledge), and a way of capturing and assessing against agreed parameters

Outcome: Positive feedback about the ease of use of the rubric to evaluate the candidates. More work to consider consistency, and whether the initial work on the rubric is correct (test employer assessment against independent assessment, and look for areas of divergence).

Recommendations:

- Update content and instructions in the tool to provide simpler user experience
- Change how the user guidance is delivered – consider video/web call/face to face
- Test the rubric to ensure that the assessment grading is valid.

3. Work based learning

Aim: The assessing and learning all happened in the workplace, and were made relevant to the particular organisation, vehicle and environment

Outcome: Positive feedback

Recommendations:

- Change recruiting approach to get more engagement
- Lengthen the time, follow a farm life-cycle/employer farm cycle rather than a pre-determined set timeline

4. Recognition - badge

Aim: There was automatic recognition on successful completion through the awarding of a badge

Outcome: Because this pilot largely focused on the employer experience, the candidates were not engaged sufficiently to place value on the recognition. Further work would be required to understand if the employers would value this badge, and therefore to invest further to enhance the candidate's involvement. As badging becomes more recognized in the Food and Fibre sector we would expect to see stronger appreciation from the candidates and farmers for the badges.

Recommendation:

- Remove the recognition element for next phase (candidate access/badge). This could be picked up in a future roll-out if driven by farmer need. This finding is aligned with the Badging Project recommendation.

Appendix 1: Research Data Sources

The aim of the pilot is to provide input into future work that requires non-academic/trained professionals to perform some kind of competency review or assessment. A number of inputs will be used to gain as wide a perspective as possible from this pilot

1. Learning Engine reporting
 - activity by the participants (e.g. login frequency, times)
 - module/section completion activity
 - badge issuing/acceptance
2. Participant Feedback - employer
 - during pilot, ensure there is a feedback form accessible – and ability to reach out to support (Jim)
 - short post pilot survey for all participants
 - o Was it easy for you to use / follow?
 - o What worked well / what did they like?
 - o What needs further improvement / what didn't they like?
 - o Did you have any telecommunication connectivity issues?
 - o Would you like to continue to use this tool for other staff / vehicles?
 - o Will they make any changes in their processes based on this pilot?
 - o Would they like to be involved in next phases?
 - information only or participation
 - 2.a. Participant Feedback - candidate
 - short post pilot survey for all participants / candidates
 - o Did they find it useful?
 - o What worked well / what did they like?
 - o What needs further improvement / what didn't they like?

3. Expert observer

During the pilot, Jim Henderson will be available and working with the pilot members. He will be in a position to report on the following:

- Who/how many participants reached out to him for support?
- What type of queries they raised?
- What pro-active service did he complete and what was the response to it?
- What behaviours changed over the course of the pilot (if any/appropriate)?
- What improvements he would recommend based on these observations?

4. Pilot project team observations

We will do a comparison of activities and resources used, against the project plan to see what changed as we went through this process

- Time allocation to converting paper-based to online representations
- Input from assessor – type, timing, skills
- Any significant changes in approach, tool etc

Appendix 2: Outline of key data source findings

1. Learning Engine reporting

Participant Statistics:

We recruited sufficient participants (managers and candidates); however the activity was lower than anticipated.

19 assessments successfully completed in the pilot

10 organisations/farms were signed up and managers provided with login details and guidelines for using the assessment

34 candidates were signed up within these organisations, and provided login details

2 assessments were promoted – Tractor and Quad Bike Skills. Light Utility Vehicle (LUV) and Motorbikes Skills were also prepared and built, but not used.

Not every candidate/manager selected to do both assessments

Activity/Results (see Appendix 3 for summary table)

8 passed Tractor assessments (26%)

3 did not pass – implies further training identified (1%)

19 did not attempt (63%)

11 passed Quad Bike Skills (47%)

4 did not pass - implies further training identified (17%)

8 did not attempt (35%)

Learning Engine Activity Tracking

The activity logs suggest that the tool was used to record activity that took place at a different time/place. Offline capability is important for this type of tool and sector

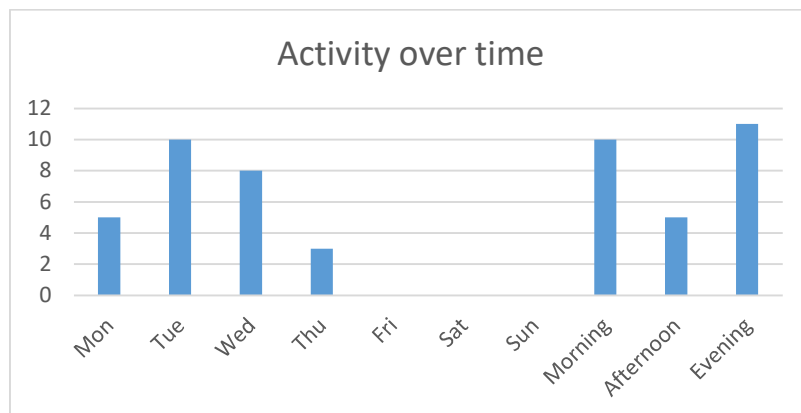
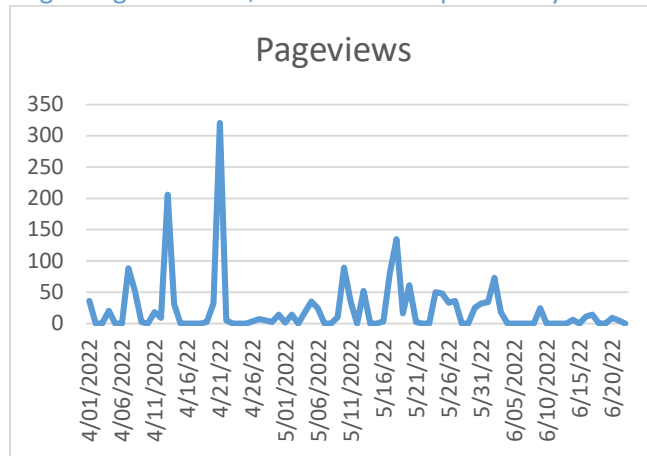
Candidates were not active users of the system

More activity with farmers with multiple candidates

Through the logs on the learning engine, the following observations were made:

- 26 Assessments over 16 learners
- 7 learners used multiple sessions to complete (43%)
- 6 learners had completion criteria done at a different time to the assessment in the tool (37%)
- 9 had daytime activity in the tool (56%)
- 10 were completed at night or in the weekends (62%)
- Time to complete the tool activity ranged between 4mins to 1.5hrs, average about 6 mins per learner

Activity fluctuated over the course of the pilot, higher in the beginning. Activity was higher at beginning of a week, and time was split evenly between morning and evening activity.



Top 10 Sections viewed

The activity report shows that the active part of the tool was the grading form and pages showing the submission status.

The course and user reports were infrequently accessed.

Activity Labels	Tractor Count	Quad Count
Grading form viewed	147	223
User graded	78	107
The status of the submission has been viewed.	73	109
Course viewed	72	101
Grading table viewed	63	91
The submission has been graded.	43	66
Course module completion updated	39	53
Course module viewed	21	19
User was marked in progress for course	16	19
User profile viewed	13	17

Activity in the tool by user profile

Role	Unique Page Views
Assessor	163
Facilitator	13
Student	27
Training Manager	52

Badge Statistics:

Engagement with the candidates and the tool was low, and this was mirrored by the value placed on the badge acceptance.

22 credentials were issued during the pilot.

- 3 have been accepted, 1 learner earned two badges
- 1 learner has created their account, but not accepted the badge yet
- 4 emails have bounced, but remainder have been opened, but not actioned

2. Participant Feedback

Largely positive, with some areas needing refinement – especially the onboarding process

Needs to be simple and clear to get engagement

Some feedback to indicate merit in continuation of this application

Getting feedback was difficult – best method was personal, via phone/email to Dairy Training.

Employer / Manager Survey

An email link survey was sent to all participants on 14 June, with a request to either respond via the survey, or by email by 20 June. The survey is less than 10 questions and takes 2 minutes to complete. The importance of feedback was stressed, and an option to provide feedback via phone or email was included. Online surveys were anonymous.

3 Responses received. Two largely positive, 1 negative.

Response summary:

1. What worked well (select any the apply)
 - User Guide notes were useful - 2
 - The grading worked well - 2
 - Technical support worked well - 1
 - Nothing worked as I expected - 1
 - The Learning Engine tool worked well- 1
2. Anything else you want to mention worked well? (free text field)
 - Was very easy once I got used to it and surprisingly efficient. Getting the staff to read the material took some convincing but was good to get a snapshot of where they were at and what to focus on.
 - It takes up a lot of time
3. What needed further improvement
 - All three responses selected “The getting started process”
4. Anything else need further improvement (free text field)

- The initial layout and logic of the process was not obvious to me. I'm sure I was the problem as I made the same mistakes several times.
 - Needs to be simpler and easier to use
5. Did you have any barriers (select items)
- Participant availability - 3
 - Time to learn the tool and assessment - 2
 - Flow of process - login to assessment; -1
 - Telecommunication / Connectivity; - 1
 - Co-vid illness; - 1
 - Time available; - 1
 - Understanding the assessment- 1
6. Would you like to continue using the tool for other staff / vehicles?
- Yes, if some things were changed - 2
 - No, not of use to me - 1
7. Would you make any changes in your vehicle training processes based on this pilot?
- Yes – 1
 - No – 2
8. Would you like to be involved in future phases?
- Yes – 1
 - No – 2
9. Any other feedback
- Really good work tackling something like this. I'm sure it isn't easy but very important. The wider stats from it would be interesting too. Even baseline capabilities (or absence of...including mine)
 - Not applicable for our operation

Feedback was also collected by Dairy Training – it appears to be from the same anonymous survey respondents – but in their own words.

A few delays with connections dropping out and then when finished it didn't always save. May have been our dodgy data connection at one of the sheds.

We found the questions easy to use and understand but I didn't write many notes in the boxes.

I personally really liked the broad questions and felt it got to cover all the stuff that I don't cover when showing them how to use the bikes.

I actually found it pretty good and easy to use. Less work for me as assessor. I was actually going to do more when I have free time.

Two [staff members] are overseas and the one left on farm is dyslexic and would need [employer] as a reader-writer. Feedback on the tool:

- *Commercially, I don't think it is worth it.*
- *It lacks moderation/consistency – what would guarantee that it was done to the appropriate standard?*
- *Rather than completing the assessment, regular observation of staff in their use of vehicles would guide me.*

- *As an employer I would rather send my staff to a course off-farm, or even have vehicle training on farm.*

It is a really good tool and exactly what is needed

One employer feedback on the general framing of how the assessments were going to be run and the effort and potential compromises to the integrity of the work. Due to the relationship the farmer will have with their staff. His alternative suggestions were:

- *A national “apprenticeship” approach with theory done separately and then a practical observation validated by farmer or on site (for a few) independent assessor.*
- *On further discussion about the self-assessment options we settled on an option where candidates could do some pre-testing of the theory via quizzes which they need to pass before the farmer/assessor arranges the observation. This would enable the observation to be more focused.*

Candidate Survey

No responses.

3. Expert observer – Dairy Training – Jim

Expert observer believed that the project team managed to deliver a good product. He didn’t notice any unusual behaviour from the participants and relate to the challenges as usual in the sector. Attempted to be in touch with the participants via text, however, a f2f initial interaction would have been a better option

In the project design, we had allocated some time by Dairy Training to provide expert advice to farmers, and support with the assessment.

The response to these questions could also be observed:

- Who/how many participants reached out to him for support
- What type of queries they raised
- What pro-active service did he complete and what was the response to it
- What behaviours changed over the course of the pilot (if any/appropriate)
- What improvements he would recommend based on these observations

In the recorded logs by Jim, the majority of this time was spent recruiting participants, and following up with the ones who had agreed, but then not followed through.

Of the 78 recorded interactions:

- 11 were for initial recruitment to the pilot (14%)
- 19 were following from acceptance, to getting participants successfully set up (27%)
- 5 were feedback/queries from participants (12%)
- 15 were push notices from Jim as reminders for completion – assessments and survey (47%)

The majority of technical follow-up was not receiving login details – some went to Spam, and sometimes incorrect email details had been given.

4. Pilot project team observations

Design phase

- allow more time and ensure rounded capability in the design team

Build phase

- Offline capability is important for this type of tool and sector
- Focus on the user experience to drive process and content

Delivery phase

- Need to be agile to respond to feedback
- Different workflow for the “getting started” solution to remove confusion, and manual effort

Observations from the project team to include:

- What worked well in each phase of the project?
- What could be improved?
- Your key/most important learning

These were the open questions asked of the pilot project team in separate meetings. The following notes are the summary of the discussion.

Design:

Dairy Training – Hamish, Jim

- Took a while for the team to settle on a possible solution (rubric)
- Guidance notes for employers were detailed to cover a lot of possible situations
- How could we make it more simple
- Too much information in current format
- Whether converting from assessor is the best way to design
 - o Maybe first design principle should be from farmer perspective
 - o Different thinking to tackle design could lead to different approach
- Found eCampus team to be accommodative and a friendly team to work with.
 - o There were disagreements (which is normal), however, at the end, the team managed to deliver a good product.
- **Recommendation:** would be good to calibrate points by using another assessor and assessing the same candidate/a sample of candidates. Because the current points scheme should be considered as a starting point, not completely accurate tool.

eCampus – David, Brent, Allison, Channa

What worked well:

- Assessment/quality check – moderation
 - o Process worked well, plenty of time to provide feedback
 - o Some difference of opinion, worked through, healthy process
- Good, engaged SME, fantastic level of expertise, really flexible, took advice really well
- Rubric check – initial assessment was spot on,
 - o but the review process was probably 50% more again.

What could be improved:

- Challenge to balance the technical requirements (platform) with having the critical information distilled for the user. How best presented with

- Probably got the order wrong – added detail (useful), could have been less up front. Usability factor wasn't as high on priority as it could have been.
- Balance between content to justify rubric up front, could have been secondary
- Helping SME think about what the toolset could be used for
- Having someone (non-technical) playing the role of non-knowledgeable learner/farmer would be useful

Build:

eCampus – David, Brent, Allison, Channa

What worked well:

- The challenge was amount of pre-reading and how it was in the tool
 - o Pleased with solution which can be used as a print document – as well as online
- Within our constraints – the marking rubric user design – lots of enhancements made
 - o Team effort – Mike, Will came up with elegant solution
 - o Allison – variation of dashboards and configuration

What could be improved:

- In-retrospect – probably learning designer/AQL earlier (it evolved through discussions). Even though assessment only. Understanding what a learner needs early would help process
- A test user –earlier in the process – get prototype up there, don't worry about content
- Do candidates actually need access – not really used this time, also flows to the badge (non) use
 - o Second release could remove this Or we build into more functionality, so that it is meaningful
 - o This pilot was a half-way effort which didn't benefit anyone

Recruitment:

Dairy Training - Jim, Hamish

It's not uncommon for farmers to have good intentions to help but end up getting too busy and can't deliver. The farmers had valid reasons (short staffed, Covid-19, changes to the farm, season). There's never a good season to carry out this type of activities at the farm. They could always be busy. A small % promised that they'll do it and never did.

Pilot Delivery:

Dairy Training - Jim, Hamish

- People were quite excited about the concept
 - o Everyone spoken to, liked the idea
 - o Challenge to get them active, using the tool
 - o learning has to be really easy to follow, practical, logical and you need to be able to communicate with them to at the times they need
 - o Something a little sexy – easy
- Selection of participants was based on personal phone calls/relationships, rather than the farmer necessarily being in the best position to use the tool
- Getting farmers up and running was a major hurdle
 - o Auto-ticketing to farmer – didn't seem to work effectively (going to spam folder)
 - o Later we copied to Jim, but easier to call to check
 - o Maybe txt with link

- Maybe if there was a system to see if link wasn't clicked, then some another follow-up (not from autoticket)
- Having three parties involved was messy
- Valuable time and good first impression from farmer were lost in this first interaction
- Candidates never logged into system
 - Some incorrect email addresses
 - Not sure if they got email at all
 - No feedback loop with candidates
- Length of pilot – one extension into June, was more needed?
 - Maybe extend, but not sure it would have attracted that much more activity
- Changes to plan – project team worked well
 - Adapting to the challenges – everyone involved worked together well
 - Agile within the pilot

Recommendation: A f2f session to assess the capability of the farmer to conduct a digital test would have been good. A talk at the kitchen table (usually the farmer's office), would have given a better understanding of the farmer's capability (both technical and where they are at in terms of their farming journey and life). With this assessment, we could have taken proactive steps to address any issues. This could be a costly exercise.

Future: Since this is an internal self-assessment, there could be bias. However, an independent assessor could use the tool.

eCampus – Channa, David, Allison

What could be improved

- Process for onboarding – super awkward, and manual effort
 - Learner access is priority normally
 - Project didn't support self-enrolment
- Took time to get the right information in the right format from the farmers. We got there (Channa/Allison), but still individual messaging.
 - Need to allow more time upfront to design onboarding process end to end (not just tool).
- Make changes to the content and how it is presented
 - Make more clear instructions within the App for instructions. Perhaps video explanation – Jim talking to it, rather than read the document.

5. Changes to Initial Project plan

Relatively minor changes against original project plan

More time/effort than expected for a "conversion" project

We did a comparison of activities and resources used, against the project plan to see what changed as we went through this process

- Time allocation to converting paper-based to online representations
- Input from assessor – type, timing, skills
- Any significant changes in approach, tool etc

Design

- Took longer than expected to create the user guides and the assessment rubric
- Used a Learning Designer to interpret current model and create simplified rubric

Build

- Initially thought we could provide on tablet with off-line capability. This wasn't feasible to provide the functionality to add value to a paper only version

Recruit

- Right/more number of farmers/candidates recruited, but activity was lower than anticipated
- Recognise this is new tools and new way of thinking for the participants – maybe need to change approach
 - o Activity will improve - they get used to it and we get better at the implementation

Pilot

- Held this open longer, and moved into a quieter season for the dairy farmers to aid completion
- Had thought “expert advisor” would assist with assessment, however, this ended up being more to follow-up on activity and check tool access issues.

Survey

- Had hoped to get more detail from farmers, but used logs of conversations to track instead along the way

Appendix 3: Assessment activity summary table

Key:

Each # in the first column is an unique organisation, each row is an individual candidate.

#	Tractor Skills		Quad Bike Skills	
	Progress	Badge	Progress	Badge
1	Has not attempted	NA	NA	NA
	Has not attempted	NA	NA	NA
	Has not attempted	NA	NA	NA
2	Completed: Passed	Issued	NA	NA
	Has not attempted	NA	NA	NA
	Has not attempted	NA	NA	NA
3	NA	NA	Completed: Passed	Issued
	NA	NA	Has not attempted	NA
	NA	NA	Has not attempted	NA
4	Completed: Did not pass	NA	Completed: Passed	Issued
	Completed: Passed	Issued	Completed: Passed	Issued
	Completed: Passed	Issued	Completed: Did not pass	NA
	Completed: Did not pass	NA	Completed: Did not pass	NA
	Completed: Passed	Issued	Completed: Passed	Issued
5	Has not attempted	NA	NA	NA
	Has not attempted	NA	NA	NA
	Completed: Passed	Issued	Completed: Passed	Issued
6	Has not attempted	NA	NA	NA
	Has not attempted	NA	NA	NA
	NA	NA	Has not attempted	NA
7	Has not attempted	NA	Completed: Passed	Issued
	Has not attempted	NA	Completed: Passed	Issued
	Has not attempted	NA	Completed: Did not pass	NA
	Has not attempted	NA	Completed: Passed	Issued
8	Has not attempted	NA	NA	NA
9	Completed: Passed	Issued	Completed: Passed	Issued
	Completed: Did not pass	NA	Completed: Did not pass	NA
10	Completed: Passed	Issued	Completed: Passed	Issued
	Completed: Passed	Issued	Completed: Passed	Issued
	Has not attempted	NA	Has not attempted	NA
	Has not attempted	NA	Has not attempted	NA
11	Has not attempted	NA	Has not attempted	NA
	Has not attempted	NA	Has not attempted	NA
	Has not attempted	NA	Has not attempted	NA

Appendix 4: Work Integrated Model

