

# Visualising digital footprints to enhance learner engagement in work-integrated learning



## Contents

Executive Summary .....	4
Project Details .....	5
1. Project Title .....	5
2. Project Team .....	5
Project Context and Issues Addressed .....	7
Project Aims .....	7
Project Approach .....	8
Project Outputs/ Deliverables/ Resources Developed .....	9
1. Background literature about WIL /WBA: .....	9
2. Design principles for WIL and Data Dashboards: .....	10
3. Workplace-Based Assessment (WBA) design .....	10
4. Prototypes for whole of cohort and individual student dashboards for WBAs: .....	13
5. Staff reporting- dashboards .....	18
6. Online modules for students completing WIL: .....	21
7. Data mining to identify quality feedback information: .....	22
8. Tracking patterns of engagement longitudinally across the program .....	24
Project Evaluation .....	26
Lessons Learnt .....	28
Project Impact .....	30
Transfer of Innovation and Dissemination .....	32
- Web presence .....	32
- Internal meetings and presentations: .....	32
- Conference presentations nationally and internationally: .....	33
- Other dissemination activities .....	34
Further Grants .....	34
References .....	34

## Tables & Figures

Table 1 Project Team Members and Key Project Contributions .....	5
Table 2 Project Sub-Aims .....	7
Figure 1: Assessment structure of Small Animal clinics (VETS5030) 2024.....	11
Figure 2 The Feedback Mark 2 feedback process .....	11
Figure 3 View of the WBA form for MEDI7100 .....	12
Figure 4 Design of WBAs in years 3 and 4 of the Medical program .....	12
Figure 5 Year 3 and MD task plan.....	13
Figure 6 Reflective questions from Year 3 and 4 MD task review .....	13
Table 3 Design principles for digital dashboards.....	14
Figure 7 Initial prototype of individual longitudinal tracking dashboard incorporating the aggregation of qualitative feedback data from multiple WBAs.....	15
Figure 8 Prototype WBA dashboard for mobile devices to summarise progress and also highlight detailed completion information .....	15
Figure 9 Whole of cohort dashboard to illustrate overall completions of WBAs.....	16
Figure 10 Whole of cohort dashboard showing locations where DOPS were completed and the assessor's role .....	16
Figure 11 Reworked whole of cohort dashboards created using Excel and available to current students via Padlet .....	17
Figure 12 Excel version of figure 9 and available via Padlet.....	18
Figure 13 Excel version of figure 10 and available via Padlet.....	18
Figure 14 PowerBI staff dashboard to monitor COPS completions .....	19
Figure 15 PowerBI dashboard integrating multiple sources of assessment information adopted in 2023 for MD Design progress review process .....	19
Figure 16 Example of spreadsheet showing count of Skills list acquisition for SVS students .....	20
Figure 17 Example of spreadsheet showing count of Skills list acquisition for SVS students for 2023 via species .....	20
Figure 18 Example of spreadsheet showing count of Skills list acquisition for SVS students for 2023 via experience (rotation/placement).....	21
Figure 19 Screenshot of online modules .....	22
Figure 20 Padlet overview page for students to access whole of cohort qualitative feedback .....	23
Figure 21 Excel file version of qualitative feedback for Mini-CEX filtered by mini-CEX type, placement and assessor .....	23
Figure 22 Section of the third online module to support students in utilising quality feedback information ....	24
Figure 23 Student engagement patterns across 2022 comparing GPAs.....	25
Figure 24 Average weekly submissions during 2022 demonstrating that students not achieving required completions lagging behind the cohort early in the year where the lines diverge .....	25
Figure 25 Patterns of engagement with WBA's to identify "at risk" patterns of completion .....	26
Table 4 Overview of evaluation activities and outcomes.....	27
Table 5 Description of Project Impacts.....	30
Table 6 Budget details .....	<b>Error! Bookmark not defined.</b>

## Executive Summary

Early engagement in sustained, authentic work-integrated learning (WIL) activities significantly enhances students' ability to meet entry-level practice standards by graduation. However, the dispersed nature of WIL settings poses challenges for real-time tracking of student performance, delaying access to meaningful feedback and early identification of disengaged or struggling students.

This **collaborative project**, involving Medicine, Veterinary Science, and ITaLI staff and students, utilized a design-based research approach encompassing exploration, design, implementation, analysis, and reflection phases. Key activities included three co-design sessions with project team members, two webinars with an international reference group, and extensive consultations with the wider student body and WIL support staff.

The project developed evidence-based design principles for workplace-based assessments (WBA) and WIL digital dashboards. We created visualisations for cohort-wide WIL activities, initial prototypes for individual student dashboards to track progress, and detailed staff-facing dashboards for individual student tracking. Analysis of WBA data led to the identification of quality assessor feedback, which was compiled into a resource for students. Additionally, we implemented three online modules to enhance students' ability to manage learning in WIL settings by setting personal learning goals and self-monitoring progress towards course outcomes.

Several **challenges** were encountered, primarily related to navigating complex university management processes to access WIL data sets, which delayed the project. The resignation of centrally provided learning analytics staff further complicated the situation. This project underscores the need for significant institutional cultural change to support the implementation and maintenance of innovative teaching and learning activities.

Project outcomes were widely **disseminated** through presentations at local, national, and international meetings and conferences. The project team also stimulated broader discussions on the benefits of accessing and analysing large learning-focused digital data sets. Collaboration between students, academics, learning design, and learning analytics staff was crucial to achieving project outcomes. This project has highlighted the importance of sharing insights across institutional boundaries to advance WIL practices at UQ and beyond.

## Project Details

### 1. Project Title

Visualising digital footprints to enhance learner engagement in work-integrated learning

(see also this [website](#))

### 2. Project Team

*Table 1 Project Team Members and Key Project Contributions*

Project team member	Project Contributions
Assoc Prof Helen Wozniak Faculty of Medicine project champion	Led project team and collaborated with project members to complete all stages of the project (exploration and analysis, co-design activities, implementation and evaluation). Led the reporting and dissemination activities and reference group workshops. Helen moved to lead assessment at the Australian National University in April 2024
Assoc Prof Justine Gibson School of Veterinary Science project champion	Led development, implementation and evaluation of MyProgress at SVS Participated in co-design workshops, literature reviews, focus group, reference group, development of modules, reporting and dissemination of findings.
Dr Anna Kull	Supported the project team, arranged meetings and co-design sessions, guided the literature review, analysis of WIL data, and liaison and payment of the student partners, as well as overseeing the Teams site, reporting and monitoring activities during the project. Anna left UQ in March 2024
Shari Bowker	Enabled connection between project activities and central initiatives, assisted with co-design activities, data gathering and analysis, and dissemination.
Kym Ward	Provided baseline WIL data and supported learning design for the online modules
Christy Noble	Provision of expertise related to WBAs, feedback literacy and analysis of qualitative feedback information, design of the online modules and analysis of the evaluation data
Rachel Claydon Later Christine Devine	Design and implementation of interventions with Year 3 and 4 medical students. Participated in co-design workshops and development of modules, data analysis and dissemination.
Asela Olupeliyawa	Design of WBAs for the medical course and analysis of data and student progress for year 3 and 4 medical students. Asela moved to University of Melbourne in June 2024
Learning Analytics Team	Supported access to, collation & synthesis of WIL data and development of the prototype whole of cohort and individual dashboards. The learning analytics staff left the university learning analytics team in July 2023
Chantal Bailey	Data preparation, dashboard development and data analysis

---

Senior student partners Medicine (3) Kathryn Bird, Daniel Ochayi, Zack Kodiyattu, and Vet Sc (1) Zachary Low	Participation in co-design sessions, design of dashboard and online resources, led ongoing consultations with students through focus groups and sharing of insights with project team members
--	---

---

## Project Context and Issues Addressed

Work-integrated learning (WIL) forms the foundation for all professional programs. WIL provides the essential authentic context for students to apply theoretical knowledge gained from their classroom activities to real-world activities (Cooper et al., 2010). Although WIL placements vary in length, location, assessment and supervision requirements, common goals across professional WIL activities include enabling students to practice and develop their professional capabilities, facilitate feedback conversations with supervisors, and engage in longitudinal monitoring of their progress.

Achieving optimal learning outcomes from WIL is challenging. Learning during WIL placements tends to be unplanned and opportunistic. Supervisors are often non-university staff who volunteer to support learners while juggling their own competing workplace demands. They are often required to prioritise client care over supporting learners. Consequently, students need to adapt to a variety of learning environments, negotiate their role within workplace teams and manage their development of professional capabilities to meet program learning outcomes. Students often struggle with transition into WIL settings finding it difficult to find their place within this complex setting (Barrett, 2018; Magnier et al., 2011). Thus, universities need to generate strategies to enhance the development of students' learning capabilities in WIL settings by enabling students to track their progress longitudinally and facilitating effective feedback engagement. UQ staff and WIL supervisors also need access to real-time information to monitor student progress. The recent adoption of online authentic assessment tools provided an exciting opportunity to harness assessment information from digital records captured during WIL placements that were previously hidden, enabling analysis and real-time tracking to guide and support student engagement in WIL activities.

WIL forms the foundation of the Doctor of Medicine (MD) and Bachelor of Veterinary Science (Vet Sc) programs. Monitoring and evaluating student's WIL achievements, during these programs is complex because WIL placements are dispersed across a wide variety of settings. For example, in the MD program students are placed in settings spanning primary to tertiary health care, across multiple disciplines (e.g., emergency, surgical care), private general practices, and community organisations in urban, rural and international locations (New Orleans Ochsner Clinical School); meanwhile, Vet Sc students complete placements on farms and in small, mixed, large animal and other (e.g. equine, exotic, zoo) practices.

## Project Aims

The overarching project aim was to utilise digital learner footprints captured during WIL placements and then design, implement, and evaluate a suite of interventions to enhance engagement and learning.

The project sub-aims are listed in table 2 below and linked to the relevant project outputs outlined in the project output section of this report.

*Table 2 Project Sub-Aims*

<b>Project Sub-Aims</b>	<b>Related Project Outputs</b> <i>(see these sections listed in the project output part of this report pages 9 to 26)</i>
Reveal patterns of learner activities during WIL placements using learning analytics	Design principles (p10) Prototypes for whole of cohort and individual student dashboards for WBAs (p13) Staff reporting- dashboards, other formats outline purposes (p18)

	Tracking patterns of engagement longitudinally across the program (p24)
Develop real-time digital dashboards illustrating different learner profiles, so that students can monitor their learning, growth, and development during WIL placements	<p>Design principles (p10)</p> <p>Prototypes for whole of cohort and individual student dashboards for WBAs (p13)</p> <p>Staff reporting- dashboards, other formats outline purposes (p18)</p> <p>Tracking patterns of engagement longitudinally across the program (p24)</p>
Enable timely identification of disengaged or struggling students and contribute to understanding about student engagement, retention, and progression during WIL placements	<p>Background literature about WIL /WBA (p9)</p> <p>Design principles (p10)</p> <p>Workplace-Based Assessment (WBA) design (p10)</p> <p>Staff reporting- dashboards, other formats outline purposes (p18)</p> <p>Tracking patterns of engagement longitudinally across the program (p24)</p>
Develop, implement, and evaluate interventions to enhance the learner's ability to set personal learning goals and self-monitor progress during WIL placements and achieve course learning outcomes	<p>Background literature about WIL /WBA (p9)</p> <p>Workplace-Based Assessment (WBA) design (p10)</p> <p>Online modules for students completing WIL (p21)</p> <p>Data mining to identify quality feedback information (p22)</p>
Enable staff and WIL supervisors to connect, guide and support learners who demonstrate activity patterns that place them at risk of failure in WIL placements/courses, while also offering opportunities for students who have met core competencies to extend their learning	<p>Workplace-Based Assessment (WBA) design (p10)</p> <p>Staff reporting- dashboards, other formats outline purposes (p18)</p> <p>Online modules for students completing WIL (p21)</p> <p>Data mining to identify quality feedback information (p22)</p> <p>Tracking patterns of engagement longitudinally across the program (p24)</p>

## Project Approach

The project timeline followed the design-based research (DBR) approach of iterative cycles of analysis, design, implementation, evaluation, and redesign (McKenney & Reeves, 2019). This framework was ideal, as the approach directly aims to understand the complexity of learning and assessment during the WIL placement. DBR's strength lies in its close nexus between theory and practice ensuring that theoretical principles guide the design of the project's activities. The close association between designers, academics and students with different viewpoints sharing their ideas and periodic reference group consultation also creates opportunities to disseminate the project outcomes.

The project approach and timeline varied from the original proposal following significant delays in accessing WIL digital data for the exploration and analysis phase. This meant that WIL data was not available for



analysis until late in the 1<sup>st</sup> year of the project. To manage this delay, the project team members undertook an analysis of the associated literature describing approaches used to support learning in the workplace and applied this to the types of datasets available at UQ depicting learner activity during WIL. This was also supported during the project through two online workshops with the international reference group, focus groups with WIL course coordinators, student led focus groups with their peers and three co-design sessions with the student partners. This was later able to inform the design of the online modules (see project output p21).

Once the WIL data became available for analysis the project team was able to undertake some WIL data analysis to interpret patterns of WIL activity completion which led to the design and implementation of whole of cohort data dashboards. In the 2<sup>nd</sup> year of the project further challenges emerged during the design phase after the loss of central ITaLI Learning Analytics in-kind support for the project. This meant that all work on the design of individual student dashboards could not be continued following the initial prototype development work. At this stage the project team was able to draw on the earlier work during the design and analysis phase to design and implement the online modules and enhance the cohort level dashboards for medicine. Both these delays had a significant impact on the project and provided essential lessons for learning data management at UQ (see 'Lessons Learnt' p28).

## Project Outputs/ Deliverables/ Resources Developed

This collaborative project involving the Schools of Medicine, Veterinary Science and Central UQ successfully developed a range of resources and offered valuable insights into the implementation of the WIL platform MyProgress across the university. It also highlighted some critical lessons in data management. The key project outputs are outlined below.

### 1. Background literature about WIL /WBA:

The literature reviewed during the analysis and exploration phase of the project aligned to the following themes: learning in the workplace, feedback in the workplace and the feedback process including feedback literacy, the design of learning analytics interventions with learning focused data such as dashboard design, and the participatory and co-design process in human- computer interaction. Key insights from the literature informed all aspects of the project, including activities, reference group meetings, co-design sessions and focus group questions that were adopted by the students and staff. It also guided the nature of the project outputs and resources detailed below. Key messages from the literature regarding workplace learning included considerations about the three key stages of learning during WIL:

- **Prior to commencing a WIL placement:** recognising the role that context, attitude and motivation of the learner has on WIL, so that learners and supervisors have a shared understanding about the purpose and process of completing workplace-based assessments as well as the importance of goal setting and shifting the mindset to a learning rather than a performance orientation (Billet, 2016, Martin, 2022, Wise, 2014).
- **During early stages of entering a new WIL:** recognising the importance of social-cultural aspects of this setting and the relationships with others in the workplace, so orientation to the clinical context is essential. Understanding the organisational culture, the place that the learner has in this, including recognition of team dynamics in the workplace, and need to provide a supportive environment to stimulate participation (Castanelli, 2023, Ceelen,2021).
- **During assessment activities:** ensuring workplace-based assessments, the WIL learning process and information generated supports the learner to develop their evaluative judgement and self-monitoring skills to prepare them for the next event. Both supervisor and learner need to understand the standard of performance expected at each stage of learning, that feedback literacy is needed to focus information and process meaning from interactions with staff and that observation by

supervisors is essential in the early stages of WIL (Boud & Molloy, 2013, Winstone, 2019, Martin, 2022 and Ceelen, 2021).

## 2. Design principles for WIL and Data Dashboards:

The following design principles for the capture of WIL activity and the associated dashboards were generated from the literature review, co-design sessions and reference group meetings:

- Development to match the program's assessment framework (e.g. Competency-Based Medical Education, assessment for learning)
- Development team needs to represent all stakeholders
- Dashboards need to use standardised data
- Individual and cohort data dashboards have different purposes– WBAs completed will differ with different cohorts of students and type of placements (Piotrkowicz, 2021)
- Include quantitative and qualitative data - actionable information is important (Ryan, 2021), and there is value in comparing feedback information with a learner's own internal views, exemplars or feedback received from others (Nicol, 2021)
- Dashboard needs to provide at a glance key performance metrics, and then options to drill down for further specific detail
- Identify and display performance benchmarks for the cohort
- Focus on actionable intelligence- enable learners to monitor learning, analyse the underlying cause of outcomes, and develop action plans
- Design targeted reflection and learning planning based on information in dashboard
- Display areas of concern and recommend resources for improvement. Consider engagement patterns, and use nudges to prompt engagement (Piotrkowicz, 2017, Wilson 2012, Lodge 2023), while noting when notifying students, they prefer personal contact rather than generic emails (West et al, 2020)
- Support learners in how to interpret and act on information in a dashboard (also Pardo, 2022; Pozdniakov, 2022), explore ways to present data stories and use cases for how to use data
- It is essential to plan consistent data governance processes that address privacy, use and maintenance, especially for platforms that are adopted by multiple courses and programs in different schools or disciplines
- Include mechanisms for continuous process improvement

## 3. Workplace-Based Assessment (WBA) design

Both veterinary and medicine WIL assessments known as WBAs utilised Boud & Molloy's (2013) insights on the need to integrate feedback designs into the curriculum to enable students to engage with feedback and support their own learning. This project has informed the design of WBAs in the Veterinary Science program and also the Doctor of Medicine Program.

### Veterinary Science Program:

A main project output is the transformation of the 5<sup>th</sup> year Veterinary Science placement assessments. The collaboration with medicine combined with the affordances of the Myprogress ePAD platform, courses in fifth year have begun to shift from an end-of placement high stakes performance assessment administered by the school to continuous low-stakes assessments driven by the student on their device. This transformation facilitates students' ability to elicit feedback, engage with standards and criteria through self-evaluation of

their learning and performance, and consequently generate plans to improve their performance (see Figure 1). A similar transformation has been applied to 3<sup>rd</sup> year Bachelor of Veterinary Technology student's placement assessments.

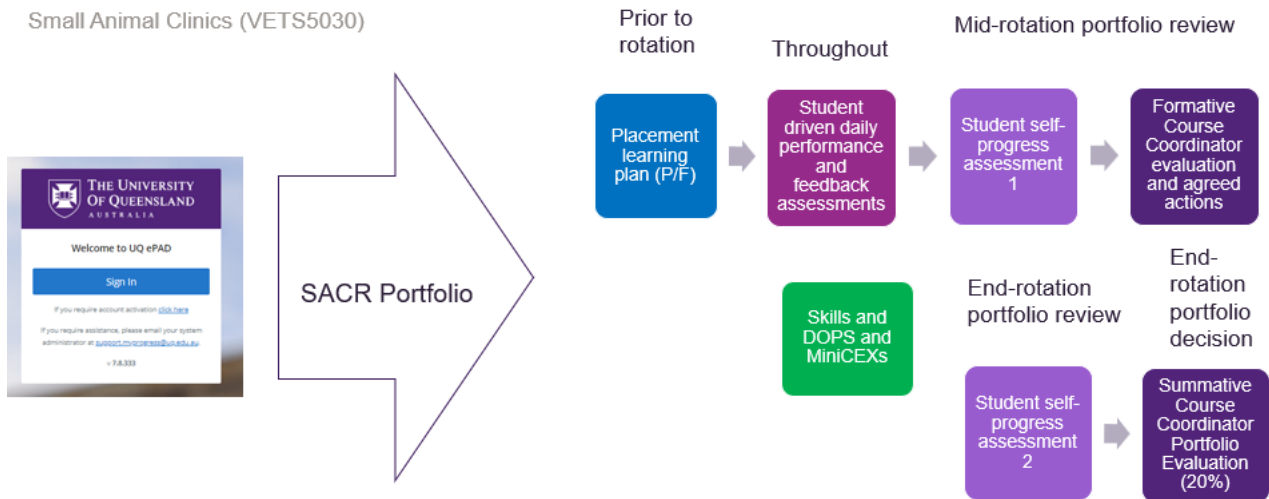


Figure 1: Assessment structure of Small Animal clinics (VETS5030) 2024

**Medical Program:**

A core component of the Doctor of Medicine Program is the clinical assessment system that begins with a form of WBAs known as observed clinical assessments (OCAs) in the simulated setting developing to WBA's completed during clinical placements from the 2<sup>nd</sup> year of the program. The Myprogress platform supports these assessments longitudinally across the 4 years of the program and the Boud and Molloy feedback mark 2 model has been translated into the design of the Myprogress assessment tasks. Figures 2 & 3: Illustrate how the medical program has translated the Feedback Mark 2 model into the design of the WBA assessment form in the Myprogress platform for the MEDI7100 course.

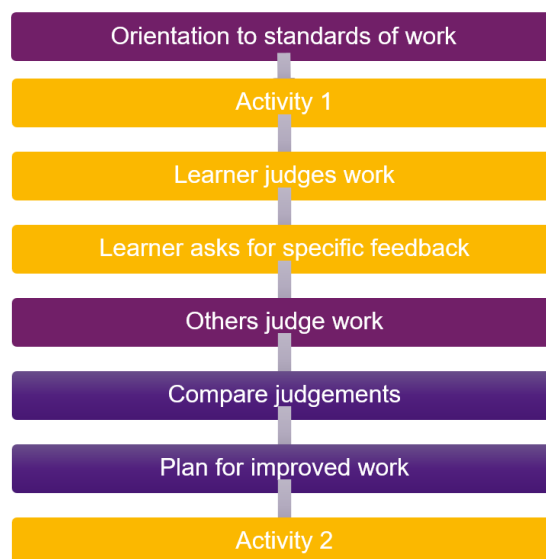


Figure 2 The Feedback Mark 2 feedback process

### Student to Complete

**1. Focus of this OCA (DOPS)**

Select the procedure

Infection control, hand hygiene, PPE

**2. Procedural task summary**

Outline a summary of the procedural task steps.

**3. Request for focussed feedback**

Prior to your OCA (DOPS), consider what specific feedback you would like from your tutor. For example, it might be on knowledge, technique, equipment, post procedure management, time management, or professionalism.

Describe your feedback request:

**4. Student to complete - post procedure**

What made this a good performance?

### Assessor to Complete

Figure 3 View of the WBA form for MEDI7100

In Years 3 and 4 of the Doctor of Medicine Program, students engage in the Workplace Learning Portfolio (WLP). A year-long course running parallel to discipline-based course placements, the course is designed to capture and assess students' clinical and professional development throughout this time. It includes reflective learning and documentation of clinical experiences, with an emphasis on practical application of skills in various healthcare settings. At the start of each placement, students complete a task plan outlining their goals and desired achievements, considering feedback from previous placements and areas they wish to improve. Upon concluding the placement, students conduct a task review to evaluate their accomplishments, assess whether they met their learning goals, and consider the feedback they received. Figure 4 illustrates the WLP course design.

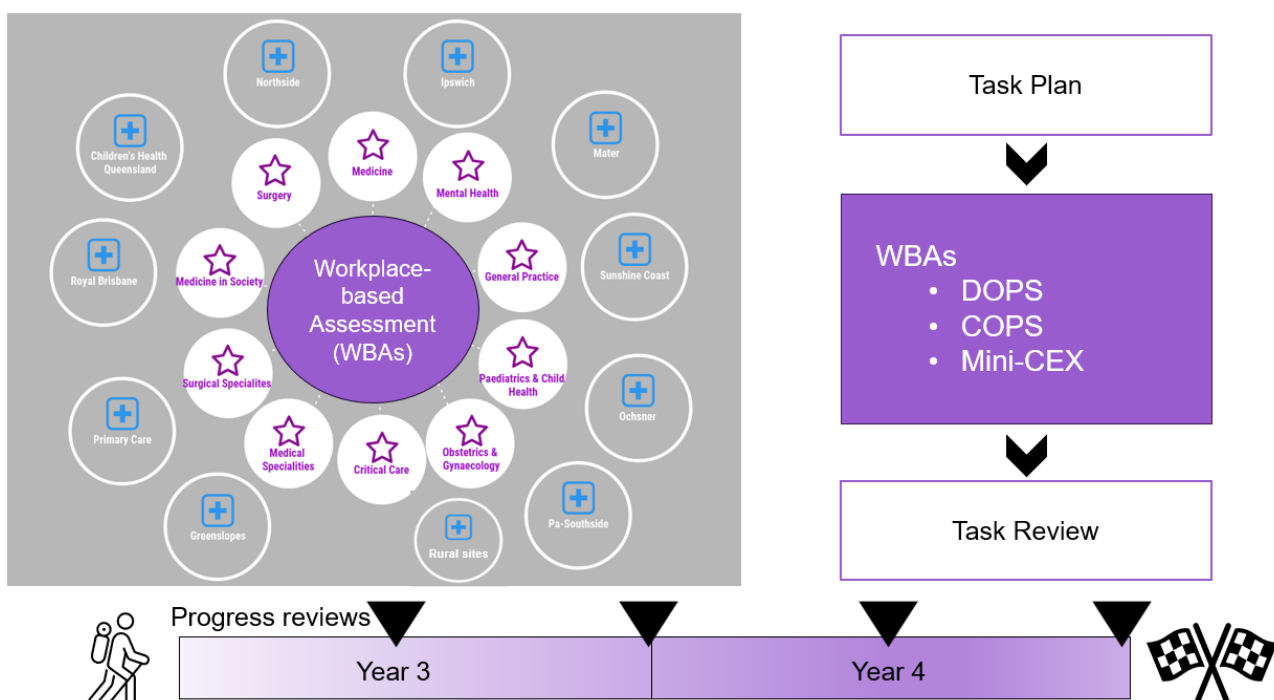
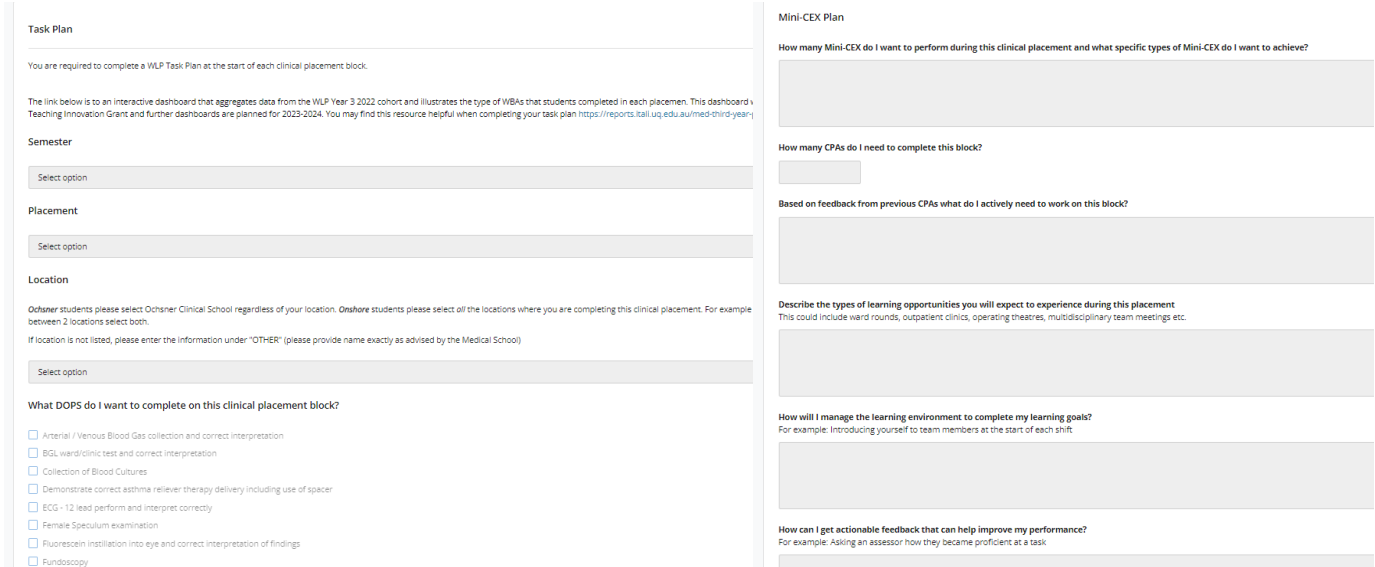


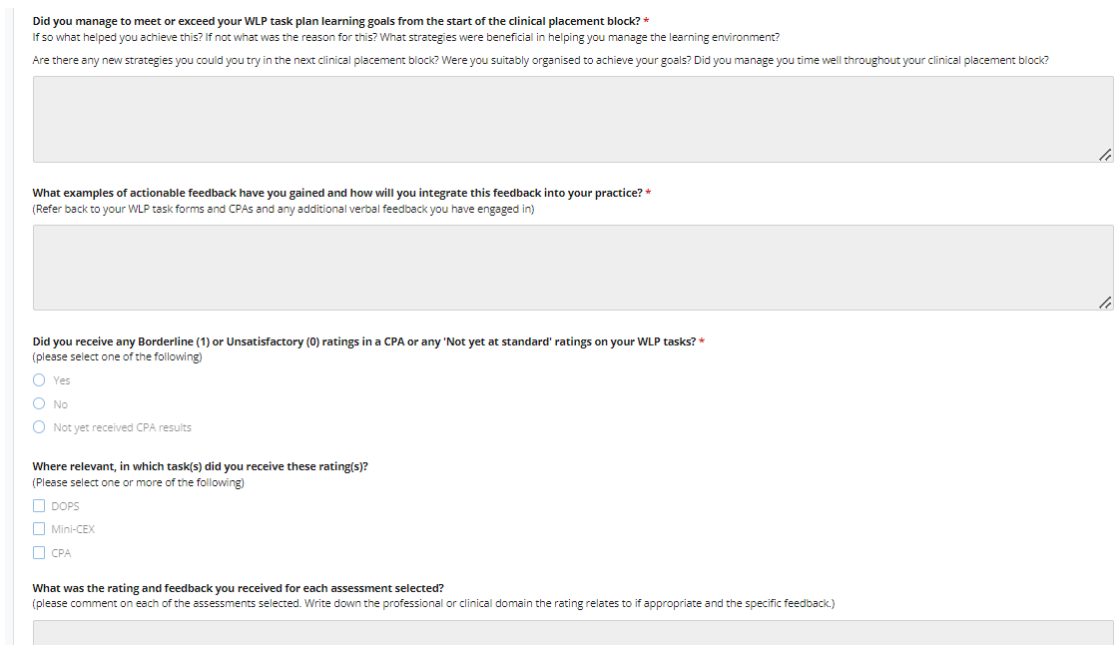
Figure 4 Design of WBAs in years 3 and 4 of the Medical program

The Myprogress platform supports students to engage in self-assessment, receive feedback from supervisors and track their progress in developing clinical skills as well as across core competencies like patient care, teamwork, and communication. The visibility and accessibility of this longitudinal information for students and supervisors encourages targeted action planning and reflective practice, guiding both clinical skills development and professional growth throughout the learning journey. Figures 5 and 6 illustrates this scaffolded approach.



The image shows two side-by-side screenshots of the Myprogress platform. The left screenshot is titled 'Task Plan' and contains sections for 'Semester', 'Placement', 'Location', and 'What DOPS do I want to complete on this clinical placement block?'. The right screenshot is titled 'Mini-CEX Plan' and contains sections for 'How many Mini-CEX do I want to perform during this clinical placement and what specific types of Mini-CEX do I want to achieve?', 'How many CPAs do I need to complete this block?', 'Based on feedback from previous CPAs what do I actively need to work on this block?', 'Describe the types of learning opportunities you will expect to experience during this placement', 'How will I manage the learning environment to complete my learning goals?', and 'How can I get actionable feedback that can help improve my performance?'.

Figure 5 Year 3 and MD task plan



The image shows a screenshot of the 'Reflective questions from Year 3 and 4 MD task review' form. It contains several sections: 'Did you manage to meet or exceed your WLP task plan learning goals from the start of the clinical placement block?', 'What examples of actionable feedback have you gained and how will you integrate this feedback into your practice?', 'Did you receive any Borderline (1) or Unsatisfactory (0) ratings in a CPA or any 'Not yet at standard' ratings on your WLP tasks?', 'Where relevant, in which task(s) did you receive these rating(s)?', and 'What was the rating and feedback you received for each assessment selected?'.

Figure 6 Reflective questions from Year 3 and 4 MD task review

#### 4. Prototypes for whole of cohort and individual student dashboards for WBAs:

Specific features of a medicine focused whole of cohort and individual student dashboard was distilled from the co-design sessions and the features outlined in table 3 below to guide the development of prototype dashboards.

Table 3 Design principles for digital dashboards

<b>Whole of cohort dashboard</b>	<b>Individual dashboard</b>
How much gets done at this placement (median)	What placements are coming up
Are there things that can only be done here at this placement	How am I going- what have I already done, What do I need to do to meet requirements
Are there some hard tasks that I should be doing now	What do I still need to do
Recommend tasks usually done at a particular placement	Should I revisit some tasks
Who usually assesses this task	Recommend tasks that I haven't done recently
What tasks are done early in the year	Progress, am I doing enough different types, different difficulty
Examples of effective feedback for specific placements and tasks Examples of ineffective feedback	Consolidated feedback for tasks I have completed
Consider whole of year data from prior year, if collating data from current year only show when a full block/placement has been completed rather than midway through	Include degree of competency- level perhaps in forms
Include placement site, in VET include species, perhaps more detail about the type of placement (this would be needed within Inplace or in the form), or some coding that connects placement name to a type of placement, or Chantal suggested a set up in Myprogress in a hierarchy.	Longitudinal tracking of feedback from same WBA e.g. long case
Fix skewing of data- so number is not best for x axis for DOPS that have to be done multiple times	Individual data would be more useful to use during placements
Optimise for small screen- mobile	Ways to track progress related to completion of how may WBAs they have completed and how many left to do- progress bar
Cookies to remember filters so they appear the same way next time dashboard viewed	Options for reminders from within the platform- must be related to the time period connected to a placement
Data in placements tab more useful than in the procedural skills tab Christy noted that users may have different needs- course coordinators may need whole of cohort data to identify gaps	Don't wish to be compared with their own cohort, here is where I am so they can make a judgement call about how I am going. Could be within a placement, within a semester and within a year (ie students count this themselves)
Students not that interested in who signs off WBA (but this might be useful for course coordinators and academic staff)	Include their own feedback data from CPA, mini-CEX, longcase feedback- as this is where the most useful feedback data is provided by supervisors

The screenshots below illustrate the initial prototype developments created by the ITaLI Learning Analytics team members prior to the loss of their support in the project.

**Individual dashboard prototypes:** For longitudinal tracking that included qualitative feedback data received during WBAs are illustrated in Figures 7 and 8.

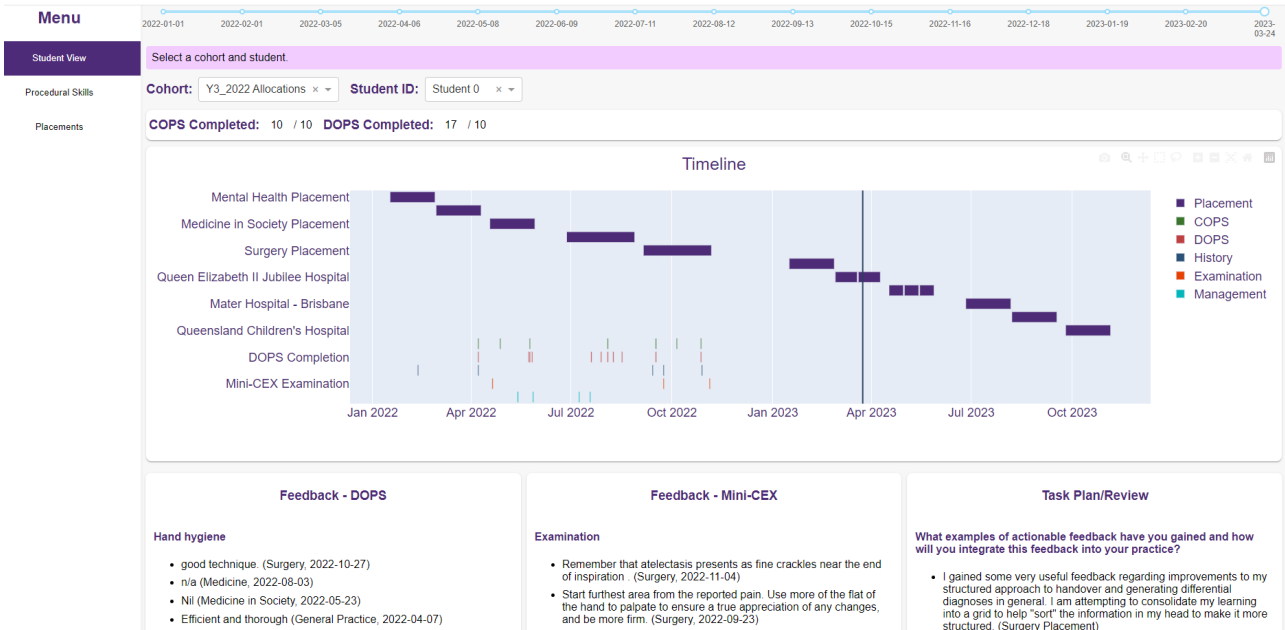


Figure 7 Initial prototype of individual longitudinal tracking dashboard incorporating the aggregation of qualitative feedback data from multiple WBAs

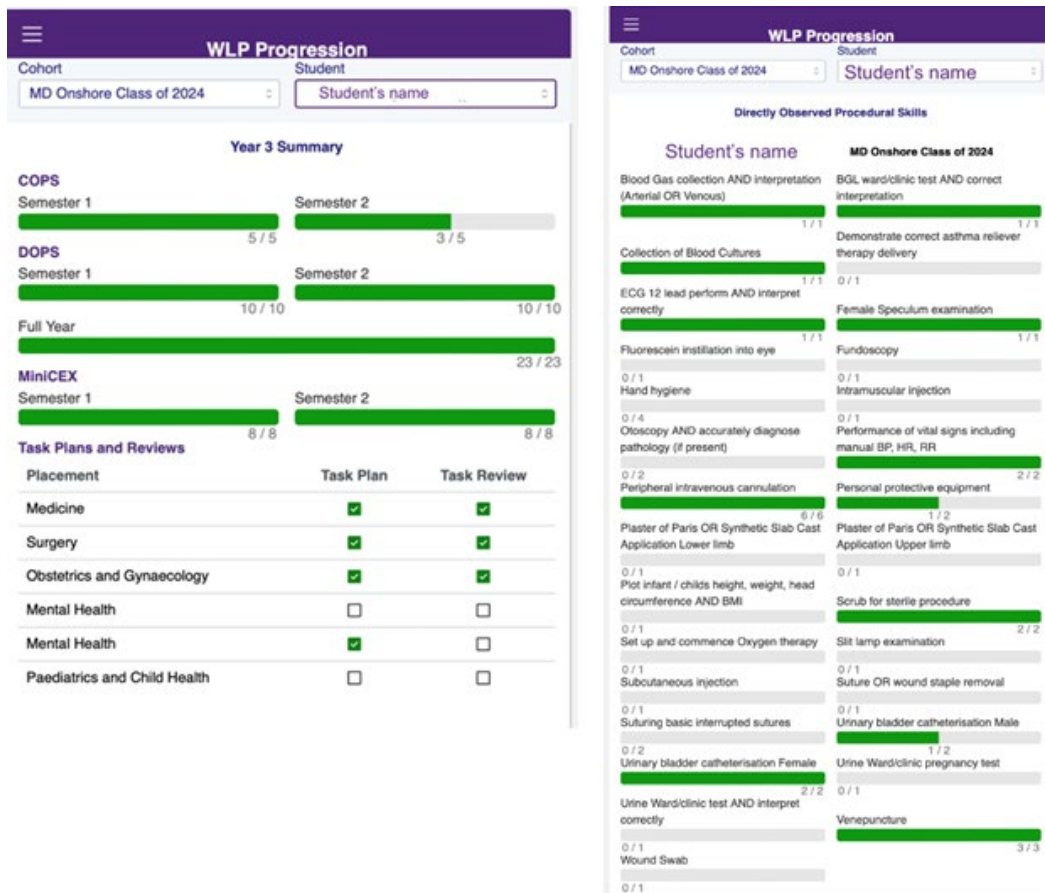


Figure 8 Prototype WBA dashboard for mobile devices to summarise progress and also highlight detailed completion information

These initial designs evolved following the co-design sessions to further prototype development of a mobile friendly individual student facing dashboard. Unfortunately, further design work was halted following the loss of learning analytics staff at UQ and the lack of access to infrastructure at the faculty level to implement customisable student facing dashboard with student authentication systems.

**Whole of cohort dashboard prototypes**

Whole of cohort student facing dashboards illustrating WIL experiences by placement for Medicine were developed by Learning Analytics staff, however again further design work halted due to loss of learning analytics staff at ITaLI. Figures 9 and 10 illustrate these early prototypes.

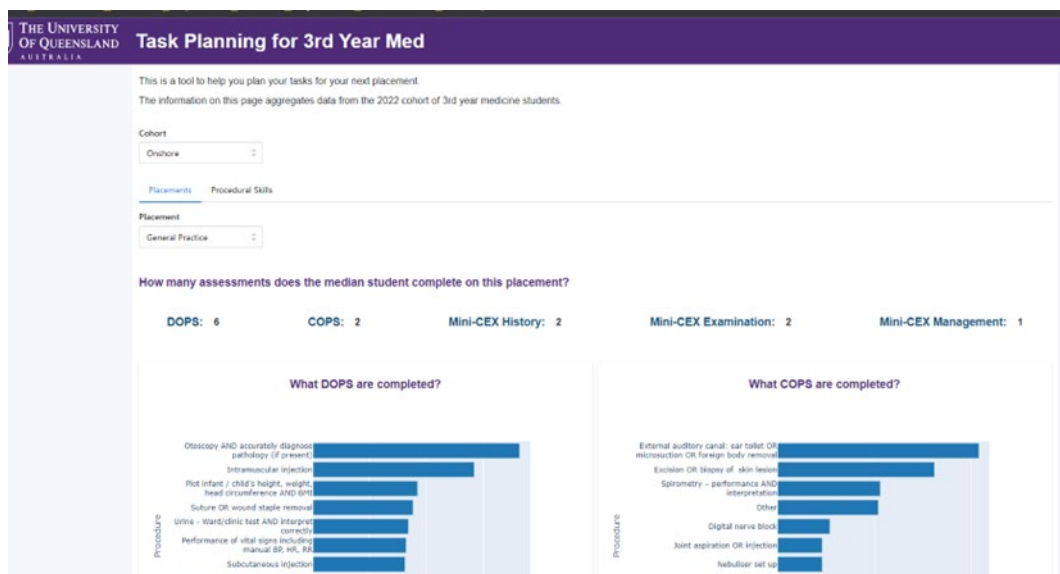


Figure 9 Whole of cohort dashboard to illustrate overall completions of WBAs

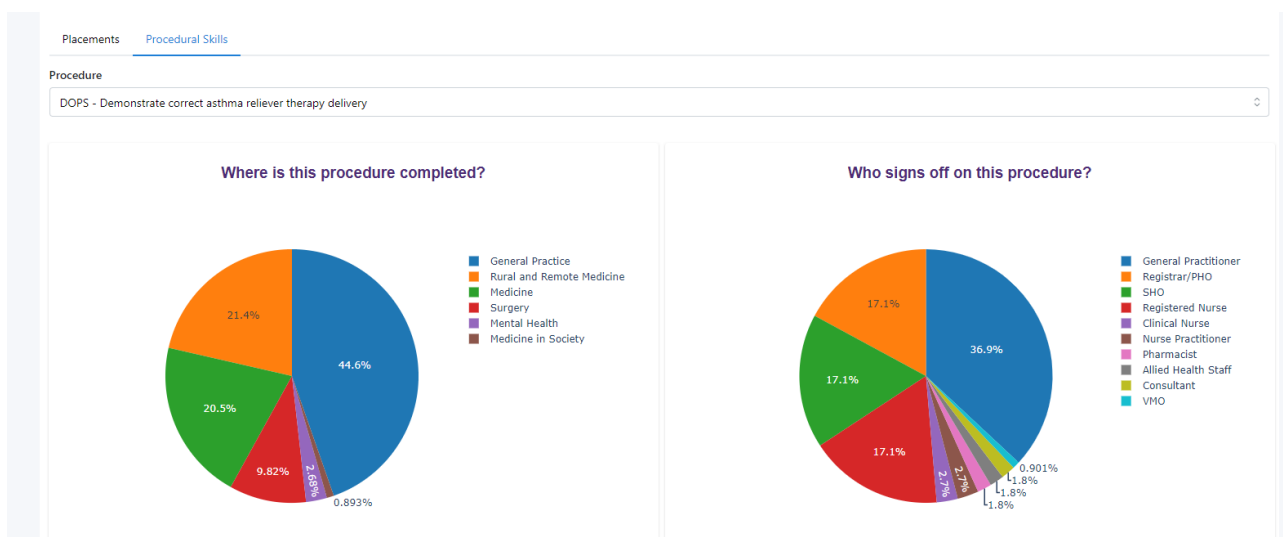


Figure 10 Whole of cohort dashboard showing locations where DOPS were completed and the assessor's role

Analysis work continued despite the loss of central learning analytics support. The project team devised an alternative method of providing the whole of cohort dashboards to students: Whole of cohort datasets were




collated on this [Padlet page](#) which have been incorporated into activities for the 3 modules described in the next section to illustrate WBA completions across the suite of clinical placements completed by our medical student cohorts in Australia and the Ochsner Clinical School (USA) (section 1 of the Padlet page: Identifying WBA opportunities). It is important to note that this work would require significant data cleaning to update for future cohorts. Figures 11-13 illustrate the information available from the excel files provided on the linked Padlet page above.

Faculty of Medicine - Medical School - Onshore Cohort

**Task Planning for 3rd Year Med**

MEDI7316: DOPS and MiniCEX Procedures



This resource compliments the three online modules: *Plan, prepare, proceed: Strategies and insights for workplace learning*. These modules help you to manage how you approach your learning in the clinical setting and maximise the opportunities available to you as you develop as a beginning practitioner.

planning your learning for each placement and completing the WLP task plan, this resource could be used to anticipate opportunities that may be available on that placement. See each of these sections in the three modules in the series PLAN, PREPARE, PROCEED for further information – specifically in [Module 1 Section 1.3 - Expectations at each placement site](#), [Module 2 Section 2.6 - Learning goals](#) and [Module 3 Section 3.7 - Taking action](#).

This is a tool to help you plan your workplace-based activities and assessments known as **WBAs** for your next placement. The information on these spreadsheet tabs aggregates data from the **2023 Onshore Cohort of 3rd year medical students**. This tool is best suited for use on desktops, laptops and tablets, NOT mobile phones.

The information to help student's plan for placements is in the purple tab called 'MEDI7316\_Onshore\_Placements'. This dashboard aims to help students identify how many WBAs the median student completes on the selected placement, as well as what DOPS and MiniCEX are completed on the placement selected by the student.

The information to help student's plan for the WBA types is in the blue tab called 'MEDI7316\_Onshore\_WBA Types'. This dashboard aims to help student's identify where the WBA was completed, i.e. which placement, and who signs off on the procedure, i.e. what is the assessor's position.

Where you see **"To select [for Placements/the type of DOPS or MiniCEX]"** in the placements and WBA Types tabs, there is a **drop down list in the next cell over (cell with dashed lines around the border)** that will allow you to **select for placements or WBA types using the tab**.

Please see the image below for an example of what you are supposed to click to see the drop down list.

**instructions:** Click on the cell with the dashed lines around the border. A tab will appear on the bottom righthand corner. Select the option that you want using the tab with the downward arrow. The graphs should change to the option that you have selected.

**Troubleshooting the dashboard figures:** If the figures or figure headings do not change straight away, give it a moment to catch up, or press save or wait for them to change.

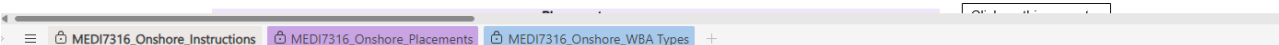


Figure 11 Reworked whole of cohort dashboards created using Excel and available to current students via Padlet

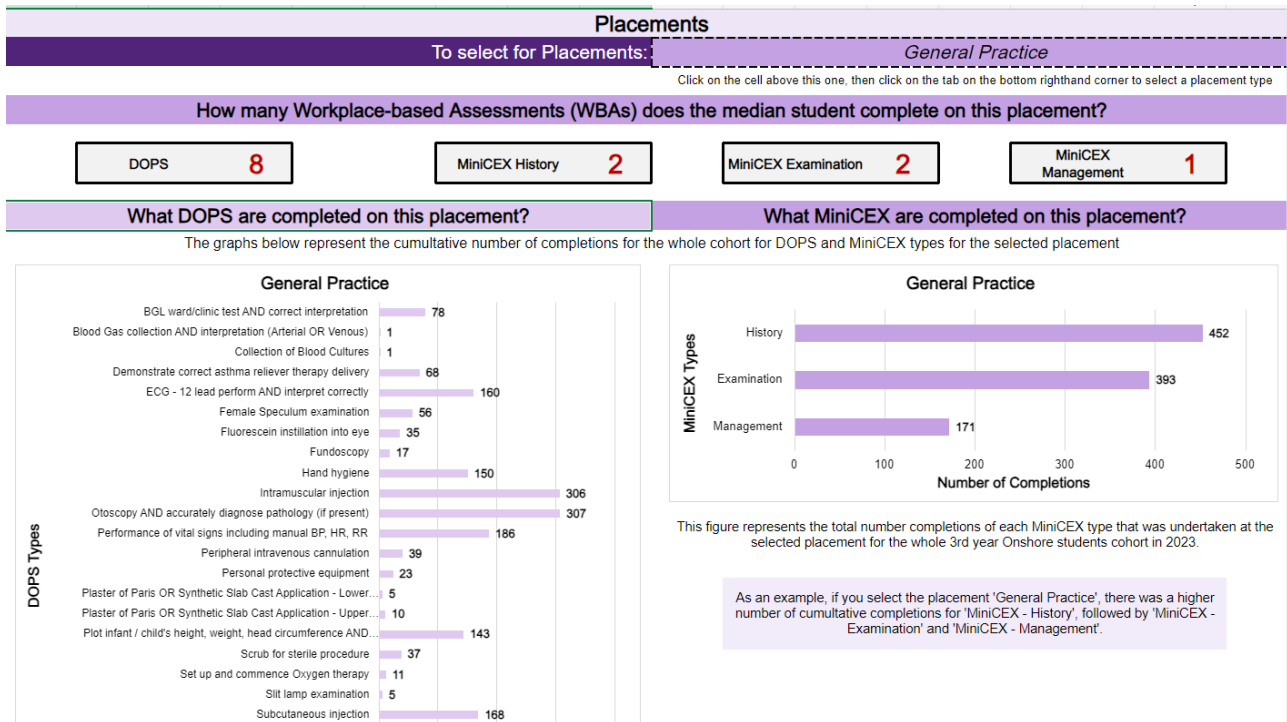


Figure 12 Excel version of figure 9 and available via Padlet

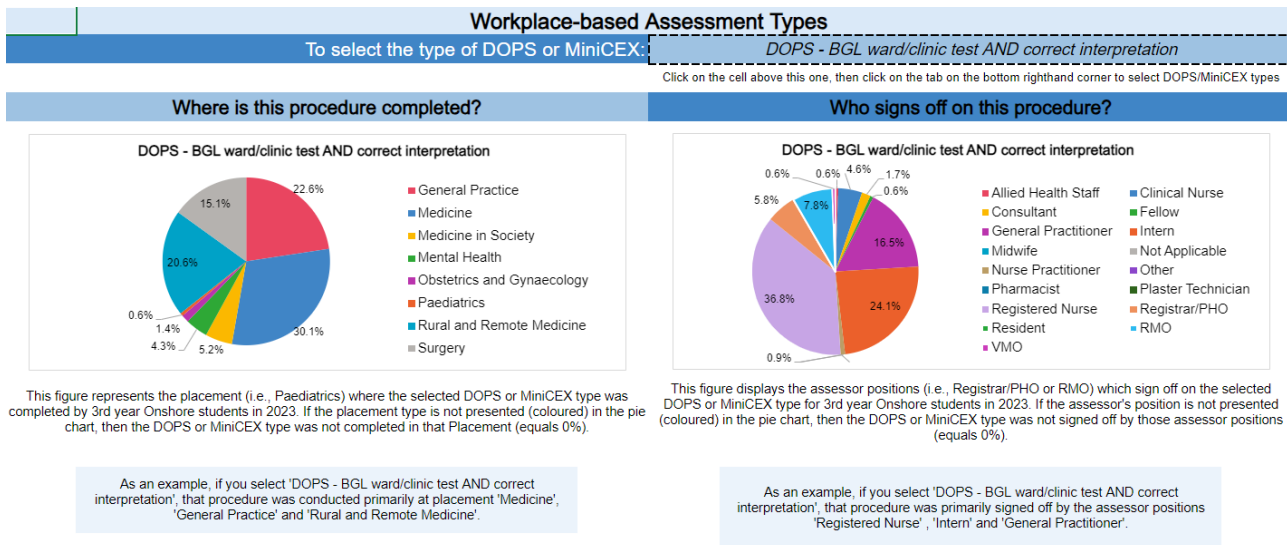


Figure 13 Excel version of figure 10 and available via Padlet

## 5. Staff reporting- dashboards

### Medicine Staff facing PowerBI visualisations tracking students' WBA submissions

Students in year 3 and 4 in the medical program complete WBA tasks that are recorded in Myprogress. This data is collated and displayed for staff only in a PowerBI dashboard to identify at-risk students. In the year-long course, student receive feedback on their progress at the middle of the year with a final outcome at the end of the year, A traffic light system on the staff facing dashboard indicates students' progress at each of the check-points, with a final outcome being calculated based on expected submission numbers. A master-

detail display in the dashboard allows for selection of individual students on the left panel of the dashboard to view further details regarding the WBA submissions on the right panel (Figure 14).

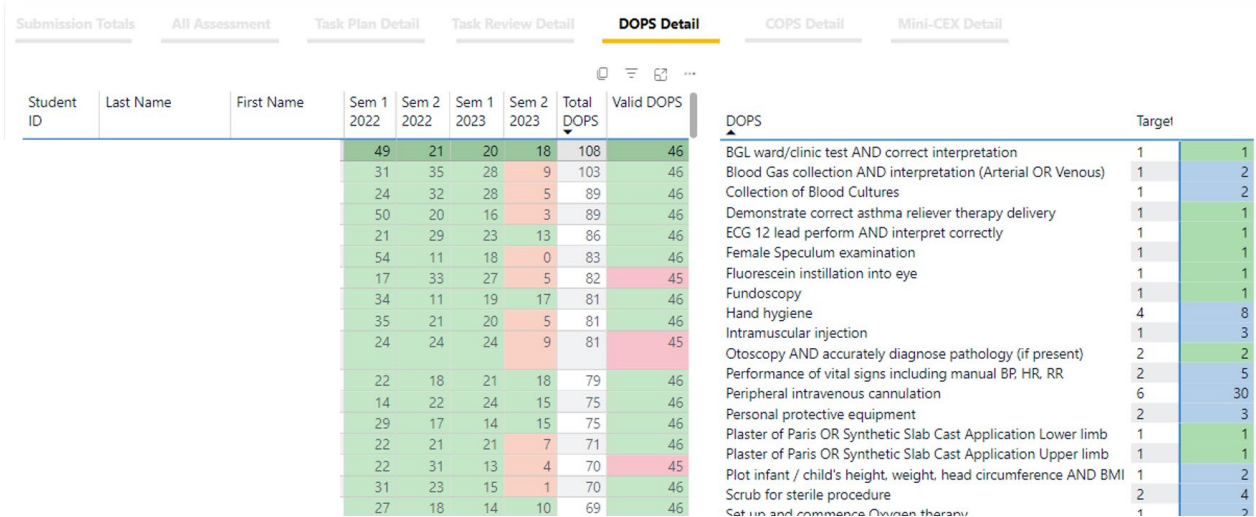


Figure 14 PowerBI staff dashboard to monitor COPS completions

For the new MD (MD Design) year 1 in 2023, student submissions on all assessment tasks in three components (Knowledge, Clinical Skills and Professionalism and Engagement) were tracked in a staff facing PowerBI dashboard. Students' progression was tracked and monitored at various time points throughout the year with qualitative comments from Myprogress included in the displays to provide context to progress decisions made. This provided a rich mechanism for feedback to a large cohort of students. Figure 15 illustrates this dashboard type.

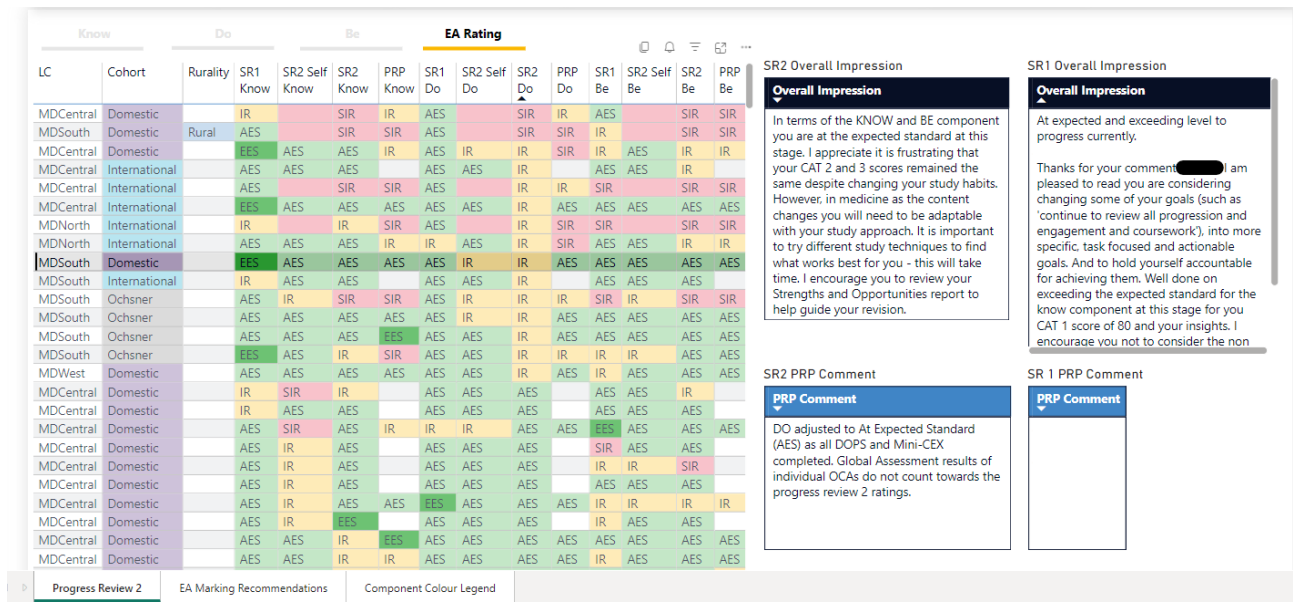


Figure 15 PowerBI dashboard integrating multiple sources of assessment information adopted in 2023 for MD Design progress review process

### Veterinary Science tracking formats

Veterinary graduates need to be able to competently and independently perform a range of clinical and technical skills as they enter the workforce. Therefore, the final year students complete a Skills List

assessment task which maps students' acquisition of a core list of clinical skills while on WIL. With the assistance of Science Faculty Data Analyst, the SVS has been able to collate Skills acquisition by animal species (Figures 16 and 17), and experience (placement/rotation) (Figure 18) informing student progress and curriculum design. Data is imported into Grade Centre to allow students to track their progress throughout their final year. In 2024, students track their achievements of Direct Observation of Procedural Skills on their ePAD, and the data analyst will provide further information at the completion of placement/rotations to inform curriculum design for 2025. Recording of both clinical Skills and DOPS are crucial for SVS to meet accreditation requirements.

	D	E	F	G	H	I
UQ Sign in ID	skill	Avian or Other	Cat or Dog	Horse	Livestock	
s1		27	0	23	7	0
s2		33	4	33	0	0
s3		44	12	41	1	0
s4		34	0	25	17	0
s5		17	4	0	0	15
s6		43	0	34	18	14
s7		35	5	27	0	8
s8		38	3	33	12	0
s9		45	0	41	4	14
s10		44	6	39	10	1
s11		46	12	41	8	1
s12		42	4	42	3	0
s13		42	1	40	11	9
s14		46	0	39	19	22
s15		35	3	24	14	18
s16		42	5	38	0	8
s17		48	0	47	0	12
s18		34	0	32	10	6
s19		45	3	38	16	17
s20		47	14	36	18	17
s21		44	6	39	15	12
s22		49	6	46	15	0
s23		46	2	37	11	9
s24		40	4	32	16	12
s25		38	7	32	7	5
s26		52	10	49	10	0
s27		37	4	29	7	20
s28		44	3	38	13	9
s29		40	10	35	7	9
s30		40	11	25	8	24
s31		49	0	41	14	17
s32		40	9	27	7	11
s33		43	8	33	16	26
s34		47	4	43	13	13
s35		42	5	32	14	15

Figure 16 Example of spreadsheet showing count of Skills list acquisition for SVS students

Skill Type	Skill	Animal									
		Cat	Dog	Cow	Horse	Pig	Poultry	Small ruminant	Other	Models	
Anesthesia	Measure indirect arterial blood pressure	100	100	100	100	100	100	100	100	100	100
	Monitor and manage patient under anaesthesia	100	100	100	100	100	100	100	100	100	100
	Perform regional anaesthesia through injection/infusion of local anaesthetic agent	100	100	100	100	100	100	100	100	100	100
	Place an endotracheal tube	100	100	100	100	100	100	100	100	100	100
Animal Handling	Set-up an anaesthetic machine	100	100	100	100	100	100	100	100	100	100
	Pick up and examine all four feet in a clinical context	100	100	100	100	100	100	100	100	100	100
Clinical Exam	Safely and effectively catch, handle and restrain	100	100	100	100	100	100	100	100	100	100
	Assess body condition score and estimate weight	100	100	100	100	100	100	100	100	100	100
	Collect rumen fluid sample	100	100	100	100	100	100	100	100	100	100
	Collect samples aseptically for bacterial or fungal culture	100	100	100	100	100	100	100	100	100	100
	Collect skin scrapings and examine for ectoparasites	100	100	100	100	100	100	100	100	100	100
	Effectively use an ophthalmoscope and tonometer	100	100	100	100	100	100	100	100	100	100
	Obtain a blood sample	100	100	100	100	100	100	100	100	100	100
	Obtain urine sample by cystocentesis	100	100	100	100	100	100	100	100	100	100
	Pass a crop needle	100	100	100	100	100	100	100	100	100	100
	Perform a general clinical examination including distance exam and individual physical exam (TPRM)	100	100	100	100	100	100	100	100	100	100
	Perform a rectal exam or palpation	100	100	100	100	100	100	100	100	100	100
	Perform a Schirmer tear test	100	100	100	100	100	100	100	100	100	100
	Perform fluorescein staining of cornea	100	100	100	100	100	100	100	100	100	100
	Perform reflect testing: cornea, panniculus	100	100	100	100	100	100	100	100	100	100
	Perform urinary catheterization of male animal	100	100	100	100	100	100	100	100	100	100
Diagnostics	Set up and record an ECG	100	100	100	100	100	100	100	100	100	100
	Collect samples aseptically for bacterial or fungal culture	100	100	100	100	100	100	100	100	100	100
	Completion of a submission form for specimen analysis to a diagnostic laboratory	100	100	100	100	100	100	100	100	100	100
	Examine a suitable specimen for dermatophytosis - microscopy, Wood's lamp	100	100	100	100	100	100	100	100	100	100
	Examine urine sample via measuring specific gravity, and performing a dipstick and sediment examination	100	100	100	100	100	100	100	100	100	100
	Measure PCV and TPC on a blood sample	100	100	100	100	100	100	100	100	100	100
	Perform a Diff-Quik stain	100	100	100	100	100	100	100	100	100	100
	Perform a faeces float and egg count	100	100	100	100	100	100	100	100	100	100
	Perform a systematic post-mortem examination, including sample collection	100	100	100	100	100	100	100	100	100	100
	Prepare a cytological smear, from impression or aspirate	100	100	100	100	100	100	100	100	100	100
Surgery	Prepare diagnostic blood smear	100	100	100	100	100	100	100	100	100	100
	Set up and use a microscope	100	100	100	100	100	100	100	100	100	100
	Take a radiograph of diagnostic quality	100	100	100	100	100	100	100	100	100	100
	Use a refractometer in a clinical context (e.g. to measure specific gravity of urine or colostrum)	100	100	100	100	100	100	100	100	100	100
	Apply drops and ointment	100	100	100	100	100	100	100	100	100	100
	Appropriately apply sutures in a clinical context	100	100	100	100	100	100	100	100	100	100
	Appropriately use haemostats in a clinical context	100	100	100	100	100	100	100	100	100	100
	Appropriately use needle holders in a clinical context	100	100	100	100	100	100	100	100	100	100
	Appropriately use scalpel in a clinical context	100	100	100	100	100	100	100	100	100	100
	Perform correct open/closed glove application, and gowning	100	100	100	100	100	100	100	100	100	100
Therapy	Perform effective surgical scrubbing of hands	100	100	100	100	100	100	100	100	100	100
	Administer an intramuscular injection	100	100	100	100	100	100	100	100	100	100
	Administer an intravenous injection	100	100	100	100	100	100	100	100	100	100
	Administer oral medication	100	100	100	100	100	100	100	100	100	100
	Administer subcutaneous injection	100	100	100	100	100	100	100	100	100	100
Other	Application of limb bandage	100	100	100	100	100	100	100	100	100	100
	Instill ophthalmic medication	100	100	100	100	100	100	100	100	100	100
	Instill otic medication	100	100	100	100	100	100	100	100	100	100
	IV cannulation	100	100	100	100	100	100	100	100	100	100

Figure 17 Example of spreadsheet showing count of Skills list acquisition for SVS students for 2023 via species

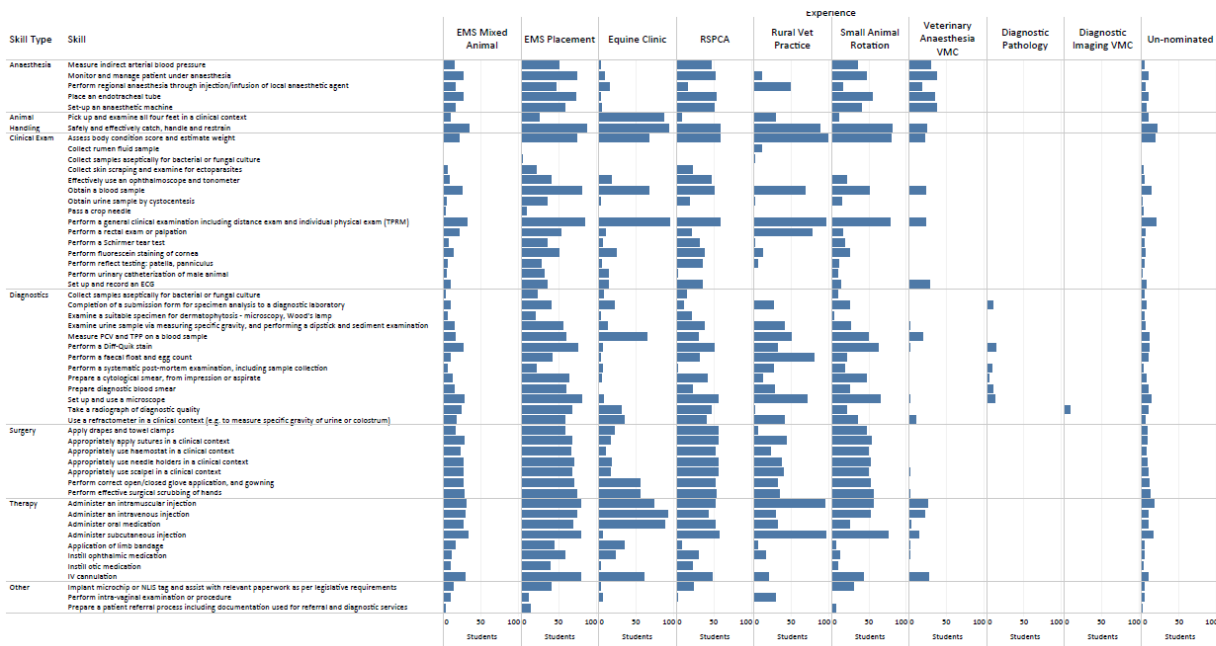


Figure 18 Example of spreadsheet showing count of Skills list acquisition for SVS students for 2023 via experience (rotation/placement)

## 6. Online modules for students completing WIL:

Development of a suite of 3 online modules to support student transition into learning in the workplace- Plan, Prepare, Proceed was designed to incorporate other project outcomes into a series of activities that students can access prior to and during their clinical placements. Each module is described and linked below to enable access and a screenshot of module 1 is illustrated in Figure 19.

- **Module 1- Plan:** This first online module guides learners to gain a clear understanding about what to expect from WIL prior to commencing their clinical placement
- **Module 2 - Prepare:** This module takes the learner to consider strategies that they can adopt to maximise their learning opportunities during the first few days of their placement drawing on the planning activities that they completed in the first module.
- **Module 3 - Proceed:** In the final module learners are challenged to consider how they can leverage WBA opportunities to gain valuable feedback and strategically plan future actions to continue to develop their clinical skills.

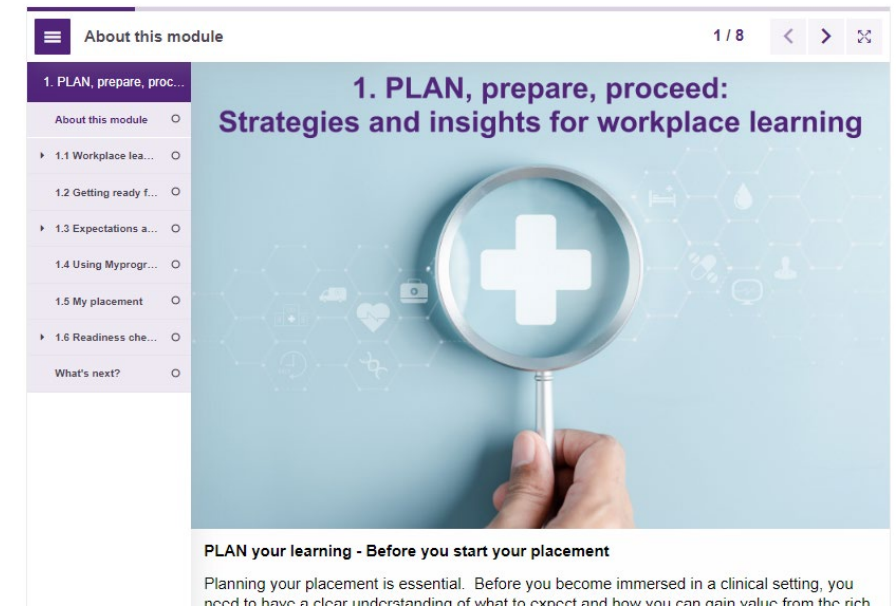


Figure 19 Screenshot of online modules

Although the initial development was targeted for the medical program, the three-module approach can easily be adapted for other programs completing WIL.

## 7. Data mining to identify quality feedback information:

A significant output of the project was the analysis of qualitative feedback comments provided by clinical supervisors during the completion of WBA tasks by students during clinical placements. Based on research completed by the project team a dictionary of feedback terms was developed drawing on examples of feedback comments that encompassed specific, instructional and actionable elements. This along with an analysis of the length of feedback entries was used to identify and extract higher quality feedback examples for all WBAs (mini-CEX and DOPS) completed during 2022 in year 3 (17,577 records). The large data set was then analysed using the R programming language to anonymise the data and extract examples of feedback demonstrating features that were aligned to the quality framework as well as the placement type, role of the assessor and type of WBA completed (e.g. mini-CEX and DOPS). This was then visualised in a tabulated format so students could filter and extract relevant examples to their current WIL activity.

Feedback from the student partners indicated that they valued gaining insights into the type of feedback that was received by their peers, so this work was then extended in 2024 to analyse both year 3 and year 4 WBA records collected during 2023 (36,727 in total). The design for the display of information was enhanced so students can now select the attributes of relevance to their placement or type of WBA and review examples of high quality feedback as illustrated in [section 2 of the Padlet page: Reviewing WBA feedback](#) (Figure 20 & 21). This has also been incorporated into activities for the students to complete as part of the 3<sup>rd</sup> online module (Figure 22). Once again data analysis expertise is required to sustain these innovations.

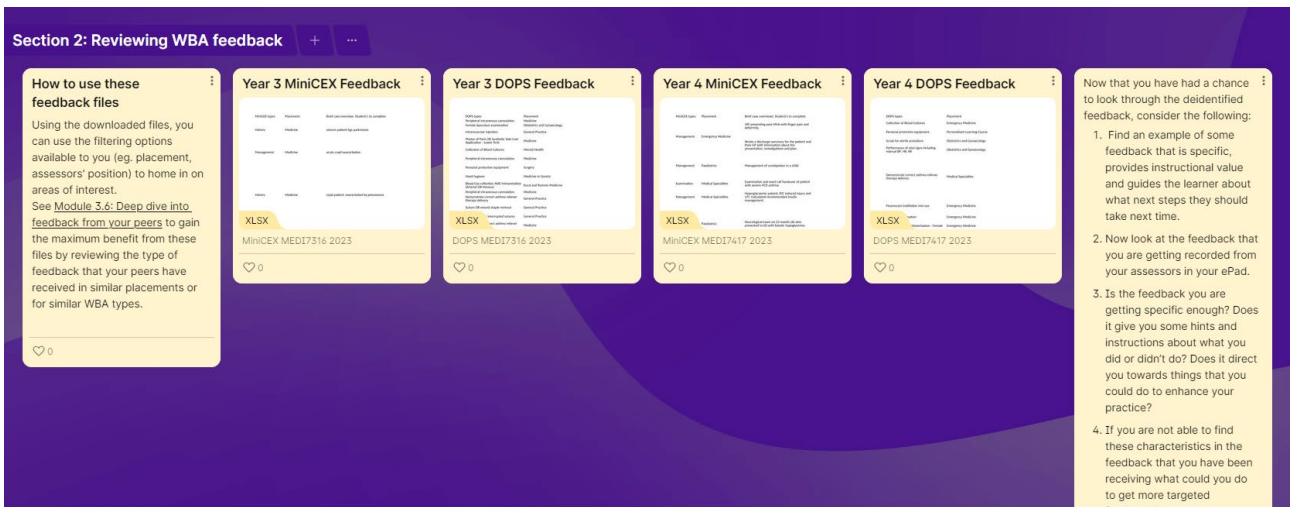


Figure 20 Padlet overview page for students to access whole of cohort qualitative feedback

MiniCEX types	Placement	Brief case overview: Student's to complete	Assessor feedback censored	Assessor's position
Management	Emergency Medicine	39F presenting post MVA with finger pain and deformity.	Good letter. If there are multiple issues, you can group each issue and discuss presentation, examination, investigations, management and plan in separate sections to structure it clearly.	RMO
Management	Paediatrics	Management of constipation in a child.	Good stepwise approach to management. Just remember that high fibre foods aren't going to resolve constipation. Osmolax is a great choice for stool softeners.	Consultant
Examination	Medical Specialties	Examination and ward call handover of patient with severe VCD asthma	As discussed, continue to improve patient review skills. Remember to review mar.	Intern
Management	Medical Specialties	Hyperglycaemic pateint, IDC induced injury and UTI. Calculated recommended insulin management.	Know where to access information quickly to improve time to treat.	intern
Examination	Paediatrics	Neurological exam on 23 month old who presented to ED with ketotic hypoglycemia.	ways of assessing cranial nerves and power and tone of limbs. You can get a lot of information by just observing and playing with the child. Try to go through the whole list of cranial nerves and see what sort of things can be done with a 2 year old to test each one. Remember to look for those umn and	Consultant
History	Emergency Medicine	F with chest discomfort, lightheaded ness, Afib, found to be in cardiogenic shock.	Always broaden your differential - think of possibilities of what something could be.	Registrar/PHO

Figure 21 Excel file version of qualitative feedback for Mini-CEX filtered by mini-CEX type, placement and assessor

**3.6 Deep dive into feedback from your peers** 7 / 9

**3. Plan, prepare, PROC...**

About this module ●

▶ 3.1 WBA types ○

3.2 Technology tip... ○

3.3 Completing W... ○

3.4 Learning from ... ○

3.5 Feedback tips ○

3.6 Deep dive into... ○

3.7 Taking action ... ○

What's next? ○

Another way for you to gather insights about feedback is to **review the type of feedback that your peers have received in similar placements or for similar WBA types.**

The team who developed this resource have extracted a selection of feedback records gathered by your peers from the Myprogress system. It has been de-identified and collated to provide you with an opportunity to review what other supervisors have provided to medical students.

There are files for DOPS feedback and another with mini-CEX feedback for year 3 and year 4 (four files). You can see and download the files in Section 2 of the [Feedback Padlet](#). Both files have filters (filtering options for the DOPS file: types of DOPS (form\_name), placement, semester and assessor's position; filtering options for the mini-CEX file: types of mini-CEX (form\_name), semester, placement and assessor's position). To navigate through the files, you can either use the small triangle on the left side of each column heading or utilise the filtering slicers on the right-hand side after the last column.

DOPS types	Placement	Assessment feedback comments	Assessor's position
Collection of Blood Cultures	Emergency Medicine	Good technique, could use syringe next time to collect blood for vial	Registrar/PhC
Personal protective equipment	Personalised Learning Course	Correct pipette use. Utilise visual prompts on doors to remember correct order if available	SHO
Scrub for sterile procedure	Obstetrics and Gynaecology	Systematic technique of scrubbing in. Please ensure you scrub above the elbows	Registrar/PhC

Figure 22 Section of the third online module to support students in utilising quality feedback information

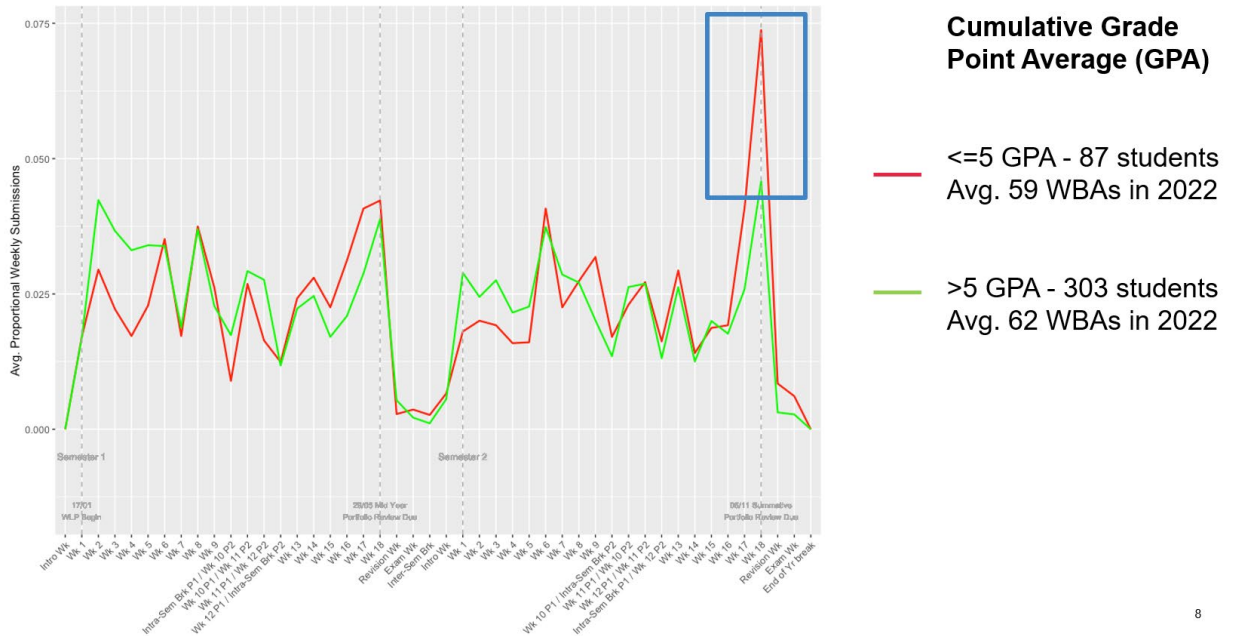
## 8. Tracking patterns of engagement longitudinally across the program

Workplace-based assessments (WBAs) provide evidence of medical students' clinical and non-clinical skills development in clinical settings. Learning analytics, extensively used to explore student engagement in classroom-based settings, has been applied during this project to gain insights about completion of WBAs. This empowers educators and course coordinators to gain valuable insights about student progress and use this evidence for data-informed decision-making.

### Initial tracking analysis:

The project team conducted an analysis of the Year 3 data set from 2022 (23920 submissions, 320 students) to identify patterns of engagement and associated factors such as prior academic performance (GPA). Results showed that students with higher cumulative WBA completions showed early and consistent engagement. Tracking average WBA submissions over the year revealed that students with lower prior semester GPA (<5) were slower to accumulate submissions and meet course requirements, while students with a higher GPA submitted more tasks, more frequently, and met course requirements earlier. This gap in completed tasks is visible by Week 7 of Semester 1. Placement type also seemed to influence their engagement, with students completing more WBAs during generalist placements. Figures 23 and 24 show the patterns of engagement identified from the 2022 dataset. The project team aimed to consider in more detail if lower WBA completion could inform identification of at-risk students and how best to support their transition to workplace-based learning.





8

Figure 23 Student engagement patterns across 2022 comparing GPAs

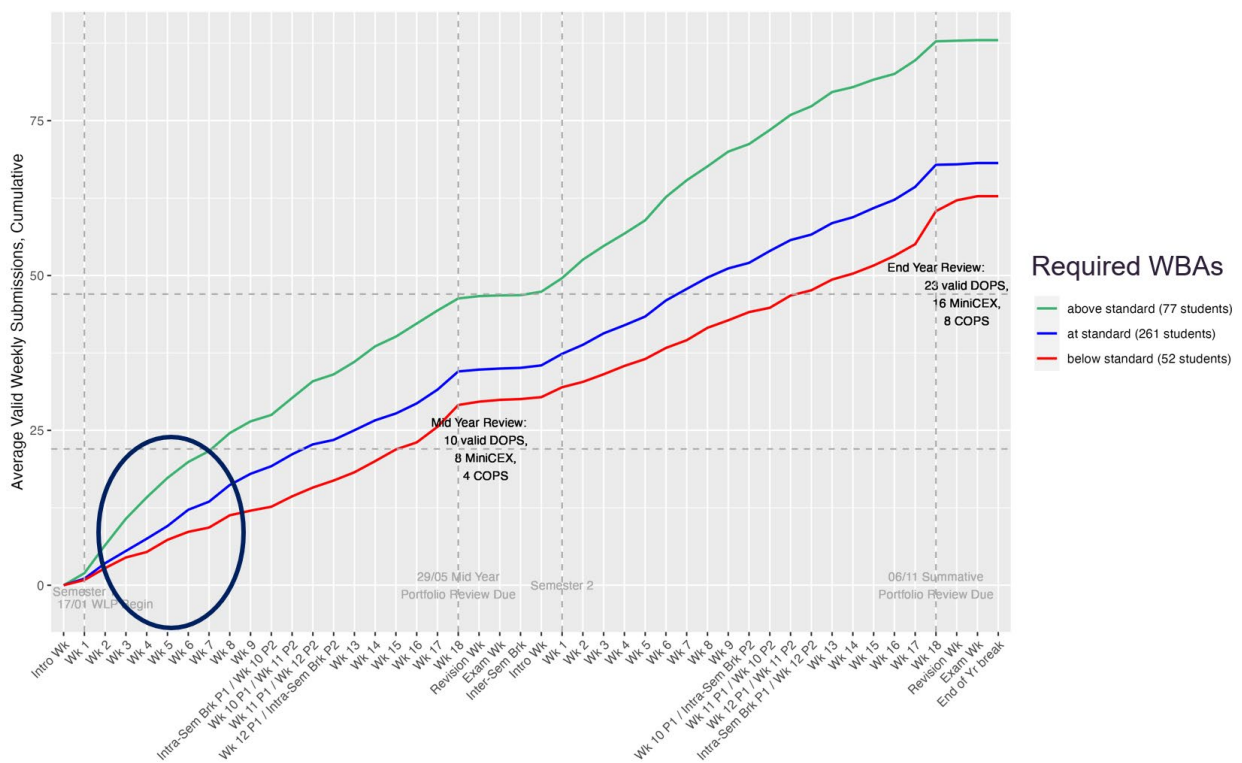


Figure 24 Average weekly submissions during 2022 demonstrating that students not achieving required completions lagging behind the cohort early in the year where the lines diverge

### Further analysis

Information revealed in the initial analysis led to a further in-depth analysis of this cohort at three time points (early, mid and late) in each of the two 18-week semesters. A cleaner set of data from 2022 Year 3 was utilised (20,807 WBAs from 296 students) and four distinct patterns of learner action were identified: exceeding targets (46%), on-track (25%), completing just enough (17%), at-risk of not meeting targets (12%) (Figure 25). Learner patterns of completing WBAs were generally consistent across the semester, although engagement dropped in the latter part of the semester if requirements were exceeded early on. Inactivity early in the semester (before week 7), was linked to the group of at-risk learners who were offered supportive interventions at the mid-year review point. Delayed and lower WBA completion can help identify at-risk students needing more support for workplace-based learning. Data-driven approaches can enhance our understanding of learner actions in the workplace, support personalized learning strategies and highlight the importance of providing varied approaches for different groups of learners.

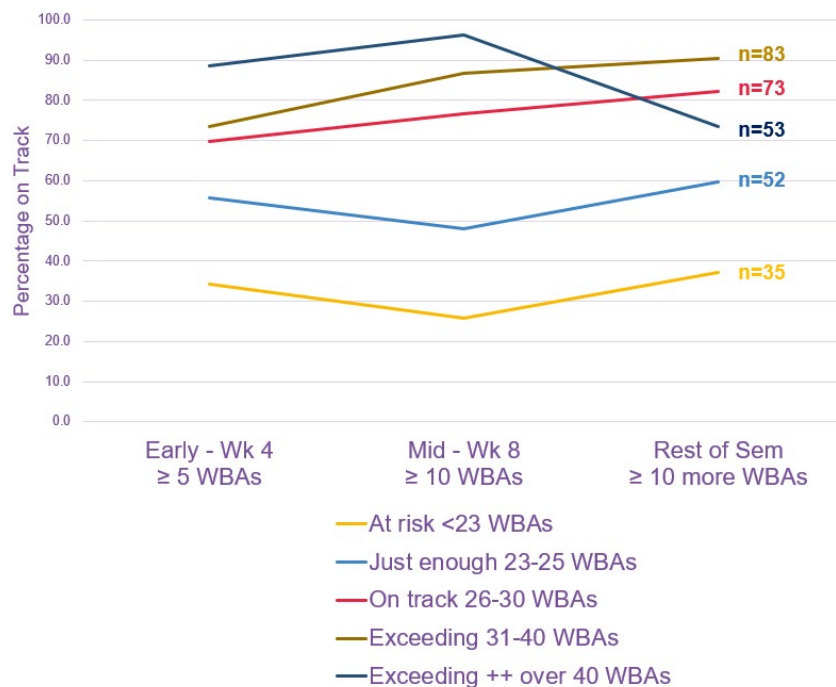


Figure 25 Patterns of engagement with WBA's to identify "at risk" patterns of completion

### Project Evaluation

In keeping with the educational design research approach adopted during this project a range of evaluation activities were completed to guide the work throughout all stages of the project. In addition, the University of Queensland's ethics committee for research involving human subjects approved ethical clearance for aspects of the evaluation process adopted throughout this project (2022/HE001030). For example: students, course coordinators, clinical supervisors and members of the international reference group all provided evaluation information for aspects related to each of the project activities. Focus groups were the primary source of evaluation information as this provided a rich dataset to inform the project activities. It also enabled the project team to receive ongoing feedback during the design and development, and implementation and reflection stages. As project deliverables were created (dashboards and the online resource) the evaluation information was supplemented by data collected on dashboard use from staff and students, although it was not possible to track access to the online modules due to limitations with the platform adopted to deliver these resources. It was also found that tracking data from the Blackboard LMS was unreliable. The table below outlines the key evaluation activities completed during the project. In addition some quotes have been included to demonstrate project outcomes.

Table 4 Overview of evaluation activities and outcomes

Project Stages	Evaluation activity	Timing	Key outcomes
Exploration and Analysis	International reference group consultations with project team	4 sessions May -Oct 2022	Identified challenges associated with WBA capture, tracking, data analysis, illustrating similar perspectives experienced globally and across disciplines
	Consultation with 17 staff - MD and SVS course coordinators, clinical academics, Clinical Unit Heads and Professional staff	8 sessions with 17 staff Sept – Oct 2022	Illuminated needs of these key stakeholders required for their role supporting students before, during and after clinical placements.
	Student focus groups facilitated by student partners	Multiple sessions with 12 medical students, 16 VET students	Gained insights about how students manage electronic capture of WBAs, monitor their progress and identification of current platform and design areas to consider for improving the student experience
Design and Construction	Co Design session 1 for project team and student partners	October 2022	Synthesize data from exploration and analysis phase to define parameters for dashboards and engage in co-design process to evaluate prototypes
	International reference group consultations with project team and student partners	3 sessions May 2023	Evaluated framework to guide construction of online resources to support student learning during WIL placements, identified additional video resources available to the project team
	Co Design session 2 & 3 for project team and student partners	Mar& Dec 2023	Co-design of online modules and feedback during module development
Implementation and Reflection	Student focus groups facilitated by student partners	Prior to Codesign session 2	Identifying how students utilise the whole of the cohort dashboard prototypes and potential ways the qualitative peer feedback dataset could be developed
	Focus groups by student partners and project team with university and clinical stakeholders and international reference group members, and survey embedded in online modules Tracking data from LMS	Multiple Jan-July 2024	Positive value of dashboards and online modules although awareness of the resource availability by wider student cohort was low Students do use alternative methods of keeping track outside of Myprogress, highlighting the need for better individual student dashboards Myprogress platform and PowerBI visualisations have enabled capture of WIL activities and greater visibility of student progress during placements for staff
	Reflection of project process and outcomes by student partners (written reflection) and international reference group (survey)	Aug 2024	Reference group strongly supportive of project, and student partners highly valued outcomes and collaboration between students, staff and designers

One of the international experts commented on the online modules as follows:

*The modules contain a really great range of resources. They cover a lot with just the right amount of detail so they are not an onerous piece of work for the students. I have created a lot of eLearning material in my career and this is a particularly good example of how it should be done. A well-balanced mix of content types and a clear rationale for every aspect, all without jargon. Module 2 where you share the data around WBA completion is impactful and provides an immediate visual of best practice. We have used similar visuals to explain the benefits of engaging early. Module 3 has videos of current students explaining the various processes for recording WBA in the portfolio. This is an excellent idea. The videos contain the necessary information but the whole manner of the delivery is just like a peer helping a student. The videos where students provide advice on the experience of placement are good and we have also done this with our students but it is interesting to see students creating the videos for navigation of the IT systems.*

The following illustrates the learning outcomes from one of the student partners in the project:

*Throughout this project I've gained experience in running student interviews and focus groups, including question development, recruitment, consent forms, running a session with controlled questions and appropriate follow up questions, data consolidation and presentation and multi-disciplinary meetings. Through my review of student resources, as well as discussions with my peers I've gained a better understanding of how others approach work-integrated learning placement as well as how best to seek feedback and integrate it into my practice.*

An example of a quote from a UQ staff member in a focus group regarding the success of dashboards from their perspective:

*...definitely the additional assessments. So not just CPAs, but all of the assessments that are completed in Myprogress that way we can have feedback from all assessments in one spot, you know, we could filter if we're looking for how many CEXs...if we're looking for dops or cops or additional CPAs. We can filter all of that, pull comments and just have an abundance of student feedback.*

## Lessons Learnt

There were several key lessons learnt through this project and they are outlined below.

1. **Educational design research** (EDR) was an excellent approach for managing this UQ Teaching Innovation Grant. The Myprogress platform to track WIL learning activities through completion of workplace-based assessments (WBAs) was a new innovation at the University of Queensland, even though WBAs have been a core element of medical and veterinary curriculum for several years. EDR was able to investigate this complex area due to its ability to investigate authentic practice, drawing on theory and what was known about workplace learning and tracking of WBAs (from our international expert reference group) to inform the iterative design process.
2. The **co-design process** derived from the human-centred design technology space enabled stakeholders to have a 'seat at the table' to be involved in collective creativity with involvement in the design decisions that were made. This along with EDR thrived by creating a collaborative and close relationship between researchers, developers, and end users to build the gap between theory and practice.
3. There is a **rich source of information** available to staff and students to support their learning in the workplace. The School of Veterinary Science noted the use of Myprogress as a key achievement in 2023 and it was commended during the 2024 School Review. The work in the Medical School developing a

system of assessment to guide longitudinal tracking of student learning was highlighted in the AMC accreditation visit during 2022. This has provided opportunities in both Schools to develop new approaches to monitor and identify students at risk student of not meeting learning outcomes and provides timely information to staff as noted in the project outcomes described earlier. Lessons learnt regarding data management have also informed the assessment strategy implemented for the new Doctor of Medicine program known as MD Design (longitudinal aggregation of assessment information for progress reviews).

4. The project highlighted the **limitation of UQ systems** for accessing and managing large learning related data sets. While the Myprogress application procurement process had ensured that the rich dataset could be available, the project was delayed for several months as the project team navigated several **institutional boundaries** to gain access to the WIL / WBA data sets. This partly stemmed from the innovative nature of this area, the **need to enhance recognition about the value of learning related data by central information technology staff** as there was a lack of process and understanding about our requests for datasets. This often led to gaps in data being made available, inefficient systems to check for the daily data feeds and inadequate mechanisms for access to the “data lake” for project team members. This severely delayed the central work of this project making it very difficult to complete the analysis of student engagement patterns while completing WIL.
5. The critical need to map out **clear naming conventions and hierarchical frameworks** in the initial stages of implementing new learning systems. For example, when the Myprogress platform was procured there was insufficient awareness by the university about the need to manage deployment and define nomenclature across multiple schools and faculties. This meant that when data was to be extracted from the data lake, information relevant to the two disciplines involved in this project was difficult to locate and analyse. WBAs involve capture of millions of instances of information about the student learning process. Clear nomenclature and hierarchies of information across the university is essential. This is important to set up at the beginning design stage and lessons have been learnt at the discipline level regarding the naming of all fields that make up the WBA capture so that retrieval in an understandable format can facilitate analysis.
6. There is a need to **resource a central learning analytics team with data scientists** to support innovative projects such as this one. Although there was an agreement to provide central data scientist staffing and support in the form of learning analytics at the grant development and approval stage, when these staff left the organisation, this was stopped, and no contingency was available. This completely stalled our ability have ongoing hosting of the implemented and prototyped dashboards as there was no handover and no other central staff with knowledge or expertise of the systems used by this team. Access to Python and Plotly Dash had been available through centrally hosted supported web platform which was not available anymore with no other option possible within the faculties. In addition there was no ability to deploy the dashboards to individual students via student sign-on process as this was managed centrally and not available to faculty staff.
7. The **professional staff resourcing commitment at the faculty level** for ongoing sustainability is unknown. Therefore, updating the medicine cohort dashboard spreadsheet and the development of the cohort dashboard for SVS will be affected by a lack of administrative resources to manage data.
8. Mechanisms to **enhance connections** between schools and faculties and central IT and educational support is needed to share our knowledge base and expertise. There is gap between the needs of academic staff designing and supporting innovative learner centred learning designs and centralised staff, with no mechanisms to flag possible improvements to such learning systems. For example, while there is an option to embed PowerBI dashboards into the Myprogress system there is no avenue available to promote this development work. This would require a **complete cultural change to forge closer connections** between the end users (academic in the schools), central teams at UQ and the vendor who is keen to support these innovative developments. Currently this is blocked because of the governance processes that manage the vendor and university communications. Even with a superb

learning designer involved in this project centrally, this **disconnect** could not be solved. This has been overcome in other universities (e.g. WSU) where end users worked directly with the vendor to create learner centred dashboards.

These constraints were nicely summarised by one of our UK international reference group members who wrote in our evaluation survey:

*With large cohorts of students, the WBA data set created is huge. At (name of university) students produced 30,000 assessments a year..... We also ran pilots producing more visual displays of the WBA data including a student focused learning analytics platform called MyPAL. The students welcomed this but ultimately it did not receive further funding so could not be progressed. To do WBA well and get the full benefit for students requires an **investment of staff and resources which is often woefully underestimated.***

Students also highlighted the need for improved functionality to track their progress individually, a feature that was in the initial road map for the Myprogress platform but never provided. This demonstrated that our design principles for individual student dashboards and our prototypes would have met their needs but could not be completed due to the loss of central learning analytics staff.

*Would be nice to show a semester tally for each DOPS/COPS/MiniCEX so we don't have to count them up ourselves.*

*Be able to see semester counts!*

*Tools to see easily what was done: this current semester/ countdowns of what needs to be completed to meet that coming semesters requirements*

*Reminders for upcoming assessments would be helpful*

## Project Impact

Project impacts are best described by considering the IMPEL framework shown in Table 5.

Table 5 Description of Project Impacts

Levels of impact	Description of Impacts
Team Members	<ul style="list-style-type: none"> <li>Staff: Recognition of expertise in WBA and data management by internal university staff and external organisations:</li> <li>Shari leads the design of eportfolios for WIL across the university and was recognised for her work in 2022 through winning the ITaLI Individual award for performance and positive changes to culture.</li> <li>Christine and Christy have led the development of WBA resources by the cross university Australian and New Zealand collaboration known as <a href="#">ACCLAIM</a>.</li> <li>Chantal Bailey has developed dashboards for staff in the Faculty of Medicine and has facilitated connections with the business and intelligence CoP</li> <li>Justine has led the pedagogical redesign of WBA's in the School of Veterinary Science where 2 out of 5 commendations by the School Review related to the use of technology for learning. The redesign of WBA and the ability to track skills and DOPS during WIL to demonstrate students attainment of competency will be essential for SVS 2025 accreditation evaluation.</li> <li>Student partners: Students articulated their increased feedback literacy, specifically in using a model to seek, process and enact feedback, which</li> </ul>

	<p>they plan to apply to future learning and assessments. They also expressed they gained insights into large multidisciplinary projects and enhanced their research skills such as project design, data collection and management, and appreciate the pedagogical expertise behind assessment and feedback design.</p>
<p>Immediate Students</p>	<ul style="list-style-type: none"> <li>• The students completing WBAs in the old MD program and Veterinary Science and Veterinary Technology program have benefited from the introduction of electronic formats to capture learning during WIL, including enhancements to current resources to assist them in planning their learning as they move from one placement to the next placement.</li> <li>• The project has also informed the capture of all assessment information in the new MD (MD Design) to enable the building of PowerBI tracking dashboards to enable staff to review student progress through the year and implement strategies to identify at risk learners and offer additional support prior to end of year progression decisions.</li> <li>• The project has also supported the design of WBAs introduced in the new year 2 clinical immersion that was implemented in 2024 for the MD.</li> </ul>
<p>Spreading the Word (contribution to knowledge in field)</p>	<ul style="list-style-type: none"> <li>• WIL design and feedback design principles gained during the project have enabled Shari to adapt and apply these concepts within multiple disciplines across UQ</li> <li>• Throughout the project numerous presentations have been provided to staff within the School of Medicine and School of Veterinary Science</li> <li>• Eight presentations at national and international medical education and veterinary education conferences, and four presentations at UQ HEA or Teaching and Learning week events</li> <li>• As project team members have moved to new roles in other higher education institutions the gains from this project are informing their work (Helen at ANU, Asela at Melbourne University).</li> </ul>
<p>Narrow Opportunistic Adoption (at UQ leading to changes for students)</p>	<ul style="list-style-type: none"> <li>• Course and program coordinators have been engaged in the use of dashboards to monitor WIL activities (In medicine all clinical units including the Ochsner clinical school in USA, course coordinators in the Vet Tech and Vet Science programs). Other programs not currently using Myprogress are keen to develop their WIL activities pending university resources and central support (HABS: social work, psychology and the Doctorate of Dentistry). There is also a need to continue work on developing individual student dashboards adopting the features and prototypes that are applicable for use for any WBA activity as this is a key request by our student partners.</li> <li>• Design of assessment system and visibility of assessment information empowers students to take responsibility for their learning (self-directed and self-regulated learning). This is shifting the feedback culture for students attending WIL placements by enhancing their assessment literacy and encouraging further actions in their next WIL activity.</li> </ul>
<p>Narrow Systemic Adoption (at UQ)</p>	<ul style="list-style-type: none"> <li>• The innovative nature of this project was recognised during accreditation for both the medical program and veterinary science program. For example the Veterinary Science School received two commendations for its use of technology to support student learning specifically referring to the use of Myprogress to promote student reflection on learning and acquisition of competencies, and the tailored, student-led learning elements for their WIL placements.</li> <li>• Through this project we have demonstrated how WIL assessment information can support staff to interpret what they see in the Myprogress</li> </ul>

	<p>dashboard, what it means, and what they can do to support student learning during WIL.</p> <ul style="list-style-type: none"> <li>• By increasing student responsibility for learning we are encouraging students to capture a portfolio of evidence which forms part of the UQ portfolio ecosystem.</li> <li>• The project has highlighted the critical need at UQ for clarity in data management, the importance of standardising how this is collected so that it can be used efficiently. It has also identified the gaps in integration between teaching and learning systems, so that it can inform curriculum and assessment design.</li> </ul>
<p>Broad Opportunistic Adoption (beyond UQ)</p>	<ul style="list-style-type: none"> <li>• Members of the international reference group indicated in their feedback the value of engaging in the project reference group sessions how they are interested in creating similar resources to those in our online modules.</li> <li>• The value of close liaison with the Myprogress vendor in the early stages of this project was <u>recognised by the vendor</u>.</li> <li>• It is also interesting to note that the expertise of project team members has been drawn upon during the design of the new Australia wide internship program for medical graduates across Australia which incidentally has now selected to Myprogress platform for their WBA platform and eportfolio.</li> </ul>
<p>Broad Systemic Adoption (beyond UQ)</p>	<ul style="list-style-type: none"> <li>• This may occur as key project team members have moved to other universities.</li> <li>• The Murdoch Veterinary Program is reviewing UQ SVS use of MyProgress and pedagogical principles for WBA, with discussion in progress to collaborate and share materials.</li> </ul>

Evidence of the impact of this project on immediate students was revealed in the final evaluation completed by the student partners in their focus groups with medical students across 9 different clinical sites (urban and rural). Students commented about the intentional nature they adopted to seek feedback. The quotes below illustrate the impact project outcome 3, 4 and 7, designing WBA's that embed feedback literacy in the capture process and the recognition of the importance of targeted feedback.

*Yes I am - I want to be a good doctor and like getting specific feedback about my procedures I'm intentional about seeking feedback by asking specific questions. I also try to request feedback after relevant tasks or cases to get timely, useful insights  
I will always signpost I'm seeking feedback if I want it.  
Yes - specific feedback (how was my mannerisms? Di I mis anything important)  
Often ask for procedure related tips and tricks of how to improve  
Highlighting specific aspects you would like feedback on PRIOR to the task*

An example of broad opportunistic adoption was this comment by one of the international reference group members located in the UK:

*It has inspired me to consider working with students to create walkthrough videos for use of the technology rather than making the videos myself from a more formal teacher perspective.*

## Transfer of Innovation and Dissemination

- Web presence

Project webpage: [Visualising digital footprints to enhance learner engagement in work-integrated learning - Medical School - University of Queensland \(uq.edu.au\)](https://visualisingdigitalfootprints.com.au/)

- Internal meetings and presentations:

- School of Veterinary Science meetings: Curriculum Review Days, T&L meetings



- MyKnowledgeMap Community of Practice
- Board of Examiners meetings Doctor of Medicine program including within year progress reviews
- Meetings with School of Medicine clinical sites including the Rural Clinical School and Ochsner Clinical School
- Business Intelligence and Data analytics CoP meetings at UQ
- Presentations at UQ Teaching and Learning Weeks 2022 and 2023
- **Conference presentations nationally and internationally:**
  - Olupeliyawa A, Monk S, Wozniak H, Kull A, Devine C, Noble C, Ward K & Gibson J (2024). *Exploring student engagement in the workplace: insights from analysis of large WBA datasets*. Ottawa: Melbourne, Australia, 24-28 Feb 2024.
  - Wozniak H, Gibson J, Noble C, Devine C, Bowker S & Kull A (2024). *A co-design approach to enhance workplace-based assessment practices*. Ottawa: Melbourne, Australia, 24-28 Feb 2024
  - Wozniak, H. (2023). ACCLAiM Professional Development Series. Exploring the nexus between feedback, action and engagement in workplace-based assessment. 1Dec. [Available](#)
  - Wozniak H, Gibson J, Herndon A, Ledger A, Bailey C, Bowker S, Olupeliyawa A, Kull A, Devine C, Noble C, Ward K, Monk S, Bird K, Ochayi D, Kodiyattu Z, Low Z (2023). *Digital dashboards that connect learners and challenge our thinking about assessment*. UQ Teaching and Learning Week, St Lucia, QLD, Australia, 31 October 2023.
  - Wozniak H, Gibson J, Noble C, Claydon R, Bowker S, Bakharia A, Kull A, Ward K, Garrard R, Olupeliyawa A, Bird K, Ochay D, Kodiyattu Z & Low Z (2023). *Co-designing digital dashboards to enhance student engagement in work-integrated learning (WIL)*. ANZAHPE 2023: Turning tides: Navigating the Opportunities, Gold Coast, QLD Queensland, 26-29 July 2023.
  - Olupeliyawa A, Tobin S, Kull A, Wozniak H, Gibson J, Garrard R, Monk S, Bailey C & Robinson K (2023). *Navigating ebbs and flows of digital dashboards used in medical student assessments during clinical placements*. ANZAHPE 2023: Turning tides: Navigating the Opportunities, Gold Coast, QLD Queensland, 26-29 July.
  - Wozniak, H. (2023). Analysis of the relationships between feedback, action planning and engagement in workplace-based assessment tasks (WBAs). Health Professions Education Research Micro-Conferences 2023, Online, 20 June 2023. [Available here](#) (7:14).
  - Wozniak H, Gibson J, Bakharia A, Bowker S, Claydon R, Garrard R, Kull A, Noble C & Olupeliyawa A (2022). *Co-designing digital dashboards to enhance student learning in the workplace*. UQ HEA Conference, St Lucia, QLD, Australia, 2 November 2022
  - Wozniak H, Noble C, Claydon R, Monk S & Steele M. (2022). *Rethinking how feedback from WBAs can stimulate extension and growth for learners*. Ottawa Lyon 2022 Reimagining Assessment Across the Continuum, Lyon, France, 26-28 August 2022.
  - Wozniak H, Claydon R, Noble C, Monk S & Steele M. (2022). *Enhancing feedback partnerships to guide learner actions in workplace-based assessments*. ANZAHPE Festival 2022, Online, 11, 13, 19 July 2022.
  - Wozniak H, Gibson J, Noble C, Claydon R, Bowker S & Bakharia A. (2022). *A cross-disciplinary partnership between staff and students to support learner growth in diverse clinical settings*. ANZAHPE Festival 2022, Online, 8-19 July 2022.

## - Other dissemination activities

- Presentations and discussions at the Cross University Medical School Community of Practice sessions which has representatives from medical programs across Australia and New Zealand
- Team members (Drs Christy Noble and Christine Devine) participate in the ACCLAiM collaboration – a collaboration across all medical schools in Australia and New Zealand studying and supporting clinical assessment and workplace-based assessments and provide a highly regarded professional development series. Assoc Prof Helen Wozniak was an invited speaker for their professional development seminar series.
- The Reference group members spanned Universities across Australia, New Zealand, United Kingdom, Canada and the United States of America.

## Further Grants

A grant titled “*Monitoring and enhancing formative assessment for learning in work-integrated learning (WIL) for the medical program*” has been submitted for The Australian National University Strategic Learning and Teaching Grants 2024. This grant builds on the work of this TIG and applies it to the medical program at ANU where the project lead is now based. It was developed to align with the ANU priority areas of

- strengthening authentic learning and assessment,
- strengthening formative assessment for learning
- strengthening industry engagement in learning and teaching
- addressing program-level auditing and implementation of WIL.

At the time of writing this report the outcome of the grant application is pending.

## References

- Billett, S. (2016). Learning through health care work: premises, contributions and practices. *Medical Education*, 50(1), 124–131. <https://doi.org/10.1111/medu.12848>
- Boud, D., & Molloy, E. (2013). Rethinking models of feedback for learning: the challenge of design. *Assessment and Evaluation in Higher Education*, 38(6), 698–712. <https://doi.org/10.1080/02602938.2012.691462>
- Castanelli, D. Sociocultural learning theory and assessment for learning. *Med Educ.* 2023; 57( 5): 382- 384. doi:10.1111/medu.15028
- Ceelen, L., Khaled, A., Nieuwenhuis, L., & de Bruijn, E. (2021). Pedagogic practices in the context of students' workplace learning: a literature review. *Journal of Vocational Education & Training*, ahead-of-print(ahead-of-print), 1–33. <https://doi.org/10.1080/13636820.2021.1973544>
- Martin, L., Blissett, S., Johnston, B., Tsang, M., Gauthier, S., Ahmed, Z., & Sibbald, M. (2023). How workplace-based assessments guide learning in postgraduate education: A scoping review. *Medical Education*, 57(5), 394–405. <https://doi.org/10.1111/medu.14960>
- Winstone, N., & Carless, D. (2019). *Designing Effective Feedback Processes in Higher Education* (1st ed.). Routledge. <https://doi.org/10.4324/9781351115940>
- Wise, A. (2014). Designing pedagogical interventions to support student use of learning analytics. *Proceedings of the Fourth International Conference on Learning Analytics and Knowledge*, 203–211. <https://doi.org/10.1145/2567574.2567588>



## Contact details

### Project Leaders

**Assoc Prof Justine Gibson**

**T +61 7 5460 1830**

**E [gibson.j@uq.edu.au](mailto:gibson.j@uq.edu.au)**

**Assoc Prof Helen Wozniak**

**T +61 2 6125 8456**

**E [helen.wozniak@anu.edu.au](mailto:helen.wozniak@anu.edu.au)**

CRICOS Provider Number 00025B