Work Integrated Learning in Laboratory Medicine at RMIT

Meaghan Botterill
Educational Technology Advancement Group (EduTAG)
RMIT University

Dr Indu Singh
Medical Sciences, School of Health Sciences
RMIT University

Jane Moon
Medical Sciences, School of Health Sciences
RMIT University

The Laboratory Medicine program at RMIT University is an internationally accredited program offering students careers in all the major areas of laboratory medicine. ePortfolios were first trialed as a way for students to record their Professional Practice placement in 2008. Since then, there have been iterative developments of the ePortfolio practices and processes to allow students to record their compulsory 40 week Professional Practice, Work Integrated Learning (WIL), placement. This case study is a work-in-progress review of the current use of ePortfolios in Laboratory Medicine. Students currently record, and simultaneously reflect upon, their WIL placement using a scaffolded template in PebblePad. They are required to share their monthly journal entries with their workplace and academic supervisors creating a triangulated communication process. Overall this has been a positive experience for staff, students and workplace supervisors.

Keywords: Work Integrated Learning, ePortfolios, PebblePad, Laboratory Medicine, RMIT.

Introduction

The use of ePortfolios, or electronic portfolios, within the Australian university sector has expanded rapidly over the past several years (Hallam et al., 2008). ePortfolios provide a space where students can 'record, reflect and present information about themselves and their educational and training experiences for the purposes of learning, assessment, and making transitions, particularly to employment' (Curyer, Leeson, Mason, & Williams, 2007, p. 18). According to the Joint Information Systems Committee (JISC):

> An e-portfolio is the product, created by the learner, a collection of digital artefacts articulating experiences, achievements and learning.
>
> Behind any product, or presentation, lie rich and complex processes of planning, synthesising, sharing, discussing, reflecting, giving, receiving and responding to feedback. These processes – referred to here as 'e-portfolio- based learning' – are the focus of increasing attention, since the process of learning can be as important as the end product (JISC, 2008, p. 6).

At RMIT University (RMIT), ePortfolios were introduced as an enterprise supported tool in 2008. Following a review of various ePortfolio systems in 2007, the university decided to commence a trial of the PebblePad ePortfolio system (Botterill, Allan, & Brooks, 2008). Now in its third year, there are approximately 90 courses with over 5000 students using ePortfolios for learning and teaching purposes. As part of the continuing roll-out of ePortfolios across the university, ePortfolios have been strategically positioned as a vehicle that will enable the ongoing compilation of learning achievements and experiences that can be used for authentic, evidenced-based assessment and demonstration of career readiness.

The introduction and implementation of ePortfolios across the university have been closely aligned with RMIT's strategic directions, notably Graduate Attributes, Work Integrated Learning, Professional Accreditation, Internationalisation and Recognition of Prior Learning. Work Integrated Learning (WIL) is a core component in the majority of RMIT University's programs. A key tenet of WIL is that students should 'learn by doing in context and with feedback [from industry professionals]' (RMIT, 2010c). Types of WIL activities include 'placement in a

workplace including practicums and clinical practice' (RMIT, 2010b). This case study explores the use of ePortfolios in the Laboratory Medicine program at RMIT.

Background: Laboratory Medicine at RMIT

Laboratory Medicine at RMIT is the only Australian internationally accredited, four year degree program that prepares students for work as medical scientists in all the major areas of laboratory medicine including haematology, transfusion and transplantation science, cytopathology, histopathology, medical microbiology and clinical biochemistry (RMIT, 2010a). The program is accredited with the Institute of Biomedical Sciences (IBMS) UK, which mandates the academic requirements for programs so that graduates can register as biomedical scientists with the Health Professions Council in the UK and work in laboratories and hospitals globally. The program contains a compulsory WIL professional practice placement which occurs in third year, whereby all students complete up to 40 weeks of supervised work experience in a diagnostic, research or reference laboratory. On average, there are 55 students who participate in the WIL placement per year. RMIT arranges all placement positions and two teaching staff members conduct site visits twice per year to review student performance and elicit feedback from supervisors. Students can also spend 10–13 weeks in approved overseas laboratories in the UK, Ireland, Sweden, Macedonia, Kuwait, USA, Singapore and Hong Kong. Students are only required to come on campus twice per year.

The Professional Practice year comprises of 4 courses: Professional Practice in Laboratory Medicine 1 and 2 (ONPS2175 and 76, each worth 36 credit points) and Principles of Professional Practice 1 and 2 (ONPS2173 and 74, worth 12 credit points each). Prior to the introduction of ePortfolios in Professional Practice (ONPS2175 and 76) in Laboratory Medicine, students produced a paper-based portfolio which was submitted after the completion of their WIL placement at the end of November. This portfolio, often in excess of 150 pages, consisted of weekly journal entries detailing the activities undertaken in the various laboratories and supported by monthly feedback from the students' workplace supervisors. In addition to the portfolio, assessment tasks were required for the Principles of Professional Practice (ONP273 and 74). Here, students had to undertake a risk assessment analysis of their laboratory, complete an organisational structure assignment, complete a reflective essay on their placement and attend two on-campus seminars which included assessable activities.

At the end of November, the Professional Practice portfolios were submitted to an academic staff member for assessment. They could be submitted as hardcopy at the School office, or they could be emailed and were subsequently printed off. Upon submission of the portfolios, there was a week's turnaround time in which they were very quickly assessed to ascertain if they demonstrated the required competencies and students were thus awarded a pass or fail grade so they could progress (or not) to their final year. Following this, the designated academic staff member spent the next three months completing a thorough review of the portfolios. They were then returned to students when they returned in March the following year. Students were also required to show a Continual Professional Development (CPD) log of activities undertaken throughout their work placement and write a reflective essay of their whole placement experience.

The decision to trial ePortfolios in Laboratory Medicine was based on a number of factors. Firstly, issues had been identified around academics being unable to provide regular feedback and monitor student progress across student placement. This created issues as students received very little if any formative feedback on their Professional Practice portfolio throughout the year, so there was no way for them to know if they were meeting the required learning outcomes and competencies. There was also the issue of assessment workload on one academic staff member and the fact that students did not get their portfolios returned until the start of the next academic year. Students also felt that it was hard to maintain regular communication with their academic supervisors and thus maintain a sense of connection with the program and university. Secondly, it was difficult to monitor if students were meeting the required competencies and learning objectives uniformly across the various hospitals and laboratories. This is important as a way to maintain and monitor the quality of the student experience within the hospitals and laboratories and is also important for continued international program accreditation.

ePortfolios in Laboratory Medicine

ePortfolios, as online learning environments strengthen the university's ability to provide flexible assessment practices and support student career development. For students, ePortfolios enhance the opportunities to provide evidence of formal and informal learning, and position them for the transition to graduate employment. The university-wide

availability of student ePortfolio capability provides increased flexibility for the development of assessment practices that are academically robust and independent of time and place, hence they are being used for laboratory and hospital placements with the aim of providing a viable alternative for WIL assessment. The decision to introduce ePortfolios in the course was also considered a way to address the issues mentioned above, streamline processes and meet the Institute of Biomedical Science (IBMS, UK) international accreditation requirements.

This is a case study of work currently being undertaken at RMIT in Laboratory Medicine. The next sections will discuss the approach taken, the outcomes so far, including issued faced, and future directions for ePortfolios in Laboratory Medicine.

The approach: embedding ePortfolios in Professional Practice

ePortfolios were introduced into the Profession Practice placement courses as a way for students to record, reflect upon and gather evidence of the skills and knowledge acquired in the workplace and also in their formal and informal learning experiences. This was considered important in an era where Information and Communication Technologies (ICTs) are ubiquitous and where Web 2.0 technologies, e.g. blogs, wikis and social networking are used extensively by students in both their academic and social interactions on the internet. This was a chance to change practices from 20th century paper-based portfolios, and transform them into electronic portfolios commensurate with the knowledge economy and the modern era.

In 2008, students and industry partners were invited to voluntarily try the new ePortfolio system, PebblePad. Three laboratories volunteered, including two from the Austin Hospital and one from the Peter MacCallum Centre. In this initial trial, students used PebblePad to record their placement journal entries and receive feedback/comments from their supervisors in second semester. Both students and their supervisors were able to compare experiences and they all acknowledged the advantages of the electronic system. However, work was still required to streamline the recording processes to make using PebblePad easier and simpler for students and industry supervisors. In 2009 all students were asked to use PebblePad to record their journal entries as well as to submit their other assignments. Many students used it efficiently; however some students chose to submit their other assignments as email or hard copy. About 2-3 percent of students emailed their journal entries to their supervisors if they or their supervisor had difficulty with the webfolio setup or if they wanted to attach large documents as evidence.

In 2010, the use of ePortfolios to record and evidence WIL placements was made mandatory and ePortfolio use has been further extended and developed. At the start of the year, following a review of what worked in 2009, the issues faced and areas for improvement, a new and improved template was designed for student use. A template is recognized as a valuable scaffolded approach to facilitate student learning and assessment outcomes (Lawton & Purnell, 2010) and supports ‘ePortfolio-based learning’ (JISC, 2008, p. 6). Firstly, it was decided to reduce the number of journal entries from weekly to monthly entries. To facilitate feedback between students, workplace supervisors and academic staff, a process was developed whereby students would share their monthly journal entries with their workplace supervisors so they could comment upon them, then these would in turn be seen by the academic staff. It was hoped that this would create and triangulate ongoing feedback and communication across all parties. In order to consolidate the entire year’s assessment into one process, all assessment tasks from across the four courses of Professional Practice 1 and 2, and Principles of Professional Practice 1 and 2 are now incorporated into the template. By structuring the entire Professional Practice year’s assessment into an ePortfolio, it was felt that students would be able to make connections across the various courses, instead of seeing them as discrete entities.

The template was improved using the form builder tool in PebblePad and the webfolio wizard. The template was then placed within the course’s institutional space, called a gateway, so students could copy it into their own ePortfolio and work in it. The form builder allowed us to build bespoke forms for the different assessment tasks, i.e. the monthly journal entries which included the students needing to identify the learning outcomes and competencies they thought they had achieved in the month (see Figure 1 below), the risk assessment and the organisational structure assessment tasks and the CPD log. In addition to these, a detailed reflective journal was added so that students could reflect on their overall workplace experience. This journal also asked the students to give an example of an experience that demonstrated each of the learning objectives and competencies.

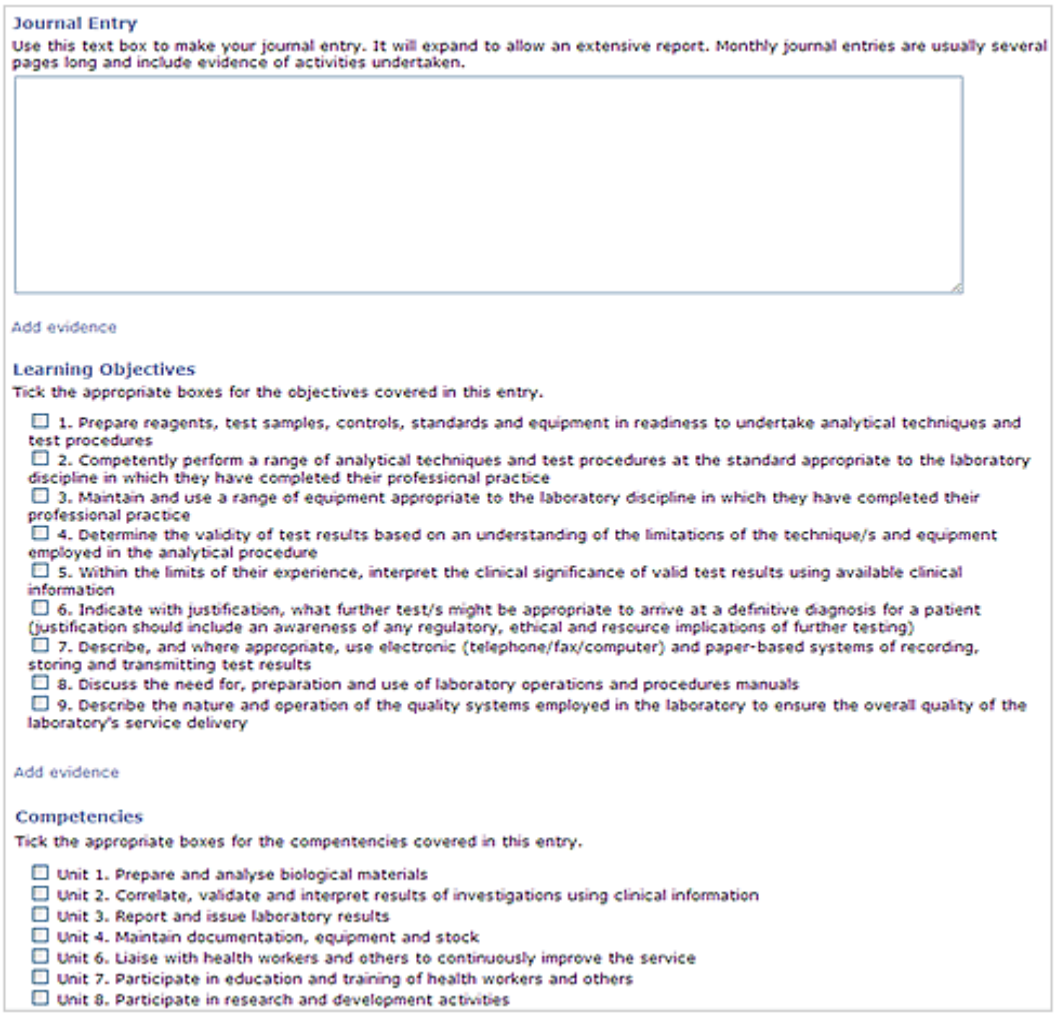

Figure 1: a monthly journal entry form

These forms were then placed inside a webfolio using the webfolio wizard (see Figure 2 below).

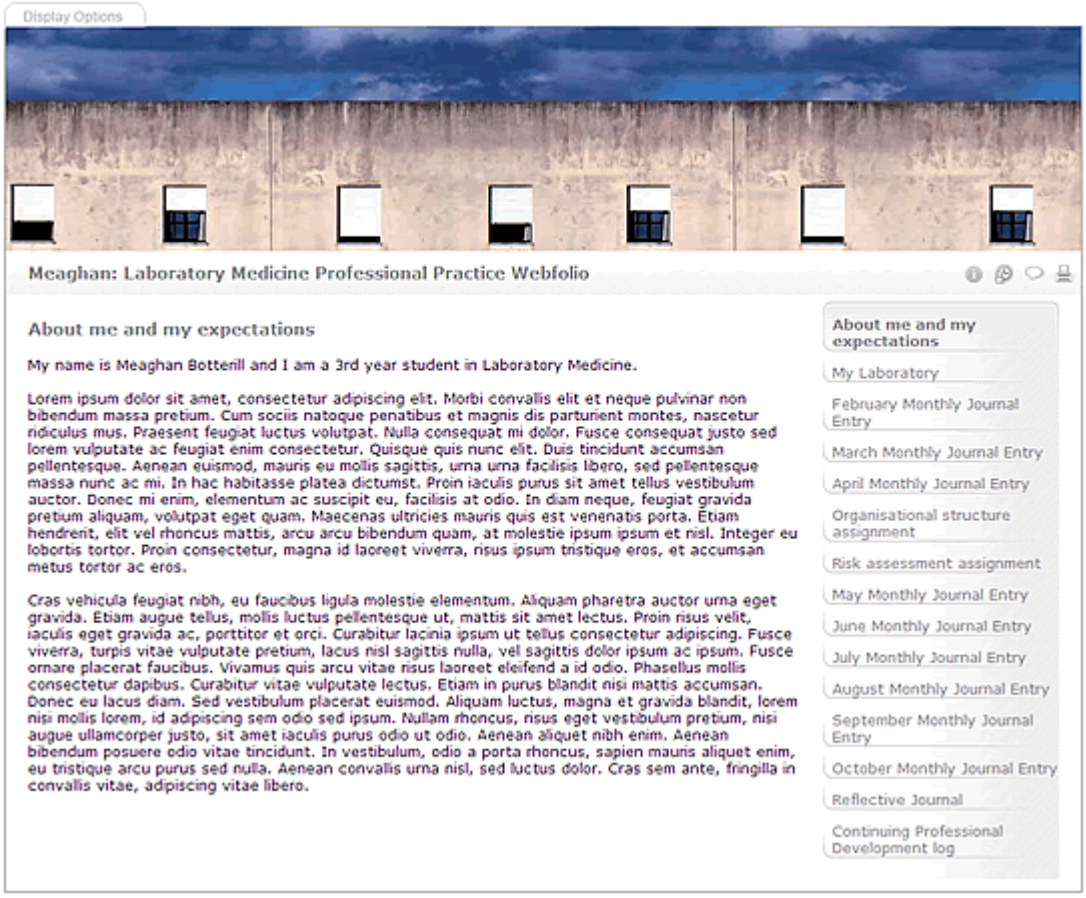

Figure 2: the webfolio template

Finally the template was placed in the resources section of the Laboratory Medicine gateway so students could copy it and use it throughout the year (see Figure 3 below).

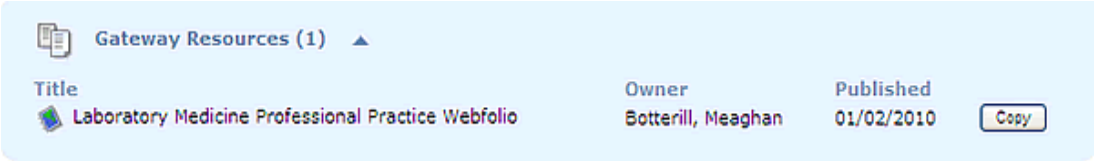

Figure 3: the template in the gateway resources section of the gateway

Once the template was developed and placed in the gateway, a hands-on induction session was held in a computer lab for all students, supported by specific instructions and step-by-step guides. In this, students were introduced to PebblePad, the Laboratory Medicine gateway and the template. They were shown how to copy the template into their ePortfolio, along with the process for sharing their monthly journals with their supervisors and publishing their webfolio to the gateway. There were also specific instructions developed for the workplace supervisors detailing how they could access their student's journal entries and how to make comments on them. Finally there was an induction session with the teaching team members and 'how to' guides written to support them also.

Outcomes

Students

The most important aspect of PebblePad from the students' perspective was that ePortfolios allows for multimodal artefacts, e.g. images, videos, audio files, and more traditional rich media files such as Word documents, PowerPoints, spreadsheets etc., to be collected and presented to different audiences as evidence of learning and skills development over time. Some students appreciated the three way communication process and their opportunity to respond to and

reflect upon comments from both industry and academic supervisors which overcame the lack of regular face-to-face meetings with both their supervisors together. This allowed them to relate their experiences while on work placement more readily with their academic learning and hence better understand the concepts taught and their real world application and utility. With the previous paper-based end of year submission which were not returned to students till the start of the next academic year, students got so busy studying their final year courses, that most never got an opportunity to link the feedback given by their academic supervisor to their actual work experience. However, even if some of them did relate the feedback back to their work experience, it was not easy to remember what was practiced on work placement possible up to a year ago and relate it to what was taught in second year.
Students also commented on the usefulness of PebblePad beyond industry placement as a resource for themselves and in some cases, they have started to use it for personal use. As students have been using and exploring PebblePad, many have come to realize that it can serve as a kind of extended resume for them. Additionally, they can use it not only within the RMIT to record their learning and achievements during their program, but also beyond their formal university experience and extend it into 'real' life.

The major issue from the students' perspective has been familiarity with the system and the assessment change to ePortfolio-based learning which requires regular input practices rather than last minute rushes. All students were given an induction session at the start of the year in which they had to submit a small assignment as a hurdle task into PebblePad. Those who then started using PebblePad early in their placement were more likely to remember how to use it and were able to submit their monthly journal entry to their placement supervisors. However, those who did not regularly complete their monthly journal entries or started them late, didn't have the same level of familiarity and confidence with the program, and hence they were also unable to assist their supervisors if required.

Program (including teaching staff)
From a program perspective, ePortfolios were introduced to improve assessment practices for students undertaking the compulsory 40 week Professional Practice placement in both local and international hospitals and laboratories which is required for professional accreditation. This has been achieved and has been a great success, and is assisted by the annual review of what has worked and still needs further improvement. This review process has been essential to the ongoing development of ePortfolio based learning and assessment in the program. Additionally, unexpected results have been the way that ePortfolios provide a unique way of fostering independent and connected learning across a field of study which allows students to link practice and praxis across different courses and activities. We believe that ePortfolios-based learning fosters independent learning and assists students to reflect upon, record and collect evidence of their learning and skills development over time which can therefore be used to support their personal, professional and academic development and to used demonstrate career readiness.

Staff appreciated the ongoing monitoring of student work and the ability to provide good quality, timely feedback. Unlike the previous paper-based portfolio, students often did not receive substantive feedback until after the completion of their professional practice year, so they did not have the ability to benefit from the feedback, work on their weaknesses nor the opportunity to discuss the possibility of gaining further experience in areas they needed most with their placement supervisors. Using PebblePad has enabled staff to ensure that students are provided with equitable facilities and support across the various workplaces and given the opportunity to meet the professional competencies and learning outcomes required in the program. This in turn complements the knowledge that students learn on campus and gives them the ability to apply it in practice. It has been a very useful tool in communicating with students off campus.

So far we have received positive feedback from the students and staff and there is a lot of interest being generated around the university. The only area of concern, raised by both staff and students, has been about technical issues such as speed and certain copy and paste functions. These have been addressed and resolved where possible. Some users feel they require more training as it has taken them a long time to get used to the system. However once they had experience and got over initial teething issues they have been able to appreciate the overall functionality of the process and system.

Industry supervisors
Responses from industry supervisors (n=6) were generally positive regarding the use of PebblePad as a way to manage / monitor student laboratory placement. A final evaluation will be undertaken with all supervisors (n=30) after placements finish. The supervisors who used PebblePad regularly from the start of their student's placement and had received an induction / training session were more positive than those who left it till later in the year. In general, those supervisors who felt discouraged or negative about using PebblePad were not given a proper induction at the start of

the year or had left it too long to remember how to use the system. Although all supervisors were given 'how to' guides for to support them, these was not as effective as face-to-face inductions. Thus, early induction sessions helped the supervisors to become familiar with the product and feedback processes. The industry supervisor induction process will be improved upon in 2011 through both site visits and the opportunity to participate in an induction session at RMIT.

The responses from industry supervisors can be put into categories, design issues (navigation) and technical issues. As mentioned, a number of supervisors had problem with familiarity of the software as this was a new process for many of them. There were some concerns about design issues such as finding the 'comment box'. The comment box is on the top right hand side of the webpage and the icon wasn't very obvious until it was pointed out. A number of supervisors also expressed annoyance with the need to login each time to access their student's monthly journals entries following email notification that the student had shared the journal entry with them. Some said that they were dealing with lots of emails each day and that they 'simply couldn't remember login name and forget their passwords'. However, one supervisor said saw this problem as an organizational problem and was able to overcome it by printing the login name out and placing it on the computer. Finally, several supervisors said that they would have liked to be able to annotate / make specific comments on various parts of the student journal entries. Unfortunately, this cannot be done in the current version of PebblePad. This has been addressed though and will be available in PebblePad 3.

The following comments from one supervisor typifies many of the responses:

> *I have found it to be an improvement over the old system of submitting the journal as students often got behind and this meant that they may be asking you to read pages and pages of notes toward the end of their placement. This was not an ideal situation for the student or the supervisor. So the PebblePad requirement that the journal is submitted to an RMIT supervisor means that the laboratory feedback is more current for the student and the effort is spread out*
>
> *I think that the email system is also a good improvement to ensure that the responses are actually coming from a supervisor. I also like the way that the student can attach the various pieces of evidence to their journal, which should be a great resource for them in the future.*
>
> *The only drawback is the inability to make changes to the student's submission with coloured or italicised responses. There is also no ability to change font or make bold for emphasis.*

Future Directions

In 2010, IBMS reaccredited the Laboratory Medicine program until 2014. One of the recommendations was the need for the Professional Practice placement to introduce graded assessment to replace the current competency based assessment, in order to comply with the assessment practices of other accredited programs. The use of PebblePad will make this easier to achieve as the final grades and results must be recorded within 2-4 weeks of the completion of student placements. Thus the use of ePortfolio based learning and assessment will allow for speedy review and examination as it will be ongoing process. A marking rubric will be developed to provide both academics and industry supervisors with a way to grade student progress at regular intervals. Therefore, this will provide a way to provide students with regular progress reports, quality feedback and graded assessment throughout the year.

Conclusion

The use of ePortfolios in Laboratory Medicine to record student placement has been a success. Generally, the experience from students, academic staff and industry supervisors has been positive, but there is a need to continue to develop capabilities in all stakeholder groups. The main area of concern has been familiarity with the software and processes, although this can be reduced substantially with induction sessions and early use of the system to reinforce practices. The issues that led to the trial of ePortfolios to record professional practice placement have all been addressed and ongoing annual reviews of the use of ePortfolios in Laboratory Medicine will further develop and evolve ePortfolio learning across the program.

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