Monitoring and evaluating clinical skills using a customised online learning portfolio

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The Context

In 2014 PebblePad was introduced into the Bachelor of Radiography and Medical Imaging (Hons) (BRadMedImg) program as an innovative clinical learning platform to replace the existing paper-based approach and improve communication between university staff and clinical supervisors. Previously students had used paper-based workbooks that contained information and space for almost everything they needed to read and complete for their clinical placements. Additionally university staff regularly visited students and clinical supervisors during each clinical rotation. Over time it became obvious we needed to move into an online environment that would overcome restrictions associated with the traditional approach and engender more effective monitoring of student progress.

The BRadMedImg is an integrated academic and clinical 4 year degree program with an overt commitment to developing critically reflective radiographers with the multifaceted skill base to match (Baird 2009). The year level clinical workbooks used contract learning as a vehicle to facilitate the development of radiographic technical and procedural skills and radiographic professional skills. Despite the best of intentions these workbooks were seldom seen by clinicians and students as testament to the whole journey from student to registered radiographer. Workbooks failed to foster a "capstone" effort of capturing progression.

With the inception of the Medical Radiation Practice Board of Australia (MRPBA) in 2012 and the subsequent publication of the MRPBA professional capabilities framework, it became imperative to establish a more integrated and permanent system of monitoring and evidencing student clinical progression. In an environment comprising in excess of 100 clinical sites the introduction of PebblePad to our clinical partners and students was arduous and challenging. Nevertheless, persistence has had its rewards. PebblePad is at the heart of our clinical programme, with
students and clinical partners now understanding that PebblePad is much more than simply a repository for clinical documentation.

The Problem

Unsurprisingly, given current trends, online learning in the health professions has gathered pace and radiography is no exception (John-Matthews, Gibbs, Messer, 2013. Wertz, Hobbs, Mickelsen, 2014). Indeed in keeping with the Better Teaching Better Learning agenda that directs educational endeavours at Monash University (2015), health science students are increasingly experiencing a mix of in-class and online delivery of core content. However this is not as prevalent in the recording of radiography student experiences during the delivery of clinical education (Kowalczyk, 2014). Monash University was the first undergraduate radiography course in Australia to implement a wholly online clinical studies repository for all aspects of clinical placements from student led activities, clinical skills assessments and clinical liaison.

There were multiple drivers for change, internal and external, large and small.

- Paper-based clinical placement workbooks had reasonably large yearly costs.
- Using paper-based assessment did not readily support personalised learning through timely and iterative feedback.
- Managing paperwork for clinical placements over four years was cumbersome, e.g. keeping copies of student work for audit purposes and for gathering of exemplars. The probability of paper copies being lost or damaged was also higher.
- University assessors were unable to view and monitor student work-in-progress while the students were on placement. This limited the synchronicity of communication between University staff, clinical tutors and students.
- The team needed a system to support the aggregation and display of radiographic images.
- The PebblePad framework, in particular the workbook function and the inbuilt reflective templates, allows students to readily evidence their development of professional and technical skills in accordance with course philosophy. Students are uploading anonymised copies of their own radiographs.
- The Better Teaching Better Learning Agenda of Monash University.

The Approach

Introducing online documentation in clinical sites is fraught with difficulties (Chow et al, 2012). Thus we adopted an incremental hybrid approach in an effort to ease the transition for all stakeholders into the online environment.
The initial stages were as follows:

- Semester 1, 2014, hybrid phase: rapid rollout student led n=187
  - Year 3 (specialised clinical contracts on PebblePad, student only) + printed Workbooks
  - Year 2 (specialised clinical contracts on PebblePad, student only) + printed Workbook across year
- Semester 1, 2014, External “champions”
  - Year 1 (split cohort, PebblePad or printed Workbook, student only) with some elements on PebblePad for selected externals
- Semester 2, 2014, (in order of the clinical placements) support phase for students. Externals added n=98
  - Year 2 (as above)
  - Year 3 (PebblePad only as a series of Workbooks)
  - Year 1 (PebblePad only as a series of Workbooks)

We make use of templated clinical liaison feedback forms and grading rubrics. These ensure there is a similar approach across all staff. We have begun to make use of data analytics which PebblePad affords. We can download results and run statistical analyses to identify areas of weakness. These areas can then be addressed within the curriculum.

We have been able to communicate with students and busy clinical supervisors in a more effective and timely manner. The students use Folio Pages to create a personal and professional profile, deemed “Bios”, as an insight and introduction about themselves for their clinical sites before they attend.

We have been able to orchestrate electronic placement handovers between placements with minimum additional effort.

Students have immediate access to feedback from multiple sources such as faculty and clinical to support their learning.

The Results

The results exceeded initial implementation objectives:

- Reduction in the administrative burden by allowing simultaneous multi-user access at one time.
- While the budgetary outlay has been high in the transition phase, the move to an online environment is a long term investment. There has been considerable effort to showcase achievements outside of our department and with increasing faculty interest and involvement now happening ongoing costs will be significantly reduced.
- Flexible delivery of teaching and learning.
- Dynamic links to current evidence based practice repositories.
- Evidence of longitudinal learning with development of reflective skills (Y1 –Y4).
- Synchronous and asynchronous formative feedback and assessment.
- Media display (image capture) of skill acquisition demonstrating problem solving capacity (See appendix A for an example).
- Students can more confidently understand what it means to be registered as they are required to actively evidence each one of the registration requirements. Further to this, in year four they will use their eportfolio to answer the question “Why should I be registered?”

Survey of year 2 students (2016)

- 88% agreed that ‘The introduction to the clinical portfolio (tutorial) meant students knew how to access and navigate their clinical studies requirements while on placement.’
- 70% of students found PebblePad easy to navigate.
- 88% agreed that the image collection helped scaffold their clinical development.
- 86% agreed that the reflective reports helped scaffold their clinical development.
- 98% agreed that the feedback in the clinical skills assessments enabled them to identify areas for improvement
- 91% agreed that the activities in the Induction Programme raised their awareness of emergency procedures
- 85% of people agreed that they could appreciate the advantage of PebblePad (we asked specifically about using an online platform) for clinical documentation.

Lessons Learnt

As mentioned, there are many obstacles to introducing online documentation in clinical environments (Chow, 2012). Planning is therefore essential. We adopted an incremental hybrid approach of the online platform alongside printed workbooks initially in an effort to ease the transition into the online environment. The timeline for introduction was significantly reduced due to ever increasing pressures to transition to wholly online workbooks. However, with a clear strategy in place it was much easier to re-adjust the timeline in accordance with the blueprint.

There are various degrees of digital literacy across stakeholders. It can be that those you most expect to have the requisite skills don’t, and the opposite can also be true. Do not underestimate them. It is also important to remember that things that might seem obvious to you are not to others.

We concur with the observation made by Chow et al (2012) that successful implementation of online clinical documentation is highly dependent upon the attitudes of the end user. We quickly
realised that the attitudes of the academic staff involved in implementation at close proximity with the platform are as crucial as those of the end users. Be prepared for the difficulties associated with change, believe in what you do, and relish the victories!!

In Brief – Showcasing ‘Future Readiness’ with PebblePad

• Students are capturing their skill development across placements rather than within placements, moving from an insular mindset to a more holistic approach.
• The students start writing their “Bios” in semester 2, year 1 with some basic information about themselves. To support students and give them confidence for job interviews they are introduced to graduate position descriptions in year 3 closer to application for a supervised practice position and onwards to job searches towards the end of year 4. Students interrogate these descriptors, mining them for the key skills required in the workplace. They outline their own commensurate skill mix to address these key selection criteria within their Bio. In essence these Bios naturally evolve into cover letters that students develop over three years (see Appendix B for an example of a student Bio).
• Students record their ongoing professional development and collate evidence in preparation for graduation and registration in the form of a rich eportfolio using multimedia such as images and blogs. This eportfolio will form part of their final year Clinical Portfolio submission. Students are introduced to the concept of a personal professional eportfolio in semester two, year one. They are provided with guidance throughout the process with regular tutorial sessions in year 2 and 3 (See appendix C for support framework). The framework for their eportfolio is based on the professional capabilities articulated by the MRPBA (2013). This eportfolio makes students aware of, and understand, the expectations for registration as a professional. Students are expected to provide evidence in their eportfolio to address each registration “domain”. While the eportfolios are based on core curricular activities, the nature of PebblePad and eportfolios means students can look beyond these to extra-curricular activities which are equally valuable in a student’s development. (See Appendix D for an example of a student’s eportfolio).
References


Appendix

Appendix A: Image collection and discussion

Examination Requested and Clinical Notes:
This patient came in with a request for a hand x-ray as he presented with a large swelling on his middle finger and a foreign body was listed in the clinical notes. For the exam, all the routine hand projections were implemented and no special projections were taken as they were not deemed necessary.

Patient Condition:
The patient presented in a wheelchair and was not fully conscious so I had to get his ID from his wife. During the examination, the patient was unresponsive to any verbal instructions that I gave him and so this proved incredibly difficult in terms of getting him to maintain the positions that I placed him in due to him not being aware that he needed to stay still. As a result, he would naturally relax his hand which meant that I was not able to get a perfect image and I often had to run to take the exposure to ensure that there was not much chance for him to move.

Adaptations to Procedural Technique:
For some of the projections, my supervisor had to stay in the room holding the patient's hand in position while I prepped the tube. When the tube was prepped, the supervisor would let go and run to the control panel so that I could have time to quickly take the x-ray.

Patient Limitations:
The PA was the best of the three images taken as the patient's hand was flat against the board and so did not need to be propped up with sponges or sandbags. After reviewing the image, it also became obvious that the patient had severe OA and so this made it difficult for him to straighten his fingers as they were naturally bent. His joint spaces were also quite degraded and so obviously, acquiring open joint spaces on the actual image was not really possible. In anticipation of the patient moving due to him relaxing his hand whenever I positioned it for the PA, I decided to open up the collimation a bit more so as to prevent from cutting off any anatomy should he have moved during the exposure time.

Learning Outcomes:
Given that I haven't had much experience with positioning real patients, I was fairly proud of my efforts during this examination as the patient was quite difficult and definitely was not something that I was used to or well practised at dealing with. Another important skill that I learnt from taking this hand series is to know how to judge when an adequate image has been taken. I think one of the hardest things about taking images of uncooperative patients is to know that it is not always possible to get a perfect image. Therefore, I think it is a really essential skill to not always be hung-up on acquiring
Appendix B: Bio

My name is Jessica Woods, and I am currently a 3rd year Monash student. My previous placements have been at a range of both private and public hospitals, and I am now undertaking my first rural placement for my second semester clinical rotation. I am enjoying the challenges that go hand-in-hand with the clinical environment.

Last year, I was lucky enough to be selected as one of three students to represent Monash in an International Radiography Competition, held in Taichung, Taiwan. It was an incredible experience, which I found helped me to gain a greater understanding of the role of radiography in other parts of the world. The theme of the competition was “Skull Radiography.” This was particularly fascinating, as skull x-rays are rarely performed in Australia. This meant we, as a team, had to spend a lot of time refining our skills in performing skull x-rays and pay great attention to the intricacies of skull positioning. We wrote an article detailing our experiences which was published in the AIR’s “Spectrum” magazine. I have attached the article below so that you are able to read more about the trip.

I initially enrolled in radiography as a pathway to sonography - I am very interested in ultrasound, and ideally would love to study post-graduate sonography and specialise in obstetrics and women’s health. However I have thoroughly enjoyed my time spent in x-ray and CT.

Outside of university and clinical studies, I tutor Maths and English for students ranging from Grade 3 to Year 12. I also work part time at Eltham Stadium, as a functions team leader. I am the youngest of 6 children, and am now becoming bombarded with lots of new nieces and nephews - it is amazing!

I look forward to getting to know each other, and learning from the range of staff and experiences that your site has to offer!

Appendix C: Overview of student support for development of professional ePortfolios

Appendix D: Example of student ePortfolio

https://v3.pebblepad.com.au/alt/monash/Asset/View/ykgr8r465ytrhxzj9g99zZz6yy