

CASE STUDY

The development and implementation of an electronic capture resource of clinical skills in medical education

Mark Hancock & Marjorie Collaco, University of Birmingham, UK



PEBBLEPAD CASE STUDIES

STORIES OF INNOVATION TOLD BY THOSE CHARTING NEW COURSES IN LEARNING, TEACHING AND ASSESSMENT.

THE CONTEXT

The aim of this project was to explore the possibilities of replacing a paper-based system supported by a legacy database (IntraMed). The data was captured from paper-based records with reference to clinical procedural skills. This is a requirement of the undergraduate medicine programme for students in their clinical years of study from year 3 – 5.

The retirement of IntraMed presented the opportunity to enhance the existing system using some immersive approaches. During the academic year 2018/19, the Higher Education Futures Institute (HEFi) Digital Partnership and Development Manager lead in the college of Medical and Dental Sciences led on an initial horizon scanning project to identify alternative software platforms for the Clinical Skills Passport development. The aim was to identify a tool for students that was accessible, both offline and online, and that students could use on their mobile devices to record their activities. This coincided with the institutional license procurement of PebblePad.

THE PROBLEM

Initial findings showed there was a lack of commitment to using a dedicated digital resource for clinical skills capture across the majority of medical schools researched nationally. We identified a clear need to innovate in this area. This presented an excellent opportunity to explore, develop and work in collaboration with PebblePad and the Birmingham Medical School to design and develop a passport which met the specific requirements of the University of Birmingham curriculum.

The existing process for skills capture was reviewed to understand the exam board and programme accreditation requirements. The paper passport measures the development of procedural skills that the General Medical Council requires medical students to be competent in at graduation.

The paper document comprises sections for General Aspects of Procedural Skills, Diagnostic Simulations, Therapeutic Simulations, Diagnostic Procedures, and Therapeutic Procedures. It was used by all three placement years of the medical education programme (Years 3, 4 and 5) to capture handwritten sign-off of clinical skills, which students then entered into IntraMed. Both the handwritten and uploaded data was cross audited by the programme administration team before the data was exported in report form and presented to the exam board.

There were significant costs associated with this process including the production of the paper passport for a cohort of around 400 students per clinical year of study and the administration costs of collating and cross auditing the paper copies against the database at the end of each academic year to produce exam board ready data. Other disadvantages were that the data was reliant upon student entry and that the paper passports had to survive being taken into clinical placement on a daily basis for the full three clinical years.

Clinicians have repeatedly reported that they are time poor, with particular reference to observed practice sign off. It is therefore imperative that the schools involved in placement practice provide documentation that enhances the quality of the assessment, as well as not impeding on the patient experience and the delivery of the clinical practitioners. The process needs to be user friendly and efficient, and also address the needs of the less tech savvy users.

THE APPROACH

Understanding the functionality and its limitations

Working in partnership with PebblePad, the HEFi Digital team identified several tools in the software that would meet the requirements of capturing procedural skills sign off. PebblePad demonstrated the identified functionality and, alongside the institutional license already being procured, was selected as the ideal resource base to develop on. The HEFi Digital team were keen to take on an institutionally supported digital platform to minimize ongoing development and sustainability costs.

The student experience

The student experience, including the number of clicks to perform each task, was continually raised as a consideration during the design process. The academic view was to minimise the number of additional steps required when compared with the paper-based passport process.

Different options were explored to satisfy the programme team's requirements. The first iteration was built using the Capability functionality on separate pages within a workbook. This introduced issues around the accuracy of reporting data and required the student to complete more steps to capture evidence for each clinical skill using a digitally signed-off form, sent as an asset back to PebblePad from the PebblePocket app. This approach was thought to rely too much on the student selecting the right evidence and attaching it to the correct place within the workbook and could result in erroneous data. It was also thought to be too time intensive from student perspective.

An alternative to this involved the use of Activity Logs within a workbook, with each clinical skill being matched to a form completed through PebblePocket. The tag attached to each form matched the criteria the Activity Log searched for, resulting in a list of signed-off skill forms automatically populating within each Activity Log. The data could then be sourced via reports to indicate how many skills each student had completed. However, there were additional features included with Activity Logs, such as the recording of hours and points, which the team felt would confuse the students. We therefore required a more efficient and effective process.

Following feature enhancements in PebblePad which enabled the number of files in a Collection to be reported upon, Collections were used in the workbook design instead. These worked in partnership with the PebblePocket app offline forms functionality. This resulted in the same outcome as the Activity Log approach but without the unnecessary distraction of tracking hours and points. The team decided this would be the best workflow.

<u>Engagement</u>

The Medicine programme had a high level of expectation in terms of the project team leading on the wider engagement of the tool in readiness for the pilot to launch. We were required to facilitate initial research into the students' views of digitising their resource, addressing the impact of introducing a digital resource in the middle of their clinical placement years, and whether they would be prepared to use their own device for the digital signature capture on placement. In addition, we needed to determine if any students did not have access to smart devices, thus making the digitisation exclusive. Students responded positively and no issues were faced in terms of access to hardware or reluctance to use their own device for the digital signature capture.

Over the course of the UK summer months the project team continued their engagement of the placement Heads of Academy and the programme management team, as well as third parties such as undergraduate coordinators from placement trusts.

The pilot induction was then agreed and delivered to students in September 2019, to two year-group cohorts, on a volunteer pilot sign up basis. Sign up was low due to students already using observed sign-off evidence in paper form. Out of a group of 800 students, just 50 joined the pilot feasibility test from September to December 2019.

Implementation

Screencasts were created for both students and the administration teams to provide clear instructions for using the digital passport. Optional induction sessions were facilitated by the project team. This was in addition to face to face support and email/telephone correspondence throughout the pilot.

<u>Evaluation</u>

The project team collated all the feedback from users throughout the pilot. This included examples of user experience stories and reported frustrations from the pilot group students. A full evaluation study was completed in December 2019 in addition to a management team review and a student focus group. The evaluation resulted in an agreement to roll out the resource across all clinical years in readiness for the academic year 2020/21.

By September 2020 there will be approximately 1200 medical students using the electronic clinical skills passport to capture digital observed practice sign-off across all placement trusts associated with Birmingham Medical School.

<u>Next Steps</u>

In readiness for the next academic year launch, we are extending the tool resources to include year 5 clinical placement skills (The year 5 cohort was not part of the initial pilot and therefore no resources were designed originally for year 5 skill capture). There were also a small number of amendments based on the evaluation outcomes that will be addressed and redesigned ready for the 2020/21 academic year.

THE RESULTS

- The evaluation concluded that the design and pilot implementation met the needs of the initial project brief to produce a digital version of the paper-based passport.
- Digital observation functionality met the requirements of clinical sign off.
- Offline functionality in the clinical environment worked effectively.
- Students on the pilot group engaged well and found the software easy to use.
- The output data produced by the digital capture of procedural skills met the programme exam board data requirements for accreditation.
- The data extraction process was found to be much more efficient than that of the current paperbased resource.

Initial feedback identified several positives including a cost reduction in moving from paper to digital, resource efficiencies in the programme administration team, cleaner data provided for exam board accreditation, and the ability to track live student engagement and completion. Possible performance or wellbeing risks can also be highlighted at an earlier stage. From the student's perspective they found it easier to maintain a digital resource which prevented loss or damage to important data.

There were concerns that clinicians and other healthcare professionals would be wary of engaging with technology. Throughout the pilot they had to provide their email address with their signature in order to receive a daily digest report of signatures they had added. This was deemed too time intensive for healthcare professionals whose number one priority was patient care and completing multiple tasks efficiently. This step will be removed for the full roll out.

From a patients' perspective there was resistance to students using a mobile device on a ward or in a surgery. Further investigation from the focus groups identified the need for more explanation to the patients of the reasons for the device use in a clinical environment.

As volunteers, the pilot group of students were empowered to be trail blazers in terms of introducing innovative approaches to what was potentially known as a very 'old school' process. Other than general set up challenges, the majority of the pilot group agreed that the benefits far outweighed the negatives. As the pilot continued, support issues reduced in volume once students had engaged and this became a standard way of working for them.

It is beyond the scope of this paper to evaluate the impact of the choices made. Here I have simply begun to identify the factors involved in developing assessment choices. More specific analysis of more stories would usefully shed light on the other enabling factors and barriers to practice.

LESSONS LEARNT

Academic Engagement

Stakeholder engagement of the academic team was essential to ensure they understood and believed in the product we designed. Throughout the design process they consistently raised concerns about their requirements not being met by the software and the potential impact on student experience. Without their full buy in to the project, they would be unable to effectively engage the student body to have a positive first response to the new process of skills capture using PebblePad. Detailed awareness, engagement and managing expectation (about the software capability) was key.

Student Usability

Medics in their clinical years are time poor and therefore have little time to adapt to new tools with minimal previous experience. The clinician sign-off process needed to be quick and efficient and not impact on students prepping the sign-off in the app or on clinicians who are constantly being requested to sign-off by multiple students in one location. Students want a flawless user experience in both the desktop and app (offline) platforms, with minimal effort to view progress and any outstanding learning that they are required to complete.

Sustainable enhancements to the software

The design and build requirements of this project stretched the PebblePocket functionality which had not been previously used in the same way by other institutions. We identified several development potentials during the pilot stage and these suggestions have been raised with the PebblePad development team. Our ongoing relationship with PebblePad is key in terms of influencing their roadmap of development and being aware of the latest functionality. This will ensure that we will remain focussed on delivering the most effective and up to date version for our students. The student experience will remain the focus of ongoing review and development.

IN BRIEF

- The PebblePocket app can effectively replace the student paper-based process.
- The new digital system will be more efficient and quicker.
- The PebblePad workbook will show each students' progress in clinical skills and help to showcase the skill levels they have achieved to clinical staff during their study and for professional portfolio requirements.
- Using a mobile device is a new approach for students whilst on placement and requires explanation to patients.

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GET IN TOUCH

There are an awful lot of things that make PebblePad unique. Not least the fact that it's a platform designed by educators for educators. Indeed, the PebblePad team is bursting to the seams with innovators and practitioners, all of whom learnt their craft in teaching roles. If you want to talk to a team who really understands your world, get in touch.

PebblePad HQ (UK)

PebblePad North America

PebblePad Australasia

01952 288 300

(864) 650 5406

0400 899 820

- ✓ hello@pebblepad.com
- https://twitter.com/PebblePad
- in https://www.linkedin.com/company/pebblepad