Using the ePET portfolio to support teaching and learning in Medicine: Lessons from 3 Institutions

Simon Cotterill, Tony McDonald, Paul Horner
Newcastle University

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Introduction

There is a high level of interest in ePortfolios because of drivers for personal development planning (PDP) within the HE sector as well subject-specific drivers in areas such as Medicine. This case study documents the educational aspects of implementing and embedding the ePET portfolio (http://www.eportfolios.ac.uk) at 3 Medical Schools in the UK.

Aims of this case study

The case study has a focus on teaching and learning issues and in particular on how ePortfolios can be used to support a diverse range of requirements. As such it is intended to be of interest to the wider community as well as those using specific software. It will help broaden the understanding of how ePortfolios can be used to support the curricula.

The case study aims to detail the policy drivers, design rationale, and document the implementation strategies at the partner sites. It also aims to document some of the ‘practical lessons’ learnt in adopting a technology approach to portfolios and collaborating on the development of new tools within ePET. Some of these ‘lessons’ may be specific to the ePET community, but most are of wider applicability. The case study will utilise semi-structured interviews of senior curriculum staff at the partner sites and summarise and provide references to existing student evaluation and feedback.

The ePET portfolio

The ePET portfolio was developed as part of the HEFCE FDTL-4 and JISC Distributed eLearning programmes.\textsuperscript{1,2} The software has been designed to be flexible in order to support a range of different educational requirements (eg. PDP, reflection,
formative and summative assessment) and provide a framework which facilitates closer integration with subject-specific curricula. ePET has been adopted in a variety of institutions and regional projects. This particular case study will document the implementation of ePortfolio in Medicine at 3 different institutions (Newcastle, St Andrew’s and St George’s) where it has been customised for different purposes.

ePET is a component based portfolio which gives it the flexibility to support diverse pedagogic and curricular requirements. Terminology, learning outcomes/skill sets and look and feel can be customised on a programme basis. Initially developed in Medicine as part of an FDTL project it has since been applied in diverse subject communities including social sciences and the arts, now with over 12,000 users. It has been further enhanced in a number of subsequent projects including 2 JISC funded regional ePortfolio initiatives and interoperability projects. ePET has been developed using Open Source tools: Zope, Python and MySQL. It is freely available to the UK FE/HE community.

Policy Drivers
There are national policy requirements in Higher Education to support progress files and PDP (NCIHE, 1997 and QAA, 2001). Also, within Medicine there have been increasing requirements to develop independent life-long learners with the skills and attitudes appropriate for assessment, appraisal and professional revalidation. These are reflected in national policy directives for medicine and indeed have been a long-standing ethos of the Medical programme at Newcastle. In common with other vocational courses, there are growing demands to assess attitudes and behaviours. These are less amenable to traditional methods of assessment and in this respect portfolios may become an important part of the assessment strategy. It is important that curricula and assessment strategies, including online learning environments, are responsive to these changing policy requirements.

Methods
We conducted semi-structured interviews in conjunction with formal and informal feedback and would like to thank the following:

Newcastle University (Geoff Hammond, Philip Bradley)
St George’s University (Terry Poulton, Adele Atkinson)
St Andrew’s University (Jim Aiton, Susan Whiten, Julie Struthers)

Overview of ePortfolios at Newcastle University
The ePET ePortfolio was first introduced into the MBBS curriculum in the 2003/4 academic year and was developed as part of a collaborative FDTL-4 project involving 4 Medical Schools (http://www.eportfolios.ac.uk/FDTL4). The portfolio was developed on a ‘stand alone basis’ and later integrated within the bespoke VLE (the ‘Learning Support Environment’) used on the MBBS programme which has an outcomes based curriculum.
Initial implementation and evaluation

The portfolio included a reflective diary, record of patient, family visits, record of meetings with personal tutors, log of learning outcomes, and a CV. Initially, during the pilot period, students in Phase I had the choice of using a paper version of the portfolio or the online version. Initially engagement was modest, with approximately a third of students using the online version of the portfolio, a third the paper-based portfolio and the remainder not using it significantly. We involved a Stage 4 student in the evaluation of the ePortfolio and he presented the results at an international conference. The pilot produced a ‘proof of concept’ and over time use of the portfolio evolved including use to support summative assessment of Student Selected Components (SSC) and to support an annual appraisal scheme. A ‘good fit’ with the curriculum took a number of years.

Portfolio to support Student Selected Components (SSC)

SSCs provide an element of student choice with learning opportunities outside the core curriculum. During Stage 4 of the undergraduate Medical Curriculum at Newcastle University students undertake 3 SSCs over a consecutive period of 21 weeks. The SSCs provides students with the choice of exploring a new subject (medical or non medical), or consolidate an area of learning that you have already encountered, or explore a topic in greater depth. The SSCs have an emphasis on self-directed learning which is important in preparation for continuing professional development and regular revalidation after qualification.

A structured ‘Learning Outcomes and Action Plan’ was specifically designed to support the SSCs. Students were required to identify intended learning outcomes (in negotiation with their supervisors). For each outcome students state how they would be achieved and how their attainment would be measured/quantified. During the SSCs students reflected against these outcomes and evidenced their achievements. At the
end of the SSC both intended and unintended learning outcomes are reviewed. In addition students could also record meetings with their SSC supervisor and make entries in a learning diary.

### MBBS Stage 4 SSC Portfolio

**Option Details**

- **Name:** Simon Cotterill
- **SSC:** Accident & Emergency Medicine
- **Supervisor:** Dr Jan Smith
- **Dates:** 06/01/2004 to 20/02/2004

### Learning Outcomes and Action Plan

<table>
<thead>
<tr>
<th>Learning Outcome</th>
<th>How will this be achieved?</th>
<th>How will this be measured/quantified?</th>
<th>Action to be undertaken</th>
</tr>
</thead>
<tbody>
<tr>
<td>After completion of the option module, the students should be able to proficient in various clinical skills including the diagnosis of fractures and other acute orthopaedic conditions, the reduction of fractures;</td>
<td>Practice in the Clinical Skills lab and, where appropriate, practice in the A&amp;E department in clinical interventions with patients.</td>
<td>Direct observation of clinical interventions with A&amp;E patients by Consultant or appointed Sp.R</td>
<td>Arrange sessions in clinical skills lab on Friday afternoons to avoid clashing with clinical duties</td>
</tr>
</tbody>
</table>

*Figure 2. Printable output from the SSC Learning Outcomes and action Plan*

Initially completion of the SSC section of the ePortfolio was mandatory, but not formally graded. However, following the successful evaluation\(^{14}\) of the ePortfolio for SSCs, supervisors are now asked to grade their student’s portfolio and this contributes to their overall marks for the SSC. The grading criteria have been refined in response to feedback from supervisors.

**Use of ePortfolio to support annual appraisal**

Appraisal can play an important role in formative development for undergraduate medicine and other health professions.\(^{11,15}\) They can also help students prepare for the regular appraisals and assessments that play an ongoing part of their professional careers. At Newcastle University we extended the use of ePortfolios to support annual appraisal in 2005/6 supported by a Newcastle University Teaching Fellowship.
Students collect evidence against ‘high level’ learning outcomes and skills (9 outcomes in Stage 1 and 13 from Stage 2 onwards) in the ‘My Evidence’ section of their portfolio. Against each of these learning outcomes the student can add evidence (reflective accounts, uploaded files, links etc.). As summary of evidence for each outcome is also required. The summary has a limit of 200 words (based on good practice from QUT, which was effective in avoiding very lengthy and potentially less coherent summaries, which are difficult for appraisers to read.). The summaries of evidence from the portfolio were then used to form the foundation for an annual face-to-face appraisal. The reflective accounts are unstructured records, though the ‘STAR-L’ framework was suggested (Situation, Task, Action, Result and lessons Learnt). This was adopted as a way to help structure reflections about an experience in such a way to make the meaning and outcome of the experience more easily identified and communicated to others.

In 2005/6 Stage 1 students were required to evidence their achievement of the learning outcomes in their ePortfolio. A dedicated training session was provided for students on the use of the portfolio and the appraisal process. Towards the end of the academic year students produced a summary of their evidence of achievement of these learning outcomes and a learning plan for the next year in their ePortfolios. These summaries were then discussed in a one-to-one meeting with an appraiser. There were 8 appraises and each appraisal session was scheduled for 15 minutes. The appraiser ‘signed-off’ the portfolio as ‘satisfactory’ (where appropriate). It was not formally graded but was a pre-requisite for progression.

Evaluation was predominantly positive16 (70% of students found the appraisal was a positive experience and 58% felt that having had the appraisal would influence the way they approached their learning next year) and the annual appraisal process was rolled out across all 5 years of the MBBS programme. Timing of the appraisals was brought forward, based on the feedback received in the first year in which appraisals were too close to exams.

Key Points

The ePortfolio is embedded within the MBBS curriculum and supports reflection, annual appraisals and summative assessment of SSCs.

It took many years for the portfolio to become embedded and to find a ‘good fit’ with the curriculum.

‘Buy-in’ and ownership by senior curriculum staff is very important for successful implementation of the ePortfolio.

Use of ePortfolios can be effective in supporting an annual appraisal scheme but this can be costly in staff and student time.

There can sometimes be confusion between ePortfolios and paper-based logbook/portfolios used in specific parts of the curriculum so it is important to differentiate between these.
Overview of ePortfolios at St Andrew’s University

The Bute School of Medicine at the university of St Andrew’s began using the ePET portfolio when they joined the collaborative FDTL ePortfolios project in 2003/4. The ePortfolio was customised to support independent learning, self-evaluation and peer review for students on the three year BSc Honours Degree in Medicine at the University of St Andrews. Because ePET was developed on a component basis it was possible to incorporate some bespoke sections to support specific case-based teaching requirements and peer review of clinical skills. The ePortfolio is hosted by Newcastle University but has been customised with the ‘look and feel’ of St Andrew’s.

Figure 3. The ePortfolio at the University St Andrew’s

Patient scenarios – Case based learning

A major component of the clinical context of our teaching is provided by a series of patient scenario workshops which are integrated with curriculum content to illustrate the clinical application of the basic sciences to common medical conditions. The scenarios are designed to engage students’ curiosity and to motivate them to explore. They also provide a focus for clinical skills training and an introduction to clinical reasoning. Student led, small group discussions and presentations (8 students per group) encourage the application of prior knowledge, the acquisition of new knowledge and provide a forum for the discussion of appropriate professional attitudes. Students use their portfolios to identify their own learning goals arising
from these workshops, to record the acquisition of key clinical skills and record peer assessment of skills practice. The ePortfolio helps students co-ordinate the learning activities associated with each scenario and identify their perceived learning needs under the headings of knowledge, skills and attitudes.

**Clinical Skills and Peer Assessment**

The clinical skills associated with each scenario are listed and students are able to detail their own learning objectives, any problems encountered in trying to attain the objectives and a record of practice associated with each each skill. The clinical skills tutors emphasise the importance of maintaining competency through practice and repetition and to emphasise this, a ‘Clinical Skills Review and Assessment’ tool is used to provide documented evidence of skills acquisition. Students are expected to act as a peer reviewers to monitor the clinical skills of other students, and have their own skills reviewed by their peers. Data shows that each student commonly reviews the skills of between 2 – 5 other students. Key skills are identified for formal review by clinical tutors and students are able to record successful assessment of skills at practical examinations. The skills review process is logged within the ePortfolio and triggers e-mails to peer and staff reviewers.

![Diagram](image-url)

*Figure 4. Overview of pedagogy for the ePortfolio at St Andrew’s*

**Formative Assessment**

The ePortfolio has been in use, with modification and refinement, for 3 years. Currently approximately 450 students are regularly accessing their records. Since
student engagement with their ePortfolio largely relies on self-motivation, we have chosen to adopt a 'light touch' to the assessment of portfolio work. A number of key tasks have been identified as being appropriate for feedback and students receive comments from personal tutors and teachers. Other tasks simply require a compliance check from personal tutors. Assessment is predominantly formative with the expectation that all the set guided study tasks are completed. Summative assessment of the ePortfolio occurs in practical examinations where students may be asked to complete a task or log a skill. Additionally, students are required to reflect on the experience of completing their final year honours dissertation (5% of the final grade).

Student evaluation shows that they are aware of the importance of maintaining a portfolio and that improvements to the interface and to our training put in place between the 2006 and 2007 cohorts not only improved the functionality of the ePortfolio, but also clarified the learning outcomes for the students.

### Key Points

The ePET portfolio has been customised to support case-based learning and peer assessment of clinical skills at St Andrew’s.

The portfolio has a clear purpose and is embedded within specific parts of the curriculum, which contribute to good levels of engagement. It has also improved students’ clarity over learning outcomes.

The pedagogy and technology have been refined over a 3 year period.

Feedback from staff and students has helped inform the design of the ePortfolio, improve the clarity of purpose and the quality of training and feedback.

### Overview of ePortfolios at St George’s University

The ePET portfolio was implemented at St. George’s University of London (SGUL) to support the MBBS programme as part of an FDTL Transferability project. As an additional delivery to the project the ePortfolio was also rolled out to Radiography (with partners in a Faculty shared with Kingston University) and Biomedical Informatics at SGUL.

The first phase of implementation involved customising a stand-alone system hosted at Newcastle but with St George’s look and feel. Initial focus was on the support of Student Selected Modules (see above) but over time other elements of the problem-based MBBS curriculum at SGUL have been supported. The second phase of implementation involved migration to hosting of ePET at SGUL and integration with other systems including an existing portal (Plone) and shared authentication (LDAP).
**Key points**

Engagement by SSC supervisors and other staff was important for uptake of the ePortfolio by students.

Applying and embedding within the curriculum takes time.

There are significant costs and challenges to integrate Open Source software with other systems.

Local management and maintenance of ePET can give flexibility to adapt it further for curricular requirements but effective use requires staff resource (system admin and learning technologist time).

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**Conclusions**

This Case Study documents the implementation of ePET to support diverse curricula requirements at 3 Medical Schools. ePET is a component-based system designed to have a high level of customisation in order to meet these diverse and changing requirements.

Key lessons from the 3 implementations are:
Key Lessons:

- There are a diversity of requirements within Medicine / portfolios are defined by their purpose(s) which may include reflective learning, PDP, case-based and group-based learning, formative assessment, appraisal and summative assessment.
- Clarity of purpose and clearly identifying what students and staff are required to do is important for engagement.
- Integration with the curriculum – needs to focus on pedagogy not technology
- Where PDP is delivered in the context of the curriculum it is has the potential to be more meaningful and engaging to both students and staff – compared to more abstract ‘stand-alone’ delivery of PDP. For example, the experience of planning and reflecting on learning outcomes for SSCs at Newcastle & SGUL
- Importance of champions / support from senior curriculum staff for effective implementation
- Involving Staff and Students in the ePortfolio Design will be beneficial
- Effective implementation of ePortfolios/PDP takes time and use. Over the 4 years of this case Study ePortfolios have been embedded in the curricula at the partner institutions. However, the roles of the portfolios within the curricula are continuously being developed and refined.
- Engaging students and staff in reflective practice (non-assessed) can meet with resistance! It is essential to ensure the students feel a sense of ownership and to establish rules of behaviour at the time of inviting participation
- ePortfolios can play a role in assessment but should be embedded first
- There is a need for constant evaluation and alignment of the portfolio with teaching, learning and assessment strategies.

Further Information

See: http://www.epportfolios.ac.uk

References


2 ePortfolios Extension Toolkit (ePET). A project funded as part of the JISC Distributed eLearning (Del) programme. http://www.epportfolios.ac.uk/ePET


http://ww.epics.ac.uk


Spencer JA, Jordan RK. Learner centred approaches in medical education. BMJ 1999; 318:1280-3


Tomorrow's Doctors: Recommendations on Undergraduate Medical Education; General Medical Council London, 2002


A Atkinson*, P Horner, S Cotterill and A Mcdonald. Engaging with ePET. Proc SMILE 2006, Sestri Levante

11

21 N Lock, P Horner and S Cotterill Initial experiences of using an ePortfolio for authentication of students’ practice records. Proc SMILE 2006, Sestri Levante