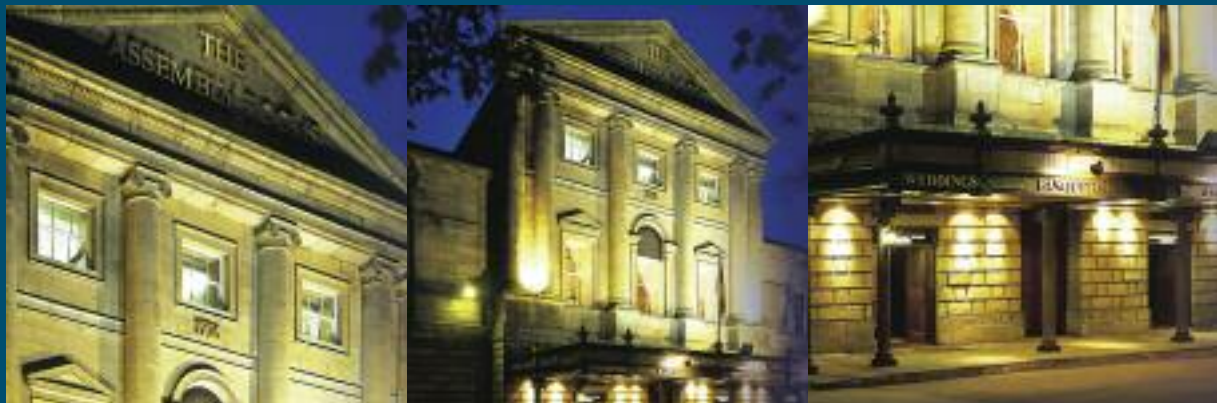




**The  
Higher  
Education  
Academy**  
Medicine,  
Dentistry and  
Veterinary Medicine

**Special Report 10**

# Conference proceedings: ePortfolios, identity and personalised learning in healthcare education



A one day conference organised by the  
Higher Education Academy Subject Centre for  
Medicine, Dentistry and Veterinary Medicine

**The Assembly Rooms, Newcastle upon Tyne**

**28 February 2008**

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# Conference proceedings: ePortfolios, identity and personalised learning in healthcare education

## Preface

This one day conference, *ePortfolios, identity and personalised learning in healthcare education*, was organised by the Higher Education Academy Subject Centre for Medicine, Dentistry and Veterinary Medicine, and funded by the Joint Information Systems Committee (JISC). It was held at The Assembly Rooms, Newcastle upon Tyne on 28 February 2008 and attracted 150 delegates from across the UK to be part of a packed day including 4 keynote speeches, 21 presentations over 4 streams of activities and 18 posters. These proceedings represent some of the work shared on that day, and are available to download from [www.medev.ac.uk](http://www.medev.ac.uk), where the completed posters and presentations, in their graphic format as presented on the day, can be downloaded as PDFs.



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# Conference programme

<i>Time</i>	<i>Activity</i>	<i>Location</i>
10.00-10.30am	Registration Coffee	Regency Suite Chandelier Suite
10.30-11.30am	<b>Introduction and welcome</b> <b>Denise Wilson</b> , Centre Manager, Higher Education Academy Subject Centre for Medicine, Dentistry and Veterinary Medicine <b>Keynotes 1</b> <b>Trudie Roberts</b> , Professor of Medical Education, University of Leeds Setting the scene: The healthcare context <b>Maureen Layte</b> , Development Director, European Institute for ELearning (ElfEL) Setting the scene: The European context	Chandelier Suite
11.30-12.45pm	<b>Parallel sessions</b> AM1 (a) <b>Tony McDonald</b> , Newcastle University (b) <b>Isobel Braidman</b> , University of Manchester (c) <b>Johanna McMullen</b> , Queen's University Belfast AM2 (a) <b>Vivien Sieber</b> , Oxford University (b) <b>Walter Williamson</b> , University of Dundee (c) <b>David Teasdale</b> , Newcastle University AM3 (a) <b>Jim Aiton</b> , University of St Andrews (b) <b>Simon Cotterill</b> , Newcastle University (c) <b>Vivien Cook</b> , Queen Mary, University of London AM4 (a) <b>Gillian Armitt</b> , University of Manchester (b) <b>Avril Senior</b> , University of Liverpool (c) <b>Helen Cameron</b> , University of Edinburgh	Chandelier Suite Regency Suite Falstaff Suite Wedgewood Suite
12.45-1.45pm	Lunch	Chandelier Suite
1.45-3.00pm	<b>Parallel sessions</b> PM1 (a) <b>Simon Cotterill</b> , Newcastle University (b) <b>Simon Grant</b> , Independent consultant, CRA, and JISC CETIS (c) <b>Christopher Bailey</b> , Bristol University PM2 (a) <b>Paul Hopkins</b> , Newcastle University (b) <b>Christopher Murray</b> , University of Leeds PM3 (a) <b>Paul Horner</b> , Newcastle University (b) <b>Tim Snashall</b> , University of Salford (c) <b>Yvonne Howard</b> , University of Southampton	Regency Suite Falstaff Suite Wedgewood Suite
3.00-3.30pm	Coffee and posters	Chandelier Suite
3.30-4.30pm	<b>Keynotes 2</b> <b>Jamie Thompson</b> , Northumbria University and 2007 NTFS Individual Award holder <b>Rob Ward</b> , Director, Centre for Recording Achievement: The broader higher education and employment context <b>Suzanne Hardy</b> , Senior Advisor (Information), Higher Education Academy Subject Centre for Medicine, Dentistry and Veterinary Medicine Wrap up and thanks	Chandelier Suite



# Keynote speakers

**Trudie Roberts**, Professor of Medical Education, University of Leeds

## Setting the scene: The healthcare context

Professor Roberts graduated from Manchester with a degree in Medicine and a BSc in Anatomy. After early medical training in Manchester and her research in Manchester and the Karolinska Institute in Sweden she was appointed Senior Lecturer in Transplant Immunology at the University of Manchester. In 2000 was appointed Professor of Medical Education and Director of the Medical Education Unit at the University of Leeds. Her main research interests are assessment of competence development of expertise and professionalism. She examines for the GMC and is a GMC visitor for Medical School undergraduate courses. She sits on the executive committees of the Association for the Study of Medical Education and the Association of Medical Education in Europe. In 2005 she became the director of Centre for Excellence in Learning and Teaching focused on Assessment and Learning in Practice Settings which involves 5 Higher Education Institutions and involves a major investment in mobile technology based near patient learning. In January 2006 she took up the role of Head of the School of Medicine in Leeds.

**Maureen Layte**, Development Director, European Institute for eLearning (EIfEL)

## Setting the scene: The European context

Maureen Layte is Development Director at the European Institute of eLearning in France. Previous careers have included senior lectureships in further education in the UK; training management in a college company specialising in open learning, and management of a training consultancy. She has been involved in 'portfolio thinking' since obtaining a qualification as NVQ assessor and is responsible for ePortfolio research, consultancy and events for EIfEL. She is also working on 8 European projects on ePortfolios, elearning, CPD and security and trust. She is co-author of *Technology-Based Training* (Kogan Page 1997) and *Valider les Competences avec les NVQs* (DEMOS 1999).

**Jamie Thompson**, Northumbria University and 2007 NTSF Individual Award holder

## The broader higher education and employment context

Jamie worked for twenty years in the Probation Service, latterly as training and development manager and as joint appointment with Northumbria University. In 1998 he joined the University full-time and developed and delivered a pioneering new programme for qualifying probation officers that integrated a vocational award with an undergraduate degree.

For the past six years Jamie has worked for the Learning and Teaching Support team at Northumbria. Currently he has particular responsibilities in relation to Work Related Learning and Personal Development Planning. He has published and disseminated widely in relation to a range of pedagogic and criminal justice issues. In 2007 Jamie was awarded a National Teaching Fellowship.

**Rob Ward**, Director, Centre for Recording Achievement

## The broader higher education and employment context

Rob Ward is the Director of the Centre for Recording Achievement, a national network organisation and registered educational charity based in the UK. As an Associate Centre of the Higher Education Academy, CRA leads work on behalf of the Academy on supporting the implementation of Personal Development Planning and ePortfolio practice. Rob is a member of the National Progress Files Implementation Group (PFIG) and was a member of the initial Scoping Group on 'Measuring and Recording Student Achievement'. He led the CRA contribution to the National Coordination Team on Student Employability (ESECT), and was formerly a Fellow of the National Institute of Careers Education and Counselling (NICEC). With others, he currently facilitates Cohort IV of the Inter/National Coalition for Electronic Portfolio Research, and coordinates the CRA work on the UK National Teaching Fellowship Project 'National Action Research Network on Researching and Evaluating Personal Development Planning and ePortfolio.' Most recently he contributed the keynote contribution to the national Australian e-portfolio symposium.



## *Parallel session papers*

# **AM1 (a): 7 years of authentication/authorisation and where we are now**

**Tony McDonald**, Newcastle University

## **Abstract**

The presentation will describe the various authentication/authorisation (A&A) initiatives the author has been involved with over the last seven years and show how they have influenced, and been influenced by, developments at Newcastle and elsewhere. Particular emphasis will be placed upon issues arising from the existence of the HE-NHS 'interface' and how some of them have been ameliorated. This is a very rich use-case for A&A, as it involves a diverse group of people (such as academics, students, library and administration staff) from differing organisations, all of whom have some 'call' on particular aspects of data requiring differing levels of A&A. A round-up of the current state of A&A in the HE and NHS sectors will be presented, as well as indications of where this may lead in the future. The presentation will show how early efforts of authenticating users have evolved as technologies have improved and new regulatory requirements have made certain actions compulsory. The application of A&A to the ePortfolio environment, where there are many different 'owners' of parts of the ePortfolio will be examined in some detail as this is an area, which is very open to different interpretations.

Topics presented will include, but not be limited to, A&A issues, Shibboleth 1 and 2, federations including the JISC Access Management Federation, Athens, devolved A&A, centralised and decentralised A&A systems, Yale-CAS, OpenID, identity management and brokering, privacy.

## **Full text**

### ***Introduction***

This is necessarily a personal view of some of the initiatives I've been involved with in relation to the issues related to authentication and authorisation of online resources over the last seven years or so. This is not intended as a comprehensive review, as that would be impossible in such a rapidly moving area. I'm also going to emphasize work that is 'at the interface' between the NHS and Higher Education (HE), that murky divide which is common to any institution whose students career paths end up at the NHS. I'll be concentrating on Medical Students, but the same principles will apply to dentists, nurses, radiographers and many more.

There are a great many people who work at the interface between the worlds of HE and the NHS. A representative sample would include; the lecturer on a medical degree programme who is also a consultant at the local trust, the student who has just started in their clinical training, meaning

that they are very much down the food chain in terms of getting access to hardware, let alone the online resources necessary for their training, the visiting professor who has been given a lecture slot and now needs access to the virtual learning environment (VLE) - 'just for today', the librarian, working in an NHS education centre, who has to cope with the fact that the same lecturer will have access to different journals dependent on whether they are logging in from an NHS or HE site, and the administration staff who need to manage the constant flow of students between HE institutions and education centres, arranging for usernames and passwords to be created and destroyed as students move around 'on rotation'. This is a non-exhaustive list, which is nevertheless representative of that part of the continuum that exists between someone who works or studies exclusively in the HE domain, through to those whose sole working environment is the NHS.

Working at the interface brings other problems, as it is all too easy to have your situation defined as a problem that only 'the other side' can sort out. This is often the same answer people are given regardless of what 'side' they happen to be on.

Is there any way through this morass? Considering that we're talking of HE and the NHS, it would seem not, but there are beacons of hope that imply that the situation is not totally lost.

It's worth defining what authentication and authorisation are, at least in the context in which we're using them;

**authentication**, as described by Wikipedia<sup>1</sup> is 'the act of establishing or confirming something (or someone) as authentic, that is, that claims made by or about the thing are true'. From an access to information standpoint, this could be as simple as the ubiquitous username/password combination. Note that having a correct username and password combination does not imply that the username used is the one that was allocated to the person you think it was. You can think of authentication as having the key to a car.

**authorisation**, again from Wikipedia<sup>2</sup> is described as 'the concept of allowing access to resources only to those permitted to use them'. You can have a perfectly valid username and password to a system, which would allow you to post messages to a bulletin board and edit details of events, but may not be allowed access to areas holding personal information. Indeed, it's highly likely in a such a system that you would not even be aware of the existence of that personal information. Authorisation can allocated to a person in a proxied manner, similar to secretaries having access to the diary of their superior.

These two terms are not interchangeable, although in early days, 'authentication' was also meant to imply authorisation as well.

## **Early days (2001-present)**

As medical schools started populating their VLEs with teaching and learning content they came up against the problem of what to do with those members of the teaching faculty who were primarily resident in the NHS. Did these people have a university login? Did they even need one? It was common to have staff in categories such as 'clinical grade training staff' who had 'honorary' access to university IT systems, and therefore the university username/password combination which lead to a university email address. The problem was that these people often had their NHS email addresses and were quite happy with those, and so the problem arose of which email address to use, the university 'official one', or the one they were more likely to use, their NHS

<sup>1</sup> <http://en.wikipedia.org/wiki/Authentication> (accessed 7 January 2008)

<sup>2</sup> <http://en.wikipedia.org/wiki/Authorisation> (accessed 7 January 2008)

one? Sometimes IT services could and did replace the HE institution email address with the NHS one, sometimes not. For those medical schools running institutional VLEs, such as BlackBoard and WebCT, this could be a major problem as they had no control over this institutional 'core data' related to the member of staff.

For those medical schools who ran their own VLE (mainly through an understanding that the commercial VLE offerings were not always appropriate for a medical degree programme), this was not such a problem. They could allocate username/password/email combinations to anyone they liked, as it was usually just another entry in a database table. Their problem came when they tried to tie up their student information with what the institutional thought it knew about the student. There can be radical differences in what each party thinks they know about the student, and still is a source of major headaches, with the possibility for data errors and duplication never far away. Another problem is that of passwords - should the student use their institutional password to gain access to this custom VLE or use an entirely different one (it can usually be assumed that the username will remain the same). The right answer is to limit the number of passwords a student needs to remember, but gaining access to institutional password tables, even in a read-only form, is a non-trivial problem (quite rightly!). Even then, what do you do when a student wants to change their password? It should be the case that changing a password should be easy enough to be done regularly, but this does require even more privileged access to institutional systems - you're now proposing to write to the password tables. This is something institutional IT services are loathe to do (again with very good reason).

Essential to making any kind of data sharing happening efficiently is a very good relationship with the institutional IT services and those of the medical school. This is not always present, although fortunately at Newcastle, we have an excellent relationship with our institutional IT providers, Information Systems and Services (ISS).

So early on, it was common to have a situation where core members of the teaching staff were not always able to access the learning environments their students were using on a day-to-day basis, where students and staff were likely to need to remember another password to access the VLE and other resources, and where it was unlikely that institutional and local information on staff and students were consistent.

## ***Shibboleth (2004-present)***

The promise of Shibboleth<sup>3</sup> is of a single sign-on (SSO) system that will allow users to enter a username/password combination one time only, and have those authentication and authorisation credentials available to services and resources that request them, without the user needing to re-enter that information. Central to making sure that this setup is viable is the requirement that both 'identity providers' and 'service providers' trust each other. An identity provider is a service (such as provided by a university IT service) that asserts that a user is actually associated with that institution, and a service provider is a web-based resource the user is trying to access (see<sup>4</sup> for an extensive list of glossary entries related to Shibboleth).

I was part of a project called IAMSECT<sup>5</sup>, that officially ran from 2004-2006, but which is still continuing on in various ways today, which looked at the problems multiple institutions had when authentication and authorisation could not be centralised, in this case medical students on the joint degree programme between Newcastle and Durham who needed access to various common online resources. As the authentication and authorisation could not be centralised (both

<sup>3</sup> <http://shibboleth.internet2.edu/> (accessed 7 January 2008)

<sup>4</sup> <http://iamsect.ncl.ac.uk/glossary/> (accessed 7 January 2008)

<sup>5</sup> <http://iamsect.ncl.ac.uk> (accessed 7 January 2008)

Newcastle and Durham having different IT infrastructures, amongst other things) we used an SSO arrangement using Shibboleth as the glue.

It is fair to say that at that time (mid-late 2004), there were other SSO systems available at the time, the most well-known in the UK HE community being Athens<sup>6</sup>. Athens differs from Shibboleth in that it (was originally) a system that required users to authenticate with a single database. Once the authentication was successful, the user was able to access a host of resources from providers who had signed up to Athens. This was different from Shibboleth, which had software available (at the time Athens was closed-source) and had distributed authentication.

Shibboleth software was in a state of flux, meaning that it would only install on certain combinations of computer hardware/operating system, and at times it seemed phase of the moon too. This is not the case now, with a wide range of stable installs available for a variety of hardware/OS combinations, and installing Shibboleth for service and identity providers is much simpler.

The other main problem we encountered was with governance issues - as the whole point of Shibboleth is that you authenticate once at an identity provider, and then are allowed access to a variety of services, the institutions providing those services have to trust all the relevant identity providers. Drawing up legal contracts between these groups could lead to a combinatorial explosion, so Shibboleth has built-in the concept of federated trust, meaning that all parties sign up to a common set of principles which will manage their day to day information sharing requirements. The JISC has setup a 'UK Access Management Federation for Education and Research'<sup>7</sup>, which has a wide variety of members.

We eventually got a system set up which would allow a Shibboleth identity provider instance at Newcastle to interrogate an active directory holding staff and student details. We then used this information to allow access (or shibbolize) to our medical VLE, which had been set up as a Shibboleth service provider.

## **Yale-CAS (2006-present)**

After spending time installing Shibboleth identity and service providers some of the problems with the Shibboleth implementations at the time became more apparent. Chief amongst this was that the identity provider could only have one authentication/authorisation source. This meant that all our 'honorary' staff would need to be in the active directory for the university, which was not possible at the time.

We then became aware of another SSO system which has this flexibility, the 'Central Authentication Service'<sup>8</sup>, originally from Yale. The great benefit of this system was the idea of a 'cascade' of authentication/authorisation sources, with these sources being interrogated in turn with the users credentials. It was therefore possible to set up a cascade which would 1) check the University active directory system, which would account for all the students on the programme, 2) then check an LDAP setup we have for our own 'honorary' staff and 3) finally check a simple MySQL table for username/password pairs which could be created and destroyed very quickly (needed for that professor who needs to access the VLE 'just for today'). This gave us an immense amount of flexibility and we are still using this system to this day.

<sup>6</sup> <http://www.athensams.net/> (accessed 7 January 2008)

<sup>7</sup> <http://www.jisc.ac.uk/federation.html> (accessed 7 January 2008)

<sup>8</sup> <http://www.ja-sig.org/products/cas/> (accessed 7 January 2008)

<sup>9</sup> <http://mail.google.com> (accessed 7 January 2008)

## **The present day**

There are now a host of authentication and authorisation schemes to choose from, ranging from SSO hosted by external companies, which work by nature of their common domain (Google Mail<sup>9</sup>, Google Groups<sup>10</sup>, Google Calendar<sup>11</sup> for example) to systems which are truly distributed authentication and authorisation systems such as OpenID<sup>12</sup>. Personally, I am most interested in OpenID for the following reasons; the software is open-sourced, highly-available and of high-quality; it's very easy to set up an OpenID-based identity and service provider; the 'buzz' and subsequent activity surrounding the protocol is intense; and many organisations are pushing themselves forward as identity providers from AOL, Yahoo, Google and Microsoft to The Daily Telegraph!<sup>13</sup> Finally, OpenID puts the onus on how much information someone is allowed to gather from your online persona very squarely under your control. You may get a degraded experience if you choose not to let someone use your email address on their site, but OpenID makes it very easy for you to say 'no' should you want to.

As OpenID is based on URLs, organisations that own URLs can become identity providers easily. This means that Newcastle University could set itself up as an identity provider and provide me with a URL, [tonymcdonald.ncl.ac.uk](http://tonymcdonald.ncl.ac.uk), which would be valid as a method for logging into any participating HE site in the country (or further afield), as Newcastle would verify who I am using whatever method they choose from a simple password through to RSA key fobs<sup>14</sup>. It's clear that organisations, particularly those who have 'trustworthy' URLs, will be competing strongly for your 'identity provision' business, and we are bound to see a wide range of services made available in the next few years.

What those services are likely to be is anyone's' guess.

For further information please contact: [tony.mcdonald@ncl.ac.uk](mailto:tony.mcdonald@ncl.ac.uk)

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<sup>10</sup> <http://groups.google.com> (accessed 7 January 2008)

<sup>11</sup> <http://calender.google.com> (accessed 7 January 2008)

<sup>12</sup> <http://openid.net> (accessed 7 January 2008)

<sup>13</sup> [http://blogs.telegraph.co.uk/technology/shanerichmond/jan08/telegraph\\_to\\_become\\_openid\\_provider.htm](http://blogs.telegraph.co.uk/technology/shanerichmond/jan08/telegraph_to_become_openid_provider.htm) (accessed 7 January 2008)

<sup>14</sup> <http://www.rsa.com/node.aspx?id=1311> (accessed 7 January 2008)

# AM1 (b): Analysis of online reflective learning in undergraduate medical students

**Isobel Braidman, Caroline Boggis and Tim Dornan, Maria Regan, University of Manchester**

**Simon Wallis, Department of Undergraduate Medical Education, Education Centre, Lancashire Teaching Hospitals NHS Foundation Trust,**

## Abstract

We are required to deliver portfolios, that contain evidence of skills competencies and reflective learning, within the UK's largest medical school, with 2000 students at university, hospitals, and community health facilities dispersed across the North West of England. We are starting to use 'Horus', an established education technology to introduce workplace learning management and portfolio services to the medical school's bespoke virtual learning environment, in the HeLM (Horus eLearning Management) project. A major challenge is whether online facilities can be used to support reflective learning to such a large number of students. We present initial investigations of online reflective discussions and the role of student facilitators. We have introduced an online discussion forum, using a WebCT platform. The students are divided into groups, each with a designated student facilitator from the same year as the other students. They provide feedback to their peers on portfolios and facilitate online discussions on portfolio matters and specific issues we raise to stimulate debate on personal and professional development. Over 60 students volunteered as facilitators. They were trained in generic group facilitation and specifically for discussions on professional issues. All students were divided into 63 groups, each with a facilitator. We used a WebCT platform, with domains for resources, a discussion board for all students, private areas for each group and for student facilitators. We devised specific activities, focusing on professional issues and accustoming students to communicate online. All students were asked to download evidence of participation for when their portfolios are reviewed.

To ascertain the nature of the online discussions and how the students react to this innovation postings were analysed with a Community of Enquiry Model<sup>1</sup> and student views were investigated with questionnaires, focus groups and individual semi structured interviews

From November until mid July 2006-2007, 98% of groups participated with 3,349 postings. Of these, 12% were at the integration and resolution levels of cognitive presence and 35%, 26% and 39% were group cohesive, emotional and open levels, respectively, of social presence, indicating increasingly sophisticated interchanges. Initial analyses showed students were positive; 'viewing' others' perspectives was beneficial, text based discussions were 'thought provoking' empowering reflective learning, although the facilitators' role had to be defined clearly and making some time for face to face interactions was desirable. We are continuing these curricular innovations in the next academic year.

<sup>1</sup> Garrison DR, Anderson T, Archer W 2000 Critical inquiry in a text-based environment: computer conferencing in higher education. *The Internet and Higher Education* 2:87 - 105.

Our initial observations indicate that the online discussion facility provided by the WebCT platform was used by almost all Year 3 students, who were located on different hospital sites and that it is possible to support this with student facilitators, drawn from the same year. We were therefore able to provide reflective learning by this means, despite a complex educational timetable and large numbers of medical students, who are geographically dispersed. WebCT, however, is a separate platform to Medlea, the virtual managed learning environment, which supports HeLM. Currently there are links between the two, but this is not ideal and our overall aim is to integrate the two systems.

## Full text

### *Introduction and purpose*

#### **Challenges of introducing personal and professional development to a large medical school**

The University of Manchester Medical School has introduced a personal and professional development strand of its undergraduate curriculum, supported by portfolios. It is the largest medical school in the UK, with over 2000 students, who are often widely geographically dispersed. Nevertheless, the overall vision is of a portfolio that will describe an individual student's maturation from year 1 to year 5, and integrate with their portfolio learning post-graduation in the clinical workplace. This is now well established in years 1 and 2. It is supported by tutor facilitators for groups of students. These tutor facilitators retain some of the functions associated with individual mentoring, but also utilise skills of group facilitation to emphasise aspects of professional behaviour, reflective writing and practice and to explain the significance of personal and professional development. This approach emphasises discussion between and learning from peers, with the aim of sharing best practice and empowering students as independent reflective learners. The portfolio itself is a simple folder, divided into sections based on the GMC's 'Good Medical Practice' guidelines

The portfolio is now being extended into years 3-5 of the curriculum, where the focus is on workplace learning. Here there are a number of challenges:

1. We have even higher numbers of students, with over 530 per year.
2. As this phase of the course emphasises workplace learning, the students are distributed over 4 geographically separate and distinct hospital sites, dispersed across the North West of England. Although each of these clinical centres has its own specific learning environment, the curriculum is that of the University of Manchester Medical School and is common to all students.
3. The nature of clinical work place learning is such that timetabling is highly complex with little opportunity for face to face group meetings to discuss portfolio activities and personal and professional development as in years 1 and 2.

We have a variety of elearning and pedagogic approaches which we are using to meet these challenges.

1. 'HORUS': a suite of sophisticated learning management technologies developed and applied to several workplace learning opportunities including early postgraduate education of

doctors, specialist medical postgraduate education and basic nurse education<sup>23</sup> To date HORUS has focused primarily on supporting learners' attainment of intended learning outcomes of objective-based curricula.

2. Virtual Learning Environment; a bespoke virtual learning environment, which supports problem based learning, 'Medlea' already in use in the Manchester Medical School.
3. Online web based discussions: The use of WebCT as a platform for online discussions, already employed for interdisciplinary and interprofessional learning between students with disparate timetabling constraints.  
(<http://www.campus.manchester.ac.uk/ceebi/projects/casestudies/9.pdf>)
4. Learner led and student facilitated learning approaches The medical curriculum of the University of Manchester Medical School is problem based and the combination of this learning approach with traditional medical workplace learning is now being cited as best practice<sup>4</sup>.

In terms of developing the delivery of portfolio in such an environment, how these technologies and learning approaches are integrated to support workplace portfolio learning is of critical importance. The rest of this paper focuses on our investigation of introducing online reflective discussions supported by student facilitators.

**Online reflective discussions** In aiming for a portfolio which develops over the entire 5 years of the curriculum, support for and further maturation of reflective learning is essential. It is a further challenge, particularly in the context of large student numbers. Comparison of online with face to face group discussions demonstrates that on line text based discussions encourage more critical thinking in undergraduate students<sup>5</sup>. Furthermore, it has also been shown that the asynchronicity of online group discussions provides students with time for reflection and incorporating experiences outside the direct milieu of the specific group activity<sup>6</sup>. This is particularly relevant to undergraduate medical students, who may require time to assimilate key critical experiences and to introduce reflections on experiences gained from clinical workplace learning. The goal is therefore to create communities of learners able to support and encourage critical thinking by individuals and the group as a whole.

**The role of student facilitators** As the students were already familiar with facilitated discussion in groups, in years 1 and 2, which emphasised sharing of good practice, empowerment of individual students as reflective learners and learning from peers, we introduced online discussion groups, that are facilitated by students from the same year as their peers. The facilitators have several roles, namely to provide feedback and advice on portfolio matters and to facilitate discussions on specific issues raised, by the portfolio support team, to focus debate. There was no specific credit given to them for this activity, although its importance in providing material for their first job applications was not lost on the students.

<sup>2</sup> Dornan T, Maredia N, Hosie L, Lee C, Stopford A 2003 A web-based presentation of an undergraduate clinical skills curriculum. *Medical Education* 37:500-508.

<sup>3</sup> Dornan T, Lee C, Stopford A, Hosie L, Maredia N, Rector A 2005 Rapid application design of an electronic clinical skills portfolio for undergraduate medical students. *Computer Methods and Programs in Biomedicine* 78:25-33

<sup>4</sup> Hirsh DA, Ogur B, Thibault GE, Cox M 2007 'Continuity' as an organizing principle for clinical education reform. *New England Journal of Medicine* 356:858-866

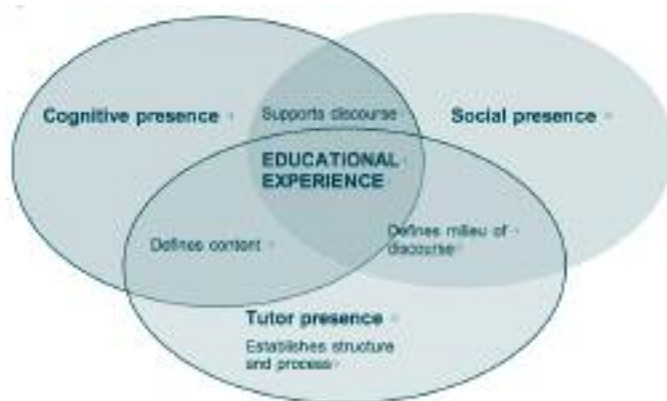
<sup>5</sup> Newman DR, Johnson C, Webb B, Cochrane C 1997 Evaluating the quality of learning in computer supported co-operative learning. *Journal of the American Society for Information Science* 48:484 - 496

<sup>6</sup> Garrison DR 1997 Computer conferencing: the postindustrial age of distance education. *Open Learning* 12:3 - 11

<sup>7</sup> Kayler M, Weller K 2007 Pedagogy, self-assessment, and online discussion groups. *Educational Technology & Society* 10:136-147

This is an innovative departure. Although online discussions have been supported by peers elsewhere in higher education, notably in teaching practice, it is generally used with small numbers of learners<sup>7</sup>. In most cases, peer assisted learning, is 'cross-level', in which more senior students are involved with learners at a junior level<sup>8</sup> and is used in this form in medical education<sup>9,10</sup>. This was not suited to our situation; these students were the first to have experienced portfolio and reflective learning for the initial two years of their curriculum. Students in more senior years would find it difficult to provide feedback on issues concerned with portfolio.

**Theoretical basis for a community of online learners** Garrison et al<sup>11</sup> formulated a theoretical basis for such discussions, the 'Community of Enquiry Model' which is depicted in Figure 1. They identified three elements. 'Cognitive presence' encompasses higher learning and critical thinking. 'Social presence' enables group members to express their full personalities socially and emotionally, develops group cohesion and a community of learners rather than individuals exchanging information. 'Teacher/tutor presence' covers organisation of learning activities and, of particular relevance here, facilitating group activities and interactions. Each is a separate entity, but the degree of overlap between them is a prerequisite for a true community of reflective learners. These authors developed a template for analysing online discussions, based on the three elements, described above. Each element is designated by specific indicators in the text and are categorised according to increasing levels of complexity as denoted by recognisable phraseology and content in the online discussion threads.



**Figure 1: Diagrammatic representation of Community of Enquiry Model, after Garrison et al.**

## Aim of the study

1. To investigate the use of the online reflective discussions.
2. To ascertain whether the groups develop into 'communities of learners', according the Community of Enquiry Model.
3. To investigate the role of student facilitators in their group discussions.

<sup>7</sup> Kayler M, Weller K 2007 Pedagogy, self-assessment, and online discussion groups. *Educational Technology & Society* 10:136-147

<sup>8</sup> Tariq VN 2005 Introduction and Evaluation of Peer-assisted Learning in First-Year Undergraduate Bioscience *BioScience Education eJournal* vol. 6. <http://www.bioscience.heacademy.ac.uk/journal/vol6/beej-6-3.htm.pdf> (last accessed 2/1/2008)

<sup>9</sup> Nestel D, Kidd J 2005 Peer assisted learning in patient-centred interviewing: the impact on student tutors. *Medical Teacher* 27:439-444.

<sup>10</sup> Field M, Fayez S, Burke JM, Mathew RG 2005 Training our future trainers: Peer-assisted learning in musculoskeletal system examination for undergraduate medical students. *Arthritis and Rheumatism* 52:S422-S422.

<sup>11</sup> Garrison DR, Anderson T, Archer W 2000 Critical inquiry in a text-based environment: computer conferencing in higher education. *The Internet and Higher Education* 2:87 - 105.

## Method

### Implementation of online reflective learning

**Training and preparation of student facilitators** All Year 3 students were invited to volunteer as student facilitators at the beginning of the academic year. Over 60 responded to our advertisement placed on Medlea. Facilitators and mentors were trained for their roles and in the use of WebCT. The student facilitators were trained in generic group facilitation techniques and prepared for their specific activities of facilitating online discussion and providing support for their peers' portfolios.

**Online discussions** All students in year 3 were divided into 63 groups, each of which was allocated a student facilitator. Each group held one initial face-face meeting and were then encouraged by their facilitators to engage in online debate, using the discussion areas created within WebCT. The first issue raised by the portfolio implementation team was that of professional behaviour in clinical practice. Specifically, all groups were asked to reflect collaboratively and reach a consensus of modern professional behaviour, suitable for them as students, based on the GMC's 'Good Medical Practice' framework. Journal articles and web sites were suggested to stimulate discussion. Students were required to demonstrate evidence of participation in their paper based portfolios in online dialogues.

### Analysis of online discussions

We used a mixed method approach. Web postings were analysed first for the frequency of usage and peak times of online interactions from November to June. Quantitative data for the type of interactions in terms of cognitive presence, social presence and tutor presence were obtained using the Community of Enquiry Model. We also used focus groups of both students and facilitators and individual semi-structured interviews to obtain qualitative data for the role of the student facilitators.

### Progress/discussion

From November until mid-July, online discussions were used vigorously; 98% of groups participated with 3,349 postings. Initial investigations indicate that the online discussions were mostly concerned with issues arising from the professionalism activity. There was some evidence that the content of portfolios was discussed within the groups online, but the implication was that these issues were dealt with mostly by face to face interactions.

Analysis with the Community of Enquiry model demonstrated that 12% of online interactions were at the integration and resolution levels of cognitive presence and 35%, 26% and 39% were group cohesive, emotional and open levels, respectively, of social presence, indicating increasing sophistication of interchanges. This is evidence that some groups were acting as true communities of learners

Initial analyses of the qualitative data showed that students were positive; 'viewing' others' perspectives was beneficial, text based discussions were 'thought provoking' and empowered reflective learning, although the role of facilitators had to be clearly defined and making time for face to face interactions was desirable. Student facilitators raised the following points:

- (a) Organisation of specific time tabled slots for face-face meetings; many thought that this would be helpful as an adjunct to their online discussions
- (b) Non participating students; some facilitators felt tentative over referring students who were not participating in discussions on to the clinical support programme.
- (c) More activities as a focus for online discussion: most facilitators wanted more issues raised by the portfolio implementation group as a focus for their discussion, to follow on from the 'professionalism' activity. They concluded that without this stimulus, the web may not continue to be used widely.

## **Conclusions/future goals**

### **Implementation of online reflective learning**

Our initial observations indicate that the online discussion facility provided by the WebCT platform was used by almost all Year 3 students, who were located on different hospital sites and that it is possible to support this with student facilitators, drawn from the same year. We were therefore able to provide reflective learning by this means, despite a complex educational timetable and large numbers of medical students, who are geographically dispersed.

Based on the preliminary analysis of the qualitative study of student responses to this form of learning, we have also incorporated further activities to initiate more online discussion. The first of these challenges the students to consider issues surrounding safe prescription of medicines. Further amendments will be made following the results of our evaluations.

### **Nature of online discussions as shown by the community of enquiry model**

This data indicated that there was an increasing social presence and group cohesion in over a third of the groups, but that critical thinking was reaching a high level in 12% of group interactions. These observations are important as they have provided the evidence for amending the preparation of student facilitators. Previously the emphasis was on acquiring generic facilitating skills, but now they are trained specifically in online facilitation techniques.

### **Future goals**

1. A more detailed analysis of the qualitative investigations of the role of the student facilitators
2. Exploration of the online interactions between student facilitators and their peers, following the changes to their training, using the Community of Enquiry Model
3. WebCT is a separate platform to Medlea, the virtual managed learning environment, which supports HeLM. Currently there are links between the two, but this is not ideal and our overall aim is to integrate the two systems.

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# AM1 (c): Interactive personal response an innovative approach to teaching and learning

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## Abstract

Lectures have been an established part of healthcare teaching back to the time of the ancient Greeks (Ausubel et al 1978), and are said to be an efficient use of resources in response to greatly increased student numbers. However, recent research calls into question the efficiency of lectures (e.g. Newble and Cannon 2001). Bligh (1998) has suggested that in the long term large group teaching is not effective in terms of student learning; that 40% of lecture time is wasted; that attention wanes after about 20 minutes and often only 20% of the information presented can be recalled later. Bransford (1999) encourages lecturers to establish what learners already know so that what is delivered better matches their learning needs. A study by Marmots (2003) demonstrates the benefits of breaking away from conventional lectures to other methods e.g. case discussion. Gordon et al (2004), Issenberg et al (1999) and Freidrich (2002) have demonstrated how case studies can be used to simulate patient care and that other forms of interactive discussion based learning can evoke deep learning.

Black (1998) argues that teachers must be involved in both formative and summative assessment with formative assessment being private and focused on the needs of the learner. Sadler (1998), Gipps (1994) and Black and Wiliam (1998), argue that formative assessment is only truly formative if the feedback given is used to improve performance, with the learner in the central role. If students are to improve they must 'have a concept of their learning goal, the ability to compare actual with desired performance, and the ability to act in such a way as to close the gap' (Brookhart 2001). According to Newble and Cannon (2002), the aim of formative assessment is to 'get the students to reveal their strengths and weaknesses'. However, to test the students and provide rapid feedback to them during a module is difficult to achieve, given time and other resource constraints.

The PRS (personal response system) provides each student with a credit card sized handset with several buttons on it, which transmits radio signals to a receiver in the lecturer's computer according to which button is pressed. The receiver tabulates the responses and can present them on screen in various formats (e.g. as a pie chart, graph or bar chart) in less than a second from the last response, or when the lecturer clicks the mouse for all to see. The closest analogy would be the 'ask the audience' system used in the television game show 'Who Wants to be a Millionaire'. The author has used the PRS system pro-actively and experimentally in teaching a module of applied biomedical sciences to second year undergraduate nursing students. This paper describes and critically evaluates the outcomes of the experiment,

It is suggested that many benefits have resulted from using the system. These include:

- Accurately monitoring attendance.
- Establishing what the students already know about a particular topic as a base point for the lecture.
- Achieving formative assessment of the groups learning development as the lecture progresses.
- Re-stimulating the groups interest when their attention begins to fade.
- Encouraging the positive participation of every student in the learning process – not just the extroverts who are always willing to speak up.
- Facilitating the introduction of case based discussions within a large group, or alternatively enabling a large class to work for part of the time in small groups.
- Providing a rapid and accurate mechanism for summative assessment in relation both to each individual lecture and the module as a whole.

The drawbacks of the system will also be discussed. These include:

- Lack of security for formal summative assessment purposes.
- The unwillingness of some students usually mature adults, to participate fully in the interactive learning environment.

The lessons learned from using the system during a complete module are described and discussed and certain conclusions offered as to its usefulness as a learning and teaching tool.

A practical demonstration of how the PRS system can be used to facilitate the learning process in practice will be included in the conference presentation of this paper.

## Full text

### **Interactive personal response: an innovative approach to personalising learning in the conventional lecture setting**

Lecturing is still one of the most common teaching methods used in medical schools but recent research calls into question its efficiency. Bligh (1998)<sup>1</sup> has suggested that large group teaching is not effective in terms of student learning because 40% of lecture time is wasted, and often only 20% of the information presented can be recalled later. He also demonstrated that students level of attention wanes after about 20 minutes and recommended introducing a change in teaching technique, even just a small break, to increase the learner's attention. Newble and Cannon (2001)<sup>2</sup> state that evidence continues to mount that although lectures are an effective methods to transmit information, they are not as effective as other methods in stimulating thinking or in changing attitudes.

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<sup>1</sup> Bligh, D. (1998) *What's the use of lectures?* (5th Edition) Intellect, Exeter.

<sup>2</sup> Newble, D., and Cannon, R. (2001) *A Handbook for Medical Teachers* (4th Edition). Kluwer Academic Publishers AH Dordrecht, The Netherlands.

Fry, Ketteridge and Marshall (2000)<sup>3</sup> argue that a variety of strategies to promote deep learning should be considered. Lectures suit the learning style of some students, but others learn better if 'cognitive conflict' methods such as case studies are used, while others may prefer discussion or group work. Marmots (2003) demonstrated the benefits of breaking away from lectures to other methods to create an environment in which students can learn more effectively. With student centered learning, students have responsibility and are required to make choices about how they learn; the lecturer becomes a guide, mentor and facilitator of learning, This is distinctively different from the traditional lecture where students are passive, and all decisions as to what is taught are made by the lecturer, with the emphasis solely on receiving information.

Black (1998)<sup>45</sup> argues that lecturers must be involved in both formative and summative assessment and, according to Newble and Cannon (2002)<sup>6</sup>, the aim of formative assessment is to 'get the students to reveal their strengths and weaknesses'. Milde (1988)<sup>7</sup> states that formative feedback should be given promptly and individually. Unfortunately, to test students and provide rapid, individual feedback during a module is difficult to achieve with large numbers. The literature therefore gives some clear indications of how to be an effective teacher, which is far removed from conventional didactic lecturing. However lectures are an efficient use of limited staff resources in the context of greatly increased student numbers and will remain an integral part of the medical education system for some time to come. How then could the concepts of good teaching described above be incorporated into the conventional lecture setting?

The PRS (Personal Response System) provides each student with a credit card sized handset with several buttons on it, which transmits radio signals to a receiver in the lecturer's computer according to which button is pressed. The receiver tabulates the responses and can present them on screen in various formats (e.g. as a pie chart, graph or bar chart) in less than a second from the last response, or when the lecturer clicks the mouse for all to see. The closest analogy would be the 'ask the audience' system used in the television game show 'Who Wants to be a Millionaire'. The system can be used in two ways. Either a handset can be allotted to a particular student for the whole of the module or their course even, or on an individual session basis random handsets can be given out to students thereby allowing anonymity of responses. The author has used the PRS system pro-actively and experimentally in teaching a module of applied biomedical sciences to second year undergraduate nursing students and has noted many benefits.

Firstly, it allows accurate monitoring of attendance. The traditional 'sign in' method is open to abuse as students often sign in for each other. With this system a handset can be assigned to each student at the start of their course and when using it in a lecture it registers that the student is present. Obviously one student could be holding two handsets, but when they are aware that the information will be reviewed by the tutor across a module students are less willing to let their friends answer for them.

A second benefit is to establish what students already know. Often time is wasted in lectures by tutors reviewing what the students already know because they are fearful to introduce more complicated concepts unless they are certain that the foundations are there. By asking a number of check questions at the start of the lecture the tutor can glean useful information about the students' background knowledge. The responses will then either indicate the need for some

<sup>3</sup> Fry, H., Ketteridge, S. and Marshall, S. (2000) *A Handbook for Teaching and Learning in Higher Education*. London, Kogan Page

<sup>4</sup> Black, P. (1998) *Testing: friend or foe? Theory and practice of assessment and testing*. London, Falmer Press

<sup>5</sup> Black, P. and William, D. (1998) Assessment and classroom learning. *Assessment in Education*. Vol: 5 No:1 pages 7-74

<sup>6</sup> Newble, D., and Cannon, R. (2001) *A Handbook for Medical Teachers* (4th Edition). Kluwer Academic Publishers AH Dordrecht, The Netherlands

<sup>7</sup> Milde, F. (1998) The function of feedback in psychomotor-skill learning, *Western Journal of Nursing Research*, Vol: 10, pages 425-434

review of the basics or provide re-assurance that the tutor can move forward confident that the students have the required background knowledge.

The system can be used to create a more student centered<sup>8</sup> learning environment by facilitating student choice in the design of the session. Every so often the lecturer can pull up a slide which asks them if they want to spend more time on the topic or move on. By involving students in this way the tutor has become a facilitator of learning rather than a didactic instructor.

The system can also help to re-stimulate the group's interest when their attention begins to fade by requiring their active participation. The lecturer can programme a question for discussion to come up at allotted times, or simply throw in a question whenever he/she observes attention wavering. When asked, 92% of students felt the lecture was more interesting when the system was used in this way, and 80% felt it helped keep their attention. Alternatively it can be used to introduce case based discussion within a large group. A scenario can be described and students asked to vote as to what their course of action would be. The majority vote determines the next slide which can be, perhaps, one of 3 alternatives, and then the students vote again. For example in a case study on asthma, the group were able to discover the consequences of their decisions as they explored how and why their choices either lead to the fictional patient recovering, if the appropriate response are chosen, or dying if inappropriate choices were made. The system can also enable a large class to work for part of the time in small groups simply by giving out handsets to clusters of 5 or 6 students, and asking them to discuss a hypothetical scenario, statement or question. Time is given for discussion and then the groups submit their responses which often provoke further discussion. The tutor can also pose a question at the start of a session to measure the group's opinion (e.g. is C.O.P.D a problem?), then ask the same question at the end to see if their opinion has altered. Used in these ways the PRS system encourages the positive participation of every student in the learning process – not just the extroverts who are always willing to speak up. When asked if they would be more likely to answer using the system than the hands up approach in a lecture 98% of students responded yes and 100% felt the system encouraged them to participate in the lecture.

The system also allows for formative assessment as the lecture progresses. To understand a new concept, such as the clinical manifestation of a disease, it is imperative that the student understands its foundations (e.g. its aetiology and pathophysiology). The PRS system allows the lecturer to insert a question slide at any point during the lecture to check understanding up to that point. If the answers reflect poor understanding, the tutor can back track until certain that the group is ready to continue.

If students have been assigned a particular handset for the whole module, tutors can recall all the data received from this handset across all sessions in the module. This can provide insightful information for both the individual student and the tutor and can enable both to see gaps in the students' knowledge or understanding and plan how to correct them. The system can also be used for a formal midway class test. For example, in a pharmacology module, students were given 25 questions similar to those they would face in their summative exam. The correct answers were revealed when the last response was collated. Students therefore were able to identify the level they need to aspire to and how close they were to achieving it. They could also ask for their results by reporting their handset number, and the data was recalled and displayed immediately, or they could simply note down the question they had answered incorrectly. The feedback provided was therefore rapid, in fact immediate, thereby giving them an opportunity to close knowledge gaps before their final assessment. 98% of students felt the immediate feedback was helpful or very helpful, 99% agreed it had identify gaps in their knowledge, 96% said this would direct further study and 99% said they found the session helpful or very helpful. The system is robust enough to allow for formal summative assessments to be completed if handsets are

<sup>8</sup> Spencer, J. and Jordan, R. (1999) Learner centered approaches in medical education. *BMJ* Vol:318 Pages: 1280-1286

matched to students. The results of this on an individual basis and for the whole group can be collated and displayed within seconds, with the obvious advantages of no lengthy marking process and immediate feedback.

There are some drawbacks to using the system. Although the software is user friendly and relatively easy to set up, a certain amount of training is required. The logistical issues of transporting the equipment, and the distribution and collection of handsets in class need to be considered, also the layout and size of the room. The equipment may be costly for a smaller institution. Extra preparation time is required to restructure lectures and design the questions to be posed. Writing suitable case studies and ensuring there are suitable alternative pathways can be challenging. It is impossible to predict how students will answer, so the tutor must be prepared for any outcome and facilitate and acknowledge those who did not vote with the majority. There is always the possibility of a split vote e.g. 50% wish to review a topic and 50% wish to continue. The tutor must have carefully considered in advance how to proceed if this situation arises. When the system is first used, there is the potential for some students to use it as a novelty toy and act irresponsibly (e.g. responding to the obviously incorrect answer). There is also the potential abuse of students taking their friends handsets with them to lectures to 'sign in'; this lack of security also limits the system's potential for high stakes summative assessment.

## **Conclusions**

In conclusion, the PRS system appears to be a useful and reliable pedagogical tool. It enables the tutor to monitor student attendance and progress, establish their prior knowledge, provide immediate formative feedback and collate important information quickly and easily. It gives each individual student a voice and enables the tutor to incorporate small group quality teaching into large group settings. A single trial is insufficient to draw sweeping conclusions and further trials with other students in other settings would be necessary. However the system certainly proved to be very popular with this particular group of students who appear to appreciate its usefulness. The system has many other potential benefits which have yet to be fully explored. For example, it would be interesting to undertake a longitudinal tracking study to investigate the benefits of assigning a handset to a student to monitor their progress through their entire course. Further technological improvement is also required to overcome some of the problems noted above. However my final conclusion is that, if used imaginatively, the PRS can be a useful additional teaching aid, offering benefits to both students and tutors alike.

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# AM2 (a): Student managed eLearning

Vivien Sieber, Adam Briggs, Jessica Mather-Hillon, Naieya Madhvani, Rasheed Zakaria, University of Oxford

## Abstract

The Medical Sciences Division (University of Oxford) includes undergraduate degrees (medical, physiological sciences, experimental psychology, biochemistry) along with clinical students based at hospitals and health centres. The university VLE WebLearn (open-source, Bodington) is the primary source of administrative and teaching information, it also provides a common point of access for the range of eLearning resources: MedLearn, a customized version of the Magnolia Content Management System (open-source CMS) where Flash templates enable users to create simple interactions (model answers, MCQs); Question Mark Perception; and Case Scenarios (simple web-authoring system). Students use Facebook for informal opportunities for sharing between years (problems, case studies, notes). Increasingly students are using the electronic tools provided by the VLE, MedLearn, and Case Scenarios to create and manage electronic teaching materials. Individuals and small groups have initiated a number of projects, which may include the organization of a peer-led teaching programme.

Students are encouraged but not compelled to create eLearning resources which are not normally assessed. Whilst formal opportunities for the creation of electronic resources are offered during SSMs, and year 6; the majority of projects have been initiated where students have identified a need. There is currently no formal training in creating electronic resources; central training is offered on the VLE and *MyWebLearn*, help guides are available from the VLE and the MSD learning technology team is available to give individual help and advice.

Students have strong ideas of what they wish to do, why they want to do it and their intended target audience. They frequently only ask for help at a relatively late stage in their development or when faced with specific technical problems e.g. video files that are too large for the VLE file quota. Some of the best examples of these student initiated projects involve groups of students collaborating to create defined programmes of study with administrative responsibility passed from one year to the next. Students have persuaded academic staff to contribute to these programmes, for example anaesthetist-led practical sessions are now included in the trauma module as a result of the 'critical trauma' initiative (<http://tinyurl.com/yprxr4>). A range of student created learning resources will be described: trauma, surgery eLearning, ophthalmology, career information.

From October 2006, all users may have a personal area within the VLE, *MyWebLearn* which provides users access to personal space, and the tools (questionnaire, discussion, structured document, web site etc) and their access controls. MSD students are using their *MyWebLearn* area in a variety of ways: personal file storage, surveys, online discussion, collaborative study, teaching in Thailand, and for the initial stages of a collaborative development which are subsequently moved to an accessible area. There have been marked differences between individuals in their enthusiasm for *MyWebLearn*, many students make little use of their accounts, whilst others have shown considerable imagination in the way students they use electronic tools to create learning opportunities for themselves and others.

## Full text

### Introduction

The Medical Sciences Division (University of Oxford) includes undergraduate degree courses (medical, physiological sciences, experimental psychology, biochemistry) along with clinical students based at hospitals and health centres. The university VLE WebLearn (open-source, Bodington) is now the primary source of administrative and teaching information, providing a common point of access for a range of eLearning resources: MedLearn, a customized version of the Magnolia Content Management System (open-source CMS) where Flash templates enable users to create simple interactions (model answers, MCQs); Question Mark Perception; and Case Scenarios (a simple web-authoring system). All users are entitled to a 'MyWebLearn' area, giving access to the full range of VLE tools and access controls.

Students are encouraged to create eLearning resources which are not normally assessed. Whilst formal opportunities for the creation of electronic resources are offered during SSM's, and year 6; the majority of projects have been initiated where students themselves have identified a need. There is currently no timetabled web training the University computer service offers WebLearn training, virtual help guides are available and the MSD learning technology team will help and advise individuals.

Students are increasingly using the tools provided by the VLE to create and manage projects, as individuals or small groups. The following case studies are four student-initiated projects which are making a significant impact on teaching practice in the division.

### Case One - Critical trauma2

During our A&E and orthopaedic attachment clinical, we learn the basics of trauma management in a two hour interactive session. At the end of the course we are examined by OSCE where we manage a short trauma scenario. To prepare for the OSCE, I role-played trauma scenarios with friends. We felt this helped us and wanted to share our experience with our peers.

We created a learning resource for students that consisted of two two-hourly teaching sessions complemented by an e-resource on WebLearn (<http://tinyurl.com/yprxr4>). On the e-resource there is a downloadable handbook but more usefully there are videos with accompanying text illustrating the management of a trauma patient. We created these using a digital camera and a manikin in the resuscitation centre. Consultant surgeons reviewed the eLearning material and some of the actual sessions to ensure accuracy.

The WebLearn staff were vital for the project. They showed me the booklets containing the minimal amount of HTML required to make a weblearn resource and also formatted my videos so they could be included on WebLearn. They also showed me the ways WebLearn could be used e.g. discussion rooms and sign up timetables.

The sessions were completely optional but the majority of each group came to them and students reported at the end of course feedback that they had found them helpful. Although I have now left medical school I continue to take a virtual interest in it and both the eLearning resource and teaching sessions are still being used.

## Case Two - Career information for medical students

### Rationale

The past few years have seen significant change and uncertainty regarding both the structure of medical careers and the methods of application for medical jobs. This lack of clarity has led to significant stress for students entering the profession. A careers website for medical students was developed to provide up-to-date careers information as well as links to further details.

### Development

A team of clinical students from different years and backgrounds (graduate entry, pre-clinical at either Oxford or Cambridge) generated a list of contents through peer questioning and a series of meetings. Data was collected over two months before the website was developed using Weblearn. Each member of the team had access to the main site that was temporarily hidden to public use. Once launched, new sections have been developed using MyWeblearn and the information transferred to the main website when completed. Medical School staff and the Junior Consultative Committee fully supported the venture, making access to new careers information and verifying published content easier. Funding was also organised through the medical school to send students to careers related conferences and then write reports for the website.



Figure 1: Careers front page

The site now has an annual rolling committee organised by the given year's BMA Medical Students' Committee representative, ensuring that information is current. A WebLearn questionnaire was used to collect feedback (Figure 2).

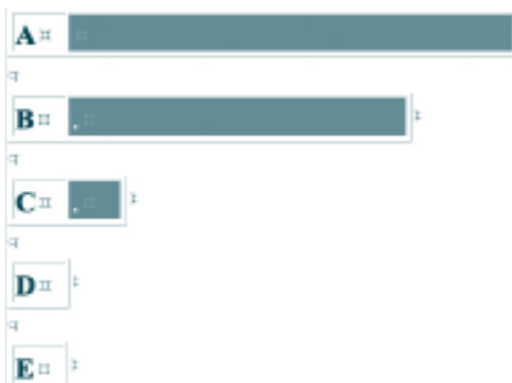


Figure 2: Responses to 'You found this site use useful or think you will find it useful in the future' where A = Strongly agree E = Strongly disagree (respondents = 49)

## Case Three - IT survey

I am the second year IT representative of the Oxford student 'MedSoc'. I created a questionnaire in the student WebLearn area to ask medical students about their experiences of IT. The questions covered: how/ why students used IT, what they found useful, wanted changing, expanding or introducing. Further questions about physical and virtual facilities and the possibility of student created resources (information, quizzes, and competitions).

## Results

### Why do you use IT?

Responses	128	
Easy	50	
Research/Information	40	(i.e. large reservoir)
Speed/efficiency/fast	21	
Resources (relevant)	9	e.g. Wikipedia
Edit text/work electronically	5	
Wikipedia	3	

### What do you use?

Responses	136
WebMail	113
WebLearn	113
Word	37
Pubmed	36
CAL	31
Wikipedia	21
Google	21
Library or OLIS	20
syllabus or curriculum	6
booking (tutorials)	4

## Why do you use WebLearn?

<b>Responses</b>	<b>135</b>
Lecture slideshows/handouts	37
quiz, test yourself	37
syllabus	31
information	26
timetable	19
exam papers	14
resources	6
image	4
video	1

## What do you want more of?

<b>Responses</b>	<b>59</b>	
lecture/notes	26	more, reading list, revision,
quiz, multiple, self -test	15	practice part A style
images/diagrams	7	images from lectures, diagrams, MRI, animated images, medical image banks
syllabus	4	relationship with syllabus, expand
clinical	3	applying clinical school, clinical references, relevant research
revision	3	comprehensive notes
nothing, satisfied	2	
discussion board	1	Students, tutors/lecturers
essay writing styles	1	
FHS help	1	

## Case Four - Surgery eLearning

Having just completed my final examinations (January 2007), I was aware that there are lots of 30 minute-1 hour slots of time in between theatre cases or after ward rounds when consultants or registrars who are supposed to be teaching medical students quite reasonably get called off on emergencies. What was required was a resource students could dip into, self-contained interactive learning that had a strong clinical flavour, required interpretation of 'real' investigations, results with instant feedback and model answers.

I spoke to the tutor for surgery, who agreed to supervise me for a 2 week SSM to get the project off the ground. MSD-LT gave advice and access to the software I needed. I signed up for a 'My

Weblearn' area and created the nascent pages there, testing them away from the public domain. I solved problems as they arose (e.g. constructing a banner for the page with some surgical instruments and a camera phone when one I wished to use was under copyright [Fig 1]). I took real examples of scenarios previous students had encountered on the wards and converted them with pictures, videos and short-answer questions into interactive cases to teach new students about the most common conditions seen in their surgery rotation.'



Figure 3: Front page of surgery eLearning

## Discussion

Students have strong ideas of what they wish to do, why they want to do it and their intended target audience. They are increasingly comfortable with technology, want to use pictures and videos, are aware of the requirements and implications of copyright and are happy to create their own digital images with cameras/camera phones. Some of the best examples of these student-initiated projects involve groups collaborating with a specific purpose to create defined programme, while continuity between years is maintained as administrative responsibility passes from one year to the next. Advice on good web practise and accessibility is provided via the VLE and learning technologists.

These student-initiated projects have all made a marked impact on medical school staff. For example, critical trauma became the focus of a 'Faculty Forum for Medical Education' with a student presentation of the project (<http://tinyurl.com/yte3x5>) in relation to students as teachers. Students have persuaded academic staff to contribute to these programmes, for example anaesthetist-led practical sessions are now included in the trauma module and the site is becoming a valuable exemplar. Similarly, as the careers site gained support from clinical school staff, the importance of providing information and support for graduating students has become increasingly recognized. Staff-led initiatives to provide students with careers information across the specialities is underway in conjunction with student representatives.

The influence of the IT survey extends beyond the division. The results, in particular the open comments, provide both MSD-LT and the central VLE administration team with valuable insights into student perception of the VLE and their wider IT needs. Within the division, the survey will be reported and discussed at the next Joint Consultative Committee. In response to comments, technical changes have been implemented on pre-clinical WebLearn; for example, RSS newsfeeds with links to external eLearning resources and training opportunities have been added.

There were a range of requests for facilities and services that are already available to students, indicating that increased efforts to inform students of provision may be as valuable as new initiatives.

Surgery eLearning resources provides another excellent exemplar that demonstrates what is readily achievable by students, and motivating both staff and students to explore the possibilities of eLearning further. All these cases have won central University OxTalent awards (<http://www.ict.ox.ac.uk/oxford/groups/oxtalent/>), disseminating them amongst a wider community.

## Conclusion

Students were asked to summarise what they had learnt/gained during these developments. Comments included:

‘In order to create a learning resource I had to really know my subject which benefits my medical career. Made me realise that it was possible for someone to doesn’t know anything about computers to create a learning resource. Gave me confidence in teaching and has made me less anxious about teaching in the future. Was great for networking and meeting people who had similar interests to mine.’

‘This project has helped me personally to develop considerable managerial skills, from chairing meetings to organising a team and liaising with members of staff. I have learnt that the Internet, and Weblearn in particular, is a fantastic user-friendly tool for disseminating information and teaching. The experience has shown that problems are identified, solutions can be easily found alongside help from helpful and enthusiastic peers and staff, and I would like to thank all of those involved. I have benefited because I am no longer receiving weekly emails asking for careers advice and updates, and my peers have benefited because the website offers much more advice than I could ever give personally.’

‘The survey has enabled me to appreciate the many needs and wants that still need to be met; many requests are common to most students thus highlighting the importance to make these changes rapidly.’

‘I gained valuable IT skills and experience which I hope to share with my new clinical colleagues in my hospital’

The benefits of student eLearning initiatives are that resources are created and ultimately managed by students. These initiatives influence faculty, stimulate discussion and are leading to further developments. Aside from IT and web skills, students valued the opportunity to work collaboratively, and gained project management and teaching experience. The associated costs, primarily learning technologist time, were minimal and the division gained useful self-perpetuating resources. The quality of these resources is maintained by peer review by students involved in developments, the wider student community, and academic staff participating in or supervising projects.

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# AM2 (b): Managing a successful programme – VMLE: Mission critical

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## Abstract

Dundee Medical School has been a leader in medical education for a number of years basing its course as a spiral curriculum with three phases; outcome-based education; an integrated systems-based approach; core curriculum with student selected components; tasked-based learning with over 100 core clinical problems and assessment-to-a-standard. In collaboration with a main partner OSMIS Ltd, Dundee Medical School has established and continued to develop since 1998 a Managed Learning Environment (MLE) system, first in a DOS operating system with a Windows web-based presentation to staff/students. It has now graduated to a total Windows framework which with its unique open source architecture permits even greater enhancements and interoperability.

JISC (2007)<sup>1</sup> defines the term MLE as 'a whole range of information systems and processes (including its VLE) that contributes directly, or indirectly, to learning and the management of that learning.' This relationship where the VLE is integral to the MLE has been recognised by Dundee from the outset and it has always therefore been the strategic objective to maintain an open source relationship concerning the many learning resources. Essentially the MLE is the necessary structure to provide ePortfolios, digital identity and differentiation, and personalised learning management.

Portfolio assessment is a central tenet of the Dundee curriculum assessment and the major feature of the Final 2nd Part Exam (5th Year) for MBChB. Thus the ongoing development of the latest Dundee Medical School Online (DMS online) framework system addresses the essential combining of those elements, facilitating different learning, personal or work related outcomes (Wikipedia, 2006)<sup>2</sup> not simply a depository. In addition ePortfolios are recognised as a digital identity, providing a place to reflect on personal experiences and store related information (Eradc, 2006)<sup>3</sup>. The individual Portfolio Assessment and Summary Sheets (PASS) used in the final exam are populated throughout the course, viewable by the student and will if so desired reviewed by the examiners at their own desk prior to the finals and as a prompt during the oral examination. In addition the growing demand for differentiation by MTAS, and enhanced transcripts through the American demands for the Medical Student Personal Evaluation (MSPE) require more sophisticated system data than currently delivered by University SMS.

A further development to augment the current range of support resources for personalised learning is the newly developed tutor support system again integral to DMS online which is a Knowledge Validation Software System (KVSS). Designed by the medical school in partnership with a local company 3MRT Ltd it will offer considerable benefits to the medical student. Whether it arrives by blogs, RSS<sup>4</sup>, wikis, white paper, conference notes, press release, scientific journal, search engine or any other of the numerous information sources available to us today, the validation is generally

<sup>1</sup> JISC 2007 [www.jisc.ac.uk/mle/](http://www.jisc.ac.uk/mle/)

<sup>2</sup> Wikipedia (2006), Available online: <http://en.wikipedia.org/wiki/EPortfolio> (accessed 7 January 2008)

<sup>3</sup> Eradc (2006), 'What is an e-Portfolio?' Available online: <http://www.eradc.org/description.php> (accessed 7 January 2008)

<sup>4</sup> RSS Rich Site Summary <http://www.whatisrss.com> (accessed 7 January 2008)

left to the individual recipient. That is the function of the KVSS, harnessing this individual 'knowledge aggregation' and re-presenting it to benefit the student and organisation.

DMS Online has the objective to continue to deliver within the one integrated open source designed system the personalised learning needs and management support of a modern, demanding medical course.

## Full text

### Introduction

The term VMLE model was described and reported in JTAP report No: 623 (Cook, J 2001) but appeared to fall in abeyance shortly afterwards when it was sought to define the terms MLE and VLE. JISC (2003, 2007) defines the term MLE as 'a whole range of information systems and processes (including its VLE) that contributes directly, or indirectly, to learning and the management of that learning.' Whether the inference and conclusion that an MLE was concerned solely with whole institutional systems has encouraged schools within institutions to focus on VLE development is not clear. However the consequence in our own experience is to raise a management expectation from a VLE that cannot be attained, producing at best a VLE with a 'hump' on its back in reality a one dimensional electronic notice board with limiting functionality.

The University over the past 5 years introduced a centrally managed Student Management System (SMS) known as SITS, and an enhanced VLE called Blackboard. The literature has encouraged Institutions to follow such an approach with the guidance to have such systems link to each other. Evidence so far suggests in our situation these systems are still not comfortable 'bedfellows' with tenuous linkage that fulfils certain needs within the Institution but at this time not the more complex needs of professional and vocational educational delivery.

Much of the University's needs from a SMS are satisfied by the management of matriculation and graduation and this consequently sets that standard. This supports standard degree pathways, assigning of academic modules and tracking those students through their 3-4 years of study. Similarly the needs for the delivery of the commonly found university subjects other than possibly law are not remotely demanding on the university VLE in the same manner as the vocational degree needs.

A medical course is more intensive in design; operationally more demanding of support on a day to day basis; involves greater individual management for large numbers of students at a time; wider variety of learning outcomes compounded with multiple off-campus clinical placements and 80% of all teaching delivered by non-university staff. At Dundee this is further complicated by the school, like many other medical schools, distant from the university and in shared accommodation with our NHS colleagues. Thus the management of the school is separate from the resource management of the university campus with all the obvious adherent issues.

The relationship with the VLEs integral to the MLE forming a VMLE has been recognised by the school from the beginning and additionally always been the strategic objective to maintain an open source relationship concerning the many learning resources. The VMLE concept model more ably describes and defines the needs of the vocational degree, eliminating or minimising unnecessary linkages and thus enhancing the effectiveness and efficiency of the system. The VMLE known as MESMIS (Medical School Staff/Student Management Information System) was designed and developed from the outset in 1998 as the 'one-stop-shop' for learning support and personalised learning.



**Figure 1: Dundee VMLE Model**

Despite the preparedness, commitment and investment by the School to the central University systems progress has been limited and frustrating. Approaches to the respective vendors of the SMS and VLE neither achieve a ready response nor priority to address their functionality. They advise formation of users groups with others (namely other schools internal and externally) which is wholly unrealistic. The needs of the internal schools are rarely similar to our own and finding other medical schools with the same central university systems are very limited. Thus the ideal of 'connecting up' the constituent parts by the use of interoperability standards such as IMS (+ FE extensions) (JISC Briefing paper 1 -2003) is overly optimistic.

## ***Establishment and maintenance of a VMLE***

### **VMLE curriculum ingredients**

'Improving the student experience is a vital element of Higher Education' Wagner, Academy for Advancement of L&T

It is fundamental to the successful delivery and use of a VMLE to have a structure and parameters with which each individual student may explore, contextualise and practice their own personal learning style. We know from experience that the development of a VLE simply by producing what are known as Reusable Learning Objects (RLOs) with neither structure nor context is expensive and wasteful producing ULOs (Unusable).

The VMLE includes and permits the following:

- Educational strategies.
- Course content.
- Learning outcomes.
- Educational experiences.
- Assessment.
- Educational environment.
- Individual students' learning style.
- Personal timetable and programme of work.

The SMS integral to MESMIS is the bedrock of the VMLE. At the medical school we had developed such a SMS some 4 years earlier than the university system and consequently this has simply required maintaining it annually with the arrival of any new cohort of students. Likewise the PG students are maintained throughout their studies but as they are not on set calendar entry dates such as semesters they are maintained as required.

Full access to personal files and personal learning resources is achieved by the student securely over the internet and from any location.

## **Tutor support, eMentoring including knowledge validation system**

Tutor support and the adherent supporting resources are a keystone of the VMLE and the personalisation of the students learning experience. The management system automatically maintains the linkages between the student and their personal tutor permitting ready and instant communication. Similarly it provides immediate and secure access by the tutor to their tutees permitting informed and supportive communication on personal issues as requested by the student, assessment counselling support and informal support forums which hopefully shortly will include the increased use of social websites to enhance that experience.

A recent development currently in its beta format is a newly designed Knowledge Validation System called 'Qui Zhi' (Chinese for seeking knowledge). This is an in-house designed system with software developed by a 3rd Party (3MRT) commercial company with whom we are already associated. Its function is to aggregate, validate and manage specialist knowledge for mentoring and eLearning. It will resolve and respond more constructively to questions and comments that were once placed on the students' forum site on MESMIS.

## **Medical student performance evaluation (MSPE)**

Over the past two years there has been an exponential increase in the demand for fuller student transcripts, requesting more detailed and graphic individual medical student evaluation. The demand for 'ranking' has now become part of the MTAS job application process and the MSPE (AAMC, 2002) has replaced what was known as the 'Deans Letter' for the North American accreditation process has placed similar demands on the administration.

The professional vocational transcripts have always been done by the medical school administration as the fuller elements of content; assessment and clinical experience are maintained and archived solely by the MSO. The university SMS cannot and will not competently handle the necessary archival records of each medical students course experience, consequently

without the VMLE this latest series of tasks would otherwise be unsupportable to the detriment of each student. In the increased competition for training posts and careers in medicine the inability to support our students in this manner would be highly negligent and wholly unacceptable.

## Mind-mapping

Another student resource linked through the VMLE portal and supported again by 3MRT is the mind-mapping VLE. This gives an extensive learning resource to those who enjoy this form of learning including standard course texts Kumar and Clarks 'Clinical Medicine' and a host of revision materials. In addition it also enjoys full access to the RCP Masterclass lessons in all areas of medicine specialties.

## Student self choice & student clinical placements

Within the VMLE there is a student selection/allocation system which supports individual preferences to be made on SSCs and in the senior year's (4/5) areas of preference for clinical experience. Normally for SSCs 6 choices are made in rank order whereas for clinical preferences they make 4 choices in the prescribed specialty areas. Choices in both processes are generally made over a 6-8 week period which permits sufficient time to consider; debate and if necessary edit individual original submissions up to the closing date. In all situations an algorithm allocates the best fit with a very high and reliable allocation providing mostly 1st or 2nd choices. The system is individually configurable to address annual SSC programme deletions or additions and similarly the clinical programme permits establishment of new placements, innovative groupings of blocks etc. as required for each academic session.

Most importantly it permits continual management of the individual programmes throughout the year allowing for change or modification for reasons such as unexpected individual student health or personal issues.

## Assessment and feedback

Assessment and feedback utilises a range of commercially produced packages, some again designed in-house and others such as Questionmark Perception (QMP) used as a standard within the university as a whole. The interoperability of the respective packages is excellent and interfaces at all levels within the VMLE. The IAT system (progress test) designed and used over the past 5 years is now being blended with a functional aspect of the QMP for a more cost effective approach to 'parsing' the questions for the progress test. The original Speedwell OMR packages are now being augmented by a TraxUK (Online feedback design and online Assessment system).

The VMLE utilises those systems to achieve management of the following:

- Formative and summative assessment.
- Online, written and project submissions.
- OMR and online documents.
- Case discussions and presentations entry.
- Assessment to a standard - marks and grades.
- Outcome and system specific assessment and feedback.

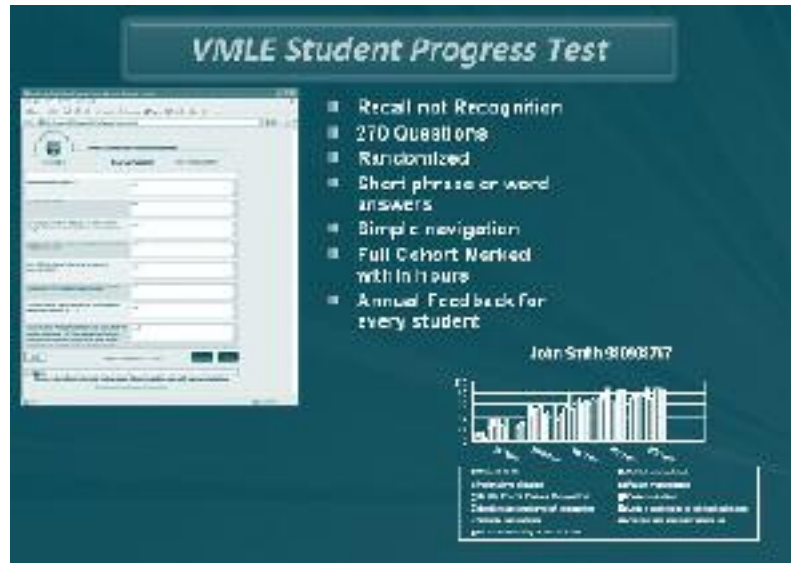


Figure 2: Progress test

## Feedback

Feedback is managed at all levels; staff/student feedback; assessment feedback; clinical placements and record of clinical experience (ROCE). The timetabling and prompting for the necessary feedback actions is broadcast through individual staff and student calendars utilising a 'traffic light' code. In addition they will self populate the individual ePortfolio and provide ready viewing for all necessary administration student/staff.



Figure 3: Feedback management

## ePortfolio assessment

Portfolio assessment is a central tenet of the Dundee curriculum assessment and the major feature of the Final 2nd Part Exam (5th Year) for MBChB (Davis et al, 2001). Thus the ongoing development of the latest Dundee Medical School Online (DMS online) framework system addresses the essential combining of those elements, facilitating different learning, personal or work related outcomes, not simply a depository (Wikipedia,2006). In addition ePortfolios are recognised as a digital identity, providing a place to reflect on personal experiences and store related information (Eradc, 2006). The individual Portfolio Assessment and Summary Sheets

(PASS) used in the final exam are populated throughout the course, viewable by the student and may ultimately be reviewed by the examiners at their own desk prior to the finals, and as a prompt during the viva.

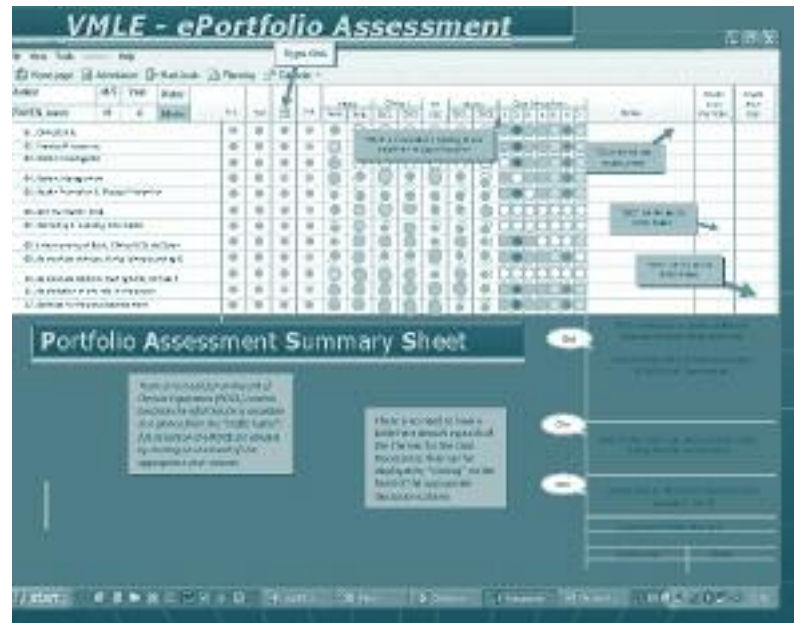


Figure 4: Student ePortfolio

## Curriculum map, course and lesson planning

Embedded within the VMLE is a fully related curriculum map which is dynamic and responsive to modifications, new delivery and learning opportunities which enhances both functions of course and lesson planning. The unified design and content of the VMLE permits audit and review strengthened by the following inherent close linkages:

- The expected learning outcomes.
- Curriculum content or areas of expertise covered.
- Student assessment.
- Learning opportunities.
- Learning location.
- Learning resources.
- Timetable.
- Staff.
- Curriculum management.
- Students.

## **Conclusions/recommendations**

The title of this paper is not intentionally a 'boastful' statement but more to express that the outcomes identified and achieved are knowingly dependent on the original VMLE concept and model. Despite guidance to seek large company involvement to ensure good linkages there is no evidence of it being a suitable strategy for vocational healthcare courses. The open approach with smaller, more responsive and less costly systems do work and should be encouraged and supported. The VMLE is mission critical to address the management, needs and objectives of an ever increasingly complex and demanding course. Political agenda and resource demands endanger the project. The separation of MLE and VLE has not been helpful changing focus and expectations with adherent cost and loss of functionality, understanding, efficiency and effectiveness.

Medical faculties should:

*Continue to encourage bespoke developments rather than adopt present commercial solutions*

A recommendation from JTAP-623, 2001

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# AM2 (c): Effective use of ePortfolios and mobile technologies to support learning and assessment in dentistry

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## Abstract

ePortfolios can provide dental students with a facility to record their clinical activities, monitor their progress, self-assessment and reflective learning. Supervisors can enter assessment grades for specific procedures/clinics and view aggregated summary data. The data collected may also have potential benefits for curriculum monitoring.

Web-based ePortfolios for dentistry were developed as part of a collaborative project (<http://www.ePortfolios.ac.uk/dentistry>). The ePortfolio for undergraduate dentistry drew on pedagogy from an existing paper-based portfolio developed at the dental school and built on technologies developed in an earlier project led by the School of Medical Education Development at Newcastle University.

A clinical recording system is at the core of the dental ePortfolio system. Students record each clinical patient visit in their ePortfolio. Once submitted each record can then be assessed by a tutor via the assessment section used in conjunction with verbal and online feedback. Once assessed all records then contribute to the progress summary of the student.

Summaries show at a glance how a student is doing on an individual basis and how they are doing in comparison to their clinical year.

These summaries include:

- Treatment procedure types/numbers.
- Visit counts.
- Grade percentages.
- Basic and detailed grades averages.

The clinical recording system has been designed to support a high level of customisation for different specialties and speciality-specific procedure lists and grading structures. The flexibility that the configuration of the clinical recording system provides means that ePortfolio can be implemented around the requirements of other dental schools and their constituent specialty clinics. The clinical recording system has also implemented in an ePortfolio used by partners in the dental school at QMUL (Barts).

The web-based portfolio has typically been accessed via desktop computers, however, access via mobile devices would prove to be an essential requirement within a clinical situation where students need to record their learning at the point of treatment and supervisors need to sign-off logbooks and provide assessment and feedback before the end of a given clinic.

A simplified assessment interface was therefore developed for handheld devices to aid this part of the assessment. This interface is automatically shown when accessed by handheld devices, typically over a 'Wifi' network.

A project to implement the use mobile technologies in undergraduate dentistry has been funded by CETL4HealthNE. These mobile technologies (as described above) will be used by students and staff in clinics over established wireless networks at Newcastle. The project is aligned to the practice based approaches to learning strand of the CETL, which aims to support learning within authentic practice-based environments with the aim of producing a workforce 'fit for purpose' in a modern health service. This will provide the facility for students to record their learning and for their supervisors to both assess and to provide immediate feedback in clinics.

The ePortfolio was successfully piloted at Newcastle with 3rd years during the 2006/7 academic year. Over 3,000 patient visits have been recorded in the system. It is currently running on 6 clinics with 3rd and 4th clinical years (174 students) with plans to expand out to all clinical years (256 students) in 2007/8. The mobile technologies are currently being used in all 6 clinics and results from evaluation studies, as part of the CETL4HealthNE funded project will be presented.

The ePortfolio has been successfully implemented at Newcastle University and provides valued support for learning and assessment. The project funded by CETL4HealthNE is helping develop a 'seamless' link between mobile devices and the ePortfolio, which increase its potential to support learning, feedback and assessment in the clinical environment. It is expected that the lessons learned from this project will have wider applicability outside dentistry by informing the general use of mobile technologies in education and the specific development of 'm-portfolio' approaches.

## Full text

### *Introduction and purpose*

A significant proportion of the dental undergraduate curriculum is dedicated to training in clinical skills. This is achieved by the provision of actual dental care. ePortfolios can provide dental students with a facility to record their clinical activities, monitor their progress, undertake self-assessment and engage in reflective learning. Teachers can subsequently co-assess student performance, provide feedback and view aggregated summary data. The data collected may also have potential benefits for curriculum monitoring.

Web-based ePortfolios for Dentistry were developed as part of a collaborative project (<http://www.ePortfolios.ac.uk/dentistry>). The ePortfolio for undergraduate dentistry drew on pedagogy from an existing paper-based portfolio developed at Newcastle University, School of Dental Sciences and built on technologies developed in an earlier project led by the School of Medical Education Development at Newcastle University.

## Methods

### The intervention

A clinical recording system is at the core of the dental ePortfolio system. Students record each clinical episode at the time and place of 'delivery' and assess their own performance within four different domains of that episode using a four point scale. Each student is provided with verbal and on-line feedback as the clinical teacher co-assesses the learner's performance. All assessed records contribute to the progress summary of the student.

Summaries not only provide an instantaneous measure of the quality and quantity of clinical work but also allow scrutiny of the different aspects of clinical provision alongside peer group comparison. These summaries include:

- Treatment procedure types/numbers.
- Visit counts.
- Grade percentages.
- Basic and detailed grade averages.

The clinical recording system has been designed to support a high level of customisation for different specialties and grading structures. The flexibility that the configuration of the clinical recording system provides means that ePortfolio can be implemented around the requirements of other dental schools and their constituent clinics. The clinical recording system has also been implemented in an ePortfolio used by partners in the dental school at QMUL (Barts).

Access to a web-based portfolio via mobile devices is an essential requirement within clinical situations. A simplified assessment interface was therefore developed for handheld devices to aid the teacher's co-assessment of performance. This interface is automatically shown when accessed by handheld devices, typically over a Wi-Fi network.

The implementation of mobile technologies for use with established wireless networks at Newcastle Dental School has been funded by CETL4HealthNE. The project is aligned to the practice based approaches to learning strand of the CETL, which aims to support learning within authentic practice-based environments with the aim of producing a workforce 'fit for purpose' in a modern health service.

### Evaluation

The portfolio was initially piloted for one term in one clinical speciality with all third year students (78). All students were asked to complete a questionnaire both before the pilot and after one term of the pilot. These questionnaires were administered in a different clinical area to prevent response bias.

The pre-pilot questionnaire measured baseline attitudes to reflection, grading and the workings of the existing paper based system. The post-pilot questionnaire was longer and included similar questions to the pre pilot to assess changes in attitude to reflection, grading and record keeping as well as questions relating to the ePortfolio itself.

The questionnaires were based on existing instruments for assessment of portfolios<sup>123</sup>, but also included additional questions relevant to this specific context, and were either 5 point Likert scale based or open 'free text' responses.

All of the students were given a random anonymous number, which was included in both pre- and post-pilot questionnaires to allow comparison but to maximise free expression.

## Results

The ePortfolio was successfully piloted in two clinical areas with Stage 3 dental undergraduates during the 2006/7 academic year. Over 3,000 patient visits were recorded in the system. In 2007/2008 the portfolio was expanded to 6 clinical areas and Stage 3 and 4 students (174) with plans to expand to all clinical years (256 students) in 2008/9.

In the evaluation, 60 of 78 (76.9%) stage 3 students completed the pre-pilot questionnaire and 72 (92.3%) students the post pilot. 55 (70.5%) students completed both pre- and post-pilot questionnaires. It is these 55 students who are included in the analyses.

Pre- and post-pilot scores and the change between are shown in Table 1. It can be seen that reflection became significantly easier and more useful and grading easier. The utility to the students of the clinical tutors' grading was significantly lower and more time consuming. Students felt that agreement on grading between students and clinical tutors increased significantly.

Student responses when asked to compare paper and electronic portfolios post-pilot are shown in Table 2. Mean scores for questions relating to accuracy are in the positive direction, i.e. with students expressing a preference for ePortfolio while all other measures are in the negative direction.

There is a relatively wide spread of opinions, as indicated by the standard deviations and the split in percentages between positive, negative and neutral responses. The mean scores are all closely centred around neutral (3), with only speed of use being more than 0.5 away from this. The concern over speed is confirmed by the split in responses, with a high proportion being negative (67.3%).

Other findings were that in the pre-pilot questionnaire, students found the paper portfolio easy (mean = 2.52), useful (mean = 2.87) but time consuming (mean = 2.93). Time spent waiting for clinicians' feedback using the paper system was felt to be excessive (mean = 2.65) and students found having to carry around a paper portfolio was difficult (mean = 3.30).

In the post-pilot questionnaire, students found the ePortfolio had good security (mean = 1.83). The training given had been only slightly useful (mean = 2.89), and the ePortfolio made interacting with their teacher slightly more difficult (mean = 3.13).

<sup>1</sup> Rees C, Sheard C. Undergraduate medical students' views about a reflective portfolio assessment of their communication skills learning. *Medical Education*. 2004 Feb;38(2):125-8

<sup>2</sup> Cotterill S, McDonald A, Drummond P, Hammond G. *Design, implementation and evaluation of a 'generic' ePortfolio: the Newcastle experience*. Proceedings of ePortfolios 2004, La Rochelle 2004 : [http://www.ePortfolios.ac.uk/FDTL4/docs/fdtl4\\_docs/ePortfolios\\_2004\\_Newcastle\\_Paper1.doc](http://www.ePortfolios.ac.uk/FDTL4/docs/fdtl4_docs/ePortfolios_2004_Newcastle_Paper1.doc) (accessed 22 November 2007)

<sup>3</sup> Cotterill S, Jones S, Walters R, Horner P, Moss J, McDonald A. *Evaluating the use of hand-held computers to access electronic portfolios and clinical guidelines in a wireless environment for undergraduate medical education*. Association for the Study of Medical Education 2006. Aberdeen 2006

In addition to Likert responses, students were asked for responses to the following questions in the post-pilot questionnaire:

- What did you most like about using the ePortfolio?
- What were the main problems and barriers to you using the ePortfolio?
- What features/support would have encouraged you to make more use of the ePortfolio?
- Any other comments?

Basic content analysis was undertaken on the responses with the comments divided into positive and negative themes. All responses to pre- and post-pilot questionnaire were included whether or not they had completed both questionnaires. Of the 72, 71 (98.6%) made at least one comment.

The three major positive themes were:

- Physical advantages including the benefit of not having to carry around a folder and not being able to lose records.
- Quality of record including the benefit of the data being organised, being able to gain an easy overview of activity, and improved feedback from tutors.
- Logistics including the ease of use and the level of detail recordable by the system.

Negative comments fell into the same three themes:

- Physical problems including not enough laptops being available and misperceptions about not being able to access the data outside of the clinic and losing data if the system 'broke'.
- Quality of records including either not being able to record enough detail or the system recording too much detail, and feedback being of a poorer quality.
- Logistics including the time consuming nature of completing the records, technical problems, and the need for more training.

## ***Discussion***

The ePortfolio has been successfully implemented at Newcastle University School of Dental Sciences and the evaluation of student views shows both advantages and disadvantages.

Positive aspects of the ePortfolio include its security, the end of having to carry around paper files, and the accuracy of records available. There was a significant increase in the utility and ease of reflection over time, although this was not reflected when students were asked to compare the system directly.

It may be that over one term, reflective skills increased naturally through increased experience, and this factor will almost certainly have played a part, but it is interesting to note that other areas such as grading and record keeping, which would be expected to improve at a similar rate, did not show significant increases.

One of the key findings from the quantitative data is the difference between student opinions when directly asked to compare paper and electronic versions and their change in attitude over time (i.e. comparing Table 2 with Table 1). Generally, changes were more positive when assessed over time than when students were asked to compare directly.

This difference in result may potentially be due to 'protest' responses, where students are inclined to give more negative opinions because of other more practical or technical problems with the system. Certainly, when the qualitative responses are analysed, the majority of the negative comments relate to technical or practical concerns.

The results on how the ePortfolio had affected feedback were mixed. This almost certainly reflects variation in how different teachers are using the system and providing their feedback, showing that when used well the system can improve feedback, but that it also has the potential to reduce feedback, and this is down to the attitude and technique of the teacher.

Several of the concerns were misunderstandings such as:

- Can't look outside of the clinic.
- If it broke, would lose all data.
- Can't put in data retrospectively/correct errors.

These misunderstandings reflect a need for more extensive training, also noted by the students in their comments.

The major concern reflected in all three methods of data collection (quantitative comparison over time, quantitative direct comparison and qualitative), is the time consuming nature of using the ePortfolio. This has improved since the pilot as the system has become more reliable and users have become more familiar but is still an issue. It is interesting to note that this was also a perceived problem with the paper system, although less so. There is therefore a balance between the extra time that the system takes to use on a day to day basis and the extra benefits it brings in terms of better reflection, more accurate and easily available records and the time saved longer term on compiling data, and the cost (in terms of time) versus benefit must be considered by users.

## Conclusions

The ePortfolio has been successfully implemented at Newcastle University School of Dental Sciences and provides valued support for learning and assessment. The project funded by CETL4HealthNE is helping develop a 'seamless' link between mobile devices and the ePortfolio, which increase its potential to support learning, feedback and assessment in the clinical environment<sup>4</sup>. Students generally found that the system improved reflection and accuracy of records, but that it was more time consuming. Technical 'teething problems' with the pilot may have influenced students' responses. It is expected that the lessons learned from this project will have wider applicability outside dentistry by informing the general use of mobile technologies in education and the specific development of 'm-portfolio' approaches

<sup>4</sup> Cotterill SJ, Angarita M, Horner P, Teasdale D, Moss J, Jones S, Walters R, Firth G, Hennessy S, McDonald AM, Fajardo R, Cendales JG, Quintero G. *Towards the m-portfolio*. Proc. ePortfolios 2006, Oxford, 2006

## Tables

		Pre-Pilot		Post-Pilot		Change (Pre - Post)	
		Mean	SD	Mean	SD	Mean	SD
I find reflection on my clinical experiences	Easy (1) Difficult (5)	2.67	1.099	2.33	0.932	0.33*	1.213
	Useful (1) Irrelevant (5)	2.37	1.263	1.94	1.071	0.43*	1.222
	Quick (1) Time Consuming (5)	3.28	0.920	3.20	1.105	0.07	1.163
I find keeping a record of my clinical activity	Easy (1) Difficult (5)	2.50	0.927	2.44	1.093	0.06	1.406
	Useful (1) Irrelevant (5)	1.94	0.811	1.89	1.076	0.06	1.459
	Quick (1) Time Consuming (5)	3.02	0.921	3.11	1.058	-0.09	1.350
I find grading my clinical work	Easy (1) Difficult (5)	3.22	1.040	2.33	0.869	0.89*	1.160
	Useful (1) Irrelevant (5)	2.19	1.029	1.91	0.976	0.28	1.379
	Quick (1) Time Consuming (5)	2.74	1.067	2.83	1.161	-0.09	1.545
I find my clinician's grades and feedback	Useful (1) Irrelevant (5)	1.28	0.596	1.87	1.047	-0.59*	1.267
	Quick (1) Time Consuming (5)	2.25	0.939	2.94	1.280	-0.70*	1.310
My grades usually agree with clinician's	Often (1) Rarely (5)	1.98	0.739	1.76	0.581	0.22*	0.718

\*= Significant difference ( $p < 0.05$ ) (t-test)

**Table 1: Mean and standard deviation of pre- and post-pilot scores for questions assessing reflection and grading and record keeping, and mean change (n=55)**

		Mean	SD	% negative response (4 or 5)	% positive response (1 or 2)	% neutral response (3)
Using the ePortfolio compared to paper is:	Easier (1) More difficult (5)	3.35	1.35	53.7	20.4	25.9
	More useful (1) Less usefull (5)	3.35	1.35	53.7	20.4	25.9
	Quick (1) Time consuming (5)	3.35	1.35	53.7	20.4	25.9
	Helps reflection more (1) Helps reflection less (5)	3.35	1.35	53.7	20.4	25.9
	More accurate - activity records (1) Less accurate (5)	3.35	1.35	53.7	20.4	25.9
	More accurate - grading (1) Less accurate (5)	3.35	1.35	53.7	20.4	25.9

**Table 2: Mean scores for questions comparing the ePortfolio to paper in post-pilot questionnaire (n=55)**

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# AM3 (a): Using an ePortfolio to encourage independent learning, self-evaluation and peer review

**Jim Aiton, Julie Struthers, Susie Whiten, Simon Cotterill\* and Paul Horner\***, School of Medicine, University of St Andrews and \*University of Newcastle Medical School, Newcastle, UK

## Abstract

Our ePortfolio (originally developed at the Medical School in Newcastle) is used to encourage students to plan, record and reflect on their own learning and to provide evidence of continuing professional development. We have been using the ePortfolio for 3 years and there are approximately 450 students enrolled annually.

An extensive training programme gives students experience of maintaining both a reflective and skills-based portfolio. Each semester, students complete at least two reflective entries linked to specific learning experiences. These progressively more challenging tasks include reflection on early learning experiences at medical school and later, address more complex clinically related events encountered in primary health care attachments. Reflective pieces are uploaded to their portfolio, shared with and reviewed by personal tutors.

A major component of the clinical context in the curriculum is provided by a series of patient scenarios which are integrated with curriculum content to illustrate the clinical application of the basic sciences to common medical conditions. These scenarios provide a focus for clinical skills training and an introduction to clinical reasoning. Student-led, small group workshops encourage the application of prior knowledge and the acquisition of new knowledge. They also provide a context for development of relevant communication skills and a forum for the discussion of appropriate professional attitudes. Students use their portfolios to identify and record their own learning goals arising from these workshops relating to relevant knowledge, skills and attitudes.

In order to ensure that students practise and maintain their clinical skills we have designed a 'Clinical Skills Practice' tool within the ePortfolio, with which they can provide evidence of their developing clinical skills. Students are expected to record practise sessions and peer review of their clinical skills prior to assessment; key skills are identified for formal review by a tutor. Automatic confirmatory emails are sent to peers and staff to confirm their involvement in the review process.

Student use of the portfolio relies on their self-motivation and commitment. However, it is also clear that students generally require feedback to ensure that they are developing the appropriate skills. For this reason, we have chosen to adopt a 'light touch' to 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. The remainder are left to the discretion of the students. Assessment is predominantly formative with the expectation that all self-study tasks are completed. Summative assessment occurs in practical examinations where students may be asked to demonstrate portfolio skills. The third year Honours dissertation has a reflective portfolio component which is also assessed (5% of the final grade).

Evaluation results show our students are now aware of the long term career benefits of maintaining a portfolio but staff awareness and feedback are key to emphasising its value and importance.

## Full text

### *Introduction and purpose*

The three year BSc Honours Degree in Medicine at the University of St Andrews provides an integrated review of all the body systems in relation to their normal structure and function, how disease processes affect the individual, the mechanism of action of drugs used to treat disease and how the health of individuals affects families and the community in which they live. In each year of study, students have opportunities to extend their clinical experience and make explicit links between the basic medical and clinical sciences in settings ranging from GP practices and community health centres to tertiary health care attachments in local hospitals. A generic skills strand runs through all three years of the curriculum and develops themes such as the scientific method, the role of evidence based medicine in health care provision and medical informatics. At this early stage of their training, students are encouraged to develop professional attitudes and the portfolio is used to provide a framework for an independent approach to learning and clinical skills acquisition and also to introduce the concept of professional development.

The unique challenge that we have to address is that, on completion of their Honours degree, our students will go on to complete their clinical training in one of 5 different medical schools (Aberdeen, Dundee, Edinburgh, Glasgow and Manchester). Therefore, students from St Andrews will have to integrate with groups of students who have been exposed to different curricula and with different experiences of maintaining portfolios. To help our students cope with this potential diversity in portfolio implementation (both paper-based and electronic) and philosophy, we have developed a training programme which gives them the opportunity to maintain both a reflective and skills-based ePortfolio.

### *Method*

#### **Integrating the ePortfolio in the curriculum**

The Bute School of Medicine web-based course management system (Galen) acts as a portal to our ePortfolio which is based on the ePet portfolio developed by the Newcastle University Medical School<sup>12</sup>. Our ePortfolio has a number of sections designed to facilitate planning, recording and reflection and students are able to choose to use any, or all of these tools. However, since we have just completed the first iteration of a new curriculum and are currently reviewing its content and delivery, we have chosen to focus on the development of a small number of key reflective and recording skills in particular areas of the portfolio:

<sup>1</sup> Cotterill SJ, McDonald AM, Drummond P, Hammond GR. Design, implementation and evaluation of a 'generic' ePortfolio: the Newcastle experience. *ePortfolios* (2004) Available: <http://www.ePortfolios.ac.uk/FDTL4?pid=49> (accessed 4 January 2008)

<sup>2</sup> Cotterill SJ, Aiton JF, Bradley PM, Hammond GR, McDonald AM, Struthers J, and Whiten S (2006) A flexible component-based ePortfolio: adapting and embedding in the curriculum. In: *Handbook of Research on ePortfolios* (ed. Jaffari, A and Kaufman, C) Idea Group. pp 292 – 304.

- Patient Scenarios – recording personal learning outcomes related to clinical scenarios.
- Clinical Skills – recording self, peer and staff review of clinical skills acquisition.
- My Documents – key written submissions (eg PowerPoint presentations and reflective pieces) shared with personal tutors.

Selected areas of the portfolio can be shared with personal tutors, peers and guests who are able to provide feedback and comment on submitted material. Personal tutors have the remit to monitor compliance and provide feedback on key portfolio tasks set throughout the course. Though the students are asked to separate their 'public' and 'private' reflections until such time as they choose to make them accessible, our expectation is that set tasks are accessible to those peers and/or personal tutors with whom students have elected to share. The table shows the training tasks for new students during their first semester.


MD2001	Event	Nature of task	Objective
Week 1	Presentation	Orientation	Introduction to portfolios
	Workshop	Orientation	Getting started with the ePortfolio
Week 2	Workshop	Reflective task	Explore feelings and emotions felt during the first visit to the dissection room
Week 3 - 12	Guided study	Tool introduction	Patient scenario – recording knowledge, skills and attitudes
	Guided study	Reflective task	First GP attachment - to relate communication skills teaching to the real life experience of communication between members of a healthcare team working in a GP practice
Week 4	Guided study	Reflective task	Good / Bad reflection – paper based task to read examples of different reflective writing pieces and to review and assess a reflective piece from a peer
Week 5	Guided study	Tool introduction	Clinical Skills Review Tool – participate in, and record self and peer review of skills acquisition
Week 6	Guided study	Reflective task	Group work/ group dynamics - explore views/ impressions/ feelings on how your group is working and how you are relating to others in the group


## Patient scenarios within the portfolio

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.

The GP recognises Jimmy, a 26 year old known intravenous drug user. The GP is confident with your technique and asks you to continue. The GP then gives Jimmy an injection. After a further period of ventilation, he begins to groan and breathe spontaneously.

The GP asks you to roll him into the recovery position.

Files:  Figure 1. Mr Jimmy Burns

 Clinical Skills

### Identify Personal Learning Needs

	What I need to know	Target date	Done	
<b>Knowledge</b>	1. What is the significance of a weak carotid pulse? Where is the carotid pulse?	04/01/2008	☑	Edit
	<input type="button" value="Add Learning Need"/>			
<b>Skills</b>	2. Placing a casualty in the recovery position	04/01/2008	☑	Edit
	<input type="button" value="Add Learning Need"/>			
<b>Attitudes</b>	3. Is there any danger of infection during mouth to mouth resuscitation?	04/01/2008	☑	Edit
	4. What behaviour would be expected from a medical student as opposed to a qualified GP?	04/01/2008	☑	Edit
	<input type="button" value="Add Learning Need"/>			

Figure 1 shows part of the ‘Jimmy Burns’ patient scenario and the associated list of personal learning needs added by a student after the small group workshop discussion.

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 practise 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 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.

## Your Clinical Skills Review and Assessment Data

MD2000					
	Date Peer Reviewed	Peer Reviewer	Date Staff Reviewed	Staff Reviewer	Passed OSPE
<input checked="" type="checkbox"/> ABC assessment	4-10-2005	Alisdair Gilmour	Not Required	Not Required	-
<input checked="" type="checkbox"/> Airway management including using pocket mask	3-10-2005	Alisdair Gilmour	Not Required	Not Required	2-10-2005
<input checked="" type="checkbox"/> Assessment of carotid and radial pulses	-	-	Not Required	Not Required	-
<input checked="" type="checkbox"/> Basic Life Support (BLS)	-	-	30-09-2005	Dr Susan Whiten	8-01-2008
	25-10-2007	Jimmy Mack	-	-	-
	25-10-2007	Jane Andrews	-	-	-
	-	-	4-01-2008	Kate Struthers	-
<input checked="" type="checkbox"/> Blood Pressure measurement	4-01-2008	All Alnoor Kara	-	-	-
	8-01-2008	VEER VITHALANI	-	-	-
	-	-	9-01-2008	Sum Sum Lo	-

Figure 2 shows a clinical skills review record containing peer and staff review confirmations.

The patient scenario and clinical skills section of the ePortfolio helps students to take more responsibility for their own learning. It encourages them to set their own goals, record strategies for achieving the goals and document their participation in the teaching of other students. In order to introduce the concept of 360° appraisal to our students, we have recently introduced peer assessment of contributions to the patient scenario workshops and intend to add this additional evidence of personal development to the ePortfolio record.

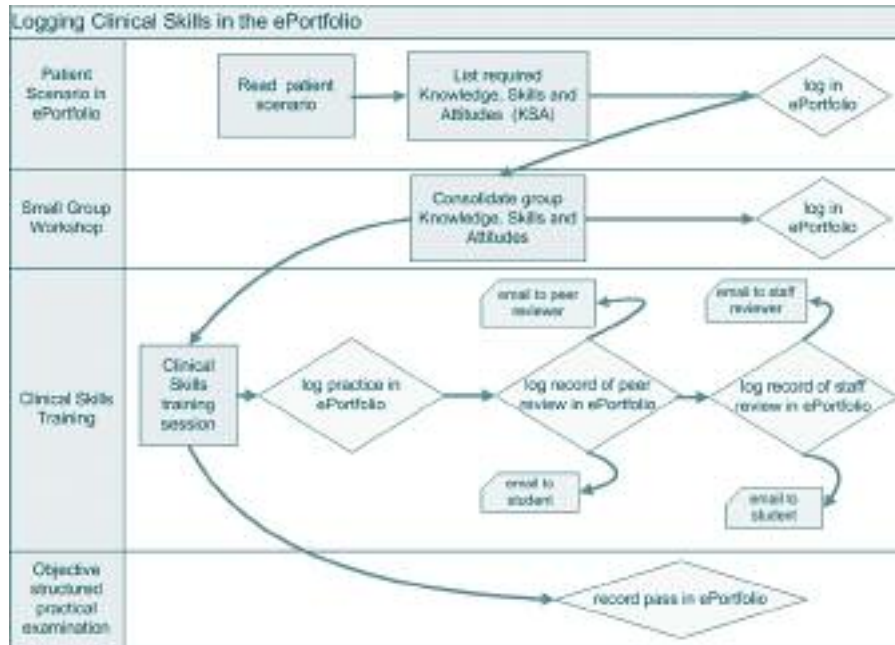


Figure 3 is a diagram showing the inter-relationship between the ePortfolio and the patient scenario workshops.

## Progress/discussion

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. Assessment is predominantly formative with the expectation that all the set 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 (Figure 4) 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.

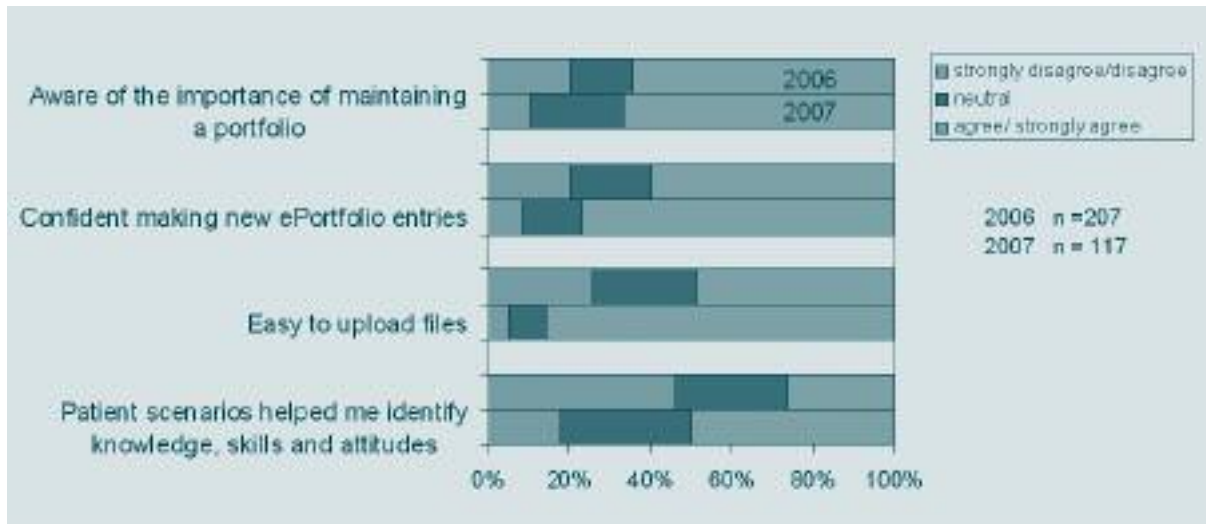


Figure 4: Student evaluation data

## Conclusions/recommendations

Embedding our ePortfolio is an ongoing process. 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. Though our students are at the beginning of their careers, they understand that maintaining a portfolio will be an important aspect of their professional development.

The accumulation of a log recording developing competencies provides students with tangible evidence of their acquisition of appropriate knowledge, skills and attitudes. A more formal and practical approach to portfolio training appears to have benefited the students, though we are aware that further work with the students is required before the ePortfolio is fully embraced as a mechanism for recording their continuing professional development. The first year representatives on the Student–Staff liaison committee reported that their own feedback from the class indicated that ...'the portfolio was going well' which, though somewhat anecdotal, suggests that we are progressing in the right direction!

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# AM3 (b): Using ePortfolios to support annual appraisal in undergraduate medicine

Simon Cotterill, Philip Bradley, Rosie Stacy, Newcastle University

## Abstract

Appraisal can play an important role in formative development for undergraduate medicine and other health professions. It can also help students prepare for the regular appraisals and assessments that they will face during their professional careers. At Newcastle University we developed the approach of using ePortfolios to support annual appraisal. This built on an established ePortfolio (ePET), which was first introduced into the MBBS curriculum in the 2003/4 academic year as part of a collaborative FDTL-4 project (<http://www.ePortfolios.ac.uk>).

The ePortfolio was extended to include a 'My Evidence' section in which students collected evidence against 'high level' learning outcomes and skills (9 outcomes in Stage 1 and 13 from Stage 2 onwards). The summaries of evidence from the portfolio were then used to form the foundation for a face-to-face appraisal at the end of the academic year. This included the facility for students to add evidence (uploading files, reflective accounts or linking to external resources) for specific learning outcomes/skills.

Supported by a Newcastle University Teaching Fellowship the technology and pedagogy were developed and in place for the start of the 2005/6 academic year. 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. The appraiser 'signed-off' the portfolio as 'satisfactory' (where appropriate). It was not formally graded but was a pre-requisite for progression.

An online questionnaire was devised to evaluate the ePortfolio and appraisal process. This included both fixed response and open-ended questions.

First year students on the A106 programme (n=237) had an appraisal at the end of 2005/6. Responses to the evaluation questionnaire in 2005/6 (90% response rate) indicated that 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.

Eighty one percent of students found the 'My Evidence' section of the portfolio easy to navigate and 91% found attaching evidence (files, links etc) to be straight forward. Sixty three percent of students felt some level of apprehension about having an appraisal, however, 91% of students felt that their appraiser made them feel at ease.

Qualitative analysis of the responses to the open ended questions found that student perceptions of what was most helpful about the process included (in order of frequency): reflection, personal interaction during the appraisal, learning evidencing skills, the process of using the ePortfolio for

appraisal, planning / goal setting, reassurance about progress, and specific advice. There were less issues about what students found least helpful; the main issue was timing (near exams). Lack of understanding the about the process, and the limited time of the session were also identified by a small number of students.

Appraisers also provided written feedback, which was predominantly positive.

Following a predominantly positive evaluation of the technology and the appraisal process it is being rolled out across the full 5 years of the MBBS programme (extended to Stage 2 of the A106 programme plus the A101 accelerated programme in 2006/7).

## Full text

### Introduction

Appraisal can play an important role in formative development for undergraduate medicine and other health professions<sup>1234</sup>. It can also help students prepare for the regular appraisals and assessments that they will face during their professional careers. At Newcastle University we developed the approach of using ePortfolios to support annual appraisal. This built on an established ePortfolio (ePET), which was first introduced into the MBBS curriculum in the 2003/4 academic year as part of a collaborative FDTL-4 project<sup>567</sup>.

### Methods

The ePortfolio was extended to include a 'My Evidence' section in which students collect evidence against 'high level' learning outcomes and skills (9 outcomes in Stage 1 and 13 from Stage 2 onwards; see Figure 1). 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 (Figure 2). The summary is limited to a maximum of 200 words (this was based on good practice from QUT<sup>8</sup>, 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

<sup>1</sup> *Tomorrow's Doctors*, GMC, London, 2002

<sup>2</sup> Murdoch-Eaton DG, Levene MI. Formal appraisal of undergraduate medical students: is it worth the effort? *Med Teach*. 2004; 26(1):28-32

<sup>3</sup> Conlo M. Appraisal: the catalyst of personal development. *BMJ* 2003;327:389-391

<sup>4</sup> Murdoch-Eaton D, Pell G, Roberts T. Changing approach to undergraduate studies documented during annual appraisal of medical students. *Med Teach*. 2007;29(2-3):111-8

<sup>5</sup> <http://www.eportfolios.ac.uk/FDTL4> (accessed 7 January 2008)

<sup>6</sup> Cotterill SJ, McDonald AM, Drummond P, Hammond GR. *Design, implementation and evaluation of a 'generic' ePortfolio: the Newcastle experience*. Proc. ePortfolios 2004 [ISBN 2-9524576-0-3].

<sup>7</sup> Cotterill SJ, Aiton J, Bradley PM, Hammond GR, McDonald AM, Struthers J, Whiten S. A flexible component-based ePortfolio: adapting and embedding in the curriculum. In: In Jafari A, Kaufman C, ed. *Handbook of Research on ePortfolios*. Pennsylvania: Idea Group Inc, 2006

<sup>8</sup> Harper, Wendy E. and McCowan, Colin R. and Hauville, Kim L. and Moody, Kim E. and Chorazyczewski, Dominique M. (2007) *Voluntary or compulsory: Using a variety of approaches and models to implement the Student e-Portfolio across 40,000 students at QUT*. In Proceedings ePortfolio Australia, RMIT University, Melbourne.

about an experience in such a way to make the meaning and outcome of the experience more easily identified and communicated to others<sup>9</sup>.

Supported by a Newcastle University Teaching Fellowship (SC) the technology and pedagogy were developed and in place for the start of the 2005/6 academic year. 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.

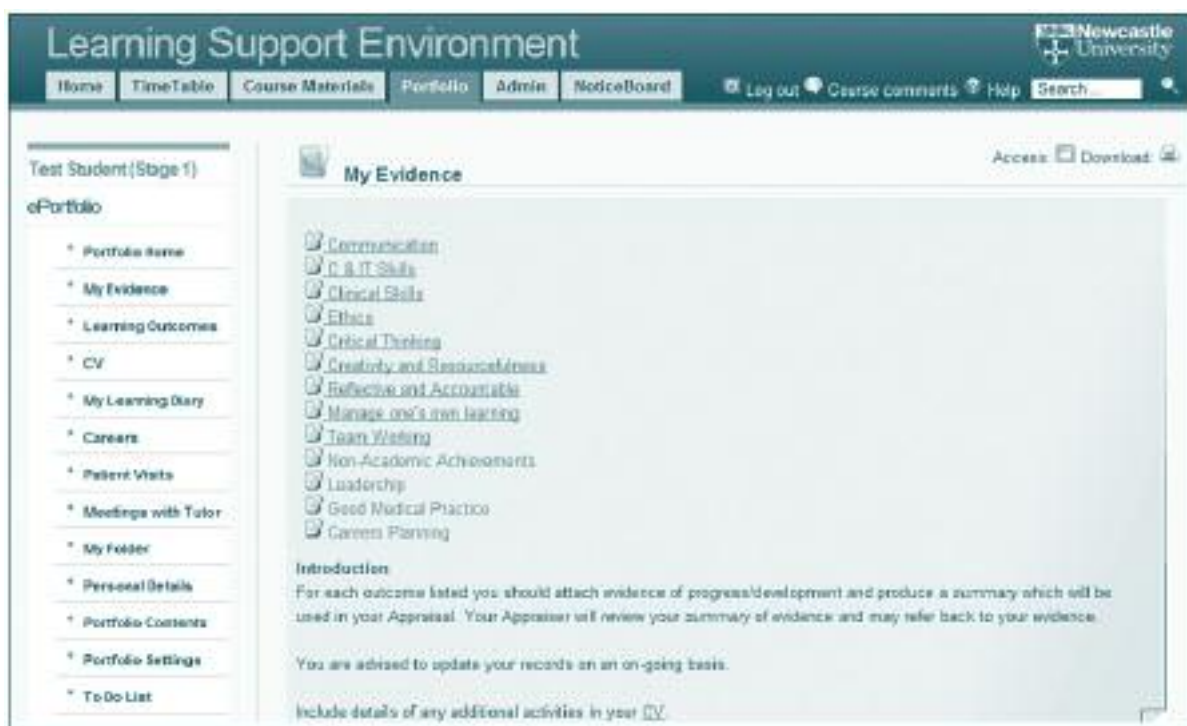


Figure 1: My Evidence section of the MBBS portfolio

<sup>9</sup> <http://www.studentportfolio.qut.edu.au/forstudents/gettingstarted/reflecting.jsp> (accessed 7 January 2008)

The screenshot displays a web-based ePortfolio interface. At the top, the title 'Communication' is visible. Below it, the 'Summary of Evidence' section contains a text box with the following content: 'I have attended all the communication skills sessions and have had positive feedback from the group leaders. My written communication has improved and I achieved an M for presentation in my last assignment. In my hospital and GP visits I was able to communicate effectively with the patients and presented a concise summary of my findings. Record created: 13/10/2005 Modified: 05/03/2007'. Below this, the 'Supporting Evidence' section lists two attached files: 'File: all\_staged\_ppt\_abstract\_for\_ASME\_2005.doc: 17/08/2006' and 'File: all\_gams\_presentation\_ashatko\_2005.doc: 17/08/2006', each with an 'Edit' button. The 'Reflective Accounts' section shows a text entry: 'Completed my Communications Skills Training (21/09/2005): This was a huge achievement for me.' with an 'Edit' button.

**Figure 2. Simplified example of summary and evidence.**

An online questionnaire was devised to evaluate the ePortfolio and appraisal process. This included both fixed response (6 point Likert scale) and open-ended questions.

## Results

First year students on the A106 programme (n=237) had an appraisal at the end of 2005/6. Responses to the evaluation questionnaire in 2005/6 (90% response rate) indicated that 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.

Eighty one percent of students found the 'My Evidence' section of the portfolio easy to navigate and 91% found attaching evidence (files, links etc) to be straight forward. Sixty three percent of students felt some level of apprehension about having an appraisal, however, 91% of students felt that their appraiser made them feel at ease.

Qualitative analysis of the responses to the open ended questions found that student perceptions of what was most helpful about the process (Table 1) included (in order of frequency): reflection, personal interaction during the appraisal, learning evidencing skills, the process of using the ePortfolio for appraisal, planning / goal setting, reassurance about progress, and specific advice. There were less issues about what students found least helpful (Table 2); the main issue was timing (near exams). Lack of understanding the about the process, and the limited time of the session were also identified by a small number of students.

Reflection	43
Holistic / Overview	12
Personal / Interaction	35
Reassurance	8
Process (portfolio / appraisal)	17
Learning Evidencing Skills	17
Planning / goal setting	14
Specific Advice	8

Table 1: What did you most helpful about the appraisal session? (102 students responded)

Personal / Interaction	20
Timing (near exams / lectures)	19
Rational / understanding the process	9
Limited time of session	7
No benefit (reason unspecified)	7

Table 2: What did you least helpful about the appraisal session? (75 students responded)

“It made me think about what I have achieved this year.”
“I was able to clarify to myself via the facilitator both the things that have gone well regarding my learning this year, and the things that I needed to improve.”
“Brought things together. Made me sum up my overall progress of the year, which was a really nice thing to do. Positive reflection.”
“It brought together different aspects of my learning to date.”
“Chance to talk through how I felt the year went and what I was worried about.”
“It allowed me to find out if I was completing the portfolio and using it in the correct way. It gave me some feedback on my general progress this year.”
“helpful to be able to reflect upon my development, especially learning what counted as evidence.”
“...thinking about how I will continue next year was useful as it is good to make plans now rather than just let yourself slip back into bad habits.”
“It came at a time when I wanted to be revising for exams. It would be more useful after the exams.”
“I didn’t really know before the session how much evidence or how many reflections were required to satisfactory evidence.”
“It was difficult to know what was wanted from it.”
“The time - too short which meant we could not discuss fully some of the issues I raised.”

Table 3: Representative responses

<b>Organisation &amp; Time management</b>	<b>34</b>
<b>Study Skills</b>	<b>21</b>
<b>Creativity / Resourcefulness</b>	<b>11</b>
<b>Motivation</b>	<b>9</b>
<b>Communication Skills</b>	<b>6</b>
<b>Reflection</b>	<b>6</b>
<b>Extra curricula activities</b>	<b>6</b>
<b>Clinical skills</b>	<b>2</b>
<b>Misc.</b>	<b>9</b>

**Table 4: Following the session what aspect of your development do you feel that you most need to improve on?**

A representative sample of responses is included in Table 3 and areas that students felt they most needed to improve on (post appraisal) in Table 4.

Appraisers also provided written feedback, which was predominantly positive.

Following a predominantly positive evaluation of the technology and the appraisal process it is being rolled out across the full 5 years of the MBBS programme (extended to Stage 2 of the A106 programme plus the A101 accelerated programme in 2006/7). From 2006/7 the timing of the appraisals was brought forward, based on the feedback received in the first year.

## Discussion

The introduction of annual appraisal supported by eportfolio has been successful in the MBBS curriculum at Newcastle. As well as helping students assess their progress it should also help build experience for the regular appraisals and assessments that are part of professional practice. The use of word limits on the summaries and reflective accounts were introduced to help students develop the ability to provide concise evidencing skills, which may be valuable in job application and interview processes. The portfolio was structured to evidence a small number of 'higher level' learning outcomes (including creativity and resourcefulness), many of these are not easily assessed by other forms of assessment. Students learnt that their wider experience, including that outside their formal learning, can be used as evidence, with a view to promoting a more holistic view of learning and development.

The blended learning approach has worked well in this context and students valued the face-to-face contact of the appraisal sessions. We took the decision to train a small number of appraisers, rather than request time from the large number of personal tutors (whose role typically has more emphasis on pastoral, rather than academic tutoring). Many students did feel apprehensive about their first appraisal, but typically reported that the appraiser put them at ease. The process was a significant demand on both appraisees' and appraisers' time, the 15 minute appraisal sessions have proved scalable, though some students felt that more time would have been beneficial.

The pedagogy developed here has been fed back into the generic ePET portfolio. In other contexts the process has been extended so that blog entries can be linked to specific learning outcomes/skills so that they automatically appear in the evidence log of the ePortfolio<sup>10</sup>.

<sup>10</sup> Cotterill SJ, Horner P, Gill S, McDonald AM, Drummond P, Teasdale D, Whitworth A, Hammond GR. *Beyond the Blog: getting the right level of structure in an ePortfolio to support learning*. Proc. ePortfolios 2007, Maastricht

## **Conclusions**

The annual appraisal supported by ePortfolio has been successfully introduced in the MBBS curriculum at Newcastle. This blended learning approach is being rolled out across the full 5 years of the MBBS programme.

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# AM3 (c): Supporting student appraisal through an ePortfolio framework

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## Abstract

This presentation reports on the successful design, implementation and recent student evaluation of an electronic portfolio designed to support a constructive annual appraisal process for undergraduate medical students studying the MB BS at Queen Mary, University of London. The principles and framework for the portfolio were the outcome of collaborative work involving staff from the Centre for Medical Education and Educational and Staff Development, clinical and research staff from the School of Medicine and Dentistry and a representative group of undergraduate students. An initial review of the literature on the use of portfolios within higher education was complemented by exploration of portfolios established by the Universities of Leeds and Newcastle using guest accounts. In addition, the experiences of staff from the Institute of Dentistry at Queen Mary in piloting an electronic progress file in the form of a clinical skills log were incorporated. On the basis of this review, it was determined that the key principles would include; a portfolio which afforded public and private space, allowed for increasing learner autonomy and integrated closely with curriculum tasks. As such, educational aims were set for the portfolio such that an MB BS student should be able to: construct a complete digital record of their achievements, draw together evidence from curricular and extra-curricular activities; review their own learning linked to both the learning outcomes of the MB BS and the requirements of the GMC; plan for their future learning and career linked to a review of past progress; prepare for an annual appraisal.

The portfolio was implemented in the Blackboard Portfolio™, since the functionality was assessed as being sufficient to support the stated portfolio aims. Additionally the tool could be integrated readily with the existing Blackboard Learning System™ currently in use at Queen Mary and this was considered advantageous by the student representatives. Guidance on the use of the portfolio and the required tasks were provided through an additional online course. An innovative element of the portfolio design was its integration with a bespoke web resource called 'career diagnosis' which required students to explore career options for discussion at appraisal.

The initial evaluation of the portfolio was undertaken through a Student Selected Component (SSC) during June 2007. Ten first year students selected the SSC and following a days training constructed their own portfolios retrospectively over a two week period using the guidance materials. Their engagement with the portfolio was facilitated through the use of discussion boards and online reflective logs. Formally, the SSC was assessed based upon three tasks: an evaluative report; an on-line reflective log; and preparation for and completion of an appraisal with a tutor.

Overall the portfolio was evaluated positively by the students. This presentation will report in detail on the pedagogical principles underlying the approach taken, results of the evaluation, and the resultant modifications to the framework.

## Full text

### *Introduction and purpose*

This paper describes the development of an appraisal framework using an ePortfolio at Queen Mary from its initiation in July 2006 to first pilot in May 2007.

The General Medical Council defines appraisal as ‘a positive process to provide feedback on the student’s performance, chart their continuing progress, and to identify their development needs’ and indicates that all ‘students should receive regular, structured and constructive appraisal from their teachers during the mainly clinical years of the curriculum’<sup>1</sup>. The purpose of the portfolio project at Queen Mary was to build upon existing systems to create a robust and thoroughly evaluated appraisal process suited to meeting this educational need. A framework for appraisal needed to be created that would define in some detail the elements of a process that medical students should follow including constructing a portfolio; selecting evidence for appraisal; early career planning and setting goals.

An early decision was taken to embed and pilot the framework using an electronic tool. The growing literature describing the use of electronic portfolios as a means of engaging students in (often mainly self-directed) reflective learning was a key factor in this decision<sup>2</sup>. The experiences of staff from the Institute of Dentistry at Queen Mary in piloting an electronic progress file based around the two themes of recording clinical activity and personal development and planning, were also significant<sup>3,4</sup>.

In this paper we set out the features of the ePortfolio, the underpinning principles that guided its creation and use, outcomes of its initial trial using ‘Blackboard Learning System CE 6’ via a Year 1 Student Selected Component (SSC), and future plans. To date first year MB BS undergraduates have been the focus for the project with the intention to extend application across all remaining four years of the programme.

### *Method*

The five stages in creating and piloting the ePortfolio were as follows:

#### **Step 1: Establishment of a working group**

The ePortfolio described here is the product of collaboration between staff from the Centre for Medical Education, Educational and Staff Development, clinical and research staff from the School of Medicine and Dentistry, and a representative group of undergraduate students.

The initial planning of the working group was informed by a review of the literature and by exploration of several existing ePortfolio systems. Guest access was available to ePortfolios in use at the Universities of Newcastle, Leeds and Liverpool and Queen Mary dental school as well as to

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<sup>1</sup> General Medical Council (2003), *Tomorrow’s Doctors*. London: General Medical Council

<sup>2</sup> Jafari A and Kaufman C (2006), *Handbook of research on e-portfolios*. Hershey: Information Science Reference, 608pp

<sup>3</sup> Maguire A, Davenport ES and Craig SA (2004), Intended learning outcomes for undergraduate training in paediatric dentistry. *Journal of Paediatric Dentistry*, 14 (3), 223-229

<sup>4</sup> Pee B, Woodman, T and Davenport, ES (2003), Developing teaching and learning innovations in dental training: the example of the Progress File Learning System. *British Dental Journal*, 195 (8), 463-468

the generic portfolio system PebblePad. Our reviews served to identify approaches that might best support an appraisal process including guided reflection on key elements of the learning, close integration of ePortfolio and curriculum activities and the value of early career planning.

## Step 2: Creation of key aims and agreed structure for the ePortfolio

The key aim for the ePortfolio was that it should facilitate an annual appraisal. As such students would be required to construct a complete digital record of their achievements; draw together evidence from curricular and extra-curricular activities; review their own learning linked to both the learning outcomes of the MB BS and the requirements of the GMC; plan for their future learning and career linked to a review of past progress.

The following principles were agreed for the structure of the ePortfolio and its use. The ePortfolio should:

- Focus centrally upon the curriculum outcomes explicitly presented in terms of five overarching domains.
- Be designed and used for formative appraisal and not summatively assessed.
- Provide students both public and private space and be essentially student owned.
- Build an understanding of some core elements of professional identity<sup>56</sup> through a focus on key phases in medical education such as the transition to medical school, entering the clinical years, application to foundation school and looking beyond foundation school.
- Provide a framework for reflection which is structured, supported and tailored to developmental stages and enhance the capacity for reflective thinking through appraisal.
- Minimize the additional work required of students or staff.

## Step 3: Establishment of a shared and well-grounded, pedagogically sound view of reflective processes

We considered that the concepts of identity and reflection (and reflective practice) appear both central and problematic to many portfolios. In reality reflection is amenable to definition but like critical thinking is not a simple concept and is often described in unfamiliar terms (e.g. 'meaning schemes' or 'meaning perspectives')<sup>7</sup>. More practically perhaps it can be thought of in terms of the application of critical thinking skills of analysis, synthesis, and evaluation to the domains of personal or professional identity.<sup>8</sup> However, like all types of learning this requires a common terminology and definitions, as well exploration of frameworks that can help an individual recognise development of the practice of reflection combined with situations that focus attention on the individual as the subject of study as well as the discipline. Put simply, we deemed the processes of reflection to be central to the appraisal process, but complex and potentially difficult<sup>9</sup>. It was therefore of the utmost importance that students received effective guidance, and

<sup>5</sup> Kalet AL, Sanger J, Chase J, Keller A, Schwartz MD, Fishman ML, Garfall, AL and Kitay A (2007), Promoting Professionalism through an Online Professional Development Portfolio: Successes, Joys, and Frustrations. *Academic Medicine*, 82, 1065-1072

<sup>6</sup> Hilton SR and Slotnick HB (2005), Proto-professionalism: how professionalisation occurs across the continuum of medical education. *Medical Education*, 39 (1), 58-65

<sup>7</sup> Lucas U and Tan PL (2006), *Developing a reflective capability: the role of personal epistemologies within undergraduate education*. Paper presented at the 14th Improving Student Learning Symposium, University of Bath, 4-6 September, 2006

<sup>8</sup> Swick HM (2000), Toward a Normative Definition of Medical Professionalism. *Academic Medicine*, 75 (3), 612-616

<sup>9</sup> Schön D (1987), *Educating the Reflective Practitioner*. San Francisco: Jossey-Bass, 355pp

a clear structure to allow them to reflect upon themselves and their learning activities in a deliberative way<sup>10</sup>. This is particularly the case in the early stages of education.

To aid this process, the working group identified many (curricular and non-curricular) situations within the MB BS programme where students would be supported in the development and application of reflection. We decided students should be provided with a set of guidelines and prompts in terms of which evidence and types of reflective activity to include within their portfolio. In our view, the curriculum and not the portfolio is where reflective learning most usefully takes place; a portfolio can help students identify and make explicit where this learning is sited. In effect, a portfolio should be a tool to ensure equivalence of opportunity for reflection but should not become a continuous prompt for doing so.

Rather, it the appraisal process which can provide the point in time at which this focus and capacity for reflective thinking is explored and grounded. Consequently, we agreed that the students be encouraged to create an overarching reflective document, 'My Year So far', summarising their strengths and areas for development in readiness for appraisal. Such a document would encourage this 'grounding' of their ability to self appraise. The structure of the document would change across the years in line with our principle that students should gain perspective on their 'identity' ranging from new medical student to virtual doctor<sup>11</sup>.

#### **Step 4: Identification and acquisition of software**

The portfolio was implemented in Blackboard Portfolio for Vista & CE™ since the functionality was assessed as being sufficient to support the stated portfolio aims. Additionally, the tool could be integrated readily with the existing Blackboard Learning System™ - CE Enterprise License (formerly WebCT) currently in use at Queen Mary and this was considered advantageous by the staff and student representatives.

The Portfolio add-in provides a simple interface structured around three menus and a set of tools that allows portfolio materials (documents, images, etc) to be added, organised and linked to goals. Goals (learning outcomes) are explicit within the portfolio and can be linked to 'pieces' of evidence. Materials can be 'published' on a Home Page through relatively simple methods.

The contents of the portfolio can be configured prior to being made available to the student, but nothing can be added centrally once released. Students have full control of the contents of the portfolio and can remove any of the default structure and content.

A default file structure based around the first year MB BS modules/course units was embedded and programme level learning outcomes were added as goals. The pilot students were given an appraisal folder on the Home Page which contained the first year learning domains in which the students would select and publish evidence for appraisers to view.

<sup>10</sup> Eraut M (2000), Non-formal learning, implicit learning and tacit knowledge in professional work. In Coffield F (ed) *The Necessity of Informal Learning*. Bristol: The Policy Press

<sup>11</sup> Dreyfus HL and Dreyfus SE (1986), *Mind over machine: the power of human intuition and expertise in the era of the computer*. Oxford: Blackwell



Figure 1: Portfolio Year 1 appraisal folder

## Step 5: Carrying out initial pilot

The ePortfolio was trialled through a Student Selected Component (SSC) entitled 'Building my personal MB BS ePortfolio' in May 2007 with 10 volunteer MB BS year 1 students. During a two-week period and following some initial software training the students passed through a cycle of activities focusing on portfolio building (collecting and uploading evidence; linking evidence to goals), preparation for appraisal (selection of evidence, referencing this evidence in 'My Year So Far' and 'My Way Forward'); publishing appraisal materials using tools in the portfolio; attending an appraisal meeting; contributing to a de-briefing session. The students were also required to explore career options for discussion at appraisal.

A separate course area was constructed which contained all details of the SSC, technical guidance and guidelines on using the ePortfolio including suggestions for evidence to upload and details of the appraisal process. Exemplars were provided including a simulated 'My Year So Far'.

Technical support for the SSC was provided through an online discussion board and via email.

To meet the aim of 'plan for a future career' a careers framework was developed based upon a newly developed online careers resource called 'career diagnosis' ([www.cxdx.qmul.ac.uk](http://www.cxdx.qmul.ac.uk)).

Evaluation was integrated into the module through students' reflective logs, submission of a written evaluative report within the specially designed WebCT course area and attendance at a feedback session.

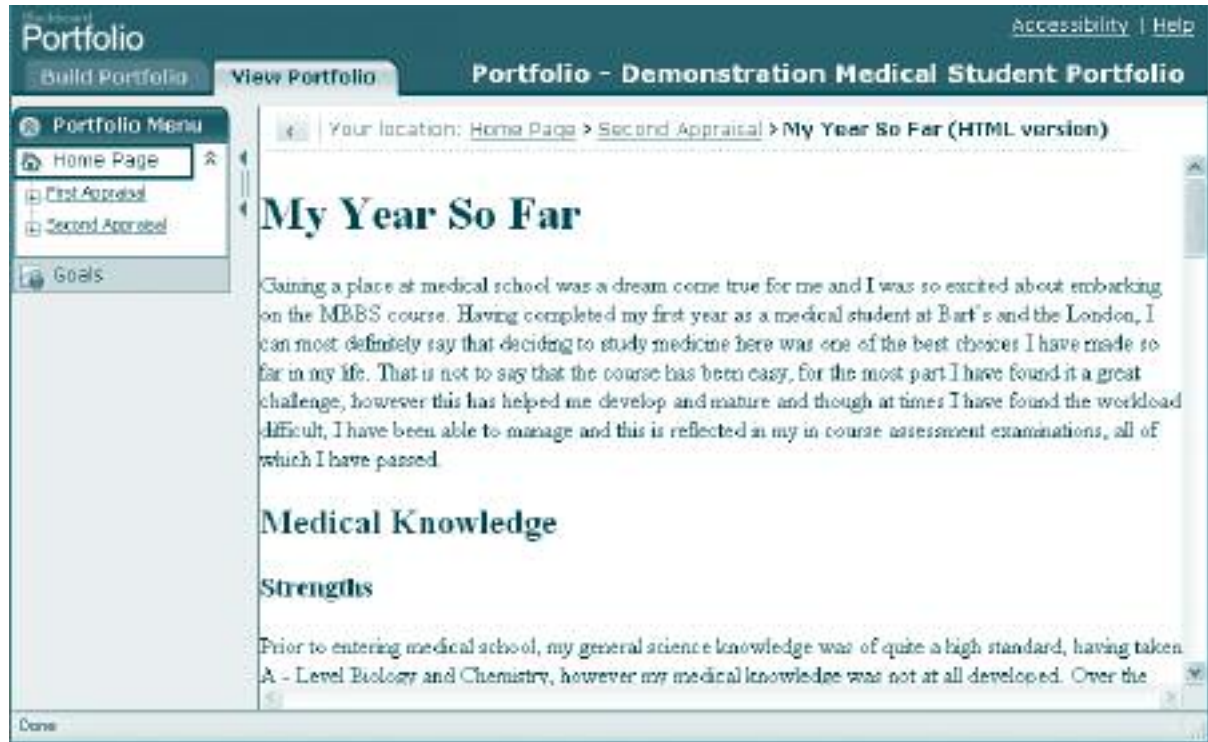


Figure 2: Portfolio displaying example My Year So Far

## ***Progress/discussion***

The evaluation of the pilot identified a number of significant issues requiring further development although broadly speaking the portfolio was evaluated positively by the students. The process of appraisal itself was valued by all 10 students who had taken part. This was an important outcome for the working group since our principle aim was to create a robust and effective appraisal process and it seemed we had gone some way in achieving this objective.

In terms of concerns, students commented upon a lack of evidence suitable for directly incorporating into their portfolio, since much useable material such as feedback, had been presented to them verbally. The concept of evidencing claims made part of the appraisal also appeared problematic for individual students who lacked clarity about what constituted evidence and how best to present evidence. Key issues raised by some were in relation to the validity of the evidence presented and the honesty of those presenting the evidence. Comments were along the lines that appraisees 'might simply be writing what they want their appraisers to hear' (SSC student) or might misrepresent their achievements. Unsurprisingly students commented that the process of reflection was difficult, but ultimately found it was useful.

Initially there was also a lack of understanding regarding the nature of appraisal with students concerned that they were still being assessed. However, subsequently students commented favourably regarding their appraisals, in particular in relation to the structured and personal nature of the process. Appraisers found that the portfolio worked well in supporting the appraisal process. 'I was able to work my way through the student's portfolio with ease, and the value of the experience came partly from the fact that all the student's work was readily accessible for joint consideration' (SSC appraiser).

There were minimal technical problems during the pilot but they did not significantly affect the outcome for students or appraisers.

## **Conclusions/recommendations**

The purpose of the work described here was to construct a framework to support an appraisal process and to make that framework available using an electronic tool.

Initially only a small pilot group of 10 students used the system. This group commented positively in regard to both the appraisal and the ePortfolio.

What seemed to work was keeping the tool simple and focused on the specific purpose of preparing for appraisal. Selecting a system that integrates with the existing virtual learning environment allowed assignments and grades to be readily saved to the portfolio, although the overall functionality is more limited compared to some other systems. Separating guidance from the portfolio contributed to ease of use of the system.

Although the results of the pilot were encouraging, it was decided to initially scale-up the process to a group of ~50 first year students rather than apply it to the whole of the first year. Currently this further trial of the ePortfolio is underway.

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# AM4 (a): Developing teacher portfolio value in a medical school environment

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## Abstract

In any learning environment, a complex relationship exists between learners and teachers as facilitators of learning. Much work has taken place to define the purposes and functionality of student portfolios in different pedagogic environments, and teacher portfolios are well established as stand-alone repositories for personal evidence collection and reflection. However, little work has taken place on the potential for student and teacher portfolio systems to work cooperatively together.

The aim of this work is to design a teacher portfolio system interacting dynamically with the student portfolio system, to add value to the teaching and learning environment for medical students in their clinical years.

In the Manchester Medical School, we have applied a formal systems analysis approach in collaboration with users and stakeholders. The first part of our approach was to conduct interviews with clinical teachers and clinical teaching managers and a focus group with students in years 3 and 4. Clinical teachers and managers were shown the student portfolio system and asked the open question 'how could a teacher portfolio system integrating with the student portfolio help you?'. Students were asked 'What facilities should we be providing that would make you want to log into the student portfolio system?'.

In the second phase of systems analysis, we have used an ontology and the Unified Modelling Language (UML) to model the integrated student and teacher portfolio systems. The ontology and model are enabling wider stakeholder testing and validation of the concepts emerging from the interviews and focus group. The final phase will be for the UML model to inform software development.

The interviews, focus group and wider validation using the ontology and UML model identified the following strands for the integrated teacher portfolio system:

- Wider opportunities for teacher feedback and evaluation to support student learning.
- Student feedback supporting staff development as teachers.
- Student feedback to support management of teaching quality.
- The student timetabling service supporting management of cross-institutional teaching resources.

The systems analysis process has demonstrated that data generated by either students or teachers can be reused by the other through the medium of an integrated student/teacher portfolio system, for purposes of self-development and motivation. The same data can be used by teaching managers for quality assurance and resource management. The work has enabled us to identify current 'paper' processes within a clinical teaching environment where an integrated teacher/student ePortfolio system could benefit both learners and teachers.

## Full text

### Introduction and purpose

In any learning environment, a complex relationship exists between learners and teachers as facilitators of learning. Much work has taken place to define the purposes and functionality of student portfolios in different pedagogic environments<sup>12</sup>, and teacher portfolios are well-established as stand-alone repositories for personal evidence collection and reflection for teachers<sup>345</sup>. However, little work has taken place on the potential for student and teacher portfolio systems to work cooperatively together.

The JISC-funded HORUS eLearning Management (HeLM) project<sup>6</sup> aims to design a generic integrated student/teacher ePortfolio system for supporting teaching and learning in health sciences. Specifically, the system aims to facilitate:

- Learners (teacher and students) learning.
- Learners evidencing their learning.
- Assurance of teaching quality.
- Management of teaching resources.

The primary domain for HeLM is Manchester Medical School and its associated teaching hospitals. This paper focuses on identification of the elements of the HeLM system in which the teacher portfolio system interacts dynamically with the student portfolio system, to add potential value to the teaching and learning environment for undergraduate medical students on clinical placement. Clinical learning differs from earlier university-based learning, a student's learning experience being highly individual and dependent upon the conditions of the patients presenting themselves during the student's relatively short period on the ward and attendance at optional events, e.g. clinics, to fill in gaps in their experience. In this context, interactions within the community of practice<sup>7</sup>, and by extension, within the portfolio system, can be expected to add significant value to the learning experience.

### Method

We have used object-oriented analysis<sup>8</sup>, in conjunction with a service-oriented architecture approach<sup>9</sup> to produce a design specification of an integrated student/teacher ePortfolio system in

<sup>1</sup> M Kimball (2005) Database e-portfolio systems: A critical appraisal, *Computers and Composition*, Volume 22, Issue 4, pp. 434-458

<sup>2</sup> Lorraine Stefani, Robin Mason & Chris Pegler (2007) *The educational potential of e-portfolios supporting personal development and reflective learning*, Routledge

<sup>3</sup> Dineke EH Tigelaar, Diana HJM Dolmans, Willem S de Grave, Ineke HAP Wolffhagen & Cees PM van der Vleuten (2006) Participants' opinions on the usefulness of a teaching portfolio, *Medical Education* 40, pp. 371-378

<sup>4</sup> Catherine de Rijdt, Eva Tiquet, Filip Dochy & Maurice Devolder (2006) Teaching portfolios in higher education and their effects: An explorative study, *Teaching and Teacher Education*, Volume 22, Issue 8, pp. 1084-1093

<sup>5</sup> Susan Wray, Teaching portfolios, community, and pre-service teachers' professional development, (2007) *Teaching and Teacher Education*, Volume 23, Issue 7, pp. 1137-1152

<sup>6</sup> [http://www.jisc.ac.uk/whatwedo/programmes/programme\\_elearning\\_capital/el\\_xinstit/helm.aspx](http://www.jisc.ac.uk/whatwedo/programmes/programme_elearning_capital/el_xinstit/helm.aspx) (last accessed 4 January 2008)

<sup>7</sup> Etienne Wenger (1998) *Communities of Practice, Learning, Meaning and Identity*, Cambridge University Press

<sup>8</sup> John Cheesman & John Daniels (2001) *UML Components*, Addison Wesley

<sup>9</sup> Duane Nickull, Francis McCabe, Ram Kumar (2007) *SOA Reference Model*, OASIS, [http://www.oasis-open.org/committees/tc\\_home.php?wg\\_abbrev=soa-rm](http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=soa-rm) (last accessed 4 January 2008)

the Unified Modelling Language (UML). This approach achieves a holistic view of the medical education environment as a whole, and specifies the design of discrete ‘services’ (e.g. portfolio, PBL discussion groups etc.) that can be implemented independently, so that institutions can select those required. The services can be integrated with each other, or to third party services via appropriate interfaces. The services are designed to be tailored at implementation according to local need, e.g. by enabling or disabling features within a service.

The holistic systems analysis approach enables the identification of synergies, where meeting the needs of one stakeholder group adds value to another stakeholder group. The first stage was to conduct a formal requirements gathering exercise with stakeholders involved in teaching and learning in the Manchester Medical School and at Salford Royal University Teaching Hospital. The goal of the requirements gathering was to capture the concepts and processes in the medical education environment and the relationships between them.

While the numbers of stakeholders in this study is small, the analysis approach enables the rapid capture and modelling of a range of ideas for possible future implementation. The expression of a requirement does not mean that the facility will be realised at a particular institution, as this is a business decision for that institution. The UML model does however provide a basis for that decision.

Requirements were gathered from:

Cohort	Method
ten ‘domain experts’: members of the HeLM project management committee, including one Hospital Dean, with responsibilities for the management of teaching and assessment;	Workshops and individual non-directive interviews
19 consultants with teaching duties at Salford Royal University Teaching Hospital	Individual focused interviews, in which consultants were shown the prototype student portfolio system and asked the introductory question ‘how could a teacher portfolio system integrating with the student portfolio help you?’
seven undergraduate medical students in Years 3 and 4	Focus group based on the introductory question: ‘What facilities should we be providing that would make you want to log into the student portfolio system?’.
three undergraduate medical students in Year 3	Individual semi-structured interviews, looking in depth at the prototype feedback part of the system.
senior management in the Faculty and in Manchester Medical School	Meetings concerning teaching quality management.

**Figure 1: Table representing the cohorts and methods of requirements gathering.**

Following user requirements gathering, the analysts interpreted the findings and developed a UML model of the Manchester medical education world. To enable the domain experts to validate the theoretical UML model, its concepts and relationships were visualised by entering ‘real’ Manchester Medical School data into the ‘individuals’ section of the Protégé-OWL ontology tool. At this stage, much fine-tuning of the model took place to ensure its accuracy and completeness.

Presentation of the model in this way has enabled a low cost check on its validity<sup>10</sup>. As the final phase of our work, the UML model is now informing software development.

## ***Progress/discussion***

The interviews, focus group and wider validation using the ontology and UML model identified the following strands for the integrated student/teacher portfolio system:

- Teacher feedback to support student learning.
- Student feedback supporting staff development as teachers and management of teaching quality.
- Availability of student marks/grades and related trends.
- The student timetabling service supporting management of cross-institutional teaching resources.

## **Teacher feedback to support student learning**

This section concerns data originating in the teacher portfolio system that can provide evidence and a focus for reflection in the student portfolio. The Manchester Medical School learning environment already supports student-teacher interactions in which staff act as mentors for portfolio activities, including supporting student facilitators of on-line discussion groups<sup>11</sup>. The systematic approach to user requirements gathering identified further opportunities for electronic feedback in the areas of:

- End of firm attendance and monitoring.
- PBL group assessment and feedback.
- Evaluations of Student Selected Components (SSCs).
- Performance in OSCEs.

These are currently paper processes in which administrators print and circulate forms for staff to comment on student performance. There is some inconsistency of practice regarding whether students receive copies of the feedback forms. Both students and staff identified the potential of the system for completion of feedback reports, though for different reasons. Students would value the forms being on-line so that they receive feedback systematically and for integration into the student portfolio. Consultants would like the forms to be on-line because they see the process as being more efficient and because they would value inclusion of the student photo on the online form.

This requirement is realised in the UML model as a generic feedback service (figure 2) interfacing with both the student and teacher portfolio systems, supporting a range of feedback forms that can be configured to local requirements.

<sup>10</sup> Roland Ukor, Gillian Armit & Hilary Dexter, *A cross-disciplinary approach to early requirements validation in supporting medical education*, submitted to WMSCI 2008

<sup>11</sup> I Braidman, M Regan, S Wallis, C Boggis & T Dornan (2008) *On-line approaches to reflective portfolio learning – initial studies*, to be presented at MEDEV ePortfolios, Personalised Learning and Identity in Healthcare Education, Newcastle 28 February 2008



Figure 2: A fragment of the UML model showing structured and unstructured feedback as specialised portfolio items

## Student feedback supporting staff development as teachers and management of teaching quality

This section concerns data originating in the student portfolio system that can be passed to the teacher system. The student learning environment through its support for experience-based learning provides for students generating feedback to clinical teachers on optional clinical learning opportunities, e.g. clinics, operating theatre, community visits and through the end of module questionnaires<sup>12</sup>. All consultants interviewed listed student feedback as valuable to them, as:

- Evidence for their personal development review portfolios.
- Stimulus for self-improvement.
- To provide management information on teaching quality in different clinical firms.

‘(The feedback system is) an excellent mechanism, with students being perhaps more forthcoming than they would be face to face. Student feedback is an excellent morale-booster for staff’.

Consultants identified through the analysis process that they would also like to receive on-line feedback from students at the end of placements, end of PBL Groups, end of SSCs, and sometimes on individual ward rounds or specific procedures, e.g. endoscopy. Desired information includes:

- The area(s) of the syllabus learnt about during the event.
- Strengths and weaknesses of teaching.
- Whether the student would recommend the learning experience to others.

The analysis also supported Dornan’s work on the use of student feedback for measurement of teaching quality based on the end of module questionnaire<sup>13</sup>. Some of the feedback uses Likert scales, the results of which can be aggregated by organisational unit, e.g. clinical firm, NHS Hospital Trust. Consultants asked for graphs and pie charts presenting comparisons of student perceptions of the performance of their firms against other firms, and also against similar firms in other Trusts. These will enable teaching management to address differences in quality of teaching. They may also provide data for key performance indicators in service level agreements between the institution and NHS Trusts.

<sup>12</sup> Tim Dornan, Martin Brown, Dan Powley and Mike Hopkins (2004) A technology using feedback to manage experience-based learning, *Medical Teacher*, Volume 26, No. 8, pp. 736-738

<sup>13</sup> T Dornan, H Boshuizen, L Cordingley, S Hider, J Hadfield & A Scherpbier (2004) Evaluation of self-directed clinical education: validation of an instrument, *Medical Education* 38, pp. 670-678

These requirements extend the UML design for the feedback service to include feedback from students to teachers, and to support presentation of aggregated feedback data.

## **The student timetabling service supporting management of cross-institutional teaching resources**

This section concerns timetabling data shared between the student and teacher portfolio systems. The student learning environment already provides a calendar and events booking service and providing on-line timetables for students and teachers based on these events. Teachers receive emailed lists of students expected to attend, and can contact them if the event needs to be cancelled.

The HeLM design extends the calendar service to include student recording of teacher attendance. As well as underpinning actual teaching data in the teaching loads database, this will potentially enhance the student experience through better reporting and management of staff attendance. It also provides data for a key performance indicator based on attendance.

A separate teaching loads database service is under development, to record planned and actual teaching. This will support allocation and potentially costing of teaching resources. This service will integrate with the calendar and events service to achieve automated recording of actual teaching.

## **Availability of student marks/grades and related trends**

This section concerns data shared by the student and teacher portfolio systems. The Manchester Medical School VLE does not currently hold student grade data. Consultants commented on the potential for probing student marks/grades and trends in these over time in order to identify students with potential difficulties. Supporting earlier work<sup>14</sup>, the focus group of Years 3 and 4 students expressed a desire for Information about personal assessment results and position in the year over time to be available to them for motivational reasons.

These requirements are realised in the UML design through the specification of a generic assessment integration service.

## **Permissions**

Both consultants and students expressed concerns about who should be able to see student data and at what level of aggregation. Accordingly, the HeLM design specifies a fine-grained permissions management framework to enable local tailoring of access to data.

## **Conclusions/recommendations**

The analysis process and resulting UML model have demonstrated that data generated by either students or teachers can be reused by the other through the medium of an integrated student-teacher portfolio system. The UML model supports data exchange between the student and teacher portfolio systems by providing a number of discrete services that can be implemented and tailored according to local requirements (figure 3). Further work is required to test the generic nature of the services in a range of environments.

<sup>14</sup> K Smith, Manchester Medical School SSC report 2008 (unpublished)



**Figure 3 showing the services integrating with the student and teacher portfolio services**

The systematic approach has enabled us to make connections and identify new sources of value through changes to current 'paper' processes and extensions to existing electronic facilities.

The effectiveness of the UML model in providing stakeholder value will only be fully tested when services are implemented and evaluated, and this forms the basis of work in progress. However, the UML model has the potential when implemented to provide value to the clinical learning community of practice, in which students and staff benefit from greater on-line interaction with each other to provide evidence for reviews of personal development, motivation, and through provision of tools for management of teaching quality.

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# AM4 (b): Yes. No. Maybe? Should we assess reflection in portfolios? A debate

Avril Senior, University of Liverpool  
Liz Mossop, University of Nottingham

## Abstract

It is widely accepted that portfolios produce a different kind of opportunity for monitoring student progress. (Friedman Ben David et al 2001)<sup>1</sup>. The information derived from portfolios is less about theoretical knowledge and more focused on the attitudinal skills and ability component of a competency. In addition, by using a portfolio, a student can illustrate to a tutor what they think of as important to their learning by the evidence they choose. By encouraging reflection, we and the students can begin analysing responses to attitudes.

The portfolio systems in place at Nottingham and Liverpool vet schools encourage students to create a library of reflective pieces as they progress through the course. Jha et al's (2006)<sup>2</sup> themes of compliance to values, motivation, personal awareness, the physician and patient relationship and professional management may all be issues that can be self-examined by reflection. Whether this reflection can then be summatively assessed by faculty, is our question.

Sumison and Fleet (1996)<sup>3</sup> suggest that reflection cannot and should not be assessed. Veterinary students (being high achievers) are reluctant to be self-critical especially if they think this will impact on their final grades. By assessing their reflection entries we may restrict their honest self-analysis. Stewart and Richardson (2000)<sup>4</sup> argue that assessment by faculty of reflection should be avoided and that more focus should be put on the process of reflection.

Conversely, a lack of assessment may lead to poor application by students. There will always be a group of students who adopt a reflective writing genre, without actually having any true ability to reflect (Stewart and Richardson 2000). Reflective skills development is part of the process of a learner becoming an expert. Specific guidance is necessary so that this transition a smooth one, and some form of assessment is necessary in order to confirm that this process has occurred. One solution is contained within the teaching of reflection as a process, and for students to understand that good reflection includes criticism.

Deciding whether assessment of a portfolio is necessary for engagement is a major consideration for any institution. This is particularly true when there may not be other assessment methods in place to record behaviours and attitudes.

This debate will consider two different portfolio systems used at two UK veterinary schools – Nottingham and Liverpool. Both schools have struggled with issues surrounding the assessment

<sup>1</sup> Friedman Ben David M, Davis MH, Harden RM, Howie PW, Ker J, Pippard MJ (2001) AMEE Medical Education Guide no 24: Portfolios as a method of student assessment. *Med Teach* 23 (6) 535-550

<sup>2</sup> Jha V, Bekker HL, Duffy SRG, Roberts TE (2006) Perceptions of professionalism in medicine: a qualitative study. *Medical Education* 40 (10), 1027-1036.

<sup>3</sup> Sumison J, Fleet A (1996) Reflection: can we assess it? Should we assess it? *Assessment and Evaluation in Higher Education* 21 (2) 121-130.

<sup>4</sup> Stewart S, Richardson R (2000) Reflection and its place in the curriculum on an undergraduate course: should it be assessed? *Assessment and Evaluation in Higher Education* 25 (4) 369-380

of reflection contained within these portfolios, and the outcome is that one school assesses, and one school does not. The speakers will each 'take the stand' to discuss their experiences and the literature for and against the assessment of reflection. The floor will then be opened for further debate.

## Full text

### *Introduction*

It is widely accepted that portfolios produce a different kind of opportunity for monitoring student progress<sup>1</sup>. The information derived from portfolios is less about theoretical knowledge and more focused on the attitudinal skills and ability component of a competency.

Both the portfolio systems in place at Nottingham and Liverpool veterinary schools encourage students to create a library of reflective pieces as they progress through the course. Creating a reflective diary can be a useful tool for promoting learning, however summative assessment of that diary is controversial.

It is important to consider the arguments for and against when considering the use of reflective accounts in any curriculum, particularly one leading to a professional qualification. This article examines both sides of the argument: Liverpool, where reflective accounts are not assessed, and Nottingham, where a reflective portfolio is assessed.

### **Say 'No' to assessment. The argument against:**

The concept of an ePortfolio has been introduced to first year veterinary undergraduates at Liverpool this year. In addition to following an electronic personal development plan (PDP), completing yearly clinical and key skills audits and writing reports on their extra-mural studies (EMS) placements, they also engage in two forms of reflective writing.

The first involves keeping a reflective 'placement' diary. This is not seen by anyone unless the student specifically wants to share it.

The second is a piece of writing detailing their reflections after a facilitated group session. This receives formative feedback. In the session they are encouraged to talk about their placement experiences and to share their thoughts and opinions about the industry they worked in. Their submission covers their feelings about their placement in light of what they now know about other people's experiences.

They are given examples of reflective writing and the criteria used for feedback.

As students progress through the course less reflective work is submitted but they are encouraged to continue writing placement reflections. In the final year they submit a reflective piece detailing why and what they chose as content of their portfolio.

'Reflection cannot and should not be assessed'<sup>3</sup>. We follow the premise that a reflective diary should be for self assessment only. Evaluation of clinical learning experiences by faculty should be done elsewhere.

There are concerns that students' apprehension about assessment inhibits the development of reflective qualities and skills. Richardson and Maltby<sup>5</sup> specified those qualities as 'open-mindedness, honesty and motivation,' and skills as 'self-awareness, description/observation, critical thinking, problem solving and evaluation.' Assessing the last three skills through journals may discourage open-mindedness and honesty, and skew the reason for the motivation.

In one study, students felt unable to describe feelings of discomfort in their diaries because of concern of it being assessed and impacting negatively on their marks<sup>5</sup>. Our students are high achievers and are unwilling to be self-critical especially if it may impact on grades. Vulnerable students may also feel intimidated by the idea that 'someone is interrogating their personal thoughts.'

Despite large amounts of literature on the practice of reflection there is still disagreement as to what reflection actually is. How can we assess students without being sure what it is that is being assessed? 'Reflection aims to develop a conscious control of knowledge in any circumstance through a meta-cognitive process<sup>6</sup>. However, cognitive processes associated with reflection are still sufficiently unknown that fair assessment must be difficult.

What are we concerned about most? Developing students' ability to reflect, or the information that comes from that reflection? If it is the latter then you can assess that by other means. Reflection is a process, not an auditable product.

Once you have decided that it is the process and not the (clinical) content that you are assessing, the issue of assessor opinion arises.

Difficulty in achieving inter-coder (inter-assessor) reliability and failure to account for all instances of reflection in submissions was noted. 'We should beware interpreting other people's meanings by applying our own experiential knowledge to them'<sup>7</sup>. Can we ensure assessors are adequately trained and assessment criteria are open and clear?

Can we differentiate between reflection and those students who have mastered the genre? Artificial experiences can occur where students study the genre and succeed in the assessment regardless of whether they can truly reflect or not.

Are we assessing reflection to 'make students do it?' Assessment drives engagement, defining what students see as important. In one study the students recognised that their reflections should be personal and individual but because of the implications of assessment they requested specific guidelines before undertaking the task<sup>4</sup>. Does this reduce reflection to the base level of needing the equivalent of past papers and model answers before it is attempted?

At Liverpool we call our reflective pieces 'ruminations'. It indicates thoughtfulness and a 'turning over' in the mind.

Aristotle spoke of deliberation rather than reflection. In the Collins New English Dictionary (1970), reflection is defined as '...utterances of truth, wise maxims.' Deliberation can mean to take counsel, to hesitate and to consider carefully. In practice we want clinicians who can act quickly and decisively – 'reflection in action'<sup>8</sup>. However, as students writing 'reflection on action', we want hesitation and discussion amongst peers. We want them to consider carefully what they are writing and why, not to see it as just another piece of coursework. We encourage our students to evaluate what learning is being gained through their reflective process. Is this enough? We will have to wait and see.

<sup>5</sup> Richardson. G, Maltby. H. (1995). Reflection on Practice: Enhancing student learning. *Journal of Advanced Nursing*, 22, 235-242.

<sup>6</sup> Ixer. G. (1999). There is no such thing as reflection. *British Journal of Social Work*, 29, 513-527

<sup>7</sup> Richardson. R. (1995). Humpty Dumpty: Reflection and reflective nursing practice. *Journal of Advanced Nursing*, 21, 1044-1050

<sup>8</sup> Schon. D.A. (1983). *The Reflective Practitioner: How professionals think in action*. New York, Basic Books

## We should (or rather we have) to assess reflection. The argument for:

The University of Nottingham, UK, opened a new veterinary school in 2006. The curriculum has been designed with an end product in mind – a competent, reflective veterinary professional equipped with life long learning skills. A portfolio has been developed to assist in the assessment and monitoring of students. By using it, students identify their own learning needs, and develop into competent, reflective professionals. Guidance is given to the students to assist them in creating their portfolio, but the intention is that it is a flexible learning tool, which they can adapt to their own learning requirements. There are few mandatory components, but evidence of reflection is required.

The portfolio forms part of the Personal and Professional Skills module, which runs across the first four years of the course. It is a 'must pass' element, the final summative assessment of the portfolio occurring yearly. No grade is given – the portfolio is either pass or fail. Continual formative assessment also occurs at regular intervals timetabled throughout the curriculum, at least twice per term.

The assessment is done by trained tutors, and cross checked by the module convenor. A simple rubric (see table) shows the level to which reflection is assessed.

	<b>Unsatisfactory</b>	<b>Satisfactory</b>	<b>Outstanding</b>
<b>Document count</b>	Less than 10 documents	10 documents	More than 10 documents
<b>Evidence type</b>	1-2 types evidence only used	3-6	7 or more, originality
<b>Learning outcomes linked</b>	Los linked irrelevantly	Majority linked correctly	Linked correctly and justified
<b>Organisation</b>	Unclear – unclear what documents are/how they are arranged	Clear – documents easy to identify and locate within file	Excellent – advanced labelling or organisation
<b>Reflective skills</b>	Actions described only.  No weaknesses discussed.	Actions, feelings and reactions described.  Generalised changes planned.  Weaknesses mentioned.	Actions, feelings and reactions described including others points of view.  Strengths and weaknesses discussed and specific targets made - (SMART)  Feedback from others/past experiences used.
<b>Action plans</b>	None	1-3 (not incl in evidence count)	3 or more
<b>Evidence range</b>	Limited e.g single farm/vet school only	Good – EMS and vet school experiences	Wide – EMS and vet school and other
<b>Overall</b>	Unsatisfactory	Satisfactory	Outstanding

Figure 1: Year one portfolio assessment rubric

The Nottingham structure attempts to adhere to the conditions laid down for successful use of portfolios<sup>9</sup> - the use of coaching to guide students in their writings, a good structure and guidelines, provision of relevant materials and learning experiences, and summatively assessing the end product.

The ability to reflect is a requirement of any professional, and in order to identify whether this reflection is occurring, it must be assessed. Without assessment of reflective portfolios, there is a danger that students will not use them effectively, if at all<sup>10</sup>. If they are not being used, then students are omitting a critical element of their training, and the curriculum will not have performed its function. Most educators accept that assessment drives learning – ‘students take their cues from what is assessed rather than from what lecturers assert is important’<sup>11</sup>. However, it is important that this assessment takes place in the right context, and in the right way.

There are certainly examples in the literature which show that assessment of reflection can go very wrong<sup>4</sup>, but these authors do not explore the outcomes and effects on professional training should reflection not be assessed. They do however, discuss the fact that there are better methods of assessing reflection than a quantitative mark, and that a pass/fail method is generally seen as more acceptable by staff and students, and should encourage discussion of weaknesses.

Another area which needs addressing by institutions wishing to assess reflective portfolios is that of the briefing of students and staff. ‘Portfolios should not be used for summative assessment because there will be no identification of weaknesses by the student completing the documents’<sup>12</sup>. At Nottingham, it is stressed that the content of their reflections is not being examined, but it is the process of reflection that must reach a certain level. It is made clear that it is the students’ ability to critically assess their own strengths and weaknesses and form action plans that is assessed.

The assessment of reflection may be something that is more difficult to impose in a pre existing curriculum, and certainly the faculty’s ‘hidden curriculum’<sup>13</sup> will influence the level of honesty within reflective pieces. There is a real advantage to being able to enforce a new assessment format at the outset of a brand new faculty and curriculum.

Whether we like it or not, all students completing a medical or veterinary degree will graduate and enter a culture of continual development and assessment. It is vital to ensure that these students are prepared for this environment, and so reflection must be assessed, with conditions and in certain ways, right from the outset. This way, it will be accepted as the norm.

## Conclusion

There is clearly no definitive answer to this question. Portfolio use is now widespread in medical and veterinary education. What is clear is that each faculty must weigh up the reasons for and against the assessment of reflection, and apply them in the context of their own curriculum. Whatever is then decided, must be firmly delivered to the students, and reviewed on a regular basis.

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<sup>9</sup> Driessen EW, van Tartwijk J, Overeem K, Vermunt JD, van der Vleuten CPM (2005) Conditions for successful reflective use of portfolios in undergraduate medical education. *Medical Education* 39, 1230-1235

<sup>10</sup> Harris S, Dolan G, Fairbairn G (2001) Reflecting on the use of student portfolios. *Nurse Education Today* 21, 278-286

<sup>11</sup> Brown G (1997) *Assessing student learning in higher education*. Routledge, London. p7

<sup>12</sup> Roberts C, Newble DI, O’Rourke AJ (2002) Portfolio-based assessments in medical education: are they valid and reliable for summative purposes? *Medical Education* 36 899-900

<sup>13</sup> Cruess RL, Cruess SR (2006) Teaching professionalism: general principles. *Medical Teacher* 28(3) 205-208.

# AM4 (c): ePortfolios in Edinburgh Medical School: their intended purposes and future directions. A review of curriculum developments through educational discourses and an historical perspective

Helen S Cameron, Karen R Simpson, Patricia Warren, Michael Begg, Allan D Cumming, University of Edinburgh

## Abstract

In 1998, the University of Edinburgh medical school introduced a new curriculum: Vision 2000. Explicitly this new programme encouraged students to 'adopt reflective and self-directed approaches to the study and practice of medicine, to maximise their effectiveness and personal satisfaction throughout their professional lives'<sup>1</sup>.

Discourses in curriculum design and mapping, theories of learning, reflective practice, assessment, professionalism and student support have all informed our current and evolving content and processes, with contributions from the GMC<sup>2</sup>, Dewey<sup>3</sup>, Schon<sup>4,5</sup>, Kolb<sup>6</sup>, Driessen<sup>7</sup>, Ericsson<sup>8</sup> and others.

This presentation will be an analytical narrative that will address ePortfolios, identity and personalised learning in Edinburgh. It will chart the development, introduction and subsequent inter-dependence of a range of innovations in the programme including the curriculum model and mapping, the content ePortfolio, logbooks, and the assessment of and support for professional development. We continue to refine these tools and systems to ensure they are aligned to the programme outcomes. In particular we are keen that they motivate students to develop both propositional knowledge (knowing that) and practical reasoning (knowing how), as well as helping them acquire the attributes of a professional and a growing awareness of who they are as individuals and as members of the medical community.

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<sup>1</sup> Medical Teaching Organisation 2007: University of Edinburgh Clinical Skills Personal Professional Development Study Guide

<sup>2</sup> General Medical Council 1998 and 2003: *Tomorrow's Doctors*

<sup>3</sup> Dewey J 1933 *How We Think*. DC Health, New York.

<sup>4</sup> Schon D 1983 *The Reflective Practitioner: How Professionals Think in Action*. Temple Smith, London.

<sup>5</sup> Schon D 1987 *Educating the Reflective Practitioner*. Jossey Bass San Francisco

<sup>6</sup> Kolb D 1984 *Experiential Learning: experience as the source of learning and development*. Prentice-Hall, New Jersey.

<sup>7</sup> Driessen E, van Tartwijk J, Vermunt, J, van der Vleuten, C 2003 Use of portfolios in early undergraduate medical training *Medical Teacher* 25:1, 18 – 23.

<sup>8</sup> Ericsson KA, Smith J 1991 *Towards a General Theory of Expertise: Prospects and Limits* Cambridge University Press, Cambridge.

The presentation will look at how influential discourses have shaped our thinking and to what extent our programme elements have been successfully implemented and appear to match the desired goals. We will also reflect on why it might have been difficult to lift some innovative ideas off the paper at first, the major factors that appear to have influenced policy development and how we might have done things better.

The evidence we will bring to bear will be varied: we have a range of feedback measures, minutes of committee meetings, personal memories and other published materials and papers to inform our analysis for this review.

One recent example has been in the domain of professionalism. From 1998 Edinburgh students have been assessed on clinical attachments on a range of behaviours thought to reflect their professionalism<sup>9</sup>. Meanwhile high profile reports such as those on the morbidity in paediatric cardiac surgery in Bristol (2001) led to massive coverage through public media and professional publications. These were often quoted by clinical staff in Edinburgh increasingly concerned that students' problems appeared de novo in the late years. The literature advised us that problems arising in clinical practice may have their precursors in medical school<sup>10</sup> and there was a growing consensus on the attributes of a medical professional<sup>11</sup>. Finally, changes to Section 60 of the Medical Act 1983, gave us the imperative to seek an electronic tracking system to ensure we had accurate information on students' professionalism at the time of graduation. However achieving acceptance for such a policy has not been straightforward.

## Full text

### *Introduction and purpose*

The University of Edinburgh brought forward a radical new curriculum called Vision 2000 in 1998. Among the innovations were a learning portfolio and a new theme called Personal Professional Development, also with its own portfolio. This paper sets out to tell the story of how the curriculum developed, and to explore the theoretical basis for the Edinburgh (and other) portfolios through relevant educational discourses. The work will inform future developments in the portfolios.

### *Method*

Information from key members of the team responsible for the development of the new curriculum in Edinburgh was gathered through use of a semi-structured questionnaire and/or interview. Documentation relating to curriculum review and development in the late 1990s was scrutinised.

The theoretical basis for the radical new curriculum and the portfolios in particular was explored through reference to theories and tenets that resonate within the medical education community today, looking particularly at discourses around the themes of personalised learning, self-directed learning, personal professional development, reflective practice, and learning styles.

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<sup>9</sup> Eraut M 1994 *Developing Professional Knowledge and Competence*. Falmer, London.

<sup>10</sup> Teherani, A, Hodgson, CS, Banach, MA, Papadakis, MA 2005 Domains of unprofessional behavior during medical school associated with future disciplinary action by a state medical board. *Acad Med*;80:517-520

<sup>11</sup> Royal College of Physicians 2005 *Doctors in Society: Medical Professionalism in a Changing World*

## Discussion

### Description of curriculum reform in Edinburgh

The University of Edinburgh undertook a major review of its medical curriculum in the 1980s culminating in a report to the Medical Faculty in 1991<sup>12</sup>. Its conclusions had many similarities with the GMC's recommendations<sup>13</sup> in *Tomorrow's Doctors* (1993)<sup>14</sup>. However the review by Scottish Higher Education Council [SHEFC] in 1997 found that the science-clinical divide remained and noted the paucity of direct patient contact and lack of emphasis on self-learning in Years 1 and 2<sup>15</sup>. These issues however had already been recognised: in 1995 the Dean had set up the Medical Teaching Organisation as the executive arm of the Undergraduate Medical Education Committee to strengthen the education management system and by 1996 it was acknowledged that further evolution was no longer possible<sup>16</sup>. The result: a radical new framework termed Vision 2000 introduced in autumn 1998 to deliver a managed integrated spiral curriculum including a Personal Professional Development and an MBChB Learning Portfolio<sup>16,17</sup>.

**Edinburgh Electronic Portfolios**

**MBChB Online Portfolio**  
Students write case reports which start with a 'clinking' in the style of the specialty but also include discussion of 'portfolio themes', thus emphasising professional knowledge in ethics, pain, communication etc relevant to an individual patient. Writing the Overview Essays in a specific theme or discipline requires students to reflect on a range of experiences with patients in different contexts.

**eemec - Edinburgh Electronic Medical Curriculum**  
at The University of Edinburgh - College of Medicine

**Personal Professional Development Portfolio**  
This portfolio is a collection of resources and evidence to inform a student's decisions about ongoing learning and practice that takes into account personal priorities. Students can link to all their assessments, such as exam results, peer & staff feedback, and case reports from the PPOD. They also complete self-assessments of generic skills e.g. 'working with others' and select items such as published posters and papers for their records. Students use all the information to review their progress through self-appraisal using a SWOT analysis, and to update their CV annually, set priorities and actions which are electronically diarised. Directors of Studies see those materials students choose to share including notes of their meetings.

Portfolio content page for the student  
Student: 0000111

Year	No	Portfolio Entry	Submitted	Units	Mark	When Submitted	Details	Document	Mark this Item	Field	Out Available
1	1	SSC 1 (Clinical Optics Practise - COP)	1	-	-	16.07 or 16/03/03	details	download	mark	edit	not available
1	2	Talking with Families	1	-	-	22.48 or 20/03/03	details	download	mark	edit	not available
2	3	SSC2a	1	-	-	11.26 or 8/10/04	details	download	mark	edit	not available
2	4	SSC2b	1	-	-	11.26 or 22/03/04	details	download	mark	edit	not available

Figure 1: The Edinburgh electronic portfolios

<sup>12</sup> Report to University of Edinburgh Faculty of Medicine(1991) referred to in Scottish Higher Education Funding Council (1997) Report of a Quality Assessment in Medicine at the University of Edinburgh

<sup>13</sup> General Medical Council (1997) Report of the Visit to the University of Edinburgh Faculty of Medicine

<sup>14</sup> The General Medical Council (1993) *Tomorrow's Doctors: Recommendations on undergraduate medical education* GMC London

<sup>15</sup> Scottish Higher Education Funding Council (1997) Report of a Quality Assessment in Medicine at the University of Edinburgh

<sup>16</sup> University of Edinburgh (1998) Medicine Programme, Course Introduction (unpublished)

<sup>17</sup> University of Edinburgh (1997) The Making of Tomorrow's Doctors (unpublished)

## Influences on curriculum reform in Edinburgh in the 1990s

The various reports and the publicity materials produced in 1997 give us insight into the goals and vision the innovators had for this new course. There is documentation of extensive consultations and feedback and descriptions of annual symposia on proposals (1996/97) and a 4-day exhibition of plans (May 1997). From these we have summarised the major drivers for change and the ideologies.

1. 'The medical, social and political environment'
2. The General Medical Council
  - Attributes of the Independent Practitioner (GMC 1987)
  - Tomorrow's Doctors (GMC 1993)
  - The New Doctor (GMC 1997)
  - The Duties of a Doctor (GMC 1995)
3. The Royal Colleges
4. National Trends in Higher Education
5. The financial position of the University and Teaching Hospitals
  - a predicted 3% reduction through SHEFC (1996)
6. Faculty educational and research priorities
7. Changing local healthcare needs and delivery
8. Key personalities had vision and inspired others

Figure 2

1. A curriculum based more in the community
2. Process of Personal Professional Development
  - as practitioner, professional and person
  - preparing graduates for life-long learning and change
  - aware of personal strengths and weaknesses
  - academic and pastoral support, recognising the value of mentoring
3. Blend of latest teaching/learning approaches combined with traditional methods
  - defined core knowledge in objectives
  - development of attitudes and skills
  - integrated courses around systems
  - self-directed and curiosity-driven learning opportunities
  - teaching that takes place in a strong research environment
  - accessing range of information including computer assisted learning
  - problem-based learning opportunities
  - incorporating reflective practice
  - using a range of assessment methods to match learning
4. A managed programme
  - a medical teaching organisation
  - independent ongoing quality assurance

Figure 3

Figures 2 and 3 list the major drivers and ideologies central to the new Edinburgh curriculum.

However the documents hold no mention of empirical evidence on which to base the new curriculum. This may be an example of the tacit knowledge<sup>18</sup> within a community of practice or substantiate the idea that curriculum design is seldom founded on research evidence but owes much to the ideology of the day<sup>19</sup>. But many of the ideologies in the Edinburgh documents and indeed in Tomorrow's Doctors (1993) were not new. George Miller in the 1960s described similar ideologies as did Simpson (1972), Cox and Ewan (1982), and Newble and Cannon (1983). It would seem that political and social influences determined that these ideologies should be promoted at this time.

## Theoretical basis supporting ePortfolios in medical education

The origins of the Edinburgh portfolios are therefore slimly justified but how can we use current theories of learning and professional practice to inform further development of portfolios?

<sup>18</sup> Polanyi M (1967) *The Tacit Dimension* Doubleday New York

<sup>19</sup> Grant J (2006) *Principles of Curriculum Design Understanding Medical Education* ASME Edinburgh

## Personalised learning

Personalised learning was first mentioned in political discourse, in Tony Blair's speech at the Labour Party Conference in 2003<sup>20</sup>. Early in the new year a government-appointed review group reported on how this will be implemented in schools<sup>21</sup>. 'Choice' and 'Voice' are key messages from ministers and policy advisers. Although personalised or personalising learning has its origins in schools it is as relevant to further and higher education with essential features that include putting the learner at the centre of the system; having high expectations of every child; shaping teaching around the way young people learn and focusing on developing learning skills and strategies (metacognition).

Charles Leadbetter has written of the need to change the 'scripts' that describe the service delivery to students; one that demonstrates a more responsive service and (more radically) one where personalisation is achieved through students participating as co-producers and co-designers<sup>22</sup>. Not all embrace this new philosophy<sup>20</sup>. There is concern that it will unreasonably raise expectations of individualised tuition and indeed that it is more about teaching than learning. Even Leadbetter acknowledges that professionals need to offer advocacy or else this policy may favour those who already most able to participate, voice their needs and exercise choice. He also advises that personalised learning may appear to challenge the statutory assessment tests and the national curriculum<sup>20</sup>.

## Self-directed learning

Self-directed learning [SDL] is central to the pragmatic expositions of personalised learning. It is not an educational theory in its own right but an inherent part of most of the commonly referred to theories of learning in medical education. The concept of SDL can be described as either an attribute of learners which they develop with effort or a system of methods which requires the student to take responsibility for completing tasks<sup>23</sup>. Those who adopt SDL strategies appear to be better prepared for future practice and for life-long learning<sup>24</sup>. In cognitive theory self-directed learning is a requirement for the personal building of new information. In social learning theory Bandura includes 'Self-regulatory capability' as one of the five basic capabilities held by all for learning in all situations<sup>25</sup>. A curriculum can therefore encourage or stifle this natural capability in its learners and might look to influence and develop specific characteristics described by Kauffman and Mann<sup>23</sup>.

There are however tensions around SDL, similar to those in personalised learning. Students must be able to assess performance and identify weaknesses. Recent reviews suggest individuals are not good at self-assessment but may be improved through understanding of criteria and performance level<sup>26,27</sup>. A student's goals may not match those of the programme: a novice in any

<sup>20</sup> Teacher Training Resource Bank: Personalised Learning <http://www.trrb.ac.uk/viewArticle2.aspx?contentId=12406> (accessed 29 December 2007)

<sup>21</sup> Smith A *Report calls for personalised learning by 2020*. *EducationGuardian.co.uk* Guardian Unlimited at <http://education.guardian.co.uk/schools/story/0,,1982004,00.html> Accessed 5 January 2008

<sup>22</sup> Leadbetter C (2004) *Learning about Personalisation: how can we put the learner at the heart of the education system?* Department for Education and Skills, Crown Office [www.standards.dfes.gov.uk/innovation-unit](http://www.standards.dfes.gov.uk/innovation-unit) (accessed 29 December 2007).

<sup>23</sup> Kauffman DM, Mann K (2007) *Teaching and learning in medical education: how theory can inform practice: understanding medical education*. ASME Edinburgh

<sup>24</sup> Spencer J, Jordan R (1999) Learner centred approaches in medical education. *BMJ* 318:1280-3

<sup>25</sup> Bandura A (1977) *Social Learning Theory*. Prentice-Hall, Englewood Cliffs, NJ

<sup>26</sup> Eva KW, Reghr G (2005) Self-assessment in the health professions: a reformulation and research agenda. *Academic Medicine*: 80:547-54

<sup>27</sup> McKinsty B, Colthart I, Bagnall G, Evans A, Allbutt H, Haig A, Illing J The effectiveness of self-assessment on the identification of learner needs, learner activity, and impact on clinical practice. Best Evidence Medical Education Systematic Review. *Medical Teacher* (In Press)

profession is unlikely to fully understand the requirements of that chosen career and as outcomes of medical education are criticised<sup>2829</sup> institutions may come under pressure to have ever more prescribed outcomes. The tension between a student-centred and an outcomes-based approach to learning is likely to continue.

## Personal professional development and professionalism

Personal professional development in Edinburgh is a process driven by the learner to guide and support their development and identity as a professional for personal satisfaction and effective practice and is often facilitated by a mentor and informed by a portfolio of evidence. It is concerned about the well-being of individuals as well as professional performance<sup>303132</sup>. Eraut points out that professional development is primarily concerned with knowing how to do things right rather than profession-specific propositional knowledge (knowing what). He also differentiates between PPD which he terms an ideology, and professionalism which he describes as a set of attributes<sup>33</sup>. Over the last 10 years the focus of attention has been moving from professional development to professionalism. In 2005 the Royal College of Physicians responded with its own redefinition of professionalism<sup>34</sup>, probably influenced by growing public criticism of the profession in the wake of poor practices and negligence that came to light through the Alder Hey, Bristol and Shipman inquiries<sup>353637</sup>. The GMC plans for appraisal and revalidation<sup>38</sup> continue to cause some tension between the self-directed aspirational and judgemental foci of the personal professional development process.

## Reflective practice

We have earlier noted that self-assessment is a crucial component of self-directed learning. Another is reflection. It is through reflection that learners can make sense of their experiences and build that understanding into their current knowledge to inform future actions. Donald Schon has done much to stimulate debate about reflection. He describes 'reflection-in-action' as the analysis, question-framing and experimental solutions that experts undertake immediately when they meet 'surprises' in their routine work<sup>39</sup>. Schon himself however describes how poorly experts are able to describe what was going through their minds after the event. Dreyfus and Dreyfus write of the intuitive reflection of experts that cannot be expressed verbally or in writing<sup>40</sup>, and Eraut argues that rapid on the spot reflection is very different from the more considered analysis after the event

<sup>28</sup> British Broadcasting Corporation Radio 4 (2008) *Where's the femur?* London

<sup>29</sup> Grant J (2000) The incapacitating effects of competence. A critique. *Journal of Health Sciences Education*. 4(3): 271-2

<sup>30</sup> Yamey G, Wilkes M (2001) Promoting wellbeing among doctors *BMJ* 322: 252-3

<sup>31</sup> Freeman R (1997) Towards effective mentoring in general practice *British Journal of General Practice* 32472: 457-460

<sup>32</sup> Weiner EL, Swain GR, Wolf B, Gottlieb M (2001) A qualitative study of physicians' own wellness-promotion practices *West J Med* 174: 19-2

<sup>33</sup> Eraut M (1994) *Developing Professional Knowledge and Competence*, Falmer Press, London

<sup>34</sup> Royal College of Physicians (2005) *Doctors in society: medical professionalism in a changing world*. RCP London

<sup>35</sup> Royal Liverpool Children's Inquiry (2001) *Report/The Royal Liverpool Children's Inquiry*, The Stationery Office London

<sup>36</sup> The Bristol Royal Infirmary Inquiry (2001) Report/ Presented to Parliament by the Secretary of State for Health by Command of Her Majesty The Crown London

<sup>37</sup> *The Shipman Inquiry 5th report* (2004) - safeguarding patients: lessons from the past proposals for the future <http://www.the-shipman-inquiry.org.uk/fifthreport.asp> (accessed Jan 10, 2008)

<sup>38</sup> The General Medical Council (2006) *Good Medical Practice* GMC London

<sup>39</sup> Schon DA (1987) *Educating the Reflective Practitioner* Jossey-Bass San Francisco

<sup>40</sup> Dreyfus HL, Dreyfus SE (1986) *Mind over Machine: the power of human intuition and expertise in the era of the computer*. Basil Blackwell Oxford

– and has different purposes<sup>41</sup>. However Schon also recommended that practitioners reflect on their actions after the event as a means of considering any surprises and analysing how these were or (with hindsight) might have been dealt with for the development of future practice. Various reflective cycles have been elaborated by Kolb, Boud and Moon<sup>42,43,44</sup>. They may have different settings and purposes but all aim to improve future performance. Mamede and Schmidt report a study to define what reflective thinking is undertaken by real doctors in their practice. This was carried out with GPs in Brazil so may not be directly applicable to UK practice across the medical specialties<sup>45</sup>. Reflective ability can be developed, often through small group work along with reflective writing<sup>46</sup>.

## Deep learning

Donald Schon drew heavily on the work of Dewey who described his ideas about the way we think in 1933<sup>47</sup>. Carol Rodgers has distilled his ideas on reflection to describe the 6 phases of the systematic, rigorous, disciplined way of thinking with its roots in scientific inquiry that is the hallmark of reflective thinking<sup>48</sup>. It is clear that he describes a process akin to both deep learning and deliberate practice. He also points out that such reflection can and should follow all manner of learning experiences including reading. More recently Moon has also written of reflection as the catalyst for deep learning<sup>44</sup>.

Dewey also emphasised that reflective thinking must include all elements of the experience (I-Thou-It and their contexts) and Rodgers warns that too often reflection focuses on self (the practitioner/student) and risks being judged as ‘soft’ and narcissistic.

Dewey’s description of reflective thinking fits well with the definition in the literature of critical thinking<sup>49</sup> and matches the theory of deliberate practice<sup>50</sup>. Initially it was thought that expert performance related to experience only<sup>51</sup> but more is required: deliberate practice is based on critical observation (reflection) of one’s practice, focussing on one’s weaknesses with the goal of improving performance<sup>52</sup>. McManus’ work in this area demonstrates that deep learning is a better indicator of success in final examinations than clinical experience per se but those who are deep learners are also more likely to undertake more clinical experience. He also demonstrated that learning style appeared to be a state rather than a trait<sup>53</sup> influenced by the curriculum and by

<sup>41</sup> Eraut M (1995) Schon Shock: a case for reframing reflection-in-action. *Teachers in Teaching: theory and practice* Vol. 1, No.1

<sup>42</sup> Kolb D (1984) *Experiential Learning: experience as a source of learning & development*. Prentice-Hall Englewood Cliffe New Jersey

<sup>43</sup> Boud D Keogh R & Walker D (eds) (1985) *Reflection: turning experience into learning*. Kogan Page London.

<sup>44</sup> Moon J (1999) *Reflection in Learning and Professional Development*. Kogan Page London

<sup>45</sup> Mamede S Schmidt H The structure of reflective practice in medicine. *Medical Education* 38(12): 1302-1308

<sup>46</sup> Slotnick HB (1996) How doctors learn: the role of clinical problems across the medical school-to-practice continuum. *Acad Med* 71 (1):28-34

<sup>47</sup> Dewey J (1933) *How we think* Prometheus Books Buffalo New York

<sup>48</sup> Rodgers C (2002) *Teachers College Record* Volume 104 Number 4; p842-866

<sup>49</sup> Garrison DR (1991) Critical thinking and adult education: a conceptual model for developing critical thinking in adult learners *Int J Lifelong Educ*; 10:287-303

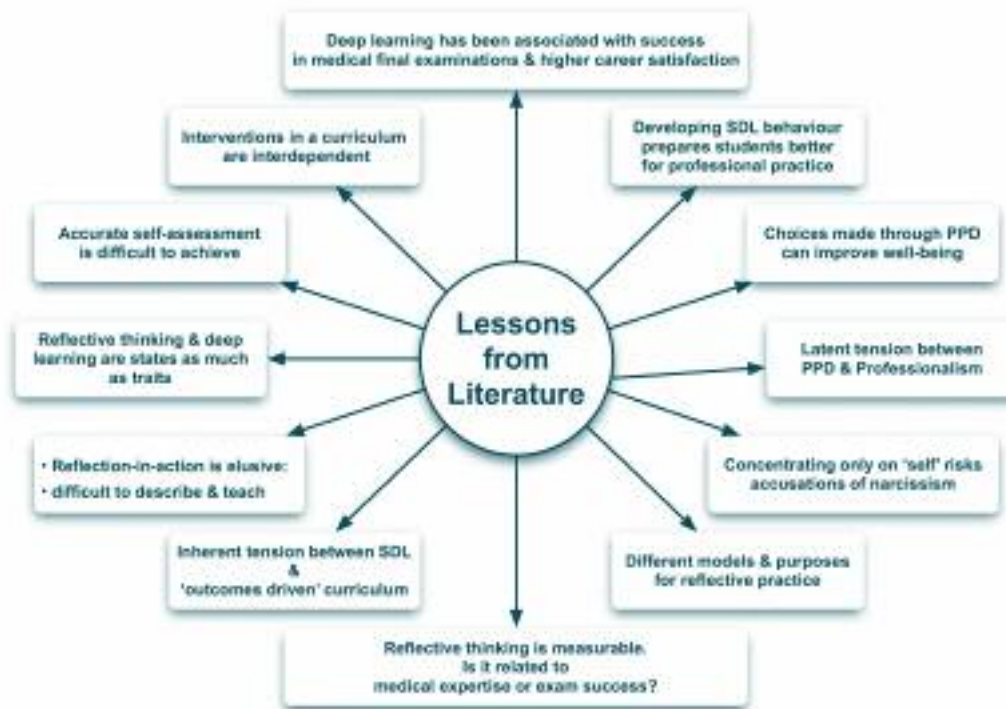
<sup>50</sup> Schmidt HG, Norman GR, Boshuizen HPE (1990) A cognitive perspective on medical expertise: theory and implications *Acad Med*; 65:611-21

<sup>51</sup> Ericsson KA, Charness N (1994) Expert performance: its structure and acquisition *Am Psychol*; 49:725-46

<sup>52</sup> Ericsson KA, Krampe RT, Teshc-Romer C (1993) The role of deliberate practice in the acquisition of expert performance *Psychol Rev*; 100: 363-406

<sup>53</sup> McManus IC, Richards P, Winder BC, Sproston KA (1998) Clinical experience, performance in final examinations, and learning style in medical students: prospective study *BMJ*; 316:345-50

previous exam failure<sup>54</sup>. More recent work by McManus in this field also suggests that doctors who are deep learners have a more positive attitude to medicine as a career<sup>55</sup>.



**Figure 4:**  
Lessons from literature

## Conclusions/recommendations

Major curriculum change in Edinburgh in 1998 and from contemporaneous documentation this appears to have been based on ideologies rather than basic research evidence. Current theories of learning and practice especially those relating to personalised and self-directed learning, personal professional development, reflective practice and deep learning offer much support to the use of portfolios in undergraduate medical education, and possibilities for future directions. Figure 4 gives the lessons from the literature.

Feedback from staff supports our learning portfolio as a valuable addition encouraging students to think extensively about patients and preparing them for future practice. Students are more wary and dislike repetitive writing tasks in both portfolios. With recent changes to the application system for Foundation Programme, senior students appreciate opportunities to develop generic skills within PPD, write reflective accounts and consider their career options.

Curriculum developers might like to consider a more scholarly exposition of development proposals as a means of clarifying aims and potential weaknesses, preventing future curriculum drift, and encouraging an enquiry-led and evidence-informed approach to curriculum development.

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<sup>54</sup> Tooth D, Tongue K, McManus IC (1989) Anxiety and study methods in pre-clinical students: causal relation to examination performance *Med Ed*; 23:416-421

<sup>55</sup> McManus IC, Keeling A, Paice E (2004) Stress, burnout and doctors' attitude to work are determined by personality and learning style: a twelve-year longitudinal study of UK medical graduates *Biomed Central Medicine*.2:29

# PM1 (a): A blog for learning: blogs and social networking with explicit support for skills and learning outcomes, within an integrated ePortfolio

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## Abstract

There has been rapid uptake of freely available blogging and social networking sites on the Internet by students (as part of the 'Web 2.0' phenomena) and there are indications that these technologies can have serendipitous benefits for supporting learning. This paper documents developments which are designed to integrate blogging and community publishing facilities into the 'ePET' ePortfolio, and directly link them to skills and learning outcomes. These are being evaluated in large-scale pilots which are part of a JISC funded regional ePortfolios project ('EPICS-2').

We have designed a blog and community spaces with explicit support for learning and CPD which is integrated into the ePortfolio. In addition to the standard features available in most generic blogs and social networking sites the following have been developed:

- Blog integration with course/CPD skill sets and learning context.
- Blog integration with ePortfolio for reflective evidencing of skills/learning outcomes.
- Pre-specified blog categories (in addition to personal ones) to help 'scaffold' learning for specific student programmes & CPD schemes.
- Support for both assigned and user-initiated learning communities.
- Support for both 'open' and 'closed' learning communities.
- User control of access to their blog entries at private, community, institution and public levels.
- Integration with ePortfolio tools for assessment (where appropriate).

The blog is integrated with the ePET portfolio and draws on skill sets and terminology that can be customised at the programme level. This aims to ensure that the blog can be more readily embedded within the learner's context. After creating a blog entry the learner has the option of linking it with one or more skills / learning outcomes. This automatically generates a cross-reference with the skill/outcome so that the record will be included in the evidence section of the 'My Skills' tool in the portfolio. The cross-reference can be enriched by the learner who can specify how the achievement described in the blog entry relates to the particular skill with the aim of encouraging and demonstrating 'meta cognition'.

In common with most other blogging software, learners can create their own categories against which they can classify blog entries. However, we have added the facility for programme leaders

and community facilitators to pre-specify categories which are of significance to learners studying specific curricula. This is intended to provide some minimal 'scaffolding' in an otherwise unstructured environment. Programme-specific categories in the blog may also have significance in assessment. For example, blog entries for a specific category can automatically be viewed in an assessed section of the portfolio (unless access is set to private).

Support for both assigned and user-initiated learning communities has been included in attempt to harness the 'power' of social networking for learning and other community objectives. Typically a student's primary community would be one which related to their programme, stage and the academic year. In addition there may be communities relating to modules, seminar groups etc. The aim here is to promote 'safe' environments in which learners can interact with others at the same level of development and with similar learning objectives – without the potential for external 'spamming' or exposure to the blogs from the previous academic year (unless educationally desirable).

We have further extended customisation of the ePET portfolio to support a range of structured and unstructured portfolio tools with integrated blogging and community publishing tools explicitly designed to support learning. Evaluation findings will be presented.

## Full text

### Introduction

There has been rapid uptake of freely available blogging and social networking sites on the Internet by students (as part of the 'Web 2.0' phenomena<sup>123</sup>) and there are indications that these technologies can have serendipitous benefits for supporting learning<sup>45</sup> This paper documents developments which are designed to integrate blogging and community publishing facilities into the 'ePET' ePortfolio<sup>67</sup>, and directly link them to skills and learning outcomes. This represents a work in progress, with this approach currently being evaluated in large-scale pilots which are part of a JISC funded regional ePortfolios project; 'EPICS-2'<sup>8</sup>.

There has been a huge growth in popularity of Websites such as Facebook, MySpace YouTube, Flickr, Blogger, and Wikipedia - often referred to as the 'Web 2.0' phenomena. The term 'Web 2.0' is slightly misleading in that it does not relate to a specific technology, but rather to a change

<sup>1</sup> Anderson P. What is Web 2.0? *Ideas, technologies and implications for education* JISC Technology and Standards Watch, Feb. 2007 (<http://www.jisc.ac.uk/media/documents/techwatch/tsw0701b.pdf> accessed 15/01/2008)

<sup>2</sup> Sandars J. Twelve tips for using blogs and wikis in medical education. *Medical teacher* 2006; 28(8):680-2

<sup>3</sup> Sandars J, Haythornthwaite C. New horizons for e-learning in medical education: ecological and Web 2.0 perspectives. *Medical Teacher* 2007; 29(4):307-10

<sup>4</sup> Bartlett-Bragg A Reflections on pedagogy: *Understanding adult learners' experiences of weblogs* In Burg BlogTalks Reloaded. Social Software - Research & Cases (2006) see: <http://blogtalk.net/Main/BlogTalks> accessed 12/12/2007

<sup>5</sup> Williams, J. B. and Jacobs, J. (2004). Exploring the use of blogs as learning spaces in the higher education sector. *Australasian Journal of Educational Technology*, 20(2), 232-247. <http://www.ascilite.org.au/ajet/ajet20/williams.html>, accessed 12/12/2007

<sup>6</sup> Cotterill SJ, Aiton J, Bradley PM, Hammond GR, McDonald AM, Struthers J, Whiten S. A flexible component-based ePortfolio: adapting and embedding in the curriculum. In: In Jafari A, Kaufman C, ed. *Handbook of Research on ePortfolios*. Pennsylvania: Idea Group Inc, 2006.

<sup>7</sup> Cotterill SJ, Horner P, Hammond GR, McDonald AM, Drummond P, Teasdale D, Aiton J, Orr G, Bradley PM, Jowett T, Heseltine L, Ingraham B, Scougall K. *Implementing ePortfolios: adapting technology to suit pedagogy and not vice versa!* Proc. ePortfolio 2005

<sup>8</sup> <http://www.epics.ac.uk> (accessed 7 January 2008)

in the use of the Internet – from a medium mainly used for finding and viewing information to one which also supports large-scale personal publishing and social networking. Web 2.0 tools (blogs, Wikis, social networking sites etc.) tend to be relatively unstructured, easy to publish in, have a high level of interaction, and self-assigned semantics (tagging), and they are often media rich.

A key question in education is can 'Web 2.0' approaches be applied to support learning, as well as their primary social and recreational purposes? There are 3 broad ways in which 'Web 2.0' approaches might be applied to support learning<sup>9</sup>. These are:

1. Using the tools 'out there' (Facebook, MySpace etc).
2. Institutional hosting of social networking software (Ning, Elgg etc).
3. Integration of Web 2.0 in VLEs, ePortfolios and other institutional systems.

These are all valid, and not mutually exclusive. However, this paper focuses on the latter approach, incorporating blogs and social networking within an ePortfolio so that they are embedded in the curriculum and have explicit links to learning outcomes, skills or competency frameworks. Part of the rationale for this approach is recognising that some level of structure / 'scaffolding' is often required for effective portfolio learning. Getting the right level of structure in an ePortfolio is complex and depends on the specific educational context and purpose of the portfolio (reflective learning, assessment, presentation etc)<sup>10</sup>.

## An integrated blog for eLearning

We have designed a blog and community spaces with explicit support for learning and CPD which is integrated into the ePortfolio. In addition to the standard features available in most generic blogs and social networking sites the following have been developed:

- Blog integration with course/CPD skill sets and learning context
- Blog integration with ePortfolio for reflective evidencing of skills/learning outcomes
- Pre-specified blog categories (in addition to personal ones) to help 'scaffold' learning for specific student programmes & CPD schemes
- Support for both assigned and user-initiated learning communities
- Support for both 'open' and 'closed' learning communities
- User control of access to their blog entries at private, community, institution and public levels
- Integration with ePortfolio tools for assessment (where appropriate)

## Integrating skills and learning outcomes

The blog is integrated with the ePET portfolio and draws on skill sets and terminology that can be customised at the programme level. This aims to ensure that the blog can be more readily embedded within the learner's context. After creating a blog entry the learner has the option of linking it with one or more skills/learning outcomes (Figure 1). This automatically generates a cross-reference with the skill/outcome so that the record will be included in the evidence section of the 'My Skills' tool in the portfolio. The cross-reference can be enriched by the learner who can

<sup>9</sup> Cotterill SJ, White A, Currant B. *Using Web 2.0 to Support PDP* PDP-UK, 2007, 12: 7-8.

<sup>10</sup> Cotterill SJ, Horner P, Gill S, McDonald AM, Drummond P, Teasdale D, Whitworth A, Hammond GR. *Beyond the Blog: getting the right level of structure in an ePortfolio to support learning*. Proc. ePortfolios 2007, Maastricht.

specify how the achievement described in the blog entry relates to the particular skill with the aim of encouraging and demonstrating 'meta cognition'.



Figure 1: Integration of blog and skills/competencies in an ePortfolio

### Pre-specifying blog categories

In common with most other blogging software, learners can create their own categories against which they can classify blog entries. However, we have added the facility for programme leaders and community facilitators to pre-specify categories which are of significance to learners studying specific curricula. This is intended to provide some minimal 'scaffolding' in an otherwise unstructured environment. Programme-specific categories in the blog may also have significance in assessment. For example, blog entries for a specific category can automatically be viewed in an assessed section of the portfolio (unless access is set to private).



Figure 2: Both user-specified and programme-specified categories are supported

## Community publishing

Support for both assigned and user-initiated learning communities has been included in attempt to harness the ‘power’ of social networking for learning and other community objectives. Typically a student’s primary community would be one which related to their programme, stage and the academic year. In addition there may be communities relating to modules, seminar groups etc. The aim here is to promote ‘safe’ environments in which learners can interact with others at the same level of development and with similar learning objectives – without the potential for external ‘spamming’ or exposure to the blogs from the previous academic year (unless educationally desirable).

## EPICS-2 regional ePortfolio system

EPICS-2 (<http://www.epics.ac.uk>) is a JISC funded project which aims to make a significant impact on the development of support for personalised learning, work-based learning, and life-long learning. The project is a collaboration of 5 Universities and FE Colleges in the North East of England. It builds on the considerable success and deliverables of the First EPICS project<sup>11</sup> around technology, pedagogy and governance relating to ePortfolios & PDP. As part of the EPICS-2 project the above approach of integrating blogs and community publishing are being integrated into ePortfolios. These are currently being evaluated in pilots with undergraduate and postgraduate students in Speech and Language Therapy at Newcastle University, the Overseas Nursing Programme at Sunderland University, undergraduates on the Combined Studies Programme at Newcastle University and the Certificate in Education at Gateshead College.

## Discussion

Here we have integrated Web 2.0 features (blogs and social networking) within an ePortfolio in attempt to find the right level of structure to support learning within an ePortfolio. In some senses, Web 2.0 applications can be considered to be unstructured portfolios. However, we consider that a level of structure, relating to purpose(s), differentiates ePortfolio from other applications such as blogs and wikis<sup>12</sup> (that is not to say that ‘portfolio learning’ can’t be achieved with unstructured tools). The issue of structure touches on the tensions between constructionist and positivist paradigms for learning<sup>13</sup>. The intrinsic structure of an ePortfolio can provide ‘scaffolding’ to support learning pedagogy or help meet the requirements of assessment. Skill sets, objectives, outcomes and competencies are by definition structured and can be explicitly supported in ePortfolio. Structure is also important in the transfer of portfolio data using recognised interoperability standards (such as IMS LIP, IMS ePortfolio, Europass-CV & HR-XML). These standards, which support structured data, are becoming increasingly important for job/course applications and supporting continuity in life-long learning. Standards commonly used with blogs (especially RSS) are very important for communicating current information but are of less relevance in supporting life-long learning.

Ignoring Web 2.0 is not really an option – students and staff are already using it and the next generation of learners will have grown up with the Web 2.0 ‘way of thinking’. However, the approach adopted to use this for education needs careful consideration. As tutors, our going ‘out there’ might not always be welcomed – some students may want to maintain a distinction

<sup>11</sup> Horner AP, Cotterill SJ, Ingraham B, Gill S, Thompson J, Ayestaran H, Webster D, Ollerenshaw B, McDonald AM, Taylor L, Wilson R, Quentin-Baxter M, Hopkins P. *EPICS – outcomes of a regional ePortfolio initiative to support life-long learning*. Proc. ePortfolios 2006, Oxford.

<sup>12</sup> <http://www.eportfolios.ac.uk/definition>

<sup>13</sup> Paulson FL & Paulson P. “Assessing Portfolios Using the Constructivist Paradigm” In Fogarty, R. (ed.) (1996) *Student Portfolios*. Palatine: IRI Skylight Training & Publishing (1994)

between their working and social lives, and as with the 'real world', and students will want to discuss aspects of their courses away from tutors and the institution. Whichever approach, effort to help students understand how to use Web 2.0 effectively for learning is probably required. We also desperately need high quality research into use of Web 2.0 for learning and PDP. Also, with the maturing 'Web 3.0'<sup>14</sup>, it will be interesting to see how the 'semantic web' will fuse with the world of personal and community publishing.

## Conclusions

We have further extended customisation of the ePET portfolio to support a range of structured and unstructured portfolio tools with integrated blogging and community publishing tools explicitly designed to support learning. This is currently being evaluated as part of the EPICS-2 regional ePortfolios project.

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<sup>14</sup> Giustini D. Web 3.0 and medicine (Editorial) *BMJ* 2008; 335:1273-4

# PM1 (b): Social portfolios supporting professional identity: implications for education

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## Abstract

Our starting point is reflection on the phenomenon of social networking websites. Before these existed, one's 'electronic identity' seemed to be a matter of personal construction. In the ePortfolio for prospective employment or post-certification re-validation, health professionals want to display those qualities, including professional values and ethics, which were perceived as officially accredited in their work context (Goffman, 1959<sup>1</sup>; GMC, 2007<sup>2</sup>), and these qualities should overlap to a large extent with their own sense of professional identity. For portfolio use, some evidence for these qualities would be needed, and what was presented could be freely chosen by the individual, or in the worst cases, invented, if that could avoid detection. Arguably, it is easier to fake attitudes than it is to fake practical skills or demonstrable knowledge, as examples of professional malpractice have illustrated over recent years.

Now, employers are increasingly looking at the electronic social networks of prospective employees to get a better picture of their true qualities (e.g. see <http://www.onrec.com/newsstories/17612.asp>). It is as if the social networking sites present a kind of 'social portfolio', which an individual is only partly in control of. In terms of Goffman, the social portfolio enables employers (and others) to sidestep the controls that actors place upon their performances to manage impressions. This social identity, the product of how one interacts with others through social networking sites, may have an increasing bearing on professional identity. This tallies with a positive value in peer assessment, which has been used effectively in medical undergraduate education to develop ethical awareness and good practice (Boggis et al, 2003<sup>3</sup>).

If it becomes increasingly the norm for health care employers to examine the social portfolios of prospective employees, what may the consequences be for the development of professional identity in these professions? We explore two possible scenarios.

In the first scenario people accept that the social portfolio is a good way to go for assessing aspects of professional identity. If assessors are realistic in what they expect, those being assessed will be able to focus on a thorough and honest attempt to allow professional values to permeate their lives in a way that will be recognised by their peers as 'good enough'.

<sup>1</sup> Goffman, E (1959) *The Presentation of Self in Everyday Life*. Penguin Books. See p 45.

<sup>2</sup> GMC (2007) *Medical students: professional behaviour and fitness to practise*. [http://www.gmc-uk.org/education/undergraduate/undergraduate\\_policy/professional\\_behaviour.asp](http://www.gmc-uk.org/education/undergraduate/undergraduate_policy/professional_behaviour.asp)

<sup>3</sup> Boggis, C, Cooke, S, Richardson, H and Holland, M (2003) *Self and Peer Assessment for Student Doctors*. In *Innovations in Assessment*, Symposium Proceedings, Teaching Research and Development Network, University of Manchester and UMIST (May 2003), p36, ISBN 1-903-640-10-5.

In the second scenario, assessors look for the ideal ‘model practitioner’ displayed through social portfolios, perhaps out of fear that relaxing ideals will lead to mistakes and blame. Those being assessed come to be highly cautious about everything they do or say with social software. Any aspects of their character which do not fit the professional ideal are hidden, perhaps leading to a refusal to participate electronically at all. Assessment would become a cynical game where the winners are those who can manipulate their social experiences to portray themselves in an ‘ideal’ light.

What does this mean for undergraduate healthcare education? Our examples, drawn partly from medical education, will illustrate both the relevance of the issues discussed and possible ways forward for good practice.

## Full text

### *Introduction and purpose*

Our starting point is reflection on the phenomenon of social networking websites in the context of personal identity. Before social networking sites existed, people’s ‘electronic identity’ seemed to be a matter of personal construction, whereas now, a personal profile may be contributed to by others, either through text or photographic images. In the e portfolio for prospective employment or post-certification re-validation, health professionals normally want to display those qualities, including professional values and ethics, which they perceive as officially accredited in their work context<sup>45</sup>. It is to be expected that these qualities should overlap to a large extent with their own sense of professional and personal identity. For portfolio use, some evidence for claims of these qualities is needed, and what is presented can be freely chosen by the individual. In the worst cases, there is the opportunity for ‘evidence’ to be invented, if that could avoid detection. A potential benefit for third parties reading personal profiles on social networking sites is that their dynamic means that people are generally more likely to be honest about themselves than might be the case in a CV. Indeed, people may inadvertently reveal profiles of themselves different from those intended to be public.

We aim to clarify the importance of bringing a clearer and more explicit awareness of social networking and its implications into healthcare education, on the grounds that healthcare professionals have a particularly trusted role in society, and need to take particular care with any information about themselves that might become available to others.

### *Method*

This paper aims to raise awareness of issues which are seen by the authors as of increasing importance to healthcare education. The work is based on our knowledge of social networking sites and services, and much related practice in the world of technology supporting education, academic, personal, and professional development, and business processes. Information supporting our experience was collated from a combination of literature survey, contacts in

<sup>4</sup> Goffman, E. *The Presentation of Self in Everyday Life*. 1959. Penguin Books. See p 45.

<sup>5</sup> General Medical Council. *Medical students: professional behaviour and fitness to practise*. Jointly produced with Medical Schools Council, 2007. ([http://www.gmc-uk.org/education/undergraduate/undergraduate\\_policy/professional\\_behaviour.asp](http://www.gmc-uk.org/education/undergraduate/undergraduate_policy/professional_behaviour.asp) accessed 2008-01-07)

healthcare professions including medicine, and our professional networks in the areas of educational technology supporting formal and informal learning.

Additionally, we searched through medical education guidance documents to discover the extent to which the issues we are raising are currently on the agenda for healthcare education curricula.

## **Progress/discussion**

### **Social networks, professional identity, and the social portfolio**

Employers in general are increasingly looking at the electronic social networks of prospective employees to get a better picture of their true qualities (see, e.g., Online Recruitment<sup>6</sup>). It is as if the social networking sites, including MySpace, Flickr and many others, but particularly at present Facebook, present a kind of 'social portfolio', over which an individual is only partly in control. As well as the intrinsically social nature of the social networking services, allowing others to add information about one often without explicit consent, there is the even more open world of the public web, which anyone can access through search engines such as Google. Through these, using appropriate search terms, much information about individuals can sometimes be found.

In terms of Goffman, the social portfolio enables potential employers and others to sidestep the controls that actors place upon their performances to manage impressions. Thus, this kind of electronically available information, whether on social networking sites or elsewhere on the web, may have an increasing bearing on professional identity as it comes to be perceived by others, independently of the professional identity that the individual feels, and wishes to project.

The importance of other people's perceptions tallies with the significance of peer assessment, which has been used effectively in medical undergraduate education to develop ethical awareness and good practice (Boggis et al.<sup>7</sup>).

An important way in which social networking and the social portfolio can affect health professionals is through the impact on patients or clients. Trust and confidence in health professionals is vital in any case in many aspects of face-to-face medical practice (Good Medical Practice<sup>8</sup>, paras 20, 21, 56, 57), and indispensable when trust and confidence play an active role in the therapeutic process.

The extent to which employers use social portfolio information as part of healthcare recruitment is not yet clear, but given that there is a free way of gaining extra information about a candidate, it is likely to be an increasing temptation for medical recruiters as for others. For example, even if medical recruiters have no mandate to look at potential professionals' social portfolios directly, it would seem quite reasonable for there to be some kind of investigation that there is nothing publicly available that could have a negative impact on professional identity and reputation.

Many students and young professionals use social networking services, particularly (at present) Facebook, and most understand that information there is liable to be searched by potential employers and others. This is, however, no excuse whatever to leave these matters to chance.

<sup>6</sup> Online Recruitment. *Employers use Facebook for further background checks*. Onrec.com, 2007-07-18 (<http://www.onrec.com/newsstories/17612.asp> accessed 2008-01-07)

<sup>7</sup> Boggis, C, Cooke, S, Richardson, H and Holland, M. *Self and Peer Assessment for Student Doctors*. In *Innovations in Assessment*, Symposium Proceedings, Teaching Research and Development Network, University of Manchester and UMIST (May 2003), p36, ISBN 1-903-640-10-5.

<sup>8</sup> General Medical Council. *Good Medical Practice*. 2006. ([http://www.gmc-uk.org/guidance/good\\_medical\\_practice/](http://www.gmc-uk.org/guidance/good_medical_practice/) accessed 2008-01-07)

## Social portfolio issues in healthcare education

Ethical issues in medicine have a long history of being covered in the education process. However, it would appear that healthcare education has not caught up with the current realities of electronic identity, and the social portfolio.

Good Medical Practice<sup>5</sup> sets out how doctors should conduct themselves professionally, and states, for example, that ‘You must make sure that your conduct at all times justifies your patients’ trust in you and the public’s trust in the profession’. However, the examples alongside that statement relate to professional practice, not explicitly to good conduct in personal or private life. The relationship with private life is more clearly spelled out in other guidance for medical students, which includes (paragraph 16):

‘Students must be aware that their behaviour outside the clinical environment, including in their personal lives, may have an impact on their fitness to practise. Their behaviour at all times must justify the trust the public places in the medical profession.’

Reinforcing this, the guidance for GP training<sup>9</sup> includes this intended outcome.

‘At the end of GP training the specialty registrar should be able to demonstrate:

- Awareness of his or her own capabilities and values.
- Understanding that his or her attitudes/feelings/values are important determinants of how he or she practices.
- Ability to clarify and justify his or her personal ethics.
- Awareness of the interaction of work and private life, and the ethical tensions that this can create.’

But there is no evidence that the interactions considered extend yet to social portfolio considerations.

Thus, the social portfolio extends a trend towards greater public accountability. Healthcare professionals are naturally early targets in this process, as they hold positions of responsibility and public trust.

## Scenarios for social portfolios

How people see the effects of using the social portfolio strongly affects the kinds of recommendations that they would accept. Here we present two extreme versions of possible consequences.

In the positive scenario people accept that the social portfolio is a good way to display and assess aspects of professional identity. If assessors and others are realistic in what they expect, the social portfolio holders will be able to focus on a thorough and honest attempt to allow professional values to permeate their lives in a way that will be recognised by their peers as ‘good enough’, the social portfolio will be able to be used to give a solid and reliable impression of professional probity to senior health professionals, including potential employers, and to give an impression to patients and clients that is consistent with, and which encourages, trust and confidence.

<sup>9</sup> Royal College of General Practitioners. Clinical Ethics and Values-Based Practice. 2007 version. Available through Postgraduate Medical Education and Training Board: GP Curriculum. (<http://www.pmetb.org.uk/index.php?id=674> and directly at [http://www.pmetb.org.uk/fileadmin/user/QA/Curricula/Approved\\_curricula/GP/3\\_3\\_Ethics\\_2006\\_01.pdf](http://www.pmetb.org.uk/fileadmin/user/QA/Curricula/Approved_curricula/GP/3_3_Ethics_2006_01.pdf) accessed 2008-01-07)

In the negative scenario, assessors look only for the ideal 'model practitioner' displayed through social portfolios, perhaps out of fear that relaxing norms will lead to mistakes, and blame. Those being assessed come to be highly cautious about everything they do or say electronically. Any aspects of their character which do not fit the professional ideal are hidden, perhaps leading to a refusal to participate electronically at all. Assessment becomes a game where the winners are those who can manipulate their social experiences to portray themselves in an 'ideal' light. Competitive peers point out anything that could be negative, in an attempt to make themselves more attractive by comparison. Patients and clients are suspicious of anything out of the ordinary appearing in the public profiles of their health professionals, complain about it, and refuse to be treated.

Future reality is likely to lie somewhere between these scenarios.

## **Conclusions/recommendations**

It is clear that there is scope for developing education related to social portfolios in healthcare education.

Healthcare students in education, professionals in training and CPD, and their educators, trainers, mentors, and other interested parties such as parents should be more aware of several issues.

- The persistence and pervasiveness of information that is put on the web in general or social networking sites in particular.
- The importance of preventing the dissemination of damaging information right from the start.
- The possibility of using social portfolio information for recruitment.
- The possible impact on reputation, face and effectiveness through patient/client perceptions.

The Online Recruitment article lists 10 things to avoid, though these are not specific to any particular employment, and though they seem eminently reasonable, no empirical evidence is given to justify their prioritisation.

1. References to drug abuse
2. Extremist/intolerant views, including racism, sexism
3. Criminal activity
4. Evidence of excessive alcohol consumption
5. Inappropriate pictures, including nudity
6. Foul language
7. Links to unsuitable websites
8. Lewd jokes
9. Silly email addresses
10. Membership of pointless/silly groups

On the positive side, the same article says 'Employers are looking for evidence of job skills, career history, a range of interests, strong writing skills, as well as other qualities and characteristics such as a confident and friendly personality.'

This advice is general, and does not explicitly consider healthcare professions. But as shown in Table 1, there is already significant overlap with the GMC/MSc guidance.

Online Recruitment article	GMC & MSC guidance: Some areas of misconduct and examples
References to drug abuse Evidence of excessive alcohol consumption	Drug or alcohol misuse Drunk driving; alcohol consumption that affects clinical work or environment; dealing, possessing or using drugs even if there are no legal proceedings
Extremist / intolerant views, including racism, sexism	Unprofessional behaviour or attitudes - including: unlawful discrimination.
Criminal activity	Criminal conviction or caution Child pornography; theft; financial fraud; possession of illegal substances; child abuse or any other abuse; physical violence.

**Table 1: Comparison of general and specific issues which could have a negative impact.**

These negative issues are clearly important, but there are also relevant issues which could have a positive impact, and need to be made explicit. Social portfolio education for healthcare professions could then encourage individuals to reflect carefully on the extent to which exposing or expressing their own personal behaviour, beliefs or experiences might positively or negatively affect their professional role.

Such considerations will not necessarily be obvious. One health professional may decide that their own religious beliefs are best kept entirely private. Another, equally conscientious professional may decide that they wish to be open their personal religious beliefs, and give evidence that this does not detract from accepted professional values and norms, or even supports them. One professional may see their voluntary work as adding to their professional, caring, image, while another may decide that it may appear biased or self-righteous, and decide to keep it private.

Because these decisions are inevitably personal, there is a need for individual support within an educational context, bringing together all of the considerations relevant to the social portfolio. This support should start at an early stage, so that individuals have the best chance of managing the presentation of their private persona in a way that is consistent with a desirable professional persona, with a positive impression/impact on potential employers, colleagues, patients / clients, and the public.

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# PM1 (c): The EELS project: Enhancing the student experience through an embedded eLearning solution

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## Abstract

The EELS (Embedded ELearning Solution) project is an innovative new approach to capture student clerking case experience across an array of medical disciplines. By harnessing the latest technological advancements we have built a flexible, highly customizable online solution to real-world case documentation, peer review, assessment and tutorial generation.

Students from medical disciplines currently move between rotations where they follow the progression of a real patient over a period of time. Students are then asked to submit a case report for assessment by their tutor. Traditional methods of submission use either paper-based or electronic document submission.

We have developed a solution which delivers these complex case report forms in a web-based environment. We can support most types of data entry including multimedia file attachments and drawable images. The forms are organized so as to elicit the required information from the student in a logical manner, but also stimulate reflective learning at key stages in the progress of the case. Using the latest web technology (XForms) we can remove the reliance on the dreaded 'save' button and provide a much more interactive experience for both student and tutor. Once a case has been completed, it can be sent to the tutor for assessment or returned to the user for further editing. Feedback can be added to the form either as general comments applied to the whole case or much more specific annotations attached to individual fields. Students can view these remarks and, if a case has been returned to them, can provide their own general comments in reply to their tutor's, thereby forming a discourse between student and tutor over the development of a case.

Individual cases progress through a series of stages set within a workflow model. The workflow is specified dynamically through a configuration file and defines the access rights available to different user groups at each stage of the case lifecycle. This workflow model means we can implement any number of review stages (with different cohorts), submission-review and re-submission cycles, support collaborative student group work, and multiple assessment and archival phases. Such flexibility allows the system to closely adapt to existing teaching practices and incur minimum startup overheads during deployment.

Finished cases deemed to be of sufficient quality by tutors can then be deposited into a library of exemplar cases for all students to view. As the body of real case material (both text and multimedia) grows, this source material can be used to form the basis of online tutorials. Taking parts or whole cases, the content can be imported into the ToolBook ELearning authoring software, which can generate an array of assessed tutorial types; including quizzes, interactive role plays, and simulations. Through such tutorials students can then explore a scenario, gather data, run tests and view results in a safe virtual environment based on real patient information.

The EELS system has been actively used since March 2007 and currently has over 150 users. Trials have been run with veterinary and dental students and we will soon run a third trial with medical students.

## Full text

### *Introduction and purpose*

Within most undergraduate medical disciplines, students undertake a practical element of their degree by attending off-site placements or rotations in a clinical environment. Experiential learning such as this is an important part of the curriculum<sup>1</sup> and provides students with valuable real-world experience engaging with patients, medical practices and various associated staff. Following a student's progress during this time is often difficult for tutors who will have little interaction with their students at a time when feedback is important to them<sup>2</sup>. As a means to assess this clinical experience, students are often asked to submit clinical case reports that document the progression of a single case in detail.

At the University of Bristol, until now the majority of these case reports take the form of either a stand alone oral presentation or a written report documenting specific aspects of the case (patient details, history, examinations etc). Whilst oral presentation facilitates immediate feedback on the case, it is normally only upon completion of the placement and no permanent record of the case is retained. In contrast a written report does provide a permanent record but feedback is often delayed. A mixture of the two approaches is possible but is costly in both student and staff time. However neither of these approaches, whether combined or not, capture the valuable detail of the cases crucial for their subsequent use as a resource for either teaching or research. By using a more structured, online solution one can start to see an entirely new set of possibilities become available which can have large benefits both to the tutor, in terms of organising and simplifying existing practices, and to students by offering them a richer, more informative and comprehensive learning experience.

Using PowerPoint presentations or word processed documents for report submission requires only basic ICT skills by both tutors and students, but they are not without limitations and miss out on the broad range of possibilities that new eLearning practices can bring. For instance a Word document can allow free text searching within a document; but it can be difficult to search across several documents simultaneously. Another problem is that the text inside a Word document, while appearing to be structured by human standards, is not to a computer and this makes it difficult to express complex queries in the form of show me all case reports where a patient had abnormal lymph nodes or find all canine cases where the dog's breed is 'Terrier'. In contrast an online database of cases can facilitate searching for an individual or groups of cases. Additionally a full multimedia online facility can allow retention of vital clinical detail e.g. images (including ultrasound, x-ray, ECT etc), sound (heart, respiration, abdominal), video as well as text and data files.

<sup>1</sup> *Tomorrow's Doctors*, General Medical Council, 2003

<sup>2</sup> Evaluation of skills during clerkships using student focus groups, Remmen R.; Denekens J.; Scherpbier A.J.J.A.; Vleuten C.P.M.V.D.; Hermann I.; Puymbroeck H.V.; Bossaert L. *Medical Teacher*, Volume 20, Number 5, 1 September 1998, pp. 428-432(5)

## Method

In an environment of changing practices<sup>3</sup>, increasing student numbers and higher student expectations we at the University of Bristol, have been looking into possible solutions to improve on current case practice. Specifically we were looking for a web-based solution which would fit with existing active learning practices and help address several key areas for improvement:

### Ease of use

It is important to design a system that would ultimately simplify the assessment process, especially in an environment with increasing student numbers. Although we are aware that any new approach is unlikely to reduce initial workloads as familiarity with a new system takes time, once users gain an understanding of the new system we hope it will allow considerable time savings to be made. The added benefit of using an online solution is that once all case material is in a single location, cases become much easier to store, manage, back up & retrieve. In addition, changes to cases can be viewed instantly by relevant parties.

### Capturing as much of the case as possible

We wanted to tap into the gamut of new digital devices available to the modern student, either from inside the practice or using devices they carry around with them on a day to day basis, such as mobile camera phones. X-rays, ultrasounds, images, audio recordings and short videos can all form part of the patient case and can provide a wealth of extra information that would be hard to include in a Word document.

### Formation of eTutorials

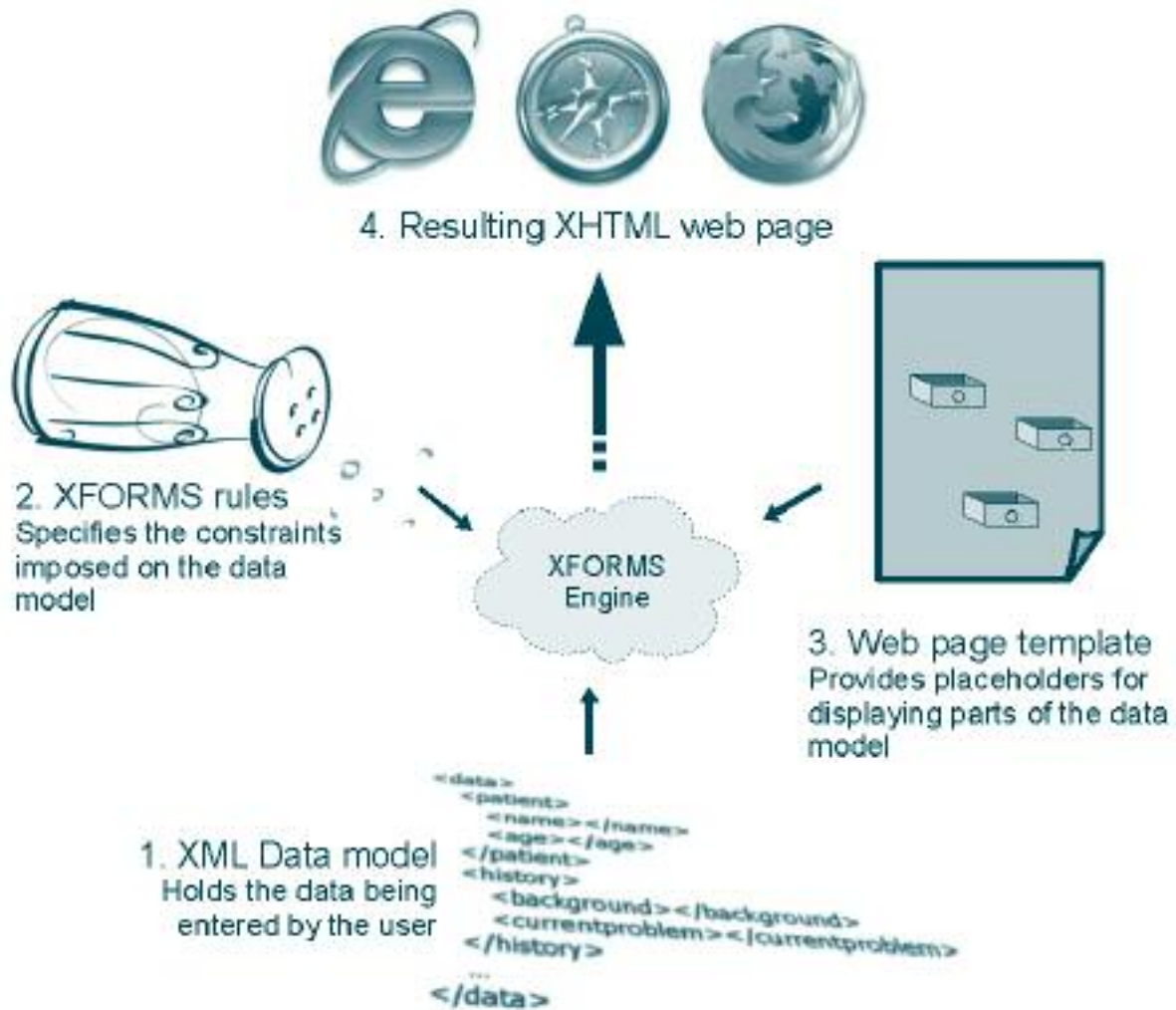
It is often difficult for tutors to obtain good quality, real documented cases with which to use as exemplars in their taught classes. However once rich, highly detailed cases are being generated by students, these can start to form a library of material tutors can draw upon to use either directly as part of their course material or as a basis for forming eTutorials which can accompany their course material.

With these challenges in mind, our approach has been to develop an online custom-built case management system that would replace the current system. Called the Clinical Experience Recorder (CER), it uses a number of novel features to support our staff and students

In the early stages of our system design we chose to adopt a new emerging web standard called XFORMS, developed by the W3C<sup>4</sup>. XFORMS can be viewed as a replacement to the <FORM> element seen in traditional HTML documents. It's utility and power comes from a conscious effort to create a distinction between the data being recorded, the presentation of the input elements on the webpage and the constraints and rules that limit the format of the data (see Figure 1). This separation is called an MVC or Model View Controller design pattern. XFORMS is based entirely on XML technologies and all data entered into an XFORMS application is stored in an underlying XML document.

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<sup>4</sup> The Forms working Group, W3C. URL: <http://www.w3.org/MarkUp/Forms/> Last Accessed Dec, 2007



**Figure 1: A conceptual view showing how the XFORMS engine draws on the three separate MVC elements to generate a web page**

Using the XFORMS approach in our application, means we can store all case data as an XML string and use the XFORMS engine to handle constraint checking, enforce data types and handle complicated interface mechanisms such as repeating elements. This is especially important as we have large complicated forms and it then allows us to separate the form design process from the need to write any validation scripts. Another benefit is that XFORMS has been designed to work alongside other new web programming techniques such as AJAX<sup>5</sup> which means we can easily implement Web 2.0 like features such as automatically saving the progress of the form as the student is entering data.

Our biggest concern when designing the system was that we needed a solution to be flexible enough to fit in with existing practices in all the teaching schools we were working with (medicine, dentistry and veterinary). Although conceptually the problem is the same in all three disciplines, in practice there are major differences.

Each school has their own set of case forms, and while most have a similar overall structure, there are specialised elements to each form which target the specific type of case being documented

<sup>5</sup> Ajax: A New Approach to Web Applications, Jesse James Garrett, *Adaptive Path*, February 18, 2005 <http://www.adaptivepath.com/ideas/essays/archives/000385.php> Last Accessed Dec, 2007

(human, dental, canine, equine etc). In our new system we needed a form-creation process that could be used by practitioners or support staff to quickly and easily create forms that mimic existing document layouts. The form editor needed to be graphical in nature and as easy to use as possible to support users who might have little computer expertise. To achieve this we developed a JavaScript-based form editor which allows form designers to create forms with tabs, grouped elements, sub groups, repeating items and various input types. By harnessing the power of XFORMS, the form editor is actually just generating a piece of XML behind the scenes which will get turned into the web form dynamically at runtime by the XFORMS engine. The form designer also doesn't need to worry about creating web pages and validating input data as all this is handled automatically by the XFORMS engine.

Another problem is that the teaching methods being used often differed. Sometimes students work in groups on a case, and sometimes on their own. Sometimes cases would be submitted to a tutor for initial review and then returned to the student for further editing, and other times students would complete the whole case before entering a single assessment phase. To cope with such different approaches, we developed a flexible workflow engine that can be adapted to suite different requirements. The workflow is embodied as an XML file that specifies the various stages of a case and the actions and access rights of users to that case in any given stage. This flexibility means we can implement any number of review stages (with different cohorts), submission-review and re-submission cycles, support collaborative student group work, and multiple assessment and archival phases.

In addition to the above features, there are a number of other system components that were written to help support tutors and students.

## Case library

Once a case has been completed and assessed, if the tutor determines it to be of sufficient quality, then they can deposit a copy of that case in an archive viewable by other students. This can then form a library of exemplar cases that students can follow, both as a learning resource but also as a model to follow for their own case reports.

## Advanced search

As previously mentioned, having a structured format for cases allows us to provide advanced search mechanisms. Using combinations of free text and selections of combo-boxes, queries can be formed in the format:

Search for all cases of type X where fieldY contains valueY and fieldZ = (valueZ1 or valueZ2) and...

## Comments and discussion

Modelling the way existing tutors mark case reports using MS Word's ability to add inline comments, the CER provides a similar facility for tutors to add single line comments to fields of a case. When the case is then viewed by the student, these comments will appear as pop-up items next to the relevant field (Figure 2 shows an example of a popup text comment). Alongside assessed feedback, the power of a student-teacher dialog within an educational context has long been valued. To support this we provide a discussion-like mechanism which allows both students and tutors to comment on a particular case. These comments are archived and can provide an aid for reflective learning. At the bottom of the screenshot below can be seen a demonstration of this feature.

The screenshot displays the University of Bristol Clinical Experience Recorder (CER) interface. At the top, there is a navigation bar with the University of Bristol logo and the text 'Clinical Experience Recorder' and 'discovery learning enterprise'. Below this, the page title is 'Clinical Experience Recorder' and the breadcrumb trail is 'University Home > CER > Clinical Experience Recorder > Case > View'. The main content area shows a case for a dog named 'Nelson George' with the following details:

Title	Nelson George
Case Number	20.01.2690
Keywords	FIP
Case status	Active
Age of animal	4 years
Breed	Male Collie
Sex	Male (neutered)
Clinician	Sam Taylor
Diagnosis	Infectious disease

Below the case details, there is a section for 'General comments' with one comment: 'A difficult case which has been well documented.' The interface also includes a sidebar with navigation options like 'My Cases', 'My Files', and 'Case Search'.

**Figure 2: Screen shot from the CER showing a student's case and the tutor's inline comment and discussion**

## Trial progress

Our first trial of the CER was aimed at the veterinary school and went live in April 2007. Canine, feline and equine forms were developed and used by students on repeating three-week rotations. This trial is still actively being used and at the time of writing has 168 students enrolled and has generated over 200 individual cases. In the autumn a second trial started with staff and students in the School of Dentistry. Slower to get going, in this trial we have 18 students registered and 9 dental cases.

## Conclusions

Although the CER is still in undergoing trials, feedback has been generally well received. Students did not receive any formal training before being able to use the software and there have been very few reported problems. The quality of generated case reports has often been excellent and with the inclusion of images and videos they become much more comprehensive. While it is clear from our observations that students have little difficulty using our new software, teachers have needed slightly more of an introduction, but once familiar most of their problems disappear. There have been concerns with the extra effort required by tutors in marking cases but this is partly due to the more detailed nature of submitted case reports.

Work is ongoing with the CER and more features are continually being developed. We plan to add statistical routines that would allow us to analyse and compare data across cases and also provide finer grain control over access to parts of a case. With these additions the CER could then start to be used as a tool to record student clinical experience while on placement and together with their clerking cases this centralised all their experience within a single ePortfolio tool.

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# PM2 (a): ePortfolio as a lead application for personal information brokerage

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## Abstract

Most attempts at ePortfolio to date have been built or procured by a single learning provider, and can only be used by a learner while registered with that provider. The goal of creating a truly user-centric ePortfolio service, which will travel with the learner from school to university and into the workplace, requires progress in the field known as identity management (IdM), principally in terms of organisational and business model.

IdM comes in two variants. In the first, organisation-centric IdM, multiple entities work to reduce the multiple e-identities by which they may know an individual to a singleton. They can then store key attributes about that individual in a master directory, and use a common identifier to link records that may be distributed across multiple databases. While sensible for entities that are closely linked in some way, organisation-centric IdM cannot be extended to create a general purpose infrastructure, largely because of privacy issues.

The second variant, user-centric IdM, starts with the premise that an individual should – for privacy reasons – use a different identifier for every relationship. It then seeks ways to provide the individual with:

- A secure single-sign-on service to multiple, distinct, counterparties.
- A permission-hub with which the individual can give fine-grained, transaction-based, permission for the transmission of personal information to and between these counterparties. Unlike organisation-centric IdM, user-centric IdM is privacy-enhancing and thus extensible. But the technology has not yet broken through into general use.

The lack of success is not for lack of technical effort. Relevant initiatives include research projects such as PRIME; private sector proposals such as Microsoft's Cardspace, OpenID, and Project Higgins; the work by Stefan Brands / Credentica on blind signatures; and standardisation efforts, such as the Liberty Alliance, and – from OASIS – the work of the SAML, XRI and XDI committees.

This paper describes a new initiative in the user-centric IdM space, called Personal Information Brokerage (PIB), which builds upon many of best elements from earlier projects. We envisage that each individual will commission one or more organisations to act as information brokers in the network space, providing secure single-sign-on and permissioned attribute exchange services as described above.

In the long run, the likely candidates for the broker role are the mobile network operators, and the banks, since both have the right kind of relationship with the individual, and should have the capacity for secure authentication as a result of their current activities. In the near term, other organisations may fulfil the broker and authentication roles.

The necessary central services for the infrastructure will be provided by a new organisation, the extensible Circle of Trust (XCOT), which is analogous in some ways to VISA or Mastercard in the

credit-card industry. Learning, and other service, providers will pay the costs of the infrastructure, either by way of periodic fees for a secure e-relationship with the individual, and updates to whatever attributes the individual has chosen to disclose; or as fees paid for the chance (i.e. reverse marketing) to enter into such a relationship.

The lead application for PIB is likely to be a user-centric approach to an ePortfolio service. If this succeeds, learners will carry a brokerage account with them as they move from school to college and into the workplace. Also they may choose to use a brokerage account not only for educational qualifications, but also to manage their relationship with the National Identity Register, to apply for jobs (with a validated CV, and proof of right to work), and to purchase age-related services. Other potential applications include secure electronic mail, an infrastructural approach to Instant Messaging and Voiceover-IP, distributed social networking, intelligent redirection of conventional mail, payment services, and various permissioned (or reverse) marketing applications.

The paper will conclude by describing preparations to pilot PIB in the education sector, in a project likely to be supported by both public and private-sector organisations.

## Full text

### *Introduction and summary*

Most attempts at ePortfolio to date have been built or procured by a single learning provider, and can only be used by a learner while registered with that provider. The goal of creating a truly user-centric ePortfolio service, which will travel with the learner from school to university and into the workplace, requires progress in the field known as identity management (IdM), principally in terms of organisational and business model.

In this paper, we describe the two main approaches to IdM, organisation-centric and user-centric, highlight their differences, and give a quick overview of early IdM initiatives. We then outline a new initiative, called 'Personal Information Brokerage', to create server-side infrastructure for user-centric IdM, explain that ePortfolio is likely to be the first of many applications, and invite learning providers to contact us if interested in participating in a pilot, probably in the North-East of England.

### *Approaches to identity management*

IdM comes in two variants. The first, organisation-centric (or enterprise) IdM, tends to be adopted by entities that are closely linked in some way. They might be different divisions or subsidiaries within a large commercial company, different public sector organisations involved in a joint initiative, or even different computer systems within a single organisation.

The first step is to draw (perhaps only as a mental picture) a new organisational boundary around the group of entities as a whole. Then it's necessary to find a way to match-up all the records about an individual. This can be difficult, because the records may be held in different databases, be stored in different formats, and use inconsistent data: out-of-date addresses, and different name formats – Jim or James? – are common examples of this last problem. These days, record matching is usually carried out by computer, using probabilistic pattern-matching algorithms, and human intervention only where necessary.

Once the records have been matched, the individual will be likely be tagged with a new identifier for use by all entities within the group. And the individual, if she interacts with the group online, may be given be a single online account, through which to inspect all the data held by the group. In effect, the group now has created a single record about that person, possibly distributed over multiple databases, but unified logically by the common identifier.

The limiting factor for organisational-centric IdM and data sharing is essentially that of privacy. As more and more entities join an organisation-centric scheme, so the scope of the single record increases, and many individuals become concerned that too much personal information can be viewed by strangers, outside their direct control. It is for just this reason that the Information Commissioner dislikes proposals for the use of unique identifiers across different sectors of society, while being relatively relaxed about the use of such identifiers within a single sector (such as the NHS number in health).

The second variant of IdM, user-centric, starts with the premise that an individual should – for privacy reasons – use a different identifier for each distinct counterparty. User-centric IdM then seeks ways to provide the individual with:

- A secure single-sign-on service for the multiple, distinct, counterparties.
- A permission-hub with which to give fine-grained, transaction-based, permission for the transmission of personal information to and between these counterparties. In contrast to organisation-centric IdM, user-centric IdM is privacy-enhancing and thus extensible across sectors. And there are other differences which are not quite so obvious.

## ***Differences between the two approaches***

First up, of three, is the question of application. Neither approach to IdM and data sharing is sufficient by itself. Individuals can only be relied upon to transmit data that shows them in a good light; and yet – for the good of society – it's necessary that certain organisations share personal information which is negative. Thus, in the long run, the user-centric / permissioned approach is likely to be used for positive information, such as qualifications, licenses, and marketing profiles; but the organisation-centric approach will continue to be used for criminal records, for child-protection purposes, and so on.

The second difference between the two IdM approaches lies in their contrasting requirements for cross-organisational identification, and authentication. To see this, consider two possible ways of proving that an individual is, say, licensed to practise medicine.

On one hand, a potential employer could search, say, the General Medical Council's register to check that a candidate, say Susan Jones, is properly licensed. The employer must then check that the Susan Jones that he interviewed, and the Susan Jones referred to by the awarding body, are the same person. This is a problem of cross-organisational identification, for which one (partial) solution is to issue identifiers recognised by both organisations.

Alternatively, Ms Jones could show a tamper-proof certificate (in either paper or electronic form), given to her by the GMC, to her potential employer. This is user-centric / permissioned data sharing. Because Ms Jones 'carries' the certificate between the two organisations, there is no absolute need for cross-organisational identification. Instead, having satisfied itself that the certificate is genuine, the employer may wish to check that Ms Jones is its rightful owner. This is a problem of authentication, for which solutions range from simple possession to the verifying of biometrics – such as face, signature, or even fingerprint - against copies that may have been affixed to the certificate by the issuing body. Note that authentication can be anonymous: there is no absolute need for Ms Jones's name, or for any other cross-organisational identifier, to appear

on the certificate.

The final difference between the two approaches to IdM lies in the maturity of the technologies needed to implement them over electronic networks. The organisation-centric approach has been developed steadily over many years; while – as the overview below shows – the user-centric approach is developing fast, but remains unproven in the mass market.

## **IdM initiatives**

Over the last seven or eight years, there has been much work in the IdM field, covering the gamut from standards initiatives to fully-fledged schemes. By way of brief summary:

*Infocards*<sup>1</sup> Following the failure of Passport to win external clients, and the cancellation of the successor Hailstorm service, Microsoft has clearly concluded that the market will not allow it to act as a server-side intermediary for single-sign-on and other identity related services. Instead, it has promoted a client-side scheme, called Infocards, in which individuals are invited to select which card of attributes they wish to disclose in a given context. MS's own implementation of Infocards, known as Cardspace™ is bundled with the Vista operating system. Other suppliers, such as Apple and Novell, have produced their own implementations. Infocards is clearly a user-centric and privacy-enhancing scheme, but it suffers from a number of shortcomings: there is no explicit provision for back-up, or synchronisation across multiple devices; personal computers are insecure, and so are unlikely to be trusted by counterparties as a source of secure authentication; for some applications, it is advantageous for the individual's point-of-presence to be permanently online; and the scheme lacks any form of business or liability model.

*OpenID*<sup>2</sup> is a decentralised framework for server-side IdM, which emerged from the blogging community, and claims rapid take-up. Despite its early success, the initial versions of the standards clearly cannot be used for more weighty applications, and the scheme's proponents are now trying to remedy some of its obvious weaknesses, such as the need for:

- Relationship-specific identifiers to enhance privacy.
- Standards to permit permissioned two-way attribute exchange; and possibly.
- A business, liability, and governance model.

The Liberty Alliance<sup>3</sup> is a grouping of large technology and consumer facing companies, formed in 2001 to 'create an open-standard for federated digital identity'. Some of its work has been donated to the OASIS SAML<sup>4</sup> committee, a standards grouping. As yet there have been few consumer-oriented deployments of the Liberty standards. Many in the IdM community believe that this is because the Liberty members are large organisations who are generally unwilling to cede control of personal data to the data subject. However, Liberty now emphasises that its standards can also be used for user-centric implementations.

*Shibboleth*<sup>5</sup> emerged from the Internet2 grouping of universities in the USA as a way of giving students and academics at one university easy access to web resources belonging to other organisations, such as other academic institutions, and publishers of web journals. The scheme lies part way between the organisation-centric and user-centric styles of IdM: its architects placed

<sup>1</sup> <http://cardspace.netfx3.com/> accessed 6 Jan 08

<sup>2</sup> <http://openid.net/> accessed 6 Jan 08

<sup>3</sup> <http://www.projectliberty.org> accessed 6 Jan 08

<sup>4</sup> [http://www.oasis-open.org/committees/tc\\_home.php?wg\\_abbrev=security](http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=security) accessed 6 Jan 08

<sup>5</sup> <http://shibboleth.internet2.edu/> accessed 6 Jan 08

great emphasis on privacy, making use of one-time pseudonyms for identification across domains, rather than persistent unique identifiers. As a result, Shibboleth is the first large-scale framework that allows an individual to show attributes (such as 'I am a student at this university') anonymously, and thus may demonstrate a way forward for future systems. Although the scheme is now being deployed in the UK education sector, it would seem to lack the characteristics necessary to allow it to grow into a generalised infrastructure for user-centric identity and information management. Specifically: (i) the individual can only transfer attributes recorded by the organisation which hosts his Shibboleth account, rather than by any third party; (ii) the individual cannot choose which organisation hosts his Shibboleth account; and (iii) the scheme lacks a business model that would allow different service providers to share the costs of secure authentication and permissioned attribute transfer.

We, the authors of this paper, believe that - within this landscape of IdM initiatives - there is both space and need for a project to create generalised infrastructure for server-side user-centric identity and information management, building on the strengths and remedying the weaknesses of earlier work. We call the project Personal Information Brokerage.

## ***Personal information brokerage (PIB)<sup>6</sup>***

We envisage that each individual will commission one or more organisations to act as his information brokers in the network space, providing secure single-sign-on and permissioned attribute exchange services as described above.

In the long run, the likely candidates for the broker role are the mobile network operators, and the banks, since both have the right kind of relationship with the individual, and should have the capacity for secure authentication as a result of their current activities. In the near term, other organisations may fulfil the broker and authentication roles.

The necessary central services for the infrastructure will be provided by a new organisation, the eXtensible Circle of Trust (XCOT), which is analogous in some ways to VISA or Mastercard in the credit-card industry. Service providers will pay the costs of the infrastructure, either by way of periodic fees for a secure e-relationship with the individual, and updates to whatever attributes the individual has chosen to disclose; or as fees paid for the chance (i.e. reverse marketing) to enter into such a relationship.

The key to the success of PIB is finding a route to critical mass, since most service providers have little interest in enabling their customers to show personal information, as recorded on their databases, to other parties. The one exception is education, where learning providers actually want learners to move on, and show evidence of their success to others. Thus the lead application for PIB is likely to be a user-centric approach to an ePortfolio service. Learners will carry a PIB-enabled ePortfolio with them as they move from school to college and into the workplace.

In time they may choose to use a brokerage account not only for educational qualifications, but also to manage their relationship with the National Identity Register, to apply for student loans (with proof of legal identity), to apply for jobs (with a validated CV, and proof of right to work), and to purchase age-related services. Other potential applications include secure electronic mail, an infrastructural approach to Instant Messaging and Voice-over-IP, distributed social networking, intelligent redirection of conventional mail, personal control of health records, payment services, and various permissioned (or reverse) marketing applications.

<sup>6</sup> See, for example, the outline description of PIB provided by Eidentity in a submission to the 2007 House of Lords S&T Committee enquiry into Personal Internet Security. Available from Eidentity Ltd. <http://www.eidentity.co.uk>

## ***A pilot***

Eidentity, a small start-up company, has now developed PIB on paper for some years. The next logical step is to run a sizeable pilot. We think that the North East of England is a suitable location, since Newcastle University is keen to be involved, and PIB can be seen as a development of work carried out by Sunderland City Council to trial the use of smart-cards and Liberty Alliance standards for identity management.

We are now seeking to recruit schools, colleges, and further universities, to participate in the pilot of PIB in the North-East, with ePortfolio as the lead application, and would welcome enquiries from interested organisations.

For further information please contact: [\*\*john.harrison@eidentity.co.uk\*\*](mailto:john.harrison@eidentity.co.uk)

# PM2 (b): If we build it will they come and more importantly will they stay?

Christopher Murray, University of Leeds

## Abstract

The University of Leeds has developed and piloted 3 ePortfolios at various stages of medical and healthcare education. Between 2005 and 2006 through the JISC funded ELP Project the university was involved in the development and evaluation of pilot ePortfolios for foundation year training and both undergraduate and postgraduate nursing courses. Parallel to these developments an ePortfolio was developed to act as a reflective progress file for MBChB students in years 1 and 2. This ePortfolio continues to be developed and this year the use of the progress file will be introduced in years 1 to 4. This academic year the use of the progress file will also be linked to the use of a reflective blog being used in the Personal and Professional Development (PPD) module of the MBChB. 'My Progress' file will become a repository for the reflective thoughts as well as the academic and non-academic achievements of students.

The thematic case study will bring together the evaluation findings of these 3 projects utilising the results of evaluation surveys and user comments as well as comparisons with the redeveloped progress file being launched in October 2007. The case study will outline and build on the key themes identified as pivotal in ePortfolio engagement: relevance, ease of use and feedback (Murray et al 2006)<sup>1</sup>.

It has been shown that ePortfolios can not work in isolation and that their use needs to be embedded into the curriculum at the onset and at key stages throughout. The use of the ePortfolio has to provide 'added value'. Users will decide how to use ePortfolios to personalise their own learning if they can clearly see its relevance.

The technology needs not only to be easy to use but also to provide opportunities to link to other artefacts developed elsewhere. The use of social networking sites, blogs, social bookmarking sites and other technological forms of presentation such as podcasts, digital stories and video enable personalisation of learning but the study will highlight that users engagement with these tools is varied and awareness of their use and relevance needs to be raised.

The role of the 'feedback provider' at each stage is pivotal in the development of the 'reputation' of the ePortfolio and the subsequent encouragement of ownership and reflective practice amongst users. Feedback links all of the other factors in ePortfolio together. It ensures continuous use and promotes reflection and ownership. Where tutors are behind the process, students are far more likely to take it seriously (Ward et al 2005)<sup>2</sup>. The study will highlight the need to raise awareness amongst those providing feedback of the various tools available so that they can exert ownership and personalise their own usage of the ePortfolio process.

<sup>1</sup> Murray, C, Smith, A, Pellow, A, Hennessy S, Higgison, C (2006) *From Application to Graduation and Beyond: Exploring User Engagement in the E-portfolio Process*. Paper presented at EDEN Conference, Vienna

<sup>2</sup> Ward, R & Richardson, H (2005) *Developing an Implementing a Methodology for Reviewing ePortfolio Products Report* to JISC at [http://www.jisc.ac.uk/uploaded\\_documents/epfr.doc](http://www.jisc.ac.uk/uploaded_documents/epfr.doc) (accessed 11th Sept 2007)

## Full text

### *Introduction and purpose*

The purpose of this case study is to look thematically at the outcomes of three ePortfolio projects developed at the University of Leeds and to attempt to highlight the main issues surrounding the implementation and subsequent engagement with these tools.

Two of these projects were funded by the JISC Enhancing Learner Progression (ELP) Project between July 2004-December 2005. These centred on the use of an ePortfolio as a progress file used as part of personal development planning (PDP) within post and undergraduate nursing courses and the use of an ePortfolio within the Foundation Year for PRHOs at a local hospital.

The university was also successful in funding the development of an electronic progress file for first and second year medical students to record and track the development of their skills for PDP purposes. The progress file has subsequently been modified and is now available to all students on the MBChB from years 1 to 4.

Within the MBChB, in particular, on the Personal and Professional Development (PPD) ICU there has also been an increase in the use of technologies to support learning and reflection. Blogging tools have been used to facilitate the teaching of ethics and students are encouraged to use the blogging tool on a weekly basis to reflect on their thoughts during the course of PPD.

The growth of blogs, wikis, social bookmarking and other tools under the web 2.0 umbrella has given rise to the idea of a technological 'ecosystem' (Sanders et al.2007)<sup>3</sup> where students are informally recording, sharing and updating their knowledge by contributing to and reading about the experiences of others.

But how are these tools to be used? In which contexts are they to be used and what environments foster the use of these tools in learning landscapes?

### *Method*

The projects were launched in June 2005 and evaluation has taken place at key points of development.

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<sup>3</sup> Sanders J & Haythornthwaite C New horizons for e-learning in medical education: ecological and Web 2.0 perspectives *Medical Teacher* 29:4 307-310

The main groups involved in the ePortfolio pilots are listed below in table 1:

Learners	Feedback required	AIM	Voluntary/ Compulsory Usage	No's
Nurses	Yes Tutors and placement supervisors	Assessment of 'Practice Records' / PDP	Voluntary	30 Students 8 supervisors
Medical Undergraduates	No – but used as the basis of conversation at annual appraisal	PDP	Voluntary	450 students
PRHOs	Yes Educational Supervisors	Reflection on Assessments and /PDP	Compulsory	33 trainees 33 Educational supervisors

**Table 1: Breakdown of users and nature of each ePortfolio pilot group**

No formative evaluation was undertaken with the undergraduate medical students but a summative survey has been completed. Some changes of emphasis have been made to the progress file which is now being used by years 1 to 4.

The PRHOs and educational supervisors have taken part in a formative evaluation and summative responses were collected at the end of the project. E-mail and informal comments have also been collected from this group.

The student nurses and their supervisors and tutors have returned both formative and summative evaluations.

The qualitative results are supplemented by quantitative data collected from statistics of ePortfolio usage and patterns.

## ***Progress/discussion***

From the results of the three different ePortfolios recurrent themes have emerged.

It was clear that there were varying degrees of usage of the ePortfolio systems. This usage is shaped not only by the student/trainees usual approach to learning but also by external factors such as technology, feedback and relevance. The four different types of users are described in table 2.

Type of Engagement	Characteristics
Reader	Makes no entries in the ePortfolio. May access once or on multiple occasions just to read the content.
Poster-Tentative	Makes 1 or 2 entries then stops.
Poster-Selective	Makes entries but only in sections they feel they can benefit from
Poster-Continuous	Makes continuous entries

**Table 2: Engagement of users by 'type'**

## Relevance

Relevance plays an integral role in engagement with the ePortfolio and facilitates the movement of the users from reader to 'poster'.

Greenberg (2004) states that ePortfolio users do not utilise all of the functions available to them and only use the sections or functions that they identify as being of most use (Greenberg, G 2004). This pattern is certainly illustrated through the student nurses use of the ePortfolio.

## Student nurses

The majority, 67%, of nursing students believed that using the ePortfolio would facilitate reflection but all of the nursing students felt that using the ePortfolio to present their 'Practice Evidence Records' would enable them to receive feedback from multiple sources and much more quickly than normal. This was the 'added value' and the relevance for using the ePortfolio. All of these users were selective in the use of the tool. They all only made entries in the 'Practice Evidence Record' and 'Reflective' sections, representing 4% of the space available for recording. The nursing ePortfolio was used by the students to facilitate a link between their placements and their university tutors. Connectivity was the relevance of this ePortfolio.

After the second cohort of nurses began using the tool the need to complete 'Practice Evidence Records' for assessment purposes disappeared removing the main impetus of use which the first cohort of nurses had utilised and subsequently the use of the ePortfolio declined.

## PRHOs

The assessment function of the Foundation Year portfolio produced a 'poster' rate of 87% but 54% of students were selective with trainees only completing compulsory sections, such as the 'End of Placement Review' and PDP sections.

## MBChB students

The use of the medical student's ePortfolio reached a peak of 60% in the four weeks prior to the annual appraisal. It was clear however from some of the comments noted from the evaluation process that the use of ePortfolio tools themselves are not the barrier but rather what this technology is being used for. Comments included:

'I'd far rather spend my time actually reading, learning something useful than being made to feel I was at some activity camp for business groups'

And

'It takes up too much of my time and isn't assessed so why should I bother?'

In an attempt to increase relevance and encourage continuous use overarching themes have been introduced alongside the evidencing of professional competency: In Year 1 'Becoming a Medical Student', Years 2 and 3 'Developing Skills' and Years 4 and 5 'Preparing for Employment'. Sections have been added linking the users to careers advice, skills development tools, non-academic achievements and activities, deanery statistics and support with applications. Many students in the pilot project stated that even though they did not use the progress file continuously they could see the future relevance and felt that this would become more apparent and useful as they passed into the later stages of the course.

## Technology

When designing an eLearning tool we should not assume that all users possess the required level of IT skills. The technology should not overshadow the learning outcomes of ePortfolio use (Woodward and Nanlohy 2004). We should also remember that the entire process is 'about people... not technology.' (Dublin 2004, p294). If this is not taken into account then we are in danger of losing the faith and attention of those we are trying to engage. The use of technology should not be a barrier to the use of the ePortfolio and the survey results have shown that the ease of use of the technology is not a barrier for the students/trainees. Eighty-five percent of the students/trainees engaged in the projects found the technology easy and intuitive to use.

However the technology was a barrier to those providing feedback.

## PRHOs and student nurses

The nursing supervisors/tutors and educational supervisors experienced high levels of difficulty in navigating and using the electronic tools.

Sixty percent (n=33) of the educational supervisors signed on to the system during the pilot. No supervisor signed on more than 5 times with the majority signing on an average of 2 times. Only 2 of the supervisors placed feedback into the PRHOs log directly, the majority, 88% (n=17) of those who provided feedback did so under the PRHOs log-in whilst sat next to them.

The supervisors of both the nurses and the PRHO's had no involvement in the design or content of the ePortfolios. The tools were as unfamiliar to them as they were to the students/trainees.

## MBChB students

The undergraduate ePortfolio was not used to collect feedback from tutors on an ongoing basis. It was primarily for student usage to track and record achievements and progress. Tutors were involved in the design and content of the ePortfolio. Students were encouraged by tutors to post to their ePortfolio at key formative and summative assessment points and 60% of the students in both years one and two used the progress file in their appraisal meeting.

The evaluation clearly demonstrates that those providing feedback need to be involved in the design of the ePortfolio and that the confidence of the feedback provider both with the technology and the process is pivotal in shaping the type of usage of the student/trainee.

## Feedback/comments

In order to provide the best environment for continuous use feedback, comments and/or an opportunity to present the ePortfolio contents to an audience needs to be factored into the process.

## PRHOs

The provision of feedback within the Foundation Year ePortfolio encouraged users to post into the reflective sections of their logs. Where feedback has been provided 50% of users have posted public reflections. Another pattern which emerged during the analysis was the extent to which those receiving feedback in their log utilised the voluntary (non-assessed) sections of the PRHO ePortfolio. All of the trainees receiving or recording feedback in their ePortfolio made an entry into one or more of the voluntary sections, but only 68% of those not receiving feedback displayed this type of behaviour.

## Nurses

All of the student nurses who posted comments or work and did not receive feedback did not post anything else into their ePortfolios. Those nursing students who did receive feedback continued to make posts and submit work and reflections for comment.

Feedback fuels the journey from tentative use to continuous use. It not only encourages regularity of posting but also the range of postings within the ePortfolio.

The importance of feedback or comments will depend on the purpose of the ePortfolio. Can meaningful reflection take place without any form of communicative discourse? Is merely collecting evidence to track achievements sufficient for the purpose of a reflective ePortfolio?

## *The future*

The increase in discussions over the use of web 2.0 technologies and attempts to integrate these tools into teaching and learning practice are still in the formative stages. Current projects involving medical students and year 12 students are being piloted (see [www.elp.ac.uk](http://www.elp.ac.uk) for more details). The social nature of these tools contrasts with the individual nature of ePortfolios. To date, a review of the progress of these projects, which have included social networks and blogs, highlights issues such as relevance and the role of the e-moderator/facilitator. The majority of students engaged in these activities prefer to use the collaborative areas as 'static' websites rather than as areas to share ideas and post comments. Further evaluation of the use of these tools is required.

## Organisation

At the present time all of these ePortfolios are 'add-ons' either within or separate from VLEs/institutional systems and learning materials. Should systems change to encourage greater usage, personalisation and engagement with the recording of achievement and evidencing of competencies, from the model currently in use:

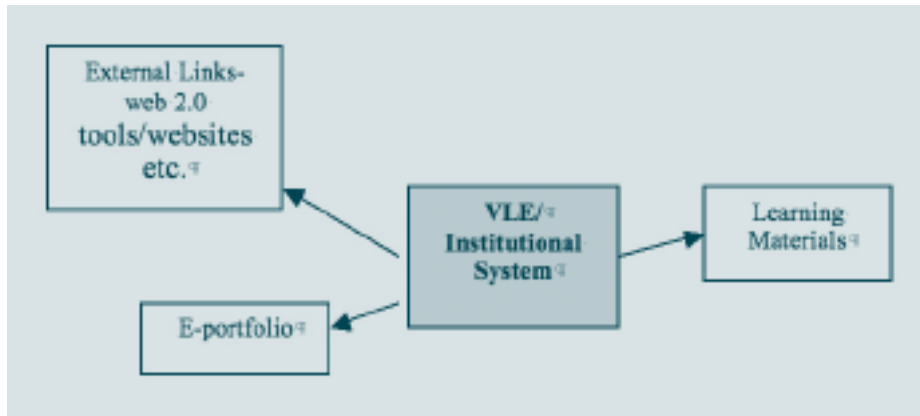


Figure 1:  
VLE/institutional  
system centric model

To this model?

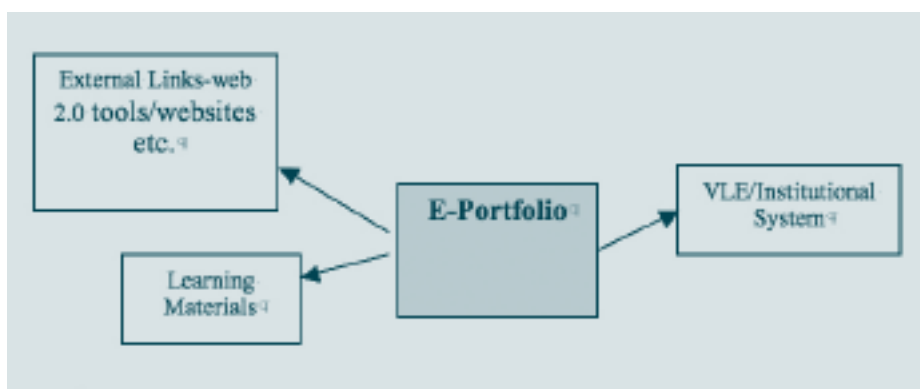


Figure 2: ePortfolio  
centric model

## Recommendations/conclusions

- Determine which type of usage you require.
- Any development of an ePortfolio should start with those providing feedback and thorough training should be offered.
- The largest barrier to student/user engagement with ePortfolios is the role and nature of the audience. Ensure users are aware what type of feedback they can expect.
- The relevance of the ePortfolio should be made clear to users and we should expect this relevance to be of cumulative importance to some users.
- When thinking of using any form of technology determine if it is suitable for the aims you wish the learners to fulfil. Do not introduce a technology just for the sake of it.
- Ensure linkages are made in the curriculum to any ePortfolio used as part of PDP. PDP should not be an 'add-on' activity but an integral part of any course.

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# PM2 (c): Strengthening the link between assessment feedback to students and personalised learning

David A Davies, Ed Peile, University of Warwick Medical School

## Abstract

The General Medical Council (GMC) has stated that students must accept responsibility for their own learning and the attainment of learning outcomes. Insight into an individual's strengths and weaknesses can arise from timely and personalised feedback of performance in assessments.

Feedback to preclinical students was easier when assessment was modular rather than integrated. The new integrated written assessment at Warwick Medical School has prompted us to take a blueprinting approach. Using a blueprinting matrix assessment items in integrated questions are linked to learning outcomes and the GMC's Tomorrow's Doctors competency statements. This ensures that:

- All outcomes are appropriately assessed.
- Examinations are not biased towards one aspect of the course.
- Feedback can be given to individual students on competency domains as well as attainment of specified learning outcomes.

We believe that this approach to setting new integrated assessments ensures reproducibility, reliability and congruity with teaching and learning.

Our aim is to provide structured and meaningful feedback to learners on their performance in integrated exam questions to help them become more self-aware of their own knowledge, skills and attitudes. Some of the challenges we have faced include matching the components of integrated questions to learning outcomes and competency statements, scoring of exam performance in this context, collation of feedback to individual students based upon attainment of learning outcomes and competency statements. All this is set against a backdrop of an increasingly large cohort of students.

The personalised and contextualised feedback each student receives promotes a better understanding of his or her learning needs, which in turn promotes a more personalised approach to learning. Evaluation of both student and teacher perceptions of how improved feedback promotes personalised learning indicates opportunities for further development in this area. We believe that the approach we have taken may be generalised to other institutions.

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# PM3 (a): Meeting the ePortfolio interoperability challenge

Paul Horner, Simon Cotterill, Newcastle University

## Abstract

The usage of ePortfolio systems among the academic community is becoming progressively more widespread following an increased emphasis on personal and reflective learning, and continuous development. This in turn has created some key issues for ePortfolio providers, institutions and individual learners in that these very personal learning records need to be able to follow the learner as they progress through their lifelong learning and continuous professional development. The JISC funded North East regional ePortfolio project (EPICS)<sup>12</sup> explored the pathways that learners follow and investigated how ePortfolio tools can support this journey and how ePortfolio records can move in parallel with the learner.

As a key outcome to the EPICS project, Newcastle University developed a number of interoperability tools within the ePET ePortfolio<sup>345</sup>. Numerous options to support interoperability were investigated ranging from all-encompassing XML schemas which store the ePortfolio data in a complex XML file; through to providing the learner's uploaded materials on a CD-ROM or allowing the learner to download the pages of a website containing their portfolio data.

The first options explored during EPICS were IMS-LIP (Learner Information Profile)<sup>6</sup> and IMS-ePortfolio<sup>7</sup> both developed by the IMS Global Learning Consortium<sup>8</sup>, which is responsible for developing and maintaining a number of key international standards; and UK-LEAP<sup>9</sup>, a UK subset of IMS-LIP. These three schemas attempt to allow the key learner information to be stored ready to be transferred between systems, and are intended to cover the vast majority of the information that could be captured within an ePortfolio, including personal details, reflections and action plans.

As an alternative to the IMS standards, the EPICS partners felt that by stripping down the ePortfolio into its component parts it would be possible to provide data in multiple formats, each covering a more specialist area. The CV component was chosen as a starting point as there are two very well documented XML schemas designed specifically for storing this information –

<sup>1</sup> Horner AP, Cotterill SJ, Ingraham B, Gill S, Thompson J, Ayestaran H, Webster D, Ollerenshaw B, McDonald AM, Taylor L, Wilson R, Quentin-Baxter M, Hopkins P. *EPICS – outcomes of a regional ePortfolio initiative to support life-long learning*. Proc. ePortfolios 2006, Oxford.

<sup>2</sup> <http://www.epics.ac.uk> (accessed 17th September 2007)

<sup>3</sup> Cotterill SJ, McDonald AM, Drummond P, Hammond GR. *Design, implementation and evaluation of a 'generic' ePortfolio: the Newcastle experience*. Proc. ePortfolios 2004 [ISBN 2-9524576-0-3].

<sup>4</sup> Cotterill SJ, Horner P, Hammond GR, McDonald AM, Drummond P, Teasdale D, Aiton J, Orr G, Bradley PM, Jowett T, Heseltine L, Ingraham B, Scougall K. *Implementing ePortfolios: adapting technology to suit pedagogy and not vice versa!* Proc. ePortfolio 2005

<sup>5</sup> <http://www.ePortfolios.ac.uk> (accessed 17th September 2007)

<sup>6</sup> <http://www.imsglobal.org/profiles/> (accessed 17th September 2007)

<sup>7</sup> <http://www.imsglobal.org/ep/index.html> (accessed 17th September 2007)

<sup>8</sup> <http://www.imsglobal.org> (accessed 17th September 2007)

<sup>9</sup> [http://wiki.cetis.ac.uk/LEAP\\_2.0](http://wiki.cetis.ac.uk/LEAP_2.0) (accessed 17th September 2007)

Europass CV<sup>10</sup> and HR-XML<sup>11</sup>. These two schemas offer very different interpretations on how CV data can be recorded, with Europass being designed very much to support movement of labour across Europe, and HR-XML to provide résumé data for use by employers and employees alike.

Although the EPICS project was designed to be a pilot to test what was feasible and to investigate the challenges to ePortfolios from interoperability, pedagogical and legal perspectives, much of the work has since been embedded within the ePET ePortfolio, allowing data to be uploaded and downloaded in the Europass CV and HR-XML formats. During the course of the 2006/7 academic year, Europass CV was embedded within the ePortfolio used by more than 2,500 postgraduate research students at Newcastle University, and during 2007/8 this was included in the ePortfolios for Speech Therapy, Biomedical Sciences and Combined Studies. Further work on embedding and developing IMS-LIP and IMS-ePortfolio will be undertaken during 2007/8 with a view for this to be made available within the ePET portfolio for the beginning of 2008/9.

Interoperability is a key challenge for the ePortfolio community. The development and implementation of standards will benefit learners by linking their ePortfolio with other learning systems (e.g. VLEs) and will provide continuity by transferring and/or linking their lifelong learning records. As such it has the potential to provide a focus on continuous development rather than episodic learning, and may also support explicit recognition of prior learning.

## Full text

The usage of ePortfolio systems among the academic community is becoming progressively more widespread following an increased emphasis on personal and reflective learning, and continuous development. This increase in usage has created some key issues for ePortfolio providers, institutions and individual learners around how the information stored in these systems can support their mobility by moving between systems when the learner changes institution. The concept of interoperability is that these very personal learning records need to be able to follow the learner as they progress through their lifelong learning and continuous professional development (CPD), whether moving between college and university, between university and the world of work, between jobs or at any other transition point.

Theoretically, interoperability is the capacity for two ePortfolio systems to render the same ePortfolio record while maintaining the context and meaning intended by the ePortfolio owner. It involves the ePortfolio record being exported from the original system, transformed into a format which can be understood by the new system, and finally imported into the new system. The benefit of this process is that the learner will not have to replicate the information they have already entered into their ePortfolio when they change systems.

There are a number of counter arguments to the importance of ePortfolio interoperability, and it could be said that these transitions create a natural closure point to a particular period within the learner's life, and at that point the information they have recorded previously is no longer as relevant to their new fresh start. When an individual registers with a comparable service such as Facebook or MySpace they wouldn't expect to copy their records across, and students generally won't expect their ePortfolio from institution x to be available when they move to institution y. However, any period of transition is a stressful time for an individual but having their records available to them at the final stage of their transition is a helpful tool and might even make that change happen more smoothly. Portfolio interoperability supports the idea that learners can build

<sup>10</sup> <http://europass.cedefop.europa.eu/> (accessed 17th September 2007)

<sup>11</sup> <http://www.hr-xml.org> (accessed 17th September 2007)

on their existing knowledge and skills in a continuous way, rather than merely undertaking a series of episodic and disjoint educational experiences. The ePortfolio model also supports a more independent approach learning where over time the individual increasingly takes responsibility and ownership of their own learning and CPD.

The JISC funded North East regional ePortfolio project (EPICS)<sup>12</sup> explored the pathways that learners follow, investigating how ePortfolio tools can support this journey and how ePortfolio records can move in parallel with the learner. As a key outcome to the EPICS project, Newcastle University developed a number of interoperability tools within the ePET ePortfolio<sup>345</sup>. Numerous options to support interoperability were investigated ranging from all-encompassing XML schemas which store the ePortfolio data in a complex XML file; through to providing the learner's uploaded materials on a CD-ROM or allowing the learner to download an offline 'website' containing their portfolio data.

The main option explored during the interoperability aspects of EPICS were IMS-LIP<sup>6</sup> (Learner Information Profile) and IMS-ePortfolio<sup>7</sup>. Both of these were developed by the IMS Global Learning Consortium<sup>8</sup>, which is responsible for developing and maintaining a number of key international standards. These schemas attempt to allow the key learner information to be stored ready to be transferred between systems, and are intended to cover the vast majority of the information that could be captured within an ePortfolio, including personal details, reflections and action plans. This information is stored in the form of strongly-structured XML files. The implementation of these standards in ePET was fairly straightforward and in general data could be mapped from many of the key ePET tools into IMS-LIP, and those areas which couldn't were perceived as being of less value to the learner following a progression and were often course or institution-specific. However, when investigating the more specific contents of the schema we found that several key fields from ePET could not be mapped to the fields available in the standards. This ultimately meant that some important information required for an ePortfolio tool would be lost when the data was transferred to a different system.

These problems were recognised by many of the ePortfolio systems that tried to implement it, and when testing data movement between different systems it was clear that there was also an issue of interpretation, with some of systems using the same LIP element to record slightly different information to other systems. This resulted in a lack of context in the uploaded system, and in most cases meant that the data had to be re-entered manually as the area of the ePortfolio where the information was stored was incorrect.

In response to the issues identified when implementing the IMS standards, the JISC-CETIS group have developed a UK instance of IMS-LIP, called UK-LEAP<sup>9</sup>. This was designed to reflect IMS-LIP very closely, but with a particular focus on the anomalies of the UK Higher Education system. UK-LEAP suffered from many of the failings of its parent specification, IMS-LIP, mainly because it was too general in its scope. It also suffered by not having the uptake that the IMS standards had, and many UK institutions preferred to implement IMS-LIP, with UK-LEAP providing a UK-based specification for the key attributes.

JISC-CETIS have started working on an updated version of UK-LEAP. Known as LEAP2.0<sup>12</sup>, this is being developed as a separate and very different entity from UK-LEAP, with the emphasis on providing complicated enough semantics to allow as much ePortfolio information to be captured as possible, but with the ability to roll back through the specification to as simple a level as possible to allow systems to record parts of the standard that they might not recognise. What this could mean is that a system can embed complicated elements related to its own particular anomalies, and when that information is uploaded into a new system the key parts of that information can be stored in a meaningful way, even if those anomalies are not understood. This is very much in its infancy and it may be a long time before the academic community can benefit

<sup>12</sup> [http://wiki.cetis.ac.uk/LEAP\\_2.0](http://wiki.cetis.ac.uk/LEAP_2.0) (accessed 17th September 2007)

from LEAP2.0, but the initial work being conducted on this seems very positive.

In addition to the IMS standards, the EPICS partners felt that by stripping down the ePortfolio into its component parts it would be possible to provide data in multiple formats, each covering a more specialist area or particular purpose (e.g. applying for a job). By splitting an ePortfolio record into these constituent parts, we can use more specialised standards to meet some of the more challenging aspects of the portfolio, and in so doing the general, cover-all approach of the IMS standards can be nicely balanced against these specialisations. The CV component was chosen as a starting point as there are two very well documented XML schemas designed specifically for storing this information – Europass CV<sup>10</sup> and HR-XML<sup>11</sup>. These two schemas offer very different interpretations on how CV data can be recorded, with Europass being designed very much to support movement of labour across Europe, and HR-XML to provide résumé data for use by employers and employees alike.

We began by investigating Europass as this gave us a much smaller and more concise starting point than the larger HR-XML schema. The issue with using a smaller schema was that we discovered some major gaps within it, although we also discovered that by being a small and concise schema, there was a lot less ambiguity within the data captured. As such we could be more certain that those elements covered would be specific enough to allow our exported ePortfolio data to be interpreted in an exact and meaningful way by external systems. This work has since been extended, with two-way import and export between a student's CV in ePET and the EuroCV<sup>13</sup> system, which allows Europass compatible CVs to be maintained<sup>14</sup>. This two-way integration uses web services to communicate and gives students a real-world solution to host a meaningful part of their ePortfolio after graduating.

Although the EPICS project was designed to be a pilot to test what was feasible and to investigate the challenges to ePortfolios from interoperability, pedagogical and legal perspectives, much of the work has since been embedded within the ePET ePortfolio, allowing data to be uploaded and downloaded in the Europass CV and HR-XML formats. During the course of the 2006/7 academic year, Europass CV was embedded within the ePortfolio used by more than 2,500 postgraduate research students at Newcastle University<sup>15</sup>, and during 2007/8 this was included in the ePortfolios for Speech Therapy, Biomedical Sciences and Combined Studies. Further work on embedding and developing IMS-LIP and IMS-ePortfolio will be undertaken during 2007/8 with a view for this to be made available within the ePET portfolio for the beginning of 2008/9.

Interoperability is a key challenge for the ePortfolio community. The development and implementation of standards will benefit learners by linking their ePortfolio with other learning systems (e.g. VLEs) and will provide continuity by transferring and/or linking their lifelong learning records. As such it has the potential to provide a focus on continuous development rather than episodic learning, and may also support explicit recognition of informal and prior learning. The process of achieving interoperability has been long and arduous, and in many ways this journey is far from reaching its destination. However, there is a real sense that things are progressing and the small incremental steps that are being made are continually moving us towards the final goal of a lifelong ePortfolio record.

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<sup>13</sup> <http://europass.cedefop.europa.eu/> (accessed 17th September 2007)

<sup>14</sup> <http://www.hr-xml.org> (accessed 17th September 2007)

<sup>15</sup> [http://wiki.cetis.ac.uk/LEAP\\_2.0](http://wiki.cetis.ac.uk/LEAP_2.0) (accessed 12th December 2007)

# PM3 (b): A case study exploring the implementation of ePortfolios in nursing education

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## Abstract

In 2006-07, the University of Salford initiated an ePortfolio pilot project that represented an institutional response to Strategic objectives identified in the university's learning technologies and employability strategies, key components of the University's overarching Learning and Teaching Strategy (2005). There was growing interest to explore technologies that have potential to support work based and lifelong learning.

In the School of Nursing, Faculty of Health and Social Care, the pilot project followed on from developments spanning nearly two decades. Since 1990 pre-registration nursing education has been 50% practice and 50% institution based. In Salford, during this time, portfolio processes have been an integral part of learning strategies, contributing to practice assessment and the integration of theory and practice. Additionally portfolios are a statutory professional requirement for first registration with the statutory body and registered nurses must continue to maintain a professional portfolio and demonstrate lifelong learning.

Between 2002 and 2005 the school participated in a consortium of four universities in an FDTL project which looked at the use of portfolios to promote the development of key skills. In Salford, the portfolio used was an ePortfolio based on a combination of two facilities. The first of these was an on-line accessible database using Filemaker Pro Unlimited software designed by a curriculum development officer in the Faculty of Business and Informatics. The second was a unit within the university's Blackboard Virtual Learning Environment. This project allowed the exploration of issues surrounding the utilisation of learning technologies to support nursing education.

Further development in the School of Nursing in 2005 saw the implementation of Personal development planning using a paper based portfolio as part of an institutional strategy. Involvement in this enabled an exploration of some factors affecting the staff's and student's uptake of personal development planning in relation to institution and practice based learning. This has led to an involvement in the pilot project which aims to introduce the use of a proprietary ePortfolio tool, iWebfolio.

The presentation aims to share our experiences of implementing ePortfolios for facilitating personal development planning in the context of nursing education with its' need to meet statutory professional requirements. In particular the case study will explore some issues affecting the implementation of the system, its' utilisation of the system by staff and students and its' effectiveness. The more specific objectives of the case study are firstly, to consider the implications of the ownership of the portfolio. In this case whereas the institution owns the tool used by students to develop portfolios, the students own the actual portfolios. Secondly we will explore the effects of the relationships between the portfolio and the assessment, verification and monitoring of learning. Lastly, we will discuss the processes involved in establishing the operational requirements of the ePortfolio system. By addressing these objectives it is hoped to identify the lessons which can be learned about the implementation of ePortfolios in a field of

education which traditionally promotes the use of portfolio processes but which doesn't readily embrace the use of leaning technologies.

## Full text

### *Introduction and purpose*

This paper reports on an ePortfolio used in nursing education, a field in which portfolios are long associated with continuing professional development, (UKCC 1995)<sup>1</sup>, were recommended by the UKCC (1999)<sup>2</sup> and are a requirement for first registration with the Nursing and Midwifery Council, (NMC 2004)<sup>3</sup>.

In 2006-07, the University of Salford initiated an ePortfolio project in response to objectives identified in its' learning technologies and employability strategies (2005) and growing interest in technologies with the potential to support work based/lifelong learning.

The University has been exploring electronic systems to support personal development planning (PDP) since 2002. This developed out of the Department for Education and Skills (DfES) funded Salford Key Skills Project. The university's Information Systems Institute also selected a tool developed by another UK Higher Education Institution (HEI). The School of Leisure, Hospitality and Food Management, developed a personal profiling tool 'in-house'.

In the School of Nursing the current pilot project followed previous developments. Between 2002 and 2005 the school participated in a Fund for Developments in Teaching and Learning (FDTL) project with three other schools of nursing which looked at portfolios and key skills. Although in Salford the attempt to develop an ePortfolio did not provide the functionality hoped for, the project nevertheless enabled the identification of factors affecting the utilisation of technology to support nursing education.

In 2005 the School of Nursing implemented a PDP system supported by personal tutors using a paper based portfolio as part of an institutional strategy. Involvement in this enabled an exploration of some factors affecting the staff's and student's uptake of PDP. This led to an involvement in the pilot project which aims to introduce the use of the chosen proprietary ePortfolio tool, iWebfolio.

The presentation aims to share experiences of implementing ePortfolios for facilitating PDP in the context of nursing education. It is intended to explore issues affecting the implementation of the system, its' utilisation by staff and students and its' effectiveness. More specific objectives include, to discuss the processes involved in establishing operational requirements, to consider the implications of the ownership of the portfolio and to explore the effects of the relationships between the portfolio and assessment, verification and monitoring of learning. By addressing these objectives it is hoped to identify the lessons which can be learned about the implementation of ePortfolios in a profession which traditionally doesn't readily embrace the use of information technology, (Bolt 1991<sup>4</sup> and Timmons 2003<sup>5</sup> cited by Alquraini et al 2007<sup>6</sup>).

<sup>1</sup> UKCC (1995) *The Nurses, Midwives and Health Visitors (Periodic Registration) Amendment Rules Approval Order* United Kingdom Central Council for Nursing, Midwifery and Health Visiting, London.

<sup>2</sup> UKCC (1999) *Fitness for practice : The UKCC commission for nursing and midwifery education* United Kingdom Central Council for Nursing, Midwifery and Health Visiting, London

<sup>3</sup> Nursing and Midwifery Council (2004) *Standards of proficiency for pre-registration nursing education* NMC London

<sup>4</sup> Bolt R. (1991) Nurses' attitudes toward computer usage at work site. Unpublished Master's dissertation, Texas Women's University, Texas

<sup>5</sup> Timmons S. (2003) Nurses resisting information technology. *Nursing Inquiry* 10(4), 257-269

## Method

This is a descriptive paper based on observations of the early stages of this project and on past experiences.

## Description and discussion

### Establishing operational requirements

The ePortfolio project emerged from separate funding bids submitted by the Faculty of Health and Social Care and the Faculty of Business, Law and the Built Environment and subsequent agreement to adopt a coherent approach which could subsequently form the basis for a University wide model. Therefore, the Salford ePortfolio pilot is co-ordinated at an institutional level by members of staff within the Education Development Unit, and supported by the university's Information Services Division (ISD).

The functional requirements of the system needed to take account of the needs of two different schools and two different approaches to PDP and a view of the longer term implications of extending its' use to other schools in the University

Consultation took place with the PDP coordinators in the two participating schools and representatives from ISD, to inform decisions about technological and business requirements. It was hoped that this process would embrace the needs of all stakeholders, but it was noted that there were some cultural differences and expectations between staff primarily concerned with technological and business processes and academic staff.

Further requirements for implementation were established in the tendering stage. Observation of demonstrations by the companies and consideration of the bid documents led to the decision to choose iWebfolio, provided by Nuventive. It was noted particularly that this product appeared user friendly and the company offered training and ongoing support, factors thought to be crucial, given the target group.

Additional school specific requirements evolved from consultation with a Nuventive Consultant. This process marked a key realisation in the process of understanding e-Portfolios, e.g. whereas a template is a framework or scaffold which provides an empty structured portfolio, iWebfolio is in fact an 'ePortfolioManagement System' (ePMS) which will enable students to create multiple portfolios. This contrasts with the traditional system in the school of nursing of a singular portfolio.

### Ownership

A distinctive feature of the ePMS is that the student is the 'owner' of their portfolios, not the HEI. Furthermore, users can control who can see their portfolios by granting permission to 'reviewers' and only people given such permission can review the portfolios.

In respect of this, it is interesting to note the popularity of such facilities as 'Facebook' where participants can 'present' themselves, but can choose what they present. This is probably richer than the content observed in an institutionally owned portfolio.

<sup>6</sup> Alquraini, H A, Alhashem A M, Shah M A, Chowdhury R I. (2007) Factors influencing nurses' attitudes towards the use of computerized health information systems in Kuwaiti hospitals *Journal of Advanced Nursing*. 57(4): p375-381

In contrast, traditionally for pre-registration nursing programmes, it has always been implied that the institution owns the portfolio. Students' portfolios were assessed. Although assessment submissions were actually only of verifications signed by personal tutors, the verifications were reported to examination boards. In this system, feedback on the portfolio was mainly verbal and usually by the personal tutor only, although practice assessment documents suggested that practice mentors also saw the portfolio and could comment on it.

More recently it was observed that the nature, amount and quality of the contents of the students' portfolios appears to be limited by their perception that it was an assessment that had to be passed rather than a tool that could be used to benefit their education. With the implementation of PDP in 2005 the Personal Development Record (PDR) was introduced which is not assessed and is not attached to practice assessments. However the established custom of personal tutors and mentors believing themselves to have an automatic right of access to the PDR appeared to persist.

## **Assessment, verification and monitoring**

Although access to iWebfolio portfolios is controlled by the owner, this does not prohibit it being used as a tool for assessment, verification and monitoring of the student's progress. The key concept here perhaps is that of multiple portfolios. Awareness and acceptance of this would enable the school to recognise that students may have a robust record of achievement and may derive several portfolios from it, one of which could be for assessment if necessary.

Also in relation to assessment, it is debateable if the decision to separate portfolios from practice assessment was a wise one. This decision was based on observation of the quality of students' portfolios and on the desire to broaden the portfolio to cover the academic and personal development of students not just development in practice. This approach appears to have led to a perception amongst both staff and students, that if completion is optional, then they can choose not to engage in the process of creating and maintaining a record.

## **Reflections and conclusions**

### **Pedagogy and technology**

Reflections on the ePortfolio project have already highlighted some factors which may be instrumental in its' effectiveness. These factors relate to the pedagogical aspects of PDP, the technological aspects of the project and the interaction between the two.

Pedagogically, assumptions were made about the extent to which personal tutors know about and understand PDP. From communications with personal tutors, with students and from monitoring of interactions between students and tutors enabled by the ePMS, a picture emerges of confusion around notions of what PDP is for. Further formal evaluation has highlighted this as an ongoing issue.

As a consequence of this, there was also an assumption about the extent of preparation and support that some personal tutors were able to give to students. Without an underpinning knowledge and rationale for PDP, the ability of students to feel comfortable with adapting those skills to an electronic environment presents a further challenge. It appears then that both staff and students require preparation for engaging in PDP, irrespective of the ePortfolio.

Also pedagogically, based on data from a faculty evaluation, rather than being seen as an integral part of the curriculum, PDP is perceived as being separate or extra. The use of technology appears to separate it even further because most processes in the school are paper-based. It appears then, that PDP needs to be more integrated with curricula and organisational processes.

Technologically, the skills of ePortfolio owners and those supporting them, has to be considered. Based on previous experience with the FDTL project, there was recognition that it could not be assumed that personal tutors were confident in their Information Technology (IT) skills and would require some training. Based on the FDTL project and on previous surveys of students' key skills it was also recognised that students also could not be assumed to be confident in their IT skills and would require some training and support. This training is therefore instrumental in enabling students to engage with the ePortfolio and in enabling personal tutors to support them.

Training both students and staff highlighted issues affecting the implementation. Training for both was undertaken by ISD ('non-academic') trainers. The focus of the student's training was to show them 'how to USE' iWebfolio, e.g. how to login, navigate etc. Training focussed on the steps involved in using the system. There was no apparent consideration about students knowledge of what they were using it for, trainers had little knowledge themselves of PDP and students were not shown 'how to DO' specific PDP activities, e.g. post goals, post a PDP plan, attach evidence, etc.

Several factors arose from this arrangement which need considering. The first was that training did not address the students' difficulties with basic file management, particularly an understanding of remote file storage. Although most nursing students have some ability to use specific applications, they appear to have had little experience of file management. Secondly the style of training did not address student's lack of IT problem solving skills. This means that if something unexpected happens, the student cannot proceed, which deters engagement or even causes distress. Thirdly, the trainers should have some knowledge of what the students needed to do as regards building a portfolio, then they could have offered training on 'how to DO' a portfolio, not 'how to USE' an IT application. Lastly, the training only showed personal tutors how to review students' portfolios, not what the students had to do. This along with personal tutors own lack of confidence in IT skills meant that when students approach them for support with their problems, personal tutors are largely unable to help. It would appear then that students and staff require preparation in basic IT skills.

The effectiveness of the training reflects the organisational structure of the University, which separates pedagogy from technology in 'Divisions' and this has influenced the ways in which students experience using the e-Portfolio. The technologists focussed on the 'how', but more emphasis needs to be given to the 'why' of implementation. Preparation for using an ePortfolio therefore requires a combined pedagogical-technological approach.

## The organisation

A final reflection on this project highlights a previously observed phenomenon hindering both PDP generally and ePortfolios. Where PDP is perceived by students and staff as being extra to or separated from the curriculum, students are discouraged from engaging with any portfolio. In an institution where paper documents continue to be used for formal processes it is difficult to perceive ePortfolios as been an integral part of the curriculum. In a context where such paper based processes such as practice assessment are also considerably dictated by partnerships with other institutions e.g. NHS organisations, who also apparently struggle with implementing IT, it is even more difficult to manage the change. ePortfolio processes therefore need to be coordinated with other processes within the organisation and partner institutions.

Overall, implementing ePortfolios in nursing requires a consideration of the whole context in which it is being attempted and not just the selection of relevant software.

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# PM3 (c): mPLAT: Mobile placement learning and assessment toolkit for healthcare students

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## Abstract

Students of the health care professions generally undertake a number of clinical placements during their training. Whilst they are in practice a clinical practitioner will assess the student's competence against a set of learning outcomes and give ongoing feedback to the student. Due to the workload of the supervising practitioner, the assessment processes can be fragile, which in turn can impinge on the students' learning.

At the same time students in practice are away from their usual learning environment, and it can be difficult for them to access their learning resources at the time that they discover the need.

The principle upon which the mPLAT project is based, is that practice based learning and in particular the mentoring process would be improved if the student and mentor had access to tools which allowed on the spot, online entry of results of assessments, such that feedback would be immediate and follow-up actions could be decided instantly. The project is a design, test and evaluation study of the software needed to effectively support learning and assessment in practice. Using hand held devices for students and staff in practice settings has been established in other studies.

mPLAT aims to provide a mobile learning toolkit to support practice based learning, mentoring and assessment. This toolkit will provide an interface so that the course leader can specify, in a flexible manner, the learning outcomes to be met, the method of assessment (including the form of the result, how it will be recorded, and by whom), the timing of the assessment(s) and the feedback to be given in response to the results, suitable learning resources to support these learning outcomes, and the actions to be taken when assessments are not completed in a timely manner. Such a toolkit could be used on a variety of programmes, both HE and FE, and in clinical and non-clinical contexts, where work place assessment is an integral part of the course

A mobile learning toolkit in this context is a hand held device (personal digital assistant). The toolkit will be loaded with software specially designed for the project to enable students and their mentors to access the learning resources, action plans and assessment records for that clinical placement. The toolkit will enable deployment of the mentor's assessment interface on a number of platforms, ranging from PCs through to PDAs and Smartphones and will also provide tools such as RSS feeds to simplify distribution of the learning resources.

The mPLAT programme intends to rigorously investigate the educational properties of the mPLAT strategy, to further develop the use of information technology and mobile learning platforms within a complex practical discipline, and where possible to apply this knowledge to healthcare practice education and assessment.

The project is funded by the Joint Information Systems Committee (JISC) and will contribute mobile assessment tools to the e-framework.

## Full text

Students of the health care professions generally undertake a number of clinical placements during their training. Whilst they are in practice a clinical practitioner will assess the student's competence against a set of learning outcomes and give ongoing feedback to the student. Due to the workload of the supervising practitioner, the assessment processes can be fragile, which in turn can impinge on the students' learning.

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A mobile learning toolkit in this context is a hand held device (Smart Phone). The toolkit is loaded with software specially designed for the project to enable students and their mentors to access the learning resources, action plans and assessment records for that clinical placement. The toolkit will enable deployment of the mentor's assessment interface on a number of platforms, ranging from Personal Computers through to Personal Digital Assistants and Smart Phones and will also provide tools such as RSS feeds to simplify distribution of the learning resources. The use of such Smart Phones also means that students can access internet resources, download documents, store notes and files as well as keep in contact with their colleagues throughout their placement, important considerations for learning.

Designing the toolkit and deciding on the applications to be built was approached using a co-design method, bringing together computer scientists, mentors and students to ensure that all voices were heard and the end result would be fit for purpose. The student – mentor relationship was examined and story boarding techniques used to visualise the journey. An important tool when bringing together people from different disciplines with differing areas of knowledge and expertise which allowed for areas where a mobile tool may be of use areas where specific software could be beneficial to the student/mentor relationship.

The end result of this co-design process was stage one of the toolkit, software designed and developed to allow the student to self assess against programme assessments and the mentor to examine their own environment for learning opportunities, deployed on a Smart Phone. Although

this is often done in an informal manner using the mPLAT software means that the students self assessment and the mentors learning opportunities assessment could be brought together to create a live and organic action plan for the students placement. Deploying these programmes on a Smart Phone allows both student and mentor to have access to the programmes at any time during their work or study, make adjustments, keep notes, search for information and communicate with others, an added value when access to computers is often limited in placements.

The mPLAT programme intends to rigorously investigate the educational properties of the mPLAT strategy, to further develop the use of information technology and mobile learning platforms within a complex practical discipline, and where possible to apply this knowledge to healthcare practice education and assessment. With technology becoming more and more accessible and portable we have an opportunity to explore the opportunities within learning environments to the benefit of the learning whilst also recognising that such technology may still be an unknown quantity to many people. This 'unknown quantity' appeared with the first deployment of the toolkit as mentors reacted in an unexpected manner, often fear and anxiety, manifested in anger and finally reluctance to take part. Exploring these reactions further with mentors it appeared that many had little or no experience of this type of technology and combined with new software it was, in retrospect too much too soon and we hadn't sold the added value of using this new application as a mobile tool. Taking this feedback into consideration the deployment was halted and a desktop version of the mentors application was developed and students given the Smart Phone for a period of 4 weeks to familiarise themselves with it before introducing the mPLAT application. At the time of writing this deployment is ongoing.

The next phase of the project is evaluation of the 1st deployment into a clinical environment. To do this we will be exploring areas such as how was the toolkit used? Who used the toolkit? When did they use it? What were the advantages of using it? What were the disadvantages? How did people react to the Smart Phone and software? Again a co-design approach is pivotal to ensuring that we do not create a robot horse when in fact we want a car and users will be invited to participate and share their thoughts, wants and ideas.

The project is ongoing with further deployments planned with a group of nursing students in another partner institution and then a healthcare (non-nursing) setting using the same approach as previously described to ensure that the toolkit and software are appropriate to meet the needs of the end user and through evaluation increase the body of existing knowledge.

The project is funded by the Joint Information Systems Committee (JISC) and will contribute mobile assessment tools to the e-framework.

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## Posters

# PO1: ePortfolio to support planning, learning and summative assessment for student selected modules in Medicine: 4 years experience

Simon Cotterill, Tony McDonald, Geoff Hammond, Philip Bradley,  
Newcastle University

### Abstract

An ePortfolio was been integrated into the virtual learning environment for undergraduate medicine at Newcastle in 2003/4 as part of a collaborative FDTL4 project (<http://www.ePortfolios.ac.uk>). Stage 4 students are required to complete the ePortfolio for one of their 3 student selected components (SSCs). A structured 'Learning Outcomes and Action Plan' was specifically designed to support the SSCs. Students are 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 can also record meetings with their SSC supervisor and make entries in a learning diary. The aims of the portfolio are to foster independent learning skills and provide the students with experience similar to that which they will face during their professional careers for processes such as appraisals, assessments and revalidation.

A questionnaire-based evaluation study was conducted for the first cohort to use the ePortfolio for SSC. This used a 6 point Likert scale and free-text questions. The study was granted ethical approval and students were asked provided written informed consent to participate prior to commencing their SSC. Participants were asked to complete questionnaires which were designed to assess potential changes in awareness of learning outcomes, factors influencing use of the ePortfolio, attitudes and perceptions of educational impact, and usability.

186 students completed the ePortfolio (100% compliance) for their SSCs. Of those, 157 students completed the questionnaires. The ePortfolio proved to be feasible, acceptable and facilitated the evidencing of learning outcomes. Overall, most respondents perceived it as being beneficial (80% thought it was a useful learning experience). The process of planning learning outcomes was perceived by some students to have had an impact on their approach to learning during the SSC (75% agreed that having clearly defined intended learning outcomes influenced the way their approached the option). This was supported by the qualitative free text responses. 85% believed that they had recorded good evidence that they had achieved their intended learning outcomes, and 91% spent time reflecting on what they had learned after completing the SSC. Barriers to using the ePortfolio were access to computers (students predominantly used computers on-location at their SSC, at home, and/or at the University) and limited time. Monitoring of the

ePortfolio for subsequent cohorts was included in the course evaluation and feedback remains predominantly positive.

Following the successful evaluation of the ePortfolio for SSCs, supervisors are now asked to grade their students portfolio and this contributes to their overall marks for the SSC.

## Full text

### Introduction

Student Selected Components (SSCs) provide an element of choice in which students can augment their learning in addition to the core curriculum<sup>123</sup>. These have also been referred to as 'Options' or 'Special Study Modules', although the term SSC was favoured since the GMC policy recommendations in *Tomorrows Doctors*<sup>4</sup>. 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. It may also provide an opportunity for students to explore a branch of medicine which attracts them as a potential career path. Irrespective of the topic chosen, the SSCs have an emphasis on self-directed learning which is important in preparation for continuing professional development and regular revalidation after qualification.

### Methods

An ePortfolio was developed and integrated into the virtual learning environment<sup>5</sup> for undergraduate medicine at Newcastle in 2003/4 as part of a collaborative FDTL4 project (<http://www.ePortfolios.ac.uk/FDTL4>). The ePortfolio provides a flexible framework in which pedagogy and terminology can be customised on programme and year-group basis<sup>678</sup>. In Stage 4 students were required to complete a specific section of the ePortfolio for one of their 3 SSCs. A structured 'Learning Outcomes and Action Plan' was specifically designed to support the SSCs.

<sup>1</sup> R M Harden and M H Davis. The Core Curriculum with Options or Special Study Modules An extended summary of AMEE Medical Education Guide No 5. *Medical Teacher* (1995) 17, 2 pp 125-148  
[http://www.medev.ac.uk/resources/features/AMEE\\_summaries/guide5.pdf](http://www.medev.ac.uk/resources/features/AMEE_summaries/guide5.pdf) (accessed 7th Jan 2008)

<sup>2</sup> Murdoch-Eaton D, Ellershaw J, Garden A, Newble D, Perry M, Robinson L, Smith J, Stark P, Whittle S. Student-selected components in the undergraduate medical curriculum: a multi-institutional consensus on purpose. *Med Teach*. 2004; 26(1):33-8

<sup>3</sup> Stark P, Ellershaw J, Newble D, Perry M, Robinson L, Smith J, Whittle S, Murdoch-Eaton D. Student-selected components in the undergraduate medical curriculum: a multi-institutional consensus on assessable key tasks. *Med Teach*. 2005; 27(8):720-5

<sup>4</sup> *Tomorrow's Doctors: Recommendations on Undergraduate Medical Education*; General Medical Council London, 2002

<sup>5</sup> Cotterill S, Skelly G, McDonald A. *Design and integration issues in developing a managed learning environment which is responsive to changing curriculum and policy requirements*. Network Learning 2004: 409-416 [ISBN 1-86220-150-1] (note: Now referred to as the 'Learning Support Environment')

<sup>6</sup> Cotterill SJ, McDonald AM, Drummond P, Hammond GR. *Design, implementation and evaluation of a 'generic' ePortfolio: the Newcastle experience*. Proc. ePortfolios 2004 [ISBN 2-9524576-0-3].

<sup>7</sup> Cotterill SJ, Horner P, Hammond GR, et al.. *Implementing ePortfolios: adapting technology to suit pedagogy and not vice versa!* Proc. ePortfolio 2005

<sup>8</sup> Cotterill SJ, Aiton J, Bradley PM, Hammond GR, McDonald AM, Struthers J, Whiten S. A flexible component-based ePortfolio: adapting and embedding in the curriculum. In: In Jafari A, Kaufman C, ed. *Handbook of Research on ePortfolios*. Pennsylvania: Idea Group Inc, 2006

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.

A questionnaire-based evaluation study was conducted for the first cohort to use the ePortfolio for SSC. This used a 6 point Likert scale and free-text questions. The study was granted ethical approval and students were asked provided written informed consent to participate prior to commencing their SSC. Participants were asked to complete questionnaires which were designed to assess potential changes in awareness of learning outcomes, factors influencing use of the ePortfolio, attitudes and perceptions of educational impact, and usability.

## Results

One hundred and eighty six students completed the ePortfolio (100% compliance) for their SSCs. Of those, 157 (84%) students completed the questionnaires. The ePortfolio proved to be feasible, acceptable and facilitated the evidencing of learning outcomes. Overall, most respondents perceived it as being beneficial (80% thought it was a useful learning experience). The process of planning learning outcomes was perceived by some students to have had an impact on their approach to learning during the SSC (75% agreed that having clearly defined intended learning outcomes influenced the way their approached the option). This was supported by the qualitative free text responses. 85% believed that they had recorded good evidence that they had achieved their intended learning outcomes, and 91% spent time reflecting on what they had learned after completing the SSC. Barriers to using the ePortfolio were access to computers (students predominantly used computers on-location at their SSC, at home, and/or at the University) and limited time. There were also some technical 'teething problems' during the initial cohort.

Representative responses to the open question: 'What did you most like about using the ePortfolio?'

'It gave a structured learning plan which I could follow and focus my clinical learning.'  
[Student A]

'It really forced me to reflect on what I had actually got out of the [SSC]. It serves as a record as to some of my achievements that I can now look back on.' [Student B]

'Setting out a plan of what I intended to learn and ticking the list off as I gained the skills - It is a good technique for setting out a learning plan which I definitely will use again.' [Student C]

'It made me keep a conscious record of what I had achieved which allowed me to feel like I was progressing, and therefore encouraged me to progress further.' [Student D]

Representative responses to the open question: 'What did you least like about using the ePortfolio?'

'Filling in the sections, I was unsure of how to answer some of the questions about how I had achieved my objectives.' [Student E]

'I found they were not easy learning outcomes to quantify or measure.' [Student F]

'Producing the learning outcomes and completing the end of option review was quite long winded and repetitive.' [Student G]

'Lack of access to a computer. Wasn't near a computer when out on visits all day and don't have one at home so meant having to come into the med school in the evenings which was bit of a pain.' [Student H]

Monitoring of the ePortfolio for subsequent cohorts was included in the course evaluation and feedback remains predominantly positive.

## **Subsequent developments**

Initially completing the SSC section of the ePortfolio was mandatory, but not formally graded. However, following the successful evaluation 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.

## **Discussion**

The use of ePortfolio to support SSCs has been successfully introduced and embedded at Newcastle University. The aims of the portfolio are to foster independent learning skills and provide the students with experience similar to that which they will face during their professional careers for processes such as appraisals, assessments and revalidation.

The process is driven by pedagogy, rather than fitting around an existing technology. The portfolio structure was designed to have a forward planning element as well as a reflective component and as such introduces the learner to a Personal Development Planning process that could be applied elsewhere. It also built on and complemented the students' relationship with their supervisor.

The ePortfolio has proven suitable for complex educational environments where students on SSCs placements are dispersed over a wide geographical area<sup>9</sup>. Some locations had limited Internet access, though this appears to be becoming less of an issue over time. Initially, the ePortfolio was mandatory for the SSCs but not formally graded. Following the successful pilot technical teething problems were addressed and the portfolio is now graded and forms part of the summative assessment for the SSCs. This is a good example of how a 'good fit' with the curriculum tends to take a number of years fine tuning of both technology and pedagogy, indeed there is a constant need to review the role of ePortfolios within a dynamic curriculum..

For further information please contact: [s.j.cotterill@ncl.ac.uk](mailto:s.j.cotterill@ncl.ac.uk)

<sup>9</sup> Cotterill SJ, Bradley PM, Hammond GR. ePortfolios: Supporting assessment in complex educational environments. In Bryan C and Clegg K (eds) (2006) *Innovative Assessment in Higher Education*, Taylor and Francis Group Ltd, London

# PO2: Evaluating the use of hand-held computers by medical students to access ePortfolios and clinical guidelines in a wireless environment

Simon Cotterill, Paul Horner, Roger Walters, John Moss, Tony McDonald, Stephen Jones, CETL4HealthNE

## Abstract

The use of Personal Digital Assistants (PDAs) by healthcare professionals is becoming increasingly common. However, still relatively little is known about their potential to support education or about using PDAs for wireless to access web-based resources in undergraduate Medicine.

Here we report on a pilot studies of the use of PDAs by 5th year medical students doing their clinical rotations at The James Cook University Hospital in Middlesborough as part of the MBBS programme at Newcastle. The study has been undertaken as part of the CETL4HealthNE programme which aims to evaluate the educational and support impact of the use of PDAs to provide students with wireless access to formulae, clinical guidelines, electronic portfolios and other web-based materials. The portfolio includes log books for specific rotations in which a limited number of learning outcomes require sign-off by a supervisor. The log book has been designed so that supervisors can sign-off procedures on the student's PDA using a scribe in a similar way in which they would sign-off a paper-based log book.

The first cohort of 30 students were issued with PDAs in March 2006. These had been configured to access a secure wireless network established as part of The 'Hospital at Night' scheme. The study design includes 2 questionnaires and focus groups designed to capture information on prior experience with IT, initial perceptions of PDAs, and student evaluation at the end of the clinical rotation with regard to usability and applicability to medical education. Data on support time and costs are also being captured in order to help access the scalability of these technologies.

Open-ended questions from the initial questionnaire indicated that a primary concern for students was the accidental loss or damage of the PDA. Key attractions included wireless access to the Internet and easy access to formulae. A focus-group (n=10) held 4 days after the launch of the study indicated that portability was an issue for certain groups of students. In the first 10 days of the study 21 students had created a total of 207 log-book entries and 5 supervisors' signatures had been collected. Subsequently, 3 further cohorts of students (Stages 3 and 5) have used the PDAs during their clinical rotations.

## Full text

### Introduction

The use of Personal Digital Assistants (PDAs) by healthcare professionals is becoming increasingly common. However, still relatively little is known about their potential to support education or about using PDAs for wireless to access Web-based resources in undergraduate Medicine.

### Methods

Here we report on a pilot study of the use of PDAs by 5th year medical students doing their clinical rotations at The James Cook University Hospital (JCUH) in Middlesbrough as part of the MBBS programme at Newcastle. The study has been undertaken as part of the CETL4HealthNE programme which aims to evaluate the educational and support impact of the use of PDAs to provide students with wireless access to formulae, clinical guidelines, electronic portfolios and other Web-based materials (Figure 1).

The students could also access the ePortfolio (ePET) used in the MBBS curriculum.<sup>12</sup> When accessing the ePortfolio with a mobile device it automatically presents a mobile interface (Figure 2). The ePortfolio includes log books for specific rotations in which a limited number of learning outcomes require sign-off by a supervisor. The log book has been designed so that supervisors can sign-off procedures on the student's PDA using a scribe in a similar way in which they would sign-off a paper-based log book.

The first cohort of 30 students were issued with PDAs in March 2006. These had been configured to access a secure wireless network established as part of The 'Hospital at Night' scheme.<sup>3</sup> The study design includes 2 questionnaires and focus groups designed to capture information on prior experience with IT, initial perceptions of PDAs, and student evaluation at the end of the clinical rotation with regard to usability and applicability to medical education. Data on support time and costs are also being captured in order to help access the scalability of these technologies.



Figure 1: PDA accessing iBleep (aka 'Hospital at Night')

<sup>1</sup> Cotterill SJ, McDonald AM, Drummond P, Hammond GR. *Design, implementation and evaluation of a 'generic' ePortfolio: the Newcastle experience*. Proc. ePortfolios 2004 [ISBN 2-9524576-0-3]

<sup>2</sup> Cotterill SJ, Bradley PM, Hammond GR. *ePortfolios: Supporting assessment in complex educational environments*. In Bryan C and Clegg K (eds) (2006) *Innovative Assessment in Higher Education*, Taylor and Francis Group Ltd, London

<sup>3</sup> iBleep - intelligent bleeping for medical professionals <http://www.ibleep.net/> (accessed 15/01/2008)

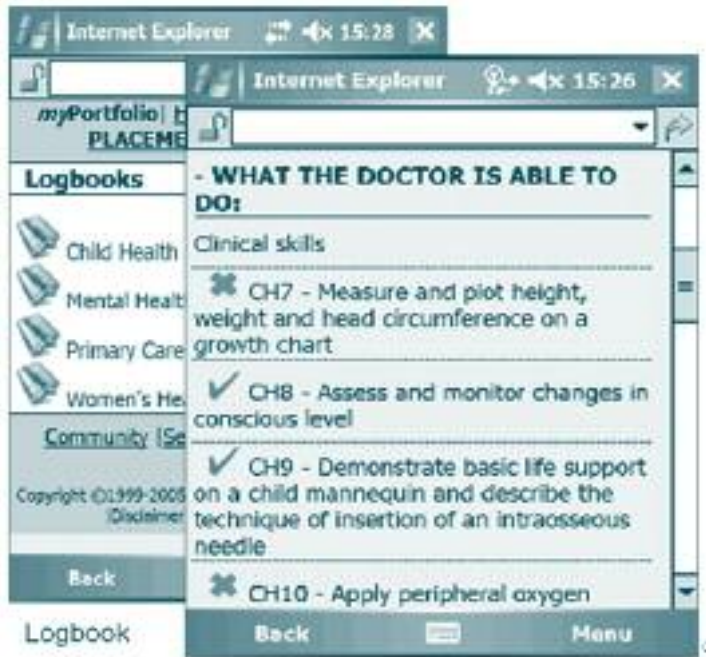


Figure 2: Mobile interface to the ePortfolio logbook

## Results

Open-ended questions from the initial questionnaire indicated that a primary concern for students was the accidental loss or damage of the PDA. Key attractions included wireless access to the Internet and easy access to formulae. A focus-group (n=10) held 4 days after the launch of the study indicated that portability was an issue for certain groups of students. In the first 10 days of the study 21 students had created a total of 207 log-book entries and 5 supervisors' signatures had been collected. Subsequently, 3 further cohorts of students (Stages 3 and 5) have used the PDAs during their clinical rotations.

**"I was able to check my emails whilst in the hospital and could go on line to research conditions and I could look up definitions of diseases with the PDA dictionary"**

**"accessing the internet from any site in the hospital being able to make notes about things easily and write a to-do list"**

**"We were given it too late in the term for me to find it beneficial."**

**"[it was a] pain to carry around, nowhere to put it"**

**"The PDA wireless connections at the hospital were erratic. The battery did not last a whole day"**

**"it impressed the doctors I asked to sign me off, it was easy to use online."**

**"Encouraged me to fill it there and then"**

**"[didn't like] Having to fill in reflections first before being able to get the competency signed"**

Table 1: Typical responses to the open-ended questions

There were some limitations to the initial pilot; because of logistical reasons the pilot began mid-way through a rotation, there were also technical problems when the wireless network was reconfigured, which limited access after week 2 of the pilot. Some practical issues were addressed during pilot; clip-on pouches were purchased to improve portability and higher capacity batteries were obtained to increase time between recharging).

The initial pilot demonstrated the feasibility of using PDAs for wireless access to Web-based formulae, guidelines and log-books in the context of undergraduate Medicine. A number of technical and logistical teething problems have been encountered, some specific to the specific model of PDA (e.g. the ePortfolio uses javascript but this needed re-installing if the device lost its power; this is not an issue for later models). There have been a number of iterative improvements as successive cohorts of students have used the mobiles. In particular, the wireless network was extended to cover the Education Centre at JCUH). Also, the communication capabilities of the iBleep product, used for the JCUH 'Hospital at Night' scheme have been extended and provide an additional 'value added' feature.

## Discussion

Embedding can take time; there have been a number of technical, logistical and educational lessons learned over a number of cohorts of students. Students have found mobile access to hospital protocols, formulae and use of external Web resources useful. Mobile access to ePortfolio for logbooks has proved feasible, sign-off by supervisors was a potential barrier, so the approach of capturing of signatures as image files is a good approach (rather than supervisors needing to remember passwords and login).

The experience here has built on the existing wireless network at JCUH, with synchronous access to Web based ePortfolio and other resources. However, many locations do not have ubiquitous wireless networks so there is a requirement to develop 'm-portfolio' applications that will also work off-line and seamlessly synchronise with ePortfolio.<sup>4</sup> This is being addressed as part of the EPICS-2<sup>5</sup> project funded by JISC with support from CETL4HealthNE. Other educational applications of mobile technologies are also being explored. CETL4HealthNE is running a study of a medical reference software suite (Dr Companion<sup>6</sup>) and ALPS is establishing use of mobile technologies to support assessment.<sup>7</sup>

## Conclusions

This pilot demonstrates the feasibility of using PDAs for wireless access to Web-based formulae, guidelines and log-books in the context of undergraduate Medicine.

For further information please contact: [s.j.cotterill@ncl.ac.uk](mailto:s.j.cotterill@ncl.ac.uk)

<sup>4</sup> Cotterill SJ, Angarita M, Horner P, Teasdale D, Moss J, Jones S, Walters R, Firth G, Hennessy S, McDonald AM, Fajardo R, Cendales JG, Quintero G. *Towards the m-portfolio* Proc. ePortfolios 2006

<sup>5</sup> <http://www.epics.ac.uk> (accessed 15/01/2008)

<sup>6</sup> <http://www.drcompanion.com/product/uk/> (accessed 15/01/2008)

<sup>7</sup> Assessment & Learning in Practice Settings (ALPS) <http://www.alps-cetl.ac.uk/> (accessed 15/01/2008)

# PO3: ePortfolios in healthcare education: Findings of the first phase of a two-stage HEA Health Sciences & Practice scoping exercise

Linsey Duncan-Pitt, University of Wolverhampton

## Abstract

The Health Sciences & Practice Subject Centre of the Higher Education Academy commissioned the University of Wolverhampton to conduct two mini-projects related to ePortfolio use in the healthcare sector.

The intention of the first project commenced early in 2007 and looked at selected healthcare-related disciplines encompassed by the Subject Centre in order to ascertain how ePortfolios are developed and to what extent they are used in Health Sciences and Practice.

The second project due to commence in early 2008 will build on the results of the first and will look at what works well and why and what does not work so well and why, in order to develop a set of detailed guidelines for future approaches to ePortfolios.

This poster will present a) the key findings of the first part of this study: a UK-wide survey<sup>155</sup> of HEIs delivering healthcare programmes and b) the proposed methodology for stage two.

## Full text

### *Introduction and purpose*

Both established and newly emerging healthcare professions expect their practitioners to evidence personal and professional development through the maintenance of a portfolio of evidence at undergraduate and registrant levels. It would seem a natural therefore that healthcare educator would be amongst the first to embrace the use of electronic portfolios. The Higher Education Academy's Health, Sciences and Practice Subject Centre (HS&P) commissioned the University of Wolverhampton to conduct a mini-project to investigate the factors which support the use of eportfolios in healthcare professional education specifically to identify the range of uses and nature of e-portfolios employed in the health sciences and practice subject disciplines. The first phase of the project invited all Higher Education Institutions (HEI) offering healthcare education in HS&P disciplines to complete an online survey.

## **Method**

A starting point for this survey was a previous study undertaken on behalf of the Centre for Recording Achievement<sup>1</sup>. Some questions were replicated to provide a more subject-specific perspective. More subject specific questions were included and the tool was piloted with 5 colleagues in a School of Health and 5 colleagues in another department who had experience of working with e-learning tools. Minor modifications were made as a result. Full ethical approval was sought. The survey link was sent to the contacts on the database of the Council of Deans of Healthcare Professions in Higher Education (now the Council of Deans of Healthcare (COD)). Instructions for completion and information for participants were provided. Three follow up mails were sent following a poor response and the mail was also sent to the Heads of eLearning group. A link to the survey was located on the HS&P website. Multiple responses were invited, acknowledging the idiosyncratic models for support of electronic learning across institutions. The survey required some personal identification in order to understand the data but personal and institutional anonymity was assured.

## **Discussion**

Thirty-five respondents represented 23 separate institutions, with a spread across three of the four UK regions (response rate = 26%). Another e-learning study commissioned by HS& also received a low response rate. Some of the possible reasons for this will be discussed in the final report.

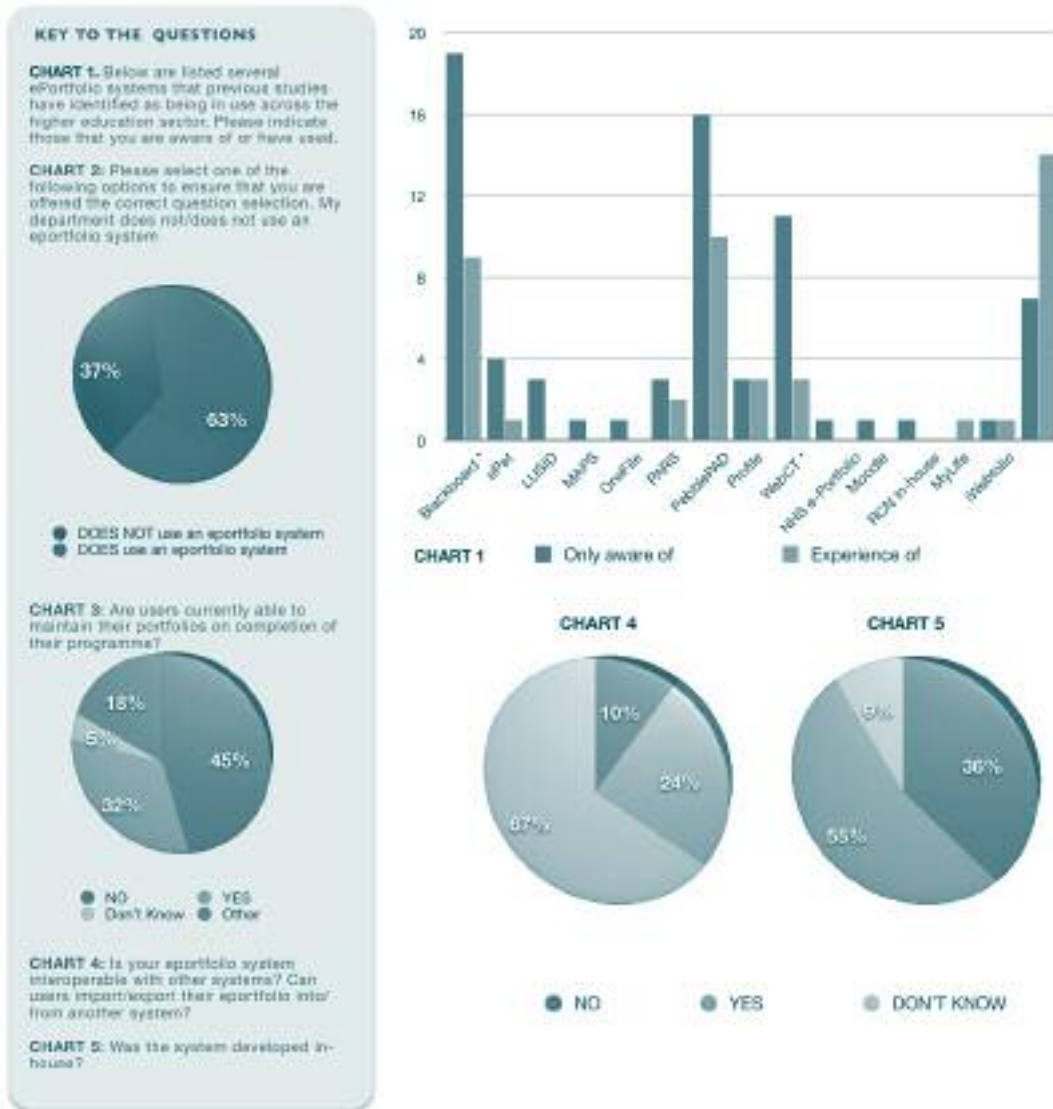
## **Key questions and findings**

### **Characteristics of the organisations' eportfolio systems**

Nearly 70% of respondents agreed that their organisation had an eportfolio system, slightly fewer were using a system. Of those who suggested that they did NOT currently use an eportfolio system or its equivalent, 45.5% (n=5) suggested that their organization had no plans to do so in the next year. 27.3% suggested that they would be using a system and 27.3% did not know.

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<sup>1</sup> Strivens J UK Higher Education e-Portfolio Survey. In: *ePortfolio 2006*, (Oxford, UK October 12-13 2006: European Institute for Electronic Learning (EifEL))



**Figure 1: About the organisations' eportfolio systems, reports on issues related to maintaining eportfolios and interoperability.**

The dominance of Blackboard/WebCT extensions was much reduced with PebblePAD being cited as often. Only one respondent cited ePET (used by a number of MEDEV disciplines) but responses were low from known users. Few respondents were able to assert that their system was interoperable. In addition, only 32% of respondents stated that users were able to maintain their eportfolios on completion of their programme. One respondent indicated awareness of a bespoke system developed by the RCN but no respondents from that professional group were users of that system.

Editing, uploading and hyperlinking to files of evidence were the most often cited functions with fewer respondents indicating that users were able to link to authenticated records or transcripts from their institution. Few were able to use a mobile device to interact with their eportfolios (an important issue for users working in practice arenas). 63.5% were unclear about the extent to which their other systems, both internal and external, would receive or interact with eportfolios, including those of employers and professional registration bodies. The ability to be able to transfer electronic portfolios between institutions may be of great significance in the future if professional representative and registering bodies adopt particular systems.

## Drivers, purposes and uses

Participants were asked to select from a range of options that explored the main purposes for their eportfolio systems with scope to add others and develop their answers further. Support for PDP/CPD and informal learning were most often cited by respondents and less often cited were reasons based on transition between institutions, collaborative learning and inter-professional discourse. In a related question 82.9% (29) suggested that PDP was being implemented and 17.1% (6) that it was not. Few were aware of the key drivers for eportfolio use<sup>2</sup>.

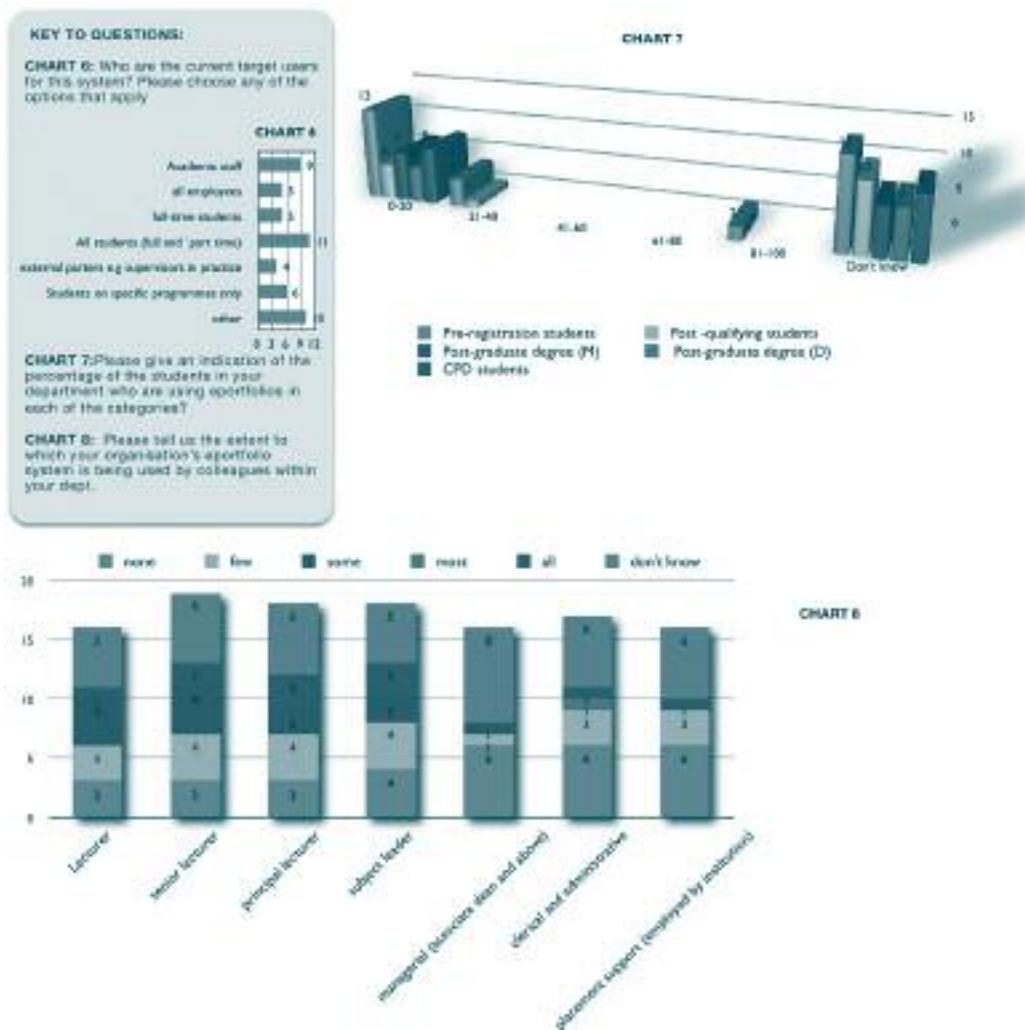


Figure 2 charts items exploring whether students, faculty and other potential users such as placement providers were using the eportfolio system.

Low levels of adoption were seen with only one respondent suggesting 100% usage. The size of the department was, however, relatively small. Pre-registration groups represented the largest category of users. Faculty users of eportfolio seem to be few or none in each case. Most respondents were from a healthcare profession and claimed that they kept a portfolio: of these only 21% were maintaining an eportfolio; 28.6 percent each were using either mainly paper with some electronic or vice versa.

<sup>2</sup> JISC 2006 *e-Portfolios: What institutions really need to know*. Joint Information Systems Council) p JISC

## **Conclusions and recommendations**

Too few responses were obtained for this study to be able to describe the national picture on eportfolio in this subject. One lesson learnt is that less formal external networks such as SIGs may be a better way to access those who can best answer these questions. Some potential respondents contacted the researcher expressing interest in the findings of the research rather than participation. These organisations were in an anticipatory stage or piloting stage and were seeking guidance. One of the respondents' comments suggested that the answers throughout had been prospective rather than a reflection of the current situation by stating: "We are currently planning a trial. At present a small number of staff are the only active users." A respondent working within a CETL advised: we are in the process of developing tools which will be used across several HEIs and the system is not up and running yet we are still deciding many of the questions you have asked so I am not able to answer accurately. This suggests that an important area for funding agencies is to bring together organizations that are working towards similar goals so that expertise can be shared.

The second phase of this study will explore the perspective of the registering bodies (Health Professions and Nursing and Midwifery Councils and the professional representative organisations that fulfil the roles of CPD providers as well as trade union services.

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# PO4: Acknowledging ‘otherness’: developing ‘thinking as a doctor’ in medical students through multiprofessional team placements

Lili Gao, Peninsula College of Medicine and Dentistry

## Abstract

When considering identity construction, there is not much discussion in literature that the multi-cultural clinical environment, such as a multiprofessional team placement, can challenge the internal transformation or professional association of medical students. This phenomenographic study has depicted medical students’ early learning experience on placements while encountering ‘others’ – healthcare collaborators such as nurses, midwives, social workers, medical specialists, etc. Data were collected by open-ended interviews and analyzed using the phenomenographic method.

The preliminary findings for this study show that learning from ‘others’ involves education in attitudes, team work, communication and shared practice such as clinical skills. The study also raises a number of issues concerning the possible influence of ‘others’ on the development of thinking as a doctor in medical students, which underlines their identity is contextually and discursively constructed between different professional boundaries.

## Full text

### *Introduction*

This paper reports some findings from a phenomenographic study, the first phase of a two-year longitudinal multi-case study describing transitions from ‘thinking as a student’ to ‘thinking as a doctor’ in the context of students’ interacting with experienced other healthcare professionals on clinical placements. My purpose of this study is to examine what medical students learn from experienced other healthcare professionals such as nurses, midwives, physiotherapists, social workers, pharmacists, and how this multiprofessional and interprofessional interaction influence medical students’ identity construction.

### *Method*

My method to identify what medical students have experienced and how they perceive multi- or inter-professional learning on placements was to use an open, in-depth interview. My data collection focus was students’ interaction with experienced other healthcare professionals during

their first two years. Interviews were audio-taped and interview data were analysed by using a modified form of the phenomenographic analysis (Marton 1994)<sup>1</sup>.

## Discussion

The findings raise a number of issues concerning the possible influence of other experienced healthcare professionals on medical students' development of 'thinking as a doctor'. To begin with, the early multiprofessional and interprofessional interactions have provided students a first impression that 'thinking as a doctor' is not merely an individual, but a dynamic and collective activity. They realized that clinical decisions sometimes were made across 'a team of nurses, physiotherapists, consultants, the auxiliary staff, the hospice manager and even the chaplain has a role' (ZFB). While examining the doctor dilemma in interprofessional cooperation, a recent literature outlined one of these barriers to doctor engagement in collaborative practice, which is caused by 'expertise and authority for decision-making' (Whitehead 2007 p1013)<sup>2</sup>. With 'detailed scientific medical knowledge' and 'specific areas of expertise', doctors are expected to take major responsibility for medical decision-making, which is a part of their professional identity. However, a 'collective cognitive responsibility' or 'an ability to share responsibility even while maintaining a strong professional stance' (Whitehead 2007 p015) is needed, when decision making is distributed across a clinical team. This collective understanding or ability is suggested to be nurtured in medical students.

The second issue is that students have identified a strategy of 'thinking as a doctor' as difference from, for example, 'thinking as a nurse'. In the trajectory of professional socialization, students under study have gone through 'identity mobility'. 'When you're shadowing a nurse, you feel like you're a baby nurse, when you're shadowing a doctor you feel like you're a baby doctor' (TMB). Identity, characterised by 'thinking as a doctor' does not arise in a vacuum, but as a result of what Hegel described as the 'Master: Slave' relationship. Martin (2002)<sup>3</sup> suggested that the process of identity construction is a process of self-reflection and images of self therefore always are constructed in reflection to others. Paradoxically, the traditionally 'superior' identity of the doctor as a member of a professional hierarchy is then only possible as the doctor recognises the 'face' of the other healthcare professional. The movement from 'thinking as a student' to 'thinking as a doctor' can be seen not only as a private cognitive event but also as a cultural feature of 'difference'.

The third issue is that this kind of early multiprofessional and interprofessional interaction develops 'thinking as a doctor' in a holistic way. The very first head students used is a 'student's head', to cope with students' academic work: How do I pass my exams? How do I do my revision? By interacting medical professionals, students develop their second head – 'a doctor's head'. This second head tries to give a diagnosis or to explain things. With interaction with experienced other healthcare professionals, such as nurses, students found they were developing 'a third head' – a humane and empathic head. The third head tries to understand the patient as a person – rather than a collection of symptoms: How are they not well? How has their life been disturbed? At the end of Year two, students now show a lot more concerns for the personal and social aspects of the patient. Although students have reported how their clinical teachers 'hammered' them with a technique called icing, to find out what the patients' ideas, concerns and expectations are, the growth of a third head was reported as the contribution to 'the vast majority of nurses who teach you how to develop a third head' (SMI).

<sup>1</sup> Marton F, (1994), Phenomenography. In T Husen, TN Postlethwaite (Eds.), *The International Encyclopedia of Education* (2nd ed.) Oxford: Pergamon.

<sup>2</sup> Whitehead R, (2007), The doctor dilemma in interprofessional education and care: how and why will physicians collaborate? *Medical Education* October (41) pp1010-16.

<sup>3</sup> Martin J, (2002), *Organizational Culture Mapping the Terrain*. CA: Sage.

## Conclusion

Findings yielded from this study show that when those early medical students interact with experienced other healthcare professionals in a multiprofessional clinical context, something has happened to their identity construction or professional association: by a process of osmosis, the multicultural aspects of the healthcare system are passed into them while they show 'legitimate peripheral participation' (Lave & Wenger 1991)<sup>4</sup> in medicine. It is showed that students have subconsciously utilized this multiprofessional context to develop 'thinking as a doctor' in a holistic and interprofessional way. In a work-based multicultural classroom, medical students built an awareness of 'others'; acknowledged 'others' expertise; and related being a doctor with 'others'—developing 'thinking as a doctor' in a holistic way, and their professional identity is contextually and discursively constructed between different professional groups. These findings are concordant with the sociocultural learning cycle (Engstrom 1998<sup>5</sup>, Bleakley 2002<sup>6</sup>), which relates the social and cultural influence to learning and to cognition, and the movement from 'thinking as a student' to 'thinking as a doctor' can be further researched from the socio-cultural perspectives.

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<sup>4</sup> Lave J, & Wagner E, (1991), *Situated Learning: Legitimate Peripheral Participation*. Cambridge: Cambridge University Press.

<sup>5</sup> Engestrom Y, (1987), *Learning by Expanding: an Activity-theoretical Approach to Developmental Research*. Helsinki: Orienta-Konsultit Oy.

<sup>6</sup> Bleakley A, (2002), Pre-registration house officers and ward based learning: a new apprenticeship model *Medical Education* January (36) pp9-15.

# PO5: The use of induction and pre-induction materials to promote learner independence in undergraduate programmes in Health Sciences

Duncan Greenhill, University of Birmingham

## Abstract

Successful study at university level is materially different to study in secondary schools and students are required to develop a very different skillset for successful completion of their studies. Students are expected to become independent, self-motivated learners, able to monitor and manage their own learning and develop critical thinking skills. They are expected to reflect on their learning experiences to become better learners (and professionals) in the future. The transition to learning within a higher education institution is therefore a critical point in a student's intellectual development.

The University of Birmingham is promoting a culture of enquiry-based learning and has implemented a number of Learner Independence Projects (LIPs). As part of this initiative the school of Health Sciences is developing a series of resources to orientate new students to constructivist approaches to teaching and learning at the induction and pre-induction stages, including the use of critical self-reflection. The resources used, and the risks and opportunities inherent in this new approach are discussed.

## Full text

Successful study at university level is materially different to study in secondary schools and students are required to develop a very different skillset for successful completion of their studies. Students are expected to become independent, self-motivated learners, able to monitor and manage their own learning and develop critical thinking skills. They are expected to reflect on their learning experiences to become better learners (and professionals) in the future. The transition to learning within a higher education institution is therefore a critical point in a student's intellectual development.

The University of Birmingham is promoting a culture of enquiry-based learning and has implemented a number of Learner Independence Projects (LIPs). As part of this initiative the school of Health Sciences is developing a series of resources to orientate new students to constructivist approaches to teaching and learning at the induction and pre-induction stages, including the use of critical self-reflection<sup>1</sup>.

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<sup>1</sup> Fisher, M., King, J. and Tague, G. (2001) Development of a self-directed learning readiness scale for nursing education. *Nurse Education Today*, 21, 516-525

The resources are housed within the institutional virtual learning environment WebCT and are designed to complement a traditional induction, not replace it, with the aim of introducing students to the culture and environment of higher education. The materials consist of video, web pages, discussion forums and activities and are divided into four main areas: The University Experience, The Programme, The Placement Experience and Student Voices.

For example, the section 'The University Experience' consists of video clips of previous students recalling their initial experiences of university, which then forms the basis of a discussion by new students of their conceptions and preconceptions about what life at university will be like. Within the same section there are web pages on the differences between study at university and school or college. These pages lead into a readiness for independent learning questionnaire adapted from Fisher et al 2001 and a discussion forum where students individually and collaboratively reflect on their current learning skills to explore their strengths and weaknesses.

Students are given access to the materials a few weeks before the start of their course. This allows them not only to explore the academic ecology of their new environment but also to get to know their peers and develop a supportive social network prior to arriving at university.

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# PO6: NHS ePortfolios: the postgraduate context

Alex Haig, NHS Education for Scotland

## Abstract

In August 2005 NHS Education for Scotland (NES) piloted an ePortfolio for 400 Foundation doctors to support training in medicine. The system was developed in-house and delivered all summative and formative assessments required of the new competency based curriculum, as well as the additional functionality required of an ePortfolio.

After the initial 12 month pilot the system rapidly expanded geographically and professionally, with separate versions created and tailored for an increasingly diverse number of groups. NES ePortfolios currently have tens of thousands of users across the United Kingdom with specialised ePortfolios for medicine (Foundation Programmes, Core Medical Training, higher specialty e.g. Royal College of General Practitioners, Royal College of Paediatrics and Child Health) and within Scotland versions for Dentistry, Nursing, Pharmacy and the Allied Health Professions.

This paper will introduce a range of topics encountered by ePortfolios in the postgraduate healthcare environment, including: the practicality and sustainability of a single generic platform for multiple distinct groups, validity and reliability of assessment tools, usage patterns and interoperability.

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# PO7: Using an assessed ePortfolio to support and monitor personalised and collaborative learning in an undergraduate midwifery programme

Jackie Haigh, Fiona Meddings, University of Bradford

## Abstract

This presentation reports a case study of using an assessed ePortfolio in an undergraduate midwifery programme 2005-7. Context: 2005 was the first year of our revised and revalidated programme of midwifery education. This programme included a Life Long Learning module in each stage. This module enhanced and gave credit to the skills students were developing through engaging in a Problem-Based Learning curriculum. The assessment was a portfolio evidencing the development of key skills (QCA 2002) and it was also influenced by the recommendation that each HE student should have a progress file (QAAHE 2000). In November 2005 we volunteered to pilot a new ePortfolio tool 'Pebblepad'.

Using this tool brought several challenges and opportunities. Challenges included encouraging students and staff to master new software and coping with technical hitches and limited centralised support in the pilot stage. Opportunities were developmental both for the students and for us as educators. Students varied in their level of engagement with Pebblepad. High achievers seemed to use it more effectively than those who were less academically able perhaps reflecting their relative lack of self-regulatory skills (Boekaerts 1999). However using Pebblepad did introduce these students to metacognitive skills and provided an opportunity for the module leaders to provide individualised feedback to support personal development. Pebblepad was also used to support collaborative learning activities. Most students found this formal peer support useful. Some students voluntarily used Pebblepad to support learning in clinical practice. This will be more directly encouraged in future as this is seen as key to motivating weaker students to engage.

Using this ePortfolio has been a development opportunity for us as module leaders. There is the obvious learning curve of mastering new software. This is a sophisticated tool that is easy to use but takes some time to get to know in detail e.g. how to manage assessment gateways. However, more significantly, assessing the Pebblepad portfolios helped us gain a much clearer understanding of the strengths and limitations of our students. This insight has guided our planning of the module next year for example providing more reminders to students to help them manage workload more effectively. More generally Pebblepad has facilitated our intuitive move away from a focus on acquiring key skills towards a focus on scaffolding a process of learner development. Future developments could include the integration of a clinical and academic portfolio of personal development facilitated by the use of mobile devices. We feel we have learnt a lot in the last two years but are still at the beginning of an experimental phase testing the ways in which technology can be used to support and authenticate a personalised learning process.

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# PO8: Portfolios - friend or foe? An investigation into the perceptions of student nurses on the Open University supported open learning pre-registration nursing programme of their practice portfolios

Lesley Holland, Jill Buckeldee, Open University

## Abstract

The Open University pre-registration nursing programme is a work-based model and is unique in terms of its mode of delivery and student support. It is also a relatively new programme. Students who are usually working as health care assistants are sponsored by their employers to study towards nurse registration.

The research aimed to investigate students' perceptions of their portfolios in practice.

The research used both quantitative and qualitative methods. A structured clinical placement questionnaire was distributed to 130 students with specific questions focusing on the portfolio. Within this questionnaire students were asked if they would participate in an interview. Ten interviews were carried out using open-ended questions. Students were asked 'How did you get on with your Portfolio?' Follow up questions asked how they used the portfolio; whether it enhanced their learning and whether their perception of the portfolio changed as they progressed through the programme.

Fifty one questionnaires were returned (giving a response rate of 39.2%) and the data were analysed. The ten interviews were tape recorded and the content was analysed to identify emerging themes and issues. The quantitative and qualitative data were compared to identify the extent to which they supported each other.

The research identified that students initially saw their portfolios very much as the enemy and were initially reluctant to engage with the process of collecting evidence and to demonstrate how they had met the Outcomes/Standards of Proficiency set by the professional body. One student commented that she was completely overwhelmed by it and threw it across the room.

As their journey progressed their perception of the portfolio changed quite dramatically. Ultimately it was perceived as an extension of themselves, a friend. Students articulated that their portfolios became the means by which they demonstrated their changing identity in their transition from health care assistant through student nurse to registered practitioner. It became a very individualised and personal illustration of their increasing knowledge, skills and experience. If they were parted from it for any length of time, for example when it was submitted to a mentor for verification, then the student felt as if a part of them was missing. The process of moving from one extreme to the other clearly involves an intense struggle. The factors affecting this progression are discussed, for example the importance of a good mentor. There is also a debate as to how much

this struggle is a necessary component of the process that students must go through in order to develop as reflective practitioners. The process of portfolio building was also investigated and was found to be driven initially by the need to provide evidence to meet the professional body outcomes of competence. Students commenced by looking at these outcomes and identifying ways of meeting them, rather than using a holistic approach to patient care and then mapping the care delivered to the outcomes met through that care episode. This suggests/indicates that these students were initially educationally immature learners.

As students progress through the courses there is evidence of more advanced holistic thinking. There is a necessary battle for learning. The portfolio is both a friend and a foe and sometimes both simultaneously.

## Full text

### Background

The Open University pre-registration nursing programme is a work-based model and is unique in terms of its mode of delivery and student support. It is also a relatively new programme. Students who are usually working as health care assistants are sponsored by their employers to study towards nurse registration. The use of portfolios in nursing practice is a central element as a means of assessing students' achievement of Nursing and Midwifery Council Outcomes/Standards of Proficiency<sup>1</sup> and in determining their progression towards registration. The portfolio forms the bridge between theory and practice. It is

‘...a collection of competency evidence assembled by practitioner/student which demonstrates the owner’s professional development’<sup>2</sup>.

The main research on portfolios in nursing has been carried out within the English National Board (ENB) funded project by Webb, Scholes et al (2003<sup>3</sup>, 2004<sup>4</sup>) and focuses upon how portfolios are used, how evidence is collected and the assessment of practice. Their research has indicated how evidence building is complex and students adopt various methods of collecting and assembling this evidence. They conclude

‘A portfolio captures learning from experience, enables an assessor to measure student learning, acts as a tool for reflective thinking, illustrates critical analytical skills and evidence of self-directed learning and provides a collection of detailed evidence of a person’s competence’ (Scholes, Webb, Gray, Endacott, Miller, Jasper, McMullen. 2004)<sup>5</sup>

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<sup>1</sup> *Nursing and Midwifery Standards of Proficiency for Pre-Registration Nursing Council* (2004) Education, London, NMC, pp26-34

<sup>2</sup> Weller B. (2005) *Bailliere’s Nurses’ Dictionary* Elsevier: Oxford

<sup>3</sup> Webb, C.; Endacott, R.; Gray, M.; Jaspar, M.; McMullan, M.; Scholes, J. Evaluating portfolio assessment systems: what are the appropriate criteria? *Nurse Education today*, Vol 23, pp 600-609

<sup>4</sup> McMullan, M.; Endacott, R.; Gray, M.; Jasper, M.; Miller, C.; Scholes, J.; Webb, C. Portfolios and assessment of competence: a review of the literature. *Journal of Advanced Nursing* 41 (3), 283- 294

<sup>5</sup> Scholes, J.; Webb, C.; Gray, M.; Endacott, R.; Miller, C.; Jasper, M.; McMullan, M. Making Portfolios work in practice. *Journal of Advanced Nursing*, 46 (6), 595-603

## **Aim**

This research focused upon the way students viewed their portfolio and how they came to terms with the task of building evidence to support their achievement of the NMC requirements. Interest was stimulated in this area by the reports from Open University Programme tutors of how difficult students found this process especially in the early stages of their study on the programme. Funding was sought and gained from the Open University Centre for Excellence in Teaching and Learning (CETL) to undertake some exploratory research.

We aimed to investigate students' perceptions of their portfolios in practice.

## **Methods**

The research used both quantitative and qualitative approaches to data collection. A structured clinical placement questionnaire was distributed to 130 students with specific questions focusing on the portfolio. The full questionnaire was one distributed to students asking them to comment upon their practice learning and for the purposes of our research we incorporated 3 questions focusing upon students' experience of the portfolio.

We were obliged to follow the five point Lickert scale (strongly agree, agree, unsure, disagree, strongly disagree) that was used in the questionnaire.

These statements were:

- There was a shared understanding of the evidence I needed to collect for my portfolio.
- It was easy to collect evidence for my portfolio.
- The portfolio helped me to identify current learning needs and how to meet them.

Within this questionnaire students were also asked if they would be willing to participate in an interview.

Ten interviews were carried out using open-ended questions. Students were asked 'How did you get on with your portfolio?' Follow up questions asked how they used the portfolio; whether it enhanced their learning and whether their perception of the portfolio changed as they progressed through the programme.

Fifty one questionnaires were returned (giving a response rate of 39.2%) and the data analysed in order to identify the extent to which students were able to engage with and collect evidence for their portfolios.

The ten interviews were tape recorded and the content analysed to identify emerging themes and issues. The quantitative and qualitative data were compared to identify the extent to which they supported each other.

## Findings

The data from the quantitative questionnaire is depicted as follows

Question	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
There was a shared understanding of the evidence I needed to collect for my portfolio.	7	13	15	14	2
It was easy to collect evidence for my portfolio while on placement.	13	24	11	3	0
The portfolio helped to identify current learning needs and how to meet them	8	24	17	2	0

Obviously such small numbers responding to the questionnaire does not provide conclusive evidence and whilst more students agreed with the questions posed in general, there are a large number who are unsure and this is probably indicative of the error of central tendency as many respondents used the unsure category. This is probably due to the limitation of the five point Lickert scale used and a four point scale would probably have been better.

The qualitative research interviews identified some very interesting themes. Students initially viewed their portfolios very much as the enemy and that they were reluctant to engage with the process of collecting evidence and to demonstrate how they had met the Outcomes/Standards of Proficiency set by the professional body. One student commented that she was completely overwhelmed by it and threw it across the room. This was at the start of the first practice period in which students were initially introduced to their portfolios.

As their journey progressed their perception of the portfolio changed quite dramatically. Ultimately it was perceived as an extension of themselves, a friend. Students articulated that their portfolios became the means by which they demonstrated their changing identity in their transition from health care assistant through student nurse to registered practitioner. It became a very individualised and personal illustration of their increasing knowledge, skills and experience. If they were parted from it for any length of time, for example when it was submitted to a mentor for verification, then the student felt as if a part of them was missing. The process of moving from one extreme to the other clearly involves an intense struggle. The factors affecting this progression are discussed, for example the importance of a good mentor. There is also a debate as to how much this struggle is a necessary component of the process that students must go through in order to develop as reflective practitioners. The process of portfolio building was also investigated and was found to be driven initially by the need to provide evidence to meet the professional body outcomes of competence. Students commenced by looking at these outcomes and identifying ways of meeting them, rather than using a holistic approach to patient care and then mapping the care delivered to the outcomes met through that care episode. This suggests/indicates that these students were initially educationally immature learners.

## Conclusion

As students progress through the courses there is evidence of a developmental journey as they struggle to come to grips with the portfolio, that there was evidence of more advanced holistic thinking as they progress in the programme. There is a necessary battle for learning and the portfolio is both a friend and a foe and sometimes both simultaneously.

Despite the limitations of a low response rate and small number of interviews the research has led to the identification of a number of areas for future research.

- The concept of struggle in portfolio building.
- Student's initial approach to portfolio as a predictor of outcome.
- How the portfolio helps with role transition.
- Specific factors that help with seeing care more holistically.
- Collecting evidence and the role of journals.

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# PO9: Embedding ePortfolio into a new midwifery curriculum: Perceptions of students, academic teachers and clinical mentors

Debbie Holmes, University of Wolverhampton

## Abstract

Every student of the University of Wolverhampton has access to PebblePad<sup>1</sup>; this is an electronic system available for students to record experiences, learning and achievements and present through an ePortfolio.

The Midwifery curriculum within the School of Health had, for some time, required the students to maintain a yearly portfolio containing written evidence to support the achievement of the 'standards of proficiency for practice' determined by the Nursing and Midwifery Council (NMC) (NMC 2004)<sup>2</sup>. The portfolio is also encouraged to build evidence for continuing professional development (CPD), a requirement by the NMC for the registered midwife (NMC 2006)<sup>3</sup>. The writing of a new curriculum gave the midwifery teaching team the opportunity to introduce a mandatory ePortfolio as part of the year-long practice modules.

Students are encouraged to compile a portfolio providing at least one piece of evidence for each of the 18 placement learning outcomes. How they showcase the portfolio is up to the individual student, provided they include four reflective essays and a drug log. The four reflective pieces of writing are summatively assessed. Students were encouraged to share the evidence electronically with their clinical mentors and their personal teachers within the University. This required, as identified by, Stefani, Mason and Pegler<sup>4</sup> (2007, p12)

'...a considerable level of learner autonomy and initiative, of learner responsibility for their learning and of opportunities to refine their learning based on feedback from the teacher.'

There was also a reliance on students having the necessary skills to develop their portfolio within the electronic Pebblepad system. Access and ICT skills are an issue for both students and staff (Beetham, 2005<sup>5</sup>, Brett, Brant & Sutherland 2006<sup>6</sup>). Training is a key element and students may feel this is extra work (Cotterill et al. 2006<sup>7</sup>), so evaluation is extremely important. The students are

<sup>1</sup> <http://www.pebblepad.co.uk/>

<sup>2</sup> NMC 2004 *Standards of proficiency for pre-registration midwifery education*. NMC: London

<sup>3</sup> NMC 2006 *The PREP Handbook*. NMC:London

<sup>4</sup> Stefani, L Mason, R., & Pegler, C. (2007) *The Educational Potential of E-Portfolios; supporting personal development and reflective learning*. Routledge:London

<sup>5</sup> Beetham, H. (2005) [http://www.heacademy.ac.uk/resources/detail/id631\\_survey\\_of\\_epdp\\_and\\_ePortfolio\\_practice](http://www.heacademy.ac.uk/resources/detail/id631_survey_of_epdp_and_ePortfolio_practice) accessed 20th September 2007

<sup>6</sup> Brett, Dr P, Brant J & Sutherland S., (2006) <http://www.jisc.ac.uk/media/documents/programmes/distributedelearning/epistiefinalreport.pdf> accessed 20th September 2007

<sup>7</sup> Cotterill, S., Aiton, J., Bradley, P., Hammond, G., McDnald, A., Struthers, J. & Whiten, S. (2006) A flexible Component-based ePortfolio: Embedding in the curriculum, in *Handbook of research on ePortfolios* Ali Jafari & Catherine Kaufman Eds. Hershey;London

on a three year programme and at the end of each year they are required to produce an ePortfolio for assessment. Each year there are two intakes of approximately 24 students, so at any one time the midwifery team of 9 teachers support up to 150 students to develop their ePortfolios. The knowledge gained from evaluating the experiences of students, mentors and teachers assisted with the planning of teaching and support for the duration of this cohort of students and has enabled future planning to be aligned with student needs.

With an ePortfolio there is less duplication of work for students when providing evidence to claim the achievement of proficiencies. More online work means less travel, some students travel a round trip of up to 60 miles for a one lecture.

Student's ITC skills and reflective skills have improved and are transferable to other modules and contribute to life long learning and CPD.

The evidence presented will provide an evaluation of the perceptions of the students, mentors and the teaching team. Evidence was required to evaluate student's skills, access, usage and ability to produce an ePortfolio, it was important to ensure the support was appropriate to meet student needs. Teacher participation and teacher perception of affect on workload was important to evaluate as was exploring if the teachers were equipped to support the students. Engagement of clinical mentors was also evaluated to discover whether there were any perceived difficulties in the sharing of written evidence.

A summary of the findings will be presented in a poster and a student from the cohort will be present to answer any questions on behalf of herself and her peers.

The sharing of this experience is crucial and the students, mentors and teachers have first hand experience of the developing and building of the student's personal ePortfolios. This relates to the UK Higher Education role in the development of ePortfolio practice both at a national level and worldwide (Strivens, 2007)<sup>8</sup>.

## Full text

### *Introduction and purpose*

Every student of the University of Wolverhampton has access to Pebblepad<sup>1</sup>; this is an electronic system available for students to record experiences, learning and achievements and present through an ePortfolio.

The Midwifery curriculum within the School of Health has, for some time, required the students to maintain a yearly portfolio containing written evidence to support the achievement of the 'standards of proficiency for practice' determined by the Nursing and midwifery council (NMC)<sup>2</sup>. The portfolio is also encouraged to build evidence for continuing professional development, a requirement by the NMC for the registered midwife<sup>3</sup>. The writing of a new curriculum gave the Midwifery teaching team the opportunity to introduce a mandatory ePortfolio as part of the year long practice modules.

<sup>8</sup> Strivens, J. (2007) A survey of e-pdp and e-portfolio practice in UK Higher Education Higher Education Academy, [http://www.heacademy.ac.uk/resources/detail/id631\\_survey\\_of\\_epdp\\_and\\_ePortfolio\\_practice](http://www.heacademy.ac.uk/resources/detail/id631_survey_of_epdp_and_ePortfolio_practice) Accessed 20th September 2007



Figure 1: ePortfolio front page

Students are encouraged to compile a portfolio providing at least one piece of evidence for each of the 18 placement learning outcomes. How they showcase the portfolio is up to the individual student, provided they include four reflective essays and a drug log. Students are encouraged to share the evidence electronically with their clinical mentors and their personal teachers during the year.



Figure 2: Placement learning outcomes

There is a reliance on students having the necessary skills to develop their portfolio within the electronic system pebblepad. Access and ICT skills are an issue for both students and staff<sup>45</sup>. Training is a key element and students may feel this is extra work<sup>6</sup>, so evaluation is extremely important. Each year there are two intakes of approximately 24 students, so at any one time the midwifery team of 9 teachers support up to 150 students to develop their ePortfolios.

Evidence was collected via questionnaires to evaluate student’s skills, access, usage and ability to produce an ePortfolio, it was important to ensure the support was appropriate to meet student needs. Teacher participation and teacher perception of affect on workload was important to evaluate as was exploring if the teachers were equipped to support the students. Engagement of clinical mentors was also evaluated to discover whether there were any perceived difficulties in the sharing of written evidence.

## ***Progress and discussion***

The use of Pebblepad to build an ePortfolio was found to be easy by 78% of the students. The evaluation of the support to do this was also good with 78% expressing they had sufficient guidance to use Pebblepad to build their portfolios. This was also reflected in the moderation of the portfolios as all students submitted an electronic portfolio containing all the mandatory requirements.

Students were asked to comment if they felt they had the skills to work in pebblepad confidently. The majority of the students said yes even if this was not the case initially. A number of students expressed a desire to work with other programmes so they had a choice, as they felt frustrated when Pebblepad was slow and sometimes unresponsive.

Sharing of evidences with personal teachers and mentors was an important aspect of the portfolio development. Although the majority of students did share the contents of the portfolio with their personal teacher 4 students did not, and 8 of those who did left it until the very last minute before handing in. The aim of the portfolio building was that it was developed over the year and commented upon during the year. Most of the sharing was done through Pebblepad although some students did share via email and some shared paper copies of the evidences. Reasons given were that email was easier and in the case of paper sharing it was preferred.

Sharing the evidences with mentors, as part of the assessment process was important as the evidence is to support the achievement of proficiencies in practice for which the mentors are responsible for assessing. This proved more problematic and is why the mentor's perceptions on this occasion have not been examined. What is important is to note is the lack of electronic sharing and the reasons why this did not occur. One reason given was mentors not having internet access, sometimes this was identified as within the clinical area but not always specified, so it could be assumed some may not have had access at home either. This is an interesting issue as it is questionable if we should expect mentors to access student's work outside of working hours on their personal computers. It does also highlight the gap between our placement providers internet capabilities and what we are expecting the students to do if there are no facilities or resources for the mentors to access the student's work.

The teachers were asked about usage, skills and support to use Pebblepad to access and comment on students work but the response rate was poor. It was unanimous from the few replies that workload had increased and agreement that sufficient guidance had been provided. All the teachers that responded found the system easy to use.

## ***Conclusions and recommendations***

It appears the students feel supported and mostly confident in their skills and abilities to use Pebblepad to build their portfolios. However, although this was managed some students experienced difficulties accessing Pebblepad from home on occasions. This is information to be fed back to the software developers but it is also an issue for the midwifery programme as it is an expectation that students will have the home computer and internet connection facilities to support their studies.

There is a question to whether we have restricted the choices of the students, some of whom prefer to work in other applications other than Pebblepad. Offering more flexibility within Pebblepad could eliminate these issues. As Pebblepad develops, we can create more templates/forms within the system to meet the student midwives needs and eliminate the creation of work within other programmes.

The responses of the teachers are concerning as there was an overwhelming feeling of increased workload and also difficulties reading online resulting in the continuation of printing of work.

The sharing of evidences with personal teachers has been improved with new guidelines for students and teachers. The issue of sharing with mentors is more problematic and is being addressed through mentor workshops and through discussion with our placement providers.

This action research is cyclical and as such the development of the use of Pebblepad to produce ePortfolios will be continually evaluated and support adjusted. It will be valuable to research many of the aspects of this small study in greater depth with a qualitative approach to provide valuable information about the continuation and embedding of the mandatory ePortfolio.

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# PO10: Social anxiety in medical students, implications for communication skills teaching

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## Abstract

Communication skills are a core part of medical undergraduate education<sup>1</sup> and are frequently taught in small group workshops where students perform whilst being observed by others and then receive feedback<sup>2</sup>.

Social anxiety is a common, under-diagnosed mental health disorder where the sufferer fears social interactions<sup>3</sup>. For individuals with social anxiety communication skills teaching will be extremely daunting and they may try to avoid participation<sup>4</sup>.

The aim of this study was to investigate the relationship between levels of social anxiety in medical undergraduates and attitudes to communication skills teaching.

The Social Phobia Scale (SPS) and the Social Interaction Anxiety Scale (SIAS) were used to measure levels of social anxiety<sup>5</sup> whilst a shortened version of the Communication Skills Attitudes Scale (CSAS)<sup>6</sup> was employed to investigate attitudes to communication skills teaching in 300 undergraduate medical students.

247 medical students (60% female) responded to the questionnaire. Average total scores ( $\pm$  standard errors) were, for SPS =  $12.85 \pm 0.65$ , for SIAS =  $17.47 \pm 0.66$ , and for CSAS =  $16.40 \pm 0.28$ . There was a significant correlation between the SPS and SIAS total scores ( $r = 0.746$ ,  $n = 247$ ,  $P < 0.001$ ), but not between either the SPS or the SIAS and the CSAS (SPS /CSAS  $r = 0.079$ ,  $P = 0.217$ , SIAS / CSAS  $r = 0.117$ ,  $P = 0.066$ ).

Female students had higher total SPS scores than males (ANOVA,  $P = 0.027$ ,  $F = 4.94$ ,  $df = 241$ ). Whilst there was only a strong correlation between the total SPS and SIAS scores ( $r = 0.632$ ,  $n = 97$ ,  $P < 0.001$ ) in males, in female students as well as a strong correlation between the SPS and SIAS ( $r = 0.785$ ,  $n = 145$ ,  $P < 0.001$ ), there was a weaker, but significant, correlation between the SIAS and CSAS ( $r = 0.146$ ,  $n = 145$ ,  $P = 0.040$ ).

<sup>1</sup> *Tomorrow's doctors*. 2003, General Medical Council

<sup>2</sup> Rider.EA and Keefer.CH, Communication skills competencies: definitions and a teaching toolbox. *Medical Education*, 2006. 40: p. 624 - 629.

<sup>3</sup> Furmark.T, et al., Social phobia in the general population: prevalence and sociodemographic profile. *Social Psychiatry and Psychiatric Epidemiology*, 1999. 34: p. 416 - 424.

<sup>4</sup> Bruce.TJ and Saeed.SA, Social Anxiety Disorder: A common, under-recognized mental disorder. *American Family Physician*, 1999. 60(8): p. 2311 - 2322.

<sup>5</sup> Mattick.RP and Clarke.JC, Development and validation of measures of social phobia scrutiny fear and social interaction anxiety. *Behavior Research and Therapy*, 1998. 36: p. 455 - 470.

<sup>6</sup> Rees.C, Sheard.C, and Davies.S, The development of a scale to measure medical students' attitudes towards communication skills learning: the Communication Skills Attitude Scale (CSAS). *Medical Education*, 2002. 36: p. 141 - 147.

Compared to other populations studied, medical students have low levels of social anxiety. Rodebaugh et al<sup>7</sup> found that an average score of 34 or over on the SIAS was discriminatory between a group diagnosed with social phobia and a group who had no such diagnosis. 19 students (8%) of our medical undergraduates had scores of 34 or over, signifying high levels. Female students tended to have higher scores than males and those who had higher levels of social anxiety reported more negative views towards communication skills teaching.

It is known that individuals with high levels of social anxiety underrate their own social skills<sup>89</sup> and that cognitive preparation could improve this<sup>10</sup>. It is not clear whether individuals with high social anxiety have lower levels of communication abilities.

Social anxiety needs to be acknowledged within the medical undergraduate population as a potential reason for reticence to participate in (and avoidance of) communication skills workshops. There are teaching interventions which may help students with social anxiety gain more from their communication skills workshops.

Further questions:

- Why are levels of social anxiety lower in medical undergraduates, and are there implications for admission criteria?
- Do students who have high levels of social anxiety perform poorly during practical examinations, such as OSCEs? And, if so why?
- Once recognised as a potential problem, how can we help students with high levels of social anxiety gain from experiential learning?

## Full text

### *Introduction and purpose*

Communication skills are a core part of medical undergraduate education<sup>1</sup> and are frequently taught in small group workshops where students perform whilst being observed by others and then receive feedback<sup>2</sup>. Social anxiety is a common, under-diagnosed mental health disorder where the sufferer fears social interactions<sup>3</sup>. For individuals with social anxiety communication skills teaching will be extremely daunting and they may try to avoid participation<sup>4</sup>. No work has been carried out to determine the levels of social anxiety within the medical undergraduate population.

The aims of this study were to determine the levels of social anxiety in the medical undergraduate population and investigate the relationship between this and attitudes to communication skills teaching within individual students.

<sup>7</sup> Rodebaugh, TL, et al., The factor structure and screening utility of the Social Interaction Anxiety Scale. *Psychological Assessment*, 2006. 18(2): p. 231 - 237.

<sup>8</sup> Strahan, E and Conger, AJ, Social anxiety and its effects on performance and perception. *Journal of Anxiety Disorders*, 1998. 12(4): p. 293 - 305.

<sup>9</sup> Strahan, EY, The effects of social anxiety and social skills on academic performance. *Personality and Individual Differences*, 2003. 34: p. 347 - 366.

<sup>10</sup> Harvey, AG, et al., Social anxiety and self-impression: cognitive preparation enhances the beneficial effects of video feedback following a stressful task. *Behaviour Research and Therapy*, 2000. 38: p. 1183 - 1192.

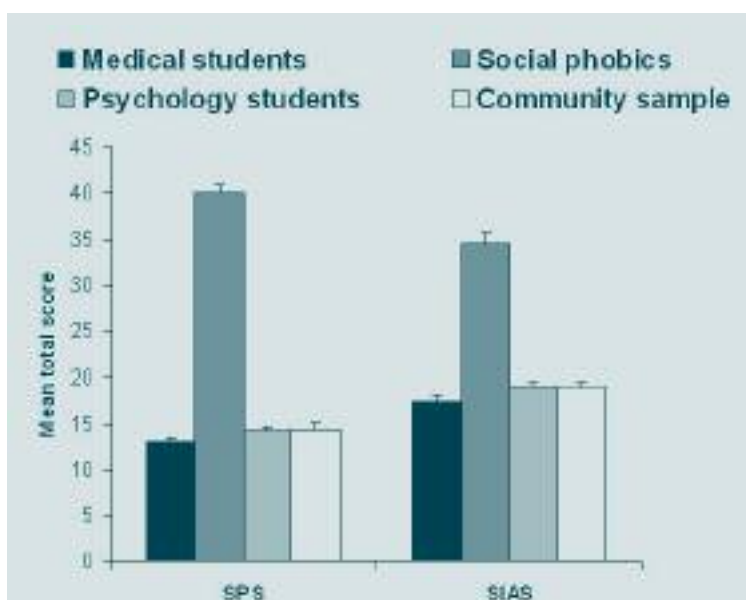
## Methods

The Social Phobia Scale (SPS) and the Social Interaction Anxiety Scale (SIAS) were used to measure levels of social anxiety<sup>5</sup> whilst a shortened version of the Communication Skills Attitudes Scale (CSAS)<sup>6</sup> was employed to investigate attitudes to communication skills teaching in 300 undergraduate medical students. Variables such as gender and year of study were also collected. Results for medical undergraduates were compared to levels found in psychology undergraduates, a group of people diagnosed with social phobia and a control group comprising of a community sample from a study by Mattick and Clark. Variables were explored to determine, for example, gender differences using t-tests and relationships between the levels of social anxiety and attitudes to communication skills teaching were investigated by Pearson correlations. Statistical analysis was carried out using SPSS v 14.

## Progress/discussion

247 medical students (60% female) responded to the questionnaire. Mean total score ( $\pm$  standard errors) for the SPS was  $12.85 \pm 0.65$ , for SIAS was  $17.47 \pm 0.66$  and for the CSAS was  $16.40 \pm 0.28$ . There were 19 students who had a score in the SIAS of 34 or over (8%), a level previously used to distinguish between a control group and a group diagnosed with social anxiety<sup>7</sup>.

When total scores for medical students were compared to three groups investigated by Mattick and Clark medical students had lower SPS scores than a group of people diagnosed with social phobia (t-test,  $t = 32.75$ ,  $df = 529$ ,  $P = 0.001$ ), a community sample ( $t = 8.659$ ,  $df = 601$ ,  $P = 0.001$ ) and psychology students ( $t = 3.238$ ,  $df = 768$ ,  $P = 0.001$ ). Similar results were found for the SIAS scores (social phobia:  $t = 20.06$ ,  $df = 529$ ,  $P = 0.001$ , community sample:  $t = 3.759$ ,  $df = 768$ ,  $P = 0.001$ , psychology students:  $t = 5.299$ ,  $df = 601$ ,  $P = 0.001$ )[5], see Figure 1.



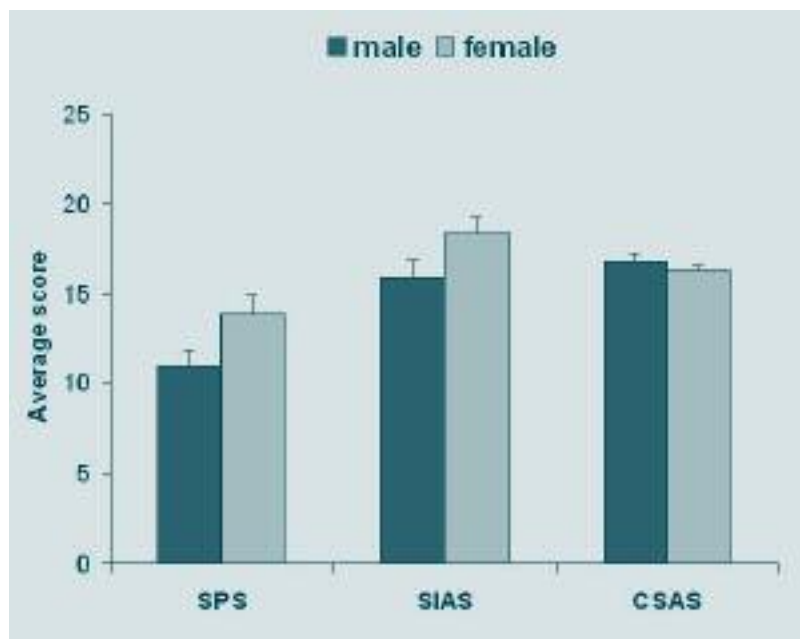
**Figure 1: Mean scores for the SPS and the SIAS for the medical undergraduates and the three groups investigated by Mattick and Clark[5]. Medical students scores on both scales were significantly lower than all other groups. Error bars represent standard errors.**

There was a significant correlation between the SPS and SIAS total scores, but neither of these scores correlated with the CSAS in the medical undergraduate students (Table 2).

	SPS	SIAS	CSAS
SPS	-	0.746*	0.079
SIAS	0.746*	-	0.117
CSAS	0.079	0.117	-

**Table 1: Pearson correlations (one tailed) between SPS, SIAS and CSAS in undergraduate medical students. \*P = 0.001**

There was a gender difference with female students having higher total SPS scores than males (ANOVA,  $P = 0.027$ ,  $F = 4.94$ ,  $df = 241$ ). Although there appeared to be a lower mean total score for males in the SIAS, this just failed to reach significance ( $P = 0.051$ ). There was no difference in CSAS scores between genders, see Figure 2.



**Figure 2: Female medical undergraduates had higher SPS scores than the male medical undergraduates. Whilst SIAS scores showed a similar trend, the difference just failed to reach significance. Error bars represent standard errors.**

There was also a gender difference in the correlations between the measures. Males showed a strong correlation between SPS and SIAS total scores (Pearson, one-tailed  $r = 0.632$ ,  $n = 97$ ,  $P < 0.001$ ) whilst in female students, as well as a strong correlation between the SPS and SIAS ( $r = 0.785$ ,  $n = 145$ ,  $P < 0.001$ ) there was a weaker but significant correlation between the SIAS and CSAS ( $r = 0.146$ ,  $n = 145$ ,  $P = 0.04$ ). Female students with higher levels of social interaction anxiety had more negative views towards communication skills teaching.

Our medical students as a group have low levels of social anxiety when compared to other groups (including other student groups). 8% of our medical undergraduates had high levels of social anxiety[7], which compares to a prevalence in society of up to 15%. This means that there are still some students who experience levels of social anxiety comparable to people who have been diagnosed with social phobia.

We have also shown that, similar to the general population, females report higher levels of social anxiety. Female undergraduates who had higher levels of social anxiety were more likely to have negative views towards communication skills teaching.

Individuals with high levels of social anxiety under-rate their own social skills<sup>89</sup> but cognitive preparation could improve this<sup>10</sup>. Social anxiety needs to be acknowledged within the medical undergraduate population, particularly among female students, as a potential reason for reticence to participate in or avoidance of, communication skills workshops where students may have to perform social skills in front of others. Avoidance of social situations in social anxiety creates a vicious cycle as the individuals faulty representation of the situation as 'threatening' is not tested but exposure therapy has been shown to be an effective treatment for people diagnosed with social phobia<sup>11</sup> Tutors should be aware of this as a possibility and could suggest learning interventions which may help such students, who may otherwise simply not turn up to workshops. As good communication skills have been linked to improved patient outcomes<sup>1213</sup> and communication skills teaching programs have been shown to improve skills<sup>14</sup> it is vital to encourage participation wherever possible.

## Conclusions/recommendations

It is not clear whether individuals with high social anxiety have lower levels of communication abilities, further work is required to elucidate this. If there is such an interaction then investigations into how we can help such students gain from experiential learning should be carried out. Individualised interventions may be beneficial in such cases.

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<sup>11</sup> Feske.U and Chambless.DL, Cognitive behavioral versus exposure only treatment for social phobia: a meta-analysis. *Behavior Therapy*, 1995. 26: p. 695 - 720.

<sup>12</sup> Trummer.UF, et al., Does physician-patient communication that aims at empowering patients improve clinical outcome? A case study. *Patient Education and Counseling*, 2006. 61: p. 299 - 306.

<sup>13</sup> Williams.S, Weinman.J, and Dale.J, Doctor-patient communication and patient satisfaction: a review. *Family Practice*, 1998. 15(5): p. 480 - 492

<sup>14</sup> Smith.S, et al., Teaching patient communication skills to medical students: A review of randomized controlled trials. *Evaluation and the Health Professions*, 2007. 30(3): p. 3 - 20.

# PO11: Logbooks: A report on a medical undergraduate pilot

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## Abstract

Logbooks are nearly ubiquitous in post-graduate medical education and specialist registrar training schemes. Trainees are required to document evidence of clinical experience, case mix and clinical procedures. Proof of deficit of training and exposure in certain areas can empower the trainee and trainer to direct appropriate attachments where the experience may be available. Within undergraduate medicine, logbooks can have a similar role to empower and direct student learning.

The University of Edinburgh piloted an undergraduate logbook within the gastrointestinal and locomotor modules in Year 3 of the medical curriculum in the 2006/7 academic year. The aim of the logbook is to encourage the student to pursue and consolidate opportunities for self directed learning while on clinical attachments. The logbook allows for and emphasises the need to document the wide range of clinical presentations and reflect on subsequent learning points and as a driver to explore further clinical questions. A section of the logbook allows the student to record the attempts at practical clinical procedures. In the face of large medical student numbers and diminishing pool of suitable patients the logbook can be used to bargain with clinical tutors to guide teaching and exposure in areas where it is deemed to be lacking.

As this was a pilot study the logbook did not contribute to the assessment of the student. The impact and feedback of the logbook at the end of the academic year was mixed. Some students embraced the logbook with great enthusiasm and it contributed to their arsenal of personalised and self directed learning. For others the majority, the resultant feedback on use was negative, many students seeing the logbook as a paper exercise.

From a practical clinical procedure approach, it is apparent that students under perform core skills areas such as venepuncture and cannulation with 77% of students reporting zero successful attempts at cannulation in the module attachment. However a minority (27%) reported that the logbook motivated them to perform clinical procedures

As the amount of factual medical information and the pressures on clinical teaching increase, students' personal and self directed learning is an essential component of modern undergraduate medical education. Several potential drivers exist that can encourage the student to embrace the clinical and other learning opportunities that exist. For some students the advent of a logbook has allowed the student to direct and focus some aspects of their clinical education. The logbook has been redesigned and simplified for the 2007/8 academic year and will be available for use in all four modules.

## Full text

### Introduction

Logbooks are commonplace in postgraduate medical specialities. The logbook encourages the postgraduate trainee to record clinical experience, exposure to practical procedures and professional activities. Within undergraduate medicine the use of logbooks is not as widespread as the postgraduate setting and has not been widely reported in the literature. But this may change with recent developments in the foundation programme application system. Since 2006 students have been required to indicate competency in clinical procedures at the time of graduation and may be selected to provide evidence in support of this and other answers within the application form.

Logbooks vary in their basic design and format but consist of three main types: paper based hand written copies, optically scanned or electronic versions. Handwritten logbooks are the most commonly described and range from free form to highly formatted versions.

According to social cognitive theory self regulation is one of the basic capabilities we all have and that being a self-directed learner is a pre-requisite for deep learning<sup>1</sup>.

Self directed learning as a strategy is most likely to produce doctors prepared for lifelong learning and to meet future challenges<sup>2</sup>. We therefore need teaching and learning methods conducive to developing self-directed learning for use on attachments where students have to learn and practise on real patients in a variety of demanding clinical situations<sup>3</sup>.

One of the problems with self-directed learning is that it requires students to be able to self assess and identify their own needs. This is not always easy to do accurately<sup>4</sup> and students are also poor in self assessment of practical procedure needs<sup>5</sup>. Logbooks may help the learner by identifying core objectives along with explicit guidance on expected experiences. The log of experiences and reflections including assessments by self and others might also improve self-efficacy and more importantly its accuracy. Logbooks can also be used as a tool to enhance individualised feedback by clinical teachers<sup>6</sup>.

A paper based logbook was therefore developed with the aim of encouraging and recording student engagement in clinical experiences. It was introduced as a pilot in two modules (Gastrointestinal and Locomotor) in 2005/6 of Year 3 in the University of Edinburgh. Year 3 is the first full time clinical attachment. Students have previously reported uncertainty about how to gain the appropriate experience and focus across the wide array of clinical presentations.<sup>4</sup>

The pilot logbook contains the following: a list of module specific core clinical presentations and diseases, a weekly diary, a log of practical procedures, clinical encounters and professional activities. Take up was over 90% on average in each module.

<sup>1</sup> Bandura A. *Social foundations of thought and action: a social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall 1986

<sup>2</sup> Spencer J, Jordan R. Learner centred approaches in medical education. *British Medical Journal* 1999;318:1280-3

<sup>3</sup> McLeod PJ, Harden RM. Clinical teaching strategies for clinicians. *Medical Teacher* 1985;7:173-189

<sup>4</sup> Norman GR. The adult learner: a mythical species. *Academic Medicine* 1999;74:886-889

<sup>5</sup> Morton J, Anderson L, Frame F et al. Back to the future: teaching medical students clinical procedures. *Medical Teacher* 2006;28(8):723-28

<sup>6</sup> Remmen R, Denekens J, Scherpier A, et al. An evaluation study of the didactic quality of clerkships. *Medical Education* 2000;34:460-464

This project aimed to evaluate how well students accept and use a logbook in undergraduate medicine.

## Method

Following completion of the initial pilot, students were invited to complete an online questionnaire with a five point Likert scale. Questions covered several aspects of the logbooks including acceptability and practical procedures practice following completion of the initial pilot. The overall response rate was 58%. An invited random sample of completed logbooks was also returned and the content analysed for completeness and practical skills exposure.

## Discussion

23% of University of Edinburgh students reported that the logbook motivated them to see patients in the clinical area on attachment. 27% of students reported that the logbook motivated them to carry out procedures on patients such as venepuncture and cannulation. An example of a free text response on best aspects on keeping a logbook follows: 'showed me how much I had accomplished at the end of the module. It was a motivation to see patients and try out certain clinical skills.'

Some of the students see the logbook as a burden with 69% reporting it as time consuming and laborious.

Students reported rate of practise of practical procedures is extremely low with over three quarters of students not practising core skills such as venepuncture and cannulation in any given module. The remaining students report practise in single figures. Similarly students report low confidence in their competence at cannulation with only 16% reporting competence at the end of a module. All students undergo formal training in a clinical skills centre on practical procedures. However it should be noted that this study population is relatively junior in terms of clinical exposure.

A further longitudinal study is underway looking at current rate of procedure practice and any barriers that may exist.

Although the documentation of practical procedure does not in itself equate with competence, it is recognised that multiple attempts at any practical procedure are required to become proficient. A study of anaesthetic SHOs suggested that 79 cannulation attempts are necessary to attain competency which is defined as an 80% success rate<sup>7</sup>. Providing clear information about practice requirements and an opportunity to log practice may help students focus and achieve what is required.

Students occasionally feel that clinical attachments are a passive experience where they feel unable to participate and are not encouraged to do so. There can be a number of reasons for this including the need to get accustomed with clinical medicine, uncertainty in their own performance and on occasion unwillingness by clinical staff to accept the presence of students in clinical area<sup>8</sup>. Thus opportunities to develop specific clinical skills and to take a deep approach to learning are wasted. The logbook offers a vehicle to develop these skills but we are unsure as to whether it is the motivated student that benefits most.

<sup>7</sup> De Oliveira Filho GR. The construction of learning curves for basic skills in anaesthetic procedures: An application for the cumulative sum method. *Anaesthesia & Analgesia* 2002;95(2):411-416

<sup>8</sup> Remmen R, Denekens J, Scherpbier A, et al. Evaluation of skills training during clerkships using student focus groups. *Medical Teacher* 1998;20(5):428-432

## Conclusions

Multiple strategies are needed to fully develop the skills and process of self directed learning in a curriculum. Undergraduate logbooks can offer some students encouragement to undertake and direct their own self directed learning. However there is a reluctance from the student body in keeping a non assessed logbook. The fact that some of our students report the logbook as a burden and a paper exercise unless mandatory<sup>9</sup> is in keeping with a literature review of undergraduate medicine logbook articles.

Some students under or over report their clinical exposure and experience but do not report on patients they have not seen<sup>10</sup>.

The logbook may encourage the more reticent student to become involved clinically, identify and develop their own learning needs.

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<sup>9</sup> Patil NG, Lee P. Interactive logbooks for medical students: are they useful? *Medical Education* 2002;36:672-7

<sup>10</sup> Denton G, DeMott C, Pangaro L et al. Narrative review: use of student- generated logbooks in undergraduate medical education. *Teaching and Learning in Medicine* 2006;18(2):153-164

# PO12: ePortfolios and their implementation in a work based learning course within a healthcare setting

David Morris, Open University

## Abstract

Many educators are currently part of an ePortfolio boom. Hundreds of academic institutions are investigating and developing ePortfolio systems. Large numbers are also purchasing off the shelf solutions. They have been described as a tool 'that may have the most significant effect on education since the introduction of formal schooling' (Love, McKean and Gathercoal, 2004). Apart from technology providing an opportunity to open up new ways of supporting learning, teaching and assessment, there are a numerous other factors driving ePortfolio development. The most salient factors are personal development planning (PDP) and the life long learning agenda. In 2005 the Department for Education and skills (DfES) e-Strategy 'Harnessing Technology: Transforming learning and children's services' proposed a personal online learning space for every learner, which will contribute to an electronic portfolio to build a record of achievement throughout lifelong learning. The 2005, HEFCE strategy for eLearning includes an objective to encourage electronic support for describing learning achievement and personal development planning. The 2004 DfES review of fair admissions to HE includes a definition of 'fair admissions', drawing upon ePortfolios for richer applicant information to aid widening participation and ease transition. The 2004, QCA Blueprint for e-Assessment proposes that by 2009 all awarding bodies should be set up to accept and assess ePortfolios. Further (FE) and higher education (HE) institutions will soon be receiving students used to ePortfolio-based assessment. With such national policy initiatives, it is little wonder then that educators are part of an ePortfolio boom.

The Open University in the UK has developed a highly configurable open source ePortfolio system that integrates fully with their virtual learning environment (moodle). This paper describes how a course team in the faculty of Health and Social Care at the Open University has configured and implemented the ePortfolio system into a work based learning course entitled 'Extending Professional Practice'. This level 2, 60 point credit course is to be presented for the first time in February 2008.

K214 will address itself to frontline support workers in health and social care as part of the foundation degree programme in health and social care. Students will be support workers in many different contexts: hospital departments, rehabilitation units, community teams, residential homes and may be employed by the NHS, Social Services, independent or voluntary organisations. The course presents an approach that is open enough to accommodate a broad range of settings and role. The course supports and assesses students' skill and knowledge development through their work in their workplace, enabling them to develop as enquiring practitioners and to be active participants in the management of their learning and career development.

In describing the configuration and implementation of the ePortfolio this paper will also expose how the ePortfolio has been used to support learning, teaching and assessment.

## Full text

### Introduction

ePortfolios have been described as a tool ‘that may have the most significant effect on education since the introduction of formal schooling’ (Love, McKean and Gathercoal, 2004)<sup>1</sup>. According to Bateson (2002)<sup>2</sup> ‘Freeing student work from paper and making it organised, searchable and transportable opens enormous possibilities for re-thinking whole curricula: in the evaluation of faculty; assessment of programmes, certification of student work, how accreditation works. Electronic portfolios have a greater potential to alter higher education at its very core than any other technology application we have know so far’.

As well as the opportunity provided by the technology to open up new ways of supporting learning, teaching and assessment, there are a numerous other factors driving ePortfolio development. The most salient of these is the national policy drives towards Personal Development Planning (PDP) and the life-long learning agenda.

In 2005 the Department for Education and skills (DfES) e-Strategy ‘Harnessing Technology: Transforming learning and children’s services’<sup>3</sup> proposed a personal online learning space for every learner, which will contribute to an electronic portfolio to build a record of achievement throughout lifelong learning. The 2005 HEFCE strategy for eLearning<sup>4</sup> includes an objective to encourage electronic support for describing learning achievement and personal development planning.

### Method

The Faculty of Health and Social Care at the Open University (OU) has developed an independent study framework (ISF) for use across a number of courses and levels. The framework aims to provide generic underpinnings for independent study and to generate templates that will enable learners to input their own practice. Such a framework will allow the faculty to operate at scale and speed. K214 ‘Extending professional practice’ is the first course to be developed within the ISF.

The OU has developed its own highly configurable ePortfolio (MyStuff) system that fully integrates with their virtual learning environment (Moodle). Students can access MyStuff throughout their study career with the OU and for at least two years afterwards. MyStuff is available to students even if it is not a compulsory part of the course. MyStuff is the de facto tool for supporting the ISF.

K214 has numerous online activities that direct students to use MyStuff in order to create, store, organise, share and reflect on their own learning content.

<sup>1</sup> Love, D., McKean, G., Gathercoal P., (2004). *Portfolios to Webfolios and Beyond: Levels of Maturation*. EDUCAUSE Quarterly, Volume 27, Number 2. Retrieved on October the 10, 2007 from <http://connect.educause.edu/library/abstract/PortfoliostoWebfolio/39864>

<sup>2</sup> Bateson, T. (2002). *The Electronic Portfolio Boom: What’s it All About?* Campus Technology. Retrieved on October the 4, 2007 from <http://www.campus-technology.com/article.asp?id=6984>

<sup>3</sup> Department for Education and skills (2005). *e-Strategy Harnessing Technology: Transforming learning and children’s services*. DfES: London.

<sup>4</sup> Higher Education Funding Council for England (2005). *Strategy for e-learning*. Retrieved on October the 4, 2007 from [http://www.hefce.ac.uk/pubs/HEFCE/2005/05\\_12/](http://www.hefce.ac.uk/pubs/HEFCE/2005/05_12/)

## Discussion

The MyStuff activities contained in K214 have been predominately designed to support a range of pedagogical approaches that fall under the umbrella of constructivist theory. There are a number of activities that require students to keep a reflective journal. According to Kunz, Dewstow and Moodie (2003)<sup>5</sup> reflective journals for individual learners are a powerful pedagogic approach to foster metacognition. There are activities that require students to share their templates and give and receive feedback. Van den Pol, Admiraal, Van den Berg, & Simons, 2007<sup>6</sup> proposed that peer feedback resembles other forms of collaborative learning, offering potential to develop new knowledge and understanding. Moodie & Kunz (2003)<sup>7</sup> stated there are a range of effective pedagogical methods and techniques that foster high quality learning activities, but which are difficult or time consuming to implement in an online learning environment. It would be very helpful to have generic templates to assist teachers with the implementation of best practice approaches into their courses. Generic educational tools would save teachers time to focus on pedagogy instead of worrying about the technical set up. The online templates used in K214 are already being used on other level 3, Practice based courses. It is envisaged that these templates will even traverse Faculties.

In implementing the MyStuff system into the course, the K214 course team faced issues of ownership, storage, interoperability and access. In the OU's implementation of MyStuff the student owns the content and their tutor can only see that content if the student chooses to share it with them. However, the institution has access to a multitude of management tracking capabilities. At the time of writing the MyStuff system is only available for two years after students have studied their last course. Greenberg (2004)<sup>8</sup> proposed that maintaining an ePortfolio beyond the college and university years can have long-term personal and professional benefits, supporting both formal and informal life-long learning. If institutions are not going to support student's ePortfolios in the long term, ePortfolio systems will need to be interoperable. Lorenzo and Ittelson (2005)<sup>9</sup> proposed that the IMS Global Learning Consortium is making important contributions in this area by establishing an extensive ePortfolio specification. However, according to Siemans (2004)<sup>10</sup> ePortfolios will be successful if the urge to excessively standardize is resisted as heavily regulated efforts may stifle creativity and innovation. To date the MyStuff system is not interoperable although data is transferable. Another issue that has been a consideration for the K214 course team is that of students having access to the internet at home and at work. According to the national statistics office (2007)<sup>11</sup> nearly 15 million households in Great Britain (61 per cent) have internet access. The most common place to access the Internet was the home (85

<sup>5</sup> Kunz, P., Dewstow, R., & Moodie, P. (2003). *A Generic tool to set up metacognitive journals and their serendipitous use*. Paper presented at the 20th Annual Conference of the Australasian Society for Computers in Learning in Tertiary Education (ASCILITE), Adelaide, Australia.

<sup>6</sup> Van der Pol, J., Admiraal, W. F., Van den Berg, B. A. M., & Simons, P. R. J. (2007). *The nature, reception, and use of online peer feedback in higher education*. Manuscript submitted for publication. Retrieved on September the 9, 2007 from <http://igitur-archive.library.uu.nl/dissertations/2007-0706-202332/c5.pdf>

<sup>7</sup> Moodie, P., & Kunz, P. (2003). *Recipe for an Intelligent Learning Management System (iLMS)*. Paper presented at AIED2003 - Supplemental Proceedings of the 11th International Conference on Artificial Intelligence in Education, University of Sydney, Australia

<sup>8</sup> Greenberg, G. (2004). *The Digital Convergence: Extending the Portfolio Model*. *EDUCAUSE Review*, vol. 39, no. 4 (July/August 2004): 28–37. Retrieved on December the 6, 2007 from <http://connect.educause.edu/library/abstract/TheDigitalConvergency/40483>

<sup>9</sup> Lorenzo, G. and Ittelson, J. (2005). *An Overview of E-Portfolios, EDUCAUSE Learning Initiative*. Retrieved on December the 6, 2007 from <http://www.educause.edu/ir/library/pdf/ELI3001.pdf>

<sup>10</sup> Siemans, G. (2004). *ePortfolios. eLearnspace, everything elearning*. Retrieved on October the 4, 2007 from <http://www.elearnspace.org/Articles/ePortfolios.htm>

<sup>11</sup> National Statistics Office (2007), Internet Access. National Statistics Omnibus Survey; Northern Ireland Omnibus Survey; Survey of Internet Service Provider. Retrieved on December the 6, 2007 from <http://www.statistics.gov.uk/CCI/nugget.asp?ID=8&Pos=&ColRank=1&Rank=374>

per cent), while nearly half (46 per cent) of adults accessed from a place of work. However this still leaves large number of the population without access in their homes or at work. This is an unresolved issue and is likely to create a widening participation agenda.

## **Conclusion**

The drivers for the implementation of ePortfolio systems are varied and numerous.

Advances in technology are offering new ways of supporting learning, teaching and assessment. ePortfolios are emerging as the de facto tool for achieving these aims.

The OU has invested large amounts of time and resources in implementing the MyStuff system. Faculties also need to invest considerable time and resources in configuring MyStuff and changing their curriculum's to reflect the new ways of supporting learning, teaching and assessment. If we are to create a useable tool for our students then we need to create an ePortfolio system that is 'sticky', i.e. a system that works and is adopted by users.

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# PO13: Using a card sort to structure enquiry based learning

Alis Racey, Jacqui Akhurst, York St John University

## Abstract

An occupational therapy card sort was developed as part of an enquiry based learning initiative during 2007-2008 to enable students to evaluate and map their skills development. The card sort consists of on line modified playing cards which students can 'deal' to identify their level of ability in relation to key skills. This card sort builds on a previous card sort developed for psychology students.

The card sort items drew on information from a range of professional standards such as the standards of proficiency for occupational therapists (Health Professions Council 2004)<sup>1</sup> and the NHS knowledge and skills framework (Department of Health 2004)<sup>2</sup> as well as core skills (Creek 2003)<sup>3</sup>. In the development of the cards, specific skills and attributes developed through undergraduate study of occupational therapy were identified for inclusion. It was intended for on-line use by occupational therapy students in the second year of their studies.

This paper will describe the use of the card sort by a group of students at intervals during their second year of study. Students completed the card sort prior to their first professional practice placement. The card sort was then repeated after the placement and again following a second placement. The resulting printouts of students' responses were evaluated, and the results of a questionnaire about students' experience of using the online card sort was analysed. The students wrote a reflective account of their perceptions of the changes in their card sort results. An analysis of the results after semester one will be discussed.

Students' self assessment of their skills encourages a reflective practice approach. There appears to be a widely shared acceptance that reflective practice can serve the purpose of aiding learning and enhancing practice (Clouder and Sellars 2004)<sup>4</sup>. Reflective practice enables students to actively engage in their professional development and the use of electronic portfolios to develop and record learning. Future developments of the card sort will be explored, for example its use by qualified staff to promote CPD.

<sup>1</sup> Health Professions Council (2004) *Standards of Proficiency: Occupational Therapists*. London, Health Professions Council.

<sup>2</sup> Department of Health (2004) *NHS Knowledge and skills Framework*. London, HMSO.

<sup>3</sup> Creek (2003) *Occupational therapy defined as a complex intervention*. London, College of Occupational Therapists

<sup>4</sup> Clouder, L. and Sellars, J. (2004). Reflective Practice and Clinical Supervision: an inter professional perspective. *Journal of Advanced Nursing*, 46(3), 262-269.

<sup>5</sup> Akhurst, J. E. & Paton, F. (2007). *The Psychology Card Sort: Researching student development*. Paper presented at York St John University learning and Teaching conference, 26 January.

## Full text

### *Introduction and purpose*

Following the evaluation of a card sort for psychology students<sup>5</sup>, it was decided that the methodology might be trialed in other disciplines. An occupational therapy card sort was developed as part of an enquiry based learning initiative during 2007-2008 to enable students to evaluate and map their skills development. The card sort consists of internet-based modified playing cards which students can 'deal' to identify their perceived level of ability in relation to key skills. This card sort builds on a previous card sort developed for psychology students.

The card sort items drew on information from a range of professional standards such as the standards of proficiency for occupational therapists<sup>1</sup> and the NHS knowledge and skills framework<sup>2</sup> as well as core skills<sup>3</sup>. In the development of the card items, specific skills and attributes developed through undergraduate study of occupational therapy were identified for inclusion. The card sort is intended for on-line use by occupational therapy students in the second year of their studies.

Students' self assessment of their skills encourages a reflective practice approach. There appears to be a widely shared acceptance that reflective activities can serve the purpose of aiding learning and enhancing practice<sup>4</sup>. Reflective practice enables students to actively engage in their professional development through the use of electronic portfolios to develop and record learning.

### *Proposed method*

The use of the occupational therapy card sort will be evaluated during 2008.

Approximately one hundred second year students will be asked to complete a card sort at two different stages. The first stage of data collection will be at the beginning of semester 2 before students complete a University module and a practice placement. This card sort will form the basis for discussion with their peers about their skill development to date. At this point students will be asked to complete a questionnaire to ascertain their experience of completing the card sort.

In the second stage the students will repeat the card sort at the end of semester 2, after they have completed a module and practice placement. Comparison of the two card sorts will then form the basis of discussion with peers concerning the changes in their card sorts during this time period. Students will be asked to write 250 words to summarise their reflection on their skill development in relation to the card sort. Data analysis will be of the two card sorts, as well as the reflective account.

The results of the first card sort and the questionnaire after stage one of the data collection will be presented.

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# PO14: A trial of an electronic portfolio system (pebble pad) with students in the faculty of health and life sciences.

Alis Racey, York St John University

## Abstract

Electronic portfolios offer occupational therapists and physiotherapists an innovative way to meet the standards of continued professional development set by the regulatory body, the Health Professions Council. There is a professional requirement for graduates from occupational therapy and physiotherapy programmes to engage in continued professional development and keep records of this activity (Health Professions Council 2006)<sup>1</sup>. Clinicians may be audited at intervals during their career which involves producing a reflective account of continued professional development and how this has influenced their practice (Health Professions Council 2006). Meeting these standards is essential for registration with the Health Professions Council, which is necessary in order to practice.

To comply with these standards, clinicians need to have a usable flexible format to record and enhance their continued professional development. Electronic portfolios offer an innovative approach to reflecting on practice, personal development planning and showcasing their learning (Stefani, Mason and Pegler 2007)<sup>2</sup>. The Health Professions Council identify a range of informal and formal learning activities as being relevant to continued professional development (Health Professions Council 2006). The flexible and inclusive format offered by an electronic portfolio provides compatibility with these requirements and allows the showcasing of work required by the audit process.

Occupational therapy students at York St John University have piloted the use of electronic portfolios to explore their utility and learning potential. Final year students on professional practice placements were chosen as the written assessed submission requires students to evaluate their fitness to practice, similar to the requirements of the Health Professions Council audit. Results of an evaluation of the clinical utility of electronic portfolios to record practice placement experience will be presented and future ways in which electronic portfolios can support continued professional development for professional registration will be explored.

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<sup>1</sup> Health Professions Council (2006) *Your guide to our standards for continuing professional development*. London, Health Professions Council.

<sup>2</sup> Stefani L, Mason R and Pegler C (2007) *The educational potential of e portfolios: supporting personal development an reflective learning*. Oxford, Routledge.

## Full text

### *Introduction and purpose*

Electronic portfolios offer occupational therapists and physiotherapists an innovative way to meet the standards of continued professional development set by the regulatory body, the Health Professions Council. There is a professional requirement for graduates from occupational therapy and physiotherapy programmes to engage in continued professional development and keep records of this activity. Clinicians may be audited at intervals during their career which involves producing a reflective account of continued professional development and how this has influenced their practice<sup>1</sup> Meeting these standards is essential for registration with the Health Professions Council, which is necessary in order to practice.

Electronic portfolios offer an innovative approach to reflecting on practice, personal development planning and showcasing their learning<sup>2</sup>. This innovative approach can be used to promote student centred enquiry during undergraduate studies which will enhance their skills of continued professional development post qualification. It is anticipated that by evaluating the use of e portfolios within particular modules and programmes it will be possible to make some assumptions about the potential for long term use of electronic portfolios for continued professional development and personal development planning.

The proposed project will evaluate the utility and learning potential of electronic portfolios when used with specific cohorts of students and a staff group. Pebble Pad will be used in different ways with various cohorts to include in service and full time occupational therapy and physiotherapy programmes, a post graduate module cohort and a staff group. Electronic portfolios will be used in various ways including for completion of planned supported open learning as directed by the module tutor. In addition, students will be able to use their electronic portfolios flexibly when identifying learning opportunities which they may use as the basis for their reflection, particularly during practice placements. The electronic portfolio will be used with in service students for the duration of the four year programme and form the basis of a graduate profile which has previously been paper based. At the end of the course students will be able to use their electronic portfolio to showcase their learning and achievements for the purpose of job application, personal development planning and for audit with the Health Professions Council as necessary.

### *Proposed method*

The project will evaluate the experiences of the various groups of students and staff when using pebble pad. This evaluation will consist of two phases and is planned for the summer 2008. Phase one will consist of an on line survey. This on line survey will be used to collect data on the utility of pebble pad such as the regularity of use, access, usability and the range of assets (online formatted sheets) used. Focus groups will be used in the second phase to explore students experiences of using pebble pad to meet specific learning outcomes and for assessment purposes. In addition information will be collected from the system to find out how regularly Pebble Pad was used and for what purposes eg which of the assets (on line reflective proformas) were being used.

A pilot of the online survey will be completed in February 2008 with in service occupational therapy and physiotherapy students. The pilot is to evaluate experiences and the utility of pebble pad after the initial three week period of its use. The results of this pilot will be presented.

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# PO15: Developing reflective writing skills in medical students

Julie Struthers, Jim Aiton, University of St Andrews

## Abstract

The Bute Medical has a web-based electronic portfolio (ePortfolio) in the professional development strand of our Honours BSc in Medicine curriculum. Our main objectives in introducing the ePortfolio were to provide a framework for a more independent approach to learning and also introduce the concept of professional development (a key concept in audit, reflection and career progression). It is essential that our students are not only aware of the importance of portfolios in medicine and medical education but that they also gain practical experience in maintaining a portfolio.

We have devised an extensive training program to support students and give them experience of maintaining both a reflective portfolio and also a skills-based portfolio since they are likely to encounter both during clinical training. The underlying strategy that we employ aims to provide students with experience of using a portfolio to be able to plan, record and reflect in order to achieve designated learning outcomes.

Our early experience with the portfolio made us aware that although students are familiar with critical writing they have had few opportunities to gain experience in more personal reflective writing. The importance of reflection and the ability to write reflectively has been highlighted by the selection processes for junior doctors, as part of the 'modernising medical careers' (UK). In order to lay the foundation for our students understanding of reflection in practice we provide early exposure to reflective writing in the curriculum.

We have created a series of practical tasks designed to improve students' reflective writing. Each semester, students complete two reflective pieces linked to specific learning experiences. These progressively more demanding tasks include reflecting on early experiences of medicine and later address more challenging and complex issues encountered by the students.

The assessment of the portfolio work is mainly formative though students are required to demonstrate practical portfolio skills in summative Objectively Structured Practical Examinations (OSPEs). Formative feedback on the reflective pieces is provided by tutor review and peer review.

We plan to give details of the practical tasks outlining the aim of each task and how these tasks are integrated into the curriculum. We will also provide detailed information on our tutor feedback process and show some examples of the students work.

We have found that the students have benefited from a more formal and practical approach taken towards encouraging reflection. The improvement in the reflective process can be seen in the written reflections added to the portfolios. Staff have been impressed by the quality of the reflective writing and many students show a mature and self critical approach to their learning and experiences.

## Full text

The Bute Medical School has a web-based electronic portfolio (ePortfolio) in the Professional Development strand of our Honours BSc in Medicine curriculum. Our early experience with the portfolio made us aware that although students are familiar with critical writing they have had few opportunities to gain experience in more personal reflective writing. The importance of reflection and the ability to write reflectively has been highlighted by the selection processes for junior doctors, as part of the 'modernising medical careers' (UK). In order to lay the foundation for our students understanding of reflection in practice we have devised a series of reflective tasks (Table 1) to provide students with an opportunity to reflect on their own and others behaviour and to relate this to clinical practice.

Each semester, students complete two reflective pieces linked to specific learning experiences. These progressively more demanding tasks include reflecting on early experiences of medicine and later address more challenging and complex issues encountered by the students.

<b>Reflective Tasks – embedded in the Professional Development strand of the curriculum</b>		
<b>Pre-Honours (1st year)</b>	<b>Honours (2nd Year)</b>	<b>Honours (3rd Year)</b>
<p><b>Early experience in the dissection room</b> <i>Self reflection</i> To explore early feelings and emotions felt and relate these to expectations and to the behaviour of others.</p>	<p><b>Loyalty to colleagues – Bristol Heart Inquiry</b> <i>Reflection on judgement</i> To reflect on whether loyalty and sympathy for colleagues outweighs the commitment to question and act upon substandard practice?</p>	<p><b>The dissection room</b> <i>Reflection on reflection</i> To revisit an early reflection to identify changes in views or attitudes.</p>
<p><b>Your first patient</b> <i>Self reflection</i> To apply general observational and reflective skills on individual who has donated their body for your medical education.</p>	<p><b>Teamwork – Community Attachment Scheme</b> <i>Reflection on others</i> To reflect on the role and barriers of teamwork in community healthcare and relate this to individual patient care.</p>	<p><b>Communication Skills – simulated patient interview</b> <i>Self reflection</i> To reflect on the experience of being videoed when working with a simulated patient and the subsequent feedback given by peers.</p>
<p><b>First GP attachment</b> <i>Reflection on learning</i> To relate communication skills teaching to the real life experience of communication between members of a Healthcare team working in a GP practice.</p>	<p><b>A personal view of healthcare delivery – Community Attachment Scheme</b> <i>Reflection on practice</i> To reflect on your personal view of health within the community and whether healthcare is being provided to an effective level</p>	<p><b>My Honours Dissertation</b> <i>Self reflection, Reflection on learning.</i> To reflect on the experiences of working on your dissertation. Consider what you have learnt about yourself, how you dealt with any problems and how the experience will be useful in your future career.</p>
<p><b>Recognising Good Reflection</b> <i>Learning to reflect</i> To read examples of different reflective writing pieces and to review and assess a reflective piece from a peer.</p>	<p><b>Dilemmas</b> <i>Reflection on judgement</i> To reflect on difficulty of performing a task despite discomfort and self-doubt. Consider your own and others initial responses or decisions and the resulting consequences.</p>	
<p><b>Group Dynamics</b> <i>Learning from reflection</i> To reflect on the dynamics of your group and your role within the group.</p>	<p><b>Significant Incident</b> <i>Self reflection</i> To reflect on an event/issue that has occurred during your time at medical school that has significantly changed your view/ attitude about medicine or medical school and /or the way you relate professionally to other students.</p>	
<p><b>Second GP attachment</b> <i>Reflection on learning</i> To reflect and compare your different experiences in relation to communication skills.</p>		
<p><b>Group Dynamics</b> <i>Reflection on reflection</i> To reflect and consider if your role within the group has changed, whether you are more confident and how you see different personalities altering group dynamics.</p>		

**Table 1: Reflective tasks – embedded in the professional development strand of the curriculum**

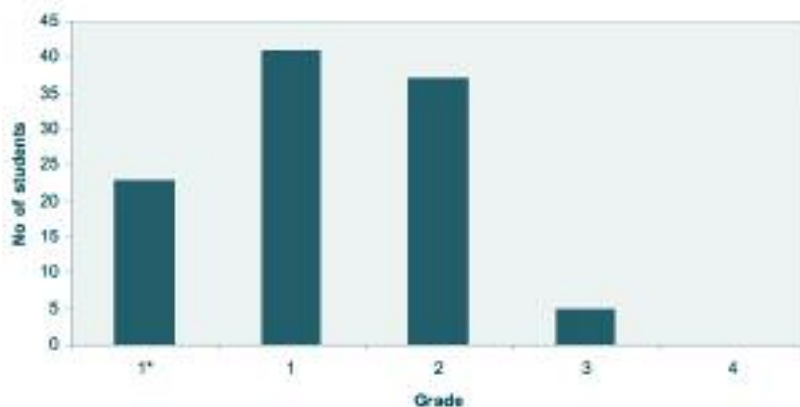
Formative feedback on the reflective pieces is provided by tutor review. In addition selected pieces are graded according to the level of reflection they achieve and feedback provided (Table 2). Exemplar pieces are displayed for students to read. Students may be asked to discuss their reflective pieces at an Objective Structured Practical Exam (OSPE) and in year 3 the Honours dissertation reflection is worth 5% of the dissertation mark.

Grading		
1 or 1*	<b>Shows deep reflection</b>	<i>questions own behaviour/emotions deliberates between different views of own behaviour and that of others clear evidence of standing back from the event recognition that personal frame of reference can change</i>
2	<b>Shows some reflection</b>	<i>contains a description of the event material is subject to some analysis willingness to be critical relevant and helpful detail is explored recognition of the overall effect of the event on self</i>
3	<b>Descriptive and contains little reflection</b>	<i>contains a description of the event not explored how the experience relates to their behaviour ideas are taken up without questioning them written only from their point of view one point is made at a time, these are not linked</i>
4	<b>Shows little effort to either record what happened or reflect</b>	<i>contains a brief description of the event no consideration is given to impact on behaviour doesn't answer the questions</i>

*Adapted from categories devised by J. Moon<sup>1</sup>*

**Table 2: Grades**

Results from grades allocated to a year 2 reflection show that 101 reflections from 106 graded achieved grade 2 or above. (28 students did not submit their piece for grading).



**Figure 1: Loyalty to colleagues - reflective task**

<sup>1</sup> Moon. J (2005), *Reflection in Learning & Professional Development, Theory and Practices*. RoutledgeFalmer

Recent evaluation showed that 76% [n=117] of 1st year students understood what was meant by critical reflection with 47% finding it easy to write. By the end of 2nd year 66% [n=68] students agreed that completing the reflective tasks had improved their ability to write reflectively with 46% [n=57] finding the feedback useful. However, only one third of those who agreed that the reflective tasks had improved their ability to write reflectively felt that the feedback had been helpful.

In conclusion we feel that students have benefited from a more formal and practical approach taken. The formative grading of reflective pieces offers a framework of feedback and guidance to the students however the majority feel they have gained more benefit from the regular opportunities provided by the structured reflective tasks. Staff, have been impressed by the improved quality of the reflective writing and many students show a mature and self critical approach to their learning and experiences.

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# PO16: Introducing an ePortfolio - the student and staff voice in healthcare

Huw Richards, Elizabeth Symonds, Rowland Gallop,  
University of Worcester

## Abstract

The University of Worcester has an established tradition of utilising eLearning methodologies in enhancing student centred learning/practice.

A paper based system for personal development planning has been in place for a number of years but with the growing utilisation of electronic systems for reflective practice and recording achievement within the health sector, a prospective strategy for the implementation of an ePortfolio system has been under development at the University of Worcester.

The utilisation of electronic methods to assist reflection are becoming encouragingly more prevalent within a variety of schemes of learning that have sought to promote student autonomy and personalised learning within the broader based healthcare arena. (Duncan-Pitt, Sutherland, 2006)<sup>1</sup>. Furthermore, the underlying constructivist pedagogy of ePortfolio use places students at the centre of their own learning experience and actively encourages initiative (Stefani, Mason and Pegler, 2007)<sup>2</sup>. The support of students' personal development and reflective learning has been one of the principle drivers informing the implementation of an ePortfolio system at Worcester.

The presentation/discussion will recount the reflections of the early stages of implementation of ePortfolios within the University of Worcester. We will explore professional, pedagogic and technical issues relating to the introduction of ePortfolios and report on lessons learnt during phase one of the implementation.

The project team's considerable expertise will promote a synergy between these areas and will be utilised as a departure point for further discussion/consideration.

The presenters will potentially utilise a range of materials to offer data from a range of 'user views', e.g. case studies, interviews, digital narratives.

The learning extracted through personal reflection will be utilised as rich data for informing subsequent developments.

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<sup>1</sup> L Duncan-Pitt, S Sutherland - *Journal of Radiotherapy in Practice*, 2006 - Cambridge Univ Press

<sup>2</sup> L Stefani, R Mason, C Pegler - *The Educational Potential of E-Portfolios*, 2007 - Routledge

# PO17: Using mobile technologies to create ePortfolios and personalised learning environments for 16 health and social care professions

Viktoria Sargent, Tom Holland, Gareth Frith, University of Leeds

## Abstract

ALPS (Assessment and Learning in Practice Settings) is a Centre for Excellence in Teaching and Learning (CETL) funded by the Higher Education Funding Council for England (HEFCE). ALPS is a regional consortium of collaborating HEI partners jointly committed to enhancing the student learning experience by stimulating and supporting innovation in the delivery of learning and teaching whilst ensuring that students graduating from courses in Health and Social Care (H&SC) are fully equipped to perform confidently and competently at the start of their professional careers. The ALPS collaboration includes the Universities of Leeds, Bradford, Huddersfield, Leeds Metropolitan University and York St John University as well as the NHS Yorkshire & the Humber, as the local Strategic Health Authority, which forms the major link to practice networks across the region.

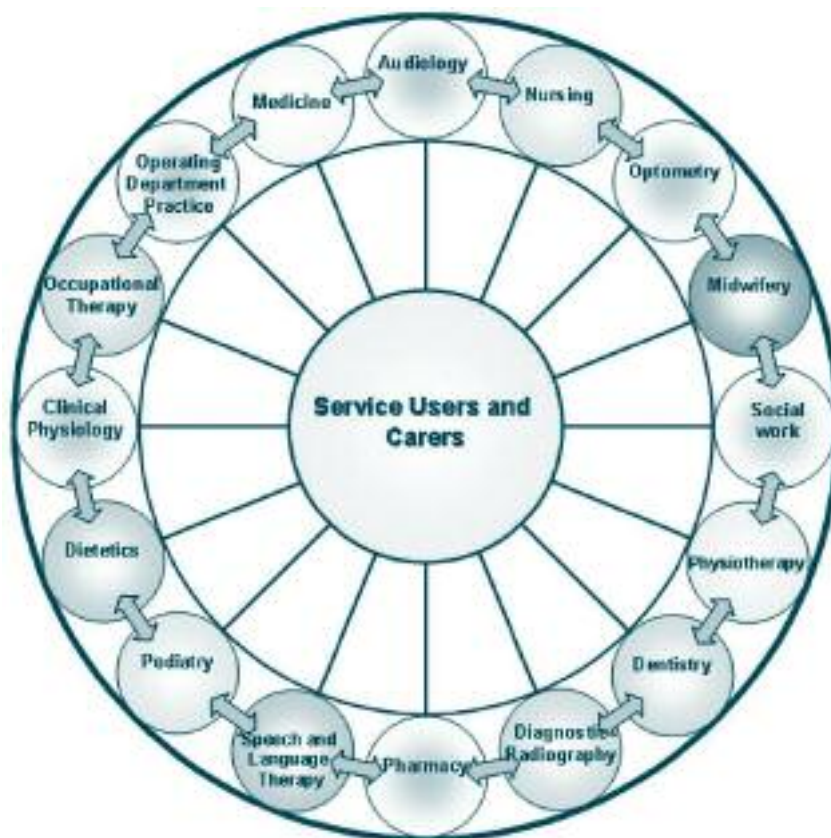
The ALPS Mobile Technologies Project is exploring the integration of mobile technology with work and assessments undertaken whilst health and social care students are out on practice placement. In order to do this, hand held windows-based mobile PDA devices are being distributed to undergraduate students, tutors and practice educators to collect reflective narratives and questionnaire data via online assessment forms or connection to multi media message boards over the practice placement period. The PDAs also have unlimited internet access and email access, allowing students on placement to stay connected to their University 'support network' of peers and tutors whilst they are out on placement.

Currently, the ALPS focus is on developing an inter-professional assessment tool which will enable the assessment of the core competencies of 'Communication', 'Team Working' and 'Ethical Practice' across professions whilst students are out on practice placements. The presentation will focus on the use of the PDAs in practice settings by students to create individual ePortfolios as part of their course assessment. We will also examine the potential to develop the technology into a personalised learning environment and examine some of the other projects around the country who are undertaking related work and working with ALPS.

## Full text

ALPS (Assessment and Learning in Practice Settings) is a Centre for Excellence in Teaching and Learning (CETL) funded by the Higher Education Funding Council for England (HEFCE). ALPS is a collaborative programme between five Higher Education Institutions in the North of England with proven reputations for excellence in learning and teaching in health and social care – the

Universities of Leeds, Huddersfield, Bradford and Leeds Metropolitan and York St John Universities. Also involved are NHS Yorkshire & the Humber, as the local Strategic Health Authority, whilst commercial partners MyKnowledgeMap, T-Mobile and mobile software specialist ecomment are providing an online infrastructure to support the programme. ALPS involves sixteen health and social care professions across the 5 Higher Education Institution partners. This is in line with the Department of Health recommendations (2001)<sup>1</sup> which state that pre-registration education providers should adopt a more flexible approach when training health and social care students for the workforce. Specifically they suggest that 'core skills, undertaken on a shared basis with other professions, should be included from the earliest stages in professional preparation in both theory and practice settings'.



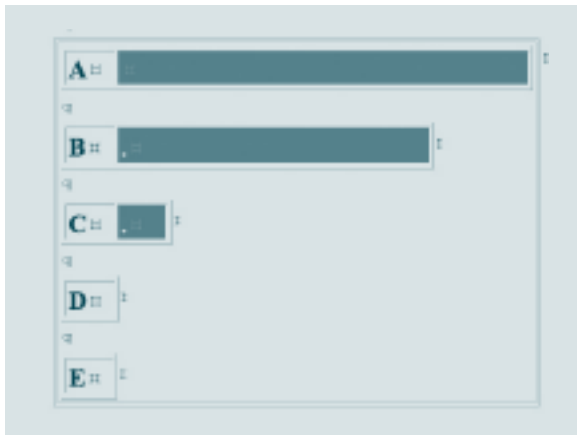
**Figure 1: The sixteen health and social care professions involved in ALPS**

The main aim of ALPS is to ensure that graduates from courses in health and social care are fully equipped to perform confidently and competently at the start of their professional careers. The future of IT provision is leading the move within educational institutions towards portability so it is necessary to examine the provision of course materials and assessments that will be compatible with this technology. As practice placements become harder to source a portable device equipped with assessment tools which encourage interprofessional feedback on a student's performance will be invaluable.

To provide a framework for interprofessional assessment ALPS has taken an innovative approach and, working with the sixteen professions involved in ALPS, has developed three common competency maps on the topics of 'Communication', Team Working' and 'Ethical Practice'.

<sup>1</sup> Department of Health. (2001). *Working Together - Learning Together: A Framework for Lifelong Learning for the NHS*. [Online] Available at: [http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_4009558](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4009558) (accessed 7 January 2008)

ALPS proposes that these chosen competences can be assessed not only by practice assessors from within their own profession but also interprofessionally by trained practice assessors from any of the professions involved with ALPS. In addition, it is hoped that these assessments will be carried out by a variety of stakeholders: as well as practice assessors and tutors, it is hoped to extend the ALPS assessment to involve student peers, service users and carers once a basic assessment template has been developed. This is in line with Boud (2000)<sup>2</sup> who suggests that assessments should be carried out by a variety of assessors, in order to provide effective feedback as a basis for reflection.



**Figure 2: A screen shot of the ALPS ethical practice competency map**

These maps are therefore now being used to create an interprofessional assessment tool which can be used in a variety of different formats (either electronically – on a mobile device such as a PDA or on a desktop computer, or on paper) with the ultimate aim that a professional from any one of the sixteen health and social care professions involved in ALPS could assess a student from any of the other fifteen professions using this tool.

With this aim in mind, the ALPS programme has provided 900 PDAs to health and social care students and their mentors/assessors which enable them to assess students' competences anytime and anywhere. Using the PDAs, students can complete assessment questionnaires, cover the core competences such as teamwork and communications, and reflect on their skills as they practise them – all in their placement or 'work' environment. The multimedia capabilities of the PDAs also allow them to record sound and video in real time, and upload to ePortfolios online, as evidence of their achievements.

<sup>2</sup> Boud, D. (2000). *Sustainable Assessment. Rethinking assessment for the learning society: Studies in Continuing Education*, 22,151-167



Figure 3: An example of an assessment form on one of the ALPS mobile devices

The benefit of ePortfolios for ALPS will be that the common competency maps developed for the interprofessional assessment of 'Communication', 'Teamwork' and 'Ethical Practice' and can be imported directly in to the ePortfolio as a skills framework. This will enable students to reflect on their work and gather evidence of achievement or competence against this specific ALPS competency framework (amongst others – e.g. evidence could also be presented to the portfolios required by professional regulatory bodies). The student can then submit specific elements of the collective evidence as part of their coursework. With the removal of paper and the introduction of a PDA, students can directly input into ePortfolios and capture feedback information as and when they most need to. Additionally, in a recent literature review, Sandars and Pellow (2006)<sup>3</sup> suggest that the benefits of using such devices include higher satisfaction for summary data, lack of data loss and access to clinical information software for students.

Tutors can download assessments to the PDAs for students to complete whilst working practice. Each assessment can be customised and personalised to individuals, to ensure that they are relevant to courses and learning styles. Students can also use the PDA to access learning resources from a central virtual learning repository. Finally, an assessor will use the PDA to log in to a secure area, connected to the university's Virtual Learning Environment teaching and business systems, to record the student's assessment and save it.

The overall consensus amongst tutors and workplace supervisors involved in the programme is that 'going mobile' is a good thing – tutors like the electronic diary which synchronises with the University system and have found it easier to make contact with their students, often using Short Message Service to arrange practice visits. The successful implementation of mobile technologies within this sector provides a clear indication of the advantages mobile technologies can bring to sectors where using a mobile device would prove more practical to collect evidence for an e-portfolio than using a desktop PC.

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<sup>3</sup> Sandars, J., & Pellow, A. (2006). *Handheld Computers for work-based assessment, lessons from the recent literature: Work Based Learning in Primary Care*, 4, 109-115.

# PO18: Practice placement meetings and personalised learning in radiotherapy clinical education

Louise Waywell, Bev Ball, Alison Smith, University of Liverpool

## Abstract

Structured and well-supported clinical portfolios are proving to be an excellent tool in helping to develop a diverse range of undergraduate radiotherapy students within the clinical environment.

Clinical tutors and academic staff from The University of Liverpool have worked closely to develop a streamline, concise and flexible portfolio. In practice, the design principles for the portfolio have proven to be fundamental in promoting student autonomy, reflective abilities and accountability. In addition, the portfolio has supported clinical tutors in quickly identifying gaps in learning pathways, encouraging earlier intervention and therefore increasing support mechanisms that are in place. This has been paramount with the increase in student numbers needed to meet the demand on cancer services.

The main tool used by the clinical tutors to identify areas of weakness has been the development of the practice placement summary form. Students need to identify their strengths and weaknesses in relation to key areas of development, providing evidence to support their claims. This is then discussed with their clinical tutor, facilitating the early intervention of additional support if necessary.

The University of Liverpool undergraduate portfolio aims to meet a range of learning styles, encourages continuous feedback, accountability and in essence sets some of the foundations for life long learning and evidence based practice. Graduates in their first post undertake a period of mentorship. This is a structured portfolio based, process requiring reflection and peer review. Early evidence indicated students who have completed the undergraduate clinical portfolio find the transition to mentorship unproblematic.

Changes currently taking place in the NHS and Health Professions Council mean that engagement in lifelong learning is now mandatory. If the foundations for this are instilled during training will this enhance the radiotherapy profession and the service provided?

## Full text

Structured and well-supported clinical portfolios have proven to be a fundamental tool in supporting a diverse range of undergraduate radiotherapy students within the practice placement environment. Baume<sup>1</sup> defines a portfolio as 'a structured collection comprising of labelled evidence and critical reflection on that evidence. A portfolio is part of the learning process, and it is presented to show evidence of that learning'. The University of Liverpool, radiotherapy programme first introduced a structured clinical portfolio in 1999 where it has been in continuous development since. Over the years it has changed to reflect up-to-date policy, professional and educational requirements, informed through continuous staff / student evaluations. The possibility of converting the portfolio to an ePortfolio is currently being investigated.

The construction of the portfolio meets a number of learning outcomes, including: development of professional autonomy; independent learning outside of formal institutions and lifelong learning (LLL)<sup>2</sup>. It is self directed by the individual students. Health care professionals, albeit academic or clinical, hold a duty of care to embed the principles of LLL at an early stage, ensuring knowledge, skills and competences are acknowledged and sustained. The skills and knowledge acquired through the undergraduate programme sets the foundations for individual continued development, whether on a personal or a professional level (CPD).

The practice placement elements of the degree programme are assessed via a portfolio of evidence, compiled over three years. This contains a range of patient case studies, worksheets, and reflective logs which are considered an essential part of the learning process. Schon<sup>3</sup> recognises the ability for professionals to reflect as pivotal to learning, either 'in' or 'on' action. Students are encouraged to make 2-3 log entries / week, reflecting on critical learning events in practice.

Radiotherapy students during practice placement are asked at the end of each long placement (3 weeks or more) to complete a SWOB (strengths, weakness, opportunities and barriers) analysis of their experience, using a placement summary form. This is completed in relation to: patient and carers; technical knowledge and skills; administration and skills or knowledge as part of the team. The placement summary is cross-referenced to the entries in their reflective learning logs. The main purpose of this process is to give the student an opportunity to draw on their reflective logs, to review their development during the placement. It encourages them to identify their own strengths and weaknesses during the placement and the learning opportunities that were given, so that they can develop an action plan for their next placement. Their logs are seen as a pathway for developing reflective radiotherapists of the future.

The student's written placement summary is discussed at a scheduled meeting with their clinical tutor, to which they are expected to bring their portfolio including the reflective logs. Both the clinical tutor and student go through the student's summary. The tutor can ask for exemplification of what they have written, which will necessitate the student referring to the relevant log entries<sup>4</sup>. Confidentiality is maintained as the tutors do not need to read the log entry themselves, but a record exists to facilitate discussion. The usefulness of this placement summary is to support clinical tutors in quickly identifying gaps in the learning pathways, allowing earlier intervention and ensuring appropriate support mechanisms are in place. This has been paramount with the increase in diversity and student numbers required to meet the demand on cancer services.

<sup>1</sup> Baume, D. (2001), *A Briefing on Assessment of Portfolios*, Learning and Teaching Support Network Generic Centre, York

<sup>2</sup> Candy, P.C. (1991), *Self-Direction for Lifelong Learning: A Comprehensive Guide to Theory and Practice*, San Francisco: Jossey-Bass

<sup>3</sup> Schon, D. (2002) 'From Technical Rationality to Reflection-in-Action', in Harrison, R., Reeve, F., Hanson, A. and Clarke, J. (eds.) *Supporting Lifelong Learning* (Volume 1) Perspectives on Learning, London, Routledge

<sup>4</sup> Strivens, J. (2006), *Efficient assessment of Portfolios*, The Higher Education Academy, report for the OU, <http://www.open.ac.uk/pbpl/resources/details/detail.php?itemId=460d156> accessed: 14/12/07

Annual evaluation of the undergraduate practice placement modules has shown the portfolio is an effective tool for enabling students to reflect on their knowledge and skills as well as their own rate of progression in the clinical environment. Many students find the portfolio time consuming, dislike keeping logs, claiming they do not know what to write, and strongly feel they are a waste of time. Staff thought that if the confidentiality of the logs was ensured, the students might be more inclined to complete them and be honest.

It was decided to undertake a survey of recent graduates (n=52) to see if their views on the portfolio had changed following a minimum of six months NHS employment. Information was obtained, by questionnaire (50% response) as to whether or not they were using their reflective skills to assist in further learning, and whether they found engagement any easier having completed the undergraduate portfolio. Graduates now thought the portfolio scheme was helpful when starting work as it assisted in ways to reflect and in the routine of maintaining a portfolio; more valuable than I realised at the time and my reflection has definitely improved. Their views had changed from when they were undergraduates.

Student learning during practice placement is a complex issue and cannot be defined solely just by action. Reflection on experience is the main underlying principle in gaining learning through a clinical setting. Portfolios and reflective journals can facilitate reflective learning that is central to professional practice. The reflective component in the portfolio is therefore preparing the undergraduates to enter the professional setting once graduated with an enhanced ability to reflect on their everyday practices. This should ultimately improve the individuals thinking and understanding thus impact positively on clinical effectiveness.

The introduction of Agenda for Change (AFC) and Knowledge and Skills Framework (KSF) in the NHS has emphasised the need for individuals to be able to produce a portfolio. If a professional wishes to expand their scope of practice in order to work at a more advanced level, a portfolio of evidence is required to demonstrate they can effectively meet the required knowledge and skills set out in their KSF job profile. In addition the Health Professions Council, the UK's registration body, has made CPD mandatory. This development is to be evidenced using a portfolio system that can be requested for inspection from 2008. Failure to provide evidence could result in removal from the register and termination of employment.

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