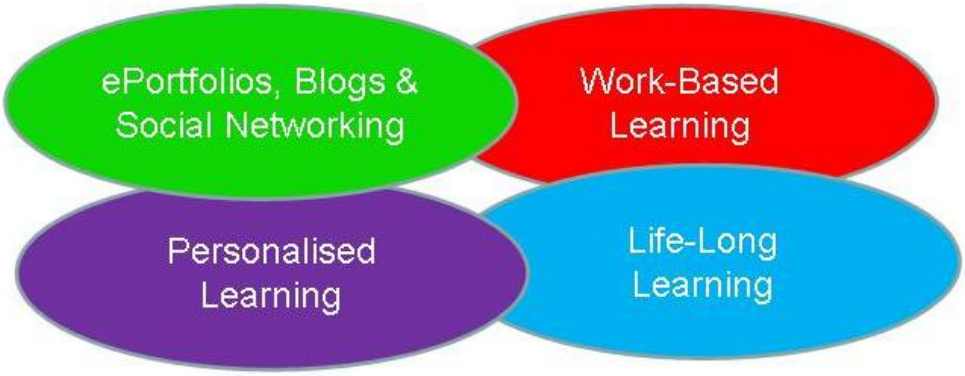
North East regional collaboration for personalised, work-based, and life-long learning: EPICS-2

JISC Final Report



EPICS
NE Regional ePortfolios & PDP Collaboration - www.epics.ac.uk

JISC

March 2009

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Online Resources

In order to make the outcomes of EPICS-2 more accessible, particularly for those with an interest in a specific part of the project, the project Website includes the following:

EPICS-2 Final Report page and Sub Reports http://www.epics.ac.uk/report

Executive Summary	A 2 page overview of EPICS-2.
Postgraduate Pathways Report	26 page report detailing our work to support personalised learning pathways for postgraduates across the region.
Mobile Technologies Report	19 page report detailing our work with JANET txt and alternatives for asynchronous technologies to support ePortfolios.
Case Study - Northumbria University	5 page case Study of use of ePortfolios to support Professional Development in Business Information Systems
Interoperability Case Study	Using LEAP2a as a mechanism for transferring real student data
Case Study - Sunderland University	Piloting of an ePortfolio with nursing students
Using XCRI-CAP	information sheet - Using XCRI-CAP for sharing workshop
JANET txt	information sheet - Integrating texting services using JANET txt
Federated learning opportunities	information sheet - Sharing postgraduate training opportunities on a regional basis

Additional Resources and Technical Information http://www.epics.ac.uk/report

EPICS-2 Project Summary	Presentation which gives an overview of the project.
focus-group.ppt	Presentation used during focus groups held to understand requirements - includes focus group questions and ground-rules
functional-requirements.doc	Functional requirements for the PGR proof-of-concept system
proof-of-concept.zip	Source code (PHP) for the proof-of-concept system
proof-of-concept.sql	Database table code (MySQL) for the proof-of-concept system
xcri-cap-feed-specification.doc	Specification for the XCRI-CAP feed used for the transfer of events details from training providers to a regional hub
web-service-specification.doc	Source code (PHP) for the prototype system for the transfer of training records
web-service.zip	Web service and SOAP message specification for the transfer of training records to systems such as ePortfolios

Software: An Updated version of ePET is available http://www.eportfolios.ac.uk/downloads

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1 http://www.jisc.ac.uk/whatwedo/programmes/elearningcapital/xinstit2.aspx

1.0 Executive Summary

Introduction

EPICS-2 was a collaborative project which made a significant impact on the development of support for personalised learning, work-based learning (WBL), and life-long learning. This was an18 month initiative, funded as part of the JISC e-Learning programme, ending March 2009. It built on the considerable success and deliverables of the EPICS project around technology, pedagogy and governance relating to ePortfolios and Personal Development Planning (PDP).

Key Outcomes

The project deliverables are of relevance to the achievement of the vision for more flexible approaches to learning and teaching, personalised and life-long learning (see HEFCE revised e-Learning strategy, 2009).

Our case studies advanced understanding of ePortfolio/PDP; **embedding in the context of the curriculum** proved vital for engagement.

The project provides valuable insights into incorporating **blogging and social networking** into institutional systems and the interplay between these and the use of external sites in learning.

We developed a working model for the cross-institutional sharing of learning opportunities for **postgraduate researchers**, using XCRI-CAP, which is likely to have wider applicability.

Work on **interoperability standards for lifelong learning** complimented 2 JISC-CETIS projects, shaping national standards.

We learnt valuable lessons on technology & user acceptance from work on supporting learner-owned mobile devices (**JANET txt**).

The project contributed to the community of practice with **Regional Forum** events and other activities. EPICS-2 also contributed to the **JISC community**, working with other initiatives (COMPORT, Leap2a, XCRI, JANET txt, JISC RSC Northern & JISC InfoNet).

There are significant **continuity activities** with use of ePortfolios/blogs being rolled out beyond the 600+ learners directly involved in the project. EPICS-2 was also a building block for other innovative initiatives including "**Dynamic Learning Maps**" and "**ELLI in HE**".

The **ePET portfolio,** including developments from EPICS-2, is now freely available to the JISC community.

ePortfolios, Blogs and Social Networking

Blogs and elements of social networking were incorporated into an existing ePortfolio ('ePET'), with integrated support for evidencing structured outcome/skill sets. This was piloted in a range of programmes at Newcastle University, Gateshead College (JISC COMPORT project) and Sunderland University. Northumbria University also contributed a case study using the Blackboard portfolio.

High levels of engagement were seen in some programmes, with effective use of blogging to evidence professional standards and use of community areas for discussion. The project evaluation identifies factors which influence uptake and provide evidence that some learners found ePortfolios/blogs useful for reflection and staying in touch whilst on placements / WBL.

There was a distinction in some cases between more formal use of the institutional portfolio/blog for 'professional reflection' shared with tutors and peers and informal discussion limited to a sub-set of peers on external social networking sites. Professionalism was an issue raised in both contexts. Further details at www.epics.ac.uk

Personalised learning Pathways for Postgraduates

We developed a working model for sharing training opportunities for Postgraduate Researchers (PGRs) amongst the 5 universities in the North East of England.

The aim is to widen the range of opportunities for PGRs (including part-time and distance PGRs). The model built on a broad consultation process involving the training providers and PGRs across the region.

Executive Summary (cont.)

Outcomes of this work include:

- a "proof of concept" regional information hub which aggregates feeds of information from multiple training providers, presenting them to PGRs as a single navigable, searchable menu of events from across the region.
- Specifications for event feeds, based on the **XCRI** format and a **Web Service** to allow training and attendance records to be sent from a training provider and be imported into students' ePortfolios or other systems.

Regional Forum

The Regional forum was established in 2004 to share good practice and help develop capacity for PDP and ePortfolios in the North East. Forum events are open to those outside the project partners. Five Forum events supported by the EPICS-2 project were hosted at the partner institutions.

Life-long Learning

Newcastle University's previous work on ePortfolio interoperability led to the EPICS-2 project being extended to allow us to take a lead role in the development of the emerging LEAP2a standard, through the PIOP project. Newcastle University has been able to successfully implement the LEAP2a standard in the ePET ePortfolio, and has taken a lead role in the further development and refinement of that standard.

Mobile technologies for WBL

We researched a number of options to allow students to add content to their ePortfolio through mobile technologies, and successfully piloted a system using **JANET txt** that allowed undergraduate students at Newcastle University to add blog content via text message.

ePET Portfolio

The ePET ePortfolio system has been updated during the course of the EPICS-2 Project. A refined version of this is now available as an online demonstration, or as a download on the ePET project website (www.eportfolios.ac.uk).

Conclusions

The project undertook a range of activities to advance our support for personalised, work-based learning and life-long learning. The outcomes are of relevance to the achievement of the vision for more flexible approaches to work-based learning and life-long learning (see HEFCE revised e-Learning strategy, 2009) and the effective delivery of PDP (see revised QAA guidelines for PDP, 2009) .

Related Publications

Cotterill SJ, Horner P, McDonald AM, et al. **A Blog for learning: blogs and social networking with explicit support for skills and learning outcomes, within an integrated ePortfolio.** Proc. ePortfolios, identity and personalised learning in healthcare education. p91-6, 2008 Newcastle. (ISBN 978-1-905788-66-2)

Edney M, Cotterill SJ. **Regional solutions for linking postgraduate training systems and ePortfolios.** Proc UK GRAD YNE Hub 'eResearcher' Conference, Durham, 2008

Horner P, Cotterill SJ. **Meeting the ePortfolio Interoperability Challenge.** Proc. ePortfolios, identity and personalised learning in healthcare education. p124-7, 2008 Newcastle.

Cotterill SJ. **Learning with Web 2.0: hype or reality?** Proc. Festival of Learning 2008, Carlisle

Cotterill SJ, White A, Currant B. **Using Web 2.0 to support PDP** PDP-UK, Centre for Recording Achievement, 2007, 12: 7-8.

Clark W and Adamson J (2008) **'Assessment of an ePortfolio: developing a taxonomy to guide the grading and feedback for Personal Development Planning'**, Practitioner Research in Higher Education (in press).

Cotterill SJ, Horner P, Gill S, et al. **Beyond the Blog: getting the right level of structure in an ePortfolio to support learning.** Proc. ePortfolios 2007, Maastricht.

Further Information & Resources

http://www.epics.ac.uk

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2.0 Background

EPICS-2 included a broad range of activities which related to national, regional and institutional requirements around personalised learning, support lifelong learning and work-based learning.[2,3,4] The project built on the considerable success of the EPICS regional ePortfolio project[5,6] which was funded as part of the JISC 07/04 Distributed eLearning Programme (DeL). The outcomes of this initial EPICS project spanned technology, pedagogy and governance related to ePortfolios to support personal development planning (PDP) and case studies to develop and model the transfer of life-long learning data between institutions. This itself drew on regional interest in PDP and a body of work in developing and implementing ePortfolios and systems support for PDP funded by JISC, HEFCE and DfES.[7]

3.0 Aims and Objectives

1. **Develop expertise and capacity through partnership and collaboration:** to support the uptake and effective use of PDP/ePortfolios across the region by:
    - Building on the Regional Forum established in the first EPICS project, the project will fund new Forum activities including focussed support for the aims and objectives of this project. The Forum, open to members beyond the partners of this project, will continue to be an effective vehicle for the sharing of good practice and contributing to the development and implementation of PDP/ePortfolios across the region.
    - Recruiting further subject areas in each of the existing partner sites.
    - Engage with new partners from the FE and other sectors, as possible and appropriate (dependent on their priorities, affiliations, pedagogies, processes and technologies).

2. **Develop and improve support for personalised learning and work-based learning** by:
    - Large-scale pilots to evaluate the use of ePortfolio to support personalised learning pathways, including use and extension of software developed in previous JISC projects.
    - Undertaking a review of technologies and associated pedagogy used to support Work-Based Learning in the North East, to share and promote good practice regionally & nationally.
    - Large-scale pilots to evaluate the use of ePortfolios, Blogs and Social Networking to support learning and PDP
3. **Supporting mobility and life-long learning** by:
    - Embedding personal learning with mobile technologies, including the development of solutions for mobile portfolio/blogging with asynchronous connection to Web-based portfolios. This will complement existing work with mobiles undertaken by CETL4HealthNE projects, which has concentrated on synchronous Wifi connection to online portfolios.
    - Embedding the transfer of real data from undergraduate to postgraduate

[2] The Future of Higher Education, Department for Education and Skills, 2003.
[3] Leitch Review of Skills, HMSO, 2006. http://www.hm-treasury.gov.uk/leitch_review_index.htm
[4] Burgess Report, Universities UK 2004.
[5] The initial EPICS project: http://www.epics.ac.uk/?pid=173
[6] Horner AP, Cotterill SJ, Ingraham B, Gill S, et al. EPICS – outcomes of a regional ePortfolio initiative to support life-long learning. Proc. ePortfolios 2006, Oxford.
[7] See: http://www.eportfolios.ac.uk

ePortfolio using methodologies developed in the first EPICS project (learning lessons from transfer of real data).

- Pilot the transfer of real ePortfolio data between FE and HE, working with the JISC funded ComPort project[8].
- Producing ePortfolio exemplars using 2 or more identity management systems (OpenID, Liberty Alliance, Shibboleth/CAS). This will be complementary for other identity management initiatives planned in the region.
- Engaging with emerging specifications and standards to facilitate the robust and efficient flow of ePortfolio and PDP data between institutions, including participating in the JISC-CETIS Portfolio SIG. Development work will support the IMS ePortfolio standard.

4. **Evaluating the impact of the project:** evaluating the impact of ePortfolios and PDP in the region:
    - Evaluating the impact of the project with new partners
    - Evaluating the efficacy of ePortfolios in the new pedagogic areas (personalised learning pathways, blogs, WBL etc.)
5. **Maximising the impact of the project:** documenting and disseminating the outcomes of the project and its evaluation and engaging with other high impact projects within the region and wider:
    - Developing and delivering a detailed dissemination strategy (in conjunction with other funded projects and the JISC) which will include workshops with the partner sites (embedding), and wider audiences (understanding/awareness) within and beyond the region
    - Making an updated version of the ePET portfolio[9] freely available to the JISC community.
    - Adding value to institutional and other initiatives (including CETLs) in the region by ensuring that this project complements institutional requirements

4.0 Methodology

4.1 Project Structure

The project was divided into a number of Work Packages and Case Studies which are designed to meet the aims and objectives of the project:

- Project management and set up (WP1)
- Developing expertise and capacity through partnership and collaboration (WP2)
- Large-scale pilots of ePortfolios, blogs and social publishing (WP3)
- Review of technologies and associated pedagogy used to support Work-Based Learning (WP4)
- Supporting personalised learning pathways for postgraduate students in a regional context (WP5)
- Supporting life-long learning (WP6)
- Identity management exemplars (WP7)

[8] ComPort: A comparative study of ePortfolio implementation in WBL. http://www.jisc.ac.uk/whatwedo/programmes/programme_elearning_capital/el_heinfe/comport.aspx
[9] http://www.eportfolios.ac.uk/ePET

- Personalised learning environments – mobile technologies (WP8)
- Evaluation (WP9)
- Dissemination and documentation (WP10)
- Updated version of the ePET portfolio freely available to FE/HE community (WP11)

The project employed Case Study methodologies and mixed methods for evaluation (questionnaires and focus groups).

4.2 Design of Blog and Community Publishing to Support Personalised Learning

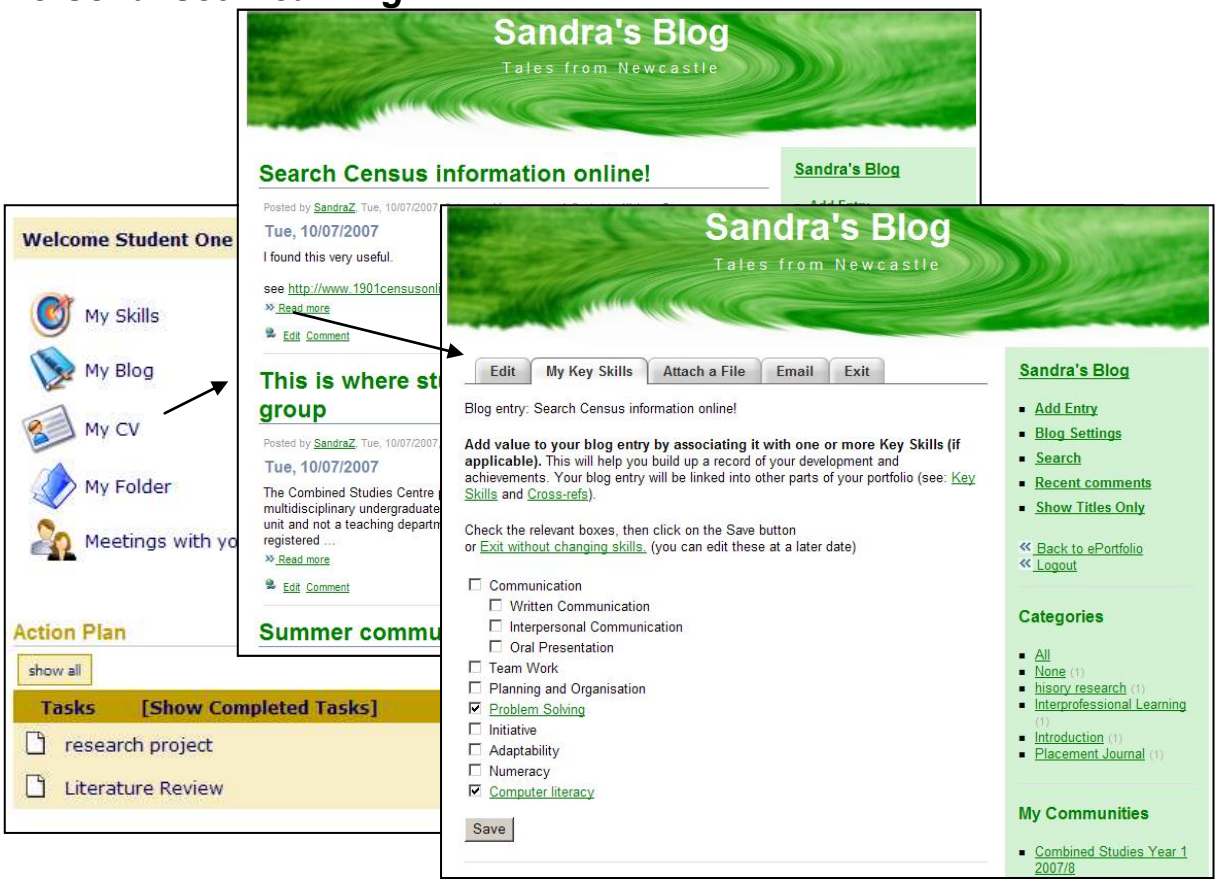

Figure 1. Unstructured blog linked to structured outcomes/skills

We designed a blog which has explicit support for structured learning outcomes / skills, with the learner able to opt to share blog entries with defined communities[10,11] This was integrated within the ePET portfolio so that learners could blog their achievements and use them to evidence one or more outcomes/skills (Figure 1).

[10] Cotterill SJ, Horner P, Gill S, et al. Beyond the Blog: getting the right level of structure in an ePortfolio to support learning. Proc. ePortfolios 2007, Maastricht.

[11] Cotterill SJ, Horner P, McDonald AM, et al. A Blog for learning: blogs and social networking with explicit support for skills and learning outcomes, within an integrated ePortfolio. Proc. ePortfolios, identity and personalised learning in healthcare education. p91-6, 2008 Newcastle. (ISBN 978-1-905788-66-2)

Whilst there is good practice for use of blogs in education a common shortfall is that learners often don't use tagging (categorisation) or use it inconsistently. This can be problematic if a sub-set of blog entries needs to be used for a specific purpose, such as assessment. It was our rationale to link structured outcome / skill sets into an unstructured blog, with blog entries automatically cross-referenced in the 'My Skills' area of the portfolio.

Personalisation

The ePET portfolio has a high level of programme-level customisation. To support the personalised learning agenda we added the unstructured blog (above) and greater customisation for individual learners (Figure 2) in a number of ways:

- Ability to add personal outcomes/skills to those of the programme and have these linked into the blog and 'My Skills' section of the portfolio
- Personalised look and feel for the blog
- Personalised title and strap line for the blog
- User specified screen name in place of student-number / username
- A component to encourage reflection on cross-module learning

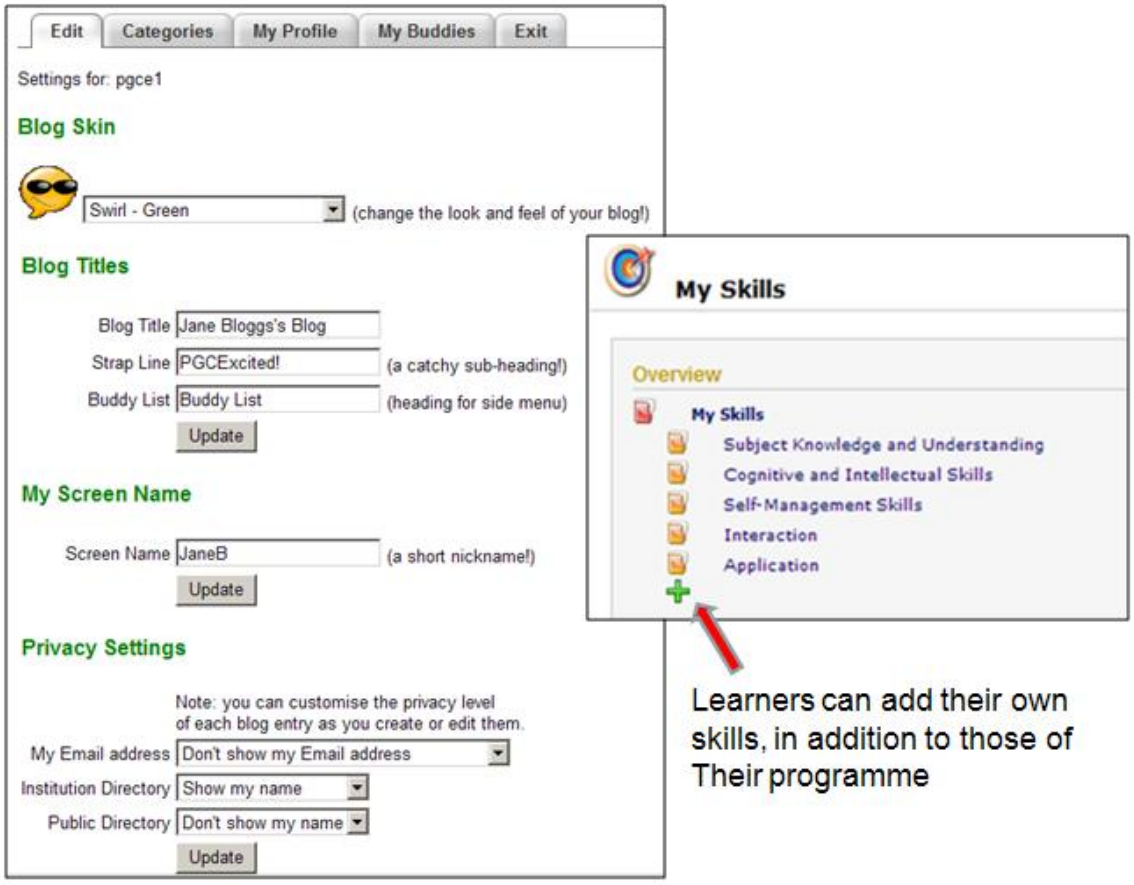

Figure 2. personalisation features in ePET

Uptake of personalisation features by PGCE students (see 5.4 below):

Customised blog title (default was name + 's Blog):	79%
Blog 'strap line'	75%
Customised 'blog skin'	51%
Customised screen name (default was username)	38%

5.0 ePortfolios, Blogs & Social Publishing

5.1 Overview of Case Studies

#	Case Study	Description
CS1	Combined Studies (Newcastle University)	Portfolios to support personalised learning pathways and encourage reflection on cross-module learning.
CS2	Speech and Language Sciences (Newcastle University)	ePortfolio/blogs/social publishing to support WBL
CS3	PGCE (Newcastle University)	ePortfolio/blogs/social publishing to support learning & WBL
CS4	Education (Gateshead College)	ePortfolio/blogs/social publishing to support learning
CS5	Overseas Nursing & Clinical Skills (Sunderland University)	ePortfolio to support learning & WBL
CS6	Employability Skills (Northumbria University)	ePortfolio to support employability & LLL

N.B. Case Study codes differ to those in the original project proposal. CS3 & CS6 were additional case studies, not in the proposal and the scope of CS5 was extended from nursing to also cover clinical skills.

5.2 Combined Studies (Newcastle University)

The ePET portfolio was customised and piloted with students on the Combined Studies programme at Newcastle University. The programme allows students to select their learning from a diverse range of subjects and to try new ones, without committing to three full years in a single unknown subject area. The portfolio was piloted for a full academic year and evaluated in its ability to help support learning and PDP in a cohesive way for students learning across a potentially diverse range of subject areas.

Figure 3. ePortfolio view for a Combined Studies student

Evaluation Summary:

- Cohort: students commencing October 2007 (n=119)
- Modest engagement: av. 28 logins per student in 18 months (range 1 -168)
- Minimal engagement prior to assessed assignment in Semester 2, Year 1
- Mostly used CV/skills (assessed), limited use of cross-module learning log

☺ "It helped me see the skills I was using that my modules shared and sort of helped me develop those further".

☹ "too time consuming"

☹ "didn't really understand what I needed to put down as evidence"

☺ "I had to write a CV and it helped me think about what modules and what aspects of each module I enjoy, while writing about them".

5.3 Speech and Language Sciences (Newcastle University)

Speech & Language Sciences (SLS) are part of the School of Education, Communication and Language Sciences at Newcastle University. The ePET portfolio was adapted for SLS curricula requirements and piloted with undergraduate and MSc students in 2005/6. This case study will involve extending the ePortfolio for SLS to include greater personalisation and new 'community publishing' facilities (WP11). These new features will be evaluated in the context of WBL, with students who undertake a number of placements during their studies.

Figure 4. ePortfolio view for a Speech and Language Sciences student

Evaluating use of ePortfolio/blog to support placement learning:

- Cohort: BSc & MSc students (all years) from October 2007
- Medium engagement: av. 30 logins per student (range 2 -142)
- Steady use over time; recording clinical goals, placements and clinical skills
- Virtually no sharing of b log entries in the community areas

☺ "being able to put in my placement goals, and have a format to review my progress in these at each stage".

☹ "I find I do not have enough time to use the ePortfolio regularly."

☹ "You had to be careful to tick a load of boxes saying that your blog was private because it could get posted in the community blog otherwise"

☺ "Ability to put in different placements into the portfolio alongside your goals and whether you achieved them. Ability to make blogs private to evaluate yourself without others seeing".

5.4 PGCE (Newcastle University)

Students on 13 Secondary PGCE programmes used the ePortfolio from September 2008, following successful piloting with a single subject area (English with Drama) in the previous academic year. The programme settings were configured to support the Quality in Teaching Standards (QTS) as defined by the Teaching and Development Agency for Schools.

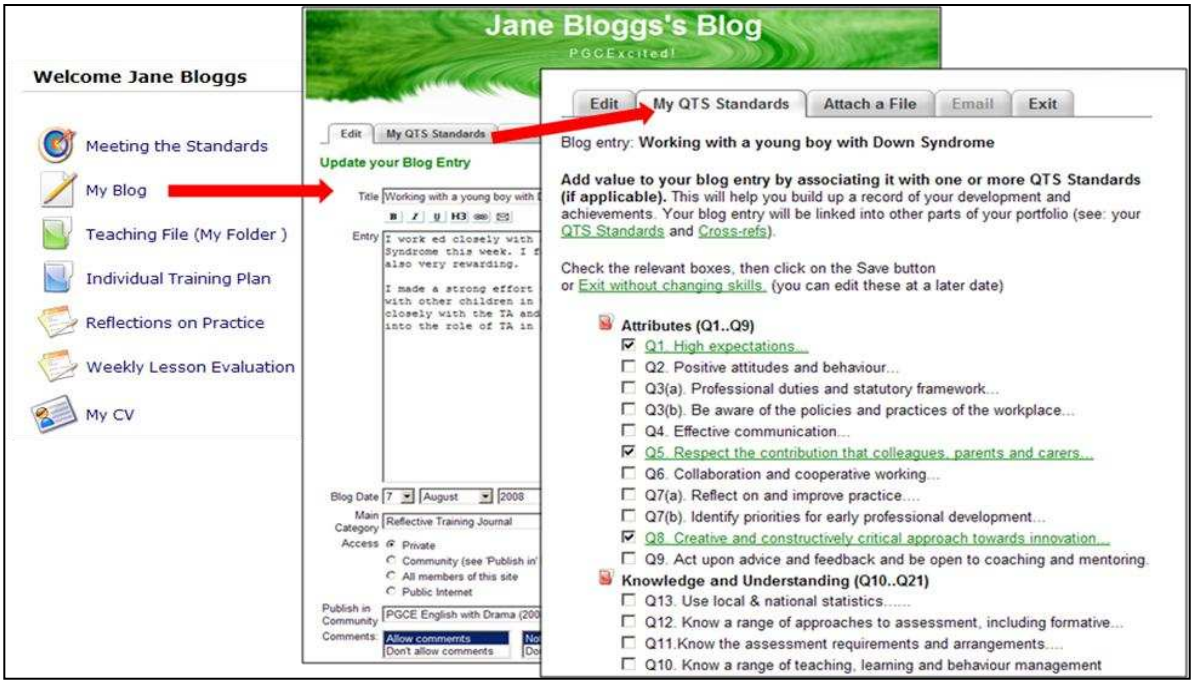

Figure 5. ePortfolio and blog to evidence QTS standards

Evaluation summary: Cohort: PGCE students (all subjects) from Sept 2008 (n=156)

- High engagement: av. 41 logins per student (range 4 -178) in Semester 1, 1096 files uploaded
- Good use of blog: av. 16 entries. Many linked to Skills av. 76 links to QTS standards
- Many blogs published to community areas: 825 entries, 262 comments

☺ "What I do like about the ePortfolio is that it is designed for the purpose of building a skills repertoire, and allows you to connect thoughts and experiences to the Key Skills."

☺ "good for staying in touch whilst on teaching practice".

☹ "It's not very clear exactly what parts of it are mandatory and what parts are optional"

☹ "It is tedious having to fill in a weekly blog especially when I have many other things to do."

☺ "the ePortfolio is well set-out with regards to being able to link blogs to the skills pages. The ePortfolio in a sense guides you through the necessaries".

5.5 Education (Gateshead College)

The ePET portfolio was used to support Education at Gateshead College, and was evaluated as part of the JISC funded COMPORT project. The standard tools available within ePet were adapted to match as closely as possible to the existing paper-based portfolio used by students studying towards their certificate of education. At the end of the project, we transferred some anonymous student data from Gateshead College to Newcastle University using the LEAP2a standard. The case study discusses the impact of introducing the electronic portfolio onto this course, and the feasibility of using LEAP2a as a method of transferring small numbers of student records between institutions.

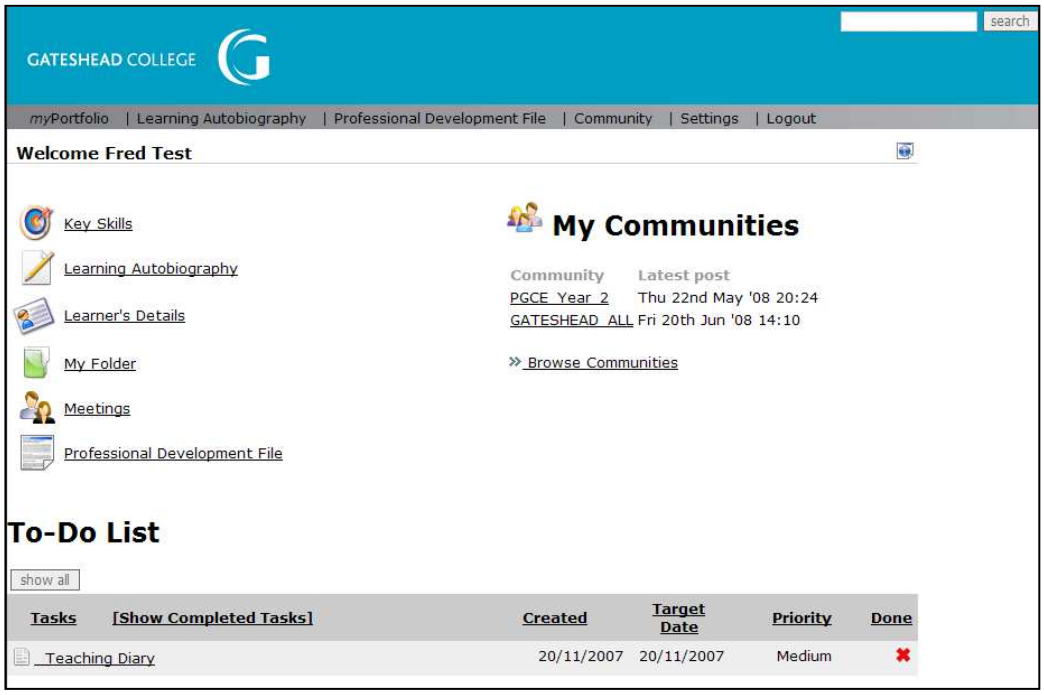

Figure 6. ePortfolio view for a PGCE student at Gateshead College

Note: the use of the ePortfolio at Gateshead College was primarily evaluated as part of the JISC COMPORT project. For further details see: http://comport.gateshead.ac.uk

☺ "It was really good to be able to immediately reflect on a good session – motivational".

☹ "There is something lost without face-to-face. This group is very supportive and, yes, the blog can help encourage dialogue, but we do it anyway face-to-face"

☺ "A good opportunity to voice opinions".

☺ "It was great to be able to put down your thoughts without thinking 'is this academic writing?' You could just let the thoughts flow".

☹ "We're complicating something that doesn't need to be complicated – reflection IS important – but all I need is a diary."

5.6 Overseas Nursing & Clinical Skills (Sunderland University)

During the 2007-2008 academic year, the University of Sunderland piloted a customised version of the ePET ePortfolio with students from two courses in the Faculty of Applied Sciences. The ePortfolio was trialled by several iterations of students on the Clinical Skills and Overseas Nursing Programmes. These were two very diverse courses, attracting students from very diverse backgrounds and with quite different needs and levels of ICT literacy. The Overseas Nurses' Programme teaches student nurses from across the world in a work-based UK healthcare setting. Some students had very limited experience of using computers before arriving in Sunderland, and others found the idea of reflective learning to be quite alien to them. Clinical Skills is a short course aimed at nursing and allied healthcare professionals, and although most students are from the UK and have used ICT systems previously, many are mature students and we found that many had quite limited ICT experience.

- An established paper-based portfolio for reflection and assessment
- ePET portfolio adapted to replicate parts of the paper portfolio
- Low uptake – students had option to use either paper or electronic
- Ongoing interest from programme leaders to work on an ePortfolio approach

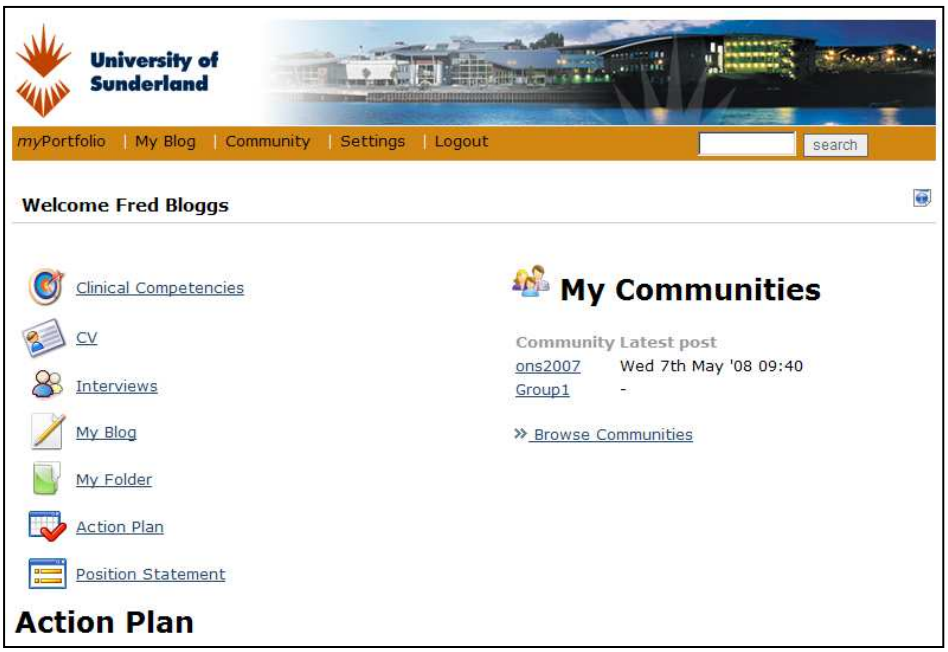

Figure 7. ePortfolio view for a Overseas Nursing student at Sunderland University

Feedback from the students and academics that this impacted upon was quite positive, but uptake of the ePortfolio was very limited. The short duration meant that students did not have enough time to learn how to use the ePortfolio effectively, and the number of different cohorts of students who studied these courses meant that it was not always possible to provide training sessions. A lack of previous ICT experience provided an overwhelming barrier to uptake for both courses. One student in particular had no previous ICT experience, having only used a computer briefly before beginning to study on the Overseas Nurses' Programme. In Clinical Skills it was found that there was a preference for the paper version, particularly among mature students, many of whom stated ICT experience as a key reason for this.

A more detailed report on this Case Study is available at: http://www.epics.ac.uk/report

5.7 Employability Skills (Northumbria University)

This Case Study involved the use of an ePortfolio (Blackboard CMS) to support learning on an employability skills module. It was an action research project undertaken with undergraduate students at level 5.

Context: the module helps prepare students for the recruitment process for both year-long placements and permanent employment.

Aim: encourage students to adopt a deep, active approach to learning, and thus take responsibility for their own learning.

Methods: In order to ensure consistency and reliability a taxonomy[12] was developed by the tutors to facilitate the assessment process. This taxonomy evaluated different aspects of the ePortfolio and was designed to map across to the learning outcomes for the module. Not only did the taxonomy provide criteria against which to judge the portfolio contents, it also ensured consistency of feedback to students.

Outcomes: The use of the ePortfolio format encourages reflection and self-evaluation and facilitates formative feedback by peers and tutors, as well as providing a repository for evidence of skills and capabilities from which appropriate material can be selected to support specific job applications.

> ☺ "This module has really helped me prepare myself and my documentation for when I start to apply for placement jobs ... Once I had finished my CV I was really impressed with it. I felt proud to see all my achievements etc listed out, as this is something I wouldn't normally do"..."

For full details on this Case Study see the self-standing report:
http://www.epics.ac.uk/report (5 pages)

Case Study: use of ePortfolios to support Professional Development in Business Information Systems at Northumbria University

A report produced for the North East regional collaboration for personalised, work-based, and life-long learning (EPICS-2)

http://www.epics.ac.uk

Report authors: Wendy Clarke, Jackie Adamson

northumbria UNIVERSITY

Full EPICS-2 project report and acknowledgements:

http://www.epics.ac.uk/report

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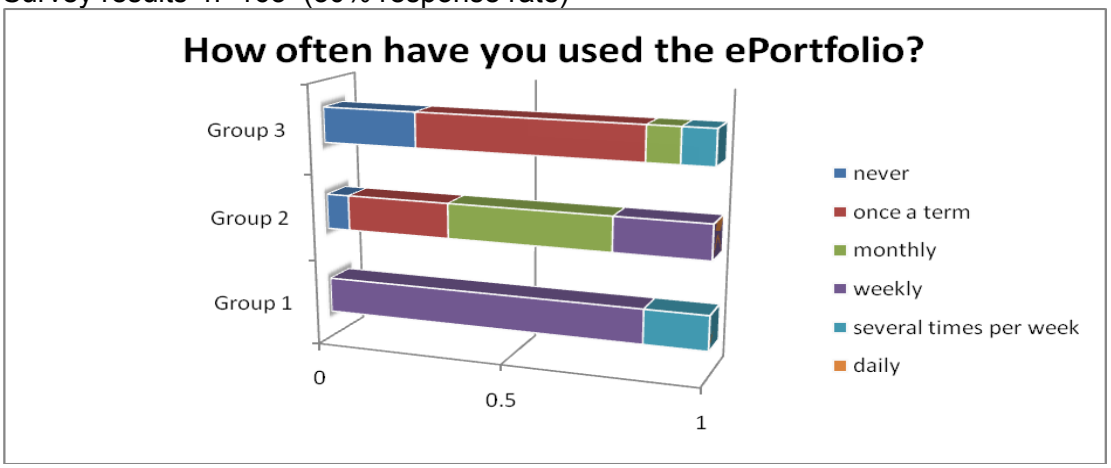
[12] Clark W and Adamson J (2008) 'Assessment of an ePortfolio: developing a taxonomy to guide the grading and feedback for Personal Development Planning', Practitioner Research in Higher Education (in press).

5.8 Factors related to engagement with ePortfolio / blog

Students from 16 undergraduate and taught postgraduate programmes at Newcastle University (Case Studies 1 to 3) were asked to complete an online questionnaire, regardless of whether they had used the ePortfolio, near the end of Semester 1, 2009. This included statements related to common themes that have been linked to engagement with PDP in other case studies. Programmes were grouped according to their overall level of engagement (modest, medium and high engagement).

Survey results n=163 (30% response rate)



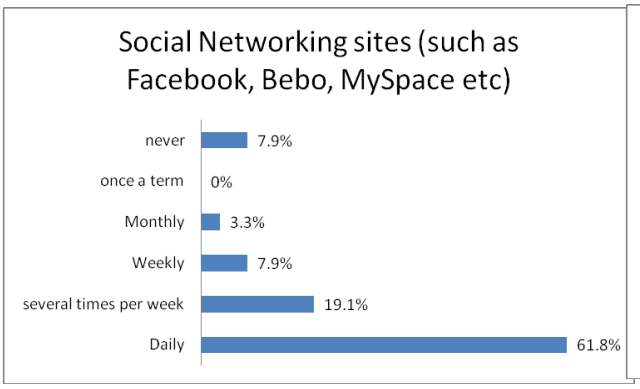
	Group 1	Group 2	Group 3
never	0	6%	25%
once a term	0	28%	58%
Monthly	0	42%	9%
Weekly	84%	24%	0
several times per week	16%	0	8%
Daily	0	0	0

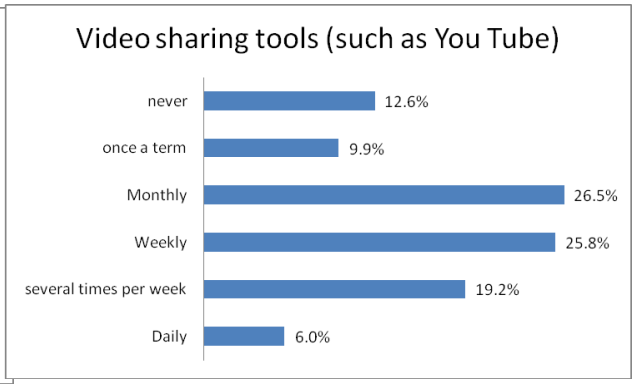
	Group 1 **High Engagement**	Group 2 **Medium Engagement**	Group 3 **Modest Engagement**
I have a clear understanding of the purpose of the ePortfolio	87%	74%	58%
I have a clear understanding of how the ePortfolio is used in my programme	91%	76%	42%
I received adequate information on how to use the ePortfolio	58%	50%	58%
I had a clear understanding of the skills being evidenced in the ePortfolio	66%	65%	17%
The skills included in the ePortfolio are important in studying for my degree	69%	94%	25%
The skills included in the ePortfolio are important for my longer-term career	59%	94%	33%
The ePortfolio is important for my programme	75%	82%	33%
Course handbooks and study guides refer to the ePortfolio	58%	65%	25%
Teaching staff regularly refer to the ePortfolio	84%	41%	33%

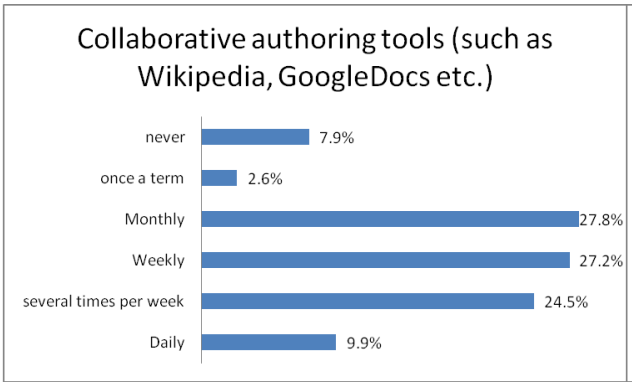
5.9 Use of Web 2.0 and other technologies

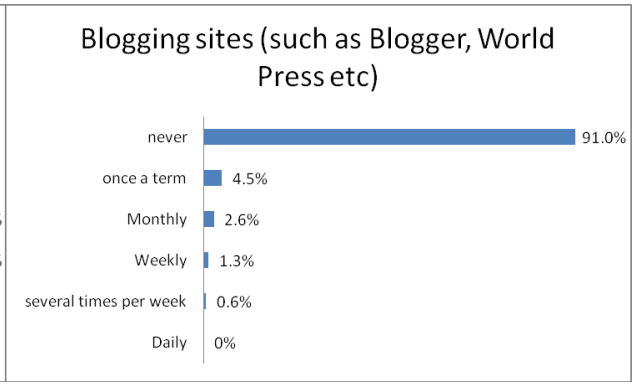
In order to better understand the baseline use of technologies by students in Case Studies 1 to 3 the online questionnaire included questions on their general use of technologies. The response rate to the questionnaire was 30% (n=163) so it is possible that results are not fully representative.

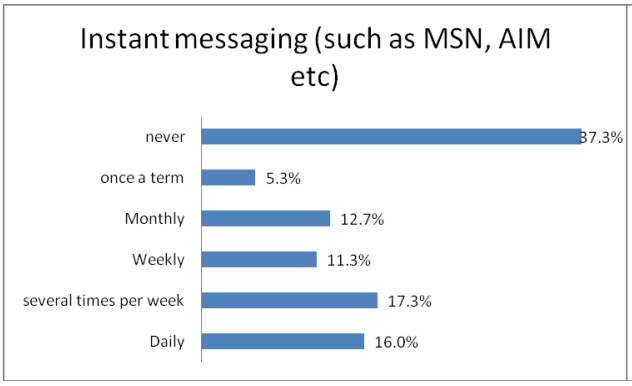
How often do you use the following <u>for any reason</u> (social, fun, work/study):

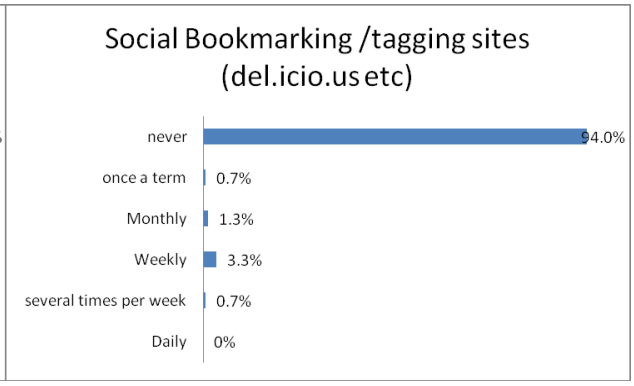




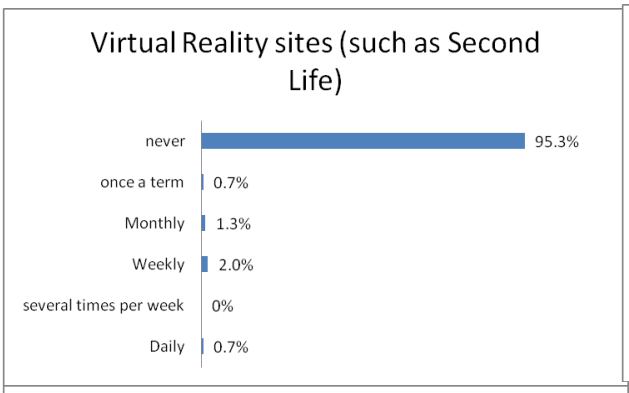


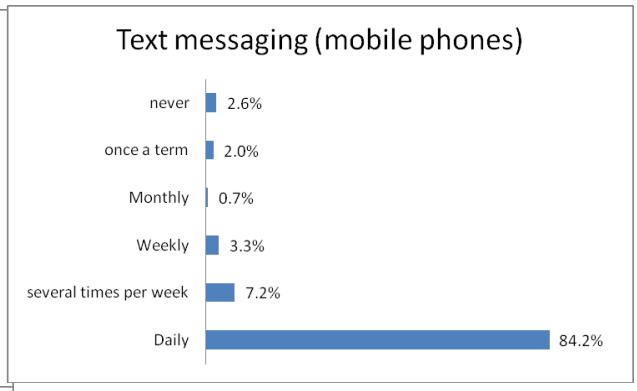


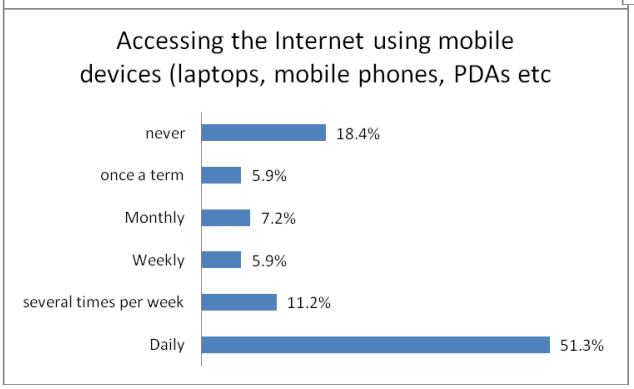




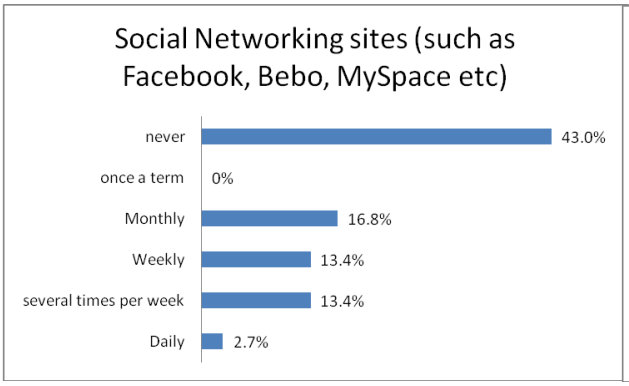
How often do you use the following for any reason (social, fun, work/study) continued…

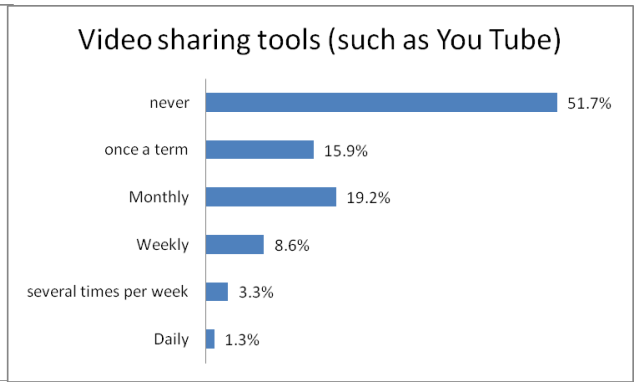


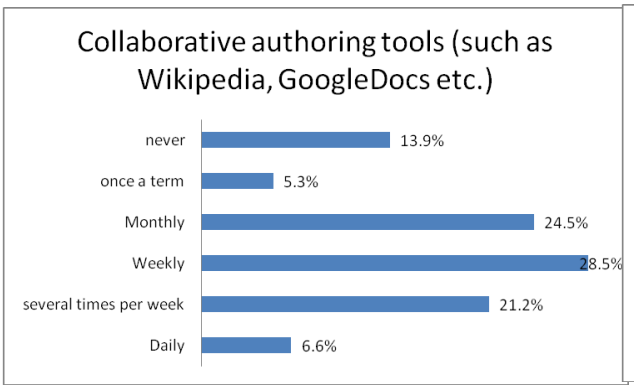


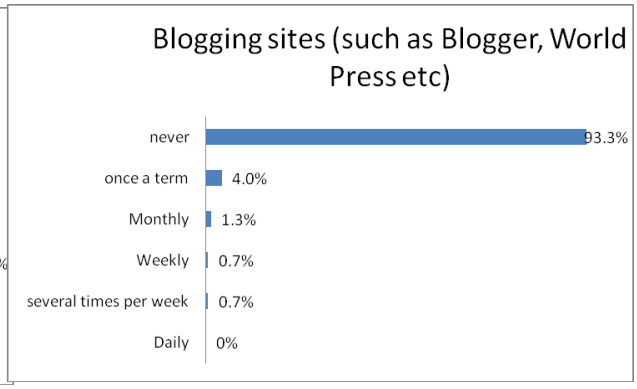


How often do you use the following <u>for study</u> (including informal course-related discussion):









5.10 Use of Social Networking and perceptions of its use in learning

As the response rate to the questionnaire was 30% it is possible that results are not representative, however, the results are consistent with those published in other surveys of students' use of social networking.

91% of respondents at Newcastle University use social networking sites (58% on a daily basis). Use of these sites was predominantly for social reasons:

How do you use social networking and blogging sites (not including the ePortfolio)	
Stay in touch with friends	93%
Share photos, music, videos or other work	81%
Find out more about people (I know or have not met)	66%
Plan or invite people to events	64%
Communicate with classmates about course-related topics	**62%**
Participate in special interest groups	43%
As a forum to express my opinions and views	26%
Make new friends I've never met in person	11%
For professional activities (job networking etc)	11%
Communicate with teaching staff about course-related topics	**9%**

62% sometimes used them to communicate with classmates about course-related topics (particularly around assignments and sharing useful links)

9% had used them to communicate with teaching staff about course-related topics

"…most people see Facebook etc. as an escape from work and it really should stay that way."

BSc Speech & Language Sciences student

"It must never be enforced. Emphasis on *'social'* networking. Informality is key."

Combined Studies student

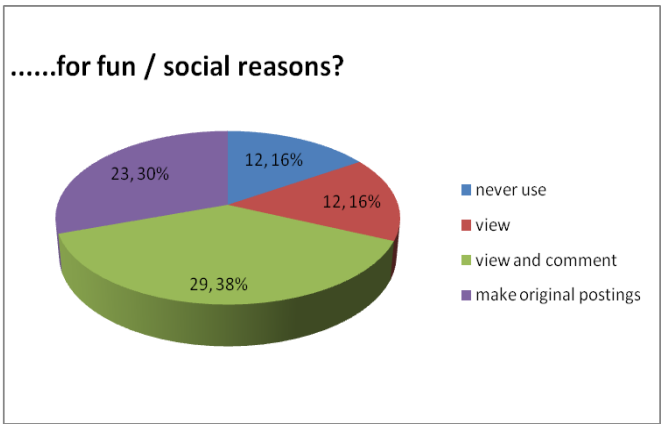
"I prefer to keep social networking sites for personal use and for engaging in general conversation about essays etc in a non-official/non-university domain where it's friends discussing a course.

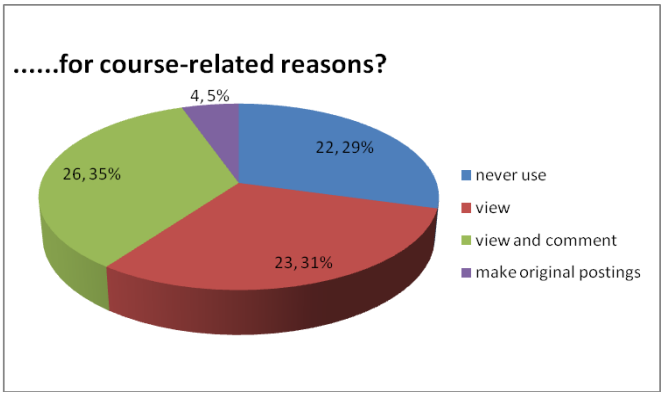
Professional dialogue, opinions on educational matters, lesson plans, theory discussions I prefer to engage in face to face or via the official, nominated online spaces."

PGCE student

Respondents made fewer original postings when using social networks / blogs for course-related reasons compared with when they used them for social reasons:

How do you use social networking and blogging sites?





Sub-groups of students actively used Facebook to discuss their courses (see 5.9 above). From one particular PGCE Subject area:

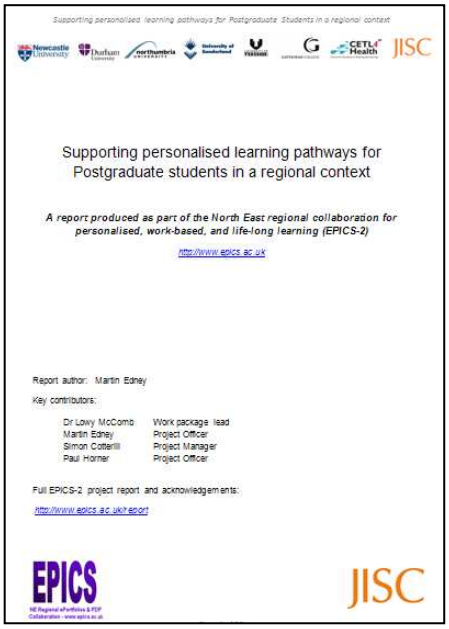
> "We were encouraged to discuss work in the e-portfolio and this was completed (if a little clinically). However, there were a few informal discussions about school and university work taking place on facebook, which more people were contributing to. These invloved discussing work to be done, shared experiences in school placements etc. And I feel that these were just as important to our developing practice."

PGCE student

> "As a group they are making good use of [the eportfolio/blog] for focussed discussion around blog themes that I have put up there - these tend to be linked to specific curriculum sessions or activities in school. They do not initiate group blogs yet - and when asked about this they said that they were tending to use facebook for that more. [name] and I are happy to let them do this - we reminded them and they reassured us about ethics and confidentiality."

PGCE Tutor

6.0 Supporting Personalised Learning Pathways for Postgraduates in a Regional Context


Supporting personalised learning pathways for Postgraduate students in a regional context

A report produced as part of the North East regional collaboration for personalised, work-based, and life-long learning (EPICS-2)

http://www.epics.ac.uk

Report author: Martin Edney

Key contributors:

Dr Lowy McComb	Work package lead
Martin Edney	Project Officer
Simon Cotterill	Project Manager
Paul Horner	Project Officer

Full EPICS-2 project report and acknowledgements:

http://www.epics.ac.uk/report

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For full details on this work, see the self-standing report: http://www.epics.ac.uk/report (26 pages)

Introduction

This piece of work has investigated the sharing training opportunities for Postgraduate Researchers (PGRs) amongst the 5 universities in the north-east of England (Durham, Newcastle, Northumbria, Sunderland and Teesside). It examined whether this sharing would be useful, and how it could be implemented, before going on to develop specifications for making this sharing possible, and prototype and "proof of concept" systems based on the specifications. The work addressed the whole lifecycle of training in the context of shared training opportunities; this ranged from advertising shared training events, through attendance at shared events, and on to importing records of attendance at shared events in an ePortfolio or other system.

The work built on the existing cooperation among training providers in the 5 universities (the North-East Collaboration Group for Researcher Development). Most of the work was done carried out on a case study of 3 of the 5 universities (Durham, Newcastle and Northumbria) in order to keep the scope manageable.

This work fits into the broader context of the EPICS-2 project addressing the personalised learning agenda. This agenda is pertinent for PGRs, since their learning is often largely self-directed. Making a wider range of learning opportunities available to PGRs aims to make it easier for them to choose learning that meets their specific needs at a particular point in their research, as determined by their own requirements or training needs analyses.

Aim

The aim of the work is to help address issues of availability of training for part-time and distance PGRs, who may not be able to easily access courses at their home institution, and also the provision of a wider range of opportunities at all institutions.

Outcomes

The outcomes that have come from this work include:

- a "proof of concept" regional information hub which integrates feeds of information from multiple training providers, presenting them to PGRs as a single navigable, searchable menu of events from across the region

  see www.dur.ac.uk/regional.events/

- two event feeds which have been added to existing Training Course Booking Systems (at Durham University, and at Newcastle University Faculty Of Medical Sciences); these feeds are used by the regional information hub described above

- a specification for an event feed, based on the XCRI-CAP format; this specification was used to specify the feed format for the regional information hub, and in the design of the two event feeds described above

- a specification for a mechanism (based on Web Services) to allow training records to be exported from a training provider and imported into an ePortfolio or other system; this specification has been prototyped, with test records being moved from a system at Durham University into a system at Newcastle University

- a common understanding across the stakeholders in the 5 universities. The information gathering and consultation phase was crucial in getting a high-level of buy-in from stakeholders, and helping to ensure that this project worked towards something for which there is real support and demand

During the information gathering phase, it became apparent that many PGRs would also like be able to find out about other types of event in the region, such as research seminars. The subsequent specification and design work was expanded to include this possibility.

Methodology

The work involved a high level of discussion and information gathering which began at the North-East Collaboration Group for Researcher Development in order to get support and buy in from staff running PGR training in the partner universities. The work then progressed through a formal information gathering phase based on 3 of the 5 partner universities (Durham, Newcastle and Northumbria), with 30 PGRs participating in 3 focus groups, in parallel with semi-structured interviews with 10 key personnel at the 3 universities. The information gathered was used to develop a requirements specification, which led to the specifications, prototypes and proof of concept system.

A key decision was the adoption of XCRI-CAP as the feed format for course details.
For more information see our information sheet "**Using XCRI-CAP for sharing workshop information**" (http://www.epics.ac.uk/report)

Technical details are included in this document (also available on the project Website), see:

- Appendix 4: specifications for writing attendance records to ePortfolios and other remote systems

- Appendix 3: Data feed specification for training event details using XCRI-CAP

For further details on the focus groups and interviews see the full report for this work strand available via http://www.epics.ac.uk/report

Functional overview

Principles of the proof of concept system

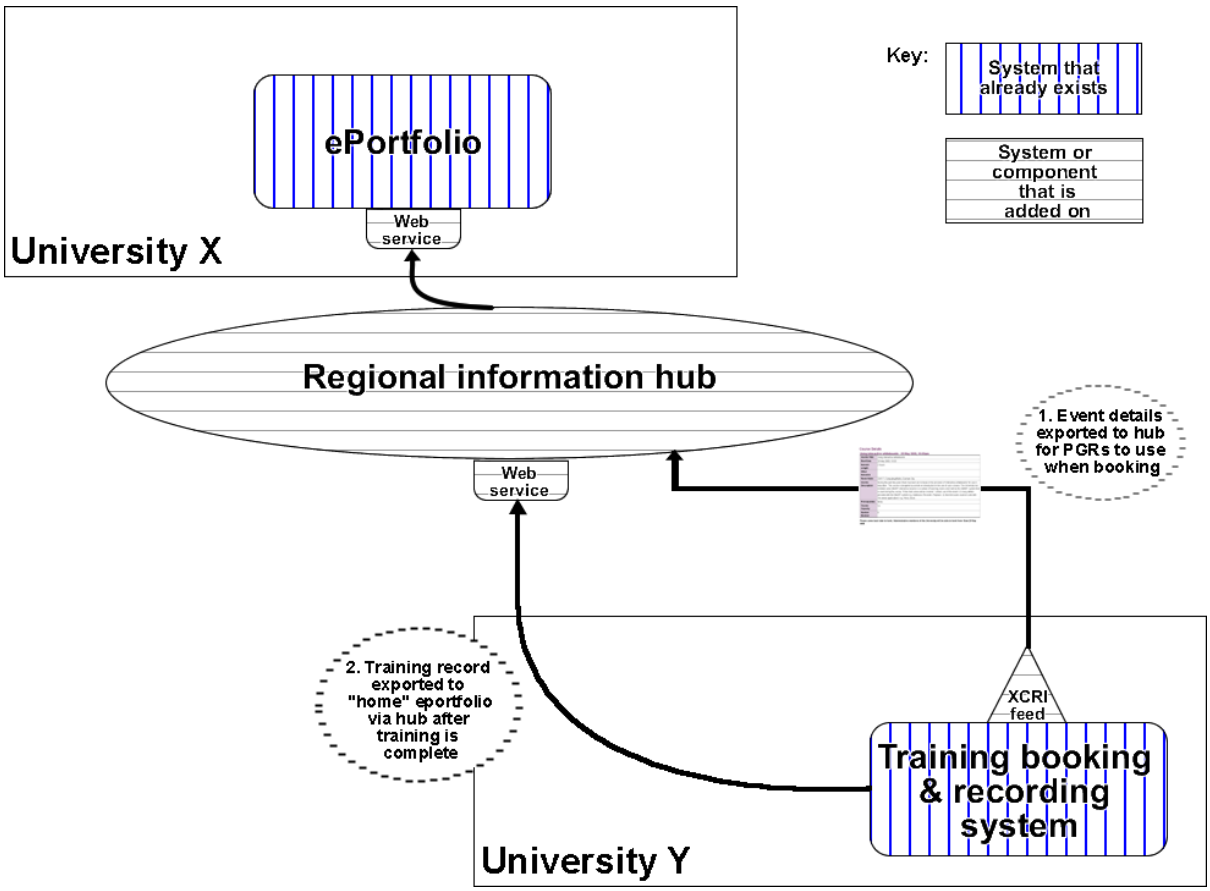


Figure 8 - system overview

The basic idea of this work is to build on existing systems and procedures wherever possible, since these are already well established and familiar to PGRs. The diagram above shows a simplified view of one way this can be achieved.

The paragraphs below describe Figure in detail, via an imaginary scenario.

An existing Training Booking system at University Y is shown. This has had an XCRI-CAP feed component added to it, and this feed is being used by the regional information hub to contribute to its list of training courses available to PGRs (although only one XCRI-CAP feed is shown in Figure , in practice the regional information hub is receiving feeds from multiple providers, and it could equally be receiving a feed of seminars or other events).

A PGR from University X uses the regional information hub to view details of events, and sends email to book a place on an event at University Y, and attends the event there. This event attendance is recorded on the Training booking and recording system at University Y, and this record is then exported from University Y back to University X, via the regional information hub. The web service in University X accepts the incoming record and stores it in the ePortfolio record of the PGR.

Functions of the proof of concept system

The proof of concept system is visible at
www.dur.ac.uk/regional.events/
The screenshots below give an idea of how the system looks and works:

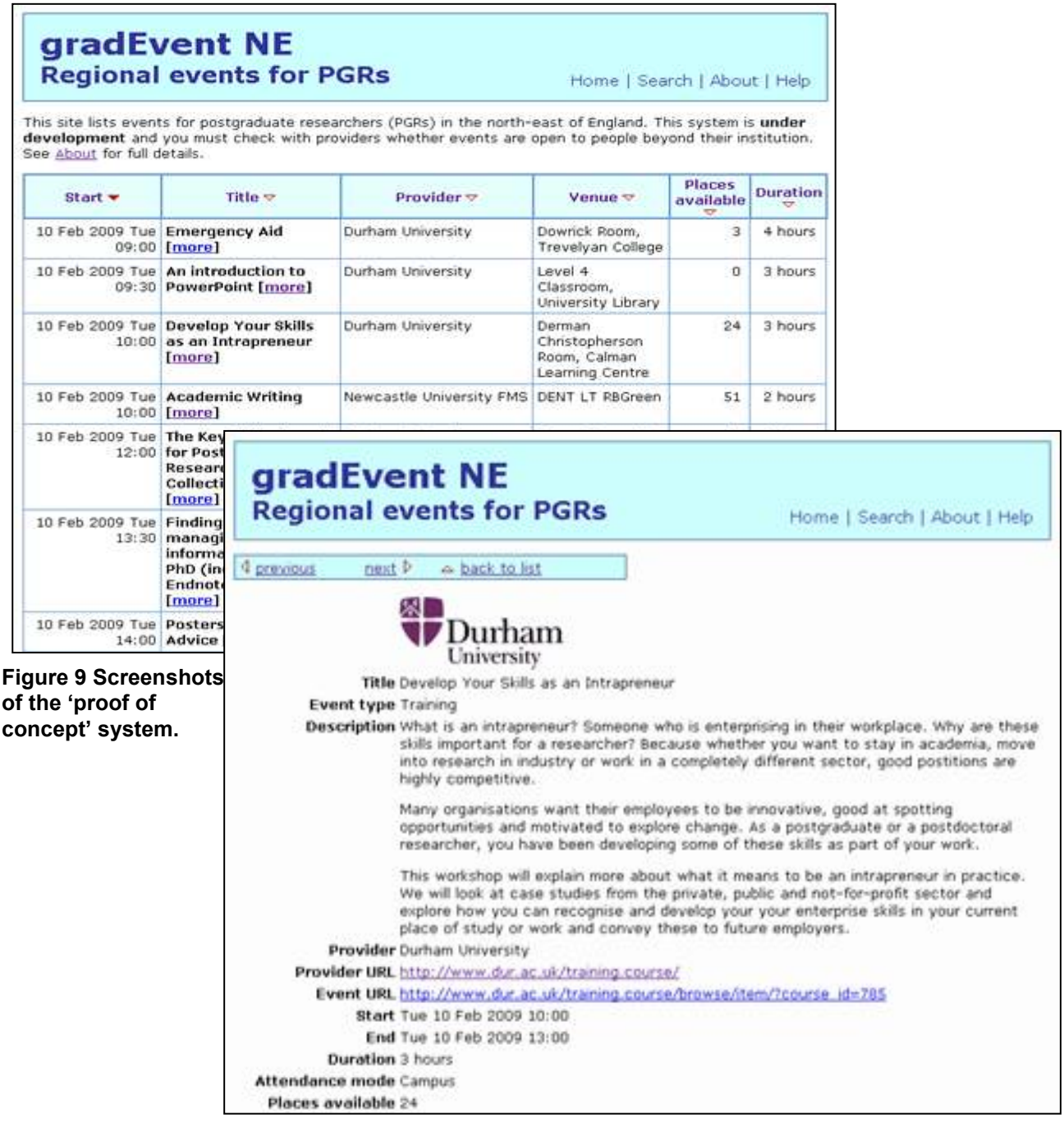


Figure 9 Screenshots of the 'proof of concept' system.

Formative Evaluation

The proof of concept has been briefly evaluated by showing it to the PGRs who contributed to the focus groups, members of staff who contributed to the information gathering phase, and the Postgraduate Training Team at Durham University.
In general the responses have been very positive – it seems that the biggest source of comment relates to data that are not being provided by the current event providers, such as

detailed location data. These issues are an effect of the decision to use existing systems, rather than designing an ideal system from scratch. (see separate report for more details).

Future developments

The system is already useful in its “proof of concept” form, but it could be greatly enhanced with further development, for example:

- developing event feeds for more providers
- developing event feeds for other types of events (e.g. research seminars)
- extending the regional information hub to incorporate booking a PGR onto an event, and sending attendance records from providers back to ePortfolio or other systems

7.0 Technologies to Support Work-based Learning

Understanding of the term WBL varies across the HE (including HE in FE) sector. Two broad areas may be addressed:

- Employees learning in the workplace (includes growing emphasis on short training courses and interaction with multiple training providers).
- Students learning in the workplace
    - Placements (e.g. 'sandwich courses' and short placements)
    - Practice based learning (e.g. health-related subjects)

The former (employees learning in the workplace) is of growing strategic importance[13] and the work of EPICS-2 around interoperability, aggregating learning opportunities from multiple providers and personalisation is of relevance to the vision of providing more flexible access to HE-level learning.

7.1 Overview of Technologies to Support WBL

The list below provides a simplified outline of technologies by purposes – in reality many of the tools listed cover multiple functions and purposes in relation to learning and teaching and support of this. These technologies are not specific to WBL, but see 'Key Issues in using technologies to support WBL' below.

eLearning / Content Delivery / Curriculum / Admin

- Virtual learning environments (VLEs e.g. Blackboard, Moodle etc)
- Online file sharing applications (e.g. Office Live Workspace)
- Calendars / Schedulers (e.g. Google Calendar)

Reflection, Recording Achievements, Evidencing

- ePortfolios
- electronic log books
- Blogging

Assessment and Feedback (including Adaptive assessment, multiple attempts etc.)

- VLE assessment tools (e.g. Blackboard)
- Specialist online assessment tools (e.g. ABC)
- Assignment upload and feedback systems (e.g. Assignment Handler)

Asynchronous Communications / Collaboration

- Email
- Bulletin Boards
- Wikis and collaborative authoring (e.g. Wikipedia, GoogleDocs)
- Social Networking (e.g. Facebook, Ning etc)
- Blogging (e.g. Blogger, MovableType)

[13] Enhancing learning and teaching through the use of technology. A revised approach to HEFCE's strategy for e-learning. HEFCE, 2009

- Social Bookmarking (e.g. Del.icio.us, StumbleUpon)
- Picture and video sharing (e.g. Flicker, YouTube)

Synchronous Communications / Interactive

- Teleconferencing, including Voice over Internet Protocol (e.g. Skype)
- Videoconferencing
- Instant Messaging (e.g. MSN, AIM)
- Micro blogging (e.g. Twitter)
- Online White Boards
- Virtual environments (e.g. Second Life)

Flexible access to Teaching and Learning (workplace, home, campus)

- Mobile technologies (e.g. laptops, ultra-portable computers, PDAs, mobile phones etc.)
- Wireless networking (e.g. wifi)

7.2 Key Issues in using technologies to support WBL

These draw on issues raised by participants at EPICS-2 WBL workshop (30th Jan 2009)

Strategic:

- More investment in Research and Development is needed.
- Sustainability needs to be built in from the onset
- Constructive alignment (learning-teaching-assessment) and QA issues
- WBL: tension between upskilling vs. accrediting what the learner is already doing
- Strategic choice in using institutional systems and/or external 'Web 2.0' facilities

Diversity / Equality of opportunity:

- Meeting the needs of all learners (diversity of learning styles, preferences, accessibility etc).
- Inequalities in access to technologies
- Assessing learning across students with unequal / decreasing learning opportunities (e.g. reduced contact time with patients by health students).

Learning in context (the importance of this cannot be underestimated!).

- Technologies must have the flexibility to support the right pedagogy, language/terminology, skill sets for the context

Change in T&L cultures (not just technologies)

- Greater flexibility / personalisation – gear around pace of learner
- WBL usually not driven by traditional academic year

Learning Relationships

- Establishing and developing relationships (learners-HE tutors-WB mentors) in WBL (how are relationships mediated by the technology?)
- How do we deliver mentoring/tutoring electronically?
- Social / fun element or just the business of learning?
- Social networking vs. professional work context (problematic)

Training needs for HE staff, WB mentors and students (often underestimated).

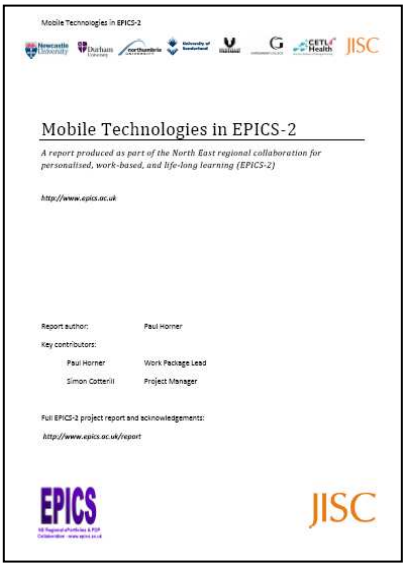
- Greater diversity of technical illiteracies in WBL;
- proficiency of student supervisor very important in this context.

Technical considerations

- Interoperability (e.g. life-long learning records in WB scenarios with multiple training providers)
- Identity management (integration, user-centred control of access)
- eLearning, not just content delivery
- Keep it simple, functionality before bells and whistles!

7.3 Mobile Technologies for WBL

For full details on this work, see the self-standing report: http://www.epics.ac.uk/report (17 pages)


Mobile Technologies in EPICS-2

A report produced as part of the North East regional collaboration for personalised, work-based, and life-long learning (EPICS-2)

http://www.epics.ac.uk

Report author: Paul Horner

Key contributors:

Paul Horner Work Package Lead

Simon Cotterill Project Manager

Full EPICS-2 project report and acknowledgements:

http://www.epics.ac.uk/report

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JISC

As part of the work to support personalised and work-based learning the EPICS-2 projects undertook significant work to enable access to ePortfolios through mobile telephones and Personal Digital Assistants (PDAs), to allow learners to record and reflect upon their learning, particularly whilst on placements / WBL.

Initially the work focussed on developing 'asynchronous' access to ePortfolios via PDAs (working off-line and then later synchronising with Web-based portfolios and other systems). This was intended to build on existing work at Newcastle University and CETL4healthNE which had largely been focussed on providing web-based access to the standard university ePortfolio via a PDA's inbuilt web browser via wireless networks.[14] However, due to the limitations of connectivity and the reliance on wi-fi in some contexts, in EPICS-2, we wanted to take this one step further, to allow students to update their ePortfolio even when a reliable internet connection was not available.[15]

During the course of EPICS-2, several options were explored to enable our learners to use mobile devices asynchronously, including form-building software and web frameworks. We eventually elected to provide this service using SMS text messaging. This represented a significant change in the direction from our initial project plan. In our original proposal we were going to use proprietary form building software to develop asynchronous solutions for mobile devices that would send students' data to their ePortfolios. However, the mobile technologies moved on appreciably since we wrote the original proposal. As such the proprietary form building software no longer seemed like a long term solution for our needs; particularly with the huge growth in data contracts and connectivity with mobile phones, not to mention HTML 5 round the corner and scope for browsers to store data on local machines. The benefits of text messages over the other tools were that it generally didn't

[14] Cotterill SJ, Jones S, Walters RA, Horner P, Moss JD, McDonald AM. Piloting hand-held computers with wireless access to portfolios and Web-based support materials in undergraduate medical education. Proc. Association for the Study of Medical Education, Genoa, 2006.

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[15] 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

require any training for learners and the ongoing support costs were minimised because the vast majority of students could supply their own mobile telephone.

We developed a tool using SMS text messages that allows undergraduates at Newcastle University to add blog entries through their mobile telephone. We have also produced a technical report which should aid other institutions to implement a similar system using the JanetTxt service.

See Appendix 5 for details of the technical work to use JanetTxt SOAP APIs

Initial Focus Group

A focus group of 3rd year students studying Speech and Language sciences (see 5.3 above) was conducted by their Clinical co-ordinator. All students owned a mobile and 27 out of 29 had a mobile phone contract.

> "Students were concerned that it would be unprofessional to use their mobile phone whilst on placement and especially problematic if in a hospital….Students were also very reluctant to pay for the service – especially as they did not feel there was a need. A couple of students did suggest considering its use for the 6 week block placement…"

This raised some key points; the learners need a clear purpose and idea of what the benefits are for using such a service. Without that there is likely to be resistance to use of personally owned mobile phones, even when most students have contracts with a large number of texts per month. Training also needs to address etiquette issues, whilst there was never any intention that students would be sending texts whilst with patients or colleagues, this does need to be made explicit and scenarios of when it would be useful should be provided e.g. texting some key points on the bus journey home from a placement, potentially to be expanded on in the blog/ePortfolio at a later date. Also, though the primary focus of this work was to provide a service for students to text to their ePortfolio/blog there were a lot of concerns about receiving 'unwanted' texts from the University and blurring of the boundaries between private lives and study/work lives; this should be adopted on an 'opt-in' basis with students signing up for different categories of alerts e.g. time-table changes within 24 hrs, alert that exam results are available etc.

Opt-in Pilot

This system was made available to undergraduate students at Newcastle University during in March 2009. More feedback will be sought from students at the end of this semester and a final report on this work will be made available to JISC and via the EPICS website during the summer of 2009.

8.0 Standards for Supporting Lifelong Learning

There are many educational and administrative benefits of interoperability between systems to support life-long learning (LLL). For example LLL can include the explicit recognition of prior learning and may help increase focus on continuous, rather than episodic learning and development.

Newcastle University have a proven track record in providing support for emerging standards for ePortfolio interoperability, and have demonstrated IMS-LIP, IMS-ePortfolio, Europass and HR-XML integration at a number of international conferences.

The scope of the interoperability work related to EPICS-2 was extended with our leading role in the development of the emerging LEAP2a standard[16], through the PIOP projects[17]. Newcastle University was one of the original PIOP partners[18], and were actively involved in the second round of LEAP2a projects.

Newcastle University has been able to successfully implement the LEAP2a standard in the ePET ePortfolio[19], and through PIOP have taken a lead role in the further development and refinement of that standard.

The interoperability case study (see: http://www.epics.ac.uk/report) was therefore able to utilise the LEAP2a specification, rather than the earlier version of LEAP as envisaged in the original EPICS proposal.

Also, LEAP2a exports are available in the version of ePET available to download from http://www.eportfolios.ac.uk/downloads.

[16] http://wiki.cetis.ac.uk/LEAP2A_specification
[17] http://wiki.cetis.ac.uk/Portfolio_interoperability_projects
[18] http://wiki.cetis.ac.uk/Portfolio_interoperability_prototyping
[19] http://www.eportfolios.ac.uk/leap2a

9.0 Regional Forum for PDP & ePortfolios (capacity building)

The Forum draws together representatives from institutions across the North East interested in PDP and portfolio learning. As a community of practice, the Forum provides a space to share good practice and develop new ideas and approaches. The Forum was established in 2005 as part of the first EPICS project and played a role as 'Critical Friend' to the project.

The EPICS-2 project supported 5 themed workshops which contributed to the other activities of the project and also acted as a vehicle for dissemination (for information, and for engagement):

Date	Theme / Title	Location
30th Jan 2009	Work based learning: Can technology help?	Trevellyan College, Durham
30th June 2008	Work based learning conference	RSC Northern, Sunderland
16th June 2008	Learning experiences in a world of change (learning journeys and personalised learning)	Teesside University
2nd May 2008	Identity management: A way forward for the NE?	Newcastle University
8th Feb 2008	Inaugural EPICS-2 forum event	Northumbria University

Further details: http://www.epics.ac.uk/forum

Problems

- The Forum is valued but over time it is noticeable that many in the constituency increasingly have less flexibility to attend face-to-face Forums as workloads are perceived to grown across the sector.
- As such, ideally events need advance notice of 2-3 months, but this was not always achieved.
- Only modest engagement from people external to the partner organisations (did include representatives from NHS, Newcastle College & local government).

Benefits

- Is a community of practice around PDP/ePortfolios with the potential to bring together people with different interests in pedagogy, technology, policy/governance areas.
- Over 90 practitioners were involved in the Forum events (above).
- The Forum was a 'critical friend' to the project
- It provides a good sounding board for new ideas (e.g. most EPICS partners joined the 'ELLI in HE' project)
- Provided research data for the project (e.g. capturing practice on use of technologies to support HE level WBL in the region).
- Provided ideas and planning for the national dissemination event to be held after the end of the project.
- Collaboration with JISC RSC Northern was valuable, practically in providing broader dissemination to colleagues in FE and input into a specific event around WBL.
- The Forum events helped broaden understanding of WBL, particularly with HE practitioners.

"The [Forum] workshops helped shape my thoughts on work based learning. Previously my focus was solely on students doing placements, but now I'm also thinking of employees learning in the work place. Do think there is a lot of overlap on use of technologies to support these though."

10.0 Project Outcomes / Evaluation

10.1 Overview of Evaluation in the project

Evaluation findings for specific work packages and case studies are reported in the relevant sections in this report and separate sub-reports.

10.2 Overall Project Evaluation

Table 1. Evaluation of Outcomes against Aims and Objectives

Aims and Objectives (intended)	Outputs and Outcomes (realised)
Developing expertise and capacity through partnership and collaboration: to support the uptake and effective use of PDP/ePortfolios across the region by: • Continuing and expanding the Regional Forum to share good practice and contribute to the development and implementation of PDP/ePortfolios. • Recruiting further subject areas in each of the existing partner sites. • Engaging with new partners from the FE and other sectors, as possible.	• 5 Regional Forum Events held (>90 attendees) and national event (to be held after the end of the project). • Recruitment of new subject areas beyond those identified in the proposal (PGCE, Clinical Skills & Employability) • Dissemination to FE via JISC RSC Northern WBL event. • Only modest engagement from people external to the partner organisations (did include representatives from NHS, Newcastle College & local government)
Develop and improve support for personalised learning and work-based learning • Large-scale pilots to evaluate the use of ePortfolio to support personalised learning pathways, including use and extension of software developed in previous JISC projects. • Undertaking a review of technologies and associated pedagogy used to support Work-Based Learning in the North East. • Large-scale pilots to evaluate the use of ePortfolios, Blogs and Social Networking to support learning and PDP.	• Developed a proof of concept regional hub to share workshop information to better support personal learning pathways for postgraduate researchers. • Extension of the ePET portfolio to include personalised blogs and community publishing + design to link unstructured blogs to evidence structured outcomes/skills. • Captured information on technologies to support WBL in the region. • Achieved the planned pilots + 3 additional pilots.
Supporting mobility and life-long learning • Embedding personal learning with mobile technologies, including the development of solutions for mobile portfolio/blogging with asynchronous connection to Web-based portfolios. • Embedding the transfer of real data from undergraduate to postgraduate ePortfolio. • Pilot the transfer of real ePortfolio data	• The work with LLL standards was significantly expanded in EPICS-2 with more of an emphasis on contributing to emerging specifications in conjunction with JISC funded PIOP and LEAP2a projects. • With agreement from JISC, direction of work on mobile technologies changed from support for asynchronous processes linked to ePortfolio to

between FE and HE, working with the JISC funded COMPORT project. • Producing ePortfolio exemplars using 2 or more identity management systems. • Engaging with emerging specifications and standards	integration of JANETtxt (texting to blogs). • We transferred real portfolio data using the latest version of Leap2a. • We successfully implemented CAS20 authentication in a version of the ePET portfolio.
Evaluating the impact of the project: evaluating the impact of ePortfolios and PDP in the region: • Evaluating the impact of the project with new partners • Evaluating the efficacy of ePortfolios in the new pedagogic areas (personalised learning pathways, blogs, WBL etc.)	• Evaluation of specific case studies including new pedagogies for use of unstructured blogs to evidence structured outcomes. • 3 additional case studies (with existing but not new partners). • Overall project evaluation • Evaluation extended to provide insights into use of external social networking sites in education + factors influencing engagement with ePortfolios/PDP.
Maximising the impact of the project: documenting and disseminating the outcomes of the project and its evaluation and engaging with other high impact projects within the region and wider: • Developing and delivering a dissemination strategy which will include workshops with the partner sites (embedding), and wider audiences (understanding/awareness) within and beyond the region • Making an updated version of the ePET portfolio freely available to the JISC community. • Adding value to institutional and other initiatives (including CETLs) in the region by ensuring that this project complements institutional requirements	• 6 related conference papers written and presented at national and international conferences. • Updated version of the ePET portfolio freely available to UK FE/HE.21 • Added value to and collaborated with other initiatives; COMPORT, PIOP, Leap2a, NTFS NARN, JISC 'Effective Practice with e-Portfolios', XCRI, JISC ePortfolios in assessment report, JANET txt and JISC Programme meetings. • The work on interoperability standards for lifelong learning helped shape emerging national standards. • The project helped lay some of the foundations for other initiatives; ELLI in HE project, JISC initiatives including PIOP, Leap2a and Dynamic Learning Maps. • Continuation includes: o Broader implementation of the ePET blog beyond the pilot subject areas at Newcastle. o Ongoing interest in regional support for postgraduate training. o Implementation of JANET txt to support the MBBS programme

[20] http://www.jasig.org/cas
[21] http://www.eportfolios.ac.uk/ePET

	and potentially other systems at Newcastle.

Ongoing evaluations

The evaluation of text to blogs/ePortfolios using JANETtxt is ongoing as the direction of our work on mobile technologies changed and the pilot did not start until near the end of the lifetime of the project.

Evaluations of 2 of the Case Studies are ongoing in the context of other projects:

- The evaluation of ePortfolio to support Employability Skills at Northumbria University is ongoing as part of the Inter/National Coalition for Electronic Portfolio Research.
- The evaluation of the ePortfolio supporting PGCE students at Newcastle is ongoing as part of the National Action Research Network into PDP/ePortfolios

10.3 Impact of the project

The key beneficiaries from the project are the learners and teachers. Over 600 learners were directly involved in the pilots for EPICS-2. Five programmes which had no prior use of ePortfolios/blogs took up these technologies as a consequence of the project. We validated the approach of embedding structured skills/outcomes in blogs (see 4.2 above) which has provided a flexible tool for reflecting, evidencing and discussing.

During the course of the project it has had a much wider impact in the wider community of practice by collaborating with other project and initiatives including:

- We collaborated with the JISC funded COMPORT project, hosting ePET for Gateshead College as part of a study in comparing use of different ePortfolios to support HE in FE.
- Because of the involvement with the EPICS-2 project the project team were able to make a leading contribution to the development of UK specifications for LLL:
    - The JISC-CETIS PIOP project
    - The JISC-CETIS Leap2a project
- Participating in meetings, writing 7 conference papers related to the EPICS-2 and >15 presentations at national and Regional Forum events have been part of the projects interface with several communities of practice; JISC community, EiFEL ePortfolios, CRA, JISC-CETIS LLL & XCRI interoperability communities as well as regional and institutional impact.
- The project partners contributed 4 case studies (3 directly from EPICS-2) to the JISC funded study by CRA into the role of ePortfolios in formative and summative assessment.[22]
- The project team contributed to the JISC 'Effective Practice with e-Portfolios'[23] co-ordinated by JISC InfoNet

[22] http://www.jisc.ac.uk/fundingopportunities/funding_calls/2008/02/jiscitteportfoliosinassessment.aspx
[23] http://www.jisc.ac.uk/effectivepracticeeportfolios

- The project team also contributed to JISC Programme meetings and JISC/Netskills ePortfolios workshop.

10.4 Longer-term Impact

We believe the project will have a significant longer-term impact because:

- Many of the project deliverables and findings are of applicable to the wider HE/FE community. In particular they are relevant to the achievement of the vision for more flexible approaches to learning and teaching, personalised and life-long learning (see HEFCE revised e-Learning strategy, 2009) and the ongoing requirements for PDP (see Guidance for institutional policy and practice in higher education, QAA, 2009).

- The unstructured blogs with explicit support for structured sills/outcomes and community publishing has been made available more broadly at Newcastle University and there has been a strategic-level proposal for adoption across the University.

- The team at Northumbria were asked to rewrite the Employability skills module as a 20 credit one, which has now been approved and is to be offered to other degree courses in the School which have similar placement schemes, starting September 2009.

- The project led an extensive consolation process with students and providers of postgraduate training in relation to the; resulting in a 'proof of concept' system, but perhaps more importantly a buy-in with stakeholders, that we hope in time will realise and resource a real system for sharing of learning opportunities across the region.

- The work on interoperability standards by the project team has contributed to the emerging UK standard Leap2a and the technical documentation associated with this, the EPICS-2 work on XCRI-CAP and JANET txt is likely to be useful in other contexts.

- The findings related to the use of Social Networking / Web 2.0 sites and the relationship with institutional systems is likely to be of interest elsewhere.

- The ePET portfolio, including developments from EPICS-2, is now freely available to the JISC community.

- The project has boosted our regional community of practice, which should have a sustained impact.

- EPICS-2 was a building block for other innovative developments including" "ELLI in HE" and "Dynamic Learning Maps

With agreement from JISC a national dissemination event will be held after completion of the project in September 2009.

11.0 Conclusions

EPICS-2 was a collaborative project which made a significant impact on the development of support for personalised learning, work-based learning (WBL), and life-long learning. This was an18 month initiative, funded as part of the JISC e-Learning programme, ending March 2009. The project findings and deliverables are relevant to the vision for more flexible approaches to learning and teaching, personalised and life-long learning (see HEFCE revised e-Learning strategy, 2009) and the ongoing requirements for PDP (see Guidance for institutional policy and practice in higher education, QAA, 2009). Implications and recommendations from the project are listed in section 12, below.

The case studies in EPICS-2 further advanced our understanding of ePortfolio/PDP; embedding in the context of the curriculum proved vital for engagement. The project piloted and validated the use of unstructured blogs but with explicit support for skills/learning outcomes as part of an ePortfolio – applying 'Web 2.0' approaches to institutional systems. The project also provided valuable insights into the use of social networking in learning and the interplay between the use of these alongside institutional sites.

The technical work on interoperability standards for lifelong learning helped shape national standards. We also developed a working model for the cross-institutional sharing of learning opportunities for postgraduate researchers to help develop 'personal learning pathways'. This work used the XCRI-CAP specification, and the work is likely to have wider applicability.

The project contributed to the community of practice, working with other initiatives both regionally and nationally (COMPORT, Leap2a, XCRI, JANET txt, JISC RSC Northern & JISC InfoNet). There are significant continuity activities with use of ePortfolios/blogs being rolled out beyond the 600+ learners directly involved in the project. EPICS-2 was also a building block for other innovative initiatives including "Dynamic Learning Maps" and "ELLI in HE". The ePET portfolio, including developments from EPICS-2, is now freely available to the JISC community.

12.0 Implications and Recommendations

The findings and deliverables from EPICS-2 have wide applicable to the JISC community. In particular they are relevant to the achievement of the vision for more flexible approaches to learning and teaching, personalised and life-long learning (see HEFCE revised e-Learning strategy, 2009) and the ongoing requirements for PDP (see Guidance for institutional policy and practice in higher education, QAA, 2009).

It is expected that the project will have longer-term impact (see section 10.4 above)

12.1 Work-based learning

There are pockets of good practice in the use of technologies to enhance WBL. However, there are a range of challenges and a bewildering choice of different technologies, e-learning and blended learning approaches to support WBL (see section 7 of this report). There is a need for greater investment in research and development at the institutional and HE/FE sector levels in order to increase the scalability and effectiveness of the use of technologies to enhance WBL. A move towards more flexible delivery of HE (including shorter duration courses outside the confines of the traditional academic year and potentially more 'eTutoring' / 'eMentoring' to support remote learners) requires large cultural change, training and capacity building.

12.2 Personal Development Planning

Across the sector and within institutions, uptake and engagement with PDP can be variable. The case studies in EPICS-2 provide insights into some of the generic factors which influenced engagement (see section 5.9 of this report).

The importance of embedding PDP in the learners' context cannot be underestimated. Does PDP relate to the learners' curriculum? Does it use the language, terminology, skills/outcomes appropriate to the programme being studied? Does PDP/ePortfolios seem to be valued by the curriculum and teaching staff?

The importance of context raises challenges for scalability at an institutional level – for example adopting a 'one size fits all' solution to support PDP may be easier and cheaper to implement, however engagement may be an issue. The approach taken…

12.3 Use of Web 2.0 and Social Networking to support learning

There are high expectations and 'hype' around the use of 'Web 2.0' and Social Networking Sites (SNS) in education. In EPICS-2 we validated the approach of applying some 'Web 2.0' approaches to institutional systems (see section 4.2 in this report). As part of our evaluation we also asked students about their use of Web 2.0 applications (section 5.9) and consistent with other surveys found high use of social networking in general, though low day-to-day use of social bookmarking, blogging (outside SNS) and virtual reality sites.

It was the use of external social networking sites for learning was particularly interesting (see section 5.10 in this report). For many students there was a distinction that social networking was a domain for social/private lives separate from work/study lives. However, the distinction was blurred in the sense that sub-groups of students used SNS for 'informal' course-related discussion with friends (particularly around assignments and sharing 'useful' links and resources). In this project, with the 2 case studies of PGCE students we found high levels of discussion going on in parallel in both Facebook and institutional portfolio/blogs; with a

distinction for some between 'informal discussion' away from tutors and 'professional' reflection and discussion in the other. In contrast, other case studies in EPICS-2 found a strong reluctance to share blogs with peers, with students preferring to keep blogs private or share only with a tutor. In part this may reflect real differences in 'learning cultures', it may also reflect the expectations and direction from tutors and programme leaders. As with bulletin boards 'communities' can occasionally arise spontaneously, but careful 'seeding' of initial discussions or 'ice-breakers' may prompt ongoing conversations. There may be 'equity' issues where a significant majority of students are part of a SNS group but a minority don't use SNS, or are not part of 'the group'.

There is a need for further research and development into the use of Web 2.0 in education, and this is likely to be changing over time. It is clear that the advent of 'Web 2.0' has greatly raised learners' expectations of IT systems in terms of their ease of use and high levels of interaction. However, as found elsewhere[24] widespread use of Web 2.0 applications by students does not necessarily equate with their effective use *for l*earning. There are training requirements for both learners and teachers in the use of these new technologies and Web 2.0 brings with it a new slant on requirements for education about etiquette/professionalism and plagiarism. Social networking may enhance team working and collective problem solving, however, there is a need to ensure that the technologies do not detract from the development of 'high-level' skills such as critical thinking, reflection, synthesis and creativity.

12.4 Lessons from the process of undertaking the project:

1. **Sometimes it's useful to change your plans – try and recognise blind alleys sooner, rather than later!**

We made a significant change in the direction of the work planned for mobile technologies (Work Package 8 of our project). In our original proposal we were going to use proprietary form building software to develop asynchronous solutions for mobile devices that would send students' data to their ePortfolios. However, the mobile technologies moved on appreciably since we wrote the original proposal. As such the proprietary form building software no longer seemed like a long term solution for our needs; particularly with the huge growth in data contracts and connectivity with mobile phones, not to mention HTML 5 round the corner and scope for browsers to store data on local machines.

In retrospect we probably took too long to arrive at that decision, particularly in this relatively short 18 month project. We did invest a lot of time exploring alternatives (installing Web frameworks such as Django and Ruby on mobile devices) which may be useful for the future as mobile devices continue to become even more powerful, but not fully workable/practical now. We finalised on developing solutions using JANET txt (thanks to JISC for agreeing to this change to our project plan) but it did result in an even heavier workload for our Project Officer (PH) towards the end of what has been a very busy project.

2. **Don't underestimate the time needed for consultation & user needs analysis in collaborative projects**

[24] Information Behaviour of the Researcher of the Future' (January 2008), CIBER project, University College London, available at www.jisc.ac.uk under What we do/Google Generation.

Our work on sharing information on training opportunities for postgraduates (Work package 5, led by Durham University) planned from the onset to include a high level of consultation with stakeholders around the region and included running focus groups at each partner site. As such we believe that the subsequent technical outputs from the project are more 'fit for purpose' and probably more importantly, there is significant stakeholder interest and buy in which makes the chance of embedding and continuation more likely. Whilst the Project Officer (ME) was primarily appointed as a technical post his non-technical skills were at least equally important in the successful delivery of this part of the project. Large collaborative projects should consider these skill requirements when appointing technical Project Officers.

3. Where possible, design project activities to have side-effects with immediate direct benefit to stakeholders

All of the focus groups for WP5 were set up to allow Graduate Training staff to observe – in 2 cases by attendance at the session, and in the third case by receiving a copy of the audio recording. In all 3 cases, the Graduate Training staff got useful feedback insight into the views of PGRs about their training programme and administrative systems. In once case, a PGR was identified who was completely unaware of the training programme, and somehow had been missed by most of that university's central administration!

Taking this approach was valuable in getting further buy-in and support from the stakeholders concerned.

4. Focus groups need to be carefully planned and co-ordinated, and run in a formal, structured way (context: postgraduate students, WP5)

The focus groups were run with a very carefully controlled format

- fixed questions, displayed one by one on an overhead projector (to avoid participants from reading ahead, and to keep participants focussed on the question under discussion)
- small numbers of participants (7-10 is recommended)
- it's best to make an audio recording of the focus group, rather than trying to write notes during the focus group – the facilitator needs to concentrate on facilitating the session, and will not have time to record or analyse the discussion while it is taking place

Such an approach is necessary to keep the discussion focussed on the matter in hand, to ensure that the views of all participants are heard, and to make sure that the focus group delivers useful results.
One of the Graduate Training staff who observed a focus group commented "That was the best-run focus group I've ever seen", so it seems that this approach is successful.

5. Collaborative projects need to be designed and developed iteratively, incrementally and flexibly

This is becoming a common way of working in software development, but is especially important for a collaborative project such as this one, where existing systems are being made to interact.

During the course of the work, several of the initial plans and assumptions were changed, and many of the technical details were evolved during the course of prototyping. This would have been extremely difficult to achieve if we had taken a sequential "waterfall model" Big Design Up Front approach.

In addition, a modular design was used, with a number of independent parts interoperating. This means that it will be possible to incrementally add/upgrade functionality. For example, at the moment PGRs who want to book on a training course have to send an email, but it will be possible in the case of Newcastle FMS to change this mechanism so that the PGR can book a place using the Newcastle FMS system. As this becomes possible at other institutions, the booking mechanism can be changed as needed.

6. Don't assume stakeholders will think your project is the best thing since sliced bread!

In retrospect we should not have been surprised that there were user acceptance issues in relation to use of personally owned mobile phones for educational purposes. Learners need a clear purpose and idea of what the benefits are for using their mobile phones for course-related services otherwise this may be perceived as an intrusion into their personal lives. Without that there is likely to be resistance to use of personally owned mobile phones, even when most students have contracts with a large number of texts per month. Also, though the primary focus the mobile technologies work in EPICS-2 was to provide a service for students to text to their ePortfolio/blog there were a lot of student concerns about receiving 'unwanted' texts from the University and blurring of the boundaries between private lives and study/work lives; this should be adopted on an 'opt-in' basis with students signing up for different categories of alerts e.g. time-table changes within 24 hrs, alert that exam results are available etc.

7. Be prepared to sacrifice functionality in favour of developing a workable solution

During the information gathering phase for WP5 it became clear that certain functionality (e.g. automatically exporting training records for PGRs from other institutions) would not be possible unless significant changes are made to existing systems, and that the owners of these systems would not be willing or able to do this within the project timescale. It made more sense to concentrate on developing prototypes and proof of concept systems that actually worked, leaving out or simplifying functionality that could not be achieved within the project timescale.

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Appendixes

Appendix 1. Glossary of acronyms and technical terms

- **ePET** - the ePET portfolio/blog (the acronym from a previous JISC project 'ePortfolios Extension Toolkit' has 'stuck' with the ePortfolio)
- **IMS** – the IMS Global Learning Consortium, Inc. http://www.imsproject.org
- **JISC** - Joint Information Systems Committee http://jisc.ac.uk/
- **LEAP2a** – a specification for lifelong learning records http://wiki.cetis.ac.uk/LEAP2A_specification
- **LLL -** Life-long Learning
- **North-East Collaboration Group For Researcher Development** – a group of people who work in the area of training and development of researchers in the 5 universities in the north-east of England (Durham, Newcastle, Northumbria, Sunderland and Teesside). Most people in this group are Deans of Graduate Schools, Postgraduate Training Managers or similar people working in Graduate Schools.
- **PDA** – Personal Digital Assistant
- **PDP -** Personal Development Planning
- **PGR - Postgraduate Researcher;** an individual who is carrying out a research degree such as a PhD, Masters By Research, DMin, EdD, etc.
- **SOAP** – "SOAP is a simple XML-based protocol to let applications exchange information over HTTP. Or more simply: SOAP is a protocol for accessing a Web Service " (source: www.w3schools.com/soap/soap_intro.asp)
- **WBL -** Work Based Learning. This generally refers to employees learning in the workplace (includes growing emphasis on short training courses and interaction with multiple training providers). The term can also include students learning in the workplace in placements or in practice-based learning.
- **XCRI-CAP (eXchanging Course-Related Information –Course Advertising Profile)** – a specification for an XML feed format. XCRI-CAP allows learning providers to publish their course information in a format that can easily be collected by course search services such as UCAS.
- **XCRI** (eXchanging Course Related Information) - XCRI is a JISC-funded, UK-oriented project to establish specifications to support the exchange of course-related information. XCRI-CAP is one of the specifications output by this project.

Appendix 2. Questionnaire for ePortfolio, blog and Social Networking

This questionnaire relates to your use of the ePortfolio/blog (http://portfolio.ncl.ac.uk) also accessed via the 'Portfolio' tab in Blackboard. Thank you for completing this evaluation, your feedback will be useful for shaping the future development of the ePortfolio/blog.

Demographics

Question	Type	Measuring
What is your degree programme code?	Text	programme
What is your year/stage of study?	Numeric	stage
Gender	Select M, F	gender
Age (yrs)	Numeric	Age

Key questions

1=Never, 2=once a term, 3=monthly, 4=weekly, 5=several times per week, 6=daily

Question	Type	Measuring
How often have you used the ePortfolio?	Likert 1-6	Usage

Scale: 1=strongly disagree 2=disagree 3=weakly disagree 4=weakly agree 5=agree 6=strongly agree

Question	Type	Measuring
I have a clear understanding of the purpose of the ePortfolio	Likert 1-6	Clarity of purpose
I have a clear understanding of how the ePortfolio is used in my programme	Likert 1-6	Clarity of purpose / embedding
I received adequate information on how to use the ePortfolio	Likert 1-6	Training & Documentation
I had a clear task to do when the ePortfolio was first introduced to me	Likert 1-6	Training / Relevance
I had a clear understanding of the skills being evidenced in the ePortfolio	Likert 1-6	Awareness
The skills included in the ePortfolio are important in studying for my degree	Likert 1-6	Motivation
The skills included in the ePortfolio are important for my longer-term career	Likert 1-6	Motivation
The ePortfolio is important for my programme	Likert 1-6	Embedding / Relevance
Course handbooks and study guides refer to the ePortfolio	Likert 1-6	Embedding / Relevance
Teaching staff regularly refer to the ePortfolio	Likert 1-6	Embedding
The ePortfolio is easy to use	Likert 1-6	Usability
The ePortfolio is well designed	Likert 1-	Usability

	6	
The ePortfolio is easy to access	Likert 1-6	Usability
Using the ePortfolio has been a useful learning experience	Likert 1-6	Learning
I have built up a good evidence of my skills using the ePortfolio	Likert 1-6	Evidence
Building the ePortfolio gave me a sense of achievement	Likert 1-6	Achievement
Using the ePortfolio helped me reflect on my learning and development	Likert 1-6	Reflection
Overall, I am satisfied with the ePortfolio	Likert 1-6	Overall
What did you most like about the ePortfolio?	Free text	Most like
What did you least like about the ePortfolio?	Free text	Least like
Do you have any other comments about the ePortfolio	Free text	Catch all

Use of the blog and communities within the ePortfolio

1=Never, 2=once a term, 3=monthly, 4=weekly, 5=several times per week, 6=daily

Question	Type	Measuring
How often have you used the blog?	Likert 1-6	Usage
Using the blog helped me reflect on my learning and development	Likert 1-6	Learning
It was easy to link blog entries to evidence [skills]	Likert 1-6	Usability
Have you had any comments on your blog entries?	Y/N	Usage
I valued getting comments on my blog entries	Likert 1-6	Value
I would feel comfortable with sharing most of my blog entries with course-mates	Likert 1-6	Attitudes
I would feel comfortable with sharing most of my blog entries with tutors	Likert 1-6	Attitudes
I would feel comfortable posting most of my blog entries on the public internet	Likert 1-6	Attitudes
Did you view other peoples postings and comments in the community areas?	Y/N	Usage
Did you contribute postings or comments in the community areas?	Y/N	Usage
I enjoyed using the community areas	Likert 1	Value
It was useful to see other perspectives in the community discussion	Likert 1	Value
Participating in the community discussions helped my learning	Likert 1	Value
Do you have any other comments about the blog / community areas	Free text	Catch all

Your use of Computers and the Internet

Scale: 1=strongly disagree 2=disagree 3=weakly disagree 4=weakly agree 5=agree 6=strongly agree

Question	Type	Measuring
Do you own a desktop computer?	Y/N	Personal access
Do you own a laptop computer?	Y/N	Personal access
Do you have a broadband connection at home?	Y/N	Personal access
Do you use a mobile phone or a PDA to connect to the Internet?	Y/N	Personal access
How much time do you spend online for work in a typical week (University & home)?	numeric	Personal access
Using computers has been important in my education	Likert 1-6	Attitudes to IT
Computers always seem to go wrong for me	Likert 1-6	IT Confidence
I prefer to participate in an Online discussion compared to a face-to-face group	Likert 1-6	Attitudes to IT
I enjoy using computers in my leisure time	Likert 1-6	Attitudes to IT
Do you have a mobile phone contract which includes a number of texts per month?	Y/N	Mobile

Use of Social Networking

We are keen to learn more about use of social networking and its potential role in education.

How often do you use the following <u>for any reason</u> (social, fun, work/study):

1=Never, 2=once a term, 3=monthly, 4=weekly, 5=several times per week, 6=daily

Question	Type	Measuring
Social Networking sites (such as Facebook, Bebo, MySpace etc)	Likert 1-6	Social networking
Video sharing tools (such as You Tube)	Likert 1-6	Video
Collaborative authoring tools (such as Wikipedia, GoogleDocs etc.)	Likert 1-6	Collab
Blogging sites (such as Blogger, World Press etc)	Likert 1-6	Blogging
Instant messaging (such as MSN, AIM etc)	Likert 1-6	IM
Social Bookmarking /tagging sites (*del.icio.us* etc)	Likert 1-6	Social bookmarking
Virtual Reality sites (such as Second Life)	Likert 1-6	VR
Text messaging (mobile phones)	Likert 1-6	texting
Accessing the Internet using mobile devices (laptops, mobile phones, PDAs etc)	Likert 1-6	mobile

How often do you use the following <u>for study</u> (including informal course-related discussion):

1=Never, 2=once a term, 3=monthly, 4=weekly, 5=several times per week, 6=daily

Question	Type	Measuring
Social Networking sites (such as Facebook, Bebo, MySpace etc)	Likert 1-6	Social networking
Video sharing tools (such as You Tube)	Likert 1-6	Video
Collaborative authoring tools (such as Wikipedia, Google Docs etc.)	Likert 1-6	Collab
Blogging sites (such as Blogger, World Press etc)	Likert 1-6	Blogging
Instant messaging (such as MSN, AIM etc)	Likert 1-6	IM
Social Bookmarking /tagging sites (*del.icio.us* etc)	Likert 1-6	Social bookmarking
Virtual Reality sites (such as Second Life)	Likert 1-6	VR
Text messaging (mobile phones)	Likert 1-6	texting
Accessing the Internet using mobile devices (laptops, mobile phones, PDAs etc)	Likert 1-6	mobile

How do you use social networking and blogging sites (not including the ePortfolio)?

Scale: 1=never use, 2=view, 3=view & comment 3=make original postings

Question	Type	Measuring
Do you contribute or do you just view what others have contributed (for fun / social reasons)?	Likert 1-4	Participate
Do you contribute or do you just view what others have contributed (for course-related reasons)?	Likert 1-4	Participate

How do you use social networking and blogging sites: Tick all that apply (taken from ECAR survey)

Question	Type	Measuring
Stay in touch with friends	Yes/No	Social
Make new friends I've never met in person	Yes/No	Social
Find out more about people (I know or have not met)	Yes/No	Social
Find someone to date	Yes/No	Social
As a forum to express my opinions and views	Yes/No	Social
Share photos, music, videos or other work	Yes/No	Social
For professional activities (job networking etc)	Yes/No	Social
Communicate with classmates about course-related topics	Yes/No	Course-related
Communicate with teaching staff about course-related topics	Yes/No	Course-related
Participate in special interest groups	Yes/No	Social

Plan or invite people to events	Yes/No	Social
Any thoughts or comments on the use of social networking sites in education?	Free text	Catch all

Permission

It would help us better understand how the blog is being used for reflection / evidencing if we could analyse a sample of anonymised blog entries.
I give permission for a researcher to view my anonymised blog entries No (selected) Yes

Appendix 3: Data feed specification for training event details using XCRI-CAP

EPICS2 WP5 will receive feeds of information from external systems (usually training booking systems) about events which are to be passed on to subscribed PGRs.

These feeds are formatted using XCRI-CAP – a standardised XML based format for exchanging course related information (see www.xcri.org). The elements used are summarised below, but full details of their use and properties are given on the XCRI wiki (see www.xcri.org/wiki/index.php/Catalog)

The XCRI elements that are used are detailed below:

Element	Type	Comments
<catalog>	class	Root element of the XCRI CAP feed

The <catalog> element contains the following elements:

Element	Type	Comments
<generated>	datetime	The date and time at which the catalog was generated, in ISO format. Both date and time should be used.
<provider>	class	Details of the organisation hosting the event (which may be different from the organisation that the trainer(s) comes from). There may only be one <provider> per feed (note that this restriction is an extension of the XCRI standard).

The <provider> element contains the following elements:

Element	Type	Comments
<identifier> (optional)	URI	A unique URI for the provider – it is recommended that this should be a web page URL
<title> (optional)	text	A brief title to describe where the information is coming from
<url> (optional)	URL	A URL to indicate a place on the provider's website where further information can be obtained, even if it is just general information about the department offering the course
<image> (optional)	class	An image that represents the resource, such as a photo or logo
<address> (optional, multiple)	string	Address of the provider (but see <venue> – usually the address for general enquiries rather than the address of <venue>. May be used for address data that doesn't fit into <street>, <town> and <postcode>
<street> (optional)	string	Street address of the provider
<town> (optional)	string	Postal town of the provider
<postcode> (optional)	string	Postcode of the provider
<phone> (optional)	string	Phone number for general enquiries
<fax> (optional)	string	Fax number for general enquiries
<email> (optional)	string	Email address for general enquiries

<course> (multiple)	class	One or more <course> elements, giving details of courses or other events offered

The <course> element contains the following elements:

Element	Type	Comments
<identifier>	string	A unique identifier for this course element
<title>	string	Title of the course
<subject> (optional, multiple)	string	A keyword or phrase for categorising the course
<description> (optional)	structured	A description of the course
<description xsi:type="epics:seeAlso"> (optional)	string	Identifiers of related <course> elements from this <catalog>.
<url> (optional)	URL	A URL for further information on this course
<qualification> (optional)	class	Details of a qualification that can result from studying a course
<credit> (optional)	class	Details of credits that may be awarded for completion of the course
<presentation> (multiple)	class	A presentation is a particular instance of the course offered at a particular time and place and is the entity to which learners apply. Alternative names for this type of structure include course offering and course instance.

The <presentation> element contains the following elements:

Element	Type	Comments
<identifier> (optional)	string	A unique identifier for this presentation element
<title>	string	Title of the presentation
<subject> (optional, multiple)	string	A keyword or phrase for categorising the presentation
<description> (optional)	structured	A description of the presentation
<description xsi:type="epics:presenter"> (optional)	string	Name and other details for the presenter
<description xsi:type="epics:provider"> (optional)	string	Names of company providing the training (if different from <provider> element of the <catalog> element
<url> (optional)	URL	A URL for further information on this presentation
<start> (optional)	datetime	Date and time when the presentation starts
<end> (optional)	datetime	Date and time when the presentation finishes
<duration> (optional)	string	The length of time over which the presentation takes place.
<attendanceMode> (optional)	string	The primary mode of attendance

	(enumerated)	(values: Campus | Distance with attendance | Distance without attendance)
<attendancePattern> (optional)	string (enumerated)	The pattern of attendance, for example evenings, daytime, weekends
<placesAvailable>	string	The number of places available on this presentation. N.B. in EPICS2 WP5, this MUST be a number indicating the total number of places originally available to external PGRs (i.e. ignoring how many external PGRs have already booked)
<enquireTo> (optional)	string	Instructions for sending enquiries about the presentation
<applyFrom> (optional)	datetime	Date when booking opens for the presentation
<applyUntil> (optional)	datetime	Date when booking closes for the presentation
<applyTo>	string	Instructions for how to book a place at the presentation
<entryRequirements> (optional)	class	Formal and informal requirements for entry to the presentation (including prerequisites)
<entryProfile> (optional)	string	Information that would help applicants match themselves to the presentation (i.e. intended audience)
<venue> (optional)	class	Location where the presentation will be delivered

The <venue> element contains the following elements:

Element	Type	Comments
<title>	string	Name of the venue
<description> (optional)	structured	A description of the venue
<url> (optional)	URL	A URL for further information on this venue
<image> (optional)	class	An image that represents the venue, such as a photo or logo
<address> (optional, multiple)	string	Address of the venue. May be used for address data that doesn't fit into <street>, <town> and <postcode>
<address xsi:type="geo:lat"> (optional)	number	Decimal latitude of the venue
<address xsi:type="geo:long"> (optional)	number	Decimal longitude of the venue
<street> (optional)	string	Street address of the venue
<town> (optional)	string	Postal town of the venue
<postcode> (optional)	string	Postcode of the venue
<phone> (optional)	string	Phone number for the venue

<fax> (optional)	string	Fax number for the venue
<email> (optional)	string	Email address for the venue
<address xsi:type="epics:roomNumber"> (optional)	string	Room number for the venue
<address xsi:type="epics:buildingName"> (optional)	string	Building name for the venue
<address xsi:type="epics:access">	string	Details of access features for the venue (steps, lifts, induction loops, etc.)

Appendix 4: specifications for writing attendance records to ePortfolios and other remote systems

EPICS2 WP5 will involve the movement of training record data from training providers to users' home institutions. This will be achieved by a SOAP 1.2 web service as detailed below. This web service will need to be added to each system that needs to receive attendance records, and therefore the web service specification here is for a SOAP server installed on each system that needs to receive attendance records:

SOAP operation importAttendanceRecord

Operation name	importAttendanceRecord
Input message	importAttendanceRecordRequest
Output message	importAttendanceRecordResponse

Message format

importAttendanceRecordRequest

The importAttendanceRecord operation takes a single argument, which is a single string, an XML tree containing all the attendance record data., and which is transferred in the message importAttendanceRecordRequest. The root element of the XML tree is `<attendance_records>`. This element contains the following 3 elements:

Element	Type	Comments
`<message_id>`	integer	Internal message ID
`<verbose>`	integer	Whether the response should be short (verbose = 0) or should contain full debugging information (verbose = 1)
`<attendance_record>`	complex	As detailed below. Each importAttendanceRecordRequest may contain one or more attend_record elements

The `<attendance_record>` element can contain the following elements:

`<presentation_id>`	integer	Internal reference to the presentation, as stored in the training provider's booking system
`<start_date>`	date	Date of the start of the event
`<end_date>`	date	Date of the end of the event
`<venue>`	text	Venue for the event
`<provider>`	text	Provider of the event content
`<presenter>`	text	Presenter of the event
`<title>`	text	Title of the event
`<learning_outcomes>`	text	Learning outcomes of the event
`<description>`	ext	Description of the event
`<username>`	text	Username of the user who booked on the event
`<email>`	text	Email address of the user who booked on the event

<attendance_status>	integer	Status of the user's attendance: 0 = N/A 1 = Attended 2 = Absent 3 = Course Cancelled 4 = Excused

importAttendanceRecordResponse

The importAttendanceReord operation always sends a response message to convey the results of the request. This consists of a single string, which contains an XML tree. The root element of the XML tree is <response>, and it can contain the following elements

Field name	Type	Comments
<request_message_id>	integer	Message ID of the corresponding request message
<error>	integer	Code to indicate whether the importAttendanceRecord operation was successful (error = 0) or not (error = 1). In practice, this should always indicate success (0), as any errors encountered will be returned via a SOAP fault
<request_message>	text	If the importAttendanceRecordRequest requested a verbose response, this will contain all of the original importAttendanceRecordRequest message in a CDATA section

Security

This importAttendanceRecord SOAP operation will be secured as follows:

SSL encryption

The web service will have to run on a secure server. This will mean that the messages described above will be SSL encrypted

Firewall based IP restriction

It is recommended that institutions use Firewall configuration to restrict the IP address that can communicate with the web service. Requests to import attendance records will only come from a single computer, so the firewall should be set to only allow access to the web service from this computer.

Authentication

The web service will need to be set-up to use HTTP authentication. A username and password will be supplied by the web service client.

Appendix 5. Technical report on JanetTxt SOAP APIs

Background

In EPICS-2, we needed to deploy JanetTxt through the existing ePET ePortfolio system. This meant that we used the JanetTxt service in a slightly different way to most other institutions. Our work used the JanetTxt SOAP (Simple Object Access Protocol) API (Application Programming Interface). SOAP uses XML to transfer data over the HTTP protocol, in much the same way that data is transferred when accessing websites. As a way of accessing and transferring data SOAP is extremely powerful, although as we found when trying to implement the JanetTxt SOAP API, it can also be extremely complicated and if the server and client are not implemented in exactly the right way, it can be very difficult to communicate using SOAP.

Sending messages (the SOAP Client)

Although EPICS-2 focussed primarily on sending text messages into the ePortfolio through JanetTxt, we did investigate the use of the API to send text messages. The process for sending messages is relatively straightforward. You simply login, by sending your username and password and then send your message (and an array of numbers to send the message to). In practice this process was not quite so simplistic.

The ePet ePortfolio system is built using Zope, a Python-based web development framework. Zope allows us to call Python scripts from the server's file system through our web application (external methods). There are two main SOAP libraries for Python – SOAPpy and ZSI. Even though SOAPpy is now deprecated, and much of the functionality is being incorporated into ZSI, because we have had some success with SOAPpy in the past we decided to use this as a first port of call. SOAPpy is a relatively lightweight library, but it can interface with WSDL (Web Service Definition Language) files or the actual SOAP objects themselves.

Below is a simple example of a SOAPpy call.

```
from SOAPpy import SOAPProxy, WSDL
def soap_eg():
    wsdlFile = 'http://soap.server.com/wsdl/myWSDLFile.wsdl'
    server = WSDL.Proxy(wsdlFile)
    return server.my_soap_method()
```

This SOAP call simply calls a function called my_soap_method at the url specified. It returns a copy of the XML response from the server. As you can see, this is very straightforward and relatively easy to get to grips with. However, when attempting to integrate this with JanetTxt, we came across a major problem in the way that PageOne (the company who developed JanetTxt and provide the API) have implemented SOAP, and the limitations of the SOAPpy library.

A very basic example is the login method. This simply uses a function called 'ovLogin' that requires an object called 'request', that contains an array of objects – 'user-id' (our JanetTxt username) and 'pwd' (our JanetTxt password). However, PageOne's reliance on namespaces means that the 'ovLogin' object needs to be passed as a 'loginRequest'

method. Unfortunately, SOAPpy could not handle this and the returned error stated that it needed to be an ovLogin. Passing an ovLogin, stated that it needed to be a loginRequest. ZSI was similarly confusing, and although it probably could handle this request, the documentation available is very limited and the online examples are based on much more simplistic use-cases than JanetTxt.

The alternative adopted was to simply send the XML as a HTTP Request. This was really a backwards step, but it did allow us to take full control over the information we were sending to the JanetTxt SOAP service. The Python HTTPLIB Library allows us to send any data as the request, and there is also extra flexibility in the headers we send. By manipulating this information we can easily formulate a SOAP request in exactly the same format that is being requested. Where this approach falls short is that every request has to be written manually. It does not use SOAP as a way of calling functions on a remote server, but instead simply sends the XML that the server is expecting.

An example SOAP request using HTTPLIB

```
import httplib
def http_ping():
    conn = httplib.HTTPSConnection("soap.oventus.com")
    conn.connect()

    soapstr = """<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope
  SOAP-ENV:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
<SOAP-ENV:Body>
<ping SOAP-ENC:root="1"></ping>
</SOAP-ENV:Body>
</SOAP-ENV:Envelope>"""
    #soap headers
    conn.putrequest("POST", "/webservices/soap")
    conn.putheader("Content-Type", "text/xml; charset=utf-8")
    conn.putheader("Content-Length", str(len(soapstr)))
    conn.putheader ("SOAPAction","ping")
    conn.endheaders()

    conn.send(soapstr)
    theResponse = conn.getresponse()
    theXml = theResponse.read()

    return theXml
```

This actual script is used to check that the server is available and that the current session is available. The returned XML needs to be parsed to return the actual variables that make up the response. Using a standard SOAP library would return these variables as objects. However, using HTTPLIB means that the returned information is simply the XML response, which needed to be manipulated. A simple function was written using the Python SAX library which rendered the contents of the SOAP responses as a Python dictionary.
The XML parser –

```
from xml.sax import parseString
from xml.sax.handler import ContentHandler
import string

class MyXMLHandler(ContentHandler):
```

```
    element = ''
    return_dictionary={}
    temp_var = ''
    this_element = ''
    this_content = ''

    def startElement(self, name, attrs):
        self.this_element = name

    def endElement(self, name):
        if self.this_content <> '':
            self.return_dictionary[self.this_element] = self.this_content

            self.this_element = ''

    def characters(self, content):
        if content.strip():
            self.this_content = content.strip()
        else:
            self.this_content = ''

def soap_xml_parse(data):
    message = data.strip()
    handler = MyXMLHandler()
    parseString(message, handler)
    return handler.return_dictionary
```

The response from the SOAP call was in the following format –

```
<?xml version="1.0" encoding="utf-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-
ENC="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<SOAP-ENV:Header>
  <m:header xmlns:m="http://schemas.oventus.com/">
    <ovHeader>
      <session-id>SOAP_33A7A50A5C8EF69BE70F786AEB944BCA</session-id>
    </ovHeader>
  </m:header>
</SOAP-ENV:Header>
<SOAP-ENV:Body />
</SOAP-ENV:Envelope>
```

The soap_xml_parse function simply returned a dictionary object

```
{'session-id':'SOAP_33A7A50A5C8EF69BE70F786AEB944BCA'}
```

This was a very simplistic parser, and there are some limitations. It does not check for attributes on any XML element, although this can be extended by manipulating the attrs object in startElement. It also overwrites any previous entries in the dictionary if a new element exists with the same name. We have extended it to cover this eventuality, but for the purposes of JanetTxt it did not seem to cause any problems.
The use of SOAP to send text messages should be relatively straightforward. It should require some kind of authentication and authorisation, but after that initial login stage should

simply be a case of posting the numbers you want to send the message to, alongside the message you want to send. The basic principle of the JanetTxt API does allow this to happen. However, in practice this did not work for us quite as easily as we had hoped. A REST interface to this API would have been far easier to use and would work easily regardless of platform or scripting language. A REST approach is becoming more common for web services and we would like to see JanetTxt implement a REST model.

Receiving Messages (the SOAP Callback Server)

The key functionality for EPICS-2 was to receive text messages from our students. The ePet portfolio system is written in Zope, and as mentioned in the section above, sending SOAP requests from Zope can be done using Python external methods. However, receiving SOAP calls is not quite as easy. The Zope interface expects HTTP requests to be 'normal' HTTP requests, and does not allow us to access the actual SOAP request object. Zope is incredibly efficient at handling XML-RPC requests, and effectively all Zope methods can be called using XML-RPC.

We are currently in the process of migrating some of our core services into Django, and as such we investigated hosting the SOAP server in a Django-based system. However, this proved to be less successful than we had hoped. Django contains excellent support for REST-based web services but because the web framework is still quite new, and despite rapidly growing, unfortunately SOAP support remains in its infancy. It is possible to make a Django method handle a SOAP request, but there are some limitations to this facility. For example, access to the SOAP-ENV:header is not currently possible, and similar problems were experienced when setting the correct response as we found when writing the SOAP requests using Python's SOAPpy library.

As an alternative to Django and Zope, we looked at another Python web framework called CherryPy. This is a very lightweight system that allows you to publish web pages in simple python script. The lightweight nature of this system meant that it was possible to write a very basic script that simply checked the XML data and headers that formed a HTTP request, parse that XML, and send back a response in exactly the format we wanted to use. Similarly to the SOAP requests, this actually involved writing our own XML. Again, this was not the preferred option, but due to the nature of the difficulties we had experienced when using the Python SOAP libraries, and the time constraints placed upon us, this was deemed to be the timeliest option.

An example of a CherryPy server is shown below. This is similar to the option we adopted, with some minor changes.

```
import cherrypy

# Configure the CherryPy Server
cherrypy.config.update({'server.socket_host': '127.0.0.1',
                        'server.socket_port': 9000,
                        'response.timeout': 6000,
                        'server.thread_pool': 10,
                       })

# JanetTxt SOAP server
class JanetTxtServer(object):
    def index(self):
        #the request object
        xmlBody = cherrypy.request.body.read()

        # respond with XML
        retXml = """<?xml version="1.0" encoding="UTF-8"?>
```

```
<SOAP-ENV:Envelope>
    <SOAP-ENV:Body>
        <m:replyResponse xmlns:m="http://schemas.oventus.com/">
            <ovAcknowledgeCallBack>
                <response><acknowledge>123</acknowledge></response>
            </ovAcknowledgeCallBack>
        </m:replyResponse>
    </SOAP-ENV:Body>
</SOAP-ENV:Envelope>"""

        cherrypy.response.headers['Content-Type'] = 'text/xml;
charset="utf-8"'
        cherrypy.response.headers['Content-length'] = str(len(retXml))
        return retXml
    index.exposed = True

# Basic root page for this server
class Root(object):
    janettxt = JanetTxtServer()
    def index(self):
        my_html = """<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0
Strict//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd"><html
xmlns="http://www.w3.org/1999/xhtml">
<head><title>EPICS-2 SOAP Server</title></head>
<body>
  <h1>EPICS-2 SOAP Server</h1>
  <p>This is the epics SOAP server</p>
</body></html>"""
        return my_html
    index.exposed = True

# serve the pages
cherrypy.quickstart(Root())
root = Root()
root.janettxt = JanetTxtServer()
```

The main issue with this option was parsing the XML into something that Python could understand. This is far more complicated than simply writing XML. The method we adopted to implement this used a Python library called SAX. We have previously used this for parsing XML in ePortfolio interoperability standards, and for quite straightforward XML it works very well. The SAX library reads through the XML element by element. You tell it what to do when an XML element is opened, when it is closed, and what to do with the content of that element.

Below is an example of a Python SAX Parser. Again, this is similar to the script used, but with some minor changes. For example, this script does not check any attributes on the XML elements.

```
from xml.sax import parseString
from xml.sax.handler import ContentHandler

# parse the XML
class MyXMLHandler(ContentHandler):
    return_dictionary={}
    this_content = ''
    this_element = ''

    # when I find a new XML element
```

```
    def startElement(self, name, attrs):
        self.this_element = name

    # when an XML element is closed
    def endElement(self, name):
        if self.this_content <> '':
            # add this to the return dictionary
            self.return_dictionary[self.this_element] = self.this_content
        self.this_element = ''

    # do something with the strings
    def characters(self, content):
        self.this_content = content.strip()


# call the XML parser
def EPICS_parser(data):
    mymessage = data.strip()
    handler = MyXMLHandler()
    parseString(mymessage, handler)
    return handler.return_dictionary
```

The parsed XML is returned as a Python dictionary.

```
{
  'session_id': 'ThisIsMySessionId',
  'recipient':'077*********',
  'dateTimeOfReq':'2008-12-01T09:30:47.0Z',
  'dateTimeOfResp':'2008-12-01T09:30:47.0Z',
  'message':'This is my Text message'
}
```

To put this information into the database is quite trivial. We simply match the recipient telephone number with the university records, and insert this message (with the corresponding time stamp) into the student's ePortfolio blog. Some additional information is added to make this limited record fit into the blog, and some security measures are added to make sure that text message entries are not made public until the student edits them online.

Conclusions

The methods we used were not actually the methods we initially wanted to use, but due to the constraints placed upon us by the available technology we had to find some slightly quirky solutions to the issues presented. Our final code works, and provides a workable and easy to use solution to the problem of mobile integration. Python as a programming language is extremely flexible, and although the support for SOAP web frameworks is less complete than in other languages, the flexibility meant that solutions could be sought from elsewhere within the Python community.