EPS in the
School of Education
University of Southampton
http://www.pgce.soton.ac.uk/eps

Abstract

In 2001, before the term "e-portfolio" was common parlance there was a perceived need to enable teachers in training to save, store, present and archive their electronically-based work so that it could be assessed by tutors. A number of alternatives were considered but none met the criteria determined by the tutors and mentors at the time. A Teacher Training Agency (TTA) Grant was used to design and implement an online system for trainee teachers to save evidence of their activities called Electronic Portfolio System (EPS). Initially, the system was to be used for those training to be ICT teachers but it was made open to all subject areas. Over the years, its use and value has changed and, through the support of the Teacher Development Agency for schools (TDA), the system will continue to develop. The principles underpinning the original and developing features of the system were established before the coding began but can be summarised in this single phrase:

protected, easy, open, secure and free access to locally stored folders

The features of the system have grown organically because of technology changes and by tutors and mentors identifying affordances. This presentation will identify the principles and how they guide the development process. It will give an opportunity to elucidate the next stages in e-portfolio developments.

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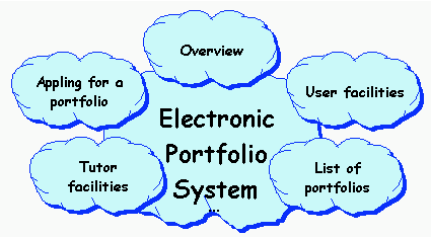
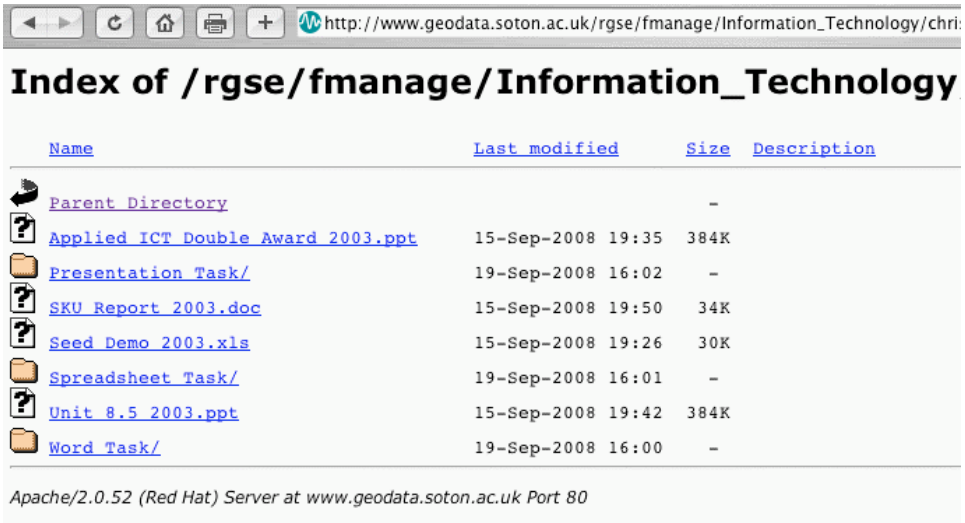
Introduction



In 2001 the EPS system looked like this…

The functionality was basic and the appearance unsophisticated. A user's portfolio was no more than an unformatted folder on the worldwide web.

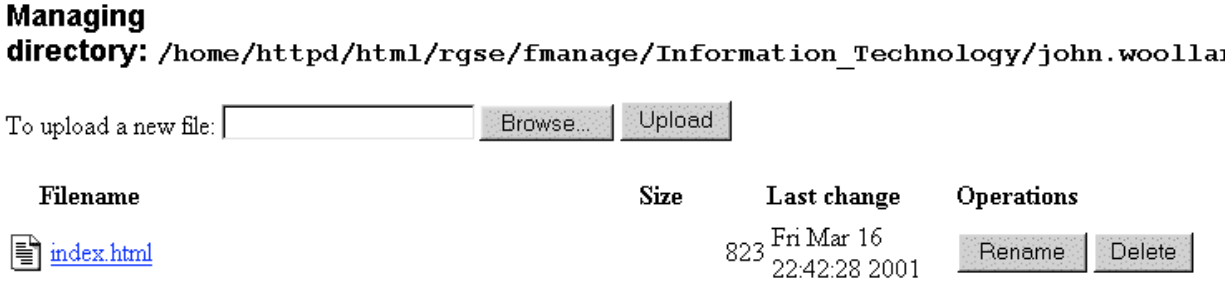


and the management view had just 4 simple functions:

browse and upload;

rename; and

delete.



"The Electronic Portfolio System, based upon technology used widely on the internet, provides our teacher trainees and students with easily accessible space to save work they wish to submit for examination. EPS enables tutors and mentors to access trainees' and students' work for review and assessment from any computer that is attached to the internet" (March 2001).

Principles

The principles underpinning the original and developing features of the system were established before the coding began but can be summarised in this single phrase:

protected, easy, open, secure, free access to locally stored folders

The features of the system have grown organically because of technology changes and by tutors and mentors identifying affordances. The principles remain intact and guide the development process.

*To ensure **open** access from any computer it is important that the system is not based upon desktop or hard drive limited systems, local area networks or intranets. It needs to have internet accessibility. To ensure that it is **easy**, the shortest available URL was established: http://www.pgce.soton.ac.uk/eps. This gateway is common for all users (trainee teachers) and enables the trainees and their mentors' access to the relevant areas and facilities.*

*Another aspect of **open** access is the vulnerability to firewalls. Many schools employ filtering systems at network, school and local authority levels to block file transfers (FTP), chat (IRC) or Samba ports. The system needs to use common port 80 HTTP access. A further aspect of openness relates to access by mentors in schools. A system based upon a commercial VLE will probably have restrictions upon or costs associated with extra users, particularly users who are not students. For this reason we were forced to reject the University-based virtual learning environment (VLE) which could not provide a **free** service to our partnership schools (WebCT and Blackboard).*

*In the principles phrase, the word **local** refers to the location of the data being stored. Because the data is associated with a person and because that data is being used for assessment purposes then the storage must comply with the Data Protection Act (OPSI, 1998). The policy and procedures ensure that the data is not excessive (Principle 3). Only information that the user chooses to submit is stored on the system. The name of the owner of the work is recorded alongside the files but no other personal or professional information is recorded on the server. The folder name is in the format forename.surname with no spaces. The data is kept up-to-date by the user (Principle 4) and the tutor cleanses all accounts on the system after University Senate has approved the award for the work (Principle 5). The data is stored on a **local** and **secure** server within the University of Southampton (Principle 7) with 24-7 internet access with that data being only accessible by authorised users. The implications of the Computer Misuse Act (OPSI, 1990) require that there is a **secure** subscription, username and password system being implemented so that we do not expose users to the possibility of carrying out unauthorised activities. The server and its data is physically **protected** because of it location within the University, The data is protected by a regime of scheduled backups and appropriate archives. The data is **protected** from unauthorised access by username and password protect at folder level on the server.*

*The word **open** also refers to the HCI (human computer interface) or users' experience when using the system. A pedagogic requirement is that it should*

*demonstrate the principles of upload and presentation in the clearest format possible and therefore accommodating the least skilled user by keeping the core facilities **simple**. The enrol process is through a single access point providing an opportunity that is independent of University enrolment or membership. There is a **simple** upload process based upon the process of browse-select-submit. At the simplest level, the user has a single online folder into which they place any resource of any file type. Those resources become instantly available across the internet to themselves and his/her tutors and mentors.*

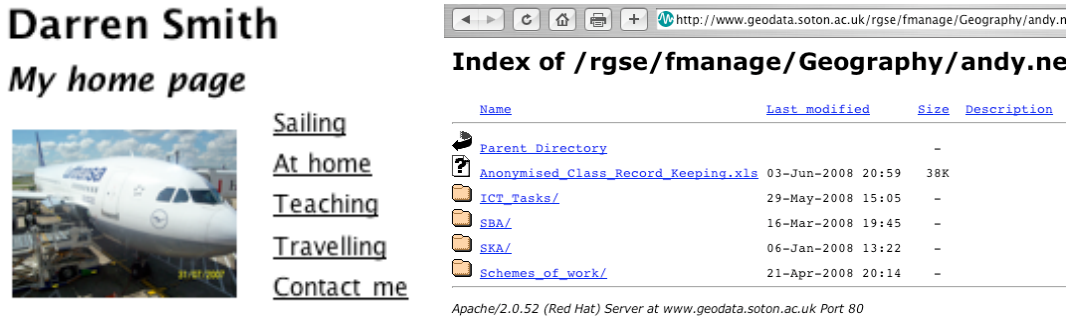
*Financial considerations are important and the **free** element refers to the enrolment of individuals regardless of University or Partnership status. However, there is a cost implication for the development of the online service and its on-going maintenance and 24-7 availability. The underpinning software is open-source and therefore free to use. However, the skills and experience of the programmer have to be paid for. The HCI design and the specification of facilities are free - they arise from the professional responsibilities of the tutors and mentors - there is no consultancy expense associated with the development. The server is a basic computer attached directly to the University network and located in the office of a member of the technical support team. There are cost-benefits because of the use of the existing University infrastructure.*

Processes

Trainees subscribe to the system providing their own username and password with an email address for correspondence. This is similar to many systems they will experience when working on the web and gives an opportunity to reinforce good habits with regard to security and password management. Trainees are given two URLs to access their portfolio. These are complex URLs because they uniquely identify the location of the portfolio on the internet. However, most users retain the email and simply click on the highlighted link.

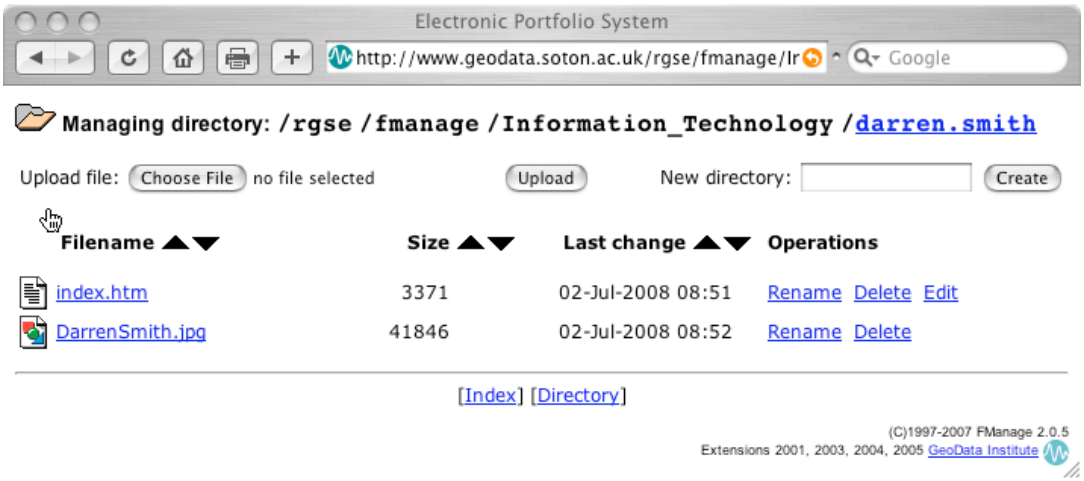
One of the URLs enables management whilst the other reveals the contents in the same way as any resource on the web. For example,

http://www.geodata.soton.ac.uk/rgse/fmanage/Information_Technology/darren.smith enables Darren and his tutors to "see" his portfolio as if it was a website. For most users, this simply looks like a list of folders and files, but Darren is a member of the Information Technology group and has included an index.htm file. The URL reveals a conventional website "homepage".



An example of a website, Darren using an index.htm file and Andy's portfolio without an index.htm file.

The other URL provided goes to the same user folder but presents the file management opportunities.



In summary, at the simplest level, trainees can create a set of files of any type. Trainees can create a folder structure with each folder and subfolder containing files of any type. A more advanced user can include in the folder an index.htm file. The folder and subfolders would then render as a conventional website - the system can be used to introduce trainees to website publishing.

In 2005, further facilities were introduced:

- *trainees could create a website or e-portfolio off-line, compress a folder of resources to a single file, upload and it would be automatically expanded and displayed online;*
- *the single file size limit was increased;*
- *a form of RSS that notified the relevant tutor when a trainee had uploaded or changed their portfolio.*

In 2008/9 a survey of trainees' and tutors' opinions will take place and guide developments funded by the TDA. The exact nature of the changes is yet to be determined but is likely to include better information (perhaps RSS) and facilities that are more efficient for tutors (for example, clearing of cohorts of files).

Reflections from the literature

There is much interest in the development and application of e-portfolios and the literature generally reflects a positive picture of the validity and efficacy of e-portfolios. There are three main themes: identifying the required functionality, building the environments and reflecting upon the affordances.

Functionality

The OSPortfolio website http://osportfolio.org provides a starting point for considering functionality. They identify the e-portfolio possessing: "tools to collect items that best represent their accomplishments, their learning, or their work; tools to reflect upon these items and their connections; tools to design a portfolio that showcases the best selections of this work; and tools to publish the portfolio to designated audiences.

The FDTL (Fund for the Development of Teaching and Learning) project first asks, who is funding the resource? Funding has important implications for the sophistication, interoperability and long-term sustainability. The FDTL development is a web-based system that provides a tool to capture, track and assess student learning remotely. The system provides students with individual, secure electronic-portfolios that contain web-forms to guide students through any educational process. FDTL is a HEFCE (Higher Education Funding Council for England)-funded project found at http://www.profile.ac.uk.

Interoperability is the ability of information gathered by a learner to be transferred seamlessly to another e-portfolio system. Guidance, reporting on research and the development of interoperability standards is through Interoperability Centre for Educational Technology http://wiki.cetis.ac.uk and is an important area for discussing the emerging issues. The interoperability issue become most pressing when the very personal learning records they form need to follow the learner as they progress through their lifelong learning and continuous professional development (Horner and Cotterill, 2006).

Another aspect of functionality is the potential to embed the system with conventional VLEs. The OSportfolio system http://osportfolio.orgis associated with Sakai http://www.sakaiproject.org and implemented at Kent University http://fpdc.kent.edu/regionalcenter/lc_0708/sakai/index.html whereas the ePET portfolio system http://www.eportfolios.ac.uk/ePET, first developed at Newcastle University in 2002, is associated with Bodington VLE http://www.bodington.org.

Building environments

Creating and developing e-portfolios in new contexts can be one of three types - open source, commercial or bespoke. Each has their advantages and challenges.

Open source: low cost basis with an army of developers sustaining the development and increased sophistication through collaboration and free

exchange of information and products. Downside - the requirement for technical knowledge/personnel.

Commercial: reliable and sustained applications with the competitive market ensuring the providers continue to develop resources and functionality. Downside: cost.

Bespoke: customised to the context and specific needs of the learners and tutors. Downside: cost and lack of developments.

Affordances

Affordances are the activities (usually related to pedagogy) that the technology enables to occur. They are the benefits for learners and for tutors arising from the functionality of the system.

Portfolios can…

- *evidence learners' prior learning and experience;*
- *demonstrate current experiences supporting PDP (personal development plans) and CPD (Continuing Professional Development);*
- *enhance students' communication and organisational skills (Brown, 2002);*
- *focus learners' thinking (Wade and Yarbrough, 1996) and promoting reflection (Schon, 1983);*
- *document a learner's progress (Abrami and Barrett, 2005; Challis, 2005; Darling, 2001);*
- *enhance learning through the process of constructing the evidence (Young, 2002; Winter 2006);*
- *celebrate achievements;*
- *help learners understand how their learning takes place (Brown, 2002);*
- *provide an alternative form of assessment (Maisch 2003).*

One particular process is called "Patchwork" which combines a collection of various texts, images, tables, forms, etc. called "patches" that build to an academic or professional theme. They are "stitched together" through a reflexive and critical synthesis (Scoggins and Winter, 1999). This is also described as the integration of "written pieces across the module, which demand critical and personal engagement, and have been the subject of peer and formative feedback, to produce a structurally unified reflective synthesis" (Ovens 2003). The patchwork file is "an attempt to combine the coherent structure of the essay with the openness of the portfolio" (Winter 2006). The importance of critical reflection in education reflects the Vygotskian notion that verbalisation is central to understanding and the development of more 'inclusive' and 'integrative' professional practice (Mezirow, 1990).

Another process is associated with a logbook. The logbook used within the portfolio system can enable tutors to make formative assessments and it can enable learners to reflect upon the learning outcomes (FETL4, 2004, Sarma et al, 2004). They report upon the development of the logbook system available

in the Bodington VLE http://www.bodington.org used by universities of Leeds, Sheffield Trent Deanery and Newcastle.

Reflections upon EPS

The most important question - what are the affordances of EPS identified by tutors using the system?

The affordances of EPS are summarised with this phrase:

learn about and experience the secure, monitored, flexible and efficient building and sharing of electronic resources

*A most important aspect of the use of e-portfolios in teacher training programmes is that they **learn about** the functionality and affordances of e-portfolio systems. It is impossible to expose all trainees to all forms of portfolio system because of the curriculum time limits and the financial implications. Therefore, it is important that the exposure they receive demonstrates the generic features of e-portfolios. Those features are:*

- *a container for the resources;*
- *a location for the container;*
- *a means of seeing the contents;*
- *a means of adding contents;*
- *a means of changing or even deleting contents;*
- *a method of registration;*
- *a method of protection (username and password);*
- *a method of securing (backup);*

The trainees should be aware of the tutors' facilities for monitoring the portfolios, in the same way as they will be responsible for monitoring the contents of their pupils' portfolios. In the EPS system, all functionality is exposed and unadorned.

The trainees are exposed to a range of assessment procedures that can be applied to e-portfolios, traditional portfolios and learners' submission in general. They can experience: formal, traditional criteria referenced assessment, peer evaluation/assessment and self evaluation/assessment.

*The system gives the tutors an opportunity to talk about the selection of usernames and passwords when registering for online facilities in general. The trainees can **learn** how and why they should have different passwords for different logins to ensure that they work in a **secure** manner.*

*Portfolios are named after their owner, for example, joe.bloggs. A very important e-portfolio on the system is called write.access. That portfolio is open so all trainees can write to it. It enables the **sharing** of resources and is widely used by trainees. It is important that trainees **experience** sharing opportunities when working online. Often, the pupils they are working with will be logged into a computer and can only read the teacher's folder and only write to their own folder. This does not facilitate **collaborative** work.*

One portfolio is named read.access. All trainees can read this portfolio. However, only a tutor can write it to. It facilitates the provision of exemplar

*portfolio resources or the **sharing** of authorised documents in a private environment (helping with some copyright/security issues where public publishing would not be appropriate).*

*The notification by email of student activity makes **monitoring** of the portfolios by tutors more efficient. This is equivalent to a RSS notification and in not too an invasive way helps tutors to keep an informal view of the usage and can be used as a formal record of engagement by individuals and groups in the e-portfolio process.*

*There is **flexible submission** of work, for example, trainees can be expected to submit work whilst in the middle of school placements without the necessity to physically send documents or for the tutor to receive them through emails.*

*The portfolio system enables trainees to **build websites** by simply including a HTML files in each folder called index.htm. Unlike conventional website production (facilitated by the University) the tutors can examine "behind the scenes" through the conventional fmanage view. They can better **learn** the concept of a website and the absolute and relative positioning of electronic resources. Website construction around a portfolio supports and exemplifies constructionist approaches to learning. The structuring of the portfolio into folders can reinforce good practice in structuring the MyDocuments folders on the trainees' own computers. The use of overarching files that describe the content of the sub-folders can reinforce patchwork portfolio principles.*

Summary

EPS is a bespoke, organic, open-source system enabling trainees to present evidence in any electronic format in a universally accessible environment giving all tutors and mentors access to that evidence. There is the facility for trainees to share documents with each other and tutors/mentors can share resources with all trainees. Trainees can learn the principles of website management. The future activities and developments will be confirmed after the TDA funded review being undertaken during the summer of 2008.

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Appendix A

Survey of alternatives (2000 onward)

http://www.pgce.soton.ac.uk/eps/survey

Appendix B

The principles of the original development:

- *accessible from any computer on the internet http://www.pgce.soton.ac.uk/eps;*
- *data being stored on a "local", secure and controlled server within the University of Southampton (Data Protection Act issues) with 24-7 access;*
- *data being only accessible by authorised users (Computer Misuse Act issues) - a secure subscription, username and password system being implemented;*
- *access not being vulnerable to firewalls in schools (by using port 80 HTTP and avoiding likely blocked FTP, IRC or Samba ports);*
- *being "freely" accessible by mentors in schools (for this reason we were forced to reject WebCT and subsequently Blackboard);*
- *demonstrating the principles of upload and presentation in the most simple format possible and therefore accommodating the least skilled trainee by keeping the core facilities simple (enrol, being given a single access point and a simple upload option);*
- *being inexpensive (based upon open-source software, stable system with a lo-cost server provided within the University infrastructure);*
- *access/monitoring of all trainees' portfolios by all tutors and all mentors; and*
- *developments and modifications being under the control of ICT-aware PGCE tutors.*