Impact study of e-portfolios on learning

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Section 1: Executive summary

Introduction

This report was commissioned by Becta to investigate the potential of e-portfolios to support learning, in light of current policy to provide a 'personalised online learning space for every learner that can encompass a personal portfolio' to every school by 2008 (DfES, 2005). In addition, the QCA's Blueprint for E-assessment proposes that, by 2009, all awarding bodies should be set up to accept and assess e-portfolios. Expectations have therefore been raised for learners as e-portfolio creators, for their current institutions and for their potential audiences.

A team of researchers from the Learning Sciences Research Institute at The University of Nottingham conducted the project between October 2006 and March 2007. They aimed to identify common themes, across a range of e-portfolio projects, and to establish dimensions and baselines that could be used for future planning and implementation. Specifically, it aimed to provide advice on:

- the potential of e-portfolios for learning
- which aspects of existing projects have an impact on learning
- whether these are transferable.

Key findings

The results of this study suggest that e-portfolios benefit learning most effectively when considered as part of a joined-up teaching and learning approach, rather than as a discrete entity. The approach should include online repositories, planning and communication tools, and opportunities for both students and teachers to draw out and present e-portfolios at particular times and for particular purposes. There is then likely to be substantial impact on both learning processes and learning outcomes.

Impact on learning outcomes

- The study found that e-portfolio processes support both pastoral and/or social needs and curriculum outcomes.
- E-portfolio processes and tools for organisation and communication support the learning outcomes of students with a wide range of abilities. Learners also develop ICT skills through using these tools, thus achieving curriculum outcomes through purposeful activity.
- E-portfolios make progress and attainment more obvious to both teachers and students because viewing and revisiting the repository of work reveals development, achievements, strengths and weaknesses.
- The combination of software tools that allow learners space for experimentation, and the expertise of teachers who can scaffold further learning, has the potential to develop creativity. But there is a potential

tension between facilitating creativity and designing supportive structures for students to enter information.

- Schools that had recently achieved their 'best-ever' results believe this was the result of an integrated, whole-school or authority-wide approach to teaching and learning support that included online tools and repositories.

Impact on learning processes

- The individual and group processes of capturing and storing evidence, reflecting and planning that many institutions currently encourage – even where they do not use the term e-portfolio – have great potential to support future individual or group e-portfolio development.
- There are some learners in all age ranges who find that software that includes structured processes and organisational tools (such as templates for planning, calendars and goal-setting exercises) scaffolds their learning until they are confident enough to progress to working independently. Some value seeing e-portfolio exemplars before embarking on their own.
- Tools that support the important learning process of feedback from teachers and peers, and collaboration within class groups and across institutions, are much appreciated by learners and teachers. These include tools for commenting, discussion forums and 'wiki-type' spaces for group projects.
- There is great potential to make connections between e-portfolio processes, such as storing, reflecting and publishing, and learners' use of emerging social software tools used outside formal education.

Commencing and sustaining e-portfolio development

- E-portfolio programmes that start in a small way, taking account of teachers' and learners' readiness, and providing different types of professional development to suit local needs, appear to be successful in all phases.
- Although some institutions are working together across phases to use e-portfolios to support transition, teachers and learners rarely consider the nature of a 'lifelong' e-portfolio repository and how this might be managed.
- Learners in many sites demonstrated well-developed processes that will support future e-portfolio development. However, a whole-institution or whole-authority approach does not imply that each area is at the same stage, and successful implementation in these case studies took account of the individual and group differences.

Many teachers and tutors realise that it would be useful to create their own e-portfolios as a professional development activity, but few have actually done so, as other factors, particularly the perceived lack of time, intervene.

Section 2: Background

The research was designed to identify the impact of e-portfolio use on learning. It is therefore important to understand participants' definitions of the two key terms.

E-portfolio

E-portfolio is a term that is becoming frequently used, with many meanings. References to the term in the Government's e-strategy, Harnessing Technology: Transforming Learning and Children's Services (DfES, 2005), indicate that e-portfolios are part of a personal online space, where learners can store their work, record their achievements (a repository function), and access personal course timetables (an organising function), digital resources relevant to their own study (personalised information) and links to other learners (for collaboration and feedback). The focus is clearly on space for learning. As well as using such spaces in schools, colleges and universities, the intention is to enable the development of 'electronic portfolios that learners can carry on using throughout life' (, 2005, p. 26).

The research team worked from an understanding of e-portfolios that incorporates both process and product, and includes a range of tools within a system that links with other systems. Broadly, the product (e-portfolio) is a purposeful selection of items (evidence) chosen at a point in time from a repository or archive, with a particular audience in mind. The processes that are required to create e-portfolios – for any purpose – include capturing and ongoing storage of material, selection, reflection and presentation.

Although virtual learning environments, repositories, and blogs support e-portfolio development, by themselves they are not likely to constitute an e-portfolio. We suggest that all types of portfolios have the potential to enhance learning, because of the processes required. Furthermore, most selections of material in an e-portfolio for presentation require some form of judgement or assessment.

When asked to describe an e-portfolio, responses from FE students included: 'It's your whole identity in electronic form'; 'A tool to market yourself'; 'A web-based resource where you can store information about yourself that can be made accessible'; and 'Is it like an online CV that gets updated every time you do something?' Primary school students generally had not heard of the term, although one said: 'Well, I've heard it, but I don't know what it means.' In the secondary schools, it was used more frequently within the pilot groups – a secondary student commented: 'Basically, it shows all the work that I've done… presenting it on the computer rather than having to lug stuff around.'

Among teachers, some saw an e-portfolio as a 'collection of evidence' for a purpose and made connections with the former paper-based records of achievement; others saw the benefits for e-portfolios in supporting personal organisation, reflection and

presentation to a range of audiences. A secondary teacher defined an e-portfolio as ‘any form of electronic folder where students will save anything pertaining to them as an individual: individual learning plan, homework, coursework… everything that relates to that student’. Another included out-of-school activities in the e-portfolio.

A more process-oriented definition came from an FE teacher: ‘We are using it as a method of recording and reflecting on skills and as a career development tool.’ Another said: ‘It’s the way things are going. Soon just giving in a CV and a letter of application will not be enough. Employers will ask for factual evidence and it’s a good thing for our students to be involved in.’ Even where the term e-portfolio was not used, learners engaged in many of the e-portfolio processes of planning and recording evidence.

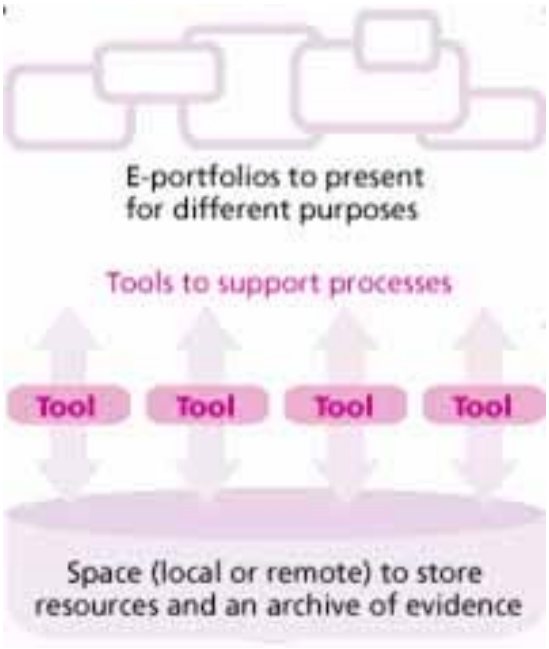
In primary schools, we found evidence of pockets of e-portfolio use, and a great deal of activity that will enable e-portfolios to be implemented in the future. One primary school used an ‘e-profile’ to illustrate/record skills as part of assessment. Others had used presentation software to create e-portfolios with the purpose of showing students’ ICT skills as they moved up to secondary school. Most of the primary teachers did not use the term: ‘We don’t talk about e-portfolios. We’re just starting to talk about learning platforms.’ However, these teachers are clearly working towards implementation of e-portfolios.

Taking a holistic point of view, Sue Nicholson, of West Berkshire Council, made an important point: ‘E-portfolios are not discrete, they are part of a system.’ Similarly, Paul Bellamy from Wolverhampton City Council indicated from the outset that their individual learning plan was but one element, though a key one, in an authority-wide initiative that touched every aspect of 14-19 provision in Wolverhampton.

As a result of this study, we suggest that an e-portfolio system contains the components shown in Figure 1.

Figure 1:

Components of an e-portfolio system



Learning

This study focused on: engagement and motivation; goal-setting and reflection; feedback and collaboration; attainment; progression and retention; and self-esteem. These aspects are considered in detail in Section 3. With the emphasis on people as lifelong learners, different processes and outcomes will be more evident and useful at different stages of life and learning.

Participants generally saw learning as a process of growth. In a typical comment, one primary teacher said:

'It's about having a better understanding of the world in all its shapes and forms. It's about being more compassionate, it's about taking into account different people's needs. And it allows them to do all of that, you know, they're going home and they're showing what somebody else has done in school: "I worked with this person on… and we made this together." And that's what learning's about, it's about just growing.'

Current policy

Several education policy levers converge in the e-portfolio arena. Since the Dearing Report (Dearing, 1997), HE institutions have encouraged students to record, reflect and build on their achievements more systematically. The Widening Participation agenda (DfES, 2003), in aiming for a wider cohort of participation in post-16 education, promotes recognition of learning in both formal and informal settings.

The Government's e-strategy intends that technology will be supportive of personalised learning, and encourages every institution to offer a personal online learning space to store coursework, course resources, results and achievements. Together with a system of identifying an individual's progression, the document suggests: 'These facilities will become an electronic portfolio, making it simpler for learners to build their record of achievement.' (DfES, 2005, p.5). Furthermore, school-leavers will have an electronic portfolio showing their achievements and best work, giving a clearer insight into what they can do in the workplace (p 12). It commits to working towards the development of electronic portfolios throughout life (p.26). This raises the important issue of audience.

The QCA's Blueprint for E-assessment proposed that, by 2009, all awarding bodies should be set up to accept and assess e-portfolios (QCA, 2004); among others, the HEFCE and JISC are supporting the work required to achieve this. Specialised diplomas to be implemented in the 14-19 phase are intended to address the need to acknowledge a wider range of qualifications for learners, and e-portfolios will be a means to record these. Some industry sectors (notably health) have seen a rapid increase in the use of e-portfolios to support personal reflection, the planning and recording of lifelong learning, and as a means of accreditation or review.

Approaches to lifelong learning throughout Europe demand reliable ways for individuals to keep records and access them when required, and the expectation is that technology will be up to the task. Although detailed discussion of technology solutions is outside the scope of this report, it is clearly a factor that will affect the success of e-portfolio implementation.

Research methods

The research used mixed methods including document analysis, surveys and interviews to achieve its aims. Becta suggested eight case studies based on information that they were using e-portfolios. They were:

- Carr Hill Primary School, Nottinghamshire
- Loughborough College, Loughborough (Further Education)
- Wolverhampton Local Authority Schools (14-19)
- West Berkshire Local Authority Schools (primary and secondary)
- The University of Wolverhampton and associated schools and colleges
- Oxford Brookes University and associated Further Education colleges
- National Institute of Adult Continuing Learning (NIACE): tutors
- National Health Service, Edinburgh: junior doctors.

Data collection

One member of the research team took responsibility for each case study. After initial contact and agreement (including written consent), site visits were conducted to establish context, collect hard copies of local documents and conduct interviews with head teachers, principals, ICT co-ordinators, teachers, learners and, in some cases, school governors. The semi-structured interview schedule is in Appendix 1, as is a list of adult participants who agreed to be named. Some interviews were conducted by telephone, and most were recorded for later transcription. In all, more than 30 teachers, tutors or managers and more than 40 school and college students or doctors were interviewed. The documents collected included e-portfolio samples, institution policies, attainment data and previous evaluation reports. Summaries of the eight case studies are found in the next section of this report. These were sent to the sites for checking by the respondents prior to publication.

An online survey was developed for students and teachers in order to gather data on usage and responses to a set of statements on a four-point Likert scale. Several open-ended questions were also included. The survey is found in Appendix 1. The response rate was affected by access difficulties, since the website filters of several institutions did not allow access to the university's website. In all, 172 responses have been collated.

Table 1: Survey respondents

Respondents	**Number**	**%**
FE/HE students	33	19
Secondary school students	74	43
Primary school students	44	26
FE/HE tutors	9	5
School teachers	4	2
Junior doctors	8	5
Total	**172**	**100**

Most survey respondents indicated their gender: females made up 62 per cent of all respondents. Among the students, 56 per cent claimed to have a personal website, but only 30 per cent of these allowed 'anyone' to look at the site. Sixty-two per cent believed they had created an e-portfolio, while 38 per cent did not think so. Some 83 per cent of the teacher respondents claimed to use e-portfolios with their students. In presenting the data, we have separated responses into two groups: one showing those who used the term 'e-portfolio', and the other showing those who responded to the questions about working in the school/college website, which we have termed 'online space'.

The data from each case study was coded and analysed to identify material relating to the broad themes of the research, and other emerging themes. The responses to individual survey questions are incorporated in the cross-case analysis section later in this report, where the data from documents, interviews and observations have been triangulated with the survey results.

One of the key requirements of the research was transferability. Lincoln and Guba (1985) argue that it is contextual similarity that makes one set of findings appropriate to another setting. This report aims to provide sufficient descriptive data to make judgements possible by policy-makers and other audiences, but argues that generalisation of results is not the most important issue in a study for policy-makers, because the aim is ‘what could be’ (in addition to what exists at present). Hence, examples of good practice should be documented even if they exist in small pockets.

Section 3: The potential of e-portfolios to support learning

In this section, we present data relating to the aspects of learning considered in the research, in order to determine the potential of e-portfolios for learning.

Engagement and motivation

Engagement can include physical attendance, social interactions with teachers and other learners, and involvement in activities. It can be measured by observation, usage statistics and reports from participants. In the case of e-portfolio development, both engagement and motivation can be affected by access to suitable technology. According to many teachers, the motivation to use the e-portfolio systems provided in each case is closely related with motivation to use ICT in general. There was a range of engagement within each project, with school students appearing engaged in several dimensions. Most institutions did not analyse the usage statistics to identify trends, and their responses were generally in terms of perceived usage, attention to the task and interaction with other people through the software. The survey results from school and college students shown in Table 2 provide a useful reality check in this case.

A teacher in one FE college said:

'If a group is in a computer room, they could be accessing it with their tutor every week; other groups, it might be fortnightly; others might just be once a month… there is quite a big variety. I had a student last year who actually used it on a daily basis because they used the action planner as they'd use their paper homework diary at school, because they could access it. You have the full spectrum!' (Case study 5)

She also commented:

'It seems like a win-win situation. The students enjoy working with the computers, and there's a generation now coming through that are familiar with working with computers, so they're not as computer-phobic as when we started the project. I think if we went in front of them with paper-based, they'd be completely turned off.'

A secondary teacher reported, in relation to the school's learning platform:

'I think when the students are working in that way, they are more focused on what they're doing, because they're there because they want to be there and they're doing it in their way, so I think that's a huge advantage.' (Case study 2)

In one FE college, a teacher reported that the visual aspects of working with ICT, as well as the reassurance of a safe environment for e-portfolio development, assist some students to become engaged in their work and motivated to produce new material (Case study 3). In contrast, doctors engaged with the e-portfolio process as it was a requirement of their programme: '…so it simply has to be done.'

Teachers across case studies reported that particular groups, such as students with special educational needs (SEN) and those at risk of exclusion, also appeared to be more engaged than previously when working with the learning platform. Teachers in schools and FE colleges reported that some students 'go into this little world' when they are working on a computer. However, while this can be construed as engagement, it is not always a positive psychological or social phenomenon and should be monitored carefully. The results of the survey questions a) and b) in Table 2 are relevant here.

Primary students were very enthusiastic about using the school website for storing, collaborating on and presenting their work. Generally, they found it 'fun', and agreed that they became more interested in their work. Among FE and secondary students, the survey results from students who 'have created an e-portfolio' (n = 66; column labelled eP) are intriguing. Although fewer than half found it fun, or that it made them more interested in their work, more than half indicated that they would like to use an e-portfolio in future. (Note that the use of the word 'fun' in the question is likely to appeal more to primary students.) A small number of teachers, on the other hand, generally felt that working with e-portfolios had been fun for their students, as well as making students more interested, with 77 per cent agreeing or strongly agreeing with these statements.

Table 2: Percentage of students in selected phases who agreed and strongly agreed with motivation statements regarding e-portfolios and online spaces (n = 149)

	Primary	**FE/Secondary**	
	OS %	**OS%**	**eP %**
a) Has been fun to use	91	41	41
b) Made me more interested in my work	95	31	44
c) Is something that I would like to use in future	98	51	56

(Primary n = 44; OS n = 39; eP n = 66)

In general, then, it seems that teachers believe the students are enjoying this use of ICT, while students are less enthusiastic. However, the results of question c) indicate that many students are quite pragmatic, realising perhaps that they should use such tools for planning, storing and reflecting on their work.

The potential for e-portfolios to support engagement and motivation could be considered in conjunction with the evidence of increasing self-esteem (Table 8), in which the results are similar. These results are influenced by the activities and the software used. Where students see a connection with their current and future lives,

motivation will be relatively high. Where the activity is mandatory and high-stakes, as in the case of the junior doctors, it is likely that it will be taken up anyway.

Goal-setting and reflection

Goal-setting and reflection are intertwined processes that support learning, and were clearly part of the purpose of the e-portfolio work in several secondary and FE settings. Setting goals requires self-knowledge as well as knowledge about the possibilities ahead, whether pertaining to curriculum, employment or personal growth. It also requires personal organisation to achieve the goals. The software tools provided in some cases, such as calendar, archiving and blog-type tools, facilitated this process.

A FE tutor explained:

> ‘We give students a model to reflect: to look at what happened to them, why did it happen, what could they do in the future. We encourage them to upload an action plan, to continually look at their development… maybe what they’ve already achieved, or by going on a course.’ (Case study 4)

In another college, a tutor said:

> ‘Having a good progress tutoring system encourages them to take time out of their studies and just reflect and think about them.’ (Case study 5)

Some students in Case study 5 commented in the survey that they learnt how to set targets and keep track of their work, adding, however, that it took ‘ages’ to do. In another college, a reflective student saw the potential as a long-term tool and suggested ‘it would be good to look at your grandmother’s portfolio’ (Case study 6).

A sixth-form textiles teacher also used the learning platform as an organising tool:

> ‘I’m trying to push more towards, “There’s no excuse for not having this in. It’s all there, you’ve got to check it”, so it leads every project onto the computers, into the computer room to have a look at where we’re at and slot it in place.’ (Case study 2)

According to one assistant head teacher (Case study 3), the digital repository particularly assists ‘fragile learners’ (such as disorganised or borderline students) to organise themselves, and to avoid losing the evidence of work they’ve done. Here, too, support is provided for reflection, especially within the Certificate of Personal Effectiveness, which encourages students to practise the skills associated with reflection. This was also the case at another school where students using the system also like the fact that when they submit work electronically, there is a record, and it won’t get lost. Their work is all in one place, and they ‘just have to look for it on the system’ (Case study 4).

Tutors in the NHS project stressed that reflection is central to a doctor's culture and that it should not be something that needs strong cultivation: it arises out of what they routinely do. The NHS e-portfolio project is relatively new, and a manager suggested that there has not been enough time to integrate a culture of recording reflection: 'The doctors themselves are interested in ticking the competency boxes and when they are in the middle of the range they are not yet asking how they might progress.'

Survey data in Table 3 shows that e-portfolios help students think more about their own learning (question a), to a greater extent than using an online space only. Those students using e-portfolios were also stronger in their responses to question b) about organisation. Both groups claim they can organise their work better than before. This is not surprising, as the question focuses more on the repository aspects than other e-portfolio features. In spite of the large number of students using the integrated planning system in Case study 4, slightly less than half of all FE and secondary students valued the planning functions, perhaps hoping for more long-term planning help.

As one student wrote:

> 'I would like more help on how to be able to make plans on the website, to help with organising myself a little better with my work. I would also like more guidance in what I would like to do when I am older and what I want to achieve.'

Table 3: Percentage of students in selected phases who agreed and strongly agreed with goal-setting and reflection statements regarding e-portfolios and online spaces (n = 149)

	Primary	**FE/Secondary**	
	OS %	**OS %**	**eP %**
a) Helps me think more about my own learning	86	46	62
b) Helps me organise my work better	84	25	44
c) Helps me see where I need to do better	77	36	46
d) Helps me plan how to improve	73	44	48

(Primary n = 44; OS n = 39; eP n = 66)

All the teachers in the survey claimed that e-portfolios helped them think more 'about learning in general'. In terms of helping to organise work, the results are less positive for students, while 89 per cent of teachers claimed it helped their students be better organised. Teachers were more positive in their responses to questions c) and d), indicating perhaps their optimism, rather than the actual situation.

The potential for e-portfolios to support goal-setting and reflection appears very strong in the data from the cases studied here. Reflective writing can be scaffolded by the structure and by teachers and tutors, and can therefore be recorded for revisiting in future. This is potentially a powerful way of allowing learners to take some control of their own progress. Coupled with the ability to 'see' gaps in a visual display, which is useful to some students, and with planning resources linked to an e-portfolio process, they will have assistance in identifying and planning where they can improve.

Feedback and collaboration

One of the claims made for virtual learning environments and learning platforms is the capacity for both collaboration in social learning and feedback, an evaluative activity that can support assessment for learning. This can involve students, teachers, parents and experts within and across institutions. There were some excellent examples of these activities in the school settings.

In Case study 2, collaboration on projects and sharing professional learning is actively encouraged among schoolteachers. This avoids 'reinventing wheels'. However, this activity is based on the learning platform, rather than an e-portfolio. In many schools, pupils, teachers and experts use the forum capability of the learning platform. One teacher said: 'The forum is good for assessing what the children know… everybody discusses as well, even the quiet ones.' Another went further, describing how students work with people outside the school through the learning platform, as a means of stimulating topics in the curriculum as well as being reflective of class activities.

An ICT co-ordinator saw the value in crossing boundaries between home and school:

> 'It's a great way for children to share work and collaborate with children in other schools. The children are able to continue their learning and share work with their parents. It helps the parents to understand better what the children are doing in school and works to build greater home-school links. The children become more interested in the world around them and enjoy having a platform to share their work and show what they can do.' (Case study 2)

Students enjoyed the communication tools provided by the various software systems to communicate with other pupils in other schools, and to make new friends. One said:

> 'I can send and receive messages from friends and teachers, which is helpful to me to do my coursework. I can send messages to my teachers if I need any extra work. It is really good to use because it becomes a part of school learning.' (Case study 4)

Out of school, primary and secondary students collaborate with friends and others in and outside their schools using more open software such as instant messaging, social networking sites or email.

One student commented:

> ‘I have [instant messaging]. Chatting to my mate, emailing my mate. We like to gossip. It has helped me with my homework.’ (Case study 2)

Some FE students felt that blogs were easier to use than their institution’s software, but that they were social software and not suitable for formal contexts. They had used these intermittently and were not regular users. They commented:

> ‘[A social networking site] is more for your personal enjoyment than for professional use as an e-portfolio would be. An e-portfolio is more for applying for universities. A blog or [social networking site] is more for your friends to look at, where you put your photographs of your holiday and that sort of thing.’

and

> ‘The social software has been around for a while now and it’s a lot more user-friendly… the instructions are much easier.’ (Case study 6)

These students generally did not collaborate in their institutional online spaces, whereas school students tended to work together on projects. This is reflected in the survey results shown in Table 4.

Table 4: Percentage of students in selected phases who agreed and strongly agreed with feedback and collaboration statements regarding e-portfolios and online spaces (n = 149)

	Primary	FE/Secondary	
	OS %	OS %	eP %
a) Is good for working with other students	100	59	50
b) Shows me what my friends are learning	93	28	33
c) Helps us give feedback on each other's work	73	46	46
d) Made me do things teachers should have done	84	34	33

(Primary n = 44; OS n = 39; eP n = 66)

This set of questions revealed some very positive responses in areas related to feedback and collaboration. Questions a) and c) received slightly more positive responses from students working in school and college websites (62 per cent positive compared with 50 per cent using e-portfolios), indicating perhaps that e-portfolios are often seen and used as individual spaces. This is further explained by the responses to question b) which indicate that students tend not to see e-portfolios, individual learning plans or progress files as ways to see what their friends are learning. This might also point to concerns about privacy and ownership, which are important issues in this area. Students would have to trust others with personal information, especially when they might be competing with their fellow students for jobs or university places.

It is important that e-portfolio creators can be sure of the limits of access to their material, and can set these limits according to their purpose. Question d) is included as an aspect of collaboration between teachers and students. The majority of respondents clearly appreciated the level of input from their teachers, and did not believe that teachers should have done more. Linking e-portfolios with personalisation clearly places the control in the hands of the learners, and they appear to appreciate this.

The potential for e-portfolios to support feedback is very high and, as the data already shows, is much appreciated by many learners. Furthermore, the potential for collaboration between teachers and their students, between students and their peers and between parents and experts is provided through linked virtual learning environments, with the proviso that it should always be the learner who decides who may see particular material, sometimes in negotiation with teachers. What e-portfolios add is a repository where the knowledge created through collaborations can be stored for later referral.

Storing and presenting evidence

Many of the purposes of e-portfolios involve presentation of evidence to an audience, whether for celebration or assessment, or for applications to institutions and employers. The study found that the content of the web spaces, in most cases, was course or curriculum-related, although evidence of outside activities was clearly encouraged in Case study 3. In the primary settings, teachers tended to collect a great deal of visual evidence by using a digital camera. There was much less use of a camera by students in these cases. In Case study 1, however, very young students were capturing material with simple video cameras while the teachers collected still images of student work. During the teachers' planning, preparation and assessment (PPA) time, the class was covered, and the teacher held conversations with individual children about the contents of their e-profiles, leading to diagnosis of strengths and weaknesses. In one impressive example, a child had recorded her voice-over on a video clip four times in order to reach the standard she desired. Older students were more likely to generate their own evidence.

Many students use personal equipment in addition to, or instead of, the school resources and, in some cases, have more experience than their teachers. One described using a family camera outside school to capture photos for the class website. Another said:

> 'I've got records of achievement, certificates and that for GCSEs and stuff, but my house was trashed and I lost all my certificates so I had to go back to AQA to get them. If the e-portfolio is accessible and has the certificates, and this is accepted by universities, then brilliant! I don't need to keep the proof.' (Case study 6)

For some FE students who are computer-literate, the system is efficient; for others, it is less so, and they would have preferred to have used paper. In line with the results in Table 2, question c), at least one tutor felt that it was worth persevering as students would have to produce a job application using an electronic format (Case study 6).

A secondary teacher saw the potential for using the learning platform to share presentations:

> 'Students teach me an awful lot. They come in with their [mobile devices] in the sixth form, where they've co-ordinated all their presentations, put it together. I get them to save it for me on the system and now we want to make it all accessible. It's growing. It's not there yet.' (Case study 2)

E-portfolio products can present teachers with valuable information about their incoming students, as a means of supporting personalisation, among other things. A primary school teacher suggested:

> ‘We’ve used presentation software, and they will upload these e-portfolios onto the school website, so hopefully for the transition from Year 6 to secondary, they will be able to show just what they can actually do. We find with any sort of changes within the key stages there tends to be a drop to begin with, because of the under-estimation of what they can do.’ (Case study 2)

This drop in achievement and engagement in connection with transition points has been noted previously, but might be overcome with increased communication between phases.

Table 5 includes data on a range of questions, showing a diversity in the responses. Students are quite happy with the size of the space they have to work in (but it is likely that in future they will need more space for digital products such as video and audio files).

Table 5: Percentage of students in selected phases who agreed and strongly agreed with statements regarding storing and presenting evidence in e-portfolios and online spaces (n = 149)

	Primary	**FE/Secondary**	
	OS %	**OS %**	**eP %**
a) Gives me enough space to store all my stuff	98	49	59
b) Makes me take more care with my work	93	36	44
c) Helps me to show people what I’m really good at	89	41	44
d) Gives me new ways of presenting my work	91	41	43

(Primary n = 44; OS n = 39; eP n = 66)

Surprisingly, in questions c) and d), students who currently use online spaces gave more positive responses than those who use e-portfolios in terms of presenting and displaying work to an audience. This may be explained by the different purposes inherent in each project, such as a focus on career planning rather than presentation to others. It could also be due to the limitations of the present use of many e-portfolios that tend to be text-based.

E-portfolio audiences include current teachers, parents, future teachers, admissions officers and employers. In some cases, there was little discussion of who the e-portfolio audiences might be outside the current institution, or the possibility that there might be several different audiences with different interests.

Attainment

All institutions have been making efforts to improve the attainment levels of their students. Schools in Case study 2 have been using the learning platform for three years, and some have recently achieved the best results ever, but as one secondary teacher said: 'It's very difficult to define. How do you know which factor did that?' Similarly in Case study 3, teachers knew that attainment had risen, and believed it to be due to the systematic whole-authority approach.

A secondary college suggested that the e-portfolio system assists attainment because it 'removes some of the barriers to learning', specifically some individual students' inability to manage learning resources in hard copy form, or set and meet deadlines (Case study 3).

In an FE college, a teacher reflected on the importance of supporting such personal organisation:

> 'Most of the modules focus on the academic skills and all the self-development study skills are in the background. In this module, they are upfront and the academic ones are at the back. They do complement each other.' (Case study 6)

a Year 10 student described how he improved the quality of his photography and had the visual evidence to show that. A sixth-former told us how pleased she was that since using the learning platform she had raised her grades in textiles significantly, from E to a B or A. A Year 4 student claimed that using the school space had helped him to move from one of the bottom groups in Year 1 to one of the top groups in Year 4 (Case study 2).

In Case study 1, very young learners, their teachers and their parents are able to see the evidence of their attainment in visual form. For the doctors at the other end of the spectrum, the e-portfolio is also used to formalise evidence of achievement, principally for their tutors, and in this regard it is seen as a valuable device to meet their assessment requirements (Case study 8).

While the capacity is not exploited at present, some e-portfolio systems can be linked with student management systems to store numerical and other attainment data that would assist students and teachers to track their progress.

Although as one FE student commented in the survey: 'To be honest I haven't learnt anything from using the e-portfolio that I didn't already know.' (Case study 6), the survey results in Table 6 tend towards a positive response to using e-portfolios to assist learning.

Table 6: Percentage of students in selected phases who agreed and strongly agreed with statements regarding attainment in e-portfolios and online spaces (n = 149)

	Primary	FE/Secondary	
	OS %	OS %	eP %
a) Helps me judge if I've improved	82	44	52
b) Has helped me to learn	91	41	42

(Primary n = 44; OS n = 39; eP n = 66)

Although one question focuses on judging improvement and the other on the process of learning, it is surprising that the results differ. Students seem to recognise the summative improvement inherent in question a) more readily than the formative improvement of question b).

The potential for e-portfolios to support attainment is linked to the other aspects of learning outlined in this report. It is also likely to be influenced by the connection of e-portfolios to other ICT supports for learning. It seems that e-portfolios make the evidence of attainment more obvious, in a range of media formats, to both teachers and students. This transparency can have the effect of giving the learner more control over their learning, and planning for future growth. A further benefit of e-portfolio systems is in tracking attainment measures for the purpose of individual planning, and, for institutions, in addressing curriculum and pastoral issues among cohorts of learners.

Progression and retention

Progression and retention are key aims of the Widening Participation agenda, and retention is a term more relevant to learners in post-compulsory settings than in the key stages of schooling. Most of the cases reported here had been using e-portfolio systems for a short time and did not provide data on progress and retention. Progress tutorials from previous years' study at one FE college can be accessed online by tutors, providing helpful tracking information when students have new tutors or move programmes. Most tutors were reluctant to suggest only one causal factor, as one stated:

> 'We know that in the tutoring process that we've been evolving, it's had a good impact and improvement on retention, achievement and success rates, which have improved year on year. We have anecdotal evidence that the work tutors have done with students in terms of the e-progress file has had a positive impact.' (Case study 2)

In one local authority, the overall pattern of participation in post-16 education was already beginning to show significant improvement, with participation in full-time courses rising from 69 per cent to77 per cent, higher than the national increase (Case study 4).

Within a lifelong learning framework, data from the earliest years would be useful in tracking progress, so the work being done in primary schools links with high-stakes work done in later years. This was recognised by at least one FE tutor, who realised the need for continual monitoring (Case study 5). Similarly, a student commented:

> 'I have learnt that the e-portfolio helps me progress with my education as it shows me how much progress I've made and my tutor can help me if am struggling with work.' (Case study 5)

Table 7 shows the relevant survey results.

Table 7: Percentage of students in selected phases who agreed and strongly agreed with the statement regarding progress in e-portfolios and online spaces (n = 149)

	Primary	FE/Secondary	
	OS %	OS %	eP %
a) Is good for showing my progress to others	89	38	50

(Primary n = 44; OS n = 39; eP n = 66)

While question a) is not strictly addressing progression through institutions, responses indicate that students have an understanding of the need to show evidence of progress to audiences, and support the contention that repositories and e-portfolios are useful in this regard.

The potential for e-portfolios to improve progression is supported by the data from cases in the 14-19 phase, where increases have been marked. However, it is clear that a system that includes planning and guidance tools, repositories of evidence and space for creativity is likely to be more successful in addressing a range of learning processes.

Self-esteem

The positive effect of e-portfolios on the confidence and self-esteem of learners is often claimed. Students and teachers in this study reported instances of increased confidence in using the technology and in approaching their learning. Students said: 'It is nice to have an area you can put stuff that you can be proud of, like in [social networking software].' (Case study 6); 'It makes me feel proud that I took my time to do that bit of work and now people can see what I can actually do.' (Case study 2);

and ‘I have learnt that everything is possible, all that’s needed is a little patience and some work.’ (Case study 3).

An FE teacher stated: ‘Some of our students are very practically based vocational tutors who suddenly start to develop more confidence if using the online space or a portfolio.’ (Case study 4). A secondary teacher reported: ‘Through dialogue with the students themselves I could very happily say that their confidence has increased.’ (Case study 2).

The self-esteem of individual foundation students in Case study 1 seems to have been increased as a result of teachers collecting evidence of their achievements. For example, perhaps they cannot count very well, but they can ride a bike – and ‘here’s a photo to prove it’, as their teacher said. This is also of value to parents, who can work together with teachers in developing their children’s self-esteem.

Table 8 presents the responses to survey questions that are linked with self-esteem.

Table 8: Percentage of students in selected phases who agreed and strongly agreed with statements indicating self-esteem as a result of using e-portfolios and online spaces (n = 149)

	Primary	FE/Secondary	
	OS %	OS %	eP %
a) Helps me to be creative	89	29	36
b) Helps me to feel confident	84	24	35
c) Has made me pleased with my progress	98	44	42
d) Helps me understand my work better	82	44	39

(Primary n = 44; OS n = 39; eP n = 66)

The question on creativity (a) is included here as an indicator of outcome, although it could also be included in motivation as an indicator of input. It is likely that the responses to all questions are heavily influenced by the software used and the purposes motivating use in the cases studied. Most secondary and FE students did not regard online spaces and e-portfolios as areas for creativity. Questions b), c) and d) focus on different aspects of self-esteem. It is interesting to see that although students tend to ‘understand their work better’ and are ‘pleased with’ their progress, for students other than those in primary schools, using e-portfolios and online spaces does not, in the main, help them to be more confident. This could be due to the extent of feedback and reflection that they have engaged in: more constructive feedback and reflection is more likely to enhance confidence. This points to an important role for teachers and tutors in promoting the social, as well as the instrumental, outcomes of learning activity.

Transferability of factors influencing successful e-portfolio implementation

In this section, we consider how the findings from each of the case studies might be transferred to achieve wider implementation of e-portfolios. The two major factors identified through the cross-case analysis that appear to have a major impact are: appropriate and reliable technology, and a learning-oriented organisational culture.

Appropriate and reliable technology

Using technology to suit the purpose, the users and the audiences is important for many pedagogical reasons, whether it be off the shelf, open source or custom-made. Students are becoming familiar with other repository software, and expect similar functionality. This study revealed a range of experiences among the cases, and a warning that educational software could be in competition with social networking software currently used by many students.

In Case study 2, the software was relatively 'invisible' as teachers and students concentrated on communicating and collaborating through it, and storing material in it. This has the benefit of reducing distractions for students, allowing them to concentrate on the curriculum, rather than the software. A less-than-satisfied student in Case study 6 described what the software should do:

> 'What you want to do is click on e-portfolio, the link, and then enter your name there, the same way as [a social networking site] works, one button, a password and there it is and it's simple to use.'

Their tutor reflected:

> 'It takes time and adequate funding to produce a truly useful website or e-portfolio. No one has quite thought through whether one piece of software can do everything for everyone or we do need to think of separate software for different levels of students and abilities.'

Similarly, the project co-ordinator wrote:

> 'I engage in many e-portfolio-like practices. Those involving dedicated e-portfolio tools have been far less satisfactory than those involving social software tools such as blogs, wikis, social networking sites.

Survey comments indicated that junior doctors also found some difficulties with their e-portfolio software: 'It must be simple, with an intuitive interface which incorporates all the aspects it needs and not rely on external sites'; 'It should give full access to assessment as you would on paper and be customisable in its method of output. It should also be reliable and FULLY (sic) tested before it is released for use'; and 'Basically it needs to be redesigned (perhaps by a junior doctor) so that it is more relevant to our practice'. One doctor suggested it should be more flexible so they

could ‘attach or add in documents such as databases of patients seen’. An important point made here is the benefit of involving users (e-portfolio creators) in the design of the technologies they are to use, although we found no examples of this.

Once software issues are dealt with, access must be considered. In schools and colleges, this is dependent on access to desktop computers, and could in future be provided through handheld devices such as PDAs. Home access depends on both hardware and telecommunications network connections, and sometimes, access to local area networks of the learners’ institutions. In the cases where access was via the web, students could work on their e-portfolios from remote locations. In such a case (for example, Case study 4), institutions do not yet pay for their use of the software, but to scale up the project will require financial resources to cover the costs of the repository and tools.

For doctors, access to technology may be quite difficult. Laptops are not allowed in hospitals, and there is competition for public terminals. PDAs have the problem of local storage and danger of loss of confidential material, while remote storage requires wireless, which is unlikely in a hospital setting.

Through the projects reported here, it is clear that the most transferable practices are based on integrated software systems designed to meet the needs of stakeholders: learners, institutions and audiences.

Organisation culture

Important aspects of organisational culture that impact on e-portfolio development and learning include: planning; approaches to teaching and learning (including personalisation); the roles of teachers and tutors; forms of professional learning; and the use of evidence in all its forms.

In a primary school with a clear approach to teaching and learning in policy and practice, a teacher said:

> ‘The single biggest change in our school is people’s confidence levels with using the ICT, and the culture change of not being the font of all knowledge… of allowing the children to lead where it goes, and to learn from them.’ (Case study 2)

This reflects a fundamental belief in the capacity of learners to take responsibility for their own learning, in partnership with teachers who provide expertise in helping them develop the processes of learning. The notion of teachers working in partnership with students was also raised in a secondary school, where the learning platform was seen as an opportunity for teachers to engage in dialogue with their students more than previously, and consequently to have a better understanding of the capabilities of the students (Case study 2). If e-portfolios are to become

widespread, institutions need to identify, at the planning stage, how they fit in with their approach to teaching and learning.

Constructive dialogue between teachers and learners supports personalisation of learning, as the knowledge gained by teachers allows them to provide targeted resources and appropriate support, and to monitor student progress. When well used, e-portfolios can provide a means of knowing more about learners' skills and knowledge, so that whole courses can be tailored to their needs. It may well be that the potential for personalisation is a key factor in successful implementation, by also encouraging more creativity and a sense of ownership in learners. Adapting the processes and the software to individual needs is likely to result in greater use of e-portfolios. For example, in Case study 5, steps were taken to adapt computer screen displays to help visually impaired students, with the consequence that these modifications were taken up by other students as well. In the NHS case, the ability to provide evidence of competencies achieved was valued, but there appeared to be limited opportunity to discriminate between individuals using the same template, and as a junior doctor commented: 'It may be difficult to stand out using the e-portfolio at interview.'

One of the key resources in successful implementation of innovations is time, and the ways it is used impacts on both student and teacher learning. Students in FE colleges made many comments about the amount of time required to both understand and create their e-portfolios and related spaces. In the NHS project, there was a sense that full implementation would inevitably be slow for the tutors. A group of staff in one school was given time to add resources to the learning platform. The amount of time devoted to planning and establishing e-portfolio use should be substantial, but a whole-school or whole-institution approach does not imply that each area is at the same stage, and successful implementation in these cases took account of the individual and group differences.

The 'evidence culture' – the notion of using a range of evidence for students to monitor their own learning, and for institutions to monitor their practices over a period of time – was not well developed, but was mentioned by some participants. Such a culture can include self-review frameworks for individual teachers and whole groups, as was being used in Case study 2.

As might be predicted, teachers and tutors have a large role to play in how e-portfolios impact on learning, both through their attitudes to teaching and learning, and to the innovation. Strong understandings of how innovations are implemented in educational settings came through in some cases:

> 'The first stage is awareness. You need to know what's there and how it can be used and of course that changes every week, getting better and bigger.

> And then making sure that what we are doing with it is of value and in future is sustainable.' (Case study 2)

Ongoing professional learning is an important part of an organisation's culture. Generally, whole-staff training en masse was seen to be less useful than targeted learning activities. One FE college in Case study 4 allocated funding for staff development, to give the tutors additional time to work together as a team, to work out how they were going to use it, and how they would roll it out with students. A local authority (Case study 2) runs a scheme whereby teachers in schools are paid an honorarium and allocated a number of days for supply cover. On those days, they provide advice and hands-on activities for other teachers, and this has supported the successful development and use of e-portfolios. In another authority, teachers clearly modelled good practice to their peers.

Many teachers and tutors realised that it would be useful to create their own e-portfolios as a professional learning activity, but we found few who had actually done so. In Case study 7, the e-portfolio development was entirely for tutors in the ACL sector, with mixed success. There was evidence of impact on professional learning and development for one FE tutor who had previously created an e-portfolio in Case study 6. Others indicated that they would like to do so, and had clear purposes for e-portfolios, but other factors, particularly the perceived lack of time, intervened.

Perceived efficiency

The most efficient and successful projects observed in this study appeared to be those with several of the following characteristics: clear plans and goals; broadly constructivist approaches to teaching and learning (including personalisation); collaboration between teachers and tutors; targeted professional learning; appropriate software and hardware; and the use of evidence in all its forms.

As noted in the case studies, many participants found e-portfolios and associated online spaces to be efficient for storing material, receiving feedback and communicating with selected audiences. In Case study 5, management of the progress tutoring system has become much more efficient than the previous expensive and cumbersome paper-based version. Most NHS tutors, supervisors and administrators saw value in streamlining the necessary tasks of assessment (Case study 8). A secondary college (Case study 4) reported saving time (for both teachers and students) as a result of better personal organisation among students. Furthermore, due to the web-based nature of the software system, when students leave at the end of Year 11, the e-portfolios will be able to be accessed via password from the FE colleges.

The potential for information overload was raised by some primary teachers, who identified a potential tension between the data being representative of a child's learning while remaining manageable. This highlights the need for selections of

material to be made from the larger repository from time to time, for specific purposes.

The survey asked if e-portfolios took up 'too much time' and the results (see Table 9) indicate that the majority of students found they did not take up too much time, either in or out of class, and found them fairly easy to use because their teachers provided help. Teachers reflected on these responses, with most agreeing that they did not take up too much of their own time either.

Table 9: Percentage of students in selected phases who agreed and strongly agreed with statements about the efficiency of using e-portfolios and online spaces (n = 149)

	Primary	FE/Secondary	
	OS %	OS %	eP %
a) Has taken up too much time in class	2	23	32
b) Has taken up too much time out of class	7	16	35
c) Is easy to use because teachers helped me	55	57	52

(Primary n = 44; OS n = 39; eP n = 66)

E-portfolio maturity modelling: Preliminary work

As a part of the study, the research team developed a draft e-portfolio maturity model that could potentially be used in subsequent projects to help define and identify good practice in the field.

A maturity model is a profile based on a set of text descriptors that can be used to provide a snapshot of an organisation's progress towards an increasingly optimised point of development. The descriptor set is generally developed in three stages. First, a group of experts negotiates a tentative set of descriptors with key stakeholders, drawing upon both existing evaluations in the domain and new data gathered from field research. Second, the working set of descriptors is developed into a reference set, following piloting with a number of organisations, in order to check the usability of the model and to verify the scaling of the descriptors in field contexts. Third, the reference set is used in authentic contexts (either by an external evaluator, or as a self-assessment instrument) in order to establish an organisation's degree of maturity in the chosen domain, and (usually) to chart progress towards optimisation and increased maturity over time. Table 10 shows an example of a maturity model descriptor set.

Table 10: Example of a maturity model descriptor set (Becta, 2007)

1. Policy				
There is no collective or written policy for ICT provision in the institution. No organised consultation. No clear focus.	There is a draft policy but no action plan. The policy is delivered top-down. Focus on establishing effective ICT systems.	There is a clear policy but no clear action plan. The policy has been developed though consultation across the institution. Focus on establishing effective ICT systems.	There is a clear written policy and action plan. Developed through consultation. Focus on enhancing effective teaching and learning outcomes rather than on technology per se.	There is clear and innovative vision, from which a shared policy and action plan have been developed. Focus on the potential of ICT for teaching and learning, and effective support mechanisms to maximise attainment. Institution proactively keeps abreast of developments.

In the present project, the intention was to complete only the first of these stages. A full and carefully revised descriptor set was developed, based on the theme of organisational maturity in relation to e-portfolios, with descriptors revised to take account of insights gained from the case studies. Because of the need to complete the project within six months, it was not possible to carry out the piloting, usability and validation stages. However, the object of the exercise was to provide a descriptor set that would be robust enough to undergo qualitative and quantitative trials in a range of field contexts.

To complete this first stage of developing a descriptor set ready for piloting involved four drafts, consultation with a number of key stakeholders and consultancy meetings with the Nottingham Trent University (NTU) team that had previously led Becta's influential first study of the application of maturity modelling as part of an ICT evaluation in complex multi-site contexts (Becta, 2007).

The first step in drafting the e-portfolio maturity model was to draw upon a bank of 67 descriptor sets developed by the NTU team for reporting on a wide set of policy and user issues relating to the use of ICT in educational settings (Becta, 2007). Most of the items in the NTU set were not used in the e-portfolio model, since they related to contextual and background factors, but some were retained, and others were adapted to sharpen their e-portfolio focus.

At two half-day workshop meetings, research team members, project consultants and NTU colleagues worked together discussing thematic areas that might be

developed into maturity model descriptors, and these discussions produced a number of draft items. At two subsequent workshop meetings involving research team members, these descriptors were revised and new ones formulated to take account of emerging findings from two other sources: the project team's interview data; and the very rich data that was emerging from the online survey of e-portfolio users (and some non-users) across the case study sites. Finally, the 17 sets of descriptors that emerged from these rounds of development were shared with Becta colleagues, and went through a final round of revisions to increase clarity, sharpness of focus and comprehensiveness in relation to the project's research goals. The draft instrument is found in Appendix 2.

Recommendations for further research

As a result of this study, several areas for further research have arisen. They include:

1. Substantial longitudinal work (three to five years) investigating the particular uses and benefits of both personal and collaborative online spaces and e-portfolios in a range of settings. In contrast to short-term projects, this would build up a picture of the effects of the e-portfolio processes and products with clear cohorts of students as they progress through formal education. Specific attention should be given to transition points such as Year 6 to Year 7, Year 10 to Year 11, entry to FE or HE institutions, and application to employment.
2. Future research should focus on social outcomes such as self-esteem and confidence, and the ways by which individual and collective creativity can be supported by e-portfolio systems, with reference to the extent of use of social software systems, the skills that are developed by learners through these systems, and their role in enhancing links between home and school.
3. Research to clarify the potential audiences (teachers, parents, employers, admissions officers, clinical staff or completely unknown audiences), and their state of readiness to receive and understand e-portfolios, would identify areas for future development and dissemination projects. This includes methods of assessment of e-portfolios.
4. Research into the potential for data-mining at institutional, local and larger scales, within privacy guidelines, would be valuable.
5. A full validation study should be undertaken to establish the usability and legitimacy of the e-portfolio maturity model presented in Appendix 2.

Section 4: Case studies

Case study 1: Pre e-portfolio activity in a primary setting: Carr Hill, Nottinghamshire

Introduction

Carr Hill Primary School is located in Retford, Nottinghamshire, and caters for over 450 children aged from three to 11, from across the economic and social spectrum. Comparative assessment figures indicate that ability levels across the curriculum are broadly in line with national averages, with the exception of speaking and listening at Key Stage 1, where Carr Hill pupils are markedly above the national average.

The stated aim of the school is to 'provide a happy and caring atmosphere, in which we will promote high standards of achievement and behaviour, which are appropriate, sensitive and meet the needs of the individual child'.

Summary

This case study revealed that, without using the term 'e-portfolio', a great deal of useful work in creating repositories of evidence was going on:

- Students in foundation years create an 'e-profile', based mainly on images of activities and outcomes, with the assistance of their teachers. These are used in a diagnostic way for assessment and planning and have the effect of increasing self-esteem for many students.
- Parents are able to view the e profile at school meetings to see what their children have achieved.
- The e-profile system represents a model of progress recording that has been found to be successful with three- to five-year-old children, which is an initial (and arguably necessary) stage on the road to full e-portfolio development.
- The collaborative, 'can-do' school ethos encourages learning and sharing of knowledge, both for teachers and students.
- Effective and supportive leadership comes from the head teacher and deputy head teacher, and dedication and vision from innovators/key players such as (in this case) a previous ICT co-ordinator and the head of Foundation Stage.
- Teaching and learning is supported by the allocation of funds to sufficient computer hardware, a full-time ICT technician and professional development opportunities.

The school prospectus states: 'The ethos of the school provides a calm and purposeful atmosphere where children are able to work and play without disruption from others.' Children appeared to be granted a high degree of responsibility and

were noticeably at ease guiding visitors around, and carrying out tasks such as entering the staffroom during lesson time to return mugs, and transporting TVs on AV trolleys from classroom to classroom.

E-portfolio use at Carr Hill

The system used at Carr Hill is not an e-portfolio, nor is it referred to by any Carr Hill staff as such. The contents are almost entirely selected by the teacher, and there is no provision for goal-setting or reflection on the part of the learner. That said, the system in use does share some features of genuine e-portfolios and provides a very useful example of how e-portfolios might be introduced to very young learners in a restricted form, with the learner gradually taking more control over the process as s/he progresses through primary school.

The system is an electronic record of performance, in the form of digital photos together with some video clips. It is referred to by the teachers using it as an e-profile, and by the children as 'my folder'. The description of 'profile' or 'folder' is apt: each child has their own computer folder, which contains a series of (mainly) photos of work they have done or skills they have demonstrated (for example, handwriting, drawing, riding a bike). This folder demonstrates to the teacher, child and parents what the child has been able to achieve.

The e-profile is currently used with the foundation year children only – that is, with children aged from just after their third birthday to those nearly six – and they have not 'taken them with them' as they have progressed through the school. Children at Key Stage 2 do use computers to store all their work in a personal folder, but this is not yet used for the purpose of showcasing progress or achievement.

However, Heather Shaw, Head of Foundation Year, who developed the e-profile system, has recently introduced the system to all staff in a staff meeting, and it is hoped that the system could be used across the school, with the current cohort of foundation year children being the first to continue with it into Year 1 and beyond. The teacher (and sometimes the child) takes photos of a child's work to create a record of what the child has done or achieved. These decisions are usually made by the teacher:

> 'We usually discuss with the children the fact that we're going to put something into their e-profile, so it might be that they're working on a draw programme and so you would say, "We're going to save this in your folder"…or it might be that you've taken a photograph of them having achieved something and so you would say, "This is where your digital photograph is saved".'

These photos typically portray products such as examples of drawing and writing, but also show students taking part in activities such as dressing up and interacting

with peers. The teacher (and sometimes the child) may also make a video recording to demonstrate a process such as interaction with peers. Once a photo has been taken or a video clip recorded, the teacher labels it and uploads it to the folder for the appropriate child, or to the folder for the year group. Screenshots from children's e-profiles are shown in Figures 2 and 3.

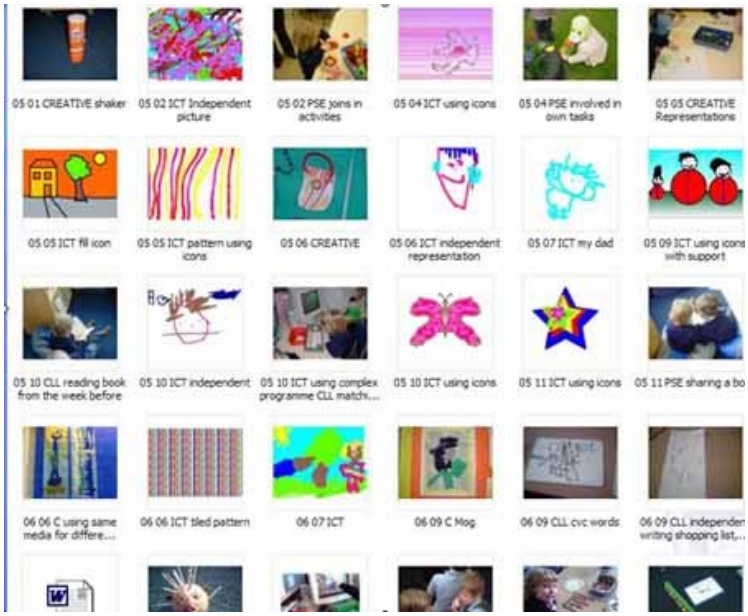


Figure 2: Screenshot of a child's e-profile

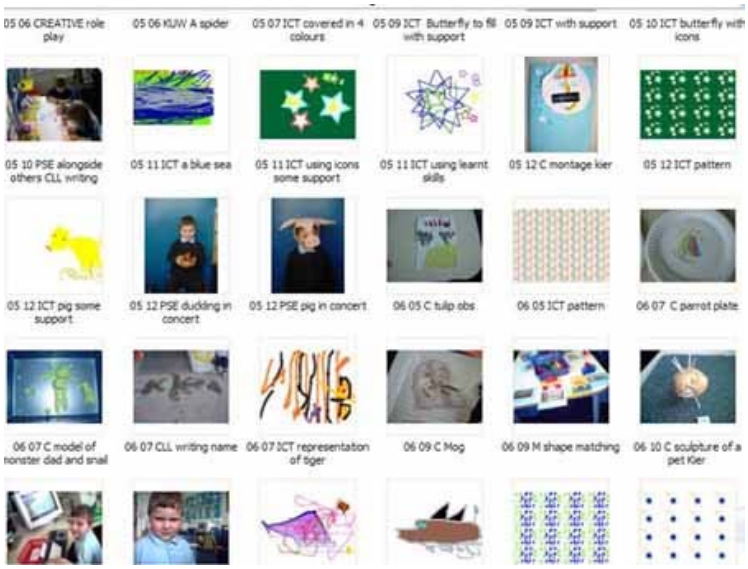


Figure 3: Screenshot of a second child's e-profile

According to Heather Shaw, the e-profile has two main purposes. The first is to provide evidence of each pupil's achievements – in other words, the e-profile acts as an assessment tool:

> ‘It’s used as part of the assessment that we make on the children, by taking photographs or little video clips that we can do now, showing just where children are, their social skills, or their confidence skills and things like that.’

The second purpose is to enable teachers to identify aspects of the curriculum that have not been covered or children who have not achieved certain skills yet: here, the e-profile acts as a planning tool for teachers:

‘You’ve got to keep assessing them… in order to make sure that you’re covering the whole of the curriculum… by using a data handling program, it’s easy to see if there are areas [that you haven’t covered].’

> ‘We have a data handling program which has all the statements and whether the children have achieved them or are working towards them, so you can think, “Right, I’m going to do an activity today which includes linking letters to sounds. Which children would be the most appropriate to work with at that level?” And you can actually use the data program to find that out so it will identify the children who you need to work with on that activity.’

There are several benefits of the e-profile system compared with paper-based approaches. Although most of the decisions relating to the collection of data to be stored in the system are currently taken by the teacher, she believes that the children, even the young ones, do feel a sense of involvement in, and ownership of, their own profile. The five-year-olds observed – a representative sample, containing a range of linguistic and academic abilities – were uniformly keen to talk about the pictures in their e-profiles.

Compared with paper-based record-keeping, the digital system is much more user-friendly, so that, for example, teachers give curriculum labels to photographs and video clips, and can retrieve them easily. Similarly, the database program makes the digital data easy to access and sort:

> ‘You need to know which 10 children are working at this level and this particular area at any given time, and plan for that group of children to do an activity together. If you’re looking through 60-odd separate pieces of paper, that takes forever, so it’s not feasible to do.’

It also provides a clear overall picture of the strengths and weaknesses of each child to other staff (for example, if another teacher is taking over the class).

The system is popular with parents and very successful on open evenings, showing parents what their child has achieved and helping them to see that the school sees them as a whole person. One teacher said:

‘Parents ask “Can they write their name?” or “They can’t seem to count yet” or whatever. And for them to be able to see they’ve done this, and they’ve done that, and what they’ve managed to achieve in this area helps parents understand that we value those kind of things as well.’

Importantly, the e-profile can boost the child’s self-esteem and motivation (particularly with those who may be struggling and might otherwise ‘learn to be failures’ very early on in their academic career), as a teacher said:

> ‘Often the child who manages to do it [learning to ride a bicycle] is probably a child who’s struggling with the more academic side of the curriculum, so it’s really nice that you’ve got this, “Look what you’ve achieved. We’re going to put this up and show everybody that you can do this.” So, from the self-esteem point of view, it’s really good.’

Similarly, capturing achievement of a new skill provides a record that can enhance self-esteem:

> ‘Some children do really struggle to get their formation right in their handwriting and they get a lot of pleasure from when they do get it right. That’s the kind of thing that they could take a photograph of.’

For children with special educational needs who might work very hard but still not achieve particular criteria, the evidence in the e-profile provides some reassurance that they are progressing. For all, motivation is enhanced when teachers recognise achievements.

Finally, the e-profile makes clear to children what their strengths and weaknesses are, and what they should be able to achieve.

- A number of factors emerged from discussion with Heather Shaw and the deputy head teacher of the school which indicate why Carr Hill has been able to maintain this innovation over a number of years. Both mentioned the following:
- Sufficient computer hardware (the school is well equipped, with a recently upgraded and networked ICT suite of 20 computers, two trolleys of 20 wireless laptops each, 24 computers around the school outside different year groups, 30 digital cameras and 15 child-friendly video cameras).
- A full-time ICT technician (who has completed training in server use).
- A supportive school ethos, which is not competitive and in which ‘everyone goes for things’, and in which people with technical skills teach/coach/mentor those who don’t on an informal basis.
- Professional development is supported: financial support is provided to enable teachers to go on training courses.

The school has a large staff, which makes it more likely that there will be people with technical expertise to share. In addition, teachers have time to share ideas and practice with each other at weekly after-school staff meetings. Leadership is important, and subject co-ordinators have cross-curricular responsibility, which helps the sharing and implementation of innovations across the school. The head teacher is supportive, ensuring that initiatives that are taken on are those that are useful, 'not just because they're part of a national agenda'.

Future e-profile/e-portfolio use at Carr Hill

Although the e-profile has been successful from the point of view of Foundation Stage teachers, pupils and parents, the system is still a work in progress. This section looks at changes that are already under way, as well as at changes that might be made in the future.

In future, with increasing use of digital cameras in the school, learners will be more involved in recording evidence of their work. Already, five-year-olds have produced their own video recordings (with voice-overs) and there is clearly great potential for handing over more control of the recording process to the learners themselves. However, it remains to be seen whether or not a change in who operates the technology is accompanied by a change in who decides what is to be recorded in the first place.

Another development is that teachers are starting to record children's feelings about their work:

> 'It gives you the opportunity which we're starting doing now, we can take video clips of talking to the children about how they felt about something or what they felt they could do differently.'

Including an element of reflection would move the e-profile closer to being an e-portfolio, rather than purely a repository. This is not without problems for children at the Foundation Stage, as some may lack the metacognitive awareness or language skills to evaluate their performance or plan future learning activities. For example, one boy, when talking about the pictures he had drawn, was able to identify that his earlier squiggly drawing (see Figure 4) was somehow inferior to his later drawings (see Figure 5), but was unable to express in what way his drawing had improved, despite the differences being very visible. At this stage, looking at their pictures and photos on the computer is clearly something the children like doing, but there may only be a few who see their e-profiles as a chance to see how they have progressed (one boy said he liked his e-profile simply because he could click on pictures and enlarge them). However, the ability to evaluate does develop with time. Another four-year-old, talking about the difference between an earlier squiggly drawing (as in Figure 4) and a later drawing of an angel, was able to talk about the differences both

in the particular drawings and in her drawing ability in general at different stages in time:

> Q: How do you think it's got better?
>
> A: Because that was a squiggle… as I got older, I did this picture and I liked it…'cos it was an angel. Because hen I was younger, I did all squiggles. When I grew bigger, I drew nice pictures.

Figure 4: Learning over time – An early drawing (squiggles)

Figure 5 shows another example of this growth.

Figure 5: Learning over time – Later drawings by the same child (a tiger and a camel)

It is hoped that the e-profile system will be taken up by teachers from Year 1 to Year 6, and that this current cohort of Foundation Stage pupils will continue to use their e-profile as they progress through the school. The deputy head teacher also intends children in Year 6 to keep a personally chosen record of achievement.

Given the right conditions, there is no reason why the Carr Hill e-profile system cannot be transferred to other situations involving either very young children or the very early stages of e-portfolio development. However, educators need to consider

carefully the factors listed above that have combined to make the Carr Hill experience a success story thus far. It has been due to the supportive ethos, dedication, leadership, funding, and practicality of the ICT that e-profiles have started to become embedded in the school culture.

Case study 2: Early e-portfolio activity across a local authority – West Berkshire Council

Introduction

West Berkshire Council is a local authority where a diverse range of learners (particularly students and teachers) are encouraged to collaborate and cross many types of boundaries. The population is dominated by people of British/European background whose socio-economic circumstances range from affluence to deprivation.

Sue Nicholson, co-ordinator of the project at the local authority, gave freely of her time to explain the broad purpose and implementation of the learning platform and the move towards e-portfolio use across 85 establishments over the past three years. The schools visited were large and small, primary and secondary: Theale Primary, St Nicolas CE Junior School, Falkland Primary and Park House Secondary.

Summary

This case study revealed:

- The local authority takes a whole-of-authority view in providing online spaces for its schools, and in supporting the training of ICT teachers who can support others in their schools.
- E-portfolios are seen as part of the whole system: people, technology resources, curriculum and so on. It is the 'integration of systems and people meshing together' that accounts for the success to date.
- There is a comprehensive ICT development programme for governors, teachers, and other staff across the authority.
- School leadership sets high standards and works to develop a learning culture.
- Schools are encouraged to use the technology as a repository, communication and creativity tool across the boundaries of home and school, school and school, and learners and experts.
- The e-portfolio skills of organisation, recording evidence, reflection and presentation are being developed here even where the term e-portfolio is not used.
- Allowing teachers to learn in a personalised fashion, and using robust software in which they have confidence, has facilitated implementation to date.
- Schools have made a start in using data from a range of tools to monitor the learning progress of individuals and cohorts.

Schools in West Berkshire have policies relating to teaching and learning and ICT, but we found no specific policies regarding e-portfolios. They tend to use e-portfolio processes in whole-class spaces, and are moving towards individual e-portfolios. Sue Nicholson told us: 'An e-portfolio for our students across the board, from primary all the way through, will have full group functionality, so children will be able to design web pages, they'll be able to run and record their own forums, and run online questionnaires. Everything that the children are doing now will eventually form their e-portfolio.'

When asked if they had used or heard of e-portfolios, a primary student replied: 'Well, I've heard it, but I don't know what it means.' A secondary student involved in piloting e-portfolios at Park House said: 'Basically, it shows all the work that I've done, presenting it on the computer rather than having to lug stuff around.' Sue Nicholson clearly sees e-portfolios as part of a system, and suggests: 'What we're talking about here is e-space in whatever form.'

Approach to e-portfolios

The purposes for e-portfolio use are many. Teachers and governors are aware of government policy regarding online spaces for learning, and are working systematically – through targeted pilot groups and selected activities – to 'improve the learning experience' for students in West Berkshire. Some teachers articulated the connection between e-portfolios and personalisation:

> 'For me it's about allowing children to express themselves however they want, and it's about giving them chances to let their learning go in the route that is natural for them. Sometimes you do it in a structure and sometimes you say, "OK, go for it." And this gives them an opportunity to say, "Yes, I can do that."'

The learning platform is used: as a tool for storing class assignments and students' products in a range of media; to show parents the work of their children; for communication and feedback between students, teachers, and experts; and for collaboration on specific projects between schools.

Although each school has taken a different approach to implementation, they all started in a small way with pilot programmes. This ensured that particular teachers or selected students (sometimes from a gifted and talented group, or a particular subject) began working on e-portfolio activity. One teacher said:

> 'We started with the children because it's useful to know what they know and can do, and how quick they are at picking things up. We started with those gifted and talented children, and then we started a systematic approach of training the staff, the teachers.'

No school has yet achieved complete implementation of e-portfolio use.

Co-ordinators were clear that teachers need to see a purpose for their use of online spaces and e-portfolios, and they need to work 'at their own pace'. One secondary school works through a representative from every department (not necessarily a head) who is prepared to move things forward. This means that different departments are moving at different rates and doing different things but 'at least they're on the journey'. A primary ICT co-ordinator commented: 'It's a tool, one that you have to learn how to use, but it has to reflect the curriculum of the school, otherwise there's no point, it's just an extra. And if it's seen as an extra, it's not going to be used.' This highlights the importance of building on existing culture when attempting implementation of an innovation.

At Park House, a small group of enthusiastic teaching staff adds resources, schemes of work and other items to the learning platform with the expectation that the practice will filter across whole departments. Sharon Upton, an ICT co-ordinator, observed the need for teachers to be ready to learn:

> 'That whole staff training, where you sit them all together and show them things, goes in with about 2 per cent probably, and the rest will get to it when they want to, they won't take it in at the time… But with the need for us to have e-portfolios in place by 2008, the school will develop an intensive training programme for staff so we can move forward. If I need to address training issues, the leadership team are very supportive and allow me windows of opportunity to deliver training.'

E-portfolios are closely linked with the concept of evidence, and teachers saw important benefits in keeping well-organised records. A primary teacher explained:

> 'I thought it would be a good way to a keep a portfolio of evidence of children's work on the website. So here is my portfolio, if Ofsted comes in and asks me about evidence of work, it's on here. And then I can get rid of those myriad bits of paper that we collect.'

They are also seen by some teachers as useful tools for transition from primary to secondary schooling. Here, the sense of audience is highlighted. Sue Nicholson recalled a project within the authority which aimed to show secondary teachers the skills of their new intake:

> 'We defined our e-portfolios as something that they would show their teacher in their very first IT lesson at their secondary school. Because, if not, who are you writing it for? How do you know that it's the right sort of thing? And it raised awareness in the secondary schools, who did a sharp intake of breath.'

To make the most of this possibility, secondary teachers will need to be ready to receive the e-portfolios that their new students bring.

The software

Schools in West Berkshire use a learning platform, which has been used authority-wide for the past three years. The company has worked closely with teachers to develop the software, and now offers a personal workspace (e-portfolio) attached to the learning platform.

To support professional learning and spread skills and knowledge about ICT, West Berkshire runs a scheme called ICTHOST (ICT Hands On Support Teachers). Teachers in schools are paid an honorarium and allocated a number of days for supply cover. On those days they provide advice and hands-on activities for other teachers. Teachers valued both their training experiences and the robust software, and this led them to reappraise their role as teachers, according to Kath Burns, ICT Co-ordinator at St Nicolas:

> 'The single biggest change in our school is people's confidence levels with using the ICT. But also the culture change of not being the font of all knowledge… of allowing the children to lead where it goes and to learn from them.'

At St Nicolas, teachers use a locally developed self-review matrix (Figure 6) to assess their own development.

A Self-Review Matrix for Web Authoring using Uniservity at St Nicolas School.
Name:

	Acknowledge	→ Reflect	→ Stimulate	
	With help I can…	**Independently I can…**	**Regularly I …**	**Regularly I …**
Custom Page	Add a custom page to reflect an event in the classroom.	Create a custom page to reflect an event in the classroom.	Create custom pages to reflect events/topics in the classroom.	Create custom pages, as a stimulus to begin topic work adding links to resources.
Forum	Add a forum to support topic work.	Add a forum to support topic work	Create forums to discuss topics and evaluate children's learning.	Create forums as a stimulus to topics, to discuss ongoing work and to evaluate children's learning.
Planning	Upload my plans on to the website.	Upload my plans on to the website.	Upload my weekly, literacy and numeracy plans on to the website.	
Upload	Upload documents on to the website.	Upload documents on to the website.	Upload documents on to the website to use in lessons.	
Survey	Add a survey on to the website.	Add a survey on to the website.	Add surveys on to the website	Add surveys as part of a stimulus or as an assessment tool for a topic

Figure 6: Teachers' self-review matrix

For students, scaffolding is provided by teachers modelling particular skills, seeding discussions on forums and then retreating as appropriate. Kath Burns explained: 'I

initially started writing the text for the children, but as it gets on it becomes less, it becomes more of the children's and less of mine.'

As the learning platform at present provides an online space for classes and their teachers, rather than an individual e-portfolio space, there is a great deal of shared class information. The following example was put together by students in a computer club at St Nicolas:

> 'Hi, this is 3F. We have three helpers, one funny teacher, 41 children, six tables, two globes, two maps, a big shelf with drawers, three wall displays for team points and all that, one interactive whiteboard. We are making pottery. In geography, we've been thinking about early settlers.'

Class pages include photographs, text, games, and personal information. In discussions with students of this age, it was clear that they saw publication on the web page as important. One said: 'Normally not many people would get their pictures up onto the web page.' At this age they did not discuss privacy or security concerns. A Year 3 student at St Nicolas showed his website with 'my name, hobbies, pets, my favourite TV show and my favourite music' but he had not put any schoolwork on his personal site. He agreed this could be possible, 'but I think my results have been pretty bad'. Another, anticipating the use of evidence in a three-way conference model, thought it would be useful at parents' evening to 'show your work, and since you are allowed to go on the computers, you could show them your homepage'.

One special school uses the platform as a celebration of whole-school achievement, uploading video clips of school activities such as an animations day, and controlling access to the site to maintain the privacy of students.

A secondary e-portfolio space, partly shown in Figure 7, was individual and more formal, containing material such as images and a sketchbook for A-level studies in textiles. It also provided organisational tools such as calendar, tasks lists and bookmarks. It is password-protected and not open to a wide audience.

Figure 7: Secondary e-portfolio page

Impact on learning

Although in several cases recent results are the 'best ever' for a school, teachers emphasised that they had changed their practice through using ICT resources in a connected way over recent years, and this had made a difference to students' learning. They felt it was almost impossible to identify discrete factors. Trish Whiting, Head teacher of St Nicolas, claimed it is the 'integration of systems and people meshing together' that accounts for their success. She added: 'People see the reason behind things, they are introduced reflectively. We are good at reflecting and evaluating, creating a learning culture.' The SATS results in 2006 were the 'best ever'. They showed improvement in:

- English overall of 1 per cent in Level 4+ (from a high base) and 6 per cent in Level 5
- maths of 17 per cent in Level 4+ (from a lower base) and 19 per cent in Level 5
- writing, where Level 5 scores increased by 24 per cent.

Writing scores have improved dramatically, according to Trish Whiting, because 'students have a reason to write'. Furthermore, exploring topics within a framework leads to more articulate children, more talking to other children and cross-fertilisation of ideas.

Students also reflected that using the online space of the learning platform had an effect on their learning. A pupil at Falkland Primary said: 'Well, at the start of Year 1,

I was in one of the bottom groups, but I think the website has helped me quite a lot and to get to one of the top groups.' Park House has had the 'best-ever' Key Stage 3 results but, rightly, teachers are reluctant to put this down to any one factor. A sixth-former reflected on the process of learning and the fun she had:

> 'My first piece I did in textiles in Year 10. We had to make a plan of an object, then take a photo of it, and then try and draw it. And I did it, and my drawing wasn't that good but my picture looked really good, and the colours were right, and the camera was good as well. Then I explained how I did it and how long it took me and that it was fun.'

This student, originally predicted to get a D for textiles at A2, achieved an A and is on target to repeat that performance. Her teacher said: 'She was previously failing as a student and, according to teachers, not only academically. But this kind of e-portfolio has given her a personalised learning space of her own.' It is likely that the space has contributed to her organisational skills and her confidence as well as content knowledge.

In spite of these examples, the use of e-portfolio usage and content data by schools to plan and evaluate is not yet well developed. Some schools acknowledged that they did not 'keep enough statistical measures', although there was some evidence of record-keeping that would inform planning and assessment. Sue Nicholson explained that all schools in the local authority are supported in self-review processes and all primary schools are involved in the Pupil Attainment Tracker (PAT).

Usage data can provide teachers with useful information when monitoring the extent of activity by individuals and groups, when and where this activity occurs, and the different types of use such as upload and download. One school made use of this data (shown in Figure 8), but such use was not widespread.

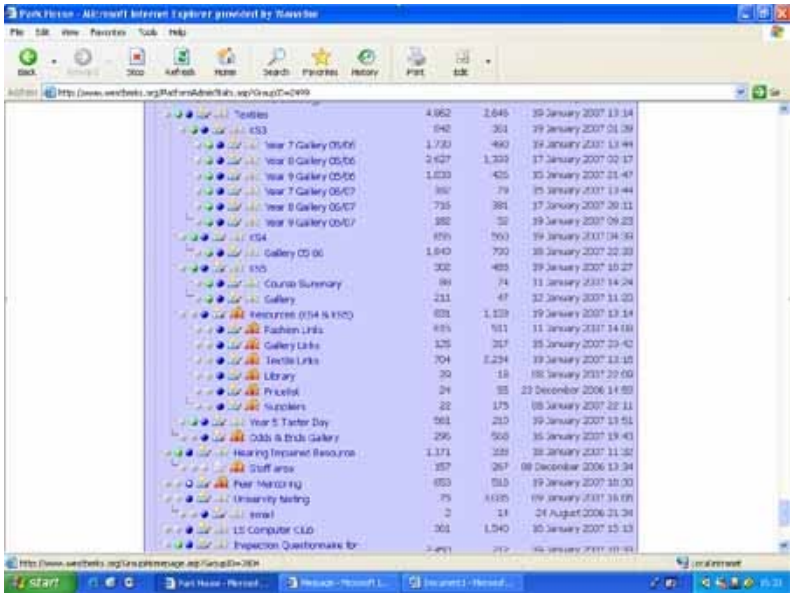


Figure 8: E-portfolio and learning platform usage statistics

This type of information will help schools measure whether the online system is meeting the expectation of flexibility for learners expressed here by Sharon Mittel, Deputy Head teacher at Park House:

> 'I think the key advantage for the individual is that they can access it at any time and they can work on things in the way that they want to, rather than just what the teacher is telling them to do. They've got that mobility to challenge themselves, to work to their strengths, and to really push forward without the influence of their peers as well. As it develops, it's going to be an advantage for the teachers as well, to be able to communicate with the students and to see what the students are doing. It will open up that awareness for everybody about what the capabilities are.'

The suggestion made here is that any potential negative effects of peer pressure will be alleviated by having a personal online space.

In general, teachers appear confident using the online space, and allow students to take a lead in learning. They also involve parents, especially in primary schools. Cathy Pullan, teacher of Year 2 at Theale Primary, told us: 'I've got the children coming in and saying "I've done this at home with mum and I've done that at home with mum" and parents are more aware of what's going on in the classroom.' Older students have engaged in forums with experts (often relatives) in a range of interesting topics, increasing the potential for more varied input in learners' lives.

The increasingly popular social software tools include repositories for storage, blogs for reflection and tools for sharing and presentation. A discussion with students at Park House about their use of such software outside school revealed that some use social networking sites to store pictures, and instant messaging for chatting to and emailing friends: 'We like to gossip, and I did IT homework on [instant messaging software] with my mate when we weren't sure what to do, so we thought "well, we'll do it together".' At this school, the ICT co-ordinator could see the potential to build on this activity, saying '…that's good because it's the intermesh of two different systems', adding that such software was not allowed to be used at the school. Primary students reported using email and instant messaging. At St Nicolas, one student said: 'I love it, especially when you email to people.' Another said: 'I find that quite fun because you can send emails to anyone you like.'

Transferability

The organisation of primary schools, where each student works with a small, tightly knit team of teachers, is an enabling factor for work of this type. It allows students to start learning the skills of e-portfolio development in group situations, and gives a wide range of students (autistic spectrum, gifted, ADHD and so on) the opportunity to

succeed at their own pace, as well as ‘taking ownership’. In secondary settings, the organisational structure requires that pockets of readiness are identified for e-portfolio implementation.

Both primary and secondary teachers and students often mentioned the sensory nature of multimodal and multimedia products, and the creative possibilities offered by the whole range of digital technologies available to them. Kath Burns said: ‘One of my worries when I took on the ICT job was that I would lose my creativity. What I’ve found in reality is that it’s come out in the ICT and the kind of work that we do.’ Maintaining a focus on this aspect may help counter some of the difficulties that arise when students are faced with more instrumental e-portfolio software, which can become boring.

This example of early e-portfolio implementation would be transferable to other local authorities who were prepared to support and sustain robust software development with a system of school-focused professional development and collaboration among schools.

Case study 3: Using personal planning software in Wolverhampton City Council

Introduction

Wolverhampton City Council has an ambitious e-learning strategy that aims to place the city at the national and international forefront of innovation for students aged 14-19. The system-wide vision aims to support the transformation of attainment, inclusion, participation and skills by providing an infrastructure with integrated curriculum provision and a set of tools for learners throughout the 14-19 age range across the authority and beyond, as the students move from schools and further education into higher education. The software at the heart of this strategy is personal planning software, but this software draws data electronically from the authority's school information management software, the Connexions support and career guidance package, to Area-prospectus.com, which holds the entire collaborative curriculum offering, both academic, vocational, work-based learning and enrichment provision, to CARD (Choose A Real Deal), the authority's school to post-school progression process, and the authority's virtual learning environment (VLE). All 18 secondary schools and the FE college in the city have post-16 provision, within an area-wide agreed curriculum framework which is integrated, consolidated, distributed and evaluated electronically. Staff development to support the innovation is extensive.

Summary

This case study revealed:

- Personal planning software has some similarities to a record of achievement, but with much greater emphasis on formative processes, access, validation, stability and durability than a paper record.
- Teacher interviews revealed:
  - regular use by all 14-19 students
  - a high proportion of pastoral teaching staff involved
  - use of personal planning software to investigate and reflect on learning opportunities available beyond the school
  - clear evidence of teacher awareness of the long-term potential of personal planning software in relation to planning to enter higher education/further education/training/employment.
- The teachers also regarded students' use of the VLE as making an important contribution to their learning, particularly in relation to storing and providing feedback on student work.
- For the students, 'anytime-anywhere learning' was a fact of life: '[Working with an e-portfolio] wasn't anything special… just enables me to save my

work online, and refer to it at a later date, and access it anywhere with the internet.'

- All the teachers felt that using an e-portfolio helped students (particularly weaker students) recognise and value their achievements. E-portfolio implementation is fully established at the pastoral level; the bigger challenge across the authority is to embed the concept at individual subject level. As one teacher put it: 'It's slow progress getting it established at whole-school level. Many staff see it as an additional burden. I think it will be a powerful and useful tool for the kids. But it will be at least four years before it's fully embedded.'

In the authority's own words:

> '[The software] is a new, dynamic, web-based individual learning plan designed to support the 21st century learner and all those involved in their learning and progress. Produced by Wolverhampton's 14-19 Development Team and Nord Anglia eLearning, the software develops a whole picture of the learner – coherent and holistic – describing: this is me; this is where I want to get to; this is how I will get there; this is how I am doing; and this is what I have achieved so far.'

Every student aged 14-19 in Wolverhampton has an account (including those in special education). The system is supported by a team of curriculum, technical and administrative staff, who between them have responsibility for integrating the personal planning software with other aspects of the authority's provision. Evidence from the schools involved in this study demonstrated that the software is used primarily in teacher conferences for target-setting in relation to students' skills and course attainment. Other areas of the software include the My Futures area, which is linked to students' participation in enrichment, and other progression-based activities, linked to their longer-term plans and life goals, and My Perspectives – for personal expression and statement building.

Wolverhampton's VLE package is widely used for day-to-day communication between teachers, students and mentors. Students use it for checking assignments, securely storing and submitting drafts or redrafted work. For many students (and some teachers), the VLE is regarded in effect as an e-portfolio, though it clearly has many more functions than just a storage tool.

Contexts

Although personal planning software has only been fully implemented since 2006, the authority has compelling evidence that its overall e-strategy is already contributing to delivering improvements in attainment and participation, though a fuller potential of this impact will not be evident for at least two years.

The data in this case study comes from three sources: interviews with three members of the 14-19 Development Team involved in the delivery and support of the e-strategy (Paul Bellamy, Alan Harrison and Bernard Skeen); interviews with three 'champions' from schools in the authority; and online survey data from 54 students in the three schools who completed an online survey. The three 'champions' interviewed had different conceptions of an e-portfolio. One teacher's very full definition, one that was close to the authority's definition of personal planning software, was the following:

> '…a record of the student's career, everything about them from Key Stage 3 SATs results following them through to the sixth form: all their programmes of study, any reviews… a representation of the student's achievement, with all that information kept in one place. Hopefully, it will build into a powerful tool for the student, to help them when they need to build a CV, or make an application.' (School A)

Another teacher saw an e-portfolio as primarily a record of achievement:

> '[My understanding of an e-portfolio is] …a collection of work as evidence towards something… That's what we do: building up a portfolio, in business studies or IT. I'd already done work on records of achievement, so this was a natural progression from that.' (School B)

Another teacher (School C), however, had a very different view, and questioned whether the software was really an e-portfolio: 'I don't see it as an e-portfolio at all.' He did, however, feel that it served a useful purpose, as 'a guidance tool for when they're planning for the future'. This teacher saw another piece of Wolverhampton's software as the central tool for building an e-portfolio: 'We also subscribe to the VLE, and it's there that their e-portfolio needs are catered for.' This teacher emphasised both the VLE tools and the opportunities for managing course participation, assessment and feedback that are available via the portal:

> '[The VLE] allows the students to save any of their work to a webspace. It allows teachers and students to communicate. It allows teachers to set and send assignments. It allows teachers to receive, mark and save completed work. It allows teachers to create self-assessment documents. It permits rapid feedback. It also encourages e-working 24/7, and learning on demand.'

In one school there were concerns over the fees necessary for all Key Stage 3 students to be subscribed to the VLE, and this was leading to discussions around alternative software options.

All the students who completed the online survey had software accounts, but only a third checked the button indicating that they had created an e-portfolio; two-thirds said that they had not created an e-portfolio. This may of course say more about

students' understanding of the term 'e-portfolio' than about whether or not they were using one.

E-portfolios in use

It was clear that currently, in the schools involved in this study, the central focus for using personal planning software was similar to a record of achievement, but with much greater emphasis on formative processes, access across a range of providers, validation, stability and durability than a paper record:

'The strength of [the software] is its linking of data to the human interface of goal-setting and planning over a five-year period and beyond. It will hold, for example, information on students' participation in a two-week work experience course that's contained in a workbook designed within the authority, and which goes into the individual's plan, but which is also available to the personal advisers of those students. (Wolverhampton City Council support team member)

This information is not simply held in electronic form; it is discussed with the student, and could feed into not only an evaluative summary within the planning software, but also a subsequent Connexions plan, CV, or post-19 decision.

First, there was a good deal of positive teacher comment about the potential of e-portfolios (however they were understood) for supporting their students' learning: 'We wanted to be a lead school – we took the project on in February 2005, before it went fully live in Wolverhampton.' (School A).

Second, despite nearly all respondents in schools and in the support team emphasising that these programmes were still in the process of becoming fully embedded, there was evidence of personal planning software being used in the multifaceted way intended by its creators and the project leaders. This is how one school 'champion' outlined its use in her school (School A):

- Currently all Year 10, 11, 12 and 13 tutor groups use the software on a monthly basis when tutors meet students for review meetings, and also when parents meet tutors.
- On parent contact day, we all did our comments on it.
- The students during tutorials have been using My Perspectives to fill in their skills, their qualities.
- The Year 11s have been using Area Prospectus to look at what else is available for them in Wolverhampton for post-16 education.
- Form tutors have been recording their termly meetings on the planning software for the past two years.
- When students have been out of school on CARD activities, they've been asked to put those into the planning software.

- The Year 13s are putting all their higher education information onto the planning software (quite a few will end up at Wolverhampton University, which is offering £1,000 off their fees for 15 hours of CARD activity).

The level of use of their e-portfolio by students reported above was 'monthly'. This is similar to the level of reported use in School C where the central e-portfolio activity was using the VLE. Twenty-five percent of students were 'using it on a weekly basis'.

Teachers and schools are still getting to grips with some aspects of the rich potential of personal planning software, as this interview segment (School A) shows:

- The students contribute a lot to the software; the tutors contribute a lot to it. It's also still under development.
- The main benefit is that the software is a concise area for holding and saving information. We can all see it. But we want to get more information on there, for example, reports from all subjects.
- If teachers do their recording into Assessment Manager, that can be downloaded into the planning software. We haven't managed to throw that on yet – but we're hoping to do that. And we can get their attendances in as well. It's going to take time to get the full picture.
- Any of the things that they write up as experiences can be attached; this includes pictures, information.
- We're trying to get them to attach information about their wider experiences, such as being able to coach basketball; to see the software as holding information that spans the whole year, not just the school year.

It is clear from this set of comments that while reviewing and recording school achievement and career planning are central elements, the storage of a broader range of evidence from all subjects and of other types of evidence is also going to be increasingly important in how the software is used.

It is also important to mention the implementation of the VLE in this context, since all schools were using it, and one interviewee regarded it as the closest approximation to an e-portfolio. It was also a more embedded technology, in that while the personal planning software had only been officially launched in some schools in the summer of 2006, the VLE had been in use for a longer period:

> 'Students have been using it for two years, but it's now really taking off. All post-16 teachers have been given CPD, and we'll be using polls and forums to evaluate it.' (School C)

This teacher claimed the VLE was a 'huge success':

> ‘Students were really keen to log on out of school and to become engaged in electronic learning. They liked the fact that they could submit their work electronically, get feedback, and improve their work easily and quickly. They like the fact that they can access learning materials online, whenever they want.’ (School C)

The student views in this school were equally positive:

> ‘I have found [the VLE] very helpful to my work because you can send information about the work to help you progress. You can also send ideas to your friends. You can also send a message to the teacher and ask for help when you are stuck on a part of your coursework.’

and

> ‘I use my e-portfolio to send work there and back to my teacher. It is effective as my teacher can then review my work or help me with issues I am stuck on.’

One student was more cautious:

> ‘The e-portfolio is useful for uploading and sending work and enables me to make sure I can be prompt with deadlines. This is the only point I see in this e-portfolios.’

However, e-portfolios have been effective in pockets only thus far, with 25 per cent using the VLE regularly in maths, business studies and science.

Learning from using an e-portfolio

Most teachers and students were cautious in claiming that using an e-portfolio was going to have a direct impact on learning: ‘…of itself, the software is not going to have any impact on learning,’ commented a local authority support team member. ‘It’s what’s contained within it: the human interaction.’

In a typical comment, a student felt that they had not learned from using an e-portfolio, but simultaneously revealed that the VLE had been used to successfully obtain formative feedback:

> ‘It hasn’t really helped me to learn anything. It has helped me to know what I need to do to improve my work. I also like it how I can send my teachers my work and then can give me feedback on it.’

Reflection on learning in order to study career or HE choices was also common:

> ‘[I learned] what I want to do when I am older. Apart from that, I have not used the website as much as I should have done.’

Students frequently referred to the organisation of their work. This comment was typical of many:

‘The main thing that I have learned is how to use my e-portfolio in order to have back-up copies of my work. I also have used it well in order to upload work from other areas.’

Engagement and motivation

Unsolicited positive comments on the planning software were rare. Even if most students regarded it as broadly valuable, the software was not regarded as intrinsically interesting, and a number of students used the survey as an opportunity to make some very negative comments:

> ‘No, I don’t enjoy using it because I find it very very, very, very, very boring indeed!! There’s nothing fun to go on!!! There’s no games and nothing I would enjoy to do!!!’

Some students clearly had not yet fully grasped how the software might be useful to them in the long term:

> ‘I did not understand what was the point of my eyeplan [sic], therefore I did not enjoy it as much as I did the [VLE].’

Positive comments on the VLE tended to begin by referring to its potential for communicating with other students, but its other features, particularly communicating with teachers, were also noted:

> ‘[I learned] how to communicate with other pupils in other schools. making new friends on it. I can send and receive messages from friends and teachers, which is helpful to me to do my coursework. I can send messages to my teachers if I need any extra work. It is really good to use because it become a part of school learning.’

One student’s positive comment was typical of a number that used informality to convey general approval of the VLE:

> ‘i like [the VLE]... i think it is very beneficial to me and my learning programme... i would be lost without it… KEEEP IT RUNNIN (sic).’

Goal-setting and reflection

Goal-setting and reflection were central elements of the personal planning software:

> ‘The impact [on students] is that they will be much more focused on their planning and thinking skills, navigating their way through the various decision points of their time in education.’ (Local authority support team member)

This emphasis was exemplified in detail by the teacher from School A, who described the actual procedures of a personal planning tutorial session. When asked what happens in the one-to-one tutorial sessions, she replied as follows: ‘We use a template to structure the interview, then review goals set at previous interviews, review achievements since last interview, identify areas to develop, and set targets for the term.’ Clearly, this sounds very much like an electronic version of a record of achievement (with the accessibility benefits that web-based software affords). At the same time, reflection on learning was just as, if not more, important than recording achievement:

> ‘In the tutor interview, they’re reflecting on their own learning, on the courses, where they feel they’ve got strengths and weaknesses, and where they need to set targets (for example, because they’re behind in coursework, or they need to develop their essay skills, or sort out their revision programme). The onus is very much on the student.’ (School A)

This teacher also emphasised the importance of reflection during Years 12 and 13, and that reflection was not only on coursework and deadlines:

> ‘The personal planning software is particularly important in the sixth form, because they can’t afford to waste two years of their lives there. The software helps to ensure that the students are learning and reflecting on their progress, and are setting and achieving goals, and taking responsibility for their learning and, increasingly, their lives.’ (School A)

Reflection on learning did not only occur in face-to-face sessions; it was also an important part of the electronic exchange of assignments between student and teacher:

> ‘Clearly, if the students are getting electronic feedback on their work and responding by reviewing, editing and improving, this is evidence of reflection on learning.’ (School C)

Some students were also able to look towards their future learning, and understood that the process of reflection would be ongoing:

> ‘I would like more help on how to be able to make plans on the website, to help with organising myself a little better with my work. I would also like more guidance in what I would like to do when I am older and what I want to achieve.’

Feedback and collaboration

Personalisation of learning was implied rather than directly stated in interview replies. Most of the comments on personal communication with teachers referred to feedback and collaboration. All the teachers and many students regarded this as an important feature of e-portfolio work in Wolverhampton. These comments are typical of a number valuing e-portfolios because they led to improved work because of swift teacher feedback, in or out of school:

> ‘Yeah, it was really good for sending work to my teacher, and I can send it from the comfort of my own home, and this means my teacher can receive the work at home as well.’

Students also appreciated the opportunity to communicate with each other, even if the communication environment was not up to the standard of their preferred web-based communications software:

> ‘It was good for helping me to communicate with my peers and also teachers to some extent. The backgrounds are not really attractive.’

On the other hand, some thought it was time-wasting to use the VLE for purely social chat:

> ‘I think that [e-learning tools] are a waste of time because the majority of people use them to talk to their friends.’

Storing and presenting evidence

The secure storage of information was a feature of e-portfolios that was valued highly by both teachers and students:

> ‘Students also like the fact that if they’ve submitted work to me electronically, then everyone knows there’s a record, and it won’t get lost. They like that element that [their work] is all in one place, and they’ve just got to look for it on [the system].’ (School B)

E-portfolios were also used more fully when a teacher was willing to accept students using the system flexibly:

> ‘The students are making use of the system… though- messaging me and messaging work to me. They’re using that rather than the assignment route, which is the one they’re supposed to use. (School B).

Attainment

The key attainment gain in Wolverhampton was an improvement of 12 percentage points in the number of students gaining five A* to C grades (from 43 per cent to >55 per cent) over the past three years, compared with the national average increase of four per cent. A senior local authority team member emphasised that while both attainment and participation were significantly improved across the city, this should be interpreted as the result of system-wide improvements in infrastructure, curriculum offering and support, rather than the product of any single component. Schools were also cautious about claiming any gains in attainment that could be attributed to the use of personal planning software:

> 'I haven't seen that happening with me… but in geography, students who don't speak up in class are messaging the teacher and asking for help. Many students are also using the [VLE's] mentoring system to get subject advice and personal advice – though some may just be seeking attention from the mentor! It's not e-portfolio, but it's part of the local authority e-learning support system.' (School B)

One teacher (School C), however, was clear that using a VLE had already shown results: '…definitely increased student motivation and achievement in science. Business studies staff are equally confident that valuable gains have been made.' In the same school, gains in attainment were also noted for students with special needs:

> 'This is the area of perhaps most surprising gains. [An e-portfolio] helps low achievers. Often special needs students have good ICT competence. So long as the teachers gear their material appropriately, there isn't an access problem.'

Progress and retention

At the local authority level, the overall pattern of participation in post-16 education was already beginning to show significant improvement:

> 'This is another area where over the authority as a whole there has been significant improvement over the past three years. Participation in full-time courses has gone from 69 per cent to 77 per cent, where the national increase has been only an increase of two percentage points. If we include work-based learning, we've gone from 82 per cent to 91 per cent, which is greater than the national average. (Senior local authority support team member)

Most individual teachers did not feel that personal planning software had been in place long enough in their schools to have had an impact on progress and retention as yet.

Self-esteem

The use of an e-portfolio to enable students to not only keep a record of their achievements, but also to see those achievements and indeed themselves in a positive rather than a negative light, was an absolutely central goal. As this teacher from School A put it:

> 'It's giving the students an opportunity to start thinking about themselves. They find it very, very difficult to think about their skills and their qualities. They shut up very quickly when you say, "What are you good at?" Our hope is that when the current Year 10 start writing statements for UCAS, they will have so much more to write about because it's all there. It's building into a concise representation of the student.'

As one student put it, simply but clearly: '[I learned…] how to do things by myself.'

Factors influencing successful implementation

Given that a city-wide infrastructure was already in place, successful implementation was primarily seen as a matter of supporting fellow teachers. Senior management teams were thought by all those interviewed to be actively supportive of e-portfolios; what was harder was winning over teachers in subject areas where the pay-off for learners was not seen by all teachers as transparent. As one teacher put it:

> 'It's slow progress getting it established at whole-school level. Many staff see it an additional burden. I think it will be a powerful and useful tool for the kids. But it will be at least four years before it's fully embedded. (School A)

Another important aspect of successful implementation was the teacher's willingness to actively encourage student participation. Rather than leave adding material to their portfolio to chance, this teacher (School B) had got the students started by creating some templates for content: 'I've created some starter material to help students get started on adding material to their personal folders.'

One challenge that was still being faced was the smooth integration of e-learning into the pattern of the school day: 'I use [the VLE] to send work and messages to students; but then you get the problem that they always want to be on the computer!' said one teacher (School B).

Getting teachers to see the e-portfolio as something more than part of the school's pastoral or personal development work, however, was a much bigger undertaking. In this, staff development was key: the big challenge is to work out how to fit in work on personal planning, without it being seen as disruptive on the one hand, or duplication on the other. As a local authority support team member said: 'It's probably a three-year task from now, really, to get all this working.'

Another area that will be increasingly important in the future relates to the data on student usage. As this teacher (School B) emphasises, richer data on how students are using the system (particularly where content is confidential) would help her to be more aware of where she might intervene to encourage participation. When asked how much information she received on student use, she replied: ‘Its contents are confidential. We are supposed to get data from [the VLE] about students’ use, but at present that doesn’t seem to get through to me. I’m aiming to chase this up.’

Additional data would also enable teachers to reward students: ‘I’m wanting to give awards to students who use e-portfolios fully, but at present I can’t do that, because the data isn’t getting through.’ This teacher (School B) already had clear ideas about the data she needed: ‘Data on both how often they log on and how long they log on for is valuable. If they only log on for 30 seconds, this might simply be to increase the number of logged visits; more useful is data on average time of log-on.’

Finally, we asked the teachers what were the key factors in their institution that had already supported the successful development and use of e-portfolios. The answer was the same from all three schools: it was teachers modelling good practice to their peers.

Case study 4: E-portfolios for planning and reflection

Introduction

This case study describes the use of e-portfolio software at two sites: Leasowes Community College in Dudley and Telford College of Arts and Technology. The e-portfolio software is provided by the University of Wolverhampton, and is a web-based system that enables the creator to set varying levels of access. In both colleges, the e-portfolio is seen as a repository, a place for reflection and a diary to help students organise their lives. It is also becoming a means to share material with others, and to present oneself to the world.

Summary

This case study revealed:

- A rationale for e-portfolio implementation that enables effective organisation, reflection, tutorial support and mentoring, more immediate feedback and support, and ease of course assessment. Efficiency gains were also expected.
- Awareness of government policy regarding e-portfolios, thus providing a framework for implementation.
- Previous experience with paper portfolios that resulted in knowledge of e-portfolio processes, such as reflection, and current implementation of e-portfolios through pilot projects which are still in early stages.
- An emphasis on organisation, reflection and creativity, using multiple modes, particularly visual representations. These appear to have benefits for many learners.
- Use of software that is web-based and can be readily accessed (at no cost for the pilot project), thus supporting experimentation, and with the potential for lifelong learning.
- A culture of professional learning that supports innovation and raises expectations among teachers, coupled with time and resources to collaborate on planning and implementing e-portfolios.

The context

Leasowes Community College is a specialist business and enterprise college, with students up to Year 11, and is described as ‘cutting edge’ in its approach to teaching and learning. Among others, it has the following aims:

- to enable all the learners in our community college to learn
- to enable students to appreciate that learning is an enjoyable and rewarding experience and so instil in them the desire for lifelong learning

- to equip our learners with the skills to set objectives and undertake tasks successfully
- to encourage effective communication and social skills, tolerance for the celebration of difference, and care and respect for others (source: www.leasowes.dudley.gov.uk).

Most Leasowes students leave with eight or nine GCSEs, while a proportion succeed at the highest grade levels and go on to be among the elite of A-level students in the area. Head teacher John Howells said: 'We believe that this emphasis on learning how to learn is what makes our students, whatever their capability, achieve such standards.' E-portfolios are seen as tools to support the achievement of the school's aims. At Leasowes, the software is being rolled out to all Year 10 students during 2007 after a pilot project in 2006.

Telford College of Arts and Technology (a post-16 college) has over 16,000 students, of whom 15,000 study part-time. The Telford area is a low-wage economy with more manufacturing than the national average. The college was rated in its latest Ofsted report as 'outstanding in every area' (source: www.tcat.ac.uk). The college has a history of using paper portfolios, and is phasing in the e-portfolio format. It has used the software since 2006 with small groups within its teacher training programme (Certificate of Education).

E-portfolio implementation

The rationale for e-portfolio implementation in the two colleges was based on improving learning by enabling effective organisation, reflection, tutorial support and mentoring, more immediate feedback and support, and ease of course assessment.

Efficiency gains, such as reduction of paperwork and easy access, were also envisaged. Theresa Loughlin, Head of Telford's School of Professional Studies, explained: 'We thought it was more dynamic, creative, obviously innovative, and it links to government policy. Within teaching and learning, we should be looking at more electronic means of developing practice and recording it.'

E-portfolios open up the possibility of multimodal contents, and teachers in both colleges see the importance of visual aspects of learning within the teaching and learning and technology frameworks. Leasowes aims for an electronic portfolio with flexibility to accommodate a range of work from text to video, allowing for reflection between students and teachers, sharing assets, comments and, where applicable, marking. In line with the widening participation agenda, Leasowes encourages students to record their out-of-school activities in the same space.

The e-portfolio system used here is clearly based on individuals as the creators. The developers describe it as 'a personal repository, a personal journal, a feedback and collaboration system… populated completely by the creators, who can, in any of their

learning identities, selectively record any abilities, events, plans or thoughts that are personally significant'. The software allows learners to link records (known as assets), augment them with other data sources and integrate institutional data with personal data. The creator has absolute control over what is shared and for how long. Where content is shared with an audience, it allows commentary and feedback.

The commercial organisation behind the e-portfolio system provides substantial training and support for the use of the software. In order to set aside time to implement the system at Telford, staff made a successful bid for staff development funding to give tutors additional time to work together as a team. They were able to learn the features of the software and to plan its use with students. Similarly at Leasowes, several days were spent with the organisation's trainers. It is anticipated that in future the college's working party on the virtual learning environment and the e-portfolio software implementers will converge to provide a systematic space for learners.

At present, implementation is in its early stages in both colleges. At Telford, the concept of an e-portfolio is introduced early in the Certificate of Education course, through a workshop session from the e-portfolio software team. Students started with asset-sharing (uploading personal content). Theresa Loughlin explained: 'We're using it specifically for reflective practice. As part of their teacher training, students have to reflect extensively and evaluate what they're reading about and what we're doing in the classroom, and how they're putting that into practice.'

Theresa Loughlin has observed the rapid uptake of the technology, even among anxious students, once they understand that it's their space and secure. 'It's a good way to formalise reflections,' said one student, but added he found it difficult to use at first. As he had no access to the internet at home, he wrote critical incidents on paper, then entered them into the e-portfolio system when he had a block of time and access to the internet at college. Even after a few hours of use, some students who are very nervous become quite confident with the software, and embark on developing what the college terms 'webfolios'.

At Leasowes, the e-portfolio system lends itself to the innovative Medionics course, which uses a range of multimedia content, and is accredited at Level 2 NCSE. A local company partly designed the course and provides input to its assessment. Students work in groups of four to replicate working conditions, and the assessment provides an authentic audience.

Sample e-portfolio content

Extracts from a webfolio created by a Telford student studying the Certificate in Education were captured on screen. It contains material under the following headings: Introduction, Critical Incidents, Reflective Review, Reflections and Experiences, Reading and Planning. Indications that the webfolio is addressed to an audience include an invitation: 'The reader is free to browse through elements of reflection and thought that have contributed to my development as a teacher.' The Reading section includes links to articles by others that have influenced this student. The Critical Incidents tab reveals the section (shown in Figure 9) that, according to the student, '…provides an insight into critical incidents experienced over my teaching practice, that have affected my planning, delivery and management of learning, the learning environment and learners'.

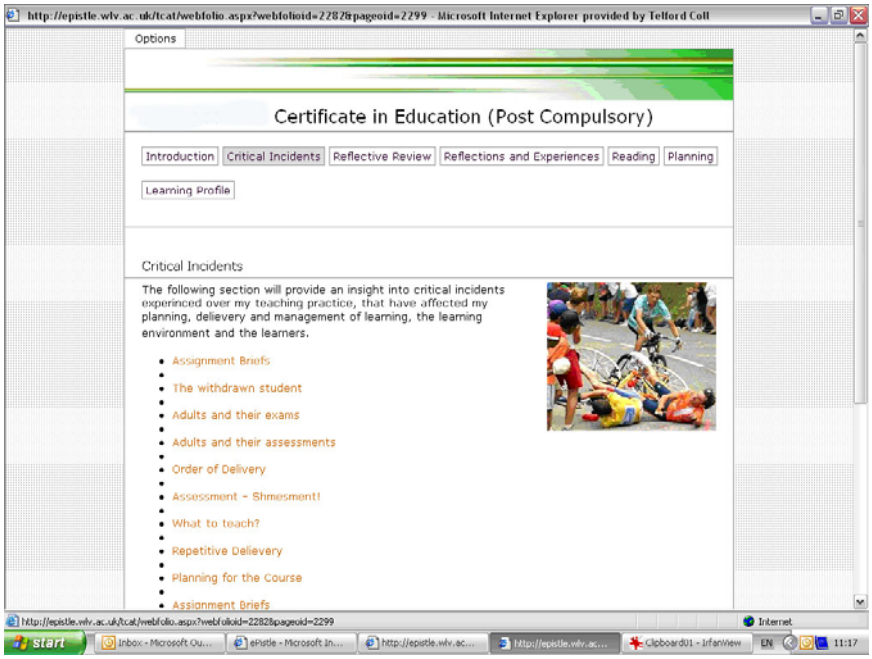


Figure 9: E-portfolio screen showing structure of contents

Figure 10 shows an example from this section entitled Assessment–Shmesment. It reveals the student's inner thoughts about one of the most difficult parts of the teaching and learning process: assessment. A journal entry reads (in part):

> 'I am lacking confidence in making the differentiation between different pieces of work. With the assignment descriptors being vague, there is little information to prescribe a pass, merit or distinction, which I feel makes it difficult to mark consistently.'

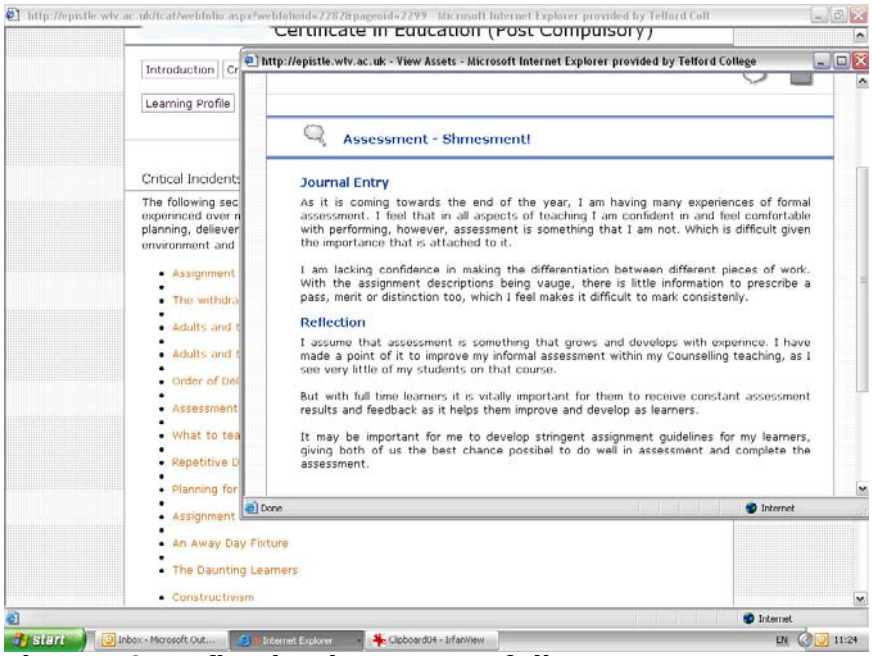


Figure 10: Reflection in an e-portfolio

This type of reflection can be used as a learning point in the course, as described earlier. Speaking of his e-portfolio as a whole, this student said: ‘The beauty of it is you’ve got something to show.’

At both colleges, the use of the software is incorporated into course time. At Leasowes, the software has been useful for collaborative learning and teamwork, allowing students to record and share information on projects. At Telford, tutor feedback is encouraged after students record their reflections, thus supporting communication. As Theresa Loughlin said: ‘If there was an incident in the classroom that they found difficult, they could reflect on that and share it with tutors and their peer group. Then some wider reading could be suggested to find different strategies to tackle that situation.’

Theresa Loughlin reports a definite improvement in learning outcomes, especially in the reflection unit of the Certificate in Education. A journal or diary was always one-dimensional when on paper, she said, but with the software students are able to be more creative, and they document their reflection a lot more than they used to with just a diary. While the unit on reflection is not graded, she recognises that the standard of students’ work has improved as they include more multi-dimensional responses, showing greater cognitive development. In addition, she has found that some of the students, who are very practically based vocational tutors, start to develop more confidence if using an e-portfolio and promote that in their own classrooms. At least one student in the Certificate of Education concurred. He felt that spending time in reflection gave him a more positive attitude to his own teaching, and that was a good lesson: ‘Teachers don’t get enough time to emphasis the good things they’ve done.’

At Leasowes, one positive effect of using the system, according to Rob Thomas, assistant head teacher, is that it helps 'fragile learners', such as borderline students, to organise themselves and to avoid losing their work. Some of the students who find school difficult, whether due to boredom or low cognitive ability, can be motivated by the increased self-esteem that can come from recording achievement.

Efficiency and effectiveness

'E-portfolios are effective for us,' says Theresa Loughlin, 'and that's why we've embraced them further.' Having started with a small pilot, Telford has developed it further this year, and now encourages students in the selected course to submit all of their award assignments in this way. Leasowes reports saving time (for both teachers and students) as a result of better personal organisation among students. Furthermore, when students leave at the end of Year 11, the e-portfolios will be able to be accessed via password from the FE colleges, due to the web-based nature of the software system.

In both colleges, the culture has had a positive effect on e-portfolio implementation. One factor influencing Telford's e-portfolio implementation is the culture of ongoing learning. The principles of personal development planning (PDP) are embedded within the organisation, as is continuing professional development (CPD), which is a significant requirement for staff membership of professional bodies, and for many learners in a wide range of professions. Telford strongly encourages reflection, which is an integral part of the assessment process for many awards, and is also part of the CPD framework for those bodies. Theresa Loughlin also highlighted the lifelong learning that can be supported by e-portfolios:

> 'My area is professional studies, and we have management studies, where students have to look at CPD records. There is an element of their own development while managing other people – 360 degree feedback can be an opportunity for them to look at themselves and what they could do better as a resources manager, operations manager or even an executive manager at strategic level.'

As a school, Leasowes has a history of experimenting with the timetable to create flexible approaches to learning, and gives extended and intensive time to particular aspects of the curriculum in order to avoid fragmentation. These include the 'one-lesson Fridays' where instead of five lessons in different subjects, students have one class that lasts for the whole school day. The school claims that discipline problems have been reduced on Fridays. In addition, 'fast-track weeks' (intensive studies of a subject lasting two to five days) have also seen 'spectacular results' at GCSE level and are now being extended to the whole school. This attitude to innovation is likely to be helpful when further developing e-portfolio use.

Both colleges were very positive about the software. At present, the e-portfolio system is available to the colleges at no cost, as it is hosted at the University of Wolverhampton. This is not a feature that can be scaled up significantly. However, should the financial resources be found to move past a pilot scheme, the web-based nature of the software is an enabling factor in supporting access, as students can access their e-portfolios from any web connection. It therefore also supports transition, as they move through educational institutions and beyond.

Case study 5: E-progress files at Loughborough College – Managing and supporting students' learning

Introduction

This case study focuses on the use of a web-based e-progress file (ePF) within Loughborough College, a medium-sized general FE institution in the East Midlands, offering a wide range of academic and vocational courses on part-time and full-time bases. The college has close links with Loughborough University and Royal National Institute for the Blind (RNIB) Vocational College, which occupy the same campus, and a number of visually impaired students attend programmes of study here.

Summary

At Loughborough College, the ePF is used alongside a system of personal and academic tutoring to record, monitor, plan and support the students' learning. Fiona Henry, progress tutorial and e-progress file co-ordinator, and Bill Lievers, Inclusiveness Manager and Director of the JISC e-Progress File Project, were interviewed; two focus groups, one of students and another of teachers, were conducted, in addition to the online survey. The data revealed that:

- The ePF has dual functions: it enables students (with support from academic staff) to manage their learning; and it acts as an administrative tool for recording data relating to the students' progress.
- The use of the ePF is embedded within both the curriculum and the administrative system of the college, and participation in its completion is an institutional requirement for all students.
- Students are supported throughout their usage of the ePF. The college provides an introduction to the system at the induction stage of their courses and, via a structured system of personal tutoring, they are guided throughout their programme of study.
- Some students access their ePF from home at times to suit themselves.
- It is difficult to separate out the effects on learning of the ePF from its wider context within the progress tutoring system.
- Positive student appraisal of the usefulness of the ePF may be directly linked to the maturity of the student's understanding of their own learning processes.
- There is evidence that the students have a strong sense of their ownership of the ePF.
- An internal evaluation identified that, while students acknowledged the usefulness of the ePF, their engagement was mostly driven by the college's requirements.
- Users of the ePF consider it be efficient, manageable and user-friendly.

- Loughborough College is actively committed to the development of systems and technologies that support learner progression, demonstrating a responsiveness to student and staff needs.
- Usage of the ePF has improved the management of the progress tutoring system (in contrast to the more expensive and cumbersome paper-based system) in terms of student engagement with the planning and management of their learning.

Fiona Henry said:

> 'We felt it was time to move into a new generation, and to utilise electronic formats and that was really the main focus – and the focus came from the users, from the students. We were picking up as progress tutors that they were ready to have something much more lively and interactive, and I suppose 3-D rather than 2-D.'

The ePF evolved out of the college's need to track and direct the students' learning within an efficient and manageable electronic system. It has its origins in the JISC project, Developing Learning and Teaching Aspects of Progress Files and PDPs, which aimed to create an ePF and e-individual learning plan (eILP) for Key Stage 3 and 4 learners and which was piloted in partnership with 10 Leicestershire schools during 2005-06. Through collaboration with bodies including Leicester City Council and Leicestershire Connexions, both the ePF and eILP have been adopted as part of the Leicestershire 14-19 Prospectus. The college also implemented these in 2005-06 with approximately 900 full-time learners across a range of programmes. A version developed for adult learners is currently running.

The software

This is a web-based database system with facilities for personalising the display and for uploading documents: for example, evidence of skills or CVs. Each user has a folder on the system, where their uploaded information is directly linked to the college's management information system (MIS), which handles student and staff records and course information. It can pull certain administrative information across into the ePF, meaning that identifying data such as name, address, and so on, do not need to be repeatedly re-entered.

Enhanced accessibility is one of the key features of the ePF. The software evolved from an initiative to implement IMS ACCLIP (Accessibility for Learner Information Package) specification. This enables users to modify display properties, such as choosing their own preferences for the font, font size, text and background colours, and check these via a preview function. For visually impaired students, the software incorporates a proprietary screen-reading software application.

There are wider initiatives within the local authority which, in conjunction with Loughborough University's ongoing development of an electronic progress management system, have successfully trialled interoperability in the two-way transfer of information.

During the current academic year, there were problems with one of the facilities that enabled staff to identify the last date that individual students had logged onto their ePF, but the IT support team were able to resolve this quickly.

ePF use: Managing and supporting students' learning

> 'Progress File is a process of reflection, assessment, evaluation and planning to help you to be successful. e-Progress File allows you to keep a track of your learning and your own personal development, and provides guidance for careers, skills development, CV and application writing… everything you need to prepare you for your future.' (Loughborough College promotional literature)

The ePF is an integral part of the college's administrative and academic systems. For the students, it is 'not an optional extra' but a central activity within their curriculum, although it is not used directly for academic work. The system is accessed at the induction stage of their studies and students work through sections either in class time, in tutorial sessions, in the library or at home if they have the facilities for remote access.

- By working through the suite of packages on the ePF, students are helped in:
- setting SMART targets (academic and personal)
- identifying goals and skills
- reflecting on strengths and weaknesses, and how to develop or maximise these
- time management (the home page of the ePF has a timetable of the current week) and deadline reminders
- completing diagnostic tools for identifying learning preferences and styles
- identifying support and student liaison services such as the careers service or training opportunities
- producing CVs
- creating a personal statement.

Students can work on their ePF individually (in class and in the college computing areas), in groups during classes, and in one-to-one tutorials with progress tutors which occur three times each year. It incorporates a student ILP which includes a reflective achievement log. ILPs are initiated at the beginning of courses so that progress can be monitored subsequently. A progress tutor stressed the underlying role of the system:

‘Because this is all about them, keeping on track, explaining where they’re at, what they want to do, getting help, not getting help, to complete their course, it’s about supporting them to complete their qualification.’

Figure 11 shows a screen available to a progress tutor, showing the student list and their recent log-in dates.

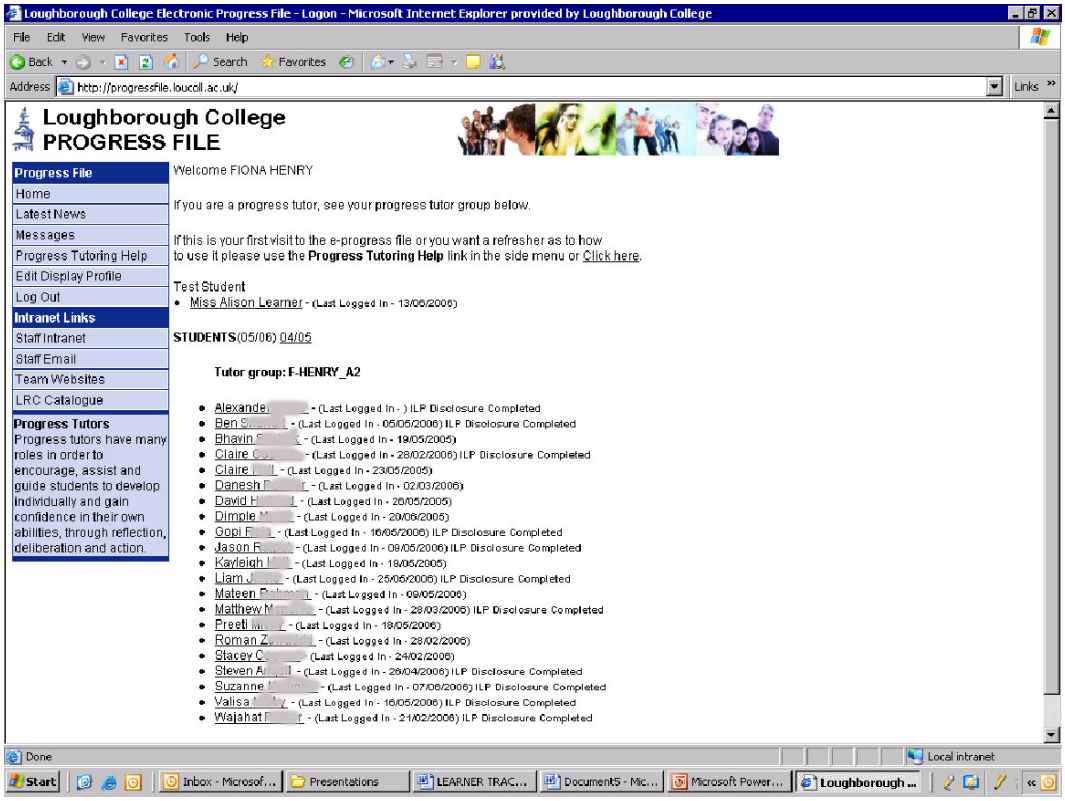


Figure 11: Sample e-progress file tutor screen

Actual usage varies from individuals engaging with it on a daily basis, to groups using it weekly, fortnightly or monthly in class. Students often approach engagement with their ePF in pragmatic terms, as one notes: ‘If we’ve completed coursework we don’t really use it. If we don’t need it, we don’t use it.’ There is, however, an important distinction which can be drawn from students’ comments during class observations and in interviews: students who demonstrated a more ‘mature’ understanding of their own learning processes and an awareness of how to manage their learning effectively were more likely to actively engaged with the ePF and also to positively appraise its usefulness. A student commented: ‘…usage ‘depends on the individual. Some people are more organised than others. So some need to use and some don’t.’

Other users identified some practical issues surrounding access to technology and the allocation of computer rooms in particular. All students, particularly part-time ones, are encouraged to access the ePF from home. Overall, the ePF was considered accessible, ‘straightforward’ and ‘really easy’ to use. The college

provides structured guidance for staff on the use of the ePF in the form of training and regular updates.

E-portfolio/ePF understandings

The term ‘e-portfolio’ was generally unfamiliar to the participants, although some staff members understood it as a method for electronically storing information and subsequently presenting it in a variety of formats. In contrast, all of the people approached during this case study had a clear idea of the purposes and usages of the ePF, as this exchange demonstrates:

> Q: Do you know what an e-portfolio is?
>
> A: No, never heard that term at all.
>
> (Whole group says ‘No’)
>
> Q: What is an e-progress file?
>
> A: Keeps track of what work you’re doing, I suppose.

This understanding was greatly assisted by the college’s induction procedures for students and by channels for staff support.

ePF ownership and access

While students cannot change the institutional data within the ePF, they do have control over the editing of their own information and any personalisation of it. The ePF is secured via a password entry system. The level of access is set by the student in consultation with the progress tutor. These permissions can allow their progress tutor, academic tutors and learning support staff access. The fact that students have control over this access can have a liberating effect on what content is included, as a progress tutor said: ‘If you give it to them… they think, great, no one looks at it, so I can write what I want. They like that.’ Similarly, students are aware of the confidentiality that is inbuilt into their use of the ePF: ‘If you write something down about your teacher, you don’t want your teacher to see it.’

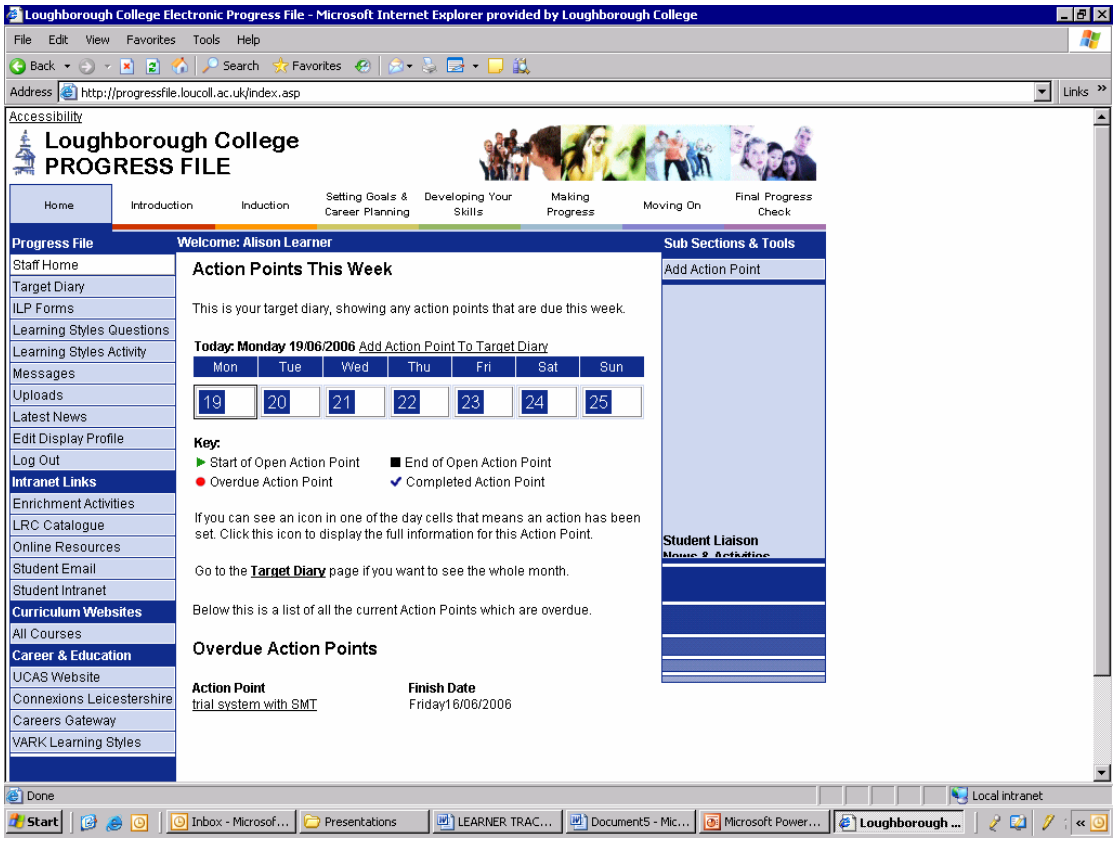


Figure 12: Student screen in e-progress file

Although the IMS ACCLIP software was designed to support visually impaired learners, other students actively use it to personalise the display of their ePF in response to their individual preferences or to the physical characteristics of the learning setting, as Fiona Henry describes:

'Some students will change it across the year to suit their mood. The idea is if you're in a room where there's a lot of light and it's reflecting on your screen, you can tone the colours down and therefore it's easier on the eye. I had tutors last year who changed the background – they had blue so that it was restful and less reflective when they were looking at it. I think this is quite important because it's not then Loughborough College, it becomes Alison Learner or whoever, and then they actually use it a bit more. That's the important thing.'

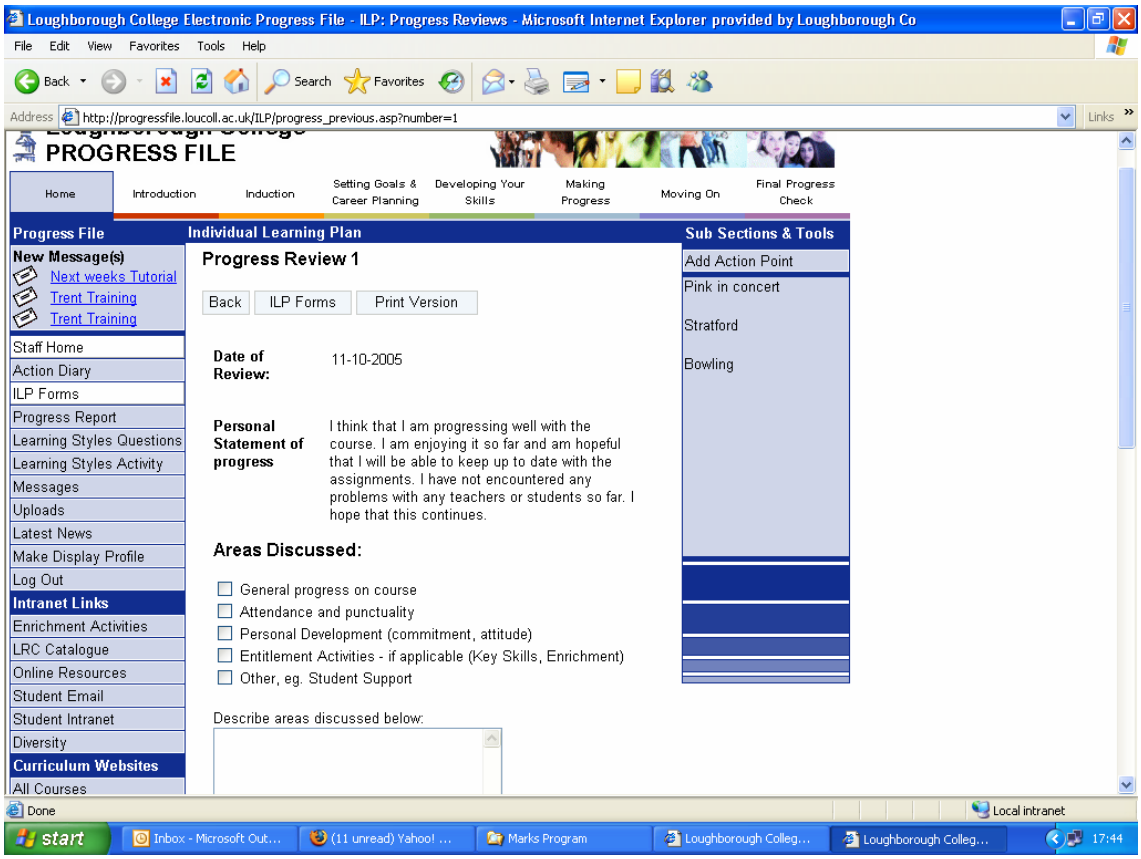


Figure 13: E-individual learning plan review screen

Figure 13 shows the type of content in the ILP. It includes a statement by the learner about her progress, new messages and, on the right-hand side, an indication that the student uses the space to keep track of her social diary as well ('Pink in concert, Stratford and bowling').

ePF value

The ePF/progress tutoring system is seen as a valuable tool by staff and students at Loughborough College, and there is a strong sense that students have ownership and control over their own inputs. In an internal survey of students' perceptions of ePF, the evaluation used a qualitative questionnaire with a self-selecting sample, and the findings overwhelmingly pointed to a positive appraisal of the system. However, a small sample of students who were interviewed felt that using the ePF was rather boring and they would welcome a more creative tool for engaging their learning processes more directly. In the interview data, there also emerged a sense that some students prefer to develop their own approaches to work, as one student commented: 'I like to find my own way of learning.'

The system is a very simple one, which means that both students and staff who lack confidence when using technology find the ePF easy to use, and the subsequent development of their ICT skills is an unintended positive outcome of its use. One

advantage of the web-based progress tutoring system over the previous paper-based version is its flexibility and ease of access for both staff and students, not least because of the considerable administrative savings. There are other observed benefits to having a computer-based system, for example, students can work at their own pace and what they are working on remains personal, in contrast to paper versions, as a tutor observed: 'If it's a pack and you've got a big folder and you open it on the desk, everyone in the class can see what section you're working on.' However, it was also observed that classroom interactions and collaborative work may be restricted:

'I find that as a team you don't do as much with it. There's less interaction but those who are slower do work at their own pace, and are probably more comfortable rather than if they had somebody to pal up with. I think there are definitely two sides.'

Another benefit identified by students, academic staff and progress tutors was that using this system helped in the development of students' confidence and self-esteem: 'You're likely to feel better about yourself when you look at it because you've written it down and you think, yeah, I've achieved that.' However, several members of staff stressed that the wider context of the ePF was the most important factor: 'I think the one-to-one process, whether it's paper-based or computer-based, is going to help. I don't think it matters whether it's e-progress or paper-based.'

It was not possible within this case study to separate out the effects of the ePF from the progress tutoring process it is embedded within. Staff identified instances where 'struggling' students benefited from the combination of the ePF/progress tutoring system. In Figure 14, the text demonstrates this, stating that: 'Tutors and students have said that one-to-one progress reviews are the most valuable aspect of progress tutoring and are extremely helpful in keeping you on target.'

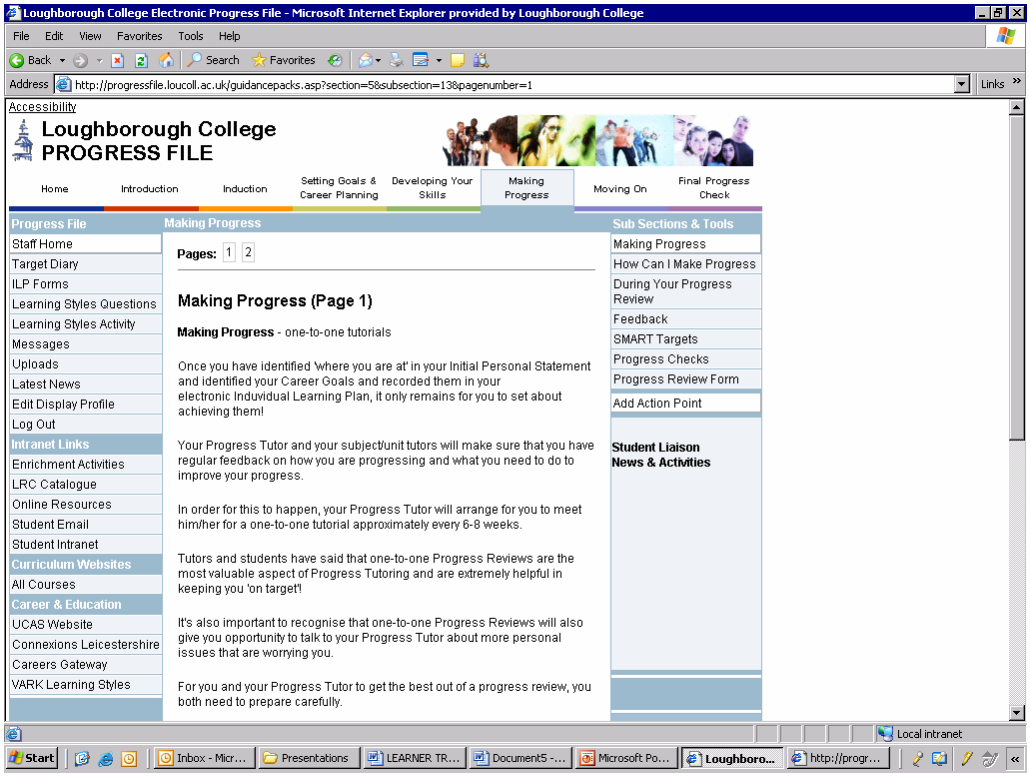


Figure 14: Guidelines to support progress tutorials

The college is in the early stages of investigating the development of a staff ePF for personal development planning activities based on the student system.

Impact on learning

The ePF is not a learning tool or a learning environment per se, rather it is intended as tool for mapping and planning students' academic development. Therefore, its impact on individual or group learning within each programme is not a direct one. However, one point arose several times in interviews with the teaching staff and the students: having the opportunity to plan and to reflect on their learning does foster a sense of control and ownership in relation to their work, which in turn supports self-management skills and self-confidence. There is also a facility whereby students can contact staff electronically and request individual help in a particular class:

> 'Absolutely it makes a difference, because we're putting it down and it's a more concrete target and students will take it more seriously… and the learning outcomes will be that you will be down asking for help every single session, receiving the right amount of help for his ability.'

However, as Bill Leivers notes, it is difficult to separate out the effect of the ePF from the wider progress support processes in action:

> ‘We know that in the tutoring process that we’ve been evolving we have a very good idea that it’s had a good impact and improvement on retention, achievement and success rates, which have improved year on year. But we believe that we have anecdotal evidence that the work tutors have done with students in terms of the e-progress file has had a positive impact.’

A progress tutor commented:

‘I personally think that when it was paper-based and they had a one-to-one, it didn’t mean very much to them. They’d go, oh, I’ve lost it or I can’t find it, but because they actually have to log on and type it in, and it stays there, I think that they take it seriously.’

Engagement and motivation

There is clear evidence that students are accessing their ePF remotely from home, indicating that they are actively engaging with it outside of the formal education setting and curriculum requirements. Also, student feedback to tutors suggests that they enjoy working through the sections and that they tend to do so in the order that interests them, focusing on areas which are relevant at that time or to current tasks.

In contrast, there are a number of students who are less committed to the ePF on the grounds that it doesn’t engage their attention, saying: ‘Because it’s boring we don’t want to use it, so we don’t make time.’ One disadvantage of student ownership and control of the access to their ePF is that, unless the student has given them access, the staff believe they have no way of monitoring the amount and type of activity being undertaken. As one said: ‘I think mine log on but I don’t know whether they do anything. I have to keep an eye on them.’

Goal-setting and reflection

The ILP is a specific part of the process which is concerned with career planning and goal-setting and takes the form of an interactive guide. It is a central part of progress tutoring, says Fiona Henry, which:

> ‘…gives the students time to reflect, evaluate and plan, and so that combination is a way of developing them as an individual and looking at themselves, because until they get to 16 coming through GCSEs, they’re very focused on getting qualifications and they maybe have not thought about what they are going to do now they’ve got the qualifications, so having a good progress tutoring system… encourages them to take time out of their studies and just reflect and think about themselves.’

From staff and students emerged a sense that most of the traditional learners who come to the college straight from their secondary school don’t have reflective or self-management skills – and it is the ePF which is instrumental in their development.

Goal-setting is a fundamental aspect of the tutoring process and the ePF has accessible facilities for doing this.

Feedback, collaboration and communication

The progress tutoring system at Loughborough College is essentially one of communication between the staff and the students. As Bill Leivers comments, this takes the form of different types of ongoing interactions: ‘There’s a primary dialogue from students and the progress tutors, there’s the dialogue between the student and the subject tutors, and also learning support.’

Many of these are face-to-face, but the system supports electronic contact which is routinely used. Staff have access to a messaging system through which they can communicate with other academic and progress tutors and individual students.

Through the ePF, students have access to an email facility and various student electronic forums. The system is not expressly designed as a collaborative facility and there is currently no facility for students to share their ePF directly with their peers, although in classroom settings they frequently work through sections together.

Retention and progression

There was anecdotal evidence from teaching staff and progress tutors that the introduction of the ePF has had a positive effect on retention through the early identification of possible problems (poor attendance, low attainment, disengagement from learning activities or progress monitoring processes) with students. Progress tutorials from previous years’ study at the college can be accessed which provides helpful tracking information – this is especially useful if students have new tutors or move programmes.

Although not yet part of an integrated system of progression, students are able to use their stored information (in electronic or paper formats) to assist activities such as job applications and UCAS submissions. The ePF creates PDF files of selected information which can be saved electronically elsewhere or printed off. The development of the learner’s personal statement is a good example of how the ePF is used to support their transition into employment or further educational opportunities.

Case study 6: E-portfolio use in further education – The transition to higher education and the transition from an undergraduate degree to work

Introduction

This case study focuses on the use of e-portfolios at two FE colleges: Abingdon and Witney College and Plumpton College. They were involved in the myWorld (Wider Opportunities for Reflective Learning and Development) project led by Oxford Brookes University. This was funded under the Distributed E-learning Strand of the JISC E-learning Programme and followed on from the PETAL (Personal E-portfolios for Teaching and Learning) project, which produced a general e-portfolio tool for lifelong learning based on the Open Source Portfolio Initiative and the Certified Member of ALT (Association of Learning Technology) scheme. Of the 13 sites involved, these two colleges had made the most progress in that project. The case study also revealed data about the use of the software tool within the ALT accreditation programme for learning technologists.

Summary

The two sites in this case study involved the use of e-portfolios for transition to and from higher education. In the Access to HE course at Abingdon and Witney College, the e-portfolio is intended to support the students in recognising their accomplishments and encouraging them to see these events as a reflection of their ability to pass the course and complete a university education.

In the career development module of the Viticulture (Wine Studies) BSc at Plumpton College, students are supported through taught sessions in developing an e-portfolio and make a CV presentation in response to a hypothetical job advert, the module assessment. This case study revealed that:

- Use of the e-portfolio was facilitated by careful integration into the courses, that is, there were taught sessions and they were linked in some way to assessment – though integration was more problematic at Abingdon and Witney College due to the poor software interface and the nature of the access student cohort. Integration was supported centrally though customisation of the e-portfolio headings for individual courses, but this process resulted in delays in implementation.
- There was a need for the process to feel more creative. There is a tension here between designing something that will provide a structure and allow students to enter information, yet making the process feel more creative.
- There were no institutional requirements for portfolio or e-portfolio use. At pre-degree level, requirements are dictated by examination boards and this did not support a central approach across all subjects.

- There was no direct evidence of impact on attainment in relation to the curriculum, but there was evidence of learning about the processes involved in creating and using e-portfolios, of understanding issues related to the use of e-portfolios and of the development of ICT skills.
- There was evidence of impact on professional learning/development for the co-ordinator at Abingdon and Witney College, who had used this to support her in working on the JISC learner experience project. There was anecdotal evidence of it helping another colleague as well.
- Being involved in the project encouraged the colleges in using e-portfolios, and the co-ordinators exploited being in a pilot to give their students an advantage over others and, at Abingdon and Witney, to raise the students' self-esteem. (There was anecdotal evidence of a past Abingdon and Witney student at interview where talking about the e-portfolio supported their application.)
- The use of the e-portfolio document for transition to employment was strongly supported by some students, but rejected just as strongly by others (due to small businesses not valuing this approach or the student seeking to be self-employed). However, it was agreed that the portfolio process was of value.
- The software was hosted centrally by the myWorld project, not at the colleges. This overcame local infrastructure and some, but not all, technical support issues. The first version of the software was not mature enough to be used effectively and the second is still not mature. There are reliability issues, interface problems, limited personalisation facilities, and so on. The software was considered unsuitable for the Access to HE course and was found to be problematic by some of the BSc students.

The software

The myWorld project aimed to explore how tools and systems can be shared cross-institutionally and to evaluate the impact of doing this within a variety of partner institutions. Part of this work was to see how feasible it is to take open source software and allow it to be customised locally. The project piloted the e-portfolio tool with a wide range of learner cohorts, and within professional institutes. The tool has been refined as a result of the piloting and the second version of the software is now in use. This software is now being developed as part of the open source Sakai collaboration and learning environment, which requires the ICT infrastructure and support offered by most universities and is not ideally suited to further education or similar contexts.

For the pilot, the software was supported and run centrally within the project. At both colleges, the e-portfolio is accessed through a link in the online learning environment and support materials for its use are placed here. These support materials needed to be detailed and visual for the Access into HE course, that is, they showed

screenshots and had step-by-step instructions of each process. This form of help was not supplied within the e-portfolio software. The expectation that most learners would return to use the software without additional support seemed unrealistic given its poor design. It was felt that during the 2005-06 pilot the software was not functional enough for effective use; the new software used in 2006-07, though improved, was still not intuitive or easy to use. Most referred to the need for the programme to be as functional as presentation tools or social networking software.

Learners who had previous experience with business software felt that they had to work to develop an understanding of its functionality (but were used to doing this), while most others struggled with the interface and needed support. This meant that at Plumpton College many were struggling to complete the work expected each week. Students said: 'Obviously there is a way to do everything, it is just a mystery on how to do it'; 'If you fail to submit some fields, it clears the whole form which is very frustrating'; 'If you want to change a bit of it, say a spelling mistake, it only saves the bit you change rather than the whole page which gets lost'.

Observing use of the portfolio at Abingdon confirmed these interface and functionality problems and, additionally, it was found that the final URL for the CV did not seem to be reliable:

> 'What a mission it was: you had to click on there and click on there and click everywhere before you could get to somewhere as simple as entering your name, so without that [the college-produced help sheet] I would never have been able to navigate my way round… What you want to do is click on e-portfolio, the link, and then enter your name there, the same way as social networking software works: one button, a password and there it is and it's simple to use. Once you entered stuff, you couldn't find it. I knew it was floating around somewhere and eventually I did find out how to locate my personal information. It was in the system but I could not find it.' (Abingdon and Witney College student)

The co-ordinator at Abingdon was familiar with the software, having used a version of it herself. She was in a good position to develop the specific help sheets. This was not the case at Plumpton where some of the students felt they needed more ongoing face-to-face time in class working with the software and supporting each other. Students felt that the developers needed to get feedback on the problems that they were having, but they had not provided this in any detail due to difficulty in describing/showing the problems and lack of opportunities to provide feedback.

Some of the problems students were experiencing with familiarising themselves with the software may well have been overcome later in the course. At this stage, most were unfamiliar with key functionalities such as peer-to-peer sharing and creation of the CV link. However, all felt that they would 'like to have an idea of the finished

product: it's bits and pieces, text in boxes and more text in boxes, scanned-in pictures, etc'. Having an exemplar would have potential in supporting understanding of the added value of the e-portfolio over a text-based CV.

E-portfolio use: Access to HE course, Abingdon and Witney College

Abingdon and Witney College has three sites across Oxfordshire. The co-ordinator of the project, Ellen Lessner, has integrated e-portfolios into one course run on the Witney and Abingdon campuses as part of the tutorial process. The one-year full-time Access to HE course is designed for students aged 19 or over who have few formal qualifications, but who have a range of prior experiences and who want to go on to study in higher education. There is a high proportion of students with specific learning difficulties on the course, many of whom have not had formal recognition of this. The 2005-06 cohort of 40 students had over 40 per cent of students with dyslexia. Retention for the full-time course is in line with the national average. The 2005-06 cohort included an evening access course which had a low retention rate. This course no longer runs.

Students on the Access to HE course study two specialist subjects validated by the Open College Network, and GCSE English and/or maths if needed. The e-portfolio forms part of the key skills programme run alongside which is part of the course credit: supporting reflection, ICT skills development and the development of the UCAS application personal statement. However, evidence from the focus group was that students did not see the connection between the two. The majority on the course are women headed for careers in nursing, midwifery, social work and education, but some go on to study other degrees in fields such as environmental science, marine biology, psychology and the media. Completion of the e-portfolio is a requirement of the tutorial course assessment.

The e-portfolio is introduced at the start of the academic year and the students are supported in populating it with evidence and information from their life to date: for example, educational background, employment, voluntary work and travel. This is updated throughout the course and is used to identify learner needs and develop confidence in their ability to complete the course and enter higher education. This is mainly completed on an individual self-study basis. The e-portfolio is used to support interview preparation. It can also be used by those who return to the workplace during or after the course.

Ellen Lessner is championing the use of the e-portfolio alone in the college at present. The rationale for not including others in the use of the e-portfolio work relates to the pilot nature of the software. Ellen feels that a mature product is needed if others are to use this in further education, due to the lack of a research culture. It was for this reason that students were encouraged and supported to use the software rather than insisting they all completed the process. The students were well aware of the pilot nature of software and e-portfolios in general, as one expressed:

> ‘It was explained to us that it was a pretty new idea and that it had not really been tried out. I think last year’s students did it as well, but they had some problems with it and it had then been improved, so it was basically work in progress. So they wanted to see how we would get on since the improvements had been made.’

Use of the e-portfolio was intended to boost self-esteem through recognition of achievements and experiences. However, an additional element of this is the nature of being part of a research project raising the status of this work for the student.

Ellen became involved in the use of e-portfolios during 2004-05, using the first software version as part of the application process for CMALT membership, the ALT accreditation programme for information learning technologists. Oxford Brookes (from where ALT is run) was central to this work and George Roberts, the myWorld project co-ordinator, was the contact. He had also been involved in applying for accreditation within this earlier project. As a result of this work, Ellen was then asked to be involved in the JISC myWorld project during 2005-06 and to develop the scenario of use described above. She recalled how she had been influenced by the positive experience of a colleague: she completed an e-portfolio and as part of the process became more aware of her achievements and then used this experience for a promotion.

E-portfolio use: Career development module, Viticulture and Oenology BSc (Hons), Plumpton College

The co-ordinator of the project, Chris Foss, has integrated the e-portfolio into an optional career-planning module in the first semester of year three of the Viticultural BSc that he leads at the college. Most students take this option as it is seen as more attractive than the alternatives due to its relevance, timing and a perception that it is an easier option. The students tend to be mature, aged 25-plus, but can be in their 50s, and as such have varying qualifications, experiences and ICT competence. They often lack confidence in their ability to participate in undergraduate-level study.

The module aims to enable the learners to investigate, develop and communicate the skills necessary to plan and achieve their career goals. The e-portfolio structure was designed by Chris to suit the needs of the module, which structures and scaffolds the task of developing an e-portfolio in order to produce a CV for a job application. The first week was an induction, in which George Roberts, myWorld project manager from Oxford Brookes, introduced the e-portfolio concept and technical issues. In the following weeks, students worked through completing the e-portfolio structure: educational history; skills audits (intellectual, practical, numeracy, communication, ICT, interpersonal/teamwork, self-management and professional development); work history and career exploration; career planning; and CV writing. In January an assessed activity is set, whereby students create an online CV and apply for one of three fictional jobs (screenshots of one example are provided in

Figure 15). Individual feedback on the appropriateness of the CV is given to each student at the end of the semester.

Eight students studied the course in its first year (2005-06) and the final project report revealed that the module supported career and skills development using new methods, with students seeing the long-term value of the approach. However, there were issues to do with the reliability and the prescriptive nature of the software, as well as the lack of resources and face-to-face support on the module. In fact, the software was not supported effectively in the pilot. The interview with Chris Foss revealed that, in the first year, the students were meant to support themselves when working through the structured sessions – there were no taught sessions except for the induction.

The 2006-07 cohort consists of 13 students, the software has been upgraded and the module is more structured, providing weekly one-hour, face-to-face support sessions. These all have the same structure: an introductory presentation which is added to by the students at the end of the session; students work in small groups to debate the key aspects and share these at the end; the electronic presentation is posted on the college intranet to be added to the next session.

Chris Foss felt the contact sessions worked well and is thinking of increasing the contact time to two hours per week, in order for the learners to review work together. However, the students felt the sessions were rather formulaic and it was suggested that they could prepare what they completed face to face prior to the sessions, and then spend time during these using the e-portfolio to develop these ideas within the software. This was partly influenced by the difficulties some had in using the software, and also because the nature of completing the work was seen as quite demanding and feedback and discussion in the group was seen as helpful.

Another tutor is now piloting the same career development module with her third-year equine studies BSC students (nine in total).

E-portfolio understandings

Unsurprisingly, the understandings of the students and tutors related to the ways they were using the e-portfolio as a transition document. E-portfolios were regarded as CVs and something to show employers and admission tutors. Abingdon and Witney College students said:

> ‘It’s a tool to market yourself… a web-based resource where you can store information about yourself that can be made accessible, like an online CV that gets updated every time you do something. It’s your whole identity in electronic form. It’s your education, your history of your work, like a CV but it’s a bit more than a CV as well… your interests… helps gain a more holistic picture of who you are, what you are, what you do, enjoy doing. It could be

> used for a job application, you could give them your portfolio address and they could log on and see it.'

Students in both colleges were aware of the utility of the e-portfolio as a lifelong learning tool, security issues, issues of ownership of data, and the need for a system that would be available to use beyond the project. Insecurities about the skills of others to access their completed e-portfolios and their willingness to refer to the information were raised. Additionally, they mentioned the need for the e-portfolio to be well presented and personalised: 'No one's going to spend that much time reading information unless it's appealing.' (Plumpton College student).

The career development module students realised the value of e-portfolios in a global job market. In addition, one student had had the experience of going to an internet café to put together a job application when he was in Australia. He found it really difficult to do without the relevant documentation, and was very enthusiastic about the potential for easy access to an online portfolio when in other countries. Some students were concerned that some smaller businesses might not be receptive to the technology and that the document itself might not be that useful to a self-employed person.

The students also mentioned the e-portfolio process – for example, supporting reflection and identifying goals were referred to – but they were not using the e-portfolio in these ways yet. The lecturers focused on similar aspects, with a focus on the process of recording and reflecting upon achievements and how these matched the next stage in the lifelong learning journey. The ways an e-portfolio supports the production of a CV that links claims to evidence were also mentioned:

> 'Even if they don't need to do this for a job, it will be useful in that it helps them reflect upon their skills and helps them think about what they should be doing. It helps them reflect on their skills they have gained and those they still need to develop… gets them to think about the evidence to support their claims, for example, prove that they can work with other people. That's intellectually challenging.' (Chris Foss, Plumpton College)

E-portfolio value

In spite of the difficulties with the software, students quite liked the process of writing about themselves and reflecting on their achievements. A key factor for success was the ways the e-portfolio had been integrated into the courses in both colleges, and the fact that the rationale for using it was transparent. At both colleges, the e-portfolio was 'sold' to the students, a process supported by the introductory session by George Roberts. However, the notion of being part of a 'project' was seen by the lecturers to be a motivator, due to the funding provided for the work and the potential advantages over other students that having completed an e-portfolio might provide.

One Plumpton College student said: ‘It is like a live interview. You get to really know who that person is.’ Another commented: ‘It’s the way things are going, so it is useful.’ Their co-ordinator, Chris Foss, commented: ‘It can give our students an immediate advantage in the employment market, until the use of e-portfolios becomes generalised throughout higher education.’

Impact on learning

In these sites, the e-portfolio completion was seen as a major goal in itself. Engagement in the processes involved in recording, storing, selecting, reflecting and presenting were the key learning objectives. Recognition of ‘gaps’ in experience/skills/knowledge was part of the process but these gaps were essentially being dealt with on both of the courses. On the Access to HE course, for example, tutors were working with the students in small groups in the key skills element to help identify issues, support study skills, and so on. throughout their course. This complete personal tutoring process supports retention, goal-setting, reflection and development of the UCAS personal statement. The e-portfolio is seen as just one element in this process.

There is no evidence of its particular value in retention and attainment in these situations except in that it is perceived to add value in relation to developing self-worth and effective e-portfolio process skills. In addition, students mentioned that the use of the e-portfolio was increasing their ICT skills and thought this was useful in itself. Chris Foss at Plumpton College stated that the e-portfolio helped students recognise their achievements and raise self-esteem and ‘generally students are surprised when they get really good jobs, appointed to run large wineries, etc’. He went on:

‘Again it is also difficult to disentangle the impact of the e-portfolio from the impact of the course itself. Most of the modules we do we focus on the academic skills and all the self-development study skills are in the background… this module they are upfront and the academic ones are at the back. They do complement each other but it is difficult to see the relationship of the e-portfolio on attainment.’

Feedback and collaboration

The students were not sharing their e-portfolios with their peers; most did not realise that this could be done. They felt that this might in itself be problematic, due to the need to trust others with personal information and because they might be competing with their fellow students for jobs or university places. However, they thought that some selective sharing and peer support in using the e-portfolio system might be helpful. Use of the e-portfolios was not monitored in any systematic and ongoing way. A deadline for completion was set and for the Access to HE course, completion was the goal. For the career development module, access to the e-portfolio was only sought to support grading of the assessed task – feedback on this related to the

suitability of the CV produced for a particular job application. Ongoing feedback was missed by some students. Figure 15 shows screenshots from an e-portfolio designed to support job-seeking. Text includes ‘I enjoy working alone but really thrive in a team environment. I feel that I work at my best in a team’ and ‘Wherever you see the words “digital content attached”, I have attached a link to a relevant website or piece of academic work’.

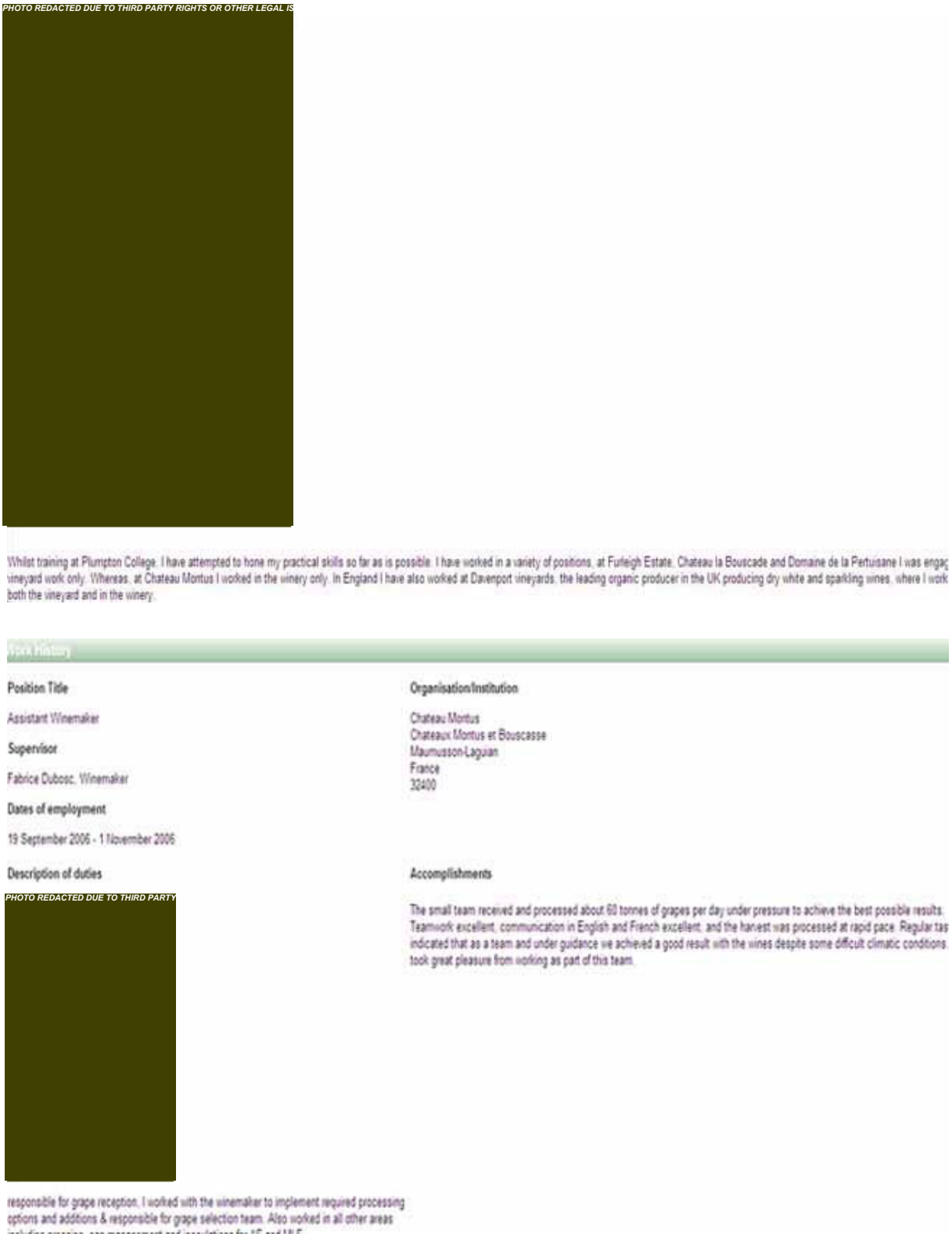


Figure 15: Selected screenshots of a finished e-portfolio online CV

Case study 7: E-portfolios for tutors – A NIACE adult and community learning staff development project

Introduction

This project comprised a suite of seven separate sub-projects running during the first half of 2006. Each sub-project was a result of a bid for a share of a central fund administered by the National Institute of Adult Continuing Learning (NIACE) to support what were, in effect, small-scale, independent, pilot projects focused on staff development of tutors in the use of e-portfolio approaches. The seven projects utilised a variety of software, and achieved differing levels of success. As yet, there has been no implementation of the locally piloted e-portfolio approach with student learners.

Summary

This case study revealed:

- Projects were part of wider local strategies to develop the use of learning platforms. In some cases, it was clear that local emphasis remains very much on content delivery and the provision of storage space for learners. In Lincolnshire, the use of the learning platform is mainly 'at a superficial level', with an emphasis on email and content repository functions. Similarly, in Dudley the focus is currently on the development of the community portal and curriculum delivery, rather than on learners recording their learning and progress.
- It seemed from discussion with co-ordinators that, despite this project, several of the seven organisations involved were not in a state of strategic readiness for wider implementation of e-portfolio systems. One contact (Manchester) reported that there are currently 'no big plans to carry it forward'. In Oxford, despite limited progress during the project itself, it remains on the agenda.
- Some local strategies were stalled owing to plug-in problems with their VLE. The Middlesbrough co-ordinator reported that, though enthusiastic and keen to implement a standard system across provision for about 30,000 learners, following a recent upgrade of their VLE installation, the e-portfolio plug-in no longer worked, and they were awaiting a new module. Similar technical issues with the learning platform were reported by Manchester and Oxford.
- Technical issues were not restricted to the VLE. Dudley reported technical problems with the local community portal, which, together with the local focus on curriculum delivery referred to above, meant that progress with e-portfolios was limited. The Lincolnshire co-ordinator reported that it had been 'a spectacularly unsuccessful project' with a very limited engagement

among the six staff involved. This was at least in part a result of the way the local system worked, with provision for upload of only one file at a time, and difficulties with export.

- Differing levels of response among participants were reported. For instance, the Manchester co-ordinator observed that they were 'expecting people to use it as a tool but they didn't', rather, participants 'saw it as an extra'. This Lincolnshire co-ordinator felt that there was a qualitative difference between potential users, and that the system 'could work for captive full-time audiences but not in the adult education sector'. However, among nine participating staff in Bromley, seven were successful in maintaining the storage of materials and the creation of portfolios. The approach is currently being trialled with a guitar class where MP3s made at home are uploaded and made available for tutor assessment. If this approach is seen to meet the requirements of Recognising and Recording Progress and Achievement (RARPA, a method developed jointly by NIACE and the Learning and Skills Development Agency for recording progress on non-accredited courses), it will be used as an exemplar to support the dissemination of the approach.
- The e-portfolio should be seen alongside tools for recording and communicating progress. Two areas (Bromley and Manchester) specifically referred to the use of blogs for recording progress.

Participating organisations

- Bromley Adult Education College
- Dudley Metropolitan Borough Council Community Education and Development Division
- Manchester Adult Education Service
- Middlesbrough Adult Education Service
- NE Lincolnshire Adult Community Learning Service
- Oxfordshire County Council Adult Community Learning
- Portsmouth City Council

Six out of seven local co-ordinators participated in telephone interviews about the overall progress of their local project, reporting varying levels of success in terms of staff development. Among the reasons given were the stage of technical development of the local learning platform, local reorganisation, and differing levels of individual response among participants. Most projects were small, and predictably these issues arise as attempts are made to roll out the projects to larger numbers of staff as a precursor to implementation with learners.

Project structure

Participating organisations were required to bid for an allocation of funds to carry out the local sub-projects. Bids for funds utilised a simple project planning pro form as provided by NIACE. Four categories of information were required:

- purpose of the e-portfolio
- intended audience of portfolios created during the pilot
- the e-portfolio tool to be used
- project objectives and evaluation methods.

There appears to have been no particular co-ordination of, or communication among, the separate sub-projects, and a final summative report on the project as a whole has yet to be written by NIACE.

Definition of e-portfolio

No explicit definition as such of an e-portfolio is provided in this project. However, three extracts from the project plan pro forma come close:

In ACL, the purpose of an e-portfolio will generally fall into one of the following categories:

- electronic scrapbook
- individual learning plan
- recording progress and achievement
- assessment
- showcasing.

E-portfolios can be created by individuals as private repositories or can be used to share work with their peers, teachers, family and friends, external verifiers and potential employers. Bespoke software, learning platforms, CD-ROMs, USB drives, dedicated webspace, or even shared folders on an internal network could all potentially be used as e-portfolios (source: NIACE Project Plan pro forma).

Purpose

Each sub-project was required to make a statement of purpose in the project plan. This drew on the list of five possible purposes (see above); four projects specified multiple purposes. Six projects focused on recording progress and achievement. Some projects noted that the intention in this staff development project was to enable tutors to see the e-portfolio tool being piloted ‘from a learner perspective’.

Audience

Since this project was conceptualised as a staff development project, the audience for the portfolios was inevitably seen relatively narrowly, largely being restricted to the tutors and managers and others immediately associated with the project itself. However, one organisation (Middlesbrough) set out to 'to develop tutors to encourage their peers, family and friends to use the system'.

Software

A variety of software was used across the projects. Software specified in the project plans was as follows:

Bromley	Bespoke software as part of the college intranet. Learners will also have the option to use a weblog for reflective/evaluative activities.
Dudley	Commercial e-portfolio system (primary school edition with ACL visual theme). Bespoke development of folders in a community portal environment. USB storage.
Manchester	Open source VLE for e-portfolios.
Middlesbrough	Open source VLE for two different approaches: 1) an e-portfolio plug-in that will allow a learner to upload or download materials from a private area of the VLE; 2) an open source VLE course with assignment modules to allow a learner to upload and download resources. Both approaches allow journals, CVs, course files and information on personal development.
NE Lincolnshire	Integrated VLE with selection of tools.
Oxfordshire	VLE to publish e-portfolios for tutors and provide new skills in VLE use for all participants.
Portsmouth	The project will use an open source VLE in addition to the city council's VLE (which has been problematic during the recent NIACE peer support project). Use of external hard drive for large picture or sound files. Word templates and discussion forums.

The varied nature of software used in the projects reflects the fact that the ACL e-portfolio staff development project was not a 'fresh start' project. Each local e-portfolio had instead to take account of, and integrate with, existing local learning platform-related developments.

Case study 8: E-portfolios in the National Health Service

Introduction

The e-portfolio described in this case study has been implemented by NHS Education for Scotland (NES). It was designed to be kept by graduate medical students during their two foundation years' training. During that training, these students (trainees) would move between a number of 'attachments' defining various clinical specialties. Within such placements they would be attached to a supervisor who would play a role in monitoring and contributing to the e-portfolio in relation to that attachment. Each of these would last approximately four months. In addition, a tutor would be assigned to each trainee. Tutors would oversee progress throughout the two-year period. Typically, a tutorial allocation might comprise 20 to 30 trainees.

This system was introduced in August of 2005 in a pilot format. The pilot population comprised all F1 (first-year foundation) trainees from the South East and North East Scottish Deaneries with some samples from elsewhere in Scotland. The total sample was 370 trainees. From August 2006, all foundation year doctors keep the e-portfolio described here. This amounts to approximately 1,600 trainees. In addition, the NES e-portfolio is now being extended to England. Our present research included a written reflection from the West Yorkshire Foundation School, which has introduced the system to all starting trainees (n = 485) from August 2006. This report was broadly positive and reinforced many of the points made from the Scottish community we have engaged with.

Summary

Synthesising the comments of designers, managers and tutors, the following points emerge that are distinctive to the local environment and which, in some cases, represent unpredicted issues that needed to be confronted:

Lifelong learning is embedded in medical practitioners' self-perception, and the purpose of the e-portfolio activity in this case is to record developing competence and reflection, as a means of assessment.

Training in this domain has a long tradition of institutionalised reflection yet documenting reflection around clinical matters is highly sensitive, the participants are strongly pressured in terms of their available time, while the e-portfolio system is a template with a strong scaffolding structure to assist recording of competencies

There are no facilities for uploading material other than text entry.

The e-portfolio is closely linked with a wider web-based training facility and it appears like a VLE.

The 'audience' is limited to a tutor, a supervisor and self.

Access to computers can be difficult as laptops are not allowed in hospitals, there is competition for public terminals, and NHS provision is very patchy. PDAs provide only local storage and there is a danger of the loss of confidential material, while remote storage requires wireless, unlikely in a hospital setting.

The e-portfolio innovation was introduced at the same time as the Modernising Medicine initiative. Thus, it was experienced simultaneously with a major reconfiguration of postgraduate training and its associated processes of assessment. This makes evaluation of impact difficult, at least on any kind of pre-test/post-test basis. On the other hand, there was continuity with previous practice in the sense that trainees had always been required to keep a portfolio. What was novel was the electronic format and the detailed structure of the recording.

Policy requires that all such trainees keep this record. Moreover, trainee and educational supervisors are required to sign a learning agreement which includes a commitment to visit the training website at least weekly in order to collect emails and other documents. They also endeavour to 'reflect and build upon their own learning experiences, identify learning needs, be involved in planning educational and training, and evaluate the effectiveness of their own learning experiences'.

This case study is based on examination of the e-portfolio, learning agreements and reports of pilot evaluations. It also draws upon extended interviews with: the two developers who designed and rolled out the e-portfolio for this community; the associate dean of medicine promoting it and overseeing it; the head of the foundation year programme (to which the e-portfolio is applied); three educational supervisors; four foundation year tutors; and a small questionnaire sample of trainees. A dean or other manager is here referred to as a 'manager' and a tutor or supervisor as 'tutor'.

Rationale, purpose and approach

This sector of medical education was already resourced with a paper portfolio and one rationale of the present project was to make the management of such record-keeping more efficient. However, it is clear that the change to electronic format was accompanied by an extension of the reach for this documentation and a change in the management of the initiative that required a more disciplined form of accounting.

The e-portfolio is designed to furnish a reflective record of a trainee's progress through the various attachments that make up the foundation years education. The design of the record is structured such as to require the completion of a standard set of queries associated with each attachment. Effectively, there is an assessment at the end of each of these, therefore, about every four months. The e-portfolio plays a major part in this assessment. It is structured to solicit evidence that the student has taken part in a number of clinical engagements and has shown success in a number of basic clinical competencies. Thus, the e-portfolio is a mixture of tick box questions

and open text fields for more free-format responses. The whole structure is available online and is integrated with the Doctors' Online Training Scheme (DOTS) system, an online electronic resource database which supports the trainee's general educational needs.

Completion of the portfolio depends on the involvement of a large number of staff. Nurses and other clinical colleagues need to be recruited to confirm that certain experiences have occurred and that certain competencies have been achieved. This makes the portfolio fairly public in terms of the range of individuals who may access it at various times. However, there is an area of the portfolio that is reserved for private, unshared reflection.

Most tutors, supervisors and administrators see the e-portfolio in terms of its value for streamlining the necessary tasks of assessment. To some extent, this includes a degree of reflective commentary by the trainee but this is fairly modest in its reach. There are, as yet, no facilities for uploading other digital artefacts (for example, media files or images) and the sole input is in textual form, which may be achieved from any internet-enabled workstation with a web browser.

Software tools and guidance

The e-portfolio is integrated with DOTS. In the designer's view, this means that trainees do not necessarily make a strong distinction between the e-portfolio and the wider digital education environment of which it is a part. The templates around which entries are made to the portfolio have been designed locally and provide for a mixture of tick box and free text entry. A lecture session early in the training period makes the basis of the e-portfolio clear. The system comes with significant online help and there is a manned help service to back this up. Many students will have had experience of paper portfolios before. This is true at Edinburgh in particular: '…as soon as you mention the word "portfolio" there is a big sigh, so it's not entirely a positive experience.' (Manager).

E-portfolio content

Each section (attachment) of the portfolio involves entries to be made in relation to the following categories of activity:

- personal development plans
- supervisors' reports
- certificate of performance
- multi-source feedback
- workplace assessments
- log entries
- significant event analyses.

An example of the format can be found at the following URL:

https://www.nhsdots.org/NHSDots/e-portfolio/FoundationTrainee/completeView.asp

Engagement and motivation

The online survey was answered by only a small number of trainees. This was consistent with the local developers' experience with evaluation initiatives of this kind. It is therefore hard to judge the degree of user engagement. On the whole, tutors believed that students found the exercise useful but, at times, the logistics of completing the portfolio could be demanding. This particularly applied to the need to persuade clinical staff to find time (and terminal access) to endorse and comment in the way they were required to:

> 'In one sense it's a chore because they have to get a lot of others involved and go online on their behalf, to tick off the boxes.' (Tutor)

> 'It is often frustrating chasing colleagues and supervisors to fill in the required sections.' (Student)

Over and above that demand, there was a sense that this was time-consuming:

> 'It is very often a time-consuming and tedious process and we are never sure of its benefit as many tutors have no experience in using it, at times relying on our knowledge of deadlines/requirements. The modules were particularly onerous as were the endless evaluation forms which required completion at the end of each module.' (Student)

and

> 'More often than not it has felt like a chore and an exercise in "jumping through hoops", but it is compulsory in my job so it simply has to be done. Having said that, it should come in useful when providing evidence of competencies achieved, so I can see some benefit in the exercise. It does however provide limited opportunity to discriminate between individuals as we are all filling in the same pro formas, completing the same modules… so it may be difficult to "stand out" using the e-portfolio at interview.' (Student)

Goal-setting and reflection

Tutors frequently stressed that reflection was central to a doctor's culture and that it should not be something that needs strong encouragement – it arises out of what they routinely do:

> '…in my personal experience the idea of self reflection is so ingrained that I don't need to be taught how to do it – but that's just me and the juniors have to do it somehow.' (Tutor)

This view cannot be assumed to be shared by all students:

> 'Recording teaching sessions attended is a good idea but the amount of crap we have to fill out reflecting on each one is a waste of valuable time. We attend, we learn, we apply useful points to future practice: simple as that!' (Student)

However, what clinicians do not normally do with their reflecting is write it down. Indeed, writing it down is something you might be careful to avoid:

> 'If I was a trainee, I wouldn't want to put all my reflection on the web. We deal with that sort of stuff all the time. In medicine it's not a good idea to write that you made a mistake: they might ADMIT (sic) that they made a mistake but not write it because you might be in court one day. We have meetings to discuss things maybe four times a week, all the time, but we never write them down.' (Tutor)

> 'The formalisation of reflection… I enjoy reflecting with colleagues in an informal way, but do not enjoy or feel the benefit of typing it into the system.' (Student)

If there are not those kind of cautious worries, then there are others that reflect the strong assessment motive of the records:

> 'There will always be some worries in their mind that some item of reflection will be used for assessment purposes.' (Manager)

Managers admit that at the moment the stress is on the e-portfolio for assessment and that more effort would need to be invested in cultivating the more reflective aspect of the tool:

> 'The whole thing is in its infancy. Not enough time to create that culture [of reflection]. They are interested in tick boxes on the right [good] side of the form. When they are in the middle, getting four (out of seven), they are not yet saying, "What do I have to do to get six or seven?" …it will take time for that.' (Manager)

As with much about this initiative, the challenge of available time is also relevant:

> 'In junior doctor training the experience has been that the reflective bit is not filled in that well… they just don't get round to it… as a researcher said to me yesterday (sic) perhaps they don't fully appreciate the value of it. It's valuable

as education but it's also valuable as evidence for specialist evaluation.' (Manager)

Feedback and collaboration

Ideally, the e-portfolio should act as a mediator for conversation between trainee, supervisor and tutor. In practice, what can happen is limited by the time that is needed to manage clinical roles and educational roles. As two tutors commented:

> 'You do this when you are eating a sandwich with your left hand and on the phone with your right but maybe we shouldn't.'

and

> 'Supervisors are supposed to meet at start and end, but sometimes it's just an email discussion.'

The e-portfolio may reduce the amount of face-to-face contact, as a tutor said: 'I wouldn't say it encourages less face-to-face but it certainly lends itself to it.' However, there was a feeling among tutors and supervisors that the portfolio was just a benign tool and tutors would merely adopt the tutoring practices that they would have preferred in any case: 'If you have an enthusiastic tutor, then you can make really good use of it. So I don't think it impedes face-to-face but it's about the individuals concerned.'

Attainment

The e-portfolio is very much about formalising achievement. Some tutors were at pains to distinguish their views about the underlying assessment strategy and the e-portfolio realisation of this. They may have suspicions about the former while welcoming the latter. Generally, the portfolio was seen by tutors as a valuable device for pursuing assessment:

> 'Assessment is at the heart. Emphasis at the early stage was certainly in assessment and that's what the deaneries use it for: to check that assessment has been done. But we are encouraging them to collect other evidence on it, [to use it] as a reflective tool also.' (Manager)

> 'It's really important. It's the only hard evidence we can rely on. All I have got is their e-portfolio, so it's important in that respect. It's been made a requirement that they must achieve these certain competences and the only way we know they have achieved them is the e-portfolio.' (Tutor)

However, there is some uneasiness about how far this can be achieved with paper-based records:

> ‘Although a trainee may have achieved what’s required on the e-portfolio, we still don’t know what they are like… some people have doubts the information is very valid. The qualities we are looking for are than just a mark on a scale. You get a feeling about somebody. In the old days it was subjective, but if the student had subjective references from a load of people and they were all good… well…’ (Tutor)

There is an uncertainty about the sense of progress in making these (clinical) judgements about people. On the one hand, the tick boxes don’t seem to tell the whole story, but on the other, they may advance one over the ‘old-boy’ practices and biases of the past:

> ‘We used to just get a feel for things and this forces us to think in terms of domains. However, what we used to FEEL (sic) does not translate into these categories easily and you might think this young doctor just hasn’t got it yet on the form he has… so I think they are not answering the right questions yet… The old days of nepotism shouldn’t happen any more so, yes, it’s better already.’ (Tutor)

There is some feeling that the e-portfolio allows a formative approach – that it allows the spotting of a bad trajectory earlier than with the old system.

Generalisability and transferability

This experience would transfer well into situations where competencies must be explicitly recorded. The audience (tutors) is clear, and the task simply must be done. In terms of a different audience in the future, one student commented:

> ‘It makes it exceptionally difficult to then transfer some/all of it into a hard copy for job interviews for ST jobs.’

However, the conspicuous success of the present initiative as a mode of organising the monitoring and assessment of trainee progress through foundation years has meant that it enjoys adoption elsewhere, including planned implementation for dental trainees, pharmacy and allied health and clinical psychology. Future developments include attention to interoperability, CV generation via selected portfolio extracts, date-specific portfolio snapshots and restyling of the interface.

Section 5: Resources

Wolverhampton City Council's e-strategy

Underpinning systems home page:
http://www.wolverhampton.gov.uk/education_learning/youth_support/14_19devteam/underpinning.htm

Information about the curriculum framework and models in Wolverhampton:

http://www.wolverhampton.gov.uk/education_learning/youth_support/14_19devteam/curriculum.htm

Information about personal planning software:

http://www.wolverhampton.gov.uk/education_learning/youth_support/14_19devteam/my_iplan.htm

Brief video:

http://www.nordangliaelearning.com/platforms_iplan.asp?p=3

Loughborough College

http://www.jisc.ac.uk/whatwedo/programmes/programme_buildmle_hefe/project_0103_loucoll.aspx

Telford College

http://asp2.wlv.ac.uk/epistle/5_report.pdf

Oxford Brookes University

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http://www.brookes.ac.uk/publications/bejlt/volume1issue4/perspective/roberts.html

West Berkshire Schools celebrate good practice in e-learning during their TV appearance

http://www.westberks.org/GroupHomepage.asp?GroupId=2495

NHS Doctors Online Training System

https://www.nhsdots.org/NHSDots/ePortfolio/FoundationTrainee/completeView.asp

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Appendix 1: Data collection tools

Leader/teacher interview schedule

Theme	Line of questioning
Context of use	What is your understanding of the term 'e-portfolio'? Why did you start to use [e-portfolios] (for assessment, reflection, transition, employability, etc)? What is the institutional support for [e-portfolio] development? (For example, is there training to help implement them?) Please describe how you use [e-portfolios] (purpose, tools, time spent, class situation, etc). Do you use one for yourself?
Engagement and motivation	How did/do you encourage students to consider [e-portfolios] as a good use of their time? What evidence do you have of student engagement with their [e-portfolios]? How often do students access their [e-portfolios] or those of other people (formally/at home, etc)? (May be computer data to show this.)
Goal-setting and reflection	How do you integrate [e-portfolios] with planning and goal-setting for students? Are students given opportunities to reflect on their learning? What structures or support do you offer?
Feedback and collaboration	Who is able to contribute to a student's [e-portfolio]? What tools enable feedback and collaboration? Who sets the levels of access to the e-portfolio?
Presentation	How are the [e-portfolios] shared (for example, web, intranet, CD)?
Attainment	What connections have you noticed between student [e-portfolio] use and improved learning outcomes? What are the benefits for: the gifted and talented? students at risk of disengaging? students with special needs? borderline students (at all levels)?
Progress, retention	To what extent have [e-portfolios] assisted in selecting, admitting and retaining students?
Self-esteem	What evidence do you have of increased self-esteem?
Effectiveness	How effective have the [e-portfolios] been?

and efficiency	Are [e-portfolios] an efficient use of resources? Is there a better alternative?
Institutional support	What are the key factors in your institution that have enabled the successful development and use of the [e-portfolio]?
	Any other comments?

Learner interview schedule

Theme	Line of questioning
Context of use	Do you know what an e-portfolio is? Why did you start to use [e-portfolios] (for assessment, reflection, transition, employability, etc)? Please describe how you use [e-portfolios] (purpose, tools, time spent, subjects or class situations, etc). How long have you used [e-portfolios]? How easy is it to use the technology?
Engagement and motivation	Do you consider creating an [e-portfolio] as a good use of your time? Do you enjoy creating your [e-portfolio]? Explain. How often do you access your [e-portfolio] or those of other people?
Goal-setting and reflection	How do you use your [e-portfolio] for planning and setting goals? How do you use your [e-portfolio] to think about your learning? What help do your teachers give?
Feedback and collaboration	Who is able to contribute to your [e-portfolio] (for example, self only, teachers, friends)? Should others be able to contribute? What tools enable feedback and collaboration? Who sets the levels of access to the [e-portfolio]?
Presentation	Where are the [e-portfolios] stored? How do you share your [e-portfolio] with other people? What type of people see it (for example, teachers, parents, employers, friends)? May I see your [e-portfolio]?
Attainment	Has using an [e-portfolio] improved your results?
Retention	Have you used an [e-portfolio] to get into a course/school? Would having one help in the future?
Self-esteem	How do you feel about yourself and your learning when looking at (thinking about) your [e-portfolio]?
	Any other comments?

Sample survey questions

Following some questions designed to elicit demographic information, these were asked:

1. Students' questions (If Yes to e-portfolios)

My e-portfolio…

- Has been fun to use
- Has made me more interested in my work
- Has taken up too much time in class
- Has taken up too much time out of class
- Is good for working with other students
- Shows me what my friends are learning
- Helps me think more about my own learning
- Gives me enough space to store all my stuff
- Makes me take more care with my work
- Helps me organise my work better
- Helps me to show people what I'm really good at
- Gives me new ways of presenting my work
- Helps me to be creative
- Helps me feel confident
- Helps me see where I need to do better
- Helps me to plan how to improve
- Helps me judge if I have improved
- Is good for showing my progress to others
- Helps me understand my work better
- Has made me pleased with my progress
- Is something I would like to use in future
- Has helped me to learn
- Helps us give feedback on each other's work
- Was easy to use because teachers helped me
- Made me do things that teachers should have done
- I have put a lot of effort into what my e-portfolio contains. YES/NO
- I have achieved more than I expected through working on my e-portfolio. YES/NO
- By using e-portfolios, I learnt...
- What I did not like about working with e-portfolios was...

2. Students' questions (If No to e-portfolios)

The school/college website…

- Has been fun to use
- Has made me more interested in my work
- Has taken up too much time in class
- Has taken up too much time out of class
- Is good for working with other students
- Shows me what my friends are learning
- Helps me think more about my own learning
- Gives me enough space to store all my stuff
- Makes me take more care with my work
- Helps me organise my work better
- Helps me to show people what I'm really good at
- Gives me new ways of presenting my work
- Helps me to be creative
- Helps me feel confident
- Helps me see where I need to do better
- Helps me to plan how to improve
- Helps me judge if I have improved
- Is good for showing my progress to others
- Helps me understand my work better
- Has made me pleased with my progress
- Is something I would like to use in future
- Has helped me to learn
- Helps us give feedback on each other's work
- Was easy to use because teachers helped me
- Made me do things that teachers should have done

3. Teachers' questions (If Yes to e-portfolios)

Working with e-portfolios…

- Has been fun for my students
- Made my students more interested in their work than they were before
- Has taken up too much of my class time
- Has taken up too much of my time outside of classes
- Is good to do with other teachers
- Tells me about what my students are learning
- Helps me think more about learning in general
- Gives us all enough space to store material
- Makes my students take more care with their work
- Helps my students be better organised in their work
- Helps my students to show others what they are really good at
- Gives us all new ways of presenting our work using technology
- Helps my students to be creative
- Helps my students feel confident
- Helps my students see where they need to improve
- Helps my students set goals for improvement
- Helps me judge how my students have improved over time
- Helps my students show their progress to other people
- Has helped my students understand their school work better
- Was a learning experience for me
- Is something I will continue to do
- Has helped my students to learn
- Was easy for my students
- Gave my students more responsibility for their learning
- Has helped us all to give feedback on other's work
- By using e-portfolios I learnt…
- What I did not like about working with e-portfolios was...

4. Teachers' questions (If Yes to e-portfolios)

Working in the school/college website…

- Has been fun for my students
- Made my students more interested in their work than they were before
- Has taken up too much of my class time
- Has taken up too much of my time outside of classes
- Is good to do with other teachers

- Tells me about what my students are learning
- Helps me think more about learning in general
- Gives us all enough space to store material
- Makes my students take more care with their work
- Helps my students be better organised in their work
- Helps my students to show others what they are really good at
- Gives us all new ways of presenting our work using technology
- Helps my students to be creative
- Helps my students feel confident
- Helps my students see where they need to improve
- Helps my students set goals for improvement
- Helps me judge how my students have improved over time
- Helps my students show their progress to other people
- Has helped my students understand their school work better
- Was a learning experience for me
- Is something I will continue to do
- Has helped my students to learn
- Was easy for my students
- Gave my students more responsibility for their learning
- Has helped us all to give feedback on other's work
- By using e-portfolios I learnt…
- What I did not like about working with e-portfolios was...

5. Doctors' questions

My NHS e-portfolio…

- Was a new kind of learning experience for me
- Allowed me to get better feedback on my work
- Has made me more interested in my work
- Has taken up too much time
- Would be good to do with other people
- Helps me think more about my own learning
- Gives me enough space to store all the stuff I want
- Helps me be better organised
- Helps me to show my strengths
- Increases my confidence
- Helps me see where I need to improve
- Helps me to plan how to improve
- Helps me judge where I have improved over time

- Is good for showing my progress
- Has helped me to reflect on my work
- Has made me pleased with my progress
- Is something I would like to do again in the future
- Has helped me to learn
- Was easy because I received the support I needed
- I have achieved more than I expected through working on my e-portfolio. YES/NO
- By using e-portfolios, I learnt...
- What I did not like about working with e-portfolios was...
- Any other comments about working with websites or e-portfolios?

Appendix 2: E-portfolio maturity modelling – A draft set of descriptors

Developed by the Learning Sciences Research Institute, The University of Nottingham, in consultation with colleagues at Nottingham Trent University and Becta. Our grateful thanks go to Jean Underwood and Gayle Dillon for sharing their expertise and matrices.

Institutional factors

1. Policy				
The institution does not have a formal policy relating to the development of the use of e-portfolios. Any e-portfolio practice may be regarded as ad hoc.	The institution has a policy relating to e-portfolio use and development; however, few stakeholders* are formally aware of it. Nevertheless, e-portfolio practice shows some relation to policy. *learners, parents (where appropriate), teachers, employers, others as appropriate	The institution has a clearly articulated policy which is generally understood by some members of various stakeholder groups. E-portfolio practice is seen generally to conform to local policy guidelines.	The institution has a clearly articulated policy relating to e-portfolio purpose, use and development; all stakeholders are aware of it. It is widely communicated, for instance, via school documentation, website, etc. E-portfolio policy and practice are highly consistent with one-another.	The institution has a clearly articulated policy relating to e-portfolio purpose, use and development. The policy is used as a framework for the ongoing review and development of the e-portfolio system, leading in turn to updating of the policy.

2. Connectivity to support e-portfolio development				
Most computers are stand-alone. External link by low-speed connection.	There is a networked central resource or some clusters which are networked with low-speed connection shared across the network.	Most computers are networked with a shared broadband institutional access but there are impediments to the flow of data between the management and curricula sectors.	All systems (management and curricula) are networked together, allowing the sharing of resources and data. Regular back-ups made.	All systems (management and curricula) are networked together allowing the sharing of resources and data for a range of viewers/readers. Differential internal and external access to the network. Awareness of need for security. Options such as wireless networks are used in addition to, or as a replacement for, fixed networks.
3. Interoperability/transferability of data				
The e-portfolio system may best be described as 'stand-alone'. No provision has been made for transferability of a portfolio or specific items of content for use under different systems or on different platforms.	Only limited provision has been made for transferability of a portfolio or specific items of content for use under different systems or on different platforms. Such operations as are possible may be difficult to perform.	Provision has been made for transferability of a portfolio or specific items of content for use under different systems or on different platforms. Users normally require assistance with aspects of the management of these aspects of their portfolio.	The e-portfolio system offers some flexibility for user management, including upload and download of individual items, and bulk export of material for designated purposes. The contents of the portfolio may be transferred between platforms, and between sectors.	The e-portfolio system offers maximum interoperability and flexibility with ease of user management, including upload and download of individual items, and tailored bulk import and export of material for a range of purposes. The portfolio and its contents may easily be transferred between platforms, and between sectors.

4. Curriculum ICT policy				
The institutional strategic or planning documents have no clear function for ICT.	ICT is incorporated into institutional strategic plans but without a clear focus.	There is a draft policy identifying support and usage but no action plan. The policy has been developed through consultation across the institution. Focus on establishing effective ICT systems.	There is a clear written policy and action plan, developed through consultation. Focus on effective learning outcomes rather than technology per se. There are clear areas identified for curriculum development and ICT solutions.	There is clear and innovative vision, from which a shared policy and action plan have been developed. Focus on the potential of ICT to impact on teaching and learning, and on effective support mechanisms to maximise attainment.
5. Institutional embedding				
No institutional embedding; e-portfolios are not yet accepted as an institution-wide initiative.	Institutional embedding is in its early stages; there is institutional commitment to e-portfolios, but there is as yet no effective identifiable 'champion', and little cross-curricular support.	Institutional embedding is beginning to bite; there is solid institutional commitment to e-portfolios, and an identifiable 'champion', who is working to gain cross-curricular support.	Institutional embedding is under way; senior leadership support and advocacy, appropriate information management structures, curriculum embedding and an e-portfolio champion are all identifiably present.	Institutional embedding achieved; senior leadership effectively connecting, information, curriculum, staff and students in a coherent and effective way; e-portfolio champion's role becomes increasingly redundant.

Teacher/tutor factors

1. Staff ICT skills				
Most staff seriously lack functional ICT skills.	A few staff are ICT familiar/competent and the ICT co-ordinator or technician is ICT fluent.	Some staff are ICT familiar/competent and the ICT co-ordinator or technician is ICT fluent.	The majority of staff are ICT familiar/competent with key staff ICT fluent, including teaching assistants.	The majority of staff are ICT fluent.
2. Teacher/tutor engagement/buy-in to e-portfolios				
Little or no teacher engagement or buy-in; teachers unaware of e-portfolio use or predominantly negative towards it.	Teacher engagement sporadic, uneven, partial; some teachers positive and keen, but e-portfolio not seen as central, important or integral to personal learning.	Teacher engagement reasonably positive; some use of e-portfolios as a tool for building both institutional and personal constructions of individuals' activity, achievements, life and identity.	Teacher engagement generally positive; e-portfolios used as a tool for building both institutional and personal constructions of individuals' activity, achievements, life and identity.	Teacher engagement almost universally positive; e-portfolios used as a central tool for building both institutional and personal constructions of individuals' activity, achievements, life and identity.
3. Teacher as provider of online feedback				
Teachers offer little or no formative feedback in the preparation of material that might subsequently be included in an e-portfolio.	Some teachers offer formative feedback in the preparation of material that might subsequently be included in an e-portfolio.	Most teachers offer formative feedback in the preparation of material that might subsequently be included in an e-portfolio.	Most teachers work regularly, constructively and formatively on giving feedback to students on material that might be incorporated into an e-portfolio.	Most teachers work regularly, constructively and formatively on giving feedback to students on material that might be incorporated into an e-portfolio, and guide the student in deciding how to use e-portfolio content.

4. Teacher encouragement of autonomy in the construction of e-portfolios				
Few staff allow students to select learning goals or learning approaches in the construction of their e-portfolios.	Some staff allow students to make autonomous choices concerning their learning goals and learning style in the construction of their e-portfolios.	Most staff allow students sometimes to make autonomous choices concerning their learning goals and learning style in the construction of their e-portfolios.	In some areas student autonomy in the construction of their e-portfolios is actively encouraged as a matter of policy by the teaching staff.	Student autonomy in the construction of their e-portfolios is actively encouraged as a matter of policy by the teaching staff and the institution provides suitable content/materials to facilitate this.

Student/learner factors

1. Student capability for autonomy in learning				
Students are not capable of selecting learning goals or learning approaches such as the use of ICT tools.	Some students are capable in some areas of making autonomous choices concerning their learning goals and learning style (at appropriate level for their age).	Most students are capable some of the time of making autonomous choices concerning their learning goals and learning style.	Most students are capable of making autonomous choices concerning their learning goals and learning style.	All students are capable of making autonomous choices concerning their learning goals and learning style.
2. Students' electronic links to the institution				
Students not linked from outside the institution.	Some students email work to and from home.	Most students use electronic transfer of work between the home and the institution. Home links are not monitored.	Students can access the institutional intranet from home to access resources or expertise. Home links are monitored to identify equity issues.	Students can access the institutional intranet from home to access resources or expertise. In homes with limited resources the institution provides some support.
3. Access to portfolio/ownership				
Any use of e-portfolios is fully under institution control and supervision. All e-portfolio activity is teacher-initiated and teacher-directed.	Access to e-portfolios is fully under institution control and supervision. Access is restricted to designated times. Learners have little choice over the content of the portfolio, which is monitored by teachers/tutors who have default access.	Access to e-portfolios is largely under institution control and supervision. It is available at – and outside – designated times. Learners have some choice over the content of the portfolio, which is also monitored by teachers/tutors with learner permission.	Flexible access to password-protected e-portfolios is available both within and beyond the institution. Learners have choice over the content of the portfolio, and are encouraged to consult teachers/tutors acting in an advisory role.	Learner access to the password protected portfolio system is available 'anytime, anywhere'; each individual learner makes personal decisions about the use and content of the portfolio, including which aspects of the portfolio will be available to others and under what conditions.
4. Learners as active creators of digital content				

Learners create little or no digital content.	Learners create some digital content in formal curriculum areas.	Learners are regular and active creators of digital content in formal curriculum areas.	Learners are regular and active creators of digital content in both formal and informal curriculum areas.	Learners are regular and active creators of content in both formal and informal curriculum areas, and make connections between their virtual spaces and multiple identities to support learning.
5. Learners as seekers and users of feedback				
Learners neither seek nor use feedback in online learning environments.	Learners use feedback in some online learning environments.	Learners use feedback in both formal and informal curriculum areas.	Learners are regular seekers and users of feedback in both formal and informal curriculum areas.	Learners are regular seekers and users of feedback involving a range of audiences, in both formal and informal curriculum areas.
6. Learner engagement/buy-in to e-portfolio				
Little or no learner engagement or buy-in; learners unaware of e-portfolio use or predominantly negative towards it.	Learner engagement sporadic, uneven, partial; some learners positive and keen, but e-portfolio not seen as central, important or integral to personal learning.	Learner engagement reasonably positive; many students value e-portfolios as a tool for recording aspects of achievement and identity.	Learner engagement generally positive; e-portfolios valued as a tool for building institutional and personal constructions of individuals' activity, achievements, life and identity.	Engagement almost universally positive; e-portfolios are a central tool for building institutional and personal constructions of individuals' activity, achievements, life and identity.

E-portfolio system factors				
1. Useability/simplicity				
The interface is complex, cluttered, difficult to grasp, with help essentially in text files. Online and offline help are incomplete and/or difficult to access.	The interface is reasonably well designed, though with some weaknesses, reasonably easy to use, and supported by tutorials, though nearly all text-based. Some offline help facilities are available.	The interface is reasonably well designed, appropriate for a wide range of users, clear, readable, reasonably easy to use, and supported by tutorials (including some graphics; not just text). Some online and offline help facilities are available.	The interface is well designed, appropriate for a wide range of users, reasonably clear, readable, easy to use, and well supported by tutorials (including some graphics; not just text). Some individualised online and offline help facilities are available.	The interface is well designed, intuitive, appropriate for a wide range of users, clear, readable, easy to use, and well supported by tutorials (including walk-throughs and screenshots or video). Online and offline help facilities are always available.
2. Reuse/malleability				
Data is essentially fixed, and in formats that are not easily transformed for other purposes.	A limited range of data types are acceptable, but only some are capable of being ported for a range of audiences and purposes. Only very limited support for reconfiguring data (for example, in order to produce a CV) ready for printing/outputting.	A reasonable range of data types are acceptable, and most are capable of being ported for a range of audiences and purposes. Some capability for reconfiguring data (for example, in order to produce a CV) ready for printing/outputting.	A wide range of data is acceptable, and structured in such a way as to make it readily capable of being ported in a range of formats and for a range of audiences and purposes. Relatively simple options will reconfigure data (for example, in order to produce a CV) ready for printing/outputting.	Any agreed type of data and file can be stored, and structured in such a way as to make it readily capable of being ported in a range of formats and for a range of audiences and purposes. Simple and intuitive (ideally one-click) options will reconfigure data (for example, in order to produce a CV).