Collaborative e-Learning: e-Portfolios for Assessment, Teaching and Learning

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Abstract: This paper presents an innovative approach to e-learning by exploring a number of initiatives where there is a move towards collaborative use of Personal Development Plans (PDPs) integrated with e-portfolios as mechanisms for delivering such plans. It considers whether such a move towards more product orientated assessment might enhance student learning experiences. Outcome based assessment and the use of e-portfolios also implies that a course may be delivered in a blended learning format and whether this change of culture in the higher education sector has an impact on tutors' course delivery and students' learning. The transition towards collaborative use of e-portfolios is presented in this paper. It addresses specifically the development of the Virtual Learning Environment (VLE) and the use of e-portfolios and how collaborative e-learning is achieved at the School of Education, Social Work and Community Education (SESWCE) of the University of Dundee (UoD). This transition is eventually assessed by listening to students. Their views have supported the e-learning experience achieved at SESWCE. Opportunities have been generated for collaborative e-learning and it has allowed UoD to work towards the national targets in this particular field.

Keywords: e-Portfolio, Virtual Learning Environment (VLE), online assessment, blended learning, collaborative learning, learning objects

1. Background

A growing number of universities and education authorities within United Kingdom (UK) as well as worldwide, are in the process of implementing the enhanced use of e-portfolios in Personal Development Plans (PDPs) as the main means of students' learning and assessment. This, in turn, would cause a reduction in the number of courses utilising formal lecture and written examinations. The emphasis on e-portfolios during the process of PDP development is particularly informed by peer assisted collaborative learning and assessment using the Virtual Learning Environment (VLE). One of the major components of the VLE at University of Dundee (UoD) and elsewhere is the growing importance and utilisation of e-portfolios because it offers the potential to promote collaborative learning and other forms of learning.

Collaborative learning and peer assessment has undergone significant development for the past decade. Researchers and practitioners, for example Thorpe (1998) and Phillips, Parsons, Duranton et al. (2004) suggested the use of Computer Mediated Communication (CMC) and computer-based activities in continuous assessment as a means to promote collaborative learning. It was highlighted that 'effective opportunities can be created to enhance feedback on learning and develop skills of group work and using information technology which have not before been possible' (Thorpe, 1998, pp 284). Acknowledging the transition from paper-based assessment to the use of VLEs and e-portfolios as a means for more collaborative learning, Eccestone (1999) raised concerns about the impact of critical reflection. For example, researchers and practitioners were cautioned against over-optimism in the use of PDPs and e-portfolios because of the tendency to gather a number of artefacts without reflecting on their significance.

However, the discussion as well as the discourse around the implementation of PDPs and e-portfolios was an ongoing process across universities in different countries. For example, the University of Georgia (UG) was making extensive use of e-portfolios in the International Technology Masters programmes. Students from the university were encouraged to present publicly a comprehensive e-portfolio of their design work as the culminating assessment in their programme (Department of Instructional Technology, 1999). Eventually, students annotated their e-portfolios via electronic journals or reflections. In a similar vein, Reeves (2000) forwarded the use of e-portfolios as a mechanism for formative assessment that allows tutors to pass comments on tutees' work before final submission of projects or theses. It was also suggested that tutors would use this route to encourage

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critical reflection among students about the artefacts they were collecting. These artefacts represented evidence of learning, practice and understanding of specific areas of a particular course. The evidence could take the form of files such as word document, power points and that would link to resources.

A major study from Netherlands, for example, identifies three goals for competency assessment with e-portfolios. These goals are selection, diagnosis and certification (Tartwijk, Driesen, Hoeberings et al., 2003). At the selection process, the suitability of a student for a study programme is assessed and the assessment outcomes are carried forward during the admission procedure. The diagnosis stage is used to determine and monitor the progress of the student's needs through their e-portfolios. By the end of the study programme, the certification process that is based on the study requirements determines attainment level of each student.

Within the United Kingdom (UK), countrywide consultancy exercise undertaken by Quality Assurance Agency (QAA) for higher education emphasises the importance of developing a PDP system (Quality Assurance Agency, 2001, Quality Assurance Agency, 2008). As a number of universities are already investigating the implementation of PDP systems, the QAA has targeted a five year programme starting in 2005 for universities. It is projected that a majority of universities will have students graduating with a first degree and utilising e-portfolios-enhanced PDPs until 2010.

This move towards PDPs is not unique to the higher education sector. Under the Assessment is for Learning Initiative (ALI) for Scottish schools, research has been undertaken to find out if it is feasible to introduce Personal Learning Plans (PLPs) in Scottish primary and secondary schools (Robertson and Dakers, 2004). This report suggested that a skills-based model of PLPs would provide inherent articulation with curriculum-based outcomes that make sense to teachers and pupils in respect of their daily experiences in schools. It is argued that if a skills-based approach for PLPs is adopted, intermediary levels and mapping learning outcomes against skills would be required. This would eventually 'enable teachers to integrate learning goals with both short and mid-term planning' (Robertson and Dakers, 2004, pp 43).

2. PDP and e-portfolio development: policy implementation and practice

The policy context from different universities within the UK and outside the country, for example, the Netherlands in particular was explored. Sources of strong evidence from one individual research, the Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre), two UK universities and one Dutch university are interrogated and the application of e-portfolios in PDPs are presented in Table 1. Barrett (2000) , for example, suggestes five key stages in the production of PDPs where artefacts are, at a first instance, collected as pieces of evidence from day-to-day teaching and learning.

Table 1: The different ways how the e-portfolio can be implemented

Source of study	Key functions of e-portfolio
Individual Research (Barrett, 2000)	Collection; Selection; Reflection; Direction; and Presentation
EPPI (Gough, Kiwan, Sutcliffe et al., 2003)	Planning; Doing; Recording; Reviewing; and Evaluating
Lancaster University (Lancaster University, 2008)	Record; Review ; Plan; Complete record of work; Demonstrate skills; Insight into ways of learning; Confidence; Self awareness and identity, and Of use for CVs etc after graduation
Liverpool University (The Centre for Lifelong Learning, 2008)	Planning; Sharing Evidence; Monitoring; Review of Evidence; Review of Literature; Statement of Outcomes; and Target
Windesheim University (Wijnand, 2004)	Registration; Representation; and Personal Record of Progress; Planning; and Reflection

Then, through a selection process, these artefacts are reviewed and evaluated; an exercise that allows students to reflect upon. This reflection exercise precedes the setting of future learning goals. It was highlighted that this stage paves the direction for the transformation of e-portfolios for professional development and supports lifelong learning.

What is not clear in Barrett's five stages is the organisational aspects of e-portfolio utilisation. This gap has been eventually filled by key findings from the study undertaken by EPPI (Gough, Kiwan,

Sutcliffe et al., 2003). As presented in Table 1, the study highlighted the importance of planning, doing, recording, reviewing and evaluating the constituents of the e-portfolio. In the context of practice being informed by both policy and research, a few examples of PDP implementation from other universities are interrogated.

As shown in Table 1, Liverpool University has established a generic set of assessment criteria for their Master Course in Education (The Centre for Lifelong Learning, 2008). Likewise, Lancaster University has developed an innovative, multifunctional and versatile VLE called 'MyPlace' for student to create, develop and refine their e-portfolios within PDPs (Lancaster University, 2008). The aim is to overcome the difficulty in deciding what it is to be assessed by using PDPs and at the same time maintaining academic standards. From the Netherland's perspective of e-portfolio utilisation, Windesheim University, for example, takes a more holistic approach. Apart from presenting, recording and planning their work and then reflecting upon, students enter their university's registration details into their e-portfolios.

3. PDP and e-portfolio development at University of Dundee (UoD)

Working in line within the national policy guidelines set by the QAA for higher education (Quality Assurance Agency, 2001) and recent developments at national level (Quality Assurance Agency, 2008), major developments of the VLE have been undertaken at UoD. The VLE at UoD that has been named as 'MyDundee, is made up of two servers (University of Dundee, 2008). They are the Online-course Delivery Server (ODS) and Content Management Server (CMS). The latter is a depository for resources that are fed by tutors and students and the e-portfolio is a subset of the CMS. More specifically, the e-portfolio is used to store personal information, present personal competence matrix, learning plans and evidence of progress, achievement and reflection. It contains artefacts as evidence of learning and practice and attainment of standards. The evidence can be in the form of word and power point files as well as links to other resources.

To operationalise the use of e-portfolios, specific guidance is issued to students about what is expected. A representative user-interface for individual student is displayed as Figure 1 below. In addition, the student has the option and opportunity to personalise the user-interface. The menu items that appear on the user-interface and that need to be addressed in the final submission are as follows:

Introduction

My Profile

My Educational Philosophy

Standards for Initial Teacher Education (SITE) Audit - Record of Achievement

Critical Reflection

My Priorities

Bibliography

As shown in Figure 1, these are hypermedia links that open in separate pages and allow students to either write directly on the page and/or attach other files.

Although such a menu is pedagogically focused by design, those features which are common to the outcomes are listed above.

By completing 'My Profile' and 'My Educational Philosophy' students become more aware of their own value-base and their own sense of identity. The 'Standard for Initial Teacher Education Audit (SITE)' that links to 'Audit of attainment' option contains links to artefacts demonstrating achievement (The General Teaching Council for Scotland, 2006). The 'Critical Reflection' demonstrates higher order thinking skills in the process of reviewing or evaluating the evidence students have gathered. 'My Priorities' that is at times known as 'Development Targets' indicate the professional skills that

students are likely to develop after having graduated and having entered the first year of employment in their profession.

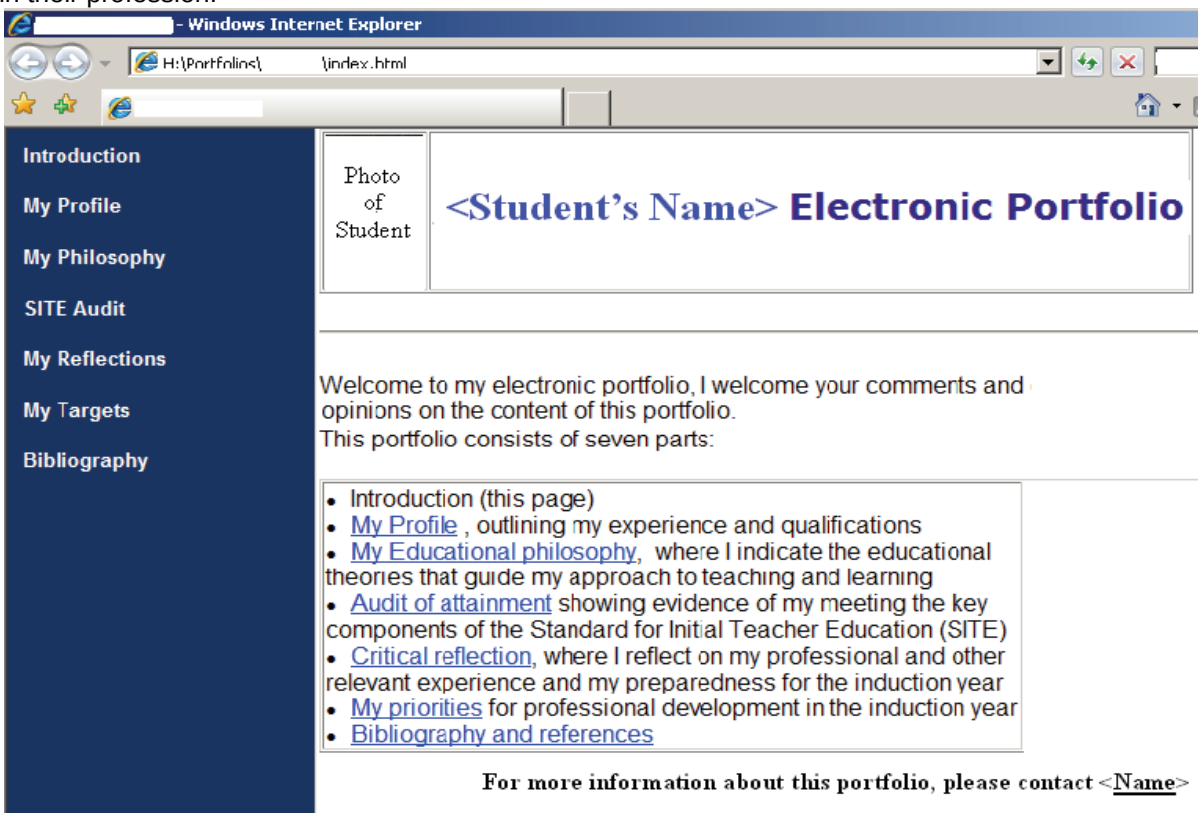

Figure 1: A sample of the user-interface of a student's e-portfolio at the University of Dundee

View the growing importance of e-portfolios in assessing students' grades, especially for their first degree as targeted by QAA (Quality Assurance Agency, 2008), four major questions are raised. First, gathering artefacts and students commenting on these artefacts do not guarantee that the students' submissions will be written in critical reflection mode. Second, what arrangements have been made by universities to maintain quality and standards and to prevent different forms of plagiarism. View the ease of availability of e-information, plagiarism is indeed a major concern (Elander, Pittam, Lusher et al., 2009). Third, how to differentiate between collaborative work and for example, student A simply does the work of student B. And fourth, as the use of e-portfolio has shifted the traditional examination, what system has been set up by University of Dundee and other universities to support lecturers and/or examiners.

As discussed earlier, although the collaborative elements promote reflection and learning, researchers and practitioners, for example Ecclestone (1999); Phillips et al. (2004); and Hennessy and Howie (2004) argued the necessity for both students as well as tutors to engage in the process of reflection. It is only by engaging reflectively that learning and progress would take place. Cottrell (2003), for example, carried this discussion further by stating that students need to set targets, attain those targets, keep reflective records and evidence of attainment.

As already stated at start of this sub-section, University of Dundee (UoD) has developed its own policy statement on the use of e-portfolios in PDPs as well as forging ahead with exploratory implementations of PDPs, utilising its chosen VLE and CMS. In this context, the School of Education, Social Work and Community Education (SESWCE), at UoD is piloting a new Post Graduate Certificate of Education Course for teachers (SESWCE, 2008). A substantial part of the course that would normally be delivered during school blocks will be dispensed using the university's VLE, MyDundee. Table 2 presents the transition from the traditional mode of course delivery to a structure that uses the VLE. The traditional mode of course delivery and the new course structure are presented in Table 2.

The new structure of course delivery allows students who are on school placements, for example, to upload their lesson plans, resources used in these lessons, evaluations of lessons progression and

other such artefacts onto their e-portfolios. During the faculty based and distance learning time, they work on a number of research projects and assignments, for which they produce both individual and collaborative reports. As these are also seen as artefacts, they are uploaded onto their e-portfolios. As each student progresses through the course, the number of such artefacts grows. Eventually, it becomes the student's own responsibility to 'link' these artefacts into the e-portfolio structure. This linked e-portfolio then provides evidence of progression, coherence and reflection as the student progresses towards course completion.

Table 2: The traditional mode of course delivery and the new course structure that uses the VLE at the School of Education, Social Work and Community Education (SESWCE, 2008)

Traditional Mode of Course delivery		New Course Structure
3 six weeks school placement blocks (18 weeks)		3 six weeks school placement blocks (18 weeks)
18 weeks faculty based		7 weeks faculty based
		11 weeks distance learning

Very early feedback from students has indicated that they have sought guidance on the ways to structure their e-portfolios. None of them, either during their first degree or subsequent modes of employment, had experienced personal development planning or e-portfolio construction. With this in mind, it was decided to give them a preset template as their user-interface. This template which has been presented earlier in Figure 1 is structured to indicate what is required in terms of assessment but, without discouraging their sense of ownership and personal commitment to the ongoing construction of their e-portfolios. As the course is accredited nationally by the General Teaching Council for Scotland (GTCS), students are to provide evidence that they have satisfied the Standards for Initial Teacher Education (SITE) by the end of course. To assist students in this process, they are provided with an electronic template of these standards in a tabulated format, in the form of a columnar display. It is also known as the SITE template for example, as displayed as Figure 2 on next page. The middle column lists required standards and the right hand column provides students with space to evidence of attainment of standards. This evidence is reflective in nature and contains hypermedia links to those files, such as teacher summative report (SE2), school placement reports, lesson plans, any additional supportive work and the students' formative report (SE1).

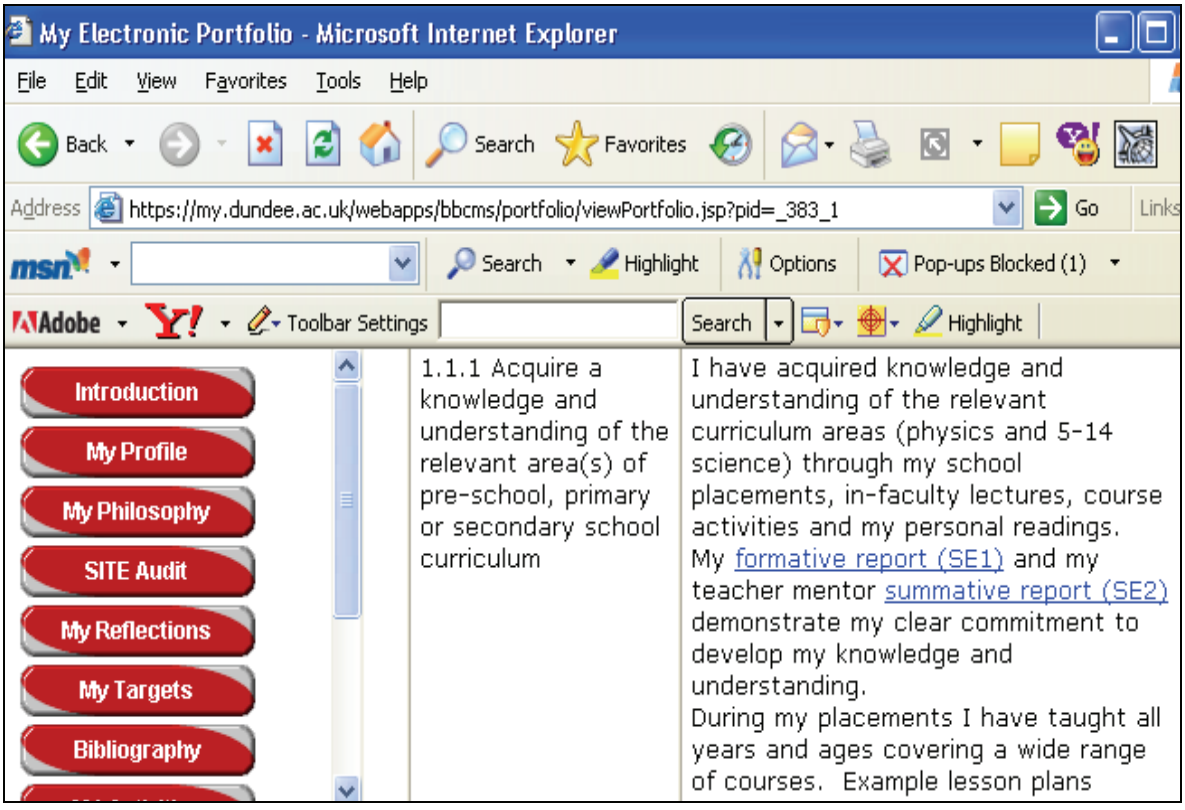

Figure 2: The user-interface an e-portfolio where students provide evidence of attaining stated standards

While students are in the process of completing this SITE template they share it with their peer learning group. This encourages peer collaborative learning and formative assessment; a process that is iterative in nature and provides feedback about learning.

As the course concludes, the e-portfolio evolves from a formative assessment instrument to one that is summative in nature. At this stage, students share their e-portfolios with their tutors who then cross-reference the e-portfolio with the SITE Audit targets ensuring that students have evidenced attainment of targets. As well as students satisfying the GTCS's professional standards for initial teacher education, e-portfolios are also used to assess the academic quality of the course, as defined in the assessment criteria of the university's validated course (SESWCE, 2008).

4. Student perception of PDP and e-portfolio development

4 weeks before the end of the first module, a sample of 26 students was issued an online evaluation questionnaire to complete. This evaluation was deliberately placed in the distance learning part of the first module because it also establishes whether students were actively engaged in the processes associated with the construction of their e-portfolios. The aim of the evaluation questionnaire was to identify which processes they were comfortable with and which would require additional support during forthcoming faculty based teaching blocks.

20 out of 26 students responded to the evaluation questionnaire. Those 6 students who did not respond stated time factor for non-completion. Those students who have responded said that it was their first experience with this kind of e-portfolios for collecting artefacts. This is justified because teaching, learning and assessment has been undergoing a transition from the traditional mode of course delivery to a blended learning format with the support of the university's VLE. 12 out of 20 students find the use of CMS easy or manageable, for example, they can add artefacts to e-portfolios and they were excited with their e-portfolios. For example, a student commented that:

> *'I am collecting my work in word and have managed to put some of these documents into my e-portfolio. I still feel rather overwhelmed by this aspect of the course' (Student).*

However, remedial support has been incorporated into the course at the introduction stage to those who finding it difficult. This can prove to be quite challenging as, immediately after this introduction, students are operating in a distance learning mode.

Most of them have reported that they understand the differences between the CMS, their content area on the VLE and their e-portfolios. This indicates that they differentiate between collecting artefacts and then building them into a cohesive e-portfolio. Those who do not understand require further remediation. Interestingly, it was found that more than 50% of students were able to successfully link folders in their content area. They have also linked individual files and other artefacts in their developing content area. The process of linking to folders, rather than files, is a second level skill and one that would be required in the final stages of building an e-portfolio. This early usage of linking artefacts into e-portfolios is encouraging, in that, students have demonstrated technical competences before moving onto a more reflective stage in using the e-portfolio as evidence of having achieved the SITE standards. To support this move, the SESWC is engaging further training in skills development in this particular area.

17 out of 20 students said that they have shared their developing e-portfolios with their peers. But, only 4 out of 20 have really commented the development of e-portfolios of their peers and even tutors' comments have been limited. It has been reported that:

> *'I've received some feedback from <Name of peer> and it's been very useful. <Name of peer> gave feedback via Comments section in the e-portfolio. Good to get a bit of encouragement and to know someone else can actually access the material. I'm not very confident about this aspect of the course and tend to save everything in My Documents. I feel I could do with more tuition centred around the use of the e-portfolio system' (Student).*

Although students have shared their e-portfolios, they have not, on the whole, passed comments to each other, in relation to the contents of their respective e-portfolios. There are implications here for the initial set of lecture inputs for future cohort of students. The importance of peer collaborative

learning will have to be stressed at the introductory stage of the course and lecturers, in particular, have to be more proactive in encouraging students at these early stages. For example, it was reported that:

> *'I have received feedback on items in developing my e-portfolio from my subject tutor and have also received a little feedback on lesson evaluation summaries from my subject and generic tutors. Feedback has been via email and has been useful and encouraging' (Student).*

In this particular case, although feedback was emailed to ensure access by the student, the use of VLE needs to be encouraged. Stressing the importance of peer collaborative learning at the outset of the course is one of the longer term implications.

The expectation is that as students move from gathering artefacts together, towards reflecting on the significance of these artefacts, then there would be greater interaction between the students and their tutors. We anticipate that there would be greater interactions with the students' peers during the next stage of the process – a part of the programme that requires greater emphasis.

5. Results and analysis

Rather than simply summarising the implementation of PDPs and e-portfolios as well as how students perceive the entire process, we conclude by further interrogating the transition towards collaborative e-learning.

Is it realistic to expect universities to adopt wide scale implementation of personal development?

The findings from the universities considered earlier in this paper indicate that implementing PDPs is feasible in the Higher Education sector. However, the implementation of PDPs and e-portfolios at the SESWCE, UoD and associated implications suggest that such usage would require a distinct culture change, on both the part of students and staff. If students are more familiar with traditional assessment by examination then moving to a more outcome based assessment model will have to be introduced with caution. It may be possible to implement such new models in one year post graduate courses, over a relatively short timescale, but for traditional 3 or 4 year degree programmes it will be more problematic. If such courses are modularised and each module is assessed separately, then implementing an outcome based assessment module would need to be considered on an individual module basis. The staffing implications are also considerable. Not only will staff have to accept the value of having an outcome based assessment model, but they will also have to spend additional time customising their existing courses with the new structure of course delivery as shown earlier in Table 2. The implementation of such a strategy will require considerable course re-alignment.

Can such implementations be achieved in an online format?

The emerging e-portfolios systems available, either as sub-systems within VLEs or bespoke systems in their own right, give scope for considerable optimism. In the case of Newcastle University, Cottrell (2003) describes how a home-grown e-portfolio system was developed and its successful application with medical students. In the Netherlands, for instance, the use of such systems has been incorporated in the study of Nursing, Medicine, and Professional Education (Wijnand, 2004). Nevertheless, the integration of a bespoke e-portfolio system with other systems, such as existing VLEs, student record system and management information systems poses certain issues such compatibility. As stated earlier, Lancaster University has investigated the possibility of using their bespoke e-portfolio system with their chosen commercial Virtual Learning Environment (VLE). This investigation has led to the development of a more versatile VLE called 'MyPlace' has been developed (Lancaster University, 2008).

At the University of Dundee (UoD), the chosen strategy is to adopt an e-portfolio system within VLE, 'MyDundee'. Although this is a more integrated solution, with the first release of VLE's e-portfolio components, we have faced and eventually overcome certain technical issues, such as downloading e-portfolios to compact disc (CD). However, there exist the potential for implementation of PDPs in an online format. As the technology evolves, whether it is a bespoke solution, on an 'off the shelf' package, it would become more robust as it has been the case at UoD.

If an online implementation is chosen, what competences will students need to develop, in order to successfully create and refine such plans?
The choice of online implementation of PDPs and e-portfolios require certain technical competences amongst both staff and students. What may be more difficult is to change a university's assessment culture from one where the tutor is predominantly in control, to that where students take more responsibility for the development of their own PDPs and e-portfolios. From a change of culture perspective, we propose that students need to develop skills in the processes of collection, selection, direction, evaluation and reflection. But, we also suggest tutors to develop their own assessment and tutoring skills where the onus may be on quality assurance of PDPs, rather than grading of assignments.

What artefacts or resources are needed to be collected in order to demonstrate achievement of the goals set in such plans?

We suggest that collection of artefacts or evidence be carried further than just a number of word-processed assignments, power point presentations, spreadsheets and video files. The SESWCE, for example, emphasises collection of artefacts, such as lesson plans, school placement reports, tutor visit reports, feedback on written assignments and reflection on discussions that take place in appropriate online forums. These artefacts need to be relevant to the course and professional attainment targets that are in use as part of the course's assessment criteria.

What effects will such a migration to Personal Development Plans (PDPs) have on the quality of teaching, learning and assessment?

The findings from this study indicate that most students are at their early stage of using PDPs, e-portfolios and online peer assisted learning. Interestingly, by the end of the programme it was also found that the majority of students have managed to complete their e-portfolios to a satisfactory level. The use of PDPs and e-portfolios is achievable, but to promote quality of teaching, learning and assessment through enhanced peer learning, we suggest that both students and tutors servicing the course have to be convinced about the advantages to adopt online peer learning into the course. We ask for a change in culture and invite further research in this area.

6. Conclusion

Acknowledging that this study engages a group of students at one university, the results are yet interesting. Rather than generalising our findings, we argue that the move towards PDPs, integrated with the use of an online delivery system, such as an e-portfolio system would help both students and tutors. The study at UoD suggests that students can develop greater sense of responsibility in relation to both the course process and the products, or assessment artefacts that they have to produce as part of their programme of study. These products and the professional competence they have mastered in the process of e-portfolio construction integrate their career development as they leave higher education and embark on their professional career. Hopefully, the professionals themselves will take cognisance of these PDPs and will endeavour, in some way to link into individual's ongoing professional staff development. Although the target to use PDPs and e-portfolios is set for 2010 by QAA as stated earlier (Quality Assurance Agency, 2008), we acknowledged that there will be struggle ahead. To ease this struggle, we propose further research into this area to find effective ways in which the construction of such e-portfolios can be achieved more collaboratively.

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