

THE ROLE OF EPORTFOLIOS IN HIGHER EDUCATION: THEIR PERCEIVED VALUE AND POTENTIAL TO ASSIST UNDERGRADUATE COMPUTING STUDENTS

W. Beresford, D. Cobham
University of Lincoln, England

wberesford@lincoln.ac.uk, dcobham@lincoln.ac.uk

Abstract

Whilst not a new concept, ePortfolios embrace the interactive nature of Web 2.0 technology and are beginning to show signs of bringing about a new pedagogy in education. The wide range of commercial and open source ePortfolio and associated tools currently available allows students to maintain an online repository of digital artefacts. These tools can facilitate reflective, collaborative and lifelong learning, and allow students to showcase skills, knowledge and understanding. A key benefit identified in the literature is the ability to create a personalised and reflective learning experience.

Previous research has shown that the lack of competent and effective use of ePortfolios and the inability of students fully to recognise the benefits to them as learners, are hindering their widespread use.

This paper focuses on a small pilot research project, which seeks to identify the Web 2.0 tools that students following undergraduate awards in technology subjects across various levels at the authors' institution are currently using. It investigates the extent to which students keep a digital record of their learning and how they perceive ePortfolios as a learning tool.

The students were surveyed by questionnaire providing quantitative data. Qualitative information was also gained by interviewing a smaller group of those students individually to ascertain whether they were able to identify the value of an ePortfolio and how they might envisage using one in their learning.

The outcome of this initial study has helped to determine whether an ePortfolio application was worthy of further development and trialling as a subsequent project.

Keywords: ePortfolios, education, learning, higher education, Web 2.0.

1. INTRODUCTION AND LITERATURE REVIEW

Since the early 1990s ePortfolios have been used in education to facilitate storage of digital artefacts, feedback, reflection on learning, and to showcase achievement [1]. During this time there have been many advances in technology. Online, interactive Web 2.0 tools including social networks, media sharing sites, blogs and wikis have the potential to bring about a new pedagogy and change the learning experience for students.

Whilst ePortfolios have continued to evolve through Web 2.0 technology, their origins can be traced back to traditional paper portfolios. Barrett summarises "the purpose, process and context should be similar between electronic and paper-based portfolios [2]." Further to this, Cho and Brown believe the ePortfolio learning experience can more social, as students are able to work together and share information [3].

ePortfolios can serve many purposes. Some of the ways in which they can be used by the student to support learning are: being able to capture and record achievement, assessment, learning including 'learning to learn', presentation and personal and professional development planning [4].

Fox identified reflection as being an important component of successful ePortfolios [5]. He explained students are more able to determine areas of need and plan future learning goals through being able to reflect on their own learning processes, aided by tutor feedback. A report of the Joint Information

Systems Committee explained how “learning processes fundamentally underpin the creation of any portfolio [6].” Over time, an ePortfolio can be used to build a story of the student's learning and achievements to a variety of audiences.

Usually online, ePortfolios reside either on an institutional portfolio platform, or as a Web 2.0 mash-up. A range of tools and applications is available, enabling the ePortfolio to be used in flexible ways across different curriculum areas. Students create, develop and manage their own ePortfolio – a key factor in their engagement, without the need for any prior coding knowledge or technical expertise. Interactive tools including blogs, wikis and photo sharing enable students to create a personalised learning experience for themselves [6].

Thompson suggests higher education institutions face a challenge in how best to adopt and incorporate Web 2.0 technologies in teaching and learning, as the current generation of students entering higher education have grown-up in a connected world, with access to computers and the Internet [7]. This has led authors to pose challenging questions such as “...is education 1.0 ready for Web 2.0 students? [7].”

Despite having grown up with access to technology, some research has shown that students have found ePortfolio technology difficult to master and can take longer to complete tasks [8]. Conversely, findings from other studies have shown that any feelings of insecurity disappear when the student has become familiar and competent with the use of the technology and processes [9].

Barrett proposes that the boundaries between interactive ePortfolio development and social networking are blurring [1]. She identifies two themes common with both: technology and reflection, and suggests that by integrating the engagement factors of social networks into ePortfolios, an increased social learning experience may be achieved.

Contrary to this very appealing notion of an ‘always-on’, ‘connected’, ‘anytime, anyplace’ learning scenario, some argue that students are not able to benefit fully from the ePortfolio process. Tosh et al discuss the use of ePortfolio systems for accountability purposes, including assessment, and explain “...making the ePortfolio mandatory automatically raises barriers and relegates it to yet another assignment for many students [10].”

Whilst there are some very good examples of the use of ePortfolios in higher education, widespread take-up is being hindered for a number of reasons. Roberts, researching into student expectations from the use of technology in support of learning, claims that “...the Net Generation's expectations begin with the expertise and passion of the faculty member [11].” Cho and Brown believe the pedagogical views of faculty are important. They state that “Faculty who hold learner-centred or learning-centred beliefs tend to see more positive values of the use of ePortfolio [3].”

Other challenges include the need for faculty to support and enable students to fully realise the benefits of using an ePortfolio in their learning, allowing students to customise their online space and on-going support for all stakeholders.

A report of the Joint Information Systems Committee states that flexible systems, tutor engagement, effective induction and access to computers and IT support are important to students [6]. Ramsden also believes academic engagement and involvement is important, “Students adapt to the requirements they perceive teachers to make of them. They usually try to please their lecturers [12].”

This means academic staff will need to be introduced to the benefits of Web 2.0 technologies including ePortfolio creation, the new ways in which students are acquiring knowledge and be willing to accept guidance on how they can adapt their teaching methods to accommodate 21st century learning.

Cohn and Hibbitts provide us with their glimpse into what the future may hold [13]. They discuss the notion of everyone having access to “a lifetime personal web space”. They suggest this results in an interactive, connected, searchable and expandable experience possible for all – a lifelong journey.

Analysis of the literature leads to the inevitable question: how should ePortfolios be used in higher education?

It is a difficult question to answer. ePortfolios have the potential to address many processes and purposes. Stakeholders all have different needs and requirements and, of course, technology continues to advance.

Should they be a tool centrally hosted by institutions and used for accountability, or will they be a constantly evolving, lifelong portfolio that is created from the Web 2.0 tools and applications we have at our disposal?

An understanding of student perception, needs and expectations is critical in forming the answers to these questions.

2. AIMS AND OBJECTIVES

The purpose of this study was to ascertain the perceived value and role of ePortfolios to undergraduate computing students and address a gap in the literature, where there was little research available on student perception of ePortfolios, to support their learning.

The findings would provide useful clarification and direction for further research into the development and role of ePortfolios in higher education. The sample group was surveyed to establish the profile of the group and responses to the following questions:

1. Do you store evidence of your learning including copies of your work, grades, feedback, Curriculum Vitae and achievements digitally?
2. Where do you store this content?
3. Do you use any of the following Web 2.0 tools and applications?
4. Have you ever created and used an ePortfolio to store and access your digital content?
5. What are the benefits of an ePortfolio to your learning?
6. If you do use an ePortfolio do you think you will still use it after university?

3. BACKGROUND AND CONTEXT

The PebblePad application was introduced at the University of Lincoln, during the 2006-7 academic year and was implemented by the institution's Centre for Educational Research and Development, to aid ePortfolio creation and personal development planning (PDP).

Use of portfolios at that time was limited to subject areas such as art and design, nursing and social care, where evidence-based assessment or practice-based learning was prevalent.

3,000 licenses were purchased initially for staff and student use, and at the time of writing a total of 3,017 accounts were entered in the database, 287 of which were active. Only two had been accessed during the previous three months.

At the time of implementation of PebblePad, academic staff expressed little enthusiasm for the need of an ePortfolio application. Factors hindering acceptance and uptake include a perceived increase in workload and staff being largely unaware of the potential benefits of ePortfolio creation and PDP. It was also highlighted that it was not easy for staff to come to a clear understanding of the purpose and processes involved in ePortfolio development, or how they could be incorporated into their courses.

Student enthusiasm and interest in ePortfolio creation and development was positive. However, due to the lack of academic staff engagement, interest began to wane.

Currently, a personal development planning working party is bringing together academic and support staff from across the institution to develop a strategy for successful deployment and engagement of ePortfolios to support learning and aid personal development planning.

4. METHODOLOGY

The study followed a mixed research methods approach. The first part of the study involved quantitative data being gathered from an online survey. Wright found online surveys to be advantageous in reaching a large number of individuals with ease [14]. This was an important consideration in the study, due to the targeted student base being spread across five separate

awards. Wright also identified automated data collection as another benefit of online survey research. Qualitative data was obtained during from the second part of the survey, by interviewing a smaller focus group of students [14].

All participants in the survey were contacted over a four week period via email. The email introduced ePortfolio technology, questioned the perceived potential benefits and invited participants to contact the researcher for further information. A web link was provided for easy access to the survey. Evans and Mathur discuss weaknesses of online surveys, including the view that they can be impersonal in nature, unless personalised [15]. With this in mind the survey was designed to allow for as much self-expression as possible, and comprised mostly of multiple-choice answers, with additional comment fields.

The second part of the study involved one-to-one interviews, conducted with as subset of the original sample surveyed. Individual views were achieved by:

- Introducing and discussing the use of technology and ePortfolio development in learning.
- Discussing the main purposes, processes and potential benefits.
- Asking a set of pre-determined questions to each interviewee.
- Allowing the interviewee the opportunity to share further comments.

5. FINDINGS

5.1 Online survey

Forty-two students, from five undergraduate computing awards completed the online survey, over a four-week period. Responses for each question are detailed below.

(Fig. 1) The majority of respondents were aged 18-23. (Fig. 2) The majority of respondents were male. These figures are generally representative of the computing student population at Lincoln.

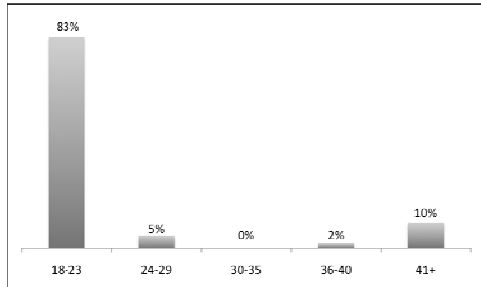


Figure 1 – Age range

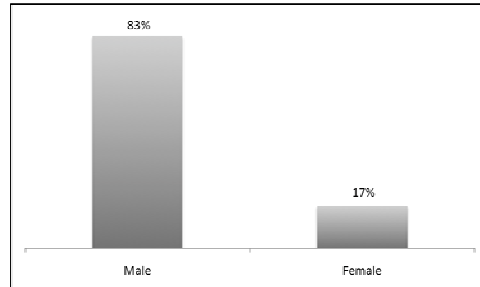


Figure 2 – Gender

The majority of respondents confirmed they were storing digital copies of their work (88%) and digital curriculum vitae (69%). Other comments indicated some students were keeping copies of all learning material, including lecture notes and assessment briefing documents. One respondent stated he had a personal website. (Fig. 3)

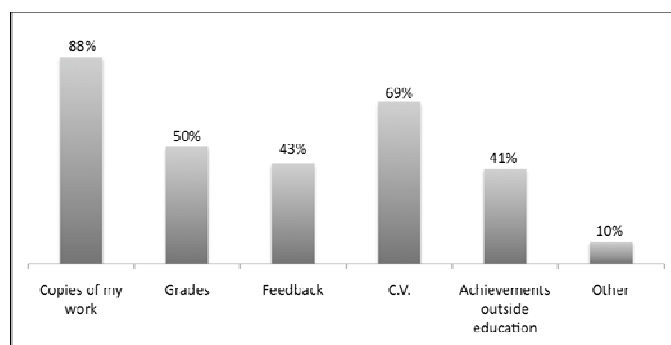


Figure 3 – Evidence of learning stored digitally

In terms of the physical media chosen for storage of digital content (Fig. 4) the overwhelming majority of respondents store digital content on a computer (95%). Other media used included removable drives, Blackboard and printed copies.

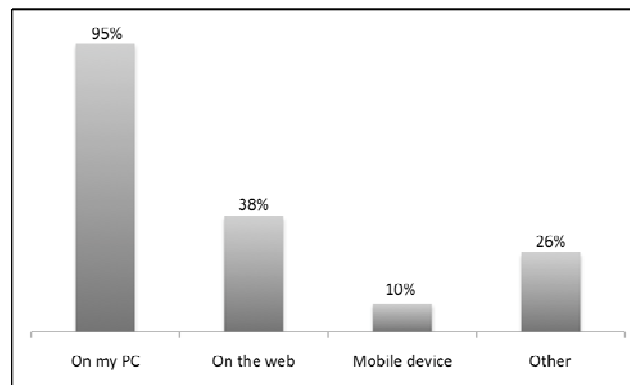


Figure 4 – Content storage

Facebook and YouTube were the two most popular online tools for social purposes. Other Web 2.0 tools and applications mentioned by respondents included Google Docs, Google Wave, Twitter and LinkedIn. (Fig. 5)

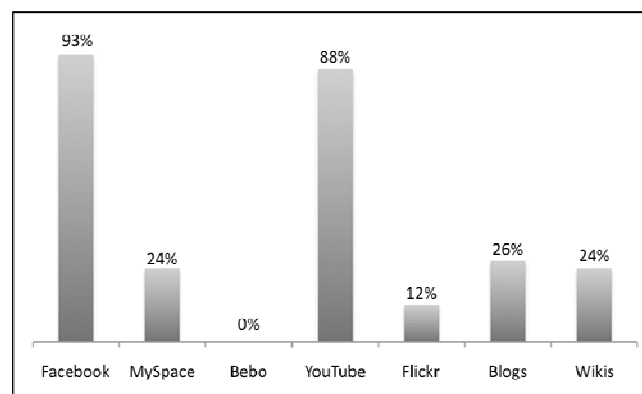


Figure 5 – Web 2.0 tools & applications used for social purposes

For learning activities the use of YouTube, blogs and wikis were popular choices (Fig. 6) However, in contrast with Facebook usage in Fig. 5 there was little use of the application in learning.

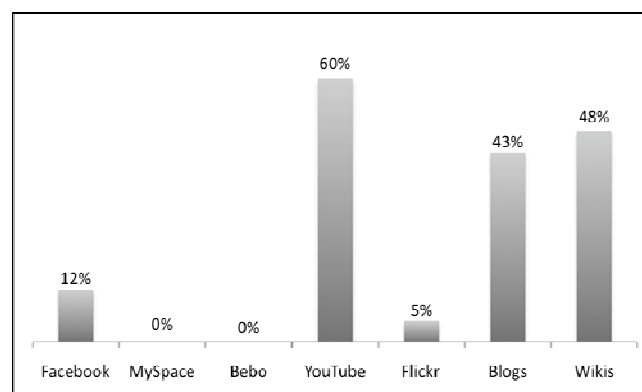


Figure 6 – Web 2.0 tools & applications used in learning

Whilst a small numbers of students indicated they had used the PebblePad and Mahara ePortfolio applications, the majority of respondents indicated they had never created an ePortfolio (Fig. 7)

Other comments included several students were currently in the process of building their own portfolio website.

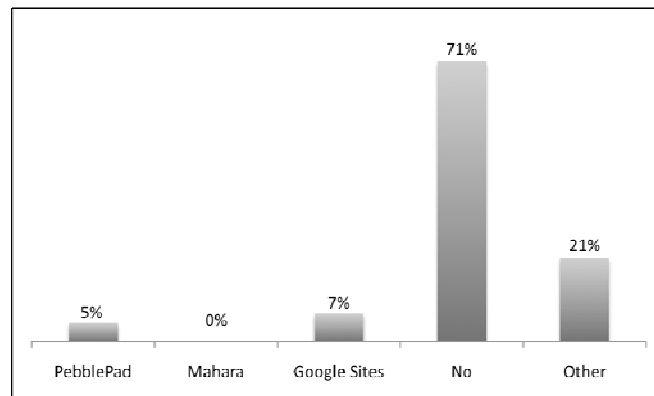


Figure 7 – Prior ePortfolio creation

The majority of respondents indicated that the ability to showcase their work was a key benefit of ePortfolio creation and development (Fig. 8) Other comments ranged from students being able to demonstrate their abilities, tendering for freelance work, to not having previously considered an ePortfolio to support learning.

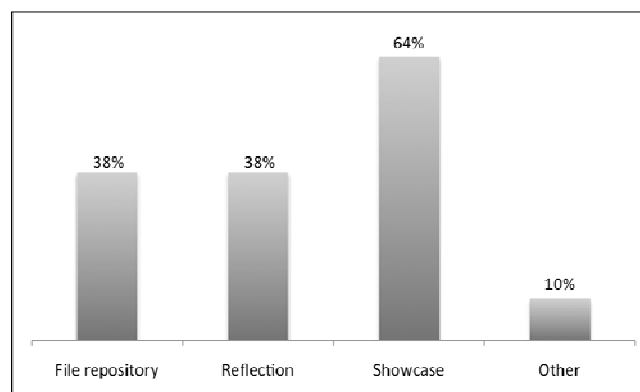


Figure 8 – Perceived benefits of ePortfolio creation to learning

More than half of respondents felt they would still use an ePortfolio after graduation (Fig. 9) Comments varied and ranged from students not thinking they would have a use for an ePortfolio after graduation, to others indicating if they started using an ePortfolio whilst at university they would probably continue to do so after graduation.

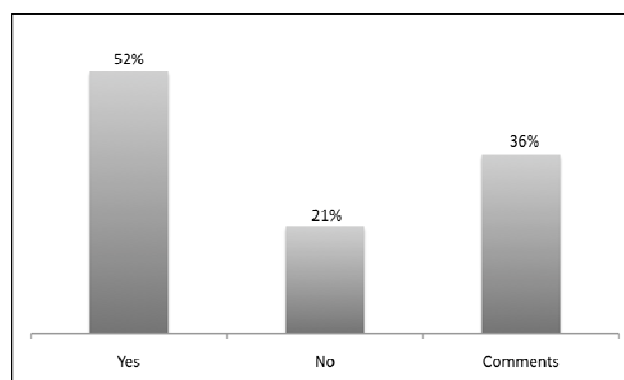


Figure 9 – Use of an ePortfolio after graduation

5.2 Student interviews

A smaller number of students were interviewed on a one-to-one basis in order to gather qualitative data. Those interviewed had already completed the survey, so were familiar with the concept of ePortfolios.

Key points expressed by students included the following:

- They would like to experience more use of Web 2.0 tools and applications at university, to support learning.
- They would like the ability to create an ePortfolio without having any institutional restrictions imposed on its creation and development.
- The main benefit perceived of ePortfolio creation was its ability to showcase achievements, demonstrate skills and help secure employment.

There was also an additional related issue that emerged namely:

- Facebook should not be used in formal learning activities. Interviewees discussed the use of Facebook was for social purposes and its use in learning would not be appropriate.

6. CONCLUSIONS AND DISCUSSION

The purpose of this study was to gain an understanding of the perceived value and role of ePortfolios and use the findings to provide clarification and direction for further research and development of ePortfolios to support learning in higher education.

The findings indicated that technology was an important aspect of students' everyday lives and was also felt to be beneficial to their learning. One student said, "My learning is wholly reliant upon the existence of technology." This statement is reinforced by the large percentage of survey respondents who are storing evidence of their learning digitally and also by the interactive, Web 2.0 social applications they are currently using to support learning. YouTube, wikis and blogs were the three most popular choices and with the exception of Facebook, they were also the most highly rated for social use.

Facebook was the top choice for social use, confirmed by 93% of respondents. Only 12% of students indicated they have used Facebook for learning.

Whilst Barrett's suggestion that social networking is both process and product is confirmed [1], the findings indicate student use of Facebook is more about process (communicating) than product (storing of work).

Barrett explains that by identifying the engagement factors of social networking and incorporating them into ePortfolio development, students will have the desire to create lifelong, interactive portfolios [1]. The findings indicate that whilst the use of technology is evident in learning, it is currently on an ad hoc, unstructured basis. By developing the use of technology in learning increasingly around social computing activities, a more social learning experience may result, giving the learner the opportunity for innovation.

The majority of students stated they did not have an ePortfolio, but indicated they were aware of some of the key benefits and may continue to develop one following graduation. From these findings it would be reasonable to agree with Thompson's suggestion that higher education institutions face a challenge in how best to adopt and incorporate Web 2.0 technologies in teaching and learning [7]. Universities have a further challenge in Cho and Brown's suggestion that institutions need to have "learner-centred beliefs [3]". Without this, student needs and requirements may not be met.

Students are discovering for themselves the value of interactive tools and applications in learning, and through the use of these Web 2.0 technologies, the ways in which they acquire knowledge is changing. Therefore, as Joint Information Systems discussed, flexible systems and tutor engagement are important to students [6].

Further development work will include devising a strategy for the implementation of a student-centred ePortfolio, to aid personal development planning at the university.

7. REFERENCES

- [1] Barrett, H. C. (2010) *Blurring the Boundaries: Social Networking & ePortfolio Development* [Online]. Helen Barrett. Available from: <http://docs.google.com/Doc?docid=0AQYgNed5WN7HZGQ3Nm01czJfMTA0MGRmdjl0emNw&hl=en> Accessed: [7th April 2010].
- [2] Barrett, H. C. (2004) *Paradigms Underlying e-portfolios* [Online]. Helen Barrett. Available from: <http://electronicportfolios.org/blog/2004/07/paradigms-underlying-e-portfolios.html> Accessed: [25th April 2010].
- [3] Cho, Y. & Brown, G. (2007) *Exploring Faculty Perceptions of ePortfolio Use and Its Relationship to Faculty Teaching Beliefs* [Online]. Inter/National Coalition for Electronic Portfolio Research. Available from: <http://ncepr.org/finalreports/WSUfinalreport.pdf>. Accessed: [4th March 2010].
- [4] Beetham, H. (2005) *e-portfolios in Post-16 Learning in the UK: Developments, Issues and Opportunities* [Online]. JISC. Available from: <http://www.jisc.ac.uk/media/documents/themes/elearning/eportfolioped.pdf>. Accessed: [15th March 2010].
- [5] Fox, I. (2009) *ePortfolios Celebrating Learning*, New Zealand Ministry of Education Report.
- [6] Joint Information Systems Committee-JISC (2008) *Effective Practice with e-Portfolios, Supporting 21st Century Learning* [Online]. JISC. Available from: <http://www.jisc.ac.uk/media/documents/publications/effectivepracticeeportfolios.pdf>. Accessed: [5th March 2010].
- [7] Thompson, J. (2007) Is Education 1.0 Ready for Web 2.0 students? *Innovate* 3 (4) Available from: <http://www.innovateonline.info/index.php?view=article&id=393>. Accessed: [25th April 2010].
- [8] Gerbic, P., Lewis, L. & Northover, M. (2009) Student Perspectives of eportfolios: A longitudinal study of growth and development. *ascilite Conference*, Auckland, New Zealand 2009. p. 327-331.
- [9] Lopez-Fernandez, O. & Rodriguez-Illera, J. S. (2008) Investigating University Students' Adaptation to a Digital Learner Course Portfolio. *Computers & Education*, 52 (3), 608-616.
- [10] Tosh, D., Light, T. P., Fleming, K., & Haywood, J. (2005) Engagement with Electronic Portfolios: Challenges from the Student Perspective. *Canadian Journal of Learning & Technology*, 31, (3).
- [11] Roberts, G. R. in Oblinger & Oblinger (eds) (2005) *Educating the Net Generation* [Online]. Educase. Available from: <http://net.educause.edu/ir/library/pdf/pub7101a.pdf>. Accessed: [23 April 2010].
- [12] Ramsden, P. (2004) *Learning to Teach in Higher Education*. London, Routledge-Falmer.
- [13] Cohn, E.R. & Hibbitts, B. J. (2004) Beyond the Electronic Portfolio: A Lifetime Personal Web Space. *Educase Quarterly*, (4), 7-10. Available from: <http://net.educause.edu/ir/library/pdf/EQM0441.pdf>. Accessed: [1st April 2010].
- [14] Wright, K. B. *Researching Internet-Based Populations: Advantages and Disadvantages of Online Survey Research, Online Questionnaire Authoring Software Packages, and Web Survey Services* [Online]. Available from: <http://jcmc.indiana.edu/vol10/issue3/wright.html> Accessed: [2nd May 2010].
- [15] Evans, J. R., & Mathur, A. The Value of Online Surveys. *Internet Research*, (15) 2, 195-219.