

# Implementing ePortfolios in higher education: A means of improving graduate employability

This paper presents a review of ePortfolios and employability. The impetus for this review is the increasing use of ePortfolios in universities both internationally and within Australia and their promotion as a process and tool for enhancing employability. Government support, both in Australia and internationally, is evident and professional associations are also promoting the benefits of using ePortfolios. However, while a number of universities nationally and internationally use ePortfolios, implementation is still fragmented and their level of use is not always maximised. Research into this field tends to be qualitative rather than quantitative however it does highlight the potential for ePortfolios in producing employment-ready graduates. This paper concludes by presenting selected cases from Edith Cowan University that highlight how to maximise the value-add of the ePortfolio for reflection, learning, and assessment, by helping students create links between theory and practice in preparation for employment.

**Keywords:** ePortfolios, employability, reflection

**Intended audience:** teaching staff, teaching support staff

**Author biography:** As part of the Curriculum 2012 and Beyond Project, a Working Party has been formed to consider alternative strategies to ensure effective implementation of an ePortfolio system with particular emphasis on employability; to develop a rationale for ePortfolio use at ECU; and, to consult and plan with ITSC to decide upon a platform that best suits ECU's needs. This paper is a collaborative effort produced by several members of the Working Party.

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This paper presents a review of ePortfolios and employability. The impetus for this review is the increasing use of ePortfolios in universities both internationally and within Australia and their promotion as a process and tool for enhancing employability. Government support, both in Australia and internationally, is evident and professional associations are also promoting the benefits of using ePortfolios. However, while a number of universities nationally and internationally use ePortfolios, implementation is still fragmented and their level of use is not always maximised. Research into this field tends to be qualitative rather than quantitative however it does highlight the potential for ePortfolios in producing employment-ready graduates. This paper concludes by presenting selected cases from Edith Cowan University that highlight how to maximise the value-add of the ePortfolio for reflection, learning, and assessment, by helping students create links between theory and practice in preparation for employment.

## **The use and development of portfolios and ePortfolios**

Electronic portfolios (ePortfolios), an innovation arising in the early 1990s (Barrett, 2001), have developed from the original concept of a portfolio; moving from traditional print portfolios used in classrooms, to use as tools to demonstrate prior learning, and personal development planning for adults (Michelson & Mandell, 2004, cited in Cambridge, 2008). As Information and Communications Technology (ICT) developed, forward thinking educators found a use for ePortfolios as mechanisms to facilitate learning and the sharing of learning and knowledge (Treuer & Jenson, 2003), as well as for the improvement of distance education (Cambridge, 2008).

Technologically, there seem to be many advantages to using ePortfolios in higher education, not the least of which is the space-saving capacity of ePortfolios as compared to their paper-based counterparts (Gathercoal, Love, Bryde, & McKean, 2002). ePortfolios can include all artefacts in a digital manner available on the internet. In a virtual environment, students are able to house several different forms of artefacts, including images, audio files, videos, Word documents, PowerPoint slides, spreadsheets, and so on (Botterill, Allan, & Books, 2008, p. 72). Unlike paper portfolios which require physical space, ePortfolios make it possible to keep a substantial archive of students' work with multiple revisions (Greenberg, 2004, p.30). Furthermore, in the same virtual environment, lecturers can view students' artefacts and provide immediate feedback (Gathercoal et al., 2002). Students can also share their ePortfolios with and receive feedback from anyone in the world, thus taking advantage of the collaborative learning capacities of ePortfolios (Wang, 2009; Flower & Rhodes, 2005). ePortfolios also offer the capacity for hyperlinking. The advantage of which is highlighted by Barrett (2001, p. 6) who suggests that when using portfolios for assessment purposes, the "transformation from 'artifacts' to 'evidence' is not always clear." but "linking reflections to artifacts makes this thinking more explicit" (p.6). Furthermore, hyperlinking within ePortfolios overcomes the two-dimensionality of traditional paper portfolios because links can be made from multiple perspectives and a single artifact can demonstrate multiple

standards, that is, links from one artifact can match to several competencies or standards in a structured portfolio (Barrett, 2001, p. 6). Another valuable characteristic of ePortfolios which is unavailable to their print counterparts is that the owners of ePortfolios have lifelong control of their portfolios “virtual identity” as Treuer and Jenson describe it (2003, p. 34). Rather than sending copies of their portfolios, with little likelihood of return, to prospective employers, graduate admission committees, faculty advisors, and lecturers, students can give access to certain ‘views’ of their ePortfolios. Students have ownership of their learning and they may tailor portions of their portfolios for their audience and control what content is seen by whom (Andre & Heartfield, 2007; Gathercoal et al., 2002). When a student decides a recipient no longer has a legitimate interest, the access code, or URL, to the ePortfolio may be changed and the recipient no longer has admittance to view the contents. Furthermore, because the student has ownership of the ePortfolio, he or she should be able to use it beyond a university career: the student may keep the portfolio and adapt it for future employment opportunities. An ePortfolio can also include a range of multimedia information about the skills and abilities of the individual and can demonstrate the use of technology to a prospective employer (Hartley, Urish & Johnston, 2006; Wiedmer, 1998). The ability to update an ePortfolio in real time as a ‘live’ document is a further advantage (Kirkham, Winfield, et al. 2006) and an essential standard according to Treuer and Jenson (2003). Finally, in relation to usability, Greenberg (2004, p.30) suggests that “digital convergence, affordability, and ease-of-use are creating portfolio opportunities for more disciplines while enhancing the opportunities for fields with long portfolio traditions”.

### **ePortfolios, learning, and employability**

In an educational setting, ePortfolios seem to offer contexts for reflection, metacognition and student-centred learning (Harper, McCowan, Hauville, Moody, & Chorazyczewski, 2007). When used across units in courses, or programmes, students may be better able to “understand their overall learning experience beyond the confines of individual units and assessment marking grids, enabling a holistic view of the individual’s current skill sets and areas for further development, and of how student experiences relate to future professional roles” (Harper et al., 2007, p.1). Avraamidou and Zembal-Saul (2003, p. 418) suggest that ePortfolios “have the potential to support reflection and re-evaluation because they provide a means of storing multiple iterations over time and a mechanism for ease and editing of revisions.” Furthermore, the development of ePortfolios has been found to be a constructivist process that may support reflection and critical examination of students’ own beliefs and skills (Avraamidou & Zembal-Saul, 2003). The process is constructivist because students are required to be engaged in their own learning and “make decisions regarding the organization and content of their portfolios” (Avraamidou & Zembal-Saul, 2003, p. 437).

ePortfolios are strength-based tools in that they demonstrate what the individual has achieved (Chang Barker, 2006) and the end product may be used as a tool for alternate pathways to higher education, entry to post graduate courses, and/or gaining employment (Hartnell-Young, Smallwood, Kingston, & Harley, 2006). The spread of ICT throughout industry and education has facilitated the increased use of ePortfolios as a useful tool and increased the expectation that the professional will use such a tool to demonstrate their knowledge, attitudes, and skills; that is their employability (Cambridge, 2008; Treuer & Jenson, 2003). In the last decade, the use of ePortfolios in higher education has increased as a way for students to document and showcase their work (Lambert & Corrin, 2007). The shift to the widespread use of portfolios, and more recently ePortfolios, aligns with the growing focus of outcomes-based education in tertiary settings. Pelliccione and Dixon (2008, p. 750) suggest that:

The changing context for higher education...has been towards an understanding that these educational settings are conceived as a preparation for employment. Universities have been engaged in re-defining curricula and assessment in order to assess 'key skills', 'generic skills' and 'graduate attributes' instead of assessing the acquisition of knowledge. The focus is upon creating 'work-ready' graduates through the alignment of curricula with graduate attributes, learning outcomes and the needs of industry.

ePortfolios facilitate reflection through the collection and selection of artefacts to record and articulate the university experience, and it is argued they support the "capacity to embed the Graduate Attributes into the curriculum and into teaching and assessment practices as well as draw on the individual's whole of life experiences outside the curriculum" (Lambert & Corrin, 2007, p. 1).

The use of ePortfolios has been linked to the concept of 'lifelong learning' (Cambridge, 2008; Treuer & Jenson, 2003) and integrative learning that prepares the individual to work within work environments that require flexibility and a positive attitude to both lifelong and integrative learning (Cambridge, 2008; Tosh & Wermuller, 2004). Lifelong learning has been defined as 'all learning activity undertaken throughout life, with the aim of improving knowledge, skills and competencies within a personal, civic, social and/or employment-related perspective' (Commission of the European Communities, 2001, p. 9 cited in Hartnell-Young, Smallwood, Kingston, & Harley, 2006). Integrative learning has been defined as "developing the ability to make, recognize, and evaluate connections among disparate concepts, fields or contexts" (Huber, Hutchings, Gales, Miller & Breen, 2007, p. 46). The concepts of lifelong learning and integrative learning as defined here appear to relate to another term used in this area – 'lifewide learning'. Lifewide learning refers to learning that occurs in different contexts such as home, school, work, community and includes transfers of knowledge between domains (Desjardin, 2003).

ePortfolios are one tool that can provide the basis for the documentation and facilitation of learning and performance (Cambridge, 2008; Treuer & Jenson, 2003) and can provide communication links between the owner, the education provider (for requirements of study) and employer (Kirkham et al., 2009) in a very individualised manner (Baume, nd; Cambridge, 2008). Their use has been linked to increased successful understanding of the self, increased awareness of skills and abilities (Stevens, 2008) including learning skills developed through reflection (Bloxham et al., 2009; Cambridge, 2008), lifelong learning, personal development planning (Bloxham et al, 2009; Kirkham et al., 2009) and increased employability (Baume, nd; Cambridge, 2008; Chang Barker, 2006).

Research in Europe (The Gallup Organization, 2010) has expressed workplace experience as the most frequently cited response from employers about how universities could improve graduate employability. Similarly, Australian research suggests that work placements are useful for developing employability skills (Crebert, Bates, Bell, Patrick, & Cragnolini, 2004). Across a range of domains and contexts, workplace and in particular specific industry experience is valued by employers (Akhurst, 2005; Precision Consultancy, 2007); and student work placements are valued by both employers and students as they can provide a range of workplace knowledge and skills, providing employers with work ready graduate employees (Cord & Clements, 2010). Work experience, including entrepreneurship skills in courses, careers advice, and portfolios have been identified as useful for enhancing employability

(Knight & Yorke, 2003) with careers information generating an understanding of a particular industry (Larkin, Pines, & Bechtel, 2002). Employability may also be enhanced by work experience as a volunteer, especially if the work is in an area in which the student proposes to gain future employment (Haski-Leventhal, Meijs & Hustinx, 2009; McCowan, 2008). However Employability is more than just the skills. It includes understanding, skills, efficacy beliefs (self-theories or internal locus of control) and metacognition which includes the ability to reflect appropriately (Knight & Yorke, 2003), all of which are attributes which have been associated with the use of ePortfolios (Baume, nd; Bloxham et al., 2009; Cambridge, 2008; Chang Barker, 2006; Kirkham et al., 2009; Stevens, 2008).

## Discussion

The link between ePortfolios, higher education, and employability currently occurs at the recruitment level where the prospective employee provides information about their skills, knowledge and attributes to a prospective employer (Australian *Flexible Learning Framework*, 2009; McCowan, Harper, & Hauville, 2005). Alternatively, if students are taught how to use the ePortfolio in terms of addressing selection criteria (e.g. STAR L: situation, task, action, result, lessons learned, or other similar systems), the ePortfolio becomes a most useful tool (McCowan, Harper, & Hauville, 2005). Whereas the Curriculum Vitae (CV) states skills and attributes, the ePortfolio can link the CV directly to evidence supporting the details provided (Tosh & Werdmuller, 2004). ePortfolios offer the potential to be searched by an organisation seeking to fill a vacancy and the ability of the ePortfolio to provide evidence of the skills and attributes of the applicant enhances the opportunity for recruitment.

In Australian research into Graduate Employability Skills, ePortfolios were recognised by both business and universities as a useful method for graduates to provide evidence of their employability skills (Precision Consultancy, 2007). Employers in the engineering, computing, human resource industry, and project management participated in research conducted by Heinrich, Bhattacharya, and Rayudu, (2007) and suggested that the production of an ePortfolio by an applicant for work would elevate the chances of that individual's employment. This research however only involved six organisations and the position across a range of employers on the use of ePortfolio has not yet been determined.

An indication of the spreading use of ePortfolios may be established, however, by reviewing several professional organisations across Australia who require practicing professionals to maintain ongoing, online Continuing Professional Development (CPD) records and reflections. Although these records are rarely referred to as 'ePortfolios', these CPD logs could be considered as a form of electronic portfolio. Professional organisations such as chiropractors are considering the use of Portfolios or ePortfolios, sometimes referred to as part of the CPD or Professional Development Program (PDP), with some specifically using an ePortfolio product. Western Australian Teachers are also required to record their professional learning activities online to maintain registration. Evidence of this learning may include written or digital artefacts and reflections (WACOT <http://www.wacot.wa.edu.au>). Furthermore, ePortfolios (Professional Development Program) provide one of four pathways to becoming a Chartered Engineer (Engineers Australia, <http://www.engineersaustralia.org.au>). This method allows applicants to record specifically required reports on their work in draft form, allows feedback from a National Assessor and the compilation of a range of final reports for presentation to achieve the award. Similarly, in Accounting, the CPA Program requires participants to gather evidence of skills, share evidence and artefacts with mentors, and gain feedback all within an online logbook

(<http://www.cpaaustralia.com.au/>). The Physiotherapy Board of Australia requires all practicing Physiotherapists to record all CPD undertaken, as well as reflection on the impact of learning on practice, within an online portfolio (<http://www.physiotherapy.asn.au/prof-dev/about-cdp-scheme>). As part of the national registration for the Nursing and Midwifery Board of Australia, all practicing nurses and midwives must also record all CPD as well as evidence of learning and reflection in an online portal (<http://www.3lp.rcna.org.au/network/home.php>). Several other professional organisations across Australia require similar maintenance of CPD portfolios.

The uptake of ePortfolios by professional association has encouraged the use of ePortfolios in tertiary institutions and, in an effort to prepare students for employment and with the capabilities to address these requirements, several units and courses at Edith Cowan University (ECU) implement, or plan to implement, ePortfolios. Hallam and Creagh (2010) suggest that implementation is often fragmented as widespread adoption is difficult to achieve however the following examples illustrate how ePortfolios are used across courses at ECU.

In the Bachelor of Education (Primary) course, for example, an ePortfolio is used in a number of units over the four year degree. In their first year of study, students are introduced to the Teacher Competencies and the importance of reflecting on their practice for professional growth. In workplace learning units, students complete reflections on their practicum experiences and make links to the professional competencies. For example, students in a first year workplace learning unit reflect on their mentor teacher's evaluation and their own self-evaluation of a learning experience that they delivered during their practicum. Students have to identify how they could improve this learning experience in relation to the Teacher Competencies. These ePortfolio entries are shared with their tutors for feedback and assessment. In a Health and Physical Education unit students upload their coaching accreditation from the Australian Sports Commission to their ePortfolio and reflect on their learning in relation to attaining this accreditation. In a special education unit students reflect on their experiences of engaging with people who have disabilities and how this links to the teacher competencies and the impact it will have on their teaching. These uses are all linked to assessment, however other units use the ePortfolio less formally, identifying for students what artefacts from the unit would be useful to include in their ePortfolios. Finally, in a capstone unit, students can draw on the material in their ePortfolio to develop their Professional Portfolios for employment. Students reported that using the ePortfolio to collect and reflect on artefacts helped them to see the connections between their university experiences and the professional competencies required in becoming a teacher (Walsh, Main & Lock, 2008).

Similarly, the Physiotherapy program requires that all students record and reflect on at least one significant learning experience while on each of five placements. Along with the reflective piece, students are required to develop a learning contract for each learning experience identified in their reflections in which they must discuss strategies they have developed to overcome issues and challenges they face, and how they have applied and tested such strategies. This method of ePortfolio implementation is designed to ensure students are not only learning from their workplace experiences but that they are linking university learning with practical application and are able to articulate what they have learned and how it will impact their future practice. Finally, as a capstone task, students are asked to look across their experiences and articulate, in a presentation format, how their learning experiences have prepared them for employment and have helped them develop ECU's

Graduate Attributes. It is intended that by engaging in these forms of reflective practice, and keeping a physical log of their learning journey, students will be better able to articulate their learning when seeking employment upon graduation. The ePortfolio tasks are also designed to develop students' reflective thinking capacities in preparation for their ongoing CPD as registered practitioners. Research into the capacity for the ePortfolio tasks to foster high levels of reflection and learning, as well as students' perceptions of the value of the ePortfolio, is currently being undertaken in a longitudinal study following the first cohort of Physiotherapy students.

## Conclusion

ePortfolios provide opportunities to enhance student employability and link with a range of other concepts important in higher education today is clear, especially to lifelong learning, (Heinrich, Bhattacharya, & Rayudu, 2007) and assessment (Baume, nd; Bloxham, Boyle, & Thanaraj, 2009; Love, McKean, & Gathercoal, 2004). While additional quantitative research would provide further substantiation for the use of ePortfolios to enhance employability in Australia, this is already well supported within the literature internationally. Within Australia, several Professional Organisations have established ePortfolio strategies for practicing professionals to maintain CPD logs and reflections. Several courses at ECU are preparing their students for graduation and employability by similarly requiring students to keep ePortfolios across experiences, units, and courses. While some students find the increased use of technology a challenge (Bloxham et al, 2009), the experiences of ECU staff and other Australian tertiary research suggests that students and staff are, for the most part, positive about the use of ePortfolios (McCowan, Harper, & Hauville, 2005).

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