



A design-based research approach for eportfolio initiatives

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The University of Auckland's recently revised elearning strategy aims to support grass roots teaching and learning enhancement initiatives as well as providing standard tools for course administration and management. This offers teachers a significant degree of freedom to choose tools and strategies to suit their specific learning design requirements. This element of choice has implications for professional development and support services, and requires evaluation and testing of options during selection and implementation. ePortfolios are a current 'hot topic' that is being explored for educational purposes by three faculties. An eportfolio tool is available within the in-house learning management system. However, Mahara, the open source product of a nationally funded initiative is proving to be a more popular choice. This paper outlines a systematic approach to implementation and evaluation of faculty-based eportfolio initiatives that draws on the collaborative approach of design-based research.

Keywords: eportfolios, elearning strategy, design-based research, communities of practice, professional development

An elearning strategy supporting choice

The University of Auckland's revised elearning strategy (2008) acknowledges the value of faculty driven elearning initiatives that exist outside the framework of the enterprise learning management system. Experience in recent years has shown that enterprise systems can offer core services through a common access and interface layer, but that they cannot reasonably be expected to provide all the technology tools required for creative elearning solutions developed within the faculties. What they can do is provide core services and an integration layer through which other tools and resources can be accessed. The strategy that supports this somewhat uncommon degree of freedom for academics is based on the service oriented architecture approach (Web Services and Service-Oriented Architecture, 2008). The implications for professional development and support services are significant because a wide range of technology tools and systems is accommodated. A systematic approach to selection and implementation is recommended. Dissemination of experience within communities of professional practice is pursued as a professional development strategy that leads to organisational learning.

ePortfolios and graduate profiles

The use of portfolios as a vehicle to provide evidence of student learning has been common in some disciplines for many years. The advent of electronic portfolios in recent years has led to a broader view of the scope for application of this method of formative and summative assessment, with the additional advantage of incorporating the generic ICT skills that most graduate profiles now include. The JISC website (JISC 2008) outlines the drivers for use of eportfolios at a national level in the UK, where policy proposes that every citizen should have a personal online learning space to contribute to eportfolio support for life-long learning. Clearly the potential of the tool is considered to be broad. Within the context of a large, research-intensive university, the scope and the challenges for use of eportfolios to align with graduate profiles, to promote reflective learning and to assess student achievement are of a similarly large scale. In light of recent experience of failed speculation (e.g. Zemsky & Massey 2004), a systematic approach to instructional design and evaluation of innovative educational concepts is recommended.

A systematic approach to eportfolio implementation

It is increasingly common to frame implementation and evaluation of innovative educational concepts within the design-based research methodology. Consistently unreliable predictions about the impact of technology in education led to development of an evidence-based approach to analyse what occurs rather than working from hypotheses. A key factor of this approach is the blend of empirical educational research with theory-driven design of the learning environment. Five main characteristics are:

- Intertwined goals of designing [effective] learning environments and developing theories of learning;
- Research and development activities engaging stakeholders in cycles of design, implementation and evaluation;
- Production of shareable theory to communicate relevant factors and implications to other practitioners;
- Research focuses on how designs function and interact with other factors present in authentic contexts;
- Appropriate methods to document and connect processes of enactment to outcomes of interest, (The Design-based Research Collective 2003).

This theory-driven approach is illuminative, includes all stakeholder perspectives and provides methods to interpret findings in light of contextual factors. It also aims to provide guidance for application of the educational principles and designs involved in the study to contexts beyond the development environment. Figure 1 shows a process model developed for a design-based research approach to eportfolio implementation within faculties.

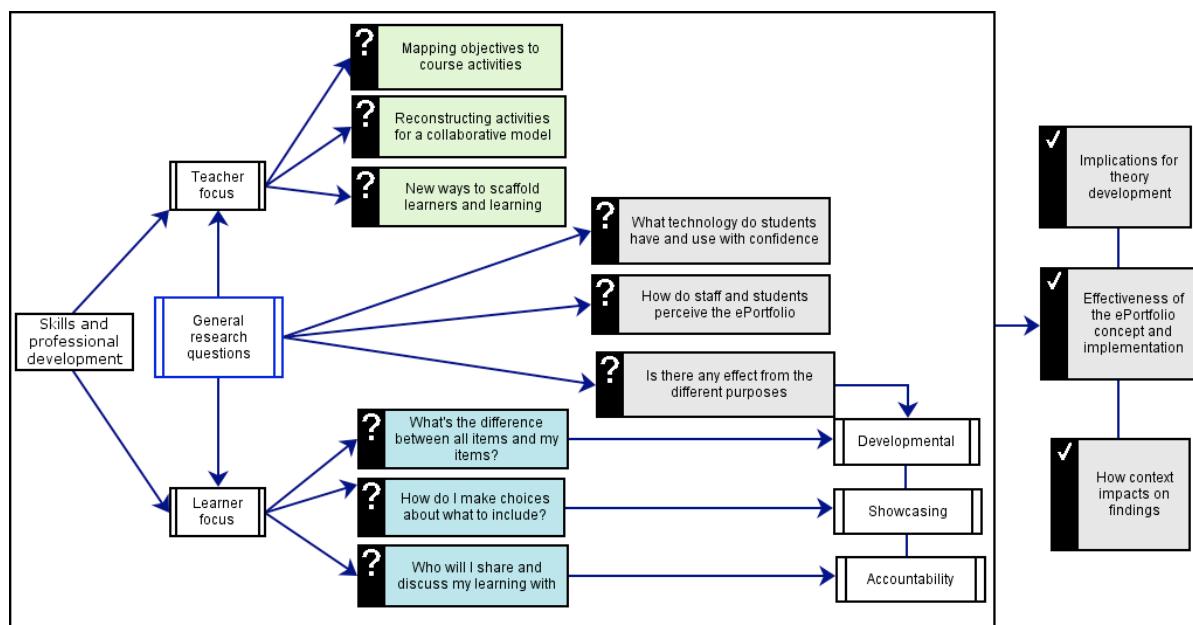


Figure 1: An eportfolio implementation process model

Educational potential of eportfolios

The current literature is rich with studies exploring the use of eportfolios in a range of educational contexts and for a variety of purposes, (see e.g. Cambridge, 2001; Stefani, Mason & Pegler, 2007; JISC, 2008). In summary, these common purposes include summative assessment; learning, reflecting and learning how to learn; presentation and peer review; career and professional development planning. Technological development has made eportfolio systems accessible with minimal ICT skills. This level of maturity supports the degree of curriculum integration required for achievement of institutional and sector-wide elearning strategic goals.

The eportfolio process conceptualised

The concept of compiling, sharing and presenting different elements of a personal collection of artefacts for learning and accountability purposes is illustrated in Figure 2. As a standard eportfolio feature, owners

have the facility to provide other groups of participants with access to their materials and reflections. This feature may be used for a variety of tasks and purposes throughout a programme of study. Peer review, lecturer comment and discussion of issues arising as well as on course formative and summative assessment objectives can thus be served.

The networked approach supported by such activities offers benefits of shared experience and increased visibility. While this presents initial challenges, experience shows that benefits do become apparent (Honey, Gunn & North, 2004). The iterative cycle of planning, implementation and evaluation of design-based research (Barab & Squire, 2004), may be useful for eportfolio initiatives, as well as for skills and professional development activities.

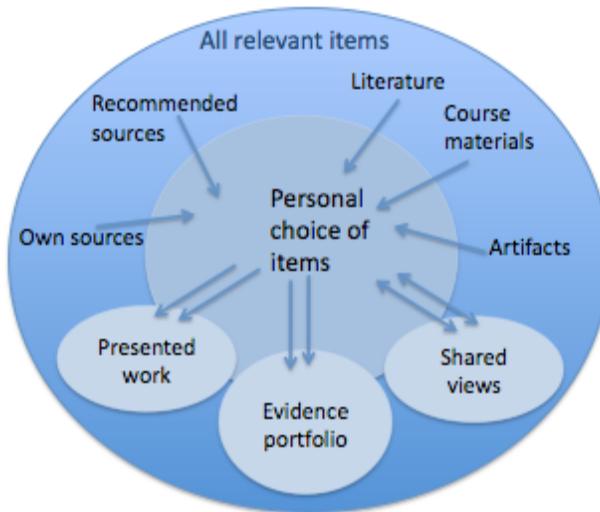


Figure 2: The eportfolio concept

Research questions

An initial literature review provided the theoretical basis of an evaluative approach to faculty based eportfolio initiatives. A number of issues were identified as common across implementation contexts. These issues are the basis of the design-based research questions that will underpin implementation and evaluation initiatives. Being independent of software or discipline, it is reasonable to assume they will apply beyond the immediate context.

Assessment or accountability

There may be tension between the use of portfolios for assessment and accountability purposes. If the portfolio is perceived as an accountability tool then the anticipated benefits of formative assessment, and the reflective and transformative aspects of learning may be limited or lost. The question is: how can effective conceptual models of the eportfolio be shaped during presentation, and reflected and reinforced by nature of their use within courses?

Visibility of student work

A key challenge for learners may be the increased visibility and significance of the learning process. Rather than being visible only in one to one relationships with teachers and assessed on the basis of outputs, learning becomes a collaborative process involving critical reflection and increased learner choices. This shift in the locus of control has long been discussed in the educational technology literature, (Laurillard 1988). The concept of eportfolios adds practical focus. Choices about visibility of students' work raise questions about who has access to what and why. In most eportfolio systems, this is a matter of student choice as they define system settings to share their work with different people. The educational benefits of sharing are identified in the literature in relation to the concept of learning within a community of professional practice, whether as central or legitimate peripheral participants (Lave & Wenger, 1991). The question is, how can lecturers assist students to exploit these benefits by designing tasks in a way that either requires, or encourages sharing, peer review and lecturer comment?

Rubrics for guidance and assessment

Assessment rubrics are one effective way to help teachers to communicate and students to understand requirements and to guide informed choices of evidence to present for different purposes. The focus question in this case is: will collaborative development of rubrics help teachers to reach common understanding and to share experience of new assessment strategies? Also, will this help students to understand from the outset what they will be assessed on and therefore what they should produce and present during the course?

Professional development for teachers

As the concept of an eportfolio is new to many teachers, professional development and mentoring by more experienced colleagues are essential elements of the project plan. Providing some form of online tutorial and good practice examples may also be useful. The literature on professional development of teachers supports collaboration between more and less experienced teachers as a way to capture creative input and generate a sense of ownership. Defining a situated professional development process for the eportfolio initiative is part of the research process.

Introducing new systems

As with all new software systems and methods of teaching and learning, the introduction of eportfolios may meet with some resistance. This can result from limited understanding of the concept and potential for its use, reluctance to shift from established ways of working, lack of early consultation or limited involvement in implementation planning. The focus here is on transparent process, early consultation, ongoing communication and orientation. The question is, what constitutes good process to manage change, to foster collaborative exploration and implementation planning, and to facilitate creative input from all stakeholders?

Access and equity

Although this is largely a disappearing problem, concerns remain about students not having access to a wide range of common technology tools or to home computers. The question is; what percentage of students does this apply to, and what action can be taken to ensure these students are adequately supported and not disadvantaged in either learning through course based activities and collaboration, or in the final assessment of portfolios.

Hosting and storage issues

Questions about portfolio location, server space and cost are peripheral to educational design, but still need early consideration. If students are encouraged to use multimedia, demands on space will be high. Hosting is an issue for discussion with IT services or external service providers if outsourcing is an option being pursued. Guidelines may be available from local experienced sources.

Discussion

This short paper presents the outline of a design-based research study for eportfolio implementation within an institutional context where freedom of choice of technology tools is supported by elearning strategy. Continuous evaluation may be more important than usual where options extend beyond the use of a standard set of enterprise system tools, and the wider impact and implications of lecturers' choices must be taken into consideration. Future publications will focus on implementation of faculty-based eportfolio initiatives where the process model described above is applied, as well as on generalisable findings resulting from these studies.

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