E-portfolios for Art, Design, Media

Introduction and orientation of the research

This report contributes to a review of the use of e-portfolios in British higher education conducted on behalf of the HEA Subject Centre for Art, Design, Media and is one of a package of outcomes delivered as a result of the research. Other outcomes include individual case studies of 3 higher education contexts and a literature review presented in the form of an annotated bibliography. This paper reports on the empirical data gathered for the study, of which qualitative evidence was predominant, although a smaller amount of quantitative data were gathered which also contributes to findings.

In this report the main focus is on examining emergent themes from the empirical data. These will be linked to key issues in the literature as the discussion continues. An extensive literature review will not be conducted at the beginning of the report, as this has already been provided in the format described above.

The existing literature and empirical data were used iteratively to substantiate key findings and generate theories in the course of the study, but some key research questions guided the inquiry from its inception. These were:

How can e-portfolios in art, design and media enhance learner skills and employability?
How do e-portfolios support learners' articulation of these capacities for appropriate audiences?
How do subject needs influence the use and uptake of e-portfolios?
How can the needs of diverse stakeholders (learners, teachers, HEIs, employers) be served by e-portfolios?

Research methods

Data collection was conducted between 2006 - 2008 in British Higher Education Institutions and via professional design bodies. An in-depth focus was adopted on three HEI contexts, and this small sample was selected on the grounds of their already well-developed PDP and e-portfolio activities. ADM-HEA networks facilitated access to participants, and members of the research team were already familiar with their work taking place in two of the contexts from presentations made at a 2006 conference on e-portfolio research held by the British Centre for Recording Achievement (CRA). In the third instance representatives of the university in question made contact with the research team, outlining the scope of their e-portfolio work and their willingness to participate. Other sites for research were considered but the three selected provided a number of advantages in terms of spread of ADM subjects, geographical location (none were in the same UK regions) and willingness to make the time-consuming arrangements needed for the research visits and for enabling data collection. Two relevant professional design bodies entered into negotiations with the research team at an early stage, with contact facilitated by the Sector Skill Council for Fashion, Shoe

manufacture and Textiles (Skillfast). These organizations provided help in administering questionnaires via their websites to ADM subject area employers and graduates.
The researchers spent two days in each of the participating universities, meeting with department and faculty heads, tutors with particular responsibilities for e-portfolios and other teaching and technical staff who had an interest in or opinion on the topic. Although semi-structured interview questions were prepared in advance, these open discussions were allowed to flow freely and were audio-recorded and field-notes kept. More formally, focus groups and individual interviews were arranged with teaching and technical staff in the three universities, and focus group meetings were also held with undergraduate and post-graduate students in the same contexts. The in-depth discussions conducted throughout these sessions were structured according to the 'questioning route' recommended in the methodological literature on focus groups as a means of data collection (Krueger and Casey, M.A., 2000). The interactions were audio-recorded, with accompanying field-notes taken by the two researchers involved; transcriptions were then subjected to early review by members of the wider research team, producing analytical memos and an overview of emerging themes. These outcomes were used iteratively to refine interview and focus group questions as the study progressed, enabling substantiation of findings across the sample. In total 18 university staff and 12 students participated in the focus groups and interviews, and approximately another 10 in wider discussions. Verbatim comments provided by respondents and extracts from field-notes are recorded in the report in double inverted commas ("…").

Survey data had originally been intended to provide significant evidence but this proved hard to come by, despite extensive time being invested by the research team in both survey design and the identification of sites for the administration of the questionnaires. Changes in the research design therefore had to be implemented to enable the work to progress to plan. Reports submitted to the HEA at regular intervals give more detail on how this developed, together with information about the ways in which changes were made so that the informational needs of the study could be met. Ultimately only a small sample of respondents was involved in providing survey data. These included 6 employers from 3 creative practices, 2 agencies and a consultancy, and included 3 creative directors and two designers from regions throughout the UK. In terms of the student survey, data were gathered from 26 current students and recent graduates in a range of ADM disciplines, including Fine Art, Graphic Design, Fashion and Textiles, Photography, Design Crafts, Industrial Design, Interaction Design and Art Direction. The findings reported here necessarily exhibit more qualitative characteristics than initially planned, being more in-depth, naturalistic, and based in participant experiences and perceptions. The breadth of coverage and potential for generalization that wider survey data could have provided has had to be sacrificed as a result. However, evidence from across the three diverse HEI contexts that were examined in some depth provides triangulation and helps to substantiate the validity of the conclusions drawn.

Findings and discussion

Findings from the research will be discussed under the following headings:

Traditional ADM portfolios and e-portfolios

The form of the 21st century art, design and media portfolio

Current technologies: function and user orientation

Employability

In elaborating on these themes the views expressed by both university staff and students will be recorded and discussed. It had been hoped to include a substantial record of employer views on the topic, but these proved very difficult to obtain in any systematic way. However most of the university tutors included in the research had extensive and current experience of interacting with the employment sector, as did the majority of students. Many of the latter had undertaken or were seeking placements, and there was a predominance in the sample of third year students who were already looking for freelance or permanent work. The research team therefore concluded that reliable evidence on employer views and needs was being included in the study, albeit reported at a remove.

Traditional ADM portfolios and e-portfolios

In order to initiate discussions and contextualize e-portfolio use within well-established art, design and media subject areas respondents were asked to describe their conceptions of what a 'traditional' art and design portfolio consists of and what it should contain. The question of an appropriate format and function for the e-portfolio could then be addressed. There was clear agreement amongst university staff across all three contexts on what the constituents of an ADM portfolio should be, and this was predicated on firmly held ideas of what the portfolio was used for. The prime function was seen to be evidential, enabling the documenting of student achievement, and this function was viewed in extremely broad terms in that the range of evidence could be very varied. At University A, which specialized in the range of disciplines centred on fashion and textiles, lecturers confirmed their view that the use of ICT had changed established formats for ADM portfolios by allowing a wider range and flexibility of content and presentation:

"The idea of a portfolio is now less clearly defined than it was, and it's only the question of what it is to be used for that helps clarify the issue".
(Tutor comment, Focus Group discussion, University A)

Staff here described the "ongoing proliferation of uses" and "widening definitions" allowed by an "e-portfolio", but remained clear on key portfolio purposes. It needed to be "a mechanism for displaying best work" and was seen as a crucial marketing tool to get students onto courses in a competitive environment. It was also produced for the purpose of gaining employment by

enabling potential employers to see student work, and therefore had to reference industry standards. The provision of evidence for audiences external to the institution was a primary consideration, but a range of other uses was described including those related to student-centred and institution-centred activities.

The literature on e-portfolios notes the dichotomy involved in using them as both a 'showcase' for achievement and as a demonstration of 'process.' The latter function is usually seen as concerned with documenting a discursive narrative of learner progress, and it has been noted that this can conflict with the other function of showing optimum learning 'products', providing a potential source of tension and confusion about purpose (Butler, P., 2006). However, study respondents did not see this as problematic in ADM disciplines, where it was felt that the 'showcasing' function did not preclude the portfolio's offering a view of the student's development, or of a wide range of capabilities -
"It needs to be selective, developmental and show what they can do."
(Tutor comment, Focus Group discussion, University A)

It is likely that this view is linked to well-established functions of the traditional ADM portfolio, which has always needed to demonstrate an individual's sound knowledge of design development processes and capability in the practical execution of design skills. This point was reinforced in discussions with staff at University C, where there was similar clarity about the kinds of evidence that needed to be included in ADM portfolios, whether 'traditional' in format or in the form of an 'e-portfolio'.

Respondents from this context were mainly involved with product design and graphic design subjects but their prescription for portfolio contents was similar to that encountered elsewhere. It was envisaged that these should demonstrate "Hard skills - a good rendering, a good CAD rendering, and soft skills - conceptual." Further tutor comments described the need for students to evidence:

- diverse capacities
- conceptual flexibility
- a view of the process of design e.g. "…annotated sketches illustrating ideas and alternatives, mind-maps, visualisation, design and development."
- analytical skills, especially in regard to "…choice and use of materials and design analysis."
- examples of design projects
- contents targeted to the specific audience

It was regarded as appropriate for these to be presented in a variety of media such as "…show-reels … slides … photographs … sketches … renderings … CAD drawings … proofs." (Composite of tutor focus group comments, University C).

Indeed, one of the functions of a portfolio as described by tutors at University B was "…the need for a folio to be homogenizing across a huge variety of media" - that is, to do the job of synthesizing varied contents into a package

that presents a coherent overview of its creator's attributes. This ordering needed to be applied to the portfolio for almost every instance of use -

"To an extent the portfolio is readdressed by its creator for each showing to a client, but you need cohesion, too - a format or style for the whole portfolio, because this underpins your personal statement."
(Tutor comment, Focus Group discussion, University B)

This idea of individual ordering of portfolio contents also related to a commonly-held belief that ADM students 'personalize' their knowledge; they therefore need an effective means of demonstrating a creative 'personality' in their work, and the portfolio should -

"…provide accurate evidence … of the ways students personally interpret the required learning for their degree … [so] you can see how this produces variety within one course."
(Tutor comment, University C)

Other significant attributes to be shown were similarly related to ideas about ADM identities (Logan, 2006) and included: "passion" and "enthusiasm" for the subject; a "solutioning approach"; "open-mindedness"; commitment to "a strong work ethic"; ("… doing what they do 100%"); and a sense of shared values with the professional design community that students aspired to join (Logan, op.cit.).

Students' views on what a portfolio should consist of were also sought during the research, and the high value placed upon the individual portfolio was evident. It was recognized that a portfolio evidencing individual work and achievements was a crucial tool in entering students' target professions, and its use was seen as a continuing aspect of their professional development - "After placement it [the portfolio] gets you a job … it's going to keep on getting you jobs for the rest of your life." (Student comment, Focus Group discussion, University C). Even in its unfinished state of development during time at university, the individual portfolio was seen as a product with adaptable parameters that would enable re-ordering, re-selection and inclusion of material for diverse audiences. Using the portfolio to show their progression was a predominant need for students, and they described it as a site for "demonstrating thought processes, drawings, finished products". The variety of contents enabled "…showing yourself off a lot more…" than any single type would, and they anticipated that potential employers would appreciate the mixed specialist media they had included. High hopes rested on these portfolios, with one student voicing the expectation that it should help - "… to get me a cushy job - it's got to move around, it can't just sit there… so I'll include videos probably, and one thing that's really different" (ibid.)

Similar views were expressed by students in other institutions, although there were evident disciplinary variations in the levels of confidence that students expressed in their ability to build a professional-looking portfolio using ICT - that is, some form of an 'e-portfolio'. At University B, for example, one student who was studying fashion and textiles worried about the level of assistance

she would need - “I’m not technically-minded” - and she and others thought that it was easier for students from some ADM disciplines to develop ICT skills of this type, notably those “… with web design backgrounds…” who “…always work this way … [and] produce nothing tangible at all.” (ibid.) The form in which 21st century portfolios should be presented emerged as a key theme in the research, generating a large amount of discussion among respondents as they debated the ways in which the potential for representing work was changed out of all recognition
by digital technologies, and by the range of these to which they had access as university staff and students.

The form of the 21st century art, design and media portfolio

The idea of the ‘e-portfolio’ has been current in British higher education for some time and there have been several attempts to develop software packages that can address the diverse needs of users, although such flexibility has proved problematic (Richardson and Ward, 2005). However, in the contexts included in this study formal flexibility was a key characteristic that respondents regarded as desirable in a portfolio, which led them to be circumspect about prescribing the dimensions of functions and form of any e-portfolio tool; in fact, questions were raised about the fitness-for-purpose of exclusively electronic means of representation. For example, staff at University A described the wide range of formats that might be needed as depending on the disciplines that students worked in, and they were not committed to the idea that digital media could fulfil all the representational needs that might arise. Rather, the portfolio could be an artefact of many kinds - it “…could be a big thing…”, a “…folio on wheels…”or “…something that is worn.” Key to these considerations were the disciplinary variations that resulted in production of 2D and/or 3D artefacts and the ways in which the quality of these was evaluated. There were common instances in which sense-based understandings were accepted to be crucial in this, such as “…the feel of textiles” or “the smell of leather goods” - which could not be represented digitally. Tutors elsewhere reinforced this point; for some ADM disciplines “the thing is to hold it in your hand … [or] you may be losing a quality … employers want to see and feel the weave and the drape of your fabric.” (Tutor comment, Focus Group discussion, University B)

Staff at University C considered that “In any art and design business you have to show what you can do and it has to be shown visually.” (Tutor comment, Focus Group discussion); in this university tutors drew a distinction between the “live folio” and the “e-folio”, describing the emerging definitions of these and of the relationship between them. They acknowledged the potential for tension between the functions of these two formats, noting that the former is “… like the end of year show, that’s a portfolio”, while the latter tended to have uses predominantly related to bridging the gap between study-oriented and employment-oriented activities. Examples of this were described as follows -

“The e-folio is for … creating an action plan based on professional aspirations … [and] for dropping the flowery language …to punchily and directly explain how you made decisions effectively.” (ibid.).

In this instance they were clearly identifying two diverse discourses in use, identified by Lave and Wenger as the 'discourse about practice' commonly found in formal learning situations and the 'discourse within practice' found in practice situations (Lave and Wenger, 1999). It was significant that e-portfolio technologies were found to enable mediation between these two contexts, bridging diverse discourses and providing a site for 'translation' of the content of students' research journals into a more professionalized account of their design decision-making. This process also appeared to be linked to the need for third-year undergraduates to undertake synthesis of their previous learning in order to achieve the 'personalization' so desirable in ADM subject areas. Staff confirmed the background to this endeavour, describing how second year students designed an action plan for their professional development and a rationale for this; and subsequently -

"In third year students engage in meta and micro reflection on their achievements. They are expected to keep a research journal, elements of which will be translated into the folio for interview."
(Tutor comment, Focus Group discussion, University C)

Staff aimed to use these activities to prepare students to articulate their achievements more effectively - "especially matching this to what the employer needs". However, there was some evidence that students found this kind of reflection and self-criticism challenging to undertake, particularly when asked to publish outcomes in a portfolio that charted their learning. They were equally reluctant to do this for employment purposes, and staff noted and understood the tensions that emerged when students' engaged in critical, analytical thinking (which could have learning benefits, particularly in terms of metacognitive understandings) and at the same time needed to represent themselves confidently and positively for the professional market.

There were also tensions involved in choosing the best ways to evidence work for self-marketing, and these centred on the way that the formal issues involved in an artefact and its representation constituted "…two different things." (Tutor comment, Focus Group discussion, University A). Concerns were voiced by respondents about the degree of authenticity that could be achieved when using digital means to represent aesthetic objects originating in other forms and media, and this issue became a key theme emerging from the research. Similar issues have been commented upon in the literature, with Dillon and Brown (2006) acknowledging that 'The intensive media-rich nature of creative production contexts is particularly challenging for ePortfolio application." (p. 420). This problem was designated as *medium shift* by the research team, and can be seen as a consequence of attempts to extend the representational range of the e-portfolio to match ADM disciplinary needs. For example, tutors at University A referred to students' collection of evidence not as an 'e-portfolio' but as "the virtualized portfolio", and the quality of image it provided was a significant concern. The virtual portfolio was nonetheless seen as a key means of gaining employment, working alongside other means and media such as catwalk shows, exhibitions and events that displayed student

work. Tutors at University C had similar ideas about the wide range of media that needed to be involved in evidencing student achievement, believing that -

"The end of year show is a portfolio in its own right. It is captured via a catalogue and fed through to professional contacts … it is multi-formed - physical, CD, showreel, website …all these media are contributing now and becoming more usual. The CD often invites viewer to visit a website."
(Focus group comment)

All of the universities in the study provided additional help in negotiating the problem of *medium shift* for students whose discipline areas traditionally relied less than others on ITC skills. At University B staff reported that "a professional photographer" was employed to help students represent their fashion and textiles work in the best possible light, while University A had established protocols that guided students on quality standards for digital images of their work. This university considered that it had clear responsibilities in this regard, described as:

"…a duty to caretake and provide …access to fit-for-purpose technologies and safe frameworks that allow learners to dip into a variety of technological pools."
(Tutor comment, University A)

The picture at University C was slightly different in that the subject fields pursued by student respondents involved much more use of ICT technologies, particularly for those studying product design. This did not preclude formal diversity being an issue in portfolio presentation, but there was a strong belief that students' successful pursuit of their studies required capability in interaction with materials, including virtual media. Discussions on this point raised complex issues about processes of design thinking and making, with tutors describing the way in which imagined ideas take on representational form through traditional, physical modelling processes using clay. However high quality computer tools now enable virtual modelling to occur, and although the learning demands of the specialist IT applications that carry this out are high, students have to learn to use these software packages. The underlying rationale for this was expressed as follows -

"Because it's not about getting technicians to do it, it resides in the designer ….By undertaking this process designers are trained to be better thinkers [and] this helps them think it through."
(Tutor comment, University C)

- that is, design processes were recognized to be integrated and iterative in ways that precluded a simple 'breaking down' into stages; plasticity of medium and thought intermingle in this process, with the product ultimately externalizing the designer's purpose and execution in one artefact. This example served to illustrate the problems involved in representing design artefacts or products which are conceived of and executed in one medium into another that has an entirely different formal aesthetic.

Students were also aware of such challenges, and described having to teach themselves skills that they didn't possess. At University C, students on the Industrial Design course had obtained "… library books on graphic design and layout, and the basics of typography …" which had been "… tricky in that we're 3D thinkers." They appeared to have coped successfully with this challenge, although some wanted their course curriculum to include more specific instruction in portfolio preparation. In general, students reported that they still lacked confidence in using technologies for representational means where these were different from the main media involved in their own subject disciplines - e.g. fashion students needed help to create high quality photographic images that did justice to their designs; those doing "hands-on work" in fine art were similarly challenged in terms of representing their achievements digitally.

The convenience offered by digital representation was appreciated, however, particularly by those whose career ambitions were international in nature. One student described the way that she sent images by email that gained her work in Japan, where it was "physically impossible to go along and show your work". She was also collaborating with others in four different countries and across continental divides, and valued the ease and cheapness offered by digital working (ibid.). Similar international ambitions were being enabled for students at University B, who regarded their geographical location as remote and potentially disadvantaging; they therefore preferred IT platforms that gave them "global" access to potential employers - "You can use the internet … both for [contacting] overseas and the UK." (Student focus group comments). It was similarly commonplace for undergraduates at University C to anticipate that both placement and employment prospects would be available within an international environment, and that this interaction would be facilitated by digital means of communication.

Current technologies: function and user orientation

There is recognition in the literature on e-portfolios that their functions and benefits are contested, particularly regarding the question of which individuals and groups should be privileged in defining purpose and use. The ways in which the opportunities presented by e-portfolios have been eagerly seized upon for educational uses are described by Price (2006), who notes that their "audience and purpose" often fails to be discussed directly with all stakeholders (p. 259). Similarly, James (2004) notes the tensions that arise when the primary uses for e-portfolios are not clearly defined, although she finds that 'reflective' and 'presentational' aspects can co-exist to serve both academic and employment-related goals. There was clear evidence in the study that e-portfolio use was envisaged as having multiple dimensions, and that these clustered around pedagogical, professional and institutional needs. Reservations were expressed by both university staff and students about the fitness-for-purpose of commercial software packages, whether for VLE or e-portfolio functions, and strong evidence emerged of the range of needs and requirements of users in HEIs. In the course of the research specific questions were asked of respondents about the kinds of technologies they made regular use of, both to identify these and to ascertain what the main

uses were. Much information was forthcoming, but this section of the report will refer to generic applications rather than to brand identifications of hardware or software products. This strategy has been adopted because it was felt to be unethical to record positive or negative comments that have potential commercial impact, particularly based on data from a predominantly qualitative study in which sample size is restricted.

Commercial packages such as VLE software were in place and well used at University A, but the VLE was described as taking its place among "a huge diversity in approaches and tools used" (Tutor comment). Rather than attempting to "rationalize" ICT applications, there was strong commitment in this context to enabling technological diversity, as it was found that "…that there is a significant buy-in from students for the range of technologies" on offer (ibid.) Nor was a single software package recommended for development of e-portfolios, and staff outlined their attempts to balance the needs of users – that is, the personalization that individual students aspired to had to be weighed against clear communications and good accessibility of student work for external audiences:

"If only one portfolio tool were to be specified, key needs would be for user interfaces that are straight-forward and for non-trainable applications and a single sign-on. This kind of rationalization can be double-edged, although so is the capacity for customization [because] over-customization can be counter-productive to the original purpose of the software…. [Our] website relies on all students providing information that is outward-facing and aimed at employers, and they are all required to do this in a similar format." (ibid.).

Tutors at University C noted that the technology-rich study environment involved in their disciplinary fields led to a reluctance on behalf of students to "learn another technology", particularly where this was an e-portfolio software package with a predominantly learning/educational orientation rather than with a specialist discipline or professional use. However, staff experience of the institution's commercial e-portfolio software had led them to believe that it offered "security and accuracy" in terms of student submission of work, enabling efficiency gains in teaching and assessment. In this context students actually had access to two types of e-portfolio, as the university had invested in a "home-grown" online portal and a commercially available e-portfolio package. However, both appeared equally unpopular with students, who felt they were being implemented to justify the costs involved - "We've got to use it because we bought it." Students were particularly critical of the failure of the commercial e-portfolio software bought by their university to meet specialist subject needs, but it had a number of characteristics that they disliked, including the idiosyncratic terminology it deployed to describe ICT functions with which they were already familiar -

"It's awkward, difficult to upload and difficult to use. They change the terms [that we are used to] e.g. 'upload' …. We do PDP and we have to use it in all three years. It's so time consuming and daft …. A nice sketchbook has so much more character. It is limited as to layout, you can't upload more than x

characters and images ….It's easy to use but rubbish for design students." (Composite of comments, Student Focus group discussion, University C)

The home-grown online forum was similarly unpopular -

"You look at your emails, not [the university forum]. It's a separate medium for this. But we've got to use it … even though everybody hated it. And we're encouraged to use it all the time but it's naff."
(Student comment, University C)

However, some students did acknowledge that these software packages facilitated teaching and assessment for staff, and this made them more tolerant of their tutors' propensity to use them -"It's easy for them [i.e. tutors] to upload papers etcetera. I don't like it but you have to do it."(ibid.)

University B had developed its own software package for Personal Development Planning (PDP), which was "in-house but text-based" and used across faculties. It was not used so extensively in art and design courses as elsewhere, because use was not compulsory and the "take-up" in these fields had been less enthusiastic. The applications that it offered included formats for student CV building and facilities for staff to receive coursework and give feedback via the site (although it was specified that this was for work in a written format and the software was not good at coping with images); staff also noted the "privacy and security" that it allowed students, who had "ownership" of their own site. The software was used in support of the Personal Academic Tutoring (PAT) system, providing students with regular study advice and "prompts to facilitate critical reflection" (Tutor comment, Focus Group discussion). This software package was described by staff as "generic but applicable to any learning activity" (ibid.) but they were aware from statistical evidence generated by the software itself that take-up was not high. Tutors deemed it to be "restricted" in terms of what it could offer for ADM disciplines - for example the visual communications course had "tried to use it" and built it into a course module, but it was predominantly used for CV building rather than for critical and analytical processes associated with the production of visual work, such as critique assessments.

Uniformity of appearance and medium appeared to be the key disincentives to the use of commercial e-portfolio softwares for students in art, design and media. Their needs for personalisation, variety from the norm and representation of a wide range of individual skills were not found to be adequately addressed by software systems that provided a "one size fits all" user interface, particularly when customization was a low priority within institutional ICT infrastructures. Students drew adverse contrasts between the sterility of commercial e-portfolio packages and other media with "character", such as the traditional art and design sketchbook.

Despite this evidence of their aversion to some institutionally-sponsored technologies, students in all three contexts provided evidence that they made wide use of ICT. Much of this use was directed at supporting learning within their specialized fields, and students seemed less likely than university staff to

draw distinctions between ICT and the other kinds of technologies that were important to them. For students, satisfaction with technologies appeared to be linked to the degree of user ownership and autonomy that they enjoyed. At University A, for example, students reflected on the purposes of the key (computer and non-computer) technologies they used, ranking them according to how functionally specific they were and how much they subsequently offered in terms of formality or freedom in their use. The rankings were as follows (with '1' most free):

"1. Student sketchbook. This was rule-free in terms of protocols for use and content, but it was accepted that one would be developed per project. Students commented on its personal nature.
2. Reflective journal. Rules for writing here reflected the international nature of student cohorts in the college, and specified that 70% was to be in English, 30% any other language)
3. Written essay. Strong specifications were provided, as a student reported - 'Our handbooks say that we should type our essays in this particular way in this particular font. With printed stuff you get more specifications.'"
(Extract from field-notes, Student Focus group, University A)

The in-depth discussions from which the above extract is derived appeared to be useful in enabling consideration of the environments and media that may be most effective in fostering learning for ADM disciplines. It is therefore instructive to follow the line of thought that respondents outlined for us here. Top ranking in terms of its significance for their work was given by students to the individual sketchbook which was constrained by "no rules" other than it had to be at least A4 in size. This freedom extended to the formal nature of the objects included, which "can be a whole object stuck in the book" or "can be very abstract" and to the content, which was so personal that it could even "be something unacceptable, morally wrong". Students commented that it was "more like a diary where we can put anything, even not related to coursework … a personal book", and descriptions of their interactions with sketchbooks indicated that they saw creativity as deriving from the full autonomy that they enjoyed in the creation and use of them. These free, mixed media sketchbooks therefore appeared to offer significant sites for art and design learning, and ICT offered additional tools to assist this generative process.

Evidence emerged that the issue of *medium shift,* which many students deemed problematic in terms of showcasing their work, was less problematic for developmental activities. It was already integrated into the design process and students described how they made positive use of it, as recorded in the following field-notes:

"Students described their use of multiple technologies, particularly those that were portable and offered a variety of functions. These appliances appealed to a wide range of senses - offering aural, visual and tactile means of recording and constructing information …. Key technologies used were … mobile phones with audio recording and photographic functions and graphic tablets for drawing. Information recorded in these ways would often end up in sketchbooks, especially photographic material .... As students make use of

them these artefacts go through multiple forms - digital then hard copy image, subsequently placed into a physical artefact (the sketchbook) that acts as a personal reflective space - and there may be alterations made to it there via drawing etc. Technologies are playing a direct role now in development processes - such as with the tablets for drawing directly to the PC - seen [by students] as 'a strong way for developing our ideas'. Learners described how they would scan pages from books, putting them through Photoshop then subjecting them to other creative interventions and manipulation, such as 'pre-printing and pulling them apart'."
(Field-notes from student focus group discussion, University A)

This and other instances recorded in the data indicated that specific practices were developing in art and design education that involved a complex blending of traditional and new technologies, with movement towards a perceived seamlessness in their functionality for supporting learning.

In terms of specific ICT preferences, the trend was for students to describe the static, heavy and large computers that comprised most PC formats as becoming less desirable to use as they developed increasingly mobile forms of working. Respondents confirmed that they hardly ever wrote anything by hand now, except when they didn't have a PC that was "small enough and light enough" to be of use for recording information in college. On college sites, though, mobile phone audio recordings were the preferred method for recording lecture and seminar content. Significant tools were provided by the institution, both in terms of generic and specialist software and hardware - laptops with presentation and word processing software, and Macs with more specialist software for design, photography and illustration.

Students also demonstrated extensive familiarity with and deployment of user-owned, Web 2.0 technologies for study purposes, and made little distinction between these in terms of their source (i.e. whether their own or university-provided hardware and software). Strong use was reported of specialist photography websites, blogs, social networking sites, personal websites and mobile hardware such as digital cameras, mobile phones and digital music/recording technologies. Apart from leisure and recreational use students used these mobile technologies for study purposes - e.g. to download and listen to podcasts relevant to their work - and described how they made their own selections of "Design Council podcasts", "crafts and textiles ones" and "videos on skills demonstrations." (Student comments, Focus group discussions, University B).They were accustomed to searching the internet for relevant resources on "academic kind of things, for practice" using Google and specialist interest sites for inspiration. However, more specific study uses were made of resources that tutors or others recommended, starting with "word of mouth and then you follow up yourself". This helped to reduce 'time-consuming' mistakes and instead started off well-founded searches - "It's like research is done for you every day." The user orientation of Web 2.0 technologies did not, however, mean that students were cut adrift by their universities to make their own way through cyberspace. Purposive efforts had been made in all three contexts to ensure that students understood the implications and scale of the communications

tools they were using, for example the potential consequences of exposure on social networking sites. At University A it was the role of specialist staff to " … mediate between … the requirements [of] … official [technologies and] … user-ownership, e.g. Web. 2.0, blogs etc." (Tutor comment, Focus Group discussion).

Employability

A small-scale survey was administered in order to expand on the range of data gathered in the qualitative, case study research that primarily constituted the inquiry. Student survey questions sought to gain information on how respondents intended to or had recently engaged with the employment sector, the skills they felt it necessary to demonstrate and the media in which they had attempted these representations. The wide range of skills that respondents felt were needed for gaining employment appeared to fall into two main categories. Firstly, tangible skill sets (those which could be represented in a portfolio) such as the ability to demonstrate creativity, technical competencies or conceptual thinking; secondly, abstract themes (those which might be represented in informal ways) such as motivation or personal management. 20% of respondents also indicated that it was important to demonstrate knowledge of the industry (e.g. "professionalism", "understanding audience/client") and 19% of responses focused on ability in articulating creativity.

Respondents felt that the use of a digital portfolio would enhance their capacity to share work and communicate their ideas, although restricted file storage space was a concern to 51% of graduates. However, access to appropriate technology was not seen as an issue, with only 11% seeing this as a significant challenge. Websites had become a significant means of showcasing work, with 94% of respondents thinking that they *should* be using one, while 84% were actually using one. However, 78% felt that they should also be using a physical portfolio, and the same number were actually doing so. In terms of e-portfolios, 44% thought that they should be utilising an e-portfolio that they had been introduced to in the educational context, but only 17% were doing so. Overall the portfolio, skills and experience were reported by students and graduates as being the most important aspects in enabling them to gain work while qualifications and awards were seen as less relevant.

A deeper picture of these considerations for undergraduates was secured in the qualitative, case study research. A focus on the ways in which employers' attentions could be attracted and employment gained was a key theme for all respondents, and inevitably this issue gained prevalence as undergraduates neared the conclusion of their course. In all three case study contexts both the formal curriculum and additional activities provided support for student employability. There was also ample evidence that students were taking responsibility for the development of and communication about their professional persona and attributes, and were using digital technologies to assist them in this.

At University B students described their use of social networking sites, particularly for developing a professional, outward-facing image and to enable them to find work. Distinct preferences emerged for certain of these, with one seen as superior to others because it had “all the applications, you can do more on it; it uploads photographs easier … [and offers] a lot more.” (Student comment, Focus group discussion). It was also regarded as more suited than others to the age group of the student participants, and was ‘global’ rather than UK-based. Students regularly posted photographs of themselves, of their friends and of their work on this site, and intended to do more of this as they ended their course – “I’ll put up my show photos.” However they recognized that while it was ‘nice to have a separate website for all your work’, this could only be ‘a taster’ and that it was informal in nature. Some third year students were already very cautious about the informality of the site and about releasing personal information too readily – “You have to be careful … we can make them private.” (Student comment, Focus group discussion, University B). Another student described her current use of an alias as her personal ‘branding’ on the same social networking site, as she was not yet ready to publicize herself and her practice fully, and noted that “I created an alias specifically for my work … it is more intriguing.” Another student undertaking professional training found that she needed to be particularly careful in the image she projected on such sites, and had carefully edited hers to provide a profile that suited her employment aspiration to teach art and design in a secondary school.

Students’ use of digital technologies that enabled transitions into work were undertaken within a supportive context, where staff also made extensive efforts to bridge them into employment. For example, tutors had set up an “employers’ advisory forum” (Tutor comment, University B) to make links with industry, facilitate placements and gain employers’ perspectives. Strong efforts were made to ensure that employers’ needs were met, and to keep an eye on changes in this regard, with the forum comprising both local employers and university alumni with links to more international contexts. Guest workshops, presentations to local employer groups, a student exchange programme with other European countries, visits to international exhibitions, links with local retailers and placements all contributed to this project of “externality-building” (ibid.). It was felt by staff that this had a positive effect on feeding into and updating the curriculum, helping to embed and maintain maintaining awareness of the professional context into the institutional infrastructure. These efforts all supported the staff aim of ensuring that student portfolios were providing the required evidence of employability. Students confirmed that such activities within the formal curriculum helped to prepare them well for face to face interactions with employers (“networking events”) that were facilitated by the university - ‘our creative industries module is about networking, reading people, getting your business card across in a short time.’ (Student comment, Focus group discussion, University B) By the third year of their courses students were aware of the need to balance “ …how creative you are versus how commercial you can be …” in order to market their employability. They also considered that key factors in gaining employment included: sufficient money for start up funds; contacts; market awareness and publicity; a good portfolio. Personal skills in self-

presentation, confidence-building, self-discipline, public speaking, and time management were further desirable attributes that were noted. Students also felt that a key contemporary aspect was having their own professional website, and would have liked an element of the course to cover this - ' … a module on producing a website for the end of the year, so you're equipped to maintain it and knowing how to market yourself.'

In terms of IT use, though, high levels of interest in the subjects they studied meant that students invested the time to undertake internet searches on key topics - 'If you go searching it's available' - as well as using this as a job-seeking tool. They were aware that in many art and design disciplines it would not be enough to provide a virtual representation of their work, and they described interactions with potential employers as constituting a variety of approaches. The following were mentioned –

"You can use the internet and the actual work, both for overseas and the UK."
"Some form of e-portofolio, plus the tangible … they want to see the actual product or design"
"The first point of contact would be by phone. Then an email, with images, and the internet … and a small pack of samples". (ibid.)

By the final year of their courses, students had developed relatively clear ideas of the kinds of evidence potential employers would want to see, and were prepared to order their representational portfolios accordingly. They commented that demonstrating progression was key to this, and noted the importance of –

"… demonstrating thought processes, drawings, finished products [which enables] showing yourself off a lot more." (Student focus group comment, University C).

Despite this emphasis on a 'progressive' portfolio, students were clear that a chronological account of their development was inappropriate. Some students thought that it was best to begin with the most creative and "wild" material and move on to the more "…producable and technical work…" later. They agreed that this non-linear account needed to be supplemented by a clear contents page that could explain the narrative of progress to viewers. There was no fixed order involved, however, and another industrial design student described how he would put his self-directed work and resume/CV at the end. This accorded with his perception of his own strengths as a designer, notably his capacity for generating creative design processes and problem-solving strategies –

'The resolution of the form wasn't important compared to the experience. Resolving issues is my strength.' (Student focus group comment, University C).

It was expected that viewers of the portfolio would be well informed in terms of the discipline in question, so that they would understand what they were seeing – "You only have five minutes and there's not much point in writing if

you can explain what it is in an image" (ibid.). There was a similar expectation that the mixed specialist media in use would be appreciated by potential employers, both in terms of software (such as programmes for physical modelling) and traditional media –"pastel, gouache, biro … to show I can physically do it."(ibid.) However, softer skills in terms of conceptual ability were also expected to be demonstrated at interview, with the portfolio acting as a focus for these deictic discussions (Mazijoglou et al., 1996; Fleming, 1998) –

'The talk thing is really big… I like to think, I thought about things and talked about films I liked etcetera … [so the interviewer could conclude] this guy thinks as well as draws.' (Student focus group comment, University C).

There was clarity in terms of students' perceptions about which kinds of skills they were attempting to demonstrate by the inclusion of selected examples of work; e.g. "These are more thinking pages … it shows all our research … brain-storming and ideation". For final year students the need to professionalize their portfolios was assuming increased importance, to the extent that friendships sometimes had to be sacrificed in the process. Increasingly critical views of one another's capacities had been used strategically to organize teams for working on the realization of projects. This growing selectivity about co-workers led one student to report that –

'It's no coincidence that our team is who it is. We wanted two people with CAD skills. They're our friends, but ….'(ibid.)

It was also evidenced in students' growing conviction that they shared qualities and values with prospective employers. This belief relied on their perception of shared preferences and 'like-mindedness', a key feature of the learner's identity as she or he comes to engage with and participate in a community of practice (Lave and Wenger, 1991); that is, they felt that they themselves would prefer certain attributes and modes of representation to be evidenced in a portfolio if they were in the employer's position. They were thus enabled to see themselves as reviewer/editor of the work of their peers and as a substitute for the employer in a developing mode of ownership of the portfolio that increasingly referenced the external, professional context. There was evidence that this new persona developed strongly in students in year three, becoming a key attribute that supported transition to the professional environment. Students were thus able to take on the role of a critical reviewer of their own portfolio and of those created by other students, anticipating the ways prospective employers would react.

In one focus group students had critiqued one another's work in minute detail, providing dozens of post-it note comments on portfolio contents (Field-notes, Focus Group meeting, University C). They had focused on the tactile aspects of their portfolios and felt the need to provide prospective employers with as 'authentic' an experience of the student's achievements as possible. This underpinned the wish –
" … to include actual drawings not photocopies - 25 or 30 real sketches – [because] they've got soul."

- and fulfilled the need for personalization of the portfolio, providing an "identity" and "character" to its contents.

To this end, mixed media were commonly in use, and staff encouraged students to produce a paper based folio as well as a web one. Sometimes students initiated paper-based approaches with employers –

"One student explained that they had contacted an employer to negotiate the format for delivery. "The employer asked me to send a PDF. I rang them up and asked to send a physical one and they said 'that's fine, no problem'." (Field-note extract, focus group meeting, University C).

The rationale for this lay in students' belief that employers are still likely to be from a 'paper-based' generation and will value this medium. There was also the potential for the student as producer to exert more control over aesthetic details of the work such as its scale, reaction to light and so on, as the following comments indicate:

"You can delete an efolio like that [respondent clicks fingers] but a book is difficult to ignore, plus people look at things on a little small monitor … [I want the portfolio to say] I built that 'cos I'm a creative person … I'll show you that I can think differently from everyone else …. [On paper] you can see what it's made of , how it reacts to the light - it's an expression of who you are, the difference between an oil painting or a poster next to it." (Composite of comments, Student Focus Group, University C)
There was consensus among students from most design fields that it was important to provide prospective employers with " ….something physical to hold", even in the midst of the multi-media onslaught in which their applications for employment were designed (CDs, animations, CV and covering letter etc).

For graphic design students at this university, whose course included a module dedicated to portfolio preparation, the stakes involved in representing their skills well were even higher. In their case the portfolio was created by as well as representing the core communicative capacities of their discipline, and they described the strong pressure to make it individual and "different". One student talked about the need to make an impact on the reader, to make the reading experience "fun" for them, and was in the midst of preparing a complex design that incorporated "a CV and folio all in one". Again, 'personalization' was a key need. A graphic design student involved in the focus group also referred to her development of a personal website that she used to present herself and skills, with similar technologies being used to represent both the products and processes involved in learning –

"It can carry on through word of mouth. People can browse it and from being a bit nosey they can find out things they might find really useful ...[on] the graphic design course we use it [Facebook] for group discussions."

The outward-facing orientation and connectivity enabled by Web 2.0 technologies was being exploited by University A to enable their students to

gain a foothold in the competitive fashion industry during their studies and on graduation from their courses. Here a purpose-built website enabled interaction with employers, and had become widely used in the fashion industry as a source of designers with new and creative ideas. In discussing this tool staff noted that it demanded some degree of standardization of content – i.e. the function of the site relied on all students providing information in a specified format, and the 'individuality' that is highly valued in creative arts portfolios was to some extent sacrificed to enabling employers' ease of access to representations of student work.

The survey data gained from employers in the course of the research were from a restricted sample, but gave a good picture of current recruitment practices. Unsurprisingly, 100% of employer respondents used 'portfolios' for recruitment; 66% also interviewed applicants, so it is probable that the 'physical' portfolio accompanies potential employees to this and discussion about it forms part of the interview procedure. Technologies that replicated procedures in traditional media were predominantly in use during the recruitment procedure: all employers confirmed that emails were the initial means by which applicants were expected to contact them, and they expected these to be accompanied by attachments showing examples of work; 80% of employers also required a CV and covering letter, although only 40% requested an online portfolio or website to be available. On average, employers reported that they invest an average of 1-2 days in recruiting a new staff member and that they look for self-motivation, technical ability, innovation and problem-solving skills in candidates at all stages of the recruitment process, but in particular in portfolios and the first interview. Even at interview respondents suggested that the portfolio is the most important element, although candidate personality and presentation are also rated highly.

The majority of respondents take only graduates, reflecting the value placed on degree qualifications. Work experience is also determined to be of high importance, with student design awards not rated as relevant. When asked what a creative portfolio needed to demonstrate, employers responded that evidence of professionalism, conceptual thinking and recent work were most important. Evidence of success in student award competitions was again seen as insignificant.

Conclusions

Specialist subject needs emerged as a significant factor in the use and uptake of e-portfolios, and there were crucial differences between the ways in which those in art and design contexts construed the concept of portfolios and the generally accepted idea of the educational 'e-portfolio'. This difference rests on well-established traditions in art and design education and practice, so that the 21st century art,design and media portfolio is hybrid, reflecting the diverse drivers underpinning e-portfolio developments and the expanded range of media available for portfolio production. Nonetheless, ADM stakeholders were not convinced that digital media could fulfill all representational needs

involved in pursuing their disciplines, and in particular it was felt that qualities associated with sense-based understandings were likely to be lost in a digital environment, such as "…feeling the weave and the drape of the fabric." The formal issues involved in an artefact and its representation were thus felt by respondents to constitute "two different things", with the 'authentic' experience of the artefact not being reproducible.

Tutor and student experiences of both in-house and commercial e-portfolio software indicate that these generic tools cannot serve the range of activities involved in ADM disciplines. Many institutions are attempting to introduce software packages of a generic kind for e-portfolio purposes and there is evidence of resistance to this from ADM students and from some staff**.** This resistance on behalf of students lies in the belief that e-portfolio software adds little to their subject-specific development and achievements, and are merely "another layer of technology" to be learned and used. It was felt by respondents that most e-portfolio software imposed a pre-ordered semantic structure on the content that users provided, limiting the expression of creativity that is so significant for learning in ADM disciplines. Rather than an 'e-portfolio' the concept of a 'virtualized portfolio' was felt to be helpful in the domain, particularly in its support for communication and connectivity across wide contexts.

There was strong evidence of student engagement with a wide range of current technologies that support learning and the evidencing of achievement. It appeared that student engagement increasingly depended upon ownership and a sense of autonomy in use, and that these conditions stimulate creative use for learning and seamlessness in the integration of traditional, established technology and innovative digital technology. For ADM students, personalization of learning included the ability to personalize all technologies in use.

In terms of employability, the virtualized portfolio was recognized by ADM stakeholders as increasing the ability to communicate widely about student achievements, address wider global audiences and increase individual visibility in the professional context. The accepted format for submission of work to employers has become email with file attachments, and no evidence was found to suggest that employers wanted to see standardized e-portfolios. However, e-portfolio packages were shown to provide a site for students to translate their personal creative ideas into a discourse suitable for describing their skills to employers. This aspect of e-portfolio use is one that needs further support within HEIs as it contributes, albeit indirectly, to learning and to the preparation of students for work. Clear evidence was found that students are sensitive to the expectations of employers and project this expectation into the development of their portfolio; that is, they begin to envisage themselves and their peers as 'prototype employees' and even act as 'prototype employers', co-operating to assist others in being adequately prepared for work.

For ADM students the e-portfolio acts as a site with potential to support design articulation, professional preparation and metacognitive

understandings about the learning achievements of oneself and others. Conversely the virtualized portfolio, hybrid in form and likely to change further in line with technological advances, is the predominant means by which learners represent their work to potential employers. It therefore fulfils the function of the traditional art, design, media portfolio for the digital age and makes a significant contribution to supporting learner transitions into the professional working context.

References

Butler, P. (2006) *A Review of the Literature on Portfolios and Electronic Portfolios* [Online] Available at: https://eduforge.org/docman/view.php/176/1111/ePortfolio%20Project%20Research%20Report.pdf (accessed 23 July 2007)

Dillon, S. & Brown, A. (2006) 'The Art of E-Portfolios: Insights from the Creative Arts Experience' In Jafari, A. & Kaufman, C. (Eds.) *Handbook of Research on E-Portfolios* pp420-433 Hershey, PA: Idea Group Reference

Fleming, D. (1998), 'Design talk: constructing the object in studio conversations', in *Design Issues*, Summer 1998, 14, 2, pp 41 – 63.

James, A. (2004) 'Autobiography and Narrative in Personal Development Planning in the Creative Arts' *Art, Design and Communication in Higher Education,* 3 (2), pp103-118

Krueger, R.A & Casey, M.A (2000), *Focus Groups: a practical guide for applied research, London,* Sage, 3rd Edition

Lave, J. & Wenger, E. (1991) *Situated Learning: Legitimate Peripheral Participation* Cambridge: Cambridge University Press

Logan, C. (2006), 'Circles of Practice: educational and professional graphic design', *Journal of Workplace Learning,* 18, 6, 331 – 343.

Mazijoglou, M., Scrivener, S. and Clark, S. (1996) 'Representing design workspace activity', in Cross, N. Christiaans, H. and Dorst, K. (eds*.), Analysing Design Activity*, John Wiley, Chichester

Price, M. (2006), 'Purpose, Audience and Engagement in Spelman College's eFolio Project', In Jafari, A. & Kaufman, C. (Eds.) *Handbook of Research on E-Portfolios* pp420-433 Hershey, PA: Idea Group Reference

Richardson, H.C., & Ward, R. (2005) *Developing and Implementing a Methodology for Reviewing E-Portfolio Products,* The Centre for Recording Acheivement.