

ePortfolios in Arts learning and assessment.

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This paper draws on a large ARC Discovery research project that sought to; identify the qualities of artistic knowing across arts disciplines, identify gaps in the present approaches to the assessment and evaluation of arts learning and teaching and discover ways that digital technologies might be used to improve the scope, depth, relevance and frequency of feedback in arts assessment. Through a series of multiple -arts case studies, a variety of digital portfolio systems were developed and observed as part of a system of storage and management of artistic artefacts and processes for assessment. This paper examines the different styles of ePortfolios generated by teachers and students across arts disciplines and suggests that using digital tools can enable a more rigorous and accountable or 'better' means of assessment for arts learning but that there are a series of issues which arise from this process which need to be examined in further detail. Whilst the research's primary aim was to develop protocols to address these issues at this stage of the research we identify these issues as areas where questions need to be asked that synthesise context, users and systems into an effective integrated feedback process for managing assessment.

Introduction

Digital media and information systems present the opportunity to capture, store and manage multiple forms of evidence (visual/aural/kinaesthetic) about artistic product and processes that are compatible with the more personal, qualitative meanings with which artistic practice is concerned. This suggests new possibilities for better assessment of learning that combines evidence of learning in these modes, with existing textual and numerical measures. EPortfolios' that provide digital means of capture, storage and reviewing of assessment data are being tested in many locations throughout the world (see for example the eportfolio consortium: <http://eportconsortium.org/DesktopDefault.aspx>). Whilst the interest in the use of this technology for assessment is growing in proportion to the availability of software and hardware and enthusiasm of the users there is an urgent need to examine the implications at a theoretical level alongside technical and practical use.

In arts education because of the ephemeral nature of arts products and the perceived subjectivity of arts assessment there is a further need to examine the potential of these technologies for 'better arts assessment' whilst being mindful of what is lost when we digitise artistic products and demonstrations of artistic knowing which constitute assessment and feedback in the arts. In this study, we propose to examine the use of Digital Media Assessment Portfolios (DMAP) across the arts disciplines in a tertiary context and focus upon whether digital portfolios facilitate 'better' assessment and what is problematic about the process. The research findings are drawn from a large Australian Research Council Discovery project entitled: '*Constructing a new conceptual framework for using digital technologies in achieving better arts assessment.*' Specifically we will examine the various interpretations of what an eportfolio is as this evolved from participants designs and needs and discuss the principle issues that arose when using ePortfolios in

assessment and learning in a tertiary arts and arts education context. The issues presented here have arisen from five participant observation case studies that focused upon arts making, and Digital Media Portfolio (DMAP) systems. As distinct from an eportfolio, DMAP can be defined as a system of assessment which employs electronic portfolios and associated digital technologies as integral to assessment. The ARC research proposed to:

- 1) Identify the qualities of artistic knowing across five art forms (Drama, Dance, Visual Arts, Media and Music).
- (2) Identify the gaps in assessment of these qualities in current approaches to arts assessment
- (3) Conceptualize ways in which digital technologies can be used in arts assessment to overcome inadequacies in current approaches.
- (4) Develop and trial a conceptual framework for better arts assessment and evaluation and fundamental knowledge that takes optimum advantage of the capacities of digital technologies to facilitate learning.

To begin this paper, we will outline the methodology used for the study and then examine the data drawn from the music case studies in detail, then describe the kinds of ePortfolios generated across the arts discipline case studies. Following this we will examine the issues that arose from the data that need to be addressed by protocols.

Methodology

Multiple Perception Analysis methodology (Ecker and Baker 1984) is the principle research framework applied to this research. This methodology involved five parallel participant observation case studies (Miles and Huberman 1984; Lincoln and Guba 1985; Jorgensen 1989) undertaken across arts disciplines within a tertiary arts setting. Each case study used digital video/audio recording with laptops to capture and manage assessment data for students and then construct digital portfolios around these artefacts and stakeholders interactions with them. Each Arts discipline case employed a unique approach to the case as required by the specific nature of the discipline and unique context and researcher. For the purpose of this paper, we will outline the music case in more detail to display the context and process of data gathering and analysis employed whilst drawing more broadly from the multiple cases in the final stages of the discussion.

The music case study

One of the music case studies consisted of a tertiary advanced music curriculum unit with 35 student music teachers. There were three assessment items:

- A resource making and conducting task,
- A construction of a complete senior syllabus music unit (Final two years of Secondary

School)

A philosophy of music education essay.

These assessment tasks were linked to the unit objectives and took place within a 3 hour class, once a week over a twelve week period in semester 1 2002. The teaching and assessment approach sought to simulate 'Arts propel' style domain projects and portfolios and to utilise peer, self and teacher assessment (Blyth and Allen 1999), individual and group work with a strong emphasis upon reflective dialogues between students and students and teacher. Harvard Project Zero Arts propel (<http://www.pz.harvard.edu/>) examines production, perception and reflection processes within long termed domain projects and utilising portfolios and a suite of self, peer and teacher assessment activities to create a dialogue about artistic knowledge with students and within the learning community. Alongside Arts- propel assessment strategies digital processes were incorporated in the following ways:

Digital videotaping of all performances and presentations

Students required to submit text and notated assessments in a universal digitised form i.e.

RTF or PDF, for word-processed documents. MIDI files & html music files such as

Scorch (Sibelius), .WAV and AIFF files for music.

From these files we constructed four sample web pages (See Figure 1 Digital Multi media Assessment Portfolio sample web page or See <http://dmap.ci.qut.edu.au> for a functioning examples)

The screenshot shows a web page for a Digital Multi media Assessment Portfolio. The page is titled 'creative industries' and 'KMP431 Music Curriculum Studies 2 Semester 1 2002'. The student's name is 'Nicholas Rhodes'. The page displays the following information:

Final Grade:	5
7	

Reports:

Student Comments
Each student will research a specific musical style outlining details about content and its relation to the style. The work will be presented in worksheet format (See appendix) and contain relevant historical and contextual material, a brief description of the style (musical analysis) a sample discography/repertoire list of composers and works and style and listening questions. The worksheet should be named at level 4-6 of the Arts syllabus years 9-10. The handout should be presented in both hard copy and on disk in word format. The attention is that at the end of semester we will share all of the worksheets amongst the students in the class.

Teacher Comments
Each student will research a specific musical style outlining details about content and its relation to the style. The work will be presented in worksheet format (See appendix) and contain relevant historical and contextual material, a brief description of the style (musical analysis) a sample discography/repertoire list of composers and works and style and listening questions. The worksheet should be named at level 4-6 of the Arts syllabus years 9-10. The handout should be presented in both hard copy and on disk in word format. The attention is that at the end of semester we will share all of the worksheets amongst the students in the class.

Assessment Items

Resource making and teaching	Unit of work	Issues in Music education
5/7 35%	5/7 35%	6/7 30%

The page also includes a 'Students' list with 'Nicholas Rhodes' and a 'Digital Multi media Assessment Portfolio' sidebar.

Figure 1 Digital Multi media Assessment Portfolio sample web page.

Developing a prototype portfolio

The model represented in figure 1 is a simple html web page that displays all the students marks and work samples on the front page and allows movement to deeper levels of explanation about

the assessment item, the criterion for assessment and provides an artefact of the work in Audio video or text form. There is also the opportunity for students to store process trail data that they feel was important to their understanding such as research summaries for essays or sketches of musical ideas in notated or audio form. The web pages also provide a place where students and teachers can reflect and interact in a dialogue about the artistic or educational work. This basic model was also linked to other students work and to html model marks database that allowed the users to click on marks to deeper levels of description and example of the students work. This html model was used as a basis for that dance assessment portfolios based upon students designs and responding to the specific needs of dance pedagogy and artefacts. In digital music studies students who were expert html user also re designed the basic portfolio layout to create their own models. This notion raised the issue of how much control over the construction of portfolios might be given to students and how prescriptive the interface needed to be in relation to novice and expert users.

The assessment data from these participants were was organised, searched and theorised utilising a process where a static html software model of a portfolio interface evolved as an analytical tool in response to stakeholder's needs. The software was useful in making abstract concepts more concrete and visible to stakeholders and the responses to it have generated theoretical notions and potential protocols. In performing arts assessment the work itself is time dependent and therefore ephemeral. The use of digital video and audio artefacts enabled the capture of these time dependent events to allow review and assessment that could refer to specific critical moments in performance. As such this process is more accountable than a review comment alone. The development has created a confrontation with technology and the human technology relationship, which transforms the problems of ephemerality and temporal dependence into immediacy and accountability. Hence, the software stands as a useful display of reduced data and provides examples of response to assessment management in digital form. This method is similar to (Allen 1998) who used 'tuning protocols' for assessment in a study that trailed digital portfolios in several school contexts in the USA. We compared the framework for analysis for the present research with the data gathered by Niguidula: (Allen 1998: 183-198)]. Furthermore it also highlights the usefulness of the software modeling as a research tool and as a means of organising and managing artistic assets in a readily accessible and retrievable manner. This software modelling acted as a process of stimulated recall for participants who interacted with the software influenced it's design and reflected on their work through these interactions. Observations of these interactions were transcribed and summarised as data. The html model became a template fore other software development in dance whilst visual arts media and drama examined quite different models for e portfolios. Further software development ocured when data drawn from across the disciplines were synthesised into a model for a dynamic database.

Development of database to model the outcomes of assessment needs across disciplines and stakeholders needs.

The process of creating a database involved primarily defining common nomenclature for terms used in assessment and then examining how each of the components of the assessment system related and defining the extent of these relationships and interconnections. This process resulted in a model that proposed the need to accommodate the different needs of stakeholders and disciplines. This model is currently being tested through an Apple University Consortium (AUC) development grant using undergraduate and postgraduate student participants to further examine the student use and staff interaction with an online feedback system as part of the University network.

Data analysis and perspective

In the music case study, we adopted ‘the teacher’s perspective’ as a primary focus for the research. We felt it was important to gather information about how the teacher responded to institutional, pedagogical, student and community need in the way that assessment is structured and perceived, the researcher viewing the data as a whole system that includes researcher as teacher. We have utilised a suite of cross checking procedures to counteract the effect of deep insider perspective (Edwards 1999) and three analytical ‘tools’ (See Figure 2 Analytical tool example), which require an examination of data from perspectives other than those that emerge as grounded theory alone (Strauss 1990).

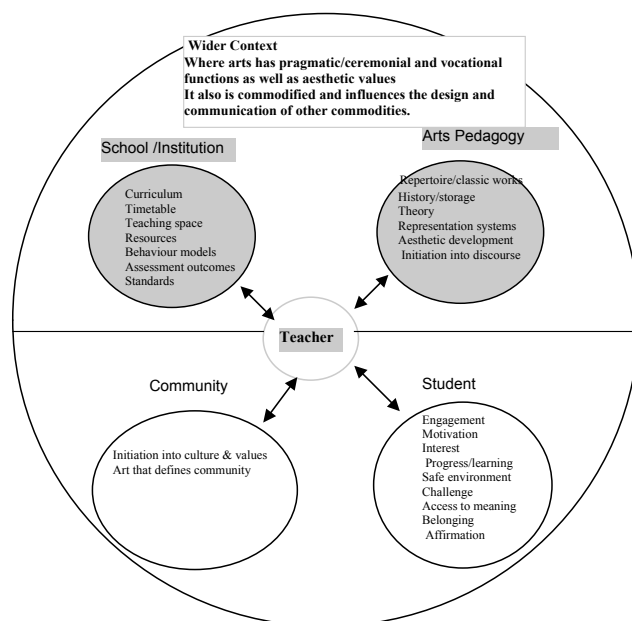


Figure 2 Analytical tool

The model displayed in Figure 2 (Dillon 2001) outlines the data analysis perspectives applied to each stakeholder represented in the system. Brown’s modes of creative engagement model (Brown 2003) was employed to examine the relationship of the students and teacher to the technology.

The following data was collected:

- Interviews and stimulated recall with digital portfolios
- Video, audiotape of presentations
- Document analysis from the institution/ university and student work.
- 35 sets of work samples from individual students, peer and self-assessment sheets,
- Marks and database materials,
- Unit evaluation statistics and comments.

These measures constitute a means of keeping data collection and analysis honest and trustworthy (Lincoln and Guba 1985) whilst the multi media nature of the data provides a means of crystallizing or triangulating data (Denzin and Lincoln 2000) and allows for a readily auditable process. Data reconstructions were crosschecked and responses tested by using the analytical tools to examine the data. Summaries were generated for each iteration, which provided multiple lenses on the phenomena. These procedures were summarised and linked to example-student-software web pages, which were developed alongside the issue discussion. These functioned as an action research (Schon 1984) process where the software becomes an interactive context where students and teachers enact cycles of change.

The outcomes of these cases were compared with those of the other arts disciplines and data relating directly to the research questions was extracted, analysed and compared drawing audio visual examples from across discipline which best illustrated the issues that arose. These data sets were then presented to a group of educational peers at a critical review colloquium in which the data was examined and compared with the participant's own contexts. Across discipline and over the range of participants the purpose and definition of what an eportfolio was or was not became apparent. Each stakeholder had different pragmatic needs that they required to be fulfilled but beyond this, the creative thinking of the teachers and students saw expressive potential for ePortfolios that extended what we had initially conceived as a repository for student artefacts for assessment.

Kinds of Portfolios

We initially adopted Harvard Project Zero arts propel model for physical portfolios of artistic works... This model collects both works in progress artefacts that represent a change in the way the learner thinks (Gardner 1992) stored in a big art folder. It is defined as a 'process portfolio'. Teachers in the visual arts have used both process and product portfolios for many years in assessment and initially we thought that an eportfolio at it's simplest level would involve digitising artefacts, reflections and reports. Much of the current work with ePortfolios focuses upon reflective interaction between students, peers and teachers about work rather than having the work there in some form other than text. This idea of reflective portfolios is gathering momentum throughout the world. The idea of actually having a digitised artefact of an artwork available to

see and hear while conducting reflective discourses about arts making is an expensive one requiring fast equipment and lots of memory and this may be the reason that it is lesser developed in assessment. In both the music and digital media case studies, this kind of discourse about arts making became the central foci of the portfolio. It enabled students to critique each others work on the network through a browser and enter into conversations about production processes. This also occurred in the music education case study where the sharing of work became a preparation for developing resources for later life as music teachers. In the dance context, where dance videos were streamed to remote students, the digital videos of the dance works became sites for reflective discussion about the artistic work. This encouraged an interesting community of learners. Students' responding to 'stimulated recall interviews' and reflections about their experiences with DMAP in music made the following statements:

'The process lent itself to accountability'

'The focus was on understanding rather than outcome alone and upon proving understanding.'

'There was a power shift to the student- A democratisation of the assessment process.'

'It provided a demonstration of outcomes'

'Better teaching and better learners.'

These statements represent the views of students who valued the feedback and describe access to meaningful learning that was gained through their reflective experiences. The portfolio offered the possibility of a site for a discourse about artistic practice beyond the individual subject.

Portfolio as a Curriculum Vitae

As many of the students were preparing for employment with their degrees, the possibilities of the portfolios as an adjunct to employment profiles was a common and immediate impression arising from students comments. The idea of show reels and CD ROMs of student work is becoming more common today in the creative industries. Students in dance saw the eportfolio not only as a place to deposit their university work but a place where work done outside the University setting could be linked to a display of their professional practice and enable the presentation of a diversity of information about the graduate. A dance student interviewed wanted to display her dual role as teacher and artist and included work as a dancer she had done professionally outside of the University setting. It was this idea that influenced the dance software development to include teacher/artists pages and evidence from theatre programs, reviews and publicity photographs. As accountability in Universities becomes increasingly linked to work place outcomes and graduate capabilities, such recognition of a students work and indeed their University work will become increasingly linked to the development of the kind of digital CV these students proposed. As the focus of this research is on assessment the links to graduate capabilities as another level of assessment is particularly noteworthy and suggests that the idea of ePortfolios as having a publishable outcome as a student resume might be both desirable and

necessary in future designs.

Portfolio as a feedback mechanism

The primary attraction of ePortfolios containing digitised artefacts as described here was how it acts as a feedback system. What was observed across cases was simply the opportunity that was available to discuss artistic work both during class time and online at anytime with peers, teachers and the wider community. This was by far the most attractive and obviously positive outcome. In the music, case study students were able to review assessment criteria and participate in making them more appropriate to a task and then by watching the digital recordings were able to ‘re-mark’ the assessment using revised criterion. What was most surprising about this was that students were prepared to take a lower mark if the feedback was better. The idea that ‘*There was a power shift to the student*’ and there was ‘*a democratisation of the assessment process.*’ was particularly apparent in this case.

The notion of feedback here enables a range of feedback from annotations attached to artefacts such as videos of performances or software-programming code to more traditional text based feedback that informs more common eportfolio systems currently. Where this research model differs from existing frameworks that operate on a reflective practice model that is text dependent is that ‘the work’ is present in artefact form such as video or audio and a response may also be present in this form. For example music students could demonstrate their understanding of a piece by adding other textual layers to it rather than using text to respond. Whilst this process does not eliminate or negate the value of text based responses and reflection it provides a framework which privileges the experience within its symbolic form over the textual explanation.

Assessment for whom? A brief examination of each stakeholder needs for assessment.

As figure 2 describes, each stakeholder has different needs and provides particular demands upon the process of assessment. The institution has a responsibility for policy, standards, accountability, record keeping, moderation across levels and disciplines and equity. Primarily the main requirement is a mark or report for each student and an understanding from the system and teachers that the procedures are fair, rigorous and accountable in accordance with institutional policy. For the institutions, ePortfolios offer the potential for more accessible and transparent systems of assessment that are capable of deeper levels of interrogation. The ability to recall artefacts of performance and track progress alone provides this opportunity. Arts Propel physical portfolios have shown a clear impact on the quality of reflective discourse about arts making but the relative ease of access of digitised artefacts provides even more opportunity to widen the discourse and allow a data trail to account for work in rich media content management systems. In an eportfolio, a click on a mark could lead to an entire discourse about a piece or pieces of work and even an artefact of the work itself. As an example of standards or a practical description of a task, this is invaluable, the cost of setting up such systems and of maintaining them being the most poignant negative factor.

The discipline and pedagogical concerns in assessment revolve around the quality of the artistic work and technical expertise of artists. EPortfolios further offer the possibility of displaying this in digitised form. For the community of parents and peers ePortfolios offer the opportunity to participate in exhibitions of work from remote locations and the chance to see a virtual report card anytime rather than just at the end of the teaching period. This allows the community to be involved in the learning process and provides potential for a more transparent process. It is from the teachers and students perspective that the real value of ePortfolios became most apparent. As suggested previously the opportunity of recall provides multiple opportunities to compare work and processes. The negative aspects of this interaction revolve mainly around issues of access, time in putting and preparing artefacts for online storage and providing procedures to deal with technophobic students and teachers.

A documentary of learning a drama perspective.

In the drama studies a different kind of portfolio was designed that involved mainly formative assessment processes. In the subject students participated in making works which were digitised using digital video and students then reviewed their learning by selecting critical moments and annotating their understanding in relation to the collaborative making process and the final product or series of videoed performances. This idea lends itself to being developed further by an annotated portfolio, which represents a documentary of a students learning. A kind of ‘making of’ video which reflect on the process and the product of creating a work in a collaborative environment. This presents exciting possibilities for stimulated recall and reflection and selection of critical moments that allow the learner to pinpoint shifts in their thoughts and actions. Whilst this idea is still in it’s infancy and undergoing further development, the consensus from participants was that it was a powerful tool for formative assessment and meta-cognitive understanding. The role of summative assessment was a lesser issue in this case because the subject had a pass/fail outcome. Nevertheless, the documentary of learning approach renewed the focus upon reflection and feedback as primary in the learning and de emphasised the notion of marks over remarks/feedback.

Portfolio as exhibition

The opportunity to display work in progress or completed artistic work in a virtual exhibition is one potential outcome of a DMAP. In the digital music and visual arts cases, the digital display of work allowed the student to select or curate an exhibition of works for assessment or simply for peer and community comment. In relation to assessment, this raises issues of representation of the work and whether or not the digitised artefact may become another kind of work. Nevertheless, the flexibility of this mode of exhibition in time and space accessibility presents possibilities for formative and peer/public scrutiny of work. Virtual galleries are indeed providing access to traditional gallery materials worldwide and the issues of access make this a generally positive notion. Questions surrounding Intellectual Property rights and the status of a representative

artefact (rather than an original) present issues that will be discussed later in this paper. The issue of who decides what is exhibited and who has access presents further policy development needs.

Portfolio as an artistic work

Several of the case study sites raised the idea that the original physical representation of an artistic work could become 'another kind of art'. Students who were multi media, new media, intermedia, mixed media artists and visual arts a student actually suggested there may be no need for the original as the media representation became the new art work. Artistic skill in presentation or curating exhibits of work through design of environments for presentation or through integrating work into a multi media form suggests that a portfolio or one of its outcomes may be a new work. This presents further issues surrounding skills in presentation perhaps over shadowing the actual work, the digital equivalent of 'nice cover poor content.' What is raised by this interpretation of ePortfolios in relation to assessment is that the portfolio as a container could be assessed alongside the work as content. In music production studies at Queensland University of Technology, we ascribe a percentage of the mark for folios of musical works to presentation so this idea is not foreign to the disciplines. The concept of assessing curatorship presents another possibility in this regard whilst the issue of the portfolio itself becoming an artwork in its own right raises still further issues in relation to how art is represented. This issue is in need of further examination.

Issues arising from data across disciplines.

Despite the perceived benefits of DMAP, there were however many issues that arose that require deeper analysis and which will need to be considered in implementation.

In a DMAP process we need to:

- Allow time for recording of performance in timetable.
- Allow time outside of class to convert and store data. Note video rendering takes up to 4 times the length of performance to convert.
- Collect assessment in digital form (Allen 1998: 193) which suggest the need to give access to generic programs i.e. PDF maker, scorch file maker midi file maker. These formats need to be the required submission format for work. This however is becoming common practice in new media and music and sound environments where standards such as Sibelius' Scorch and .wav, QuickTime or MP7 are becoming determining factors in this debate. Essentially the standards will evolve in relation to the rate and usefulness of technological developments. Portfolios only need to be able to be open to whatever these standards are rather than limited or shaped by them.

In the music education case study, much of the data collected was concerned with issues of teaching, learning, assessment and time management. We noted when reflecting on observations,

that DMAP worked as well as a database, marks extensions or evidence repository as it did when Arts propel 'democratic'/student inclusive assessment processes were used. This suggests that a DMAP needs to be flexible enough to allow these varied degrees of student, teacher and institutional power and access. The portfolios generated in this research were constructed by the teacher and then used in a dialogue with the students to construct meaning through the tasks and reflection on the tasks. Students then gave feedback on the process and the ability of the folio to represent their understanding and development. Arts propel (Gardner 1992; Seidel 2001; Seidel and Appel 2001) use of assessment procedures such as self and peer assessment, domain projects and the linking of process and product in portfolios were used throughout the unit but the folios were created and maintained by the teacher. This might replicate the role of a junior primary/elementary teacher. We found that if the work was collected in the correct format-meaning that it was specified in the assessment details in the unit outline as having to be provided in that format, then storing and organising this data was relatively easy. Access to software and hardware that digitises musical and textual information needs to be included in the cost of a system. Fortunately, many of these are shareware products so the institution needs to make policy decisions to include these in their systems as standard. Some however are quite expensive programs i.e. Music notation/publishing software which was used to create the html music notation files in the portfolio examples.

The teacher also requires time to collect data and needs to work this into the curriculum. Teacher needs to allow time in class or at another time in the day to input data, manage folios and provide comment/feedback (Allen 1998: 193). Teachers need to organise students/ structure the class to record them selves and each other so that the teacher is not constantly behind the camera or scanning/converting student data to the required format. The teacher also needs technical skills in basic digital recording, music software use and file conversion i.e. midi, wav, aiff, pdf, rtf. The implications for training in multi media data handling is becomes increasingly important for teacher education both pre and in service. Whilst the skills need not be of a professional standard, the skills of problem solving are essential in particular those of manipulating the chosen file format. In the visual arts case, the teacher organised peer groups with leaders who understood the processes of digitising data to facilitate getting student work online. Whilst in the music case study the teacher had skills in music software he found he needed a tutorial in using iMovie so he could edit Digital Video data. There are implications here for teacher training to include these skills for pre service and practicing music teachers.

Flexibility of access

Further analysis of case study data suggests a clear need for flexible levels of access, entry levels and control. On one end of the spectrum is the novice user (student or teacher) on the other the creative user. The question that arises from this is that we need easy to operate interfaces that allow clear storage, display and evaluation of data with security. At the other end we need to have creative control where the student might construct their own interface that best manages and

displays their data. At the same time, there is a need for security of IP, ethical procedures and dependable backup. We could also ask about what happens when display of assessment/exhibition might become an art in itself a kind of documentary of the assessment/learning process or alternatively, when the folio presents a lower quality product than the original.

Implications of using eportfolio like DMAP for assessment

The implications of this case study for better arts assessment using digital technologies are largely concerned with policy and access. The primary concern for the teacher relate to time management and curriculum structure. The preliminary research findings suggest that evidence collection needs to be integrated within curriculum rather than as an add-on process as it was with the research cases. In this research as with Niguidula (in (Allen 1998) portfolios were run alongside existing text/number/ hard copy methods of assessment. A process that utilises DMAP alone would require a system, which backs up data regularly, and a system for assessment that includes generating digital products. There is an inherent need for support from both technical assistance and in policy making provided by the school. Niguidula (Allen 1998: 195) noted that leadership, was essential to ensure ‘that resources were available and to maintain the technical support.’ We must also be conscious that technology can conceal as well as reveal knowledge and those with control over technology are advantaged whilst the complexity or style of interface and hardware may cause some users concern and anxiety. Nevertheless, most assessment strategies cause students anxiety and concern and we have developed systems to help most students deal with them effectively.

The critical review panel representing arts education practitioners and policy suggested that the use of ePortfolios for assessment raises a number of ethical and intellectual property issues:

- Use of photos/videos online
- Personal information
- Culturally sensitive material
- Gender sensitive material
- Appropriateness of audio vocal material i.e. lyrics in audio and text forms
- Appropriateness of dramatisations
- Discussion about other students and staff in writing or on video

The multiple case study report to the critical review colloquium further organised these and other issues under the following theme headings:

Access & control,

Ethics & rights management- confidentiality, intellectual property, copyright, etc.

Implementation - technical & policy constraints etc.

Representation & recognition of artistic learning

Each of these issues, was examined by critical reviewers using dramatic philosophical scenarios that elicited the following statements around the theme headings:

Access and Control: The student must maintain control over creativity and expressivity. Students must maintain their creative integrity and input into the selection of the DMAP content within institutional protocols and the context of DMAP - in formative assessment.

Implementation: The onus is on the system-teachers to equip the students with skills and abilities that will enable them to produce a DMAP (of quality). With these developed skills, it is understood that the students then have responsibility. (This will vary according to developmental stages).

The technological expertise appropriate to attaining suitable DMAP quality (standards implication) has implications for the assessment process.

The development of the expertise must be facilitated by the institution (system wide implication)

Ethics and rights: This is an extremely legal issue (requiring legal advice).

Given that the intention of the university is to use the created artefacts for subsequent teaching and learning purposes, the portfolio contains a representation of the work, not the actual work. (Implications: “permissions”; “informed consents”).

Recognition & Representation of Artistic Learning: All students should be aware of the limitations, functions and purpose of the DMAP process so that the assessment ‘tail’ does not wag the arts making ‘dog’.

All students are encouraged to respond to the unique challenges of representation for DMAP. When used for assessment purposes, students need to acknowledge where they have manipulated the work specifically for presentation on DMAP. (Nalder, Dillon, Brown, Smith (2003) DMAP Colloquium PowerPoint presentation.

Does D-MAP facilitate ‘better’ assessment?

Analysis of student responses in the music case studies suggest that they valued the quality of feedback more than the mark alone and this contributed highly to the accountability and transparency of the system. Furthermore, it adds weight to the assertion made in Dillon and Nalder (2002) that D-MAP processes are able to provide better quality feedback and more rigorous and accountable systems for assessment in the arts. Data gathered from across the disciplines seems to support this notion but with caution. The implications for inclusion of self and peer assessment within curriculum processes also builds on students experiences in making these kinds of judgements which are essential to reflecting on aesthetic production. This research suggests that the overall perception was that pedagogical development was enhanced by the

structure of the curriculum around analysis/perception- production and reflection (Gardner 1992). This process was particularly apparent in the resource production assessment in the music education case but also clearly part of the video recordings of philosophy presentations and essays of the philosophy assignments. The DMAP process captured and stored this data and made it available for reflective review. The connection of assessment to simulate 'real world' tasks was also pedagogically valid and clearly linked music making to how teachers create resources in a school context as well as apply reflective practice to their own teaching philosophy and practices. Pedagogical development was visible in this DMAP example. However, as I have suggested previously, using traditional forms of assessment in digital portfolios might also provide 'sense making' devices, reflective opportunities and feedback. This suggests that a DMAP should comprise a suite of strategies for assessment rather than be part of any particular method of portfolio process such as Arts Propel. It does however need to be flexible enough for use by a variety of institutional systems and users. As experienced Arts Propel users, we found the DMAP process encouraged assessment that was more rigorous and opportunities for reflection on the teachers own understanding and judgements. These implications support (Allen 1998) suggestion that ePortfolios need to reflect, support and enable the institutions vision for art and for assessment.

In this paper, we have suggested that there is evidence that a DMAP system is able to provide 'better' arts assessment because the process unifies artistic experiences, promotes reflective practice and makes the assessment practices more rigorous and accountable. However, this does not suggest that ePortfolios are a panacea for assessment. Indeed as we have grown in our understanding of the issues which arise from formal examination and textual representation of understanding as a response to particular contexts, times, places and participants so too we must work through the issues that have clearly arisen from the DMAP process in this research. We need to ask questions about: access and control, implementation, ethics and rights and the recognition of artistic learning and develop context, system and people specific policies that support and enable the stakeholders in the system to access better rather than more complex or simply more assessment. As a conclusion to this project, the researchers will include data drawn from experts commissioned to examine and propose context specific precedence and advice about these issues. These will contribute to the primary development of an appropriate and effective process of using digital technologies to manage artistic assets in an effective and meaningful way. Further research is also underway to implement the DMAP database designed as a model for this research on a university server to examine how students interact with and utilise these portfolio systems in a music environment at both undergraduate and postgraduate levels of creative practice. Primary in this process is the quality of feedback that provides the means for us to become more expressive as artists and researchers.

About the authors

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