

E-portfolios at QUT: Providing the potential for competitive advantage and a motivating learner-centred environment

David Emmett

Software, Multimedia and Internet Learning Environments
Queensland University of Technology, AUSTRALIA
d.emmett@qut.edu.au

Abstract

The growth in the use of e-portfolios across all sectors of education in recent years has been dramatic (Truer & Jensen, 2003; Barrett, 2001). For some this is a case of technology catching up with existing teaching pedagogy, for others a new electronic tool that offers the possibility of incorporating; electronic artefacts, the World Wide Web and databases for storing, sorting and viewing artefacts and experiences (Truer & Jensen, 2003; Barrett, 2001).

This paper will firstly reflect on two QUT e-portfolio tools: the Student Capability Profile (assessment focused) and the Student Portfolio (employment focused). The following discussion will then advance possible new interactive tools incorporating a reflective focus (Schon, 1998; Kerka, 1996; Sher, Williams & Sharkey, 2002), utilising journal tools and a learning focus utilising learning objects and online teaching and learning tools (Robbin, 2001; Hodgins, 2000; Bates, 1995).

Keywords

e-portfolios, Student Capability Profile, Student Portfolio, World Wide Web, reflective learning, learning objects, online learning and teaching tools

Introduction

Contemporary society is characterised by a transition from an industrial to a knowledge-based or learning economy and society. The search for competitive advantage has become an emerging trend at both institution and student level. As Nonaka (1991) stated, in an age when the only certainty is uncertainty, one source of competitive advantage is knowledge. Competitive advantage for the university involves at minimum maintaining equivalence with competitors and providing attractive features to potential students, while competitive advantage for students is often defined in terms of providing the best possible employment potential. However, as the Institution of Engineers, Australia, emphasised (1996):

The present emphasis placed on engineering science resulting in graduates with high technical capability, has often acted to limit their appreciation of the broader role of engineering professionals. Graduates must understand the social, economic and environmental consequences of their professional activities if the profession is fully to assume its expanding responsibilities.

Engineering education must become more outward looking, more attuned to the real concerns of communities. Courses should promote environmental, economic and global awareness, problem solving ability, engagement with information technology, self-directed learning and life long learning, communication, management and teamwork skills, but on a sound base of mathematics and engineering technology.

While this is an engineering example these concerns are being voiced universally across all employment sectors and should provide inspiration for institutions who seek to provide a competitive advantage for graduates.

Another significant emergent trend in education worldwide is that of a refocusing from teaching to learning, of moving the focus from teacher centred to learner centred (Oliver & Omari, 1999; Bates 1995).

This learner-centred approach is based on activities that provide high degrees of interactivity and engagement encapsulated within a motivating environment based on a well-structured curriculum (Oliver & Omari, 1999). This approach incorporates activities and conditions, such as the solution of 'real-world' scenarios, involvement in collaborative and cooperative teams, problem solving, and teacher–learner and learner–learner communication. These activities are viewed as supporting the development of higher-order thinking and learning and at the same enhancing student learning skills and strategies (Oliver & Omari, 1999). This paper will discuss the potential offered by e-portfolios to provide both the potential for competitive advantage and a motivating learner-centred environment. It will then consider two recent Queensland University of Technology (QUT) portfolio projects and finally suggest some directions for the use of portfolios at QUT.

E-portfolios

The growth in the use of e-portfolios across all sectors of education in recent years has been dramatic (Truer & Jensen, 2003; Barrett, 2001). Educators have used portfolios long before the digital era, particularly in the areas of visual media, such as art and drama, and in the field of teaching journals. E-portfolios are simply a new form of container, a new electronic tool that offers the possibility of incorporating electronic artefacts, the World Wide Web and databases for storing, sorting and viewing artefacts and experiences (Truer & Jensen, 2003; Barrett, 2001). An e-portfolio can best be described as a personalised web-based collection of experiences with supporting artefacts gathered as a core element of curriculum and of co-curricular activities and of students' reflective commentary (DiBiase, 2002). Portfolios, both print and electronic, are governed by purpose and audience and, importantly, the creation process remains the same: collection, reflection, selection and presentation.

Portfolios have the potential to foster the deeper involvement of learners in the planning and make them more responsible for the achievement of their educational goals (DiBiase, 2002). And as Danielson and Abrutyn (1997) emphasised the benefits to students can include:

- opportunities for increased learning effectiveness
- opportunities to model professionalism
- opportunities to improve IT skills
- opportunities to increase academic credit.

And the benefits to faculty include:

- student motivation
- alignment of objectives and evaluation strategies
- more useful feedback mechanisms
- incorporation into distance flexible courses.

Some other desirable outcomes include:

- the assessment of learning effectiveness
- the ability to demonstrate competence to external stakeholders
- student self-auditing
- the ability for the student and other stakeholders to view development over time
- increased interactivity among peers, teachers and external viewers
- the organisation of students' thoughts (for example, in addressing selection criteria)
- providing the visitor with a much better understanding of who the owner is and how he or she thinks.

As Mary Diez (cited in Gibson & Barrett, 2002) has poetically described them, portfolios are the mirror, the map and the sonnet of a student's life:

The mirror — provides the reflection and the view of growth over time.

The map — demonstrates the art of planning, of setting goals and of navigating through life's experiences.

The sonnet — provides a framework for creative expression about thinking, about work and presenting it to others.

The QUT experience

Graduate capabilities

In seeking to providing students with the best possible employment potential QUT is committed to:

developing graduates who can contribute effectively as citizens, leaders in the wider community, and competent professionals within their chosen discipline. Employers of QUT graduates need to be confident that graduates will demonstrate employment-related skills as well as disciplinary expertise and be capable of dealing effectively with new situations. Graduates, in turn, need to be confident in their understanding and articulation of their generic capability development, and their preparedness for a challenging and dynamic future (QUT Manual of Policies and Procedures, 2003).

In articulating the important values, attitudes, knowledge and skills that graduates should develop as part of their learning experience QUT identified the following graduate capabilities:

- knowledge and skills pertinent to a particular discipline or professional area
- critical, creative and analytical thinking, and effective problem solving
- effective communication in a variety of contexts and modes
- the capacity for lifelong learning
- the ability to work independently and collaboratively
- social and ethical responsibility and an understanding of Indigenous and international perspectives
- characteristics of self-reliance and leadership.

Portfolios at QUT

QUT has a well-documented history of the use of journals and e-journals (Bruce & Middleton, 1999; Dillon & Nalder 2002; Balantyne & Packer, 1995). Two of the most recent e-portfolio experiences at QUT, the Student Capability Profile (SCP) and the Student Portfolio (SP), are the main focus for this paper. Both portfolio tools began with different focuses: the SCP linked to academic capabilities and assessment; the SP to enhancing graduate career potential. While both portfolio tools are in their infancy they exhibit many similarities in structure and vision.

Student Capability Profile

The Student Capability Profile (SCP) (QUT Teaching and Learning Grant, 1999) evolved from a desire to address:

the holistic nature of capabilities involving the integration of personal qualities, a wide range of generic attributes and discipline knowledge which enables graduates to be effective beyond mere technical competence. The SCP was based on four critical components:

- § student monitoring of and reflecting on generic attribute development
- § staff development in creating effective learning environments and assessment tools to facilitate the development of generic capabilities
- § identification of other extra curricular activities
- § an electronic qualitative database which not only records student activities and learning outcomes but also provides access to self directed learning modules which facilitate assessment and learning capability.

To meet these critical components the SCP aimed to allow students to record, catalogue and organise progressive development of their generic capabilities over their period of study at QUT, to develop an understanding of generic capabilities, and to provide an opportunity for students to put the generic capabilities into practice through self monitoring, evaluation and reflection.

As a priority the SCP sought to develop strong links back to the academic input and validated progress towards the achievement of graduate capabilities (QUT Teaching and Learning Grant, 1999).

The SCP was designed as a prototype for the trial and evaluation with a small number of units, to inform QUT about the potential for a student capability profile. The SCP was released live to trial Civil Engineering units in Semester one 2001, and by December 2001 had been released to many QUT students in trial units in Law, IT, Science and Engineering.

An evaluation of student and staff experiences with the SCP occurred during late 2001 and the results were compiled early in 2002. The evaluation incorporating written survey and focus groups (TALSS SMILE 2002) found that:

- ✓ In the absence of defined objectives, completion of SCP activities was not perceived to be as important as completion of assessable items.
- ✓ There appeared to be some resistance from mature-aged and part-time students to being forced to put down their reflections in the activities. They did not see the same validity in it for themselves as some recent school leavers did, while final year students perceived the SCP as an opportunity to do a self-audit before leaving QUT.

- √ Students preferred an online SCP recording their progress in various skills and capabilities to paper-based portfolios '*as it is always going to be there*'.
- √ Students expressed the desire to have access to the data in the SCP after they graduated, and many saw that they could use the feedback from, for example, letter writing exercises when applying for jobs.

- ✓ Students also liked the idea that the opportunity existed to enter their own activities: *'because then it is going to show the people who are more open minded, what they have been doing with their lives ... and then people will make the most of what they put in'*.
- ✓ One student felt that it would allow students who were more committed to extend themselves and show their lecturers what efforts they have made: *'For the people who put a bit more in it will be really worthwhile for them'*.
- ✓ Staff found that responding to feedback requests via the SCP did lead to extra work—and interestingly did not seem to make any apparent difference to the number of students at the door with enquiries.

While the SCP as a pilot project has facilitated the process of discussion of generic capabilities and the utilisation of electronic tools in assessing and guiding learning activities it has not been delivered as a university-wide tool. The Student Capability Profile project is awaiting direction in terms of its incorporation within the Student Portfolio project.

The Student Portfolio

The Student Portfolio began with a different focus: assisting students to prepare for the workplace and to demonstrate their achievements to potential employers. The Student Portfolio comprises an online tool that students can use to record, catalogue, retrieve and present experiences and artefacts that they believe support the development of student and graduate capabilities.

Although the Careers and Employment section at QUT has taken the lead role in promoting the Student Portfolio the design and development was a joint project by the Information Technology Services (ITS) and the Software Multimedia and Internet Learning Environments (SMILE) units. The student portfolio is due for release university wide in Semester 1, 2004, as an integral part of QUT Virtual, the university portal. The portfolio will provide students with the ability to reflect on experiences based around a series of graduate capabilities, and is further refined around four context area settings: academic, work, personal and community. The portfolio will aim to meet the needs of the majority of students and will be student driven and self-validated.

Students have the ability to add links to artefacts which support their experiences or stand alone as an experience. Students can then assemble and release a view based on selecting the appropriate experiences and artefacts to address the requirements of the audience, for example, fellow students, lecturers and tutors and potential employers. The Student Portfolio also provides students with a template-based structure for presentation rather than requiring them to learn HTML or embrace web-based technologies.

Some of the development and delivery issues facing the project team include the following:

- ✓ The list of student capabilities used in the Student Portfolio differs from that expressed earlier in the MOPP and those used in the SCP. The selection was based on an examination of the QUT student capabilities, an analysis of sixty plus graduate selection criteria and the national employer documents from Australia, United States, United Kingdom and Canada. The final list was supported by the Associate Deans and the Teaching and Learning Committees.
- ✓ Provision within the project for the storage of artefacts which are currently on faculty or student computers is lacking.
- ✓ There is a need to motivate students to make use of the portfolio particularly in light of the evaluation comments from the SCP.
- ✓ There is a need to motivate employers to make use of and accept student portfolios.
- ✓ There is conflict with faculty-based Teaching and Learning Grant projects, ownership over the Student Portfolio and the direction and guidance on existing and future projects, which may influence the next phase of design.
- ✓ Access to the Student Portfolio for external visitors (potential employers) is unavailable through QUT Virtual; other projects are working on this with a resolution possible in Semester 1, 2004. Without external access the very reason for a career-based Student Portfolio can be called into question.

Feedback has emphasised many of the same student comments: completion of activities was not perceived to be as important as completion of assessable items. Additionally, the initial employer focus groups felt

that the main benefit for them might lay in the students' ability to organise and reflect on their experiences towards more successfully addressing selection criteria. Indeed, it was felt that where large graduate recruitment processes are taking place the employer might not have the time or capacity to review individual portfolios. Employers did, however, believe that the use of an e-portfolio would provide QUT students with a competitive advantage over other potential employees.

The future

While basic functional enhancements are required to the Student Portfolio, in order to engage the entire university population the direction must also incorporate a student-centred approach and enhance student learning and teaching. As Kennedy (1998) states, software tools developed for educational purposes must require students to actively interact in ways which requires reflection. And that interaction will best occur when the learning tasks are designed on constructivist principles. Such an interactive learning environment based on a constructivist approach to teaching and learning requires (Kennedy, Fritze, & McTigue, 1997):

- active student engagement in the construction of knowledge
- the facility to allow for a variety of student inputs
- provision for an iterative approach to learning
- provision for immediate and appropriate feedback.

Michael Polanyi (1996) contended that humans acquire knowledge by actively creating and organising their own experiences. Reflective practice is a key element of students reaching their full learning capability (Schon 1987). As Phil Race (2000) states, 'Reflection deepens learning. The act of reflecting is one which causes us to make sense of what we've learned, why learned it, and how that particular increment of learning took place'.

A key of any development in the Student Portfolio must be a clearly defined ownership and use of the portfolio between faculty and administration and among faculties themselves. The ambiguity of different uses and messages about portfolios across QUT must be removed or ameliorated in a cooperative and constructive manner.

The question of ownership also raises issues of the direction of development, in particular in the manner in which students input to their portfolio. With all faculties developing their own student capability requirements and specific requirements for the Student Portfolio there is distinct danger of the project being pulled in many directions with no sense of the ultimate destination—for example, the incorporation of workplace learning initiatives specifically linked to and derived from learning objectives; and the alignment of generic capabilities with faculty-specific capabilities, for example, the use of Education Teaching practitioner attributes and Nursing generic capabilities; and the alignment and mapping of student capabilities to account for the increasing use of cross-faculty courses double degrees and the transferring of students between courses. Interactive tools which could be developed in line with the above requirements include diary and logbook entries, reflective tools which seamlessly cater for variations in the requirements for student capabilities and workplace learning, and matrixes which facilitate students in visualising 'the big picture' and the ability to chart their progress over their university years.

The assessment of e-portfolios is an area which requires further research across the university and extensive professional development. Studies in the USA (Race, 2000) found that 40% of assessors cannot agree as to whether a portfolio demonstrates that a candidate is a competent professional. For example, bigger portfolios are not evidence of deeper thinking, as Race (2000) states, 'It is not the common ground between portfolios that is most interesting, but it is in the differences between portfolios that the depth of thinking tends to emerge; in other words reliability of assessment can be at odds with validity'. The main issue is that relatively few teachers have ever been asked to reflect and that this lack compounds the issue of teaching students reflective practices. Indeed, a reflective portfolio process relies on both teachers and students reflecting on experiences and the teaching and learning process (Hendry, 1996). As Race (2000) stated, 'it is probably unwise to attempt to 'teach' people to reflect. The process of reflection is best illustrated through examples and the provision of questions as devices to help with the reflecting processes'.

An iterative approach to learning should also be incorporated as a function of the Student Portfolio through the incorporation of self-auditing processes and feedback mechanisms which address the current needs of the learner and learning objects which address the learning requirements (Robbin, 2001; Hodgins, 2000; Laurillard, 2002). The Student Portfolio has the potential to be able to communicate with an online learning management system (LMS) to expose students to learning at different levels and capabilities, control the attainment of higher skills that require the completion of lower skills and allow students to progress not in a vertical path through the levels but in a spiral where they encounter different levels at different times. Communication tools within the LMS can also be utilised to provide the Student Portfolio with the ability to provide for immediate and appropriate feedback. Feedback mechanisms that allow teacher–learner, learner–learner, and possibly learner/faculty–employer/industry communication and sharing are a priority.

Some issues which require addressing in the near future include:

- ✓ technical design creep which can result in software that becomes too large and unsustainable. The incorporation of other online tools as a design package may solve some of these issues, for example, utilising the communication channels provided by online learning and teaching tools;
- ✓ workload concerns for both students and staff with increasing communication, assessment and feedback requirements;
- ✓ motivation of staff and students; and
- ✓ the alignment of the Student Portfolio with curriculum.

Conclusion

The success of the Student Portfolio will be in marketing the tool to students and encouraging its uptake through a focus on competitive advantage in the employment marketplace. The future must focus on the incorporation into curriculum and, where required, linking with tools which assist and focus the learning and teaching process. Where students begin to reflect on how they are growing and changing as a learner and as a person. Where, according to Palloff & Pratt (2001 p. 83):

If the course has been designed to incorporate and invite real life experience into the classroom, students can begin to explore the material being studied not just from an academic standpoint but through the personal meaning they derive from it.

However, further research is required in order to avoid using portfolios as just another electronic solution to what may fundamentally be a learning and teaching question. As Race (2000) states, 'Perhaps we're using portfolios when we don't know what else to do, or when we're scared of trying harder to quantify and assess real professional practice.' QUT is in a unique position with a solid technical foundation, an established student capability environment and a history in the use of portfolios and journals to make significant advances in reflective learning approaches and in providing a competitive advantage to graduating students.

References

- Balantyne, R., & Packer, J. (1995). *Making connection: Using student journals as a teaching/learning aid*. Canberra, ACT: HERDSA.
- Barrett, H. (2002, June 14). Presentation, *ISTE's forum on assessment and technology*. San Antonio, TX.
- Barrett, H. (n.d.). *Introduction to electronic assessment portfolios*. [online] Available: <http://herlenbarrett.com/ALI/intro.pdf> [3rd July 2003]
- Bates, A. (1995). The future of learning. [online] Available: <http://bates.cstudies.ubc.ca/> [3rd August 2003]
- Biggs, J. (1995). The role of metalearning in study processes. *The British Journal of Educational Psychology*, 55, 185–212.
- Bruce, C., & Middleton, M. (1999). Implementing assessment by portfolio in a professional practice unit. HERDSA Annual International Conference, Melbourne.

- Cambridge, B. (Ed.). (2001). *Electronic portfolios: Emerging practices in students, faculty, and institutional learning*. Washington, DC: AAHE.
- Danielson, C., & Abrutyn, L. (1997). An introduction to using portfolios in the classroom. In H. Barrett, *Introduction to electronic assessment portfolios* [online] Available: <http://herlenbarrett.com/ALI/intro.pdf> [3rd July 2003]
- DiBiase, D. (2002). *Using e-portfolios at Penn State to enhance student learning*. [online] Available: http://www.e-education.psu.edu/portfolios/e-port_report.shtml [23rd July 2003]

- Diez, M. (1994). The portfolio: Sonnet, mirror, and map. In K. Burke (Ed.). (1996), *Professional portfolios*. Skylight Training & Publishing.
- Dillon, S., & Nalder, G. (2002). *Constructing a new conceptual framework for using digital technologies in achieving better arts assessment*. [online] Available: <http://dmap.ci.qut.edu.au/Papers/DMAP.html> [24th May 2003]
- Gibson & Barrett (2002). *Directions in electronic portfolio development*. [online] Available: <http://it.coe.uga.edu/itforum/paper66/paper66.htm> [23rd July 2003]
- Hendry, G. (1996). Constructivism and educational practice. *Australian Journal of Education*, 40(1), 19–45.
- Hodgins, W. (2000). Into the future: A vision paper. [online] Available: http://learnactivity.com/into_the_future_2000.html [27th June 2003]
- Kennedy, D. (1998). Software development teams in higher education: An educator's view. ASCILITE Conference 1998.
- Kennedy, Fritze, & McTigue, (1997). An interactive graphing tool: The meaning of pedagogy and technology. In D. Kennedy, *Software development teams in higher education: An educator's view* ASCILITE Conference 1998.
- Kerka, S. (1996). *Journal Writing and Adult Learning*. [online] Available: <http://ericacve.org/docs/dig174.htm> [27th June 2003]
- Nonaka, I. (1991, November–December). The knowledge-creating company. *Harvard Business Review*, pp. 96–104.
- Oliver, R., & Omari, A. (1999). Using online technologies to support problem based learning: Learners' responses and perceptions. *Australian Journal of Educational Technology*, 15(1).
- Palloff, R., & Pratt, K. (2001). *Lessons from the cyberspace classroom the Realities of online teaching*. USA: Jossey-Bass.
- Polanyi, M. (1966). *The tacit dimension*. London: Routledge & Kegan Paul.
- QUT Manual of Policies and Procedures* (2003) [online] Available: <http://www.qut.edu.au> [23rd July 2003]
- QUT Teaching and Learning Grant 1999 Student Capability Profile*
- Race, P. (2000). *Evidencing reflection, escalate* [online] Available: <http://www.escalate.ac.uk/exchange/Reflection/index.php3> [23rd July 2003]
- Race, P. (2000). *Assessing portfolios—reflections and digressions*. [online] Available: <http://www.phil-race.net> [23rd July 2003]
- Robbin, A. (2001). *Creating social spaces to facilitate reflective learning on-line* [online] Available: <http://www.slis.indiana.edu/csi/wp/wp01-01b.html> [22nd June 2003]
- Schon, D. (1998) *Educating the reflective practitioner: Towards a new design for teaching and learning in the professions*. San Francisco: Jossey Bass.
- Sher, Williams, & Sharkey, (2002). *The implementation of a university-wide electronic reflective journal to facilitate the development of core skills*. [online] Available: <http://www.ascilite.org.au/conferences/auckland02/proceedings/papers/138.pdf> [23rd July 2003]
- The Institution of Engineers, Australia. (1996). Changing the culture: Engineering education into the future, *Review Report*.
- TALSS SMILE (2002) *Evaluation report for BENV03/OAD004 Student Capabilities Profile Pilot* [unpublished report].
- Truer & Jensen. (2003). Setting standards for electronic portfolios: A broader vision for an educational revolution. *EDUCAUSE Quarterly*, 26(2).

Yancey, B. (n.d.). Introduction: Digitised student portfolios. In B. Cambridge (Ed.). (2001), *Electronic portfolios: Emerging practices in students, faculty, and institutional learning*. Washington, DC: AAHE.

© Copyright 2003 QUT and individual authors.

This work is copyright. Apart from any use as permitted under the Copyright Act 1968, no part may be reproduced by any process without written permission from the copyright holders. The authors assign to QUT a non-exclusive licence to publish this document in full on the World Wide Web. Any other usage is prohibited without the express permission of the authors.