Educational and institutional flexibility of Australian educational software

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Abstract

Purpose – This paper aims to provide context for papers in this special issue on Australasian e-learning. The paper aims to examine the background to Australian flexible and transnational education and to evaluate the educational and intuitional flexibility of three typical products of the Australian educational software industry.

Design/methodology/approach – The history of Australian distance education is summarised and drivers for flexible education are presented. A model of flexible educational software is introduced with three dimensions: educational, institutional and support/training. Three educational software products are informally reviewed using this model to establish that the current generation of Australian educational software offers significant educational and institutional flexibility.

Findings – The three examples of Australian educational software rate highly in both educational and institutional flexibility and also offer excellent support.

Research limitations/implications – The existence of hot spots of educational technology innovation in relatively isolated areas such as Perth and Tasmania warrants further investigation.

Practical implications – The Australian educational software industry produces extremely flexible products with excellent support that are worthy of consideration by international customers. Policy makers in Australia are alerted that current policies in ICT off shoring and the Australian Research Quality Framework (equivalent to the British Research Assessment Exercise) may threaten this industry, which contributes to sizable exports in transnational education.

Originality/value – The paper brings the flexible nature of Australian educational software to light for an international audience.

Keywords Computer software, Higher education, Change management, Distance learning, Australia

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1. Introduction

Australia's history of high quality open and distance education (Barcan, 1981) has created a culture where academic and industrial entrepreneurs now offer a range of educational software that is well aligned with the demands of flexible education. To support this argument we review three Australian educational software products: Harvest Road Hive, The Learning Activity Management System (LAMS) and the Modular Object-Oriented Dynamic Learning Environment (MOODLE). In each case we will highlight features that support the educational and institutional dimensions of flexible education.

We begin by examining Australia's historical strength in distance learning and exploring the drivers to build upon this culture to provide flexible domestic and transnational mass-tertiary education. We note that barriers remain and suggest that software supporting educational and institutional flexibility could contribute to change management projects to ameliorate them. Next, we introduce the products and demonstrate how each affords educational and institutional flexibility.

The implications for Australian HE institutions and commercial software developers are that educational software provides fertile ground for investment. This is particularly apposite for Australian HE institutions when applied research is a priority for Australian government funding of research in higher education (Blackmore and Wright, 2006). For international readers, we suggest that Australian educational software should be considered as part of the formal evaluation of new products (see Kelly, 2008) within market surveys especially as international support services are now readily available (see below).

2. Drivers and facilitators for Australian flexible learning

In the nineteenth and twentieth centuries, Australia needed to provide vocational education to a rural population distributed across a vast continent. Meeting this need made Australia a natural pioneer of high quality distance learning to the extent that teachers themselves were often trained via distance learning (Barcan, 1981). Due to the vast distances between campuses and potential students, Australian universities have offered distance education programs since 1911 (Department of Employment, Education and Training, 1993). More recently, following widespread changes from rural to metropolitan lifestyles, the "overall nature of the demand for distance education has changed ... with significant numbers of city-based students choosing distance education for the convenience of not having to visit a university campus" (Gallagher, 2001, p. 3). In response to such demand many Australian universities have now reengineered themselves to offer flexible education (Seddon and Angus, 2000; Evaline, 2004). These universities are chasing an industrial model of flexibility based an industrial model in which "the 'winners' design 'customised' products and services 'on time', 'on demand' faster and more perfectly than their global competition, or they go out of business" (Gee and Lankshear, 1995, p. 6). Transnational education and training is also a substantial driver for this trend as it is now Australia's third largest services export at over ten billion Australian dollars per annum (DEET, 2004). Accordingly all Australian universities have now provided transnational courses (Rivzi, 2004).

Adopting flexible education results in substantial changes to both individual practice and organisational culture, which must be resourced and managed (Shurville and Browne, 2006; Shurville and Owens, n.d.). Flexible education expands upon the ethos of distance learning by providing "students with flexible access to learning experiences in terms of at least one of the following: time, place, pace, learning style, content, assessment and pathways" (Chen, 2003, p. 25). The Australian government advises institutions that "flexibility means anticipating, and responding to, the ever-changing needs and expectations of vocational education and training clients – enterprises, learners and communities" (DEST, 2005). Such definitions show that flexible education reverses the traditional loci of control and convenience from

academics and institutions to learners and communities. Work by Henderson (2007), Eijkman (2008), and Henderson and Bradey (2008) exemplifies a vibrant and critical culture of staff development within Australian universities, which is helping new and established academics to make the Copernican transition. Unfortunately, as flexible education places substantial additional demands upon academics, there is ample room for competitive tension between commitment to teaching and research on all sides of the academy. Meanwhile, due to the introduction of the Australian Research Quality Framework[1], the established equilibriums between teaching and research are already under considerable stress (Blackmore and Wright, 2006). In such circumstances resistance to change is the all too predictable reaction (Evaline, 2004). So, further introduction and embedding of flexible education within the Australian context is likely to require careful change management. In acknowledgement of such issues, the Australian Government has funded the Australian Flexible Education Framework (FAFEF), whose website provides invaluable resources and a good introduction to Flexible Education in Australia (AFLF, 2007). Suddaby and Milne (2008) describe comparable government initiatives in New Zealand.

We suggest that attempting to support flexible education with inflexible software only raises the potential for resistance to change. Prior experience shows that consultation exercises into real requirements and expected patterns of use can demonstrate that particular software matches local needs and help pressured staff to engage with change (Shurville and Williams, 2005; McPherson and Nunes, 2006; Luckin *et al.*, 2006).

3. Flexible educational software

Well-designed educational software can be a key enabler for flexible education (Conole and Oliver, 2006), although embedding it at an institutional level brings its own demands for change management (Rossiter, 2006; Shurville and Browne, 2006). Here we define flexible educational software to mean applications that provide both educational and institutional flexibility. Educationally flexible software should enable educators to design and manage effective learning experiences and materials and provide an interface that is appropriate for educating. Meanwhile it should provide students with opportunities to learn at their convenience and provide an interface dedicated to learning. Institutionally flexible software should provide institutions and their developers with facilities to adapt and integrate the product with local administrative processes, IT platforms and teaching culture. It should also help universities to join effective federations and partnerships with other institutions, which requires adherence to open standards and tolerance of diverse coding languages and platforms, including those that are popular in other nations.

We should stress that flexible educational software requires support systems to disseminate research and provide educational and technical support and training. Such systems may be based on open source communities, propriety services (e.g. Hive) or a hybrid (e.g. LAMS and MOODLE) that offer both open source support and proprietary services. In order for software to qualify as educationally and institutionally flexible, coordinators of open source communities and vendors should provide dedicated support and training to administrators, developers, educators and learners, which can be extended and versioned in local contexts, including federations and partnerships.

The three educational software packages we introduce below each match our informal definitions of educationally and institutionally flexible educational software and provide solid support and training to domestic and international clients.

4. Harvest Road Hive

Harvest Road Hive is a federated digital repository that provides a very flexible learning content management system (LCMS). Hive enables institutions and their partners to create digital repositories for teaching materials, including learning designs, and learning objects. These can be published and reused in virtual learning environments (VLE).

Attaching a digital repository to a VLE enables a university to implement policies to manage content – avoiding duplication, accidental deletion and copyright compliance (Richardson, 2004). One problem is that digital repositories can bring intellectual property issues to the fore. In our experience, careful change management is required to avoid sparking disputes between academics and their intuitions over ownership of materials (see Burk, 1998). While sensitive drafting of policy is essential, appropriately flexible software can help institutions avoid unnecessary conflict over intellectual property. Similarly a fine-tuned package of cultural change, policy, staff development, technical support and technical suitability is required to encourage educators to adopt existing materials in a repository (Campbell *et al.*, 2004).

Hive provides a great deal of educational flexibility. For example, a pilot project at Griffith University has demonstrated that appropriate application of Hive helped academics to embrace change (Richardson, 2004). This matches the experience of one of the authors of this article who was associated with the introduction of a digital repository based upon Hive at a university in the UK. Developing workflows and associated training materials with Hive is relatively straightforward due to an intuitive interface and a functionality that is well matched to the needs of educators. Fox and Brown reported as part of a deployment at Curtin University that Hive is an excellent vehicle which "allows university staff (academic and other) to 'take control' of their unit's CMO lists, adding individual items at any given time and arranging items to suit the needs of their students" (Fox and Brown, 2007).

Hive also scores well on institutional flexibility. A potential problem with proprietary products is that they can lock clients into their own product line, partnerships and preferred technical platforms. In contrast, Hive conforms to a range of interoperability standards, including as ADL/SCORM, Av-P70, Dublin Core, IMS, S1000D, MIL-SPEC, PENS, SGML and XML. Harvest Road also work closely with formal and informal partners such as Blackboard, MOODLE, the Open Knowledge Initiative, RELOAD and SAKAI to ensure that Hive can be used in many technical contexts. Case studies demonstrating Hive integration with a variety of e-learning platforms are readily available. For example, the librarian at the University of Western Australia confirms that Hive's open approach to standards and platforms avoids lock-in such that a university can change its digital repository, platform and/or its VLE independently. Another potential issue for institutions is extending functionality. Hive provides a well-documented application programming interface to enable local developers to fine tune the product to meet their institutional needs. Moreover, Harvest

Road manages events, such as the iHug conferences, which enable educational clients to feedback requirements to the development team.

In terms of support systems, Harvest Road offers high standard technical support and training. They also offer support on organisational issues such as change management, customisation, deployment, and implementation integration. Harvest Road is based in Perth and has branch offices in Atlanta, Canberra, Lyon, London, Mexico, Ottawa, and Sydney. We can report very positive personal experience of Hive's domestic and international training and support.

5. The learning activity management system

LAMS is free, open source software developed at the Macquarie E-Learning Centre of Excellence. LAMS enables educators to design, manage and deliver suites of individual and collaborative learning activities. These leaning designs, known as "sequences" or "digital lesson plans", can be saved and stored within an institutional repository and shared with other educators both locally and via a community website. They can be delivered to learners either within LAMS or via a choice of third party run-time environments, such as Blackboard, MOODLE and SAKAI. In LAMS' terminology, making a sequence available to learners is called "running" that sequence and learners are said to "participate" in that sequence.

LAMS provides three views: the authoring view, the learner view and the monitoring view. These views encapsulate a substantial knowledge-base of individual and collaborative learning activities expressed as tools that can be configured and prepped with content by educators and then published for learners. Learners can then upload and contribute further content, external resources and viewpoints.

The authoring view encapsulates knowledge about individual and collaborative learning activities. It features a drag and drop interface that enables educators to select individual and group activities from a pallet and to connect these in sequences through a unit of learning. These activities include asynchronous discussion forums, notice boards, quizzes, resource presentation and sharing, synchronous chat, and surveys. Each activity can be run in either individual, small group or cohort-wide mode and educators can specify group membership. Each activity contains a set of properties, which educators can configure via a form fill-in interface. They can also add content to activities, such as questions and answers for a quiz. The activities are linked into directed path(s) through the unit of learning. The paths can be conditional as the outcome of a particular activity, say a quiz, can affect the choice or order of activities that become available to the learner(s). The educator can also pass more control to learners by grouping a sub set of activities so that the learners can decide the order in which to tackle them. At all times the educator can preview the sequence they are building to see how it will ultimately appear to learners within the learner view. Educators can import sequences, adapt them and export them for sharing and re-use.

To participate in a sequence, learners need to log in to the learner view so that they can access the available sequences for their course(s). Learners can track their own progress through a particular sequence, make onscreen notes in a learning journal and also exit and return to particular sequences at will. Learners can also track their membership of groups for particular sequences.

Radical constructivists might argue that learners are still somewhat ensnared by the designs of the educator and appeal to the rhetoric of learner generated contexts (Luckin, 2006) personal learning environments (Liber, 2000) or Web 2.0 (Craig, 2007) for a more learner-centred view. Given current understanding of learning design and educational technology, however, this would be a rather empty critique as LAMS strikes a healthy balance between structure and autonomy and enables educators to scaffold learners toward greater autonomy. In time, bridges between LAMS and emerging personal learning environments might offer increased educational flexibility. For now, an abundance of well-designed sequences available online illustrate that talented educators have found ways to maximise learner flexibility within practical constrains.

The LAMS monitoring environment enables educators to track individual, group-wide and cohort-wide, progress through a set of activities within a sequence in real time. This provides an invaluable feedback mechanism to educators such that they can reflect and update their learning designs. We rate this functionality highly in terms of educational flexibility.

The LAMS foundation also run regular conferences in Australia and overseas which provide opportunities for personal development and a valuable resource for papers about using LAMS effectively, such as Cameron (2007). LAMS is further enriched by the LAMS community web site. This site enables educators to locate and reuse sequences and to learn from one another. Individual sequences contain detailed descriptions by their authors and ratings by other educators. Issues such as copyright are dealt with sensibly and comprehensively. The site offers valuable resources for personal and staff development during the transition from teacher to learner centred approaches that characterises flexible education. We rate this aspect of LAMs highly in terms of both educational and institutional flexibility. It is an example of how the ethos of flexible education has been systemically designed into LAMS and its support systems.

As an open source and open standards product, LAMS includes an application programming interface, which enables institutions and researchers to add functionality such as new learning activities. LAMS can also be integrated with third party VLEs, such as MOODLE. LAMS runs on a wide range of operating systems, which makes it extremely portable. The LAMS organisation contributes a great deal to the educational technology community by hosting the LAMS community web site and regular conferences in Australia and Europe. Excellent commercial support is available from the LAMS Foundation, which is a commercial spin-off of the Macquarie E-Learning Centre of Excellence.

The Joint Information Systems Committee of the UK has completed an extensive evaluation of LAMS in 2005 (JISC, 2005a) and published the results of a practitioner trial involving 40 projects (JISC, 2005b). These extensive and in-depth evaluations confirm that LAMS affords high educational and institutional flexibility. In the very nicest possible way, LAMS can be seen as something of a Trojan horse that stealthily imparts an underlying educational philosophy based upon collaborative and constructivist approaches. This is perhaps its greatest contribution to flexible education.

6. MOODLE

MOODLE is an open source VLE whose unique selling point is that it evolved from PhD research in constructivist education conducted by its founder, Martin Dougiamas, into software for social constructivist teaching and learning (Dougiamas, n.d.). Cole (2005) argued that MOODLE has fulfilled its promise and is particularly suited to constructivist approaches to learning due to a range of tools which include blogs, chat database activities, forums, peer assessment, surveys and wikis. Winter compared MOODLE to other platforms and concluded "moodle appears to be more engaging, has better socialisation features than its competition ... the author considers Moodle to be the preferred solution for online learning in New Zealand workplaces, especially where modules are suited to a learner-centred pedagogy" (Winter, 2006, p. 29). McMullin and Monroe (2004) noted that MOODLE provided tools that expanded on those offered by proporietory VLEs such as WebCT. These tools are currently being enhanced and expanded by plug-ins developed by a large community of open source programmers, including the UK Open University (Open University, 2005). The existing toolsets and promised enhancements all score highly in terms of educational flexibility.

MOODLE provides a cost-effective VLE that is highly compatible with a range of commercial and open source LCMSs and other tools, such as Hive and LAMS. Moodle is developed using the LAMP platform that includes GNU/Linux, Apache, MySQL and PHP. As PHP is a highly portable and low cost development option (Shurville and Williams, 2005), MOODLE offers high institutional flexibility. Graf and List (2005) have reported that Moodle is the most adaptable open source e-learning platform on the market. McMullin and Monroe observed that "perhaps the most critical weakness perceived with Moodle was not any functional aspect of the product itself, but the fact that, although there were already many small scale deployments in operation, at that time it had not yet been adopted on an enterprise basis by any university-level institution" (McMullin and Monroe, 2004). This weakness was redressed when, after extensive comparisons, the UK Open University invested £5,000,000 in an institutional MOODLE platform (Open University, 2005). MOODLE's institutional flexibility was noted during consultation exercises in two UK universities, which both resulted in successful switches from proprietary VLEs to MOODLE (Luckin *et al.*, 2006; Shurville and Owens, n.d.). With Web 2.0 developments in mind, it is interesting to note that MOODLE now interfaces well with the Elgg social networking platform (Winter, 2006; Oliver, 2006), which provides bloging, networking, community, news using feed aggregation and file sharing features (Elgg, 2007), this interface offers institutions some degree of future proofing.

In our personal experience, MOODLE's sole weakness in terms of institutional flexibility is that senior management can buy into the hype and underestimate the switching costs involved in moving to a "free" product because this development and support model only provides flexibility when resources for local development and support are available. This can raise legitimate questions about the outcomes of evaluations, such as Winter (2006), that suggest MOODLE is a low cost option.

MOODLE offers ample support via a "lively" open source community (Winter, 2006) and commercial services. We have found both of these to be well suited to the demands of flexible education in international contexts. In particular there are many well-qualified and experienced commercial consultants available to help an

institution to adopt the new software platform with an extremely collegiate and flexible model of development. With a well-managed transition from proprietary to local development, MOODLE is a blue chip investment.

7. Conclusion

We have reviewed three products of the Australian educational software industry and suggested that there is a common theme of support for educational and institutional flexibility. We suggest this may be influenced by the nation's history of commitment to distance learning and its current appetite for flexible and transnational education. Looking to the future, there are both opportunities and risks. Web 2.0 provides an opportunity for growth in educational software albeit one that Australian entrepreneurs have yet to embrace. Underlying research in educational technology is strong with admirable commitment to developing authentic learning environments via the design experiments methodology (Herrington, 2006) which could produce a new generation of flexible educational software that meets real needs with proven approaches. We believe that the main risk to the educational software industry lies in training and recruiting developers. In the wake of an agricultural and resources boom, compounded by off shoring of major ICT government contracts, there is a significant decline in enrolment in ICT in Australian universities (Koronios and Swatman, 2006). A shortage of local developers may necessitate open source and offshore development as well as labour migration. A secondary risk is the potential lack of recognition and reward for educational and interdisciplinary research within the forthcoming Australian research quality framework (Armstrong and Goodyear, 2006). Although Australia currently performs well internationally in educational technology (Blackmore and Write, 2006), established and academics and their institutions may be less prone to research educational technology if it slips between arbitrary disciplinary boundaries. While policy makers may be unable to stem macro-economic tides, they can affect the design of assessment exercises to engender creativity, innovation and exports. In terms of future research, we suggest that the existence of innovation hot spots in educational technology in areas such as Perth and Tasmania warrants further investigation.

Note

1. The Australian Research Quality Framework is an emerging equivalent to the British Research Assessment Exercise. At the time of writing the framework is in flux due to recent a change of government. Details can be found at www.dest.gov.au/sectors/research_sector/policies_issues_reviews/key_issues/research_quality_framework/default.htm

References

Armstrong, D. and Goodyear, P. (2006), "Implications of external research quality assessment for local research leadership: learning from the UK RAE experience", in Blackmore, J., Wright, J. and Harwood, V. (Eds), *Counterpoints on Quality and Impact in Educational Research*, AARE, Melbourne, pp. 19-43.

Australian Flexible Learning Framework (2007), available at: www.flexiblelearning.net.au (accessed December 4, 2007).

Barcan, A. (1981), *A History of Australian Education*, OUP Australia and New Zealand, Canberra.

Blackmore, J. and Wright, J. (2006), "The quality agenda and some issues for educational research and researchers: an introductory essay", in Blackmore, J., Wright, J. and Harwood, V. (Eds), *Counterpoints on Quality and Impact in Educational Research*, AARE, Melbourne, pp. 1-18.

Burk, D.L. (1998), "Ownership of electronic course materials in higher education", *Campus-Wide Information Systems*, Vol. 15 No. 4, pp. 142-7.

Cameron, L. (2007), "Using LAMS to facilitate an effective program of ICT instruction", in Cameron, L., Dalziel, J. and Voerman, A. (Eds), *Proceedings: 2007 European LAMS Conference: Designing the Future of Learning*, LAMS Foundation, London.

Campbell, L., Blinco, K. and Mason, J. (2004), "Repository management and implementation", available at: www.imsglobal.org/altilab/altilab2004/Altilab04-repositories.pdf (accessed December 4, 2007).

Chen, D. (2003), "Uncovering the provisos behind flexible learning", *Educational Technology and Society*, Vol. 6 No. 2, pp. 25-30.

Cole, J. (2005), *Teaching with the Popular Open Source Course Management System*, O'Reilly, Boston, MA.

Conole, G. and Oliver, M. (2006), *Contemporary Perspectives in E-learning Research*, Routledge, London.

Craig, E. (2007), "Changing paradigms: managed learning environments and Web 2.0", *Campus-Wide Information Systems*, Vol. 24 No. 3, pp. 152-61.

Department of Employment, Education and Training (1993), *National Report on Australia's Higher Education Sector*, Australian Government Publishing Service, Canberra.

Department of Employment, Education and Training (2004), *Auditing the Offshore Activity of Australian Higher Education Providers*, Australian Government Publishing Service, Canberra.

Department of Education, Science and Training (2005), "Flexible learning", available at: www.dest.gov.au (accessed December 7, 2007).

Dougiamas, M. (n.d.), "Incomplete PhD thesis", available at: http://dougiamas.com/thesis/ (accessed December, 5).

Eijkman, H. (2008), "Web 2.0 as a non-foundational network-centric learning space", *Campus-Wide Information Systems*, Vol. 25 No. 2, pp. 93-104.

Elgg (2007), "Elgg: create, connect, discover", available at: http://elgg.org/ (accessed December 5, 2007).

Evaline, J. (2004), *Ivory Basement Leadership: Power and Invisibility in the Changing University*, University of Western Australia Press, Perth.

Fox, S. and Brown, S. (2007), "Engaging students through CMO: electronic reserves and student learning", *Student Engagement, Proceedings of the 16th Annual Teaching Learning Forum, 30-31 January 2007*, The University of Western Australia, Perth, available at: http://lsn.curtin.edu.au/tlf/tlf2007/refereed/fox.html (accessed December 5, 2007).

Gallagher, M. (2001), "E-learning in Australia: universities and the new distance education", Centre for Educational Research and Innovation OECD, Tokyo, available at: www.oecd.org/dataoecd/16/52/1854142.pdf (accessed December 5, 2007).

Gee, J. and Lankshear, C. (1995), "The new work order: critical language awareness and 'fast capitalism texts'", *Discourse: Studies in the Cultural Politics of education*, Vol. 16 No. 1, pp. 5-19.

Graf, S. and List, B. (2005), "An evaluation of open source e-learning platforms stressing adaptation issues", *Proceedings of the Fifth IEEE International Conference on Advanced Learning Technologies*, ICALT 2005, pp. 163-5.

Henderson, M. (2007), "Sustaining online teacher professional development through community design", *Campus Wide Information Systems*, Vol. 24 No. 3, pp. 162-73.

Henderson, M. and Bradey, S. (2008), "Shaping online teaching practices: the influence of professional and academic identities", *Campus Wide Information Systems*, Vol. 25 No. 2, pp. 85-92.

Herrington, J.A. (2006), "Authentic e-learning in higher education: design principles for authentic learning environments and tasks", in Reeves, T.C. and Yamashita, S. (Eds), *Proceedings of World Conference on E-learning in Corporate, Government, Healthcare, and Higher Education 2006*, AACE, Chesapeake, VA, pp. 3164-73.

JISC (2005a), "Learning activity management system", available at: www.jisc.ac.uk/whatwedo/programmes/elearning_pedagogy/elp_lams.aspx (accessed December 5, 2007).

JISC (2005b), "Final report of the LAMS practitioner trial", available at: www.elearning.ac.uk/news_folder/lamsreport (accessed December 5, 2007).

Kelly, G. (2008), "A collaborative process for evaluating new learning technologies", *Campus Wide Information Systems*, Vol. 25 No. 2, pp. 105-13.

Koronios, A. and Swatman, P.M.C. (2006), "The state of information systems in Australian Universities – South Australia", *Australasian Journal of Information Systems*, Vol. 14 No. 1, pp. 201-10.

Liber, O. (2000), "Colloquia: a conversation manager", *Campus-Wide Information Systems*, Vol. 17 No. 2, pp. 56-62.

Luckin, R. (2006), "Understanding learning contexts as ecologies of resources: from the zone of proximal development to learner generated contexts", in Reeves, T. and Yamashita, S. (Eds), *The Proceedings of E-Learn 2006*, AACE, Chesapeake, VA, pp. 2196-202.

Luckin, R., Shurville, S. and Browne, T. (2006), "Initiating e-learning by stealth, participation and consultation in a late majority institution", *Journal of Organisational Transformation and Social Change*, Vol. 3 No. 3, pp. 317-32.

McMullin, B. and Monroe, M. (2004), "MOODLE at Dublin City", available at: http://odtl.dcu.ie/wp/2004/odtl-2004-01.html (accessed December 5, 2007).

McPherson, M. and Nunes, M.B. (2006), "Organisational issues for e-learning: critical success factors as identified by HE practitioners", *International Journal of Educational Management*, Vol. 20 No. 7, pp. 542-58.

Oliver, S. (2006), "Elgg: social network software for education", available at: www.readwriteweb.com/archives/elgg.php (accessed December 5, 2007).

Open University (2005), "The Open University builds student online environment with MOODLE and More"s", available at: www3.open.ac.uk/media/fullstory.aspx?id = 7354 (accessed December 5, 2007).

Richardson, J. (2004), "Implementing Harvest Road's Hive system at Griffith University: practice validates theory", ALIA CAM Digital Respository Seminar, available at: http://conferences.alia.org.au/seminars/camqld2004/richardson.pdf (accessed December 5, 2007).

Rivzi, F. (2004), "International student mobility and its limits: the Australian case", *International Higher Education*, Fall, pp. 7-9.

Rossiter, D.E. (2006), "Embedding e-learning in universities: analysis and conceptualisation of change processes", PhD thesis, Queensland University of Technology, Brisbane.

Seddon, T. and Angus, L. (Eds.) (2000), *Beyond Nostalgia: Reshaping Australian Education*, Australian Council for Educational Research, Melbourne.

Shurville, S. and Browne, T. (2006), "ICT-driven change in higher education: learning from e-learning", *Journal of Organisational Transformation and Social Change*, Vol. 3 No. 1, pp. 245-50.

Shurville, S. and Owens, A. (n.d.), "Always coming home: engaging colleagues in flexible learning with force field analysis", invited for publication in the University College of the Fraser Valley Research Review.

Shurville, S. and Williams, J. (2005), "Managing in-house development of a campus-wide information system", *Campus-Wide Information Systems*, Vol. 22 No. 1, pp. 15-27.

Suddaby, G. and Milne, J. (2008), "Coordinated, collaborative and coherent: developing and implementing e-learning guidelines with national teritiary education system", *Campus Wide Information Systems*, Vol. 25 No. 2, pp. 114-22.

Winter, M. (2006), "Learning management systems for the workplace: a research report", available at: www.tanz.ac.nz/pdf/LMS_Final.pdf (accessed December 5, 2007).

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