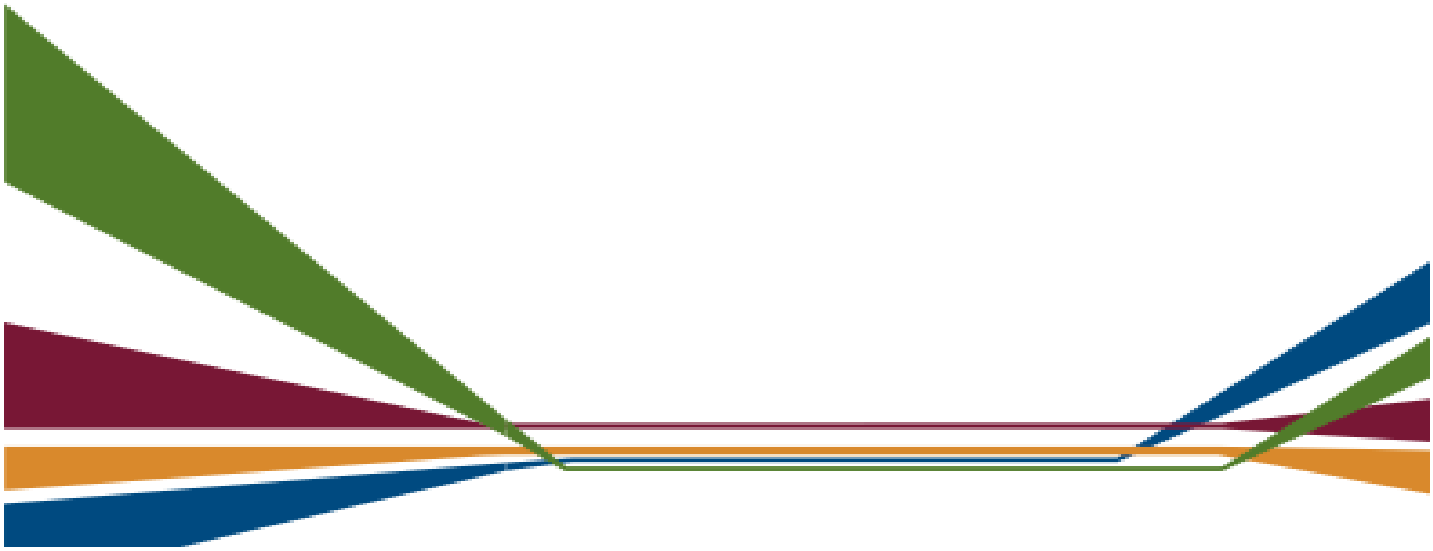
DEAKIN UNIVERSITY AUSTRALIA

INSTITUTE OF TEACHING AND LEARNING

Perspectives on the Future of Flexible Education

December 2009



Perspectives on the Future of Flexible Education

Project team: Prof Colin Mason, Dr Dale Holt, Dr Naomi Augar, Dr Gayani Samarawickrema, Dr Stuart Palmer, Dr Leanne Ngo, Terry Timberlake, Judy Munro, Kim Atkinson, Tina Bray and Gail Fluker

Institute of Teaching and Learning, Deakin University, Australia

The project team gratefully acknowledges all Deakin staff and student participants' contribution to the project.

This research study has been granted human research ethical clearance (Project No: HEAG09-51).

Further queries regarding this document:

Prof Colin Mason
Director
Institute of Teaching and Learning
Deakin University
Telephone: 03 924 17032
Email: colin.mason@deakin.edu.au

Dr Dale Holt
Associate Director
Institute of Teaching and Learning
Deakin University
Telephone: (03) 522 78183
Email: dale.holt@deakin.edu.au

Table of Contents

Executive summary

The 2009 ITL Operational Plan has as one of its objectives that the Institute lead the process of defining appropriate future directions and conditions for flexible education provision at Deakin. This required ITL to investigate current flexible teaching and learning practices within Deakin University and to prepare a set of recommendations on future provision of flexible education. Moreover, the investigations helped inform the selection process for a new Online Learning Environment (OLE), currently referred to as the University's Learning Management System (LMS). These recommendations will support Deakin's goal (described in the current strategic and teaching and learning plans) to be a leader in flexible education nationally and internationally.

This Perspectives on the Future of Flexible Education document is a collective set of deliverables achieved as part of this project. This document is structured in the following order:

Recommendations

This section contains the recommended approach to the provision of flexible education at Deakin University.

Part A: Literature review

This section contains a thorough literature review on flexible education. A macro perspective on flexible education is provided exploring various rationales for flexible education and the developments of flexible education over time in Australia. Micro perspectives of flexible education relating to online learning and teaching are explored relating to:

- good practice in online education;
- discussion of community building, social presence, partnerships and work integrated learning;
- advantages and disadvantages of open source software;
- principal reasons why institutions are moving to open source software (in terms of teaching and learning and flexibility); e-Learning vision and teaching and learning principles shaping open source software;
- staff preferences in relation to online learning environments and online teaching practices;
- learning management system plug-ins and system additions.

Part B: Empirical-based research

Employing the Deakin integrated approach to flexible education (The Deakin University Teaching and Learning Plan, 2008a, p. 5) as a backdrop together with a thorough literature review, a pilot study was conducted to document current teaching practices and define flexible education at University by identifying characteristics that are unique to Deakin including factors that enable and hinder the practice of flexible education. A purposively selected sample of thirty-two teachers across all campuses and faculties were interviewed and ten randomly selected students contributed to the study through two focus group

interviews. All staff and student participants also responded to a questionnaire. The outcomes of the pilot study include eight key themes:

- Staff understandings of flexible education
- Advantages of flexible education
- Challenges to flexible education
- Enablers and drivers of flexible education
- Implications of providing flexible education
- Student readiness for flexible learning
- Students' understanding of flexible learning
- Staff use of technologies

Part C: International Flexible Education Symposium 2009

The need to be *innovative* and to *provide options to students* was a central message stemming from an ITL hosted three-day International Flexible Education in Higher Education Symposium held on November 17 - 19, 2009 at the Melbourne Campus at Burwood. The purpose of this symposium was to hear and gather information from recognised international leaders in this field on current teaching practices and approaches to the provision of flexible education to assist with defining the future scope, innovation for and development of flexible education here at Deakin. The symposium featured two international keynote speakers - *Dr Terry Anderson*, Professor and Canada Research Chair in Distance Education, Athabasca University, Canada's Open University, and *Dr Malcolm Brown*, Director EDUCAUSE Learning Initiative, USA.

The one certainty in the future is *change*. There will always be new challenges and opportunities related to flexible education. Flexible education is complex, multidimensional and mostly includes the time and location of learning, the learning approach, the range of learning resources and delivery and is typically meant to empower the learner to select when, how and where to learn as suitable to that individual. The many variables make the implementation of flexible education complex in practice.

Recommendations

Recommended approach to the provision of flexible education at Deakin University:

- Develop well articulated and coherent program and course level policies that would aim to deliver consistent teaching and learning material for students by:
    - allowing for flexibility for academics to teach their units as they see fit
    - allowing for flexibilities that accommodate industry and accreditation requirements
    - articulating the benefits, limitations and constraints on flexible design to students so that expectations are managed.
- Ensure student readiness for flexible modes of study by:
    - scaffolding students undertaking flexible learning effectively
    - defining levels of flexibility to manage student expectations
    - offering non-compulsory wholly online units in the later years of courses rather than in the first year.
- Define clear teaching and learning support mechanisms to assist academic teachers in advancing their teaching and learning strategies by:
    - providing centralised resources and one point of contact area for staff to turn to for leadership assistance and support
    - facilitating a decentralised mechanism for ITL staff to work with and support faculties
    - ensuring faculty-based teaching staff know who to consult for assistance
    - ensuring that all staff have assistance to both central and decentralised assistance.
- Encourage staff to be innovative and experiment with, designing and developing flexible models of learning by:
    - explicitly recognising and rewarding their efforts in this area
    - publicising opportunities for reward and promotion pathways up to and including professorship through teaching excellence
    - publicising opportunities for teaching improvements supported with the award of teaching sabbaticals.
- Strengthen pedagogies related to collaboration and networked learning by:
    - developing faculty interest and knowledge in constructive and participatory learning and the social construction of knowledge
    - developing technological infrastructure to network and facilitate online and mobile connections seamlessly.
- The new Online Learning Environment (OLE), replacing the current DSO, should be:
    - accessible – able to operate across platforms and browsers and work with screen readers and other assistive technologies
    - able to be accessed and used via mobile devices including laptops, notebooks and mobile phones

    - able to be accessed and used by students studying remotely with poor bandwidth (dial-up speeds)
    - modular and configurable to promote adaptation appropriate to the unit context
    - capable of supporting peer review
    - able to provide a simple and easy to use process for creating and managing online assignments including the ability to complete marking entirely online that integrates seamlessly with existing Deakin processes
    - able to allow students to upload and share multimedia artefacts that demonstrate their learning and publish them for review and critique by any subset of Deakin students, staff and external parties.
- Develop an integrated strategy of policy, guidelines and exemplars complemented by tailored face-to-face professional development phased in over the next two years to coincide with the implementation of a new OLE at Deakin.
- Charge ITL with enhanced responsibility for undertaking evidence-driven improvements in flexible education in order to provide leadership in the area, including:
    - providing innovation funding to conduct investigations into teaching and learning practices including online and mobile teaching
    - piloting and evaluating emerging new technology to explore its educational affordances
    - examining and evaluating innovative and blended learning models
    - investigating the potential for partnerships between industry and community in adding value to teaching and learning at Deakin University.

Part A: Literature review

Making meaning of flexibility – the lived experience of flexible education

Good practice in online education, learning management system and open source software use in higher education

Making meaning of flexibility – the lived experience of flexible education

The range of rationales that underpin conceptions of flexible education, and the re-making over time of the official meaning of flexibility in national education policy, have led to the point where flexibility might be found, or be required, in nearly every aspect of Australian higher education. This paper seeks to identify those rationales and the development of public policy rhetoric that have framed the development of the meaning of flexible education over time in an Australian context. By considering the intersection of theoretical perspectives on flexible education with the realities of teaching and learning practice in a specific discipline context, this paper proposes the essential importance of individual context and agency in the making of real meaning from, and creating practical boundaries around, the otherwise tenuous definitions of flexibility often offered by institutional policy.

Introduction

In many countries internationally, including Australia, the umbrella term 'flexible education', incorporating flexible learning, flexible teaching and other related terms, has come into common usage in higher education. There is no universally agreed definition of what is meant by flexible education (Casey & Wilson, 2005; Kirkpatrick, 1997; Ling, et al., 2001; Morrison & Pitfield, 2006; Nicoll, 1998; Normand, Littlejohn, & Falconer, 2008; Nunan, 1996; Sappey, 2005). This reflects that the call for 'flexibility' has emerged as a response to a range of needs from a range of stakeholders, at different times and in many contexts. The literature suggests a diverse array of drivers for flexibility. This paper seeks to identify those rationales and the development of public policy rhetoric that have framed the development of the meaning of flexible education over time in Australia. By considering the intersection of theoretical perspectives on flexible education with the realities of teaching and learning in a specific discipline context, this paper proposes the importance of individual context and agency in making meaning from, and creating boundaries around, the otherwise tenuous definitions of flexibility often offered by institutional policy.

Flexible Education - Rationales

Rationales for flexibility include the commercialisation of higher education. As government funding declines (Kirkpatrick, 2001; Morrison & Pitfield, 2006) and numbers of conventional entry students plateau or decline (Casey & Wilson, 2005), there is a need to compete for new student markets, particularly overseas fee-paying students (Bigum & Rowan, 2004) to bolster institutional income. These new student groups may require new means of learning engagement. Non-conventional program delivery may be a response to overcrowded or limited on-campus facilities or the availability of incentives from governments for flexible delivery initiatives (Casey & Wilson, 2005). It has been argued that to be effective in a world based on capitalist and competitive economic production systems, higher education needs to transform itself to reflect this environment, and to restructure its work practices and relationships (Nunan, 1996). In Australia there is evidence of the displacement of traditional academic forms of university administration with managerialism reminiscent of a private company (Marginson & Considine, 2000; Nicoll, 1997; Sappey, 2005). Flexible education is seen to offer increased efficiency of education delivery that would be attractive to institutional

administrators (Bigum & Rowan, 2004; Nicoll, 1998), as well as providing marketing advantages to be used in the competition for students between institutions, both locally, nationally and internationally (Kirkpatrick, 2001; Sappey, 2005).

Rationales for flexibility include catering for students – where distinguishing between student demand issues and institutional supply initiatives is often difficult. Have students changed/increased their demand for flexibility in time/place/mode of study (Casey & Wilson, 2005), or have institutions created opportunities for students to study in different ways by providing new choices (Nicoll, 1997)? Is widening access to higher education through flexible delivery modes (Morrison & Pitfield, 2006; Nicoll, 1997) a way of catering for a larger student body (Normand & Littlejohn, 2006), or does it create student diversity? In reality, the interconnectedness of these issues can no longer be separated – 'Strategically, operating flexibly can be seen as both an offensive and defensive tactic.' (Kirkpatrick, 2001, p. 169)

Rationales for flexibility include responding to perceived needs of industry and employers. These include initiatives to reach non-conventional students to boost the supply of graduates in occupations or professions where shortages of practitioners have been identified (Morrison & Pitfield, 2006), and a general perception that society's need for just-in-time learning to respond to rapidly changing circumstances is not efficiently catered for by traditional, 'inflexible' models of education (Nunan, 1996).

Rationales for flexibility include responding to government policy. This might include flexible education as a means of achieving economic progress and competitiveness through the up-skilling of the populace (Nicoll, 1998; Sappey, 2005), an action in response to the increased accountability for the public funding of higher education (Kirkpatrick, 2001), or a response to government policy that declares flexibility in education a 'good' in its own right (Casey & Wilson, 2005).

In addition, a number of other general rationales for flexibility may be found in the literature. It is a logical consequence of the change in higher education from, '…a pedagogical exchange to a service encounter…' (Sappey, 2005, p. 495), where education is a market commodity (Nicoll, 1998). In its modern 'online' form, flexible education was first made possible by, and then rapidly driven by, the increasing availability of low-cost computer hardware and the Internet (Casey & Wilson, 2005; Kirkpatrick, 2001; Nunan, 1996). For institutions, flexibility in its various dimensions, provides a general capacity to respond to economic and political imperatives (Morrison & Pitfield, 2006).

Flexible Education in Australia

While the flexible provision of education (through distance education) has a history within Australia that stretches back to the early twentieth century (National Board of Employment Education and Training, 1992), the appearance of the adjective 'flexible' in relation to education is a relatively recent phenomena. Nicoll (1988) and Nicoll and Chappell (1998) observe over the period 1988-1998 that the contemporary meaning of flexible learning in Australia has been framed, and subsequently re-framed, by the discourse surrounding a series of government policy papers and reports. The 1988 Dawkins higher education policy white paper (Dawkins, 1988) is seen as a key development. In unifying the national system of higher education, it sought to not only to rationalise the number of institutions, but also to centralise the provision of university distance education to eight designated distance education centres (DECs). The policy sought to increase the quality of, and access to, distance education through rationalisation of provision, with the aim of increasing access to

higher education to provide a more skilled workforce to drive national economic expansion (Nicoll & Chappell, 1998).

The 1992 report of the National Board of Employment Education and Training investigating distance education in Australia (National Board of Employment Education and Training, 1992) both reversed the decision to centralise university distance education, and cemented the term 'flexibility' in the national higher education discourse. While the DECs had been formed with a premise of collaboration, NEBEET argued that universities should compete to provide education opportunities that best satisfied student needs. It was observed that the emergence of information and communications technologies (ICTs) would render the DEC oligopoly model obsolete (Nunan, 1996). It was also noted that the language and rationales employed in the report included competition, efficiency, access and equity, and student choice, and hence, '…resonated with values acceptable across a range of discourses…' (Nicoll & Chappell, 1998, p. 43) – '…flexible learning has the virtue that it provides something for everybody!' (Nunan, 1996, p. 3)

The 1995 Hoare Report (Higher Education Management Review Committee, 1995) reiterated the pressures facing Australian higher education, including increased accountability for performance, competition with other universities, with TAFE and with private providers, reduced government funding, the impact of ICT, the increasing diversity of students and the internationalisation of higher education (Le Grew & Calvert, 1998). It foreshadowed that the future of university teaching would focus on flexibility in curriculum and delivery.

The 1998 West Report (Department of Employment Education Training and Youth Affairs, 1998) documented a significant shift in the policy intent of flexibility in higher education. While previous policy documents focused on the organisation of higher education as a driver of national productivity and the economy, in the West Report it is higher education itself as an economic system that is seen as needing to be flexible to respond to environmental pressures and future uncertainty (Nicoll, 1998). The West report cemented support for the desirability of individuals to choose '…what, how, when and where they study…' (Department of Employment Education Training and Youth Affairs, 1998, p. 69), and lent weight to the valuing of higher education not for its own sake, but by how much it improved the earning capacity of individuals, corporations and the nation.

Since 1998, there have been further national reports on higher education, and these have contributed to the developing meaning of flexibility in higher education. The 2003 Backing Australia's Future report (Nelson, 2003) employed forms of the adjective flexible many times, but the context of flexibility had almost completely shifted to that of institutional structural flexibility, including 'Fostering flexible and responsive workplaces' (Nelson, 2003, p. 37). In advancing its industrial relations reform agenda, the government of the time focused on higher education, including making additional university funding contingent upon universities complying with a range industrial relations requirements. As observed, 'Flexible delivery is therefore a pedagogy and a marketing strategy as well as a form of work organisation.' (Sappey, 2005, p. 497), and, 'The urge to make our universities more flexible has increased so considerably that one can speak of a campaign towards more flexibility at many universities.' (Peters, 2003, p. 15)

The most recent report to influence Australian higher education policy discourse is the 2008 Bradley Review (Bradley, Noonan, Nugent, & Scales, 2008). This wide-ranging report continues the established theme of flexibility in higher education, further embedding the idea

by recapitulating all former policy conceptions of flexibility, as well as identifying new ones, including:

- flexible provision of higher education, particularly as a means for reaching otherwise uneconomic student markets;
- a flexible system that responds rapidly to stakeholder wants;
- flexibility derived from ICTs;
- flexibility in institutional staff working arrangements (this is noted both as desirable, but also as having negative impacts on certain staff);
- development of graduates that think and operate flexibly;
- more flexible, less bureaucratic higher education legislation;
- institutional strategic plans with in-built flexibility to respond to opportunities;
- flexible articulation of study pathways between the TAFE and university sectors; and
- more flexibility in the Australian qualifications framework (AQF) that defines generic qualification types and learning outcomes.

The Bradley Review both embodies and symbolises the pervasiveness of flexibility in Australian higher education policy discourse.

Regardless of the rationale, and despite the lack of agreed meaning, the response of flexibility is almost universally presented uncritically as an obvious solution. Flexible education is portrayed as inherently better than other forms of education (Bigum & Rowan, 2004), as automatically leading to a more student-centred approach (Holzl, 1999) and as an unproblematic fix to perceived problems (Nicoll, 1997). In the Bradley Review, references to flexibility can be found frequently in conjunction with other adjectives that are intended to be desirable, for example, 'flexible and collaborative', 'flexible and adaptable' and 'flexible and innovative'.

Flexible Education – Making Meaning

The literature on flexible education can be categorised into two broad groups – meta-analyses which identify aspects of flexibility (Casey & Wilson, 2005; Collis & Moonen, 2001; Ling, et al., 2001; Mayes, 2006; Normand & Littlejohn, 2006), and/or individual case studies (Lindberg & Olofsson, 2006; Morrison & Pitfield, 2006; Sappey, 2005; Willems, 2005) which provide more detail of how aspects of flexibility are implemented. The approaches to operationalising aspects of flexible education are almost endless, incorporating, but not limited to:

- aspects of **time** – program start time, finish time, length/pace of program, timing of assessment points, number of annual study periods, etc.;
- aspects of **content** – program topics, sequence of topics, learning materials, assessment, etc.;
- aspects of **access/entry requirements** – program entry points, exit points, recognition of prior learning/experience, bridging/access studies, articulation with TAFE, etc.;
- aspects of **instructional approach/design** – social organisation of learning (group, individual/independent, face-to-face), learning styles, language(s) of instruction, modality of learning resources (lecture notes, printed study guides, recorded lectures),

origin of learning resources (teacher, students, Library, Internet), methods of assessment, etc.; and

- aspects of **delivery** – place(s) of study (on-campus, off-campus, online, blended, off-shore/twinning, work-based learning), opportunities for contact with instructors and/or students, methods of support, forms of help, venues for participating in aspects of the program, content delivery channels, program communication channels, access to program administrative information and processes, etc.

The range of aspects of a program that might incorporate elements of flexibility is broad and, taken at face value, could lead to the conclusion that nearly any teaching and learning configuration could claim to be flexible in some regard. Just because a particular program offers any of the aspects identified above in a non-traditional way (i.e., using printed study materials), if other program elements remain conventionally organised, then it doesn't necessarily make it particularly flexible (Nunan, 1996). The lack of an agreed definition for flexible education may lead to a conflation of education typologies that can confuse more than illuminate (Casey & Wilson, 2005; Chen, 2003; Kirkpatrick, 2001; Normand, et al., 2008). Historically, this blurring of meaning may have equated distance with flexibility (Morrison & Pitfield, 2006; Peters, 2003), however now it is likely that online will be automatically, perhaps uncritically, presumed to mean flexible (Holzl, 1999; Normand, et al., 2008). Even though government, institutional and other policy texts present flexible education as having an objective and understood meaning from which particular practices logically flow (Nicoll, 1998), just exactly what is meant by flexible education depends on whom, when and where you ask!

Even within a single institution there may be significantly different perspectives on the theoretical meaning and/or practical implications of flexible education. A strong point of demarcation on perspective that is reported in the literature is level of management (Normand, et al., 2008). Normand and Littlejohn (2006) identify three levels of management with differing focus and concerns regarding flexible education:

1. institutional management (IM) – working at the big picture/strategic level, often with limited concern for how objectives might be achieved;
2. operational management (OM) – Heads of Faculty/School and program leaders with the responsibility for achieving strategic objectives using budgetary control and resource management; and
3. teaching-learning management (TLM) – individual academic teaching staff who explicitly and implicitly operationalise objectives relating to flexible education through their interactions with learners.

The different management levels and their respective views on flexibility are often disconnected and may be mismatched without a common vision, especially those of the IM level and the TLM level, with the OM level literally stuck in the middle and having to mediate between institutional objectives and the reality of everyday teaching and learning (Normand, et al., 2008). At the IM level, policy and definitions relating to flexibility are necessarily generic (Taylor, 2000), but may be of very limited value in providing guidance to those at the TLM level (Kirkpatrick, 1997), where the 'nitty gritty of flexible teaching and learning' must be enacted (Bigum & Rowan, 2004).

How then to approach the contested interpretations of flexible education spawned by a range of overlapping rationales and a national policy discourse that has evolved over more than two decades such that every aspect of higher education in Australia must embody flexibility? How to place boundaries around the smorgasbord of aspects of flexibility in teaching and learning? How to reconcile the often disconnected views of flexibility held by different management levels – where executive rhetoric may describe flexibility stretched so

wide that it becomes tenuous and insubstantial, and where teaching staff seek some concrete direction that makes flexibility meaningful in their discipline? Taking the lead from the central importance of context in making meaning of flexibility (Casey & Wilson, 2005; Kirkpatrick, 1997; Ling, et al., 2001; Morrison & Pitfield, 2006; Sappey, 2005), and from the primacy of individual agency over institutional rhetoric, policy and technology in the 'making real' of flexible education (Bigum & Rowan, 2004; Errington, 2004; Nicoll & Chappell, 1998; Normand, et al., 2008), this paper proposes that the meaning and value of flexible education are not solely defined by policy documents and standardised online course management systems, rather, that their essential aspects are to be found in the details of the lived experience of teachers and students engaged in the endeavour of flexible teaching and learning in their specific discipline context. As an illustration, the following section presents an account of the author's involvement in flexible engineering education over more than a decade, structured using the dimensions of flexibility espoused by Deakin's current teaching and learning plan.

Flexible Engineering Education at Deakin University – The Lived Experience

In Australia, Deakin University is a major provider of distance and online education. It teaches on four campuses located in three cities in the State of Victoria. It was one of the former eight designated DECs (Arger, 1993). With a founding Vice-Chancellor demonstrating a strong commitment to distance education (Jevons, 1984), Deakin saw itself as a dual-mode university, with some degree of separation between its teaching methods and materials used for on- and off-campus teaching. The use of distance education methodologies and materials for both student cohorts gathered momentum in the early to mid-1990s under the strategic umbrella of flexible teaching and learning, and with a growing use of online systems for learning delivery and communication.

Deakin's 'vision of flexible teaching and learning' (Deakin University, 1995, p. v) from that time was:

> The University's objectives for its educational programs are to:
>
> - use contemporary communication technologies to provide learning opportunities for students, whether on- or off-campus, in the workplace or at home;
> - provide flexible learning opportunities for students to overcome barriers of distance, location and circumstance;
> - provide opportunities to students with diverse backgrounds and relatively wide ability ranges; and
> - provide opportunities for those students who, because of social, cultural, economic and geographic factors, have particular needs and to whom Deakin has been traditionally responsive.
>
> In moving to a more flexible open-campus learning approach, Deakin seeks to utilise the full range of learning strategies available through interactive technologies. Deakin's approach to flexible open-campus learning is one in which the interaction between teacher and learner, and the place, time, modes and pace of study are determined as flexible responses to particular mixtures of the circumstances of the teacher and the learner, the subject matter and the learning context.

By 2008 (Deakin University, 2008a, p. 5), this had become:

> Deakin University's teaching and learning agenda dictates a new approach to the integration of traditional classroom teaching, distance education and online education in ways most appropriate to the needs of its diverse student cohorts and the changing student environment. Deakin's vision of an integrated approach to flexible education is an environment which includes, where appropriate, choice in:
>
> - the time (including flexible entry and exit points) at which study occurs;
> - the pace at which the learning proceeds;
> - the place (both physical and virtual) in which study is conducted;
> - the content that is studied;
> - the learning style adopted by the learner;
> - the forms of assessment employed;
> - the option to collaborate with others or to learn independently;
> - how teaching is staffed; and
> - the mix of the above used in any given course or unit.

The development of Deakin's vision of flexible education mirrors the trend in the national policy discourse over the same period from one of concern with equity and access in higher education, to one that focuses on responding to student desires using a palette of options of flexibility. While 'Equity and access for individuals and groups who might not otherwise enjoy the benefits that flow from participation in higher education' (Deakin University, 2008b, p. 3) is one of Deakin's current 'core commitments', matters of equity and access are now notable by their absence from the current vision of flexible education. Although flexible education features in the current university teaching and learning plan, the university currently has no policies specifically relating to flexible education.

In Australia the standard entry into professional engineering practice is via the completion of a four year Bachelor of Engineering (BE) undergraduate program. Prior to 1983, Deakin offered a conventional on-campus BE program until funding was withdrawn by the government of the day. Following a period of absence, Deakin proposed to offer new engineering programs based on 'flexible education', and after gaining both political and professional support, a new School of Engineering and Technology was constituted in 1991, with commencing student enrolments beginning in 1992 (Briggs, 1995). The undergraduate programs were delivered on-campus, full-time for conventional entry students. Mature age students could study the programs off-campus and/or part-time, using print-based study materials supplemented by an array learning resources that varied by unit, including video presentations, home experimental kits, computer-aided learning packages and Internet-based laboratory experiments. More recently, equipment installed in some classrooms has permitted recording of the audio and/or video of on-campus lectures for later download by students. The program curriculum was developed to be modular, permitting part-time students to study at a less than full-time pace (Palmer, 2001). Some aspects of flexibility of the Deakin engineering programs are considered in more detail below.

Flexibility in time (including flexible entry and exit points)

While off-campus students might exercise significant control over the time at which they study, all students must conform to a semester timetable that includes fixed dates for assignment submission, mandatory laboratory work and sitting examinations. A modular curriculum allows students to exercise some control over the sequence of their studies, and provides for students to commence the program at the beginning of each semester. However, this flexibility is constrained by prerequisite requirements and unit semester

availability – most engineering units are offered in only one semester each year. In 2008, Deakin implemented a trimester system, elevating a truncated summer semester to have the same status as the other two semesters by shortening the teaching period to twelve weeks and removing the exam preparation week. One of the purported benefits was flexibility for students to accelerate their programs using the third study period in the year. In practice, in the first two years of the trimester system (2008-2009), the School of Engineering offered no undergraduate study units during the third trimester.

Flexibility in pace

At the program level, students can accelerate their studies (or catch up on failed/missed units) using the summer trimester, but, as noted, for engineering this is a theoretical possibility only. Students with a good academic record may be permitted to enrol in more than a full-time load (four units per semester). Part-time enrolment can be used by students to fit study around work, family or other commitments, but this extends the time period to complete a degree. If a student is in receipt of government study support, they must maintain at least a 75 percent full-time study load, or they may lose their funding. The university sets a maximum candidature rule for students which places a limit on program completion time. For a BE, regardless of pace of study, the maximum candidature period is nine years. Students whose pace of study progress puts them at risk of not meeting the maximum candidature rule may be expelled from the program.

At the semester/unit level, there are only limited options for varying study pace. Due dates for assessment items are essentially fixed, with limited scope for negotiation through the granting of special consideration for students in difficult circumstances. The lecture timetable for a unit is essentially fixed. Students might elect to study at a different pace through the semester, but may find themselves ahead or behind key learning activities or dates that are premised on the pre-determined class timetable.

Flexibility in place

While on-campus enrolled students are expected to attend classes scheduled in a timetable, off-campus students have flexibility in where they undertake their study using print, online and other learning resources. In engineering education, the need to expose students to laboratory equipment remains an issue for off-campus study, generally requiring off-campus students to attend on-campus laboratory sessions. The use of Internet-based, remotely-controlled laboratory equipment for experimental work is possible, but is expensive to develop and maintain. In addition to required on-campus attendance for essential practical work, in Australia, the engineering professional body that accredits undergraduate programs (Engineers Australia) requires that off-campus students attend mandatory on-campus sessions of two weeks for each full-time equivalent year of their program (Palmer, Bray, & Hall, 2008).

Too much flexibility in place of study can be problematic. In the initial phase of the new School of Engineering and Technology, on-campus students (primarily direct from secondary school) were provided with the off-campus study materials and no lectures were offered, with tutorials being the only direct contact with teaching staff. Very soon, on-campus students demanded that lectures be run – they wanted more personal contact. The availability of flexible learning resources has also caused problems when off-campus students with no prospect of completing the mandatory attendance requirements nevertheless enrol in the program, for example, students currently incarcerated.

Flexibility in content

The BE program at Deakin contains 32 units of study, all prescribed except for four elective units which students may elect to study from any on offer, subject to program rules about minimum and maximum numbers of units from particular year levels. In response to feedback from the professional body that the program needed more technical depth, the engineering program now specifies two specialist engineering units as 'highly recommended electives'. The learning objectives, content, teaching methods and assessment for all units are specified in advance, though some assessment tasks that involve research elements may permit students some choice in the topics that they study. Students may enrol in a double degree program that combines engineering with a limited range of other discipline areas, but the need to fit the core of both programs into a five year period results in the loss of all elective unit choices.

Flexibility in learning style

With learning objectives, content, teaching methods and assessment for all units specified in advance, the options for variation in learning style are limited. The existence of print resources for all units, and the availability of these study guides to on-campus students provides options for students whose learning preference is reading. Where available, recorded lectures provide support for learners with a preference for listening. For students with disabilities, the central university Disability Resource Centre facilitates access to accessible course materials, alternative assessment arrangements, assistive technology, adaptive technology laboratories, etc.

Flexibility in assessment

With assessment details for all units specified in advance of the semester, there is limited scope for flexibility. As noted previously, certain types of assessment permit students to select a topic to research and report on. There is an institutional equity requirement for 'comparability of assessment' between all student groups enrolled in a unit. In practice, this is most easily achieved by making assessment identical for all modes of study, easing the unit administrative and marking burden, but doing so at the expense of optimising the assessment to best match the study mode.

Flexibility in collaboration

While off-campus students are free to study independently, it is not possible to complete the program in isolation. Working productively in a team environment is a graduate attribute that is specified both by Deakin University and Engineers Australia. The program has to contain instances where students are required to work collaboratively. Where group work is designed in as part of an assessment task, the comparability of assessment policy generally means that the group work requirement applies to all students. Advances in electronic communication technologies mean that it may be possible for students to collaborate at a distance.

Flexibility in staffing

While not directly related to students, staffing issues nevertheless impact on the student experience. At an institutional level, the introduction of a trimester system is as much about increasing the productivity of staff and other resources as it is about increasing opportunities for students to study. As noted above, this is yet to translate into any additional unit offerings for BE students. All Australian universities use casual (non-tenured) academic staff in teaching. These staff are normally paid only for their class contact hours, and not for preparation or extra student consultation time. Deakin reports that about 20 percent of its academic staff are casual, on the basis of 'full time equivalent' (FTE) employment. It is known that FTE figures understate the actual number of casual academic staff, that in

Australia 40-50 percent of teaching is performed by casual staff, and the poor funding and development of casual staff negatively impacts on the student learning environment (Percy, et al., 2008).

Conclusion

The range of rationales that underpin conceptions of flexible education, and the re-making over time of the official meaning of flexibility in national education policy, have led to the point where flexibility might be found, or be required, in nearly every aspect of Australian higher education. Such an all-encompassing conception is often mirrored in institutional rhetoric and policy regarding flexibility, sometimes implying that an expansive palette of combinations of flexibility is available to students. The official definition of flexibility may be stretched so thinly as to offer little of substance to staff charged with taking tangible action to operationalise management policy.

This paper concludes that the real meaning of flexible education emerges in and from the context-dependent lived experience of teachers and students engaged in the endeavour of flexible teaching and learning in their specific discipline milieu. The need to comply with a range of internal policy requirements (often with no explicit connection to flexible education) and a range of requirements imposed by external stakeholders (such as program accrediting professional bodies) enforces practical boundaries on flexibility. The explicit choices made by academic staff in the design and operation of their learning environments also crystallise many of the possible options into real limits on flexibility. Flexibility is often presented as a good in its own right, however there are often trade-offs required in and between aspects of flexibility that mean that the various dimensions of flexibility are not fully independent. Pressing a generic policy template for flexibility, or a model distilled from one specific context, onto a different teaching and learning situation may not be productive or possible.

References

Arger, G. (1993). Distance Education in Asia and the Pacific: Australia. In H. Kato & S.-Y. Wong (Eds.), *Distance Education in Asia and the Pacific: Country Papers* (pp. 1-13). Paris: United Nations Educational, Scientific and Cultural Organization.

Bigum, C., & Rowan, L. (2004). Flexible learning in teacher education: myths, muddles and models. *Asia-Pacific Journal of Teacher Education, 32*(3), 213 - 226.

Bradley, D., Noonan, P., Nugent, H., & Scales, B. (2008). *Review of Australian Higher Education - Final Report*. Canberra: Commonwealth of Australia.

Briggs, H. (1995, September 1995). *Towards student-centred engineering education at Deakin University.* Paper presented at the 12th Biennial Forum of the Open and Distance Learning Association of Australia, Vanuatu.

Casey, J., & Wilson, P. (2005). *A practical guide to providing flexible learning in further and higher education*. Glasgow: Quality Assurance Agency for Higher Education Scotland.

Chen, D.-T. (2003). Uncovering the Provisos behind Flexible Learning. *Journal of Educational Technology & Society, 6*(2), 25-30.

Collis, B., & Moonen, J. (2001). *Flexible learning in a digital world : experiences and expectations*. London: Kogan Page.

Dawkins, J. (1988). *Higher education: A policy statement, White Paper*. Canberra: Australian Government Publishing Service.

Deakin University (1995). *Flexible Teaching and Learning at Deakin University*. Geelong: Centre for Course Development, Deakin University.

Deakin University (2008a). *Deakin University Functional Area Plan - Teaching and Learning 2008*. Geelong: Deakin University.

Deakin University (2008b). *Deakin University Strategic Plan - Delivering Effective Partnerships 2008*. Geelong: Deakin University.

Department of Employment Education Training and Youth Affairs (1998). *Learning for life - Final report: Review of Higher Education Financing and Policy*. Canberra: Australian Government Publishing Service.

Errington, E. (2004). The impact of teacher beliefs on flexible learning innovation: some practices and possibilities for academic developers. *Innovations in Education and Teaching International, 41*(1), 39 - 47.

Higher Education Management Review Committee (1995). *Report of the Committee of Inquiry / Higher Education Management Review*. Canberra: Australian Government Publishing Service.

Holzl, A. (1999). Flexible Learning: Can we really please everyone? *Educational Technology & Society, 2*(4), 10-16.

Jevons, F. R. (1984). Distance education in a mixed-mode institution: Working toward parity. *Distance Education, 5*(1), 24-37.

Kirkpatrick, D. (1997). Becoming flexible: contested territory. *Studies in Continuing Education, 19*(2), 160 - 173.

Kirkpatrick, D. (2001). Staff development for flexible learning. *International Journal for Academic Development, 6*(2), 168 - 176.

Le Grew, D., & Calvert, J. (1998). Leadership for open and flexible learning in higher education. In C. R. Latchem & F. Lockwood (Eds.), *Staff development in open and flexible learning* (pp. 3-11). London: Routledge.

Lindberg, J. O., & Olofsson, A. D. (2006). Individual and flexible: Working conditions in the practice of Swedish distance-based teacher education. *International Education Journal, 7*(5), 699-708.

Ling, P., Arger, G., Smallwood, H., Toomey, R., Kirkpatrick, D., & Barnard, I. (2001). *The Effectiveness of Models of Flexible Provision of Higher Education - 01/9*. Canberra: Department of Education, Training and Youth Affairs.

Marginson, S., & Considine, M. (2000). *The enterprise university: power, governance and reinvention in Australia*. Cambridge; Melbourne: Cambridge University Press.

Mayes, T. (2006). *Enhancing practice - Flexible Delivery - An overview of the work of the Enhancement Theme 2004-06*. Gloucester: The Quality Assurance Agency for Higher Education.

Morrison, L., & Pitfield, M. (2006). Flexibility in initial teacher education: Implications for pedagogy and practice. *Journal of Education for Teaching, 32*(2), 185-196.

National Board of Employment Education and Training (1992). *Changing patterns of teaching and learning: The use and potential of distance education materials and methods in Australian higher education - Commissioned report 19*. Canberra: Australian Government Publishing Service.

Nelson, B. (2003). *Our Universities - Backing Australia's Future*. Canberra: Commonwealth of Australia.

Nicoll, K. (1997). 'Flexible learning' - unsettling practices. *Studies in Continuing Education, 19*(2), 100 - 111.

Nicoll, K. (1998). "Fixing" the "Facts": flexible learning as policy invention. *Higher Education Research & Development, 17*(3), 291 - 304.

Nicoll, K., & Chappell, C. (1998). Policy Effects: "flexible learning" in higher education and the "de-differentiation" of the vocational sector. *Studies in Continuing Education, 20*(1), 39-50.

Normand, C., & Littlejohn, A. (2006). *Enhancing practice - Flexible Delivery - A model for analysis and implementation of flexible programme delivery*. Gloucester: The Quality Assurance Agency for Higher Education.

Normand, C., Littlejohn, A., & Falconer, I. (2008). A model for effective implementation of flexible programme delivery. *Innovations in Education and Teaching International, 45*(1), 25-36.

Nunan, T. (1996, 8-12 July). *Flexible Delivery - What is it and why is it a part of current educational debate?* Paper presented at the Higher Education Research and Development Society of Australasia Annual Conference, Perth.

Palmer, S. (2001). Engineering flexible teaching and learning in engineering education. *European Journal of Engineering Education, 26*(1), 1-13.

Palmer, S., Bray, S., & Hall, W. (2008). What is the on-campus experience? Engineering student study and work. *International Journal of Engineering Education, 24*(4), 802-810.

Percy, A., Scoufis, M., Parry, S., Goody, A., Hicks, M., Macdonald, I., et al. (2008). *The RED Report - The contribution of sessional teachers to higher education*. Strawberry Hills, New South Wales: Australian Learning and Teaching Council.

Peters, O. (2003). Models of open and flexible learning in distance education. In S. Panda (Ed.), *Planning and Management in Distance Education* (pp. 15-27). London: Kogan Page.

Sappey, J. (2005, 9-11 February). *The commodification of higher education: Flexible delivery and its implications for the academic labour process.* Paper presented at the Reworking Work - AIRAANZ 19th Conference, Sydney.

Taylor, P. G. (2000). Changing expectations: Preparing students for flexible learning. *International Journal for Academic Development, 5*(2), 107 - 115.

Willems, J. (2005). Flexible Learning: Implications of "when-ever", "where-ever" and "what-ever". *Distance Education, 26*(3), 429 - 435.

Good practice in online education, learning management system and open source software use in higher education

The purpose of this literature review is to report on the current literature of good practice in online education especially in relation to learning management systems (LMS), including advantages and disadvantages of open source software use in higher education. It has been prepared to inform the Institute of Teaching and Learning's Future of Flexible Education project, being undertaken to define the future of flexible education at Deakin.

The Institute of Teaching and Learning is sharing the literature review with the Teaching and Learning Stream of the LMS review being managed by Callista as a potentially useful document.

Good practice in online education

Kim and Lee (2007) present findings of a study into developing an effective model for assessing learning management systems. The purpose of the model is to examine appropriateness of systems to sustain the educational experience of online learning, as opposed to concentrating on operational elements and functionality of the learning management systems themselves. They suggest the following as essential elements for determining whether an LMS is beneficial to learners: "suitability of design in screen and system, easiness of course procedure, interoperability of system and suitability of academy administration, easiness of instruction management and appropriateness of multimedia use, flexibility of interaction and test and learner control, variety of communication and test types, and user accessibility" (Kim & Lee 2007, p.291).

Vrasidas (2004) examines educational requirements relating to learning management systems, and requirements for effective online teaching. Criticisms of learning management systems reported by Vrasidas (2004) include inhibition of constructivist teaching and learning approaches in processes that "replicate the sterile traditional F2F instruction" (Firdyiwek 1999 and Marra and Jonassen, 2001 cited in Vrasidas 2004, p.912). Other issues included difficulties with usability and customisation; inadequate levels of interoperability with alternate LMS and reusability; and expense of the system (Avgeriuo et al. 2002, cited in Vrasidas 2004). Vrasidas (2004) suggests learning management systems must provide tools to enable the following practices : "learners to represent knowledge in multiple ways"; "authentic assessment"; "students to build knowledge artefacts to represent their learning"; "learners to visually express and construct meaning"; and "communication tools to allow learners and teachers to seamlessly interact" (Vrasidas 2004, p.912).

Kelly (2008) outlines a consultative process undertaken by the University of Queensland, in developing criteria for the purpose of evaluation and choice of an online collaboration software product which ultimately was decided to be Moodle. The stakeholders had as the basis of their selection criteria the belief that "learning is a complex collaborative process based on constructivist philosophies and active learning methodologies" (Kelly 2008, p.110) and summarised their selection criteria in terms of identifying the following supporting features: "student-student synchronous collaboration"; "remote students ability to communicate with their teacher and their class"; and "the simplest interface and is easiest to use" (Kelly 2008, p.109).

Watson and Watson (2007) argue to appropriately accommodate education in the Information Age, an LMS should "assess learners' current knowledge and skill work, work with teachers and learners to identify appropriate learning goals, identify and sequence instruction appropriate for the individual learner, assess learner performance products, store evidence of attainments, support collaboration and generate reports to provide information to maximise the effectiveness of the entire learning organisation" (Watson & Watson, 2007, p.31) .

Steel (2007) reports on a research study at an Australian university to obtain student responses and opinions on their experience of existing and proposed IT services based on the learning management system currently in operation (Blackboard version 6.3) where much of the feedback related to how effectively the system was used by their teachers. Students indicated they were mindful of the relevance of the LMS to the effectiveness of their learning, and while they provided constructive feedback on using the system, they expressed difficulty dealing with "less technically competent lecturers who could not use the system well" (Steel, 2007, p.947). Students also offered feedback on aspects of educational design relating to "consistency of placement of items in the system and of menus and other navigational items" (Steel, 2007, p.947). They distinguished between issues of poor design initiated by the lecturer and those ascribed to the system itself, and appreciated the availability afforded by placement of lecture notes and PowerPoint presentations on the LMS. Most enjoyed the effectiveness of communication through discussion boards, but had an expectation that additional LMS features would also be utilised by their lecturers (Steel 2007).

Heaton-Shrestha et al. (2009) in reporting on the role of a virtual learning environment on student retention in higher education, suggest the use of Blackboard assisted the retention of students through "its enhancement of academic integration: it accommodated learning style well, helped increase confidence and students' sense of control, and enhanced the student experience by providing support from the institution" (Heaton-Shrestha et al. 2009, p.5).

The issue of accessibility for students with disabilities in online learning is examined by Gerrard (2007) who reports a UK study of undergraduate students with disabilities using Blackboard. Beneficial ways in which Blackboard could be utilised for students with disabilities were suggested including maintaining simplicity on the site, eliminating areas and tools not used; developing a uniform approach to site development to aid navigation; and using colours and fonts in a consistent manner with disability guidelines (Heaton-Shrestha et al. 2009). Students provided feedback that Blackboard was not difficult to navigate especially with assistance of supportive software such as JAWS, and that studying with Blackboard improved their classroom learning as "an extremely valuable tool which offered them flexibility and a dependable resource" (Gerrard 2007, p.203). It was also noted that improved pedagogical practices established to assist students with disabilities are enhancements of sound teaching and learning approaches which will also often advantage the entire student cohort (Gerrard 2007, p.203).

Staff preferences in relation to online learning environments and online teaching practices

Errington (2004) places teachers' attitudes in a central role in developing innovative flexible learning practices in higher education, noting that teachers' notions of flexible learning are predisposed by their pedagogical values (Mar & Mark, 1998 cited in Errington 2004, p.41). Errington (2004) emphasizes that to concentrate on economic or technological solutions is to

ignore the importance of teacher attitudes. Teachers from New Zealand research articulated the significance of the following issues relating to teaching online: “how to make students more visible on Internet-delivered courses; how to personalise tutor and student involvement; how to engage students in more interactive learning; how to diversify and pace learning activities/tasks; and how to develop effective strategies for learning reinforcement, review and reflection” (Errington 2004, p.41); as well as “losing ownership of their learning materials when placed on the World Wide Web, the validity and reliability of learning assessment, and the potential lack of ‘real’ contact with students” (Errington 2004, p.41).

McGill and Hobbs (2007) reporting on a study of the use of WebCT in teaching and learning at a Western Australia university, note at the time of writing there was little published information on the utilisation of virtual learning environments (VLE) by teachers nor how their implementation affects the learning of students. However McGill and Hobbs (2007) concur with Errington (2004) in reporting research of Pajo and Wallace (2001) that effective introduction of educational technology is dependent on to what degree teachers acknowledge its usefulness. Their study concluded “students perceived that the VLE had higher impacts on their learning compared with instructors’ perceptions regarding their teaching” (McGill & Hobbs 2007, p.191), and that although teachers felt they had significant support with using the VLE they may remain sceptical of the significance of VLEs in their teaching practice (McGill & Hobbs 2007). They speculated on the possibility that “some instructors may not make effective use of the VLE as friction exists between their epistemological beliefs and their perceptions of how the technology supports learning” (Hornick et al. 2007, cited in McGill and Hobbs 2007, p.199). McGill and Hobbs (2007) concluded academic support with VLEs should concentrate on “how the VLE can be used to support different models of learning, rather than the technology itself” (McGill & Hobbs 2007, p.199).

Suri and Schuhmacher (2008) report on a survey conducted in the faculty of IT at Monash University, Australia, where staff impressions of open source virtual learning environments Moodle 1.8 and Sakai 2.4 were examined alongside Blackboard Vista 4. Unfavourable responses to the latter two systems resulted in the reviewing of Moodle which was regarded as a better system than Blackboard (Suri & Schuhmacher 2008). Most staff favoured an open source VLE to a proprietary VLE; consequently the university was at the time of writing considering the institution of an open source system to replace the proprietary one (Suri & Schuhmacher 2008). The majority of staff preferred Moodle for the following features: “ease of accessing the system”; “overall ease of use”; “user-friendly interface”; “context-sensitive help”; “overall reliability of the system”; “presenting learning materials”; “ease of uploading the resource files”; and “ease of linking the files appropriately”; “creating a group project”; “designing a quiz”; “giving feedback to students”; “creating an assignment”; “opportunities for students to give peer feedback”; “marking a group project”; and “marking an assignment”(Suri & Schuhmacher 2008, p.1004).

Evidence of staff preferences in relation to online learning environments and online teaching practices was found in the literature in a range of disciplines in higher education. Wang and Chen (2009), report on the development of criteria for assessing the appropriateness of synchronous learning management systems (SLMS) for distance language education in a study that evaluated the SLMS ‘3C’, developed at the Sun Yat-Sen University in Taiwan, reported to be capable of offering all features present in Blackboard/WebCT and Moodle, including videoconferencing (Wang & Chen 2009). An important issue in evaluation of such a system included system capability to deliver excellent synchronous tools in the areas of spoken and visual communication (Wang & Chen 2009) as such features are regarded an essential element for the specific group of learners “where native speakers find support for and develop control of their learning in interactions and exchanges with peers, learners,

teachers, and native speakers" (White, 2006, quoted by Wang & Chen, 2009, p.13). Consistent with current communicative language and distance learning pedagogies, as well as functional features of current synchronous learning management systems, the researchers propose an appropriate SLMS should be able to provide: "asynchronous interaction via multimedia forums"; "the support of cyber face-to-face interaction through online synchronous classroom"; "the support of small group cyber face-to-face interaction through multiple online synchronous classroom"; and "usability" (Wang & Chen 2009, p.4), which includes accessible design features and "flexibility in terms of instructional and pedagogical design" (Wang & Chen 2009, p.8).

Kim and Hannafin (2004) argue open Web-based learning provides an apparently highly suitable model for education of scientific inquiry (Kim & Hannafin 2004, p.3), and raise a number of issues which need to be addressed in the practice of scientific online learning, including the need for scaffolding of student learning to encourage higher order cognitive skills; appropriate "design frameworks both sufficiently inclusive to generalize and apply to a specific context"; and the availability of "research-based online scientific inquiry systems" (Kim & Hannafin, 2004, p.3). They describe the Web-based Interactive Science and Engineering (WISE) learning tool, an "open-ended learning environment" (Kim & Hannafin 2004, p.8) as robustly based in social constructivism, which emphasizes "cognitive apprenticeship, scaffolded knowledge integration, and lifelong science" (Kim & Hannafin 2004, p.8) as essential teaching and learning principles (Kim & Hannafin 2004), in a system which "provides reliable ways of building inquiry-oriented, open-ended learning environments, aligning psychological, pedagogical, technological, cultural, and practical foundations to its online scaffolding" (Kim & Hannafin 2004, p.8). Kim and Hannafin (2004) emphasize the importance of teaching and learning communities driving the requirements for technology design and systems that reflect their pedagogical principles, stating high-quality educational design is unique to a particular environment and dependent on context (Kim & Hannafin 2004).

Reeves and Reeves (2008) outline United States research on developing and assessing online courses, providing a model depicting ten "pedagogical dimensions of online learning environments" (Reeves & Reeves 2008, p.48) reported to be effective in health and social work education. Motivated by the observation that online courses are often hastily developed without sufficient consideration of teaching and learning principles or appropriate educational design, they introduce an online teaching model which emphasizes "constructivist pedagogical philosophy"; "cognitive learning theory"; "general goal orientation"; "authentic task orientation"; "intrinsic source of motivation"; "facilitative teacher role"; "integrated metacognitive support"; "integral collaborative support"; "respectful cultural sensitivity"; and "open structural flexibility" (Reeves &Reeves 2008, p.48).

In developing a theoretical model for online learning, Richards (2006) argues that a conflict of technological and teaching and learning paradigms (Richards 2006, p.242) exists in the utilisation of information and communication technologies as either enhancing, or substituting for classroom teaching and learning, and that often teachers in higher education find it difficult to effectively implement these technologies. He proposes a holistic model of online learning that assimilates technological and pedagogical elements, and acknowledges that pedagogical concerns must drive the various aspects of technological design (Richards 2006). Richards (2006) states the task of effectively "linking the design of educational content to the learning process was recognized as one of providing learners with interesting, relevant and transformative contexts to link reflection and practice" (Richards 2006, p.252), and argues his model acknowledges the manner in which online learning tasks offer a focal point for design "contextualizing learning as an action-reflection 'performance' and process on one hand, and as the key to generating the kinds of virtual senses of learning community

and environment which might characterize effective learning as knowledge construction in both face-to-face and online or mediated contexts, on the other"(Richards 2006, p.251).

Learning management system plug-ins and system additions

The capacity to add plug-ins and to modify existing systems is an important consideration in the choice and use of learning management systems in higher education (Young 2008). In recent developments in 2008, Blackboard announced the development of an updated version of its CMS to work concurrently with open-source products, an example being a partnership with Iowa State University to create the learning environment connector for Moodle (Young 2008). The purpose of this feature is to enable students to access course information developed with Moodle in Blackboard's course management system (Young, 2008) with the rationale for this decision by the University presented as the benefit of University staff and departments having choices in which system suits them best (Young 2008). Some commentators have articulated suspicion towards Blackboard's attempts to work with open source systems given their legal actions instigated towards one major competitor (Young 2008).

Lakhan and Jhunjhunwala, (2008) report Moodle has the capacity to utilise many plug-ins to augment currently existing tools including MySQL and PostreSQL databases while work is being completed to ensure compatibility with Oracle, Microsoft SQL Servers and other databases. Wheeler (2007) reports that while utilising open source signifies downloading the software is cost free, "installation, integration with other systems (e.g., the registrar or library system), and local customisation (e.g., skins, logos, TRLs) require some support expertise" (Wheeler 2007, p.56) and may need to employ staff or consultants to deal with these issues (Wheeler 2007).

Open source software Advisory Service (OSS Watch) reported a survey indicating open source software in higher education in the UK regarded as a significant alternative to proprietary software (Educause 2006), with an increase in the use of Moodle being especially noteworthy. Unfortunately relatively small numbers of universities pooled information on modifications they made to open software, often with universities having policies mandating that innovations are owned by the university and consequently are not shared with wider groups of open source users (Educause 2006).

Discussion of community building, social presence, partnerships and work integrated learning

Heaton-Shrestha et al. (2009) also reported the use of Blackboard had not been attributed to being especially helpful in increasing flexibility in learning for students or interaction and networking within peer groups. Apart from a minority of students it did not represent an essential means of social connection, nor did it provide an important way of students developing groups to provide mutual support (Heaton-Shrestha et al. 2009). Explanations for this situation suggested were "the plethora of avenues for social interaction in blended-learning courses, and preference for these alternatives (non-university webmail, chatrooms, mobile phones and face-to-face meetings)" (Heaton-Shrestha et al. 2009, p.5). Heaton-Shrestha et al. (2009) also argue the flexibility offered by the virtual learning environment was not taken to full advantage by students engaged in blended learning environments, with most of the students utilizing the online environment between classes and during attendance on campus despite the fact they could access it beyond these conditions. Students did however provide feedback that that the online learning environment had contributed to

enhanced communication between teaching staff and students (Heaton-Shrestha et al. 2009).

Craig (2007) examines ways in which developing technologies are impacting on the future learning content management systems in higher education, and predicts the availability of innovative, easy to use features in Web 2.0 may indicate current LMS will become outdated. He suggests as the web quickly transforms itself, it will be crucial that academic staff and instructional designers utilise the features of Web 2.0 as well as "an open collaborative approach to reshaping the nature of our elearning environments" (Craig 2007, p.160). Craig (2007) predicts upcoming learning management systems will consist of vastly altered functions as indicated in the amalgamation of Blackboard and WebCT and development of open source products, as well as a cohort of students who will potentially have the expectation of reactive and innovative learning modes "just as they are quickly moving beyond the traditional institutional environment to create their own virtual social realms, they may one day create and utilize their own learning tools and communities" (Craig 2007, p.160).

References to work integrated learning in the literature were sparse, however Shurville et al. (2008) in comparing Moodle to comparable products quote Winter (2006): "Moodle appears to be more engaging, has better socialisation features than its competition" (Winter 2006, p.29 quoted in Shurville et al. 2008, p.80), and suggests it is a preferred product for online learning based in New Zealand workplaces where the curriculum has a learner centred approach (Shurville et al. 2008).

E-learning vision and teaching and learning principles shaping open source software

A search of the literature reveals a range of information regarding the pedagogies underpinning the use of open source software applications in higher education including those used as learning management systems (Williams van Rooij 2007), which are frequently stated to be based on constructivist principles (Koohang and Harman 2005).

Dougiamus (2003) creator of the open source system Moodle outlines the social constructivist pedagogies underlying its development as an open source course management system. He specifically identifies the theories of "social constructivism" and "social constructionism" as influential in shaping the development of Moodle in their emphasis on "collaborative discourse (Amundsen 1999: Bonk & Cinningham 1998: Johassen, Peck & Wilson 1999) and the individual development of meaning through construction and sharing of texts and social artefacts" (Ernest 1995; Gergen 1995; Papert 1991, quoted in Dougiamus 2003, p.172). These theories are linked to the notion of learners performing the role of apprentices in "communities of practice" (Lave & Wenger 1991 quoted in Dougiamus 2003, p.172). Dougiamus (2003) stated the intention of his research in developing Moodle was also to encourage teachers to exemplify practice outlined by Mezirow (1991 cited in Dougimas 2003) of "transformative learning" which require them to assist students to explore opinions and outcomes of their underpinning belief systems, emotions and behaviour, examine other modes of thinking and assess the legitimacy of these ideas through reflection with others. Dougimas (2003) noted a gap in research into the motivation of genuine commitment of learners in interactive online discussion within such a framework, so embarked on pursuing this line of inquiry through a process of developing software with a theoretical underpinning, "evolving theory and evolving software" (Dougimas 2003, p.172).

Virkus (2008) argues the evolution of open source, social networking and Web 2.0 technologies has provoked revaluation of frameworks of e-learning, and embody the philosophy of a 'community of practice' as outlined by Wenger (1998, cited in Virkus 2008), where students may develop common interest groups, pool resources, study with one another, create and contribute to common content, as well as innovate and re-configure existing materials depending on their requirements (Virkus 2008). This offers a contrast to conventional e-learning practices which have tended to replicate earlier pedagogical models (Guntram 2007, cited in Virkus (2008). Virkus (2008) reports on the use of an open source learning management system 'IVA' (derived from FLE3) in an Estonian university based on constructivist pedagogies from the "three Cs model: construction, context and collaboration" (Johansen, 1994, cited in Virkus 2008, p.269), where the system interface is composed of three sections providing separate areas to support various features: the 'WebTop' for creation of individual knowledge and reflective behaviour; "Bookshelf" for allowing "context for meaningful learning"; and "Workshops" for student discussion and teamwork (Virkus 2008, p.269).

Koohang and Harman (2005) explore the concept of open source as a "metaphor" (Koohang and Harman 2005, p.75) for e-learning as the basis for further exploration in the development of a future theoretical and practical research model of e-learning. They argue e-learning and open source have as their basis constructivist educational philosophy, which in turn has as its foundation "the pragmatism and instrumentalism that pervades John Dewey's theories of understanding as applied to learning" (Koohang & Harman 2005, p.75). Koohang and Harman (2005) draw similarities between constructivism, e-learning and open source that include the following characteristics: "collaboration"; "cooperation"; "exploration"; "higher order thinking skills"; "interdisciplinary learning"; "knowledge construction"; "controlled learning"; "problem solving"; and "social negotiation"(Koohang & Harman 2005, p.82). Other commonalities said to exist between constructivism, e-learning and open source are that of the ability to innovate according to altered conditions which may occur to the requirements of the user; the manner in which knowledge is developed through a process of active learning (Koohang & Harman 2005); knowledge created within an environment of a community of learners; while the experience of learning is individual and unpredictable as the material studied ultimately assumes a unique meaning for each individual who engages with it (Koohang & Harman 2005).

Atwell and Pumilai (2007) argue the proliferation of open content resources evolving from open source software will have significant impact on higher education pedagogy, and should be perceived as "mediating knowledge exchange and production rather than as a determining factor" (Atwell & Pumilai 2007, p.213). Using examples of social software such as wikis and blogs Atwell and Pumilai (2007) suggest instead of being "monolithic and vendor driven and designed applications, Web 2 and social software are based on the idea of 'small pieces, loosely connected' utilising commonly recognised standards and web services for linking ideas, knowledge, and artefacts" (Atwell & Pumilai 2007, p.213). Their impact is stated to be an agent for transforming the means by which we perceive the creation and organization of knowledge, "challenging both traditional taxonomies of knowledge based on disciplines and challenging the idea of 'expert knowledge' passed down to learners or consumers" (Atwell & Pumilai 2007, p. 213). open content and open education resources are also stated to have strong relationship with activity theory which enables: "an understanding of the role of tools in mediating knowledge development"; "us to understand the different communities with whom we seek to engage and that these communities may have different and contradictory rules and motivations"; and "emphasis on developmental needs in human practices and institutions and on new forms of practical activity and artefacts constructed by participants" (Atwell and Pumilai 2007, p.215).

Wheeler (2007) reports the teaching behaviours in open-source software environments reflect the understated but all-encompassing principles of the academic community. He suggests "in open source software, communities draw on the leverage of a shared core system without constraining the option for local add-ons to meet specific needs" (Wheeler 2007, p.54). Referring to the 'community source model' in the United States where a number of higher education institutions share their resources in an open source project it was found "an unexpected benefit has been the remarkable sharing and staff development across the communities. Institutions have freely shared training materials, support documents, tutorials, installation configurations" (Wheeler 2007, p.54), while the resultant community conferences were seen to enhance staff development.

The use of Moodle as an open source learning management system is reported to have had a significant effect on the New Zealand educational system as the most widely used LMS in higher education in New Zealand (Wyles, 2006). As well as being chosen for its technical features and adaptability, open source approaches were considered in New Zealand due to the requirement to provide access to a range of teaching and learning philosophies and varied "contextual interfaces with an emphasis on Te Reo Maori and Pacific Island cultural requirements" (Wyles 2006, p.3). Some of the higher education institutions concentrated on, "contextual interface development of the virtual learning environment, including cultural look and feel themes, creating technical help, pedagogical support files, and tutorial packages, in appropriate languages to assist learners and instructors become familiar with the e-learning environment created" (Wyles 2006, p.3).

Williams van Rooij (2007; 2009) suggests there is little evidence in the literature to thoroughly evaluate the degree to which use of open source software enhances effective online pedagogy. She argues the benefit of online learning is its capacity to encourage the development of constructivist learning settings (Domine cited in Williams van Rooij 2007), and suggests research of courses utilising WebCT or Blackboard has identified them as vehicles for "collaboration, the development of a strong sense of community, and the inclusion of constructivist strategies of collaborative learning into the instructional environment" (De Neui & Dodge, 2006: Gill, 2006; Iyer, 2003 cited in Williams van Rooij 2007, p.436). However it is acknowledged that while teachers can implement commercial course management systems in a constructivist way, factors including greater teacher work demands; inadequate assessment capacity; poor ability to encourage subjects requiring applied tasks; and the requirement for more refined community discussion tools than the current discussion features; detract from the success of those systems to promote this type of collaborative learning effectively (Papastergiuo, 2006 cited in Williams van Rooij 2007). Recommendations from a United States study examining the beliefs of decision makers regarding the value of open source compared to commercial software systems included the need for a thorough evaluation of the benefits of open source for supporting teaching and learning (Williams van Rooij 2007).

Coates (2005) reports at the time of writing his article there had been little research conducted on the effect of learning management systems on teaching and learning practices. He argues the important role LMS play in forming academics' online teaching paradigms, "LMS are not pedagogically neutral technologies, but rather, through their very design, they influence and guide teaching. As the systems become more incorporated into everyday academic practices, they will work to shape and even define teachers' imaginations, expectations and behaviours" (Coates 2005, p.27). He suggests less experienced teachers will develop their teaching expertise in an environment where such systems dominate the teaching environment and may have a significant influence on an individual's developing teaching practice. He suggests choosing an open source alternative in preference to relinquishing management of pedagogical substance to third party commercial systems may assist organisations to maintain the capacity to develop unique

content and functions of their learning management systems, instead of acquiescing to a situation where an LMS "may be homogenising the creation, style and ownership of pedagogical knowledge" (Coates 2005, p.32).

Advantages and disadvantages of open source software

Machado and Tao (2007) state that while Blackboard and WebCT are used by 80-90% of educational institutions that utilise learning management systems in the United States, open source learning management system products now exist which have no licensing expenses. Other benefits associated with the use of open source learning management systems are said to be the capacity to adapt the products and reuse them in the educational environment, and as innovative functions are developed, they can be incorporated into the users' current system as required at little expense (Machado & Tao 2007).

Pan et al. (2007) argue benefits in the use of open source may include lessening organisational IT system costs and assisting in the establishment of a "sustainable economy wherein co-developers' participation in code development is free" (Pan et al. 2007, p.3). Use of open source is also perceived to stimulate originality where "in an open source world, original ideas illuminate the receivers' world and provide the spark and motivation to others in the community or conversation to do better" (Pan et al. 2007, p.4). Citing Moodle as a frequently used open source software package developed to assist teachers and academics develop online educational programs (Moodle, 2005a: Wikipedia, 2005 cited in Pan et al. 2007), the package is described as being "free to download, use, modify, and even distribute and sell (under GNU General Public License), all with no license fee" (Pan et al. 2007, p.9).

Archambault et al. (2008) report that in an evaluation of the use of a range of course management systems in the College of Education at the University of Nevada Las Vegas the following advantages were observed for Moodle: "more customizable than Blackboard"; "course content can be organized in a weekly or topical fashion making it easier for students to access relevant information"; "help links are automatically embedded within every Moodle installation to offer teachers and students navigational support"; as well as the advantage of the system being developed in a pedagogical framework by an educator. Shurville (2008) argues Moodle is especially valuable to constructivist teaching and learning activities in its tools which incorporate blogs, chat database activities, forums, peer assessment, surveys and wikis.

In a study conducted in the United States comparing the effectiveness of Blackboard and Moodle to meet the teaching and learning requirements of teachers and students, it was reported students favoured Moodle, due to the package being easier to work with than Blackboard (75%), although it is also noted 65% of students believed their competency with learning management systems had assisted their adaptation to Moodle (Machado & Tao 2007). Barr et al. (2007) report on research that suggests New Zealand academics regard Moodle an effective LMS that encourages "higher order learning activities" Barr et al. (2007, p.135) due to "the degree of control this LMS gives them over the development and teaching of their programs". Participants of the outlined study found Moodle easy for inexperienced users but also provided scope for advanced users to use more complex techniques (Barr et al. 2007).

Disadvantages of open source software were also noted in the literature. Gozdiskowski and Chen (2007) report certain software is incompatible with open source; that proprietary software incorporates a wider range of features (Sinnet & Barr cited in Gozdiskowski & Chen

2007); and open source contains "vulnerabilities and security issues" (Gozdiskowski & Chen, 2007, p.1). Pan et al. (2007) argue the integrity of the open source product may often be susceptible to issues because source codes may be downloaded and adapted publicly, and redistributed without assurance the new code is free of problems. They also identify concealed cost as a disadvantage of using open source where often there exists no technical assistance when issues arise (Pan et al. 2007), and extra resources are required to maintain the product. Machado and Tao (2007) concur with the opinion that absence of technical support allocated to commercial learning management systems may be problematic for open source, and suggest issues may arise if the common base code is customized too significantly. In this situation, the capacity to upgrade to subsequent versions of the software may be impeded. Staff with specific knowledge of open source software is essential to install the software, which may necessitate recruitment or up skilling of current staff (Machado & Tao 2007). Shurville (2008) argues Moodle's failing in regard to flexibility is that it requires "resources for local development and support" (Shurville 2008, p.80) and is not as some may perceive it to be, a product with little cost.

Archambault et al. (2008) observe further disadvantages of Moodle stating the package is sometimes vulnerable to "exploits" and "hacks" (Archambault et al. 2008, p.5); a requirement exists to keep the open source updated, backed up and operating effectively; and staff may experience some discomfort in learning the use of a new product, particularly if they were accustomed to working with alternative systems. Archambault et al. (2008) also suggest the Moodle product and modules tend to be more difficult to install than other CMS and CMS modules (Archambault et al.2008).

Principle reasons why institutions are moving to open source software (in terms of teaching and learning and flexibility)

Gozdiskowski and Chen (2007) state that open source systems are developing popularity in higher education "because they have a much lower cost, can be more customized, make license management easier, and they are community-driven and community serving" (Gozdiskowski & Chen, 2007, p.1) compared to the expense of commercial learning management systems. They argue the speedy growth and community acceptance of open source products can lead to the creation of effective and reliable systems which measure up favourably to commercial software. Gozdiskowski and Chen (2007) argue "many open source projects appear to be highly organized and provide tool-support focused upon enhancing human collaboration, creativity, skill, and learning" (Gozdiskowski & Chen, 2007, p.1). This process can lead to the development of superior software compared to the conventional process where a limited number of programmers have access to the source code (Lawrie & Gacek, 2002 cited in Gozdiskowski & Chen, 2007).

Pan et al. (2007) in comparing higher education to "a 'greenhouse' for growing open source projects" (Pan et al. 2007, p.7), report higher education is beginning to welcome open source with ensuing development of innovative products (Abel, 2005: Wheeler, 2004 cited in Pan et al. 2007). These products predominantly appear in the form of open source course management systems, electronic portfolios, or student information systems uniquely created for higher education and at times in joint projects undertaken by a number of institutions. The authors reflect on the possible underlying philosophy of such projects motivating higher educational institutions to find open source attractive "perhaps such development efforts not only utilize the hard work, experiences, and thought power of these institutions but also the ethical models of higher education where the strong, collaborative communities of sharing and idea exchange are the norm, instead of hiding one's ideas from competitors (Abel, 2005)" (Pan et al. 2007). In referring to the use of Moodle in higher education Pan et al...

(2007) suggest one of its prime benefits compared to alternative systems lies in its firm basis in "social constructivist pedagogy" (Pan et al. 2007, p.9) evident in characteristics whose purpose is to "support role sharing, allow(ing) each participant to be a teacher as well as a learner" (Wikipedia, 2005 quoted in Pan et al. 2007, p.9).

Rationale for a university's choice to implement an open source learning management system is illustrated in a study reported by Stewart et al. (2007) where three learning management systems WebCT, LotusNotes and Moodle were trialled for suitability of use at Athabasca University Canada. Moodle was chosen due to its performance with an unambiguous lead according to various performance criteria examined by evaluators including: "flexibility in start and end dates for students enrolling in courses"; "support for paced and individualized study courses"; "affordability for students"; "accessibility for students with disabilities"; "access at different connection speeds" (Stewart et al. 2007, p.2); instructional design; systems administration functions; and teaching and learning criteria including "workable assignment drop box"; and "accommodation of XML and mobile device delivery" (Stewart et al.. 2007, p.2).

Williams van Rooij (2009) in reviewing United States literature from the disciplines of software engineering and education examines motivation for open software adoption, and suggests higher education institutions perceive open source software as a means to support both pedagogical and administrative requirements to provide benefits in the following areas: "social and philosophical"; "software development methodology"; "security and risk management"; "software adoption life cycle" and "total cost of ownership" (Williams van Rooij 2009, p.695).

References

Archambault , L, Oh-young, C, Rongratana, N & Levitt G 2008, 'A Look at Content Management Systems in a Higher Education Setting: Implementation Strategies, Experiences, and Future Implications', in G. Richards (Ed), *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare and Higher Education, AACE,* Chesapeake, VA, November 17, 2008 pp. 553-559.

Archambault, L, Oh-young, C, Rongratana, N & Levitt G 2008, 'A Look at Content Management Systems in a Higher Education Setting: Implementation Strategies, Experiences, and Future Implications', Power Point Presentation.

Attwell, G & Pumilia P 2007, 'The New Pedagogy of Open Content: Bringing Together Production, Knowledge, Development and Learning', *Data Science Journal*, vol. 6, pp. 211-219.

Barr, H, Clayton, J & Gower, B 2007, 'Faculty Response to the Implementation of an Open Source Learning Management System in Three Tertiary Institutions in New Zealand', *Computers in the Schools*, vol. 24, no. 3 / 4 pp. 125 -137.

Coates, H 2005, 'A Critical Examination Of The Effects of Learning Management Systems On University Teaching and Learning', *Tertiary Education and Management*, vol. 11, pp. 19-36.

Craig, E 2007, 'Changing paradigms: managed learning environments and Web 2.0', *Campus-Wide Information Systems,* vol. 24, no. 3, pp. 152-161.

Dougiamas, M & Taylor, P 2003, 'Moodle: Using Learning Communities to Create an Open Source Course Management System', in D Lassner & C McNaught (eds), *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 2003,* AACE, Chesapeake, VA, pp. 171-178, retrieved 8 October 2009, http://www.editlib.org/p/13739.

Educause Review 2006, *Tech Watch Information Technology in the News*, vol. 41, no. 5, pp.6-7.

Errington, E 2004, 'The impact of teacher beliefs on flexible learning innovation: some practices and possibilities for academic developers', *Innovations in Education and Teaching International*, vol. 41, no.1, pp. 39-47.

Gerrard, C 2007, 'Virtual Learning environments Enhancing the learning experience for students with disabilities', *Campus-Wide Information Systems*, vol. 24, no. 3, pp.199-206.

Gozdiskowski, M, Chen, W 2007, 'Open Source Software in Virtual University Development: An Overview' In C. Montgomerie & J. Seale (Eds.) *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications* 2007, Chesapeake, VA, June 25, 2007, pp. 603-605.

Heaton-Shrestha, C, May, S, & Burke, L 2009,' Student retention in higher education: what role for virtual learning environments'? *Journal of Further and Higher Education*, vol. 33, no. 1, pp. 83-92.

Kelly, G 2008, 'A collaborative process for evaluating new educational technologies',*Campus-Wide Information Systems,* vol. 25, no. 2, pp. 105-113.

Kim, M & Hannafin M 2004, 'Designing Online Learning Environments to Support Scientific Inquiry', *The Quarterly Review of Distance Education*, vol. 5 no. 1, pp.1-10.

Kim, SW & Lee, MG 2008, 'Validation of an evaluation model for learning management systems', *Journal of Computer Assisted Learning*, vol. 24, no. 4, pp. 282-294.

Koohang, A & Harnam K 2005, 'Open Source: A Metaphor for E-Learning', *Informing Science Journal*, vol. 8, pp. 75-86.

Lakhan, S & Jhunjhunwala K 2008, Academia has adopted open source software for some online learning initiatives because it addresses persistent technical challenges, *EDUCAUSE Quarterly*, vol. 31, no. 2, pp. 1-11.

Machado, M & Tao, E 2007, 'Blackboard vs. Moodle: Comparing User Experience of Learning Management Systems', *37th ASEE IEEE Frontiers in Education Conference*, Milwaukee, WI, October 10-13, 2007, pp. S4J-S4J-12.

McGill, T & Hobbs V 2007, 'How students and instructors using a virtual learning environment perceive the fit between technology and task', *Journal of Computer Assisted Learning,* vol. 24, no. 3, pp. 191-202.

Pan, G & Bonk 2007, ' The Emergence of Open-Source Software in North America', *The International Review of Research in Open and Distance Learning*, vol.8, no. 3, pp.1-18.

Reeves, P & Reeves T 2008, 'Design considerations for online learning in health and social work education', *Learning in Health and Social Care*, vol. 7, no.1, pp. 46-58.

Richards, C 2006, 'Towards an integrated framework for designing effective ICT-supported learning environments: the challenge to better link technology and pedagogy', *Technology, Pedagogy and Education,* vol. 15, no. 2, pp. 239-255.

Shurville, S, O'Grady, T & Mayall P 2008, 'Educational and institutional flexibility of Australian educational software', *Campus-Wide Information Systems*, vol. 25, no. 2, pp.74-84.

Steel, C 2007, 'What do university students expect from teachers using an LMS'? *Proceedings ascilite Singapore 2007*, Singapore, 2 December - 5 December, 2007, pp. 942-950.

Stewart, B, Briton, D, Gismondi, M, Heller, B, Kennepohl, D, McGreal, R & Nelson C 2007, 'Choosing MOODLE: An Evaluation of Learning Management Systems at Athabasca University', *International Journal of Distance Education Technologies,* vol.5, no. 32-27, pp.1-7.

Suri, H & Schumacher M2008, 'Open-source vs proprietary VLE: An exploratory study of staff perceptions', Poster, *Proceedings ascilite Melbourne 2008*, Melbourne, 30 Nov – Dec 3, 2008, pp. 1002-1006.

Virkus, S 2008, 'Use of Web 2.0 technologies in LIS education: experiences at Tallinn University, Estonia', *Program: electronic library and information systems,* vol. 42. No. 3, pp. 262 – 274 retrieved 6 October 2009, http://www.emeraldinsight.com/Insight/viewContentItem.do;jsessionid=930AF885856C08E66AF72E065FA88F90?contentType=Article&contentId=1735023.

Vrasideas, C 2004, 'Issues of Pedagogy and Design in e-learning Systems', *Proceedings of the 2004 ACM Symposium on Applied Computing,* March 14-17, 2004**,** pp. 911-915.

Watson, W & Watson S 2007, 'An Argument for Clarity: What are Learning Management Systems, What are They Not, and What Should They Become'? *TechTrends,* vol. 51, no. 2, pp. 28-34.

Wang Y, & Chen N 2009, 'Criteria for evaluating synchronous learning management systems: arguments from the distance language classroom', *Computer Assisted Language Learning*, vol. 22, no. 1, pp.1-18.

Wheeler, B 2007, 'Open Source 2010 Reflections on 2007', *Educause Review,* vol. 42, no. 1, pp. 49-67.

Williams van Rooij S 2007, 'Perceptions of Open Source Versus Commercial Software: Is Higher Education Still on the Fence?' *Journal of Research on Technology in Education,* vol. 39, no.4, pp. 433-453.

Williams van Rooij, S 2009, 'Adopting Open-Source Software Applications in U.S. Higher Education: A cross-Disciplinary Review of the Literature', *Review of Educational Research*, vol.79, pp. 682-701.

Wyles, R 2006, 'New Zealand Open Source Virtual Learning Environment Project - A Case Study in Achieving National Development goals using Open Educational Resources', *The Fourth Pan Commonwealth Forum of Open Learning Achieving Development Goals: Innovation, Learning, Collaboration and Foundations,* Jamaica, 30 October - 3 November, 2006, pp. 1-7.

Young, J 2007, 'Blackboard Connects With Software Competitors', *Chronicle of Higher Education*, vol. 55, no. 11, pp.15.

Part B: Empirical Research

Flexible education at Deakin University: A qualitative research report of a pilot study

Executive summary

The Deakin University Teaching and Learning Plan (2009) describes an integrated approach to flexible education consisting of choice in time, pace, place, content, learning style, assessment, collaboration and staffing. Employing this policy position as a backdrop, this study endeavours to define flexible education as enacted at Deakin University by identifying characteristics that are unique to Deakin including factors that enable and hinder the practice of flexible education. A purposively selected sample of thirty two teachers distributed across all Campuses and Faculties were interviewed and ten randomly selected students contributed to the study through two focus group interviews. All staff and student participants also responded to a questionnaire.

Eight key themes were identified from the research study as follows:

- Staff understandings of flexible education;
- Advantages of flexible education;
- Challenges to flexible education;
- Enablers and drivers of flexible education;
- Implications of providing flexible education;
- Student readiness for flexible learning;
- Students' understanding of flexible learning; and
- Staff use of technologies.

It was clear that staff participants' understanding of flexible education varied and their practice was greatly influenced by disciplinary requirements, student cohorts and industry requirements and obligations, to name a few. The capacity to adapt teaching approaches to suit learner needs, use a range of technologies for this purpose and blending learning options were part of their understanding of flexible education. They drew on the multiple dimensions of flexibility to facilitate the learning experiences of their students and accommodated aspects of flexibility according to their beliefs of what counted as good teaching.

Flexible education was valued for a range of opportunities and advantages it offered. It permitted educational provision for wide ranging student groups including off-campus, off-shore and working students. It allowed staff to work remotely, accommodated varying learning styles, wide ranging content, forms of delivery, and a selection of technological options for delivery. However, flexible education had its challenges. Among others, these included compliance requirements, staff workloads, resource demands and class sizes. Despite these challenges, staff participants recognised student needs, the enabling role of management, various forms of support and personal motivations as strong enablers in their provision of flexible education. Nevertheless, participants were also concerned about student readiness to manage flexible learning and its impact on study habits as well as their own workloads including the need to balance teaching demands and research productivity.

Student participants' understanding of flexible education was all encompassing: to have multiple forms of content, including materials offered in face-to-face sessions to be available online; quick responses to their queries on Deakin Studies Online (DSO), the University's learning management system (LMS) and very prompt feedback on assignments. Contrary to the importance they placed on flexibility in relation to place of study, students also wanted more face-to-face classes, perhaps paradoxically since staff also report that student attendance at on-campus classes is declining.

Technology, especially DSO featured prominently in the staff participants' practice of flexible education and connections were automatically made between flexible education and technology possibly because of the pivotal role of DSO at Deakin. However, it was also clear that participants had moved with the times to explore emerging technologies related to learning, and were keen to see the University mainstream them.

The study also revealed that flexible education has constraints in different parts of the University and that student demands for flexibility should be guided by strong pedagogic rationales. Also critical to the success of flexible education at Deakin were reliable, relevant support and resources within Faculties and across the University as well as a strong evidence base that would guide the University's flexible education agenda.

Project background

The purpose of this project is to document current understandings and teaching practices at Deakin University related to flexible education from the perspective of the teachers.

A total of thirty two Deakin University academic staff members representing all four Faculties and ten Deakin University students participated in the study which set out to define flexible education as enacted at Deakin University. Flexible education is complex, multidimensional and mostly includes the time and location of learning, the learning approach, the range of learning resources and delivery and is typically meant to empower the learner to select when, how and where to learn as suitable to that individual. The many variables make the implementation of flexible education complex in practice. Collis & Moonen (2001) define it as:

'. . . a movement away from a situation in which key decisions about learning dimensions are made in advance by the instructor or institution, towards a situation where the learner has a range of options from which to choose with respect to these key dimensions' (p. 16).

They express flexibility in four key areas: technology, pedagogy, implementation strategy and institutional framework while Khan (2007) presents the same idea in eight factors - institutional, management, technological, pedagogical, ethical, interface design, resources support, and evaluation. A systematic understanding of these factors and how learners and teachers operate in relation to these factors will lead to better insights into successful flexible learning environments and the creation of such environments.

The Deakin University Teaching and Learning Plan (2009) describes an integrated approach to flexible education consisting of choice in time, pace, place, content, learning style, assessment, collaboration and staffing. Previous experience has shown that Deakin University staff have been creating successful, well designed, effective, learner-centred flexible education environments that actively support diverse learners (see for example *Contemporary online teaching cases*, http://www.deakin.edu.au/itl/teach-learn/cases/index.htm). This use of new technologies in learning has extended the flexible options offering opportunities and challenges for both learners and teachers (including the institution). Through a series of interviews this study explored flexible education including the challenges and opportunities as articulated by Deakin staff in a Deakin context.

Purpose

The purpose of this project is to document current understandings and teaching practices at Deakin University related to flexible education from the perspective of the teachers. Specifically, the project set out to

- Define flexible education as enacted at Deakin University;
- Identify the characteristics that are unique to Deakin University; and
- Identify factors that enable and hinder the practice of flexible education at Deakin University.

Research procedure

Research design

The study was driven by an interpretive naturalistic inquiry approach and was designed as a qualitative case study that provided the rich descriptions of the context under investigation. The method supported the goals of this study by:

- Understanding and confirming what is known (Stake, 1978) and obtaining a snapshot of a situation in a given time, in relation to the research question.
- Capturing the knowledge gained through vicarious experience which is different from knowledge from empirical research. These are 'self-generated knowings' (Stake & Trubull, 1982, p.5) which include the subjects' view of the world, their experiences and tacit knowledge.
- Providing for the study of the particular at a given time so that it leads to a better understanding of the context.

Sample and data collection procedure

A total of thirty two Deakin University teachers representing all four Faculties and ten Deakin University students participated in the study.

Thirty two teachers who are practitioners of flexible education were purposively selected because a random selection approach would not identify practitioners with considerable experience in flexible education only and therefore capable of informed comment. Selected participants were requested to fill in a short questionnaire (see Appendix 1 - Staff questionnaire) and contribute to an interview (see Appendix 2 – Staff interview questions) that explored the staff member's practice in relation to flexible education.

The range of staff participants included one sessional tutor, two associate lecturers, eighteen lecturers, eight senior lecturers, two associate professors and one professor. Figure 1 shows their distribution across the level of employment.

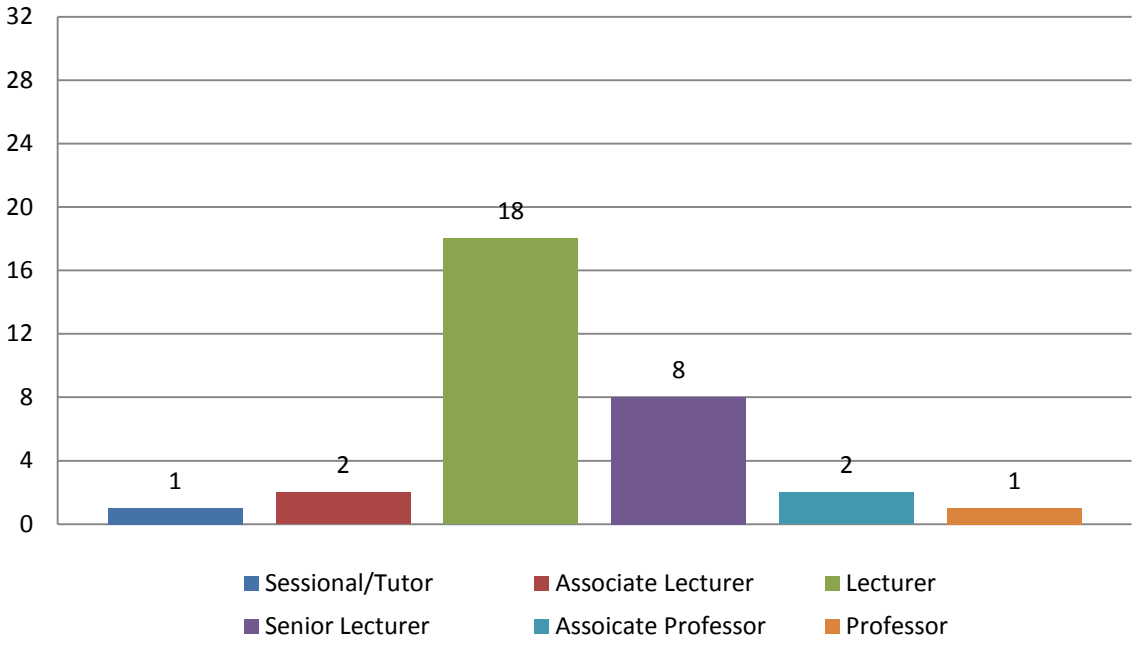


Figure 1: Staff participant distribution by level of employment

Thirty of these participants were employed on a continuing basis while one was employed on a short-term contract and one was a casual staff member. Eighteen participants of the thirty two in this sample had taught wholly online units and seventeen had taught Summer Semester or Trimester 3 (T3). Of the thirty two participants, eight were from the Faculty of Arts and Education, four from the Faculty of Business and Law, twelve from the Faculty of Health, Medicine, Nursing and Behavioural Sciences and nine from the Faculty of Science and Technology. Figure 2 shows their distribution across the Schools.

Prior to the interview, all teachers were sent individual emails confirming the date, time and place of the interview together with the questionnaire, interview questions, plain language statement and consent form. The interview with each participant lasted between 25-45 minutes. All interviews were audio recorded, transcribed and the transcriptions verified and accepted by each participant before analysis.

Ten students who carried out their learning through flexible forms of learning were requested to fill in a short questionnaire (see Appendix 3 – Student questionnaire) and contribute to a focus group interview (see Appendix 4 – Student focus group questions). The distribution of students in the two focus groups was as follows:

- Student focus group one (Melbourne Campus at Burwood) – four participants; and
- Student focus group two (Geelong Waterfront Campus) – six participants.

All ten students were undergraduate students under 25 years of age and were enrolled as on-Campus students. Three of them were international students, and seven were domestic students. While none of them had studied in Trimester 3 or in the Summer Semester, four had studied wholly online units.

The two student focus group interviews were also audio recorded and transcribed before analysis.

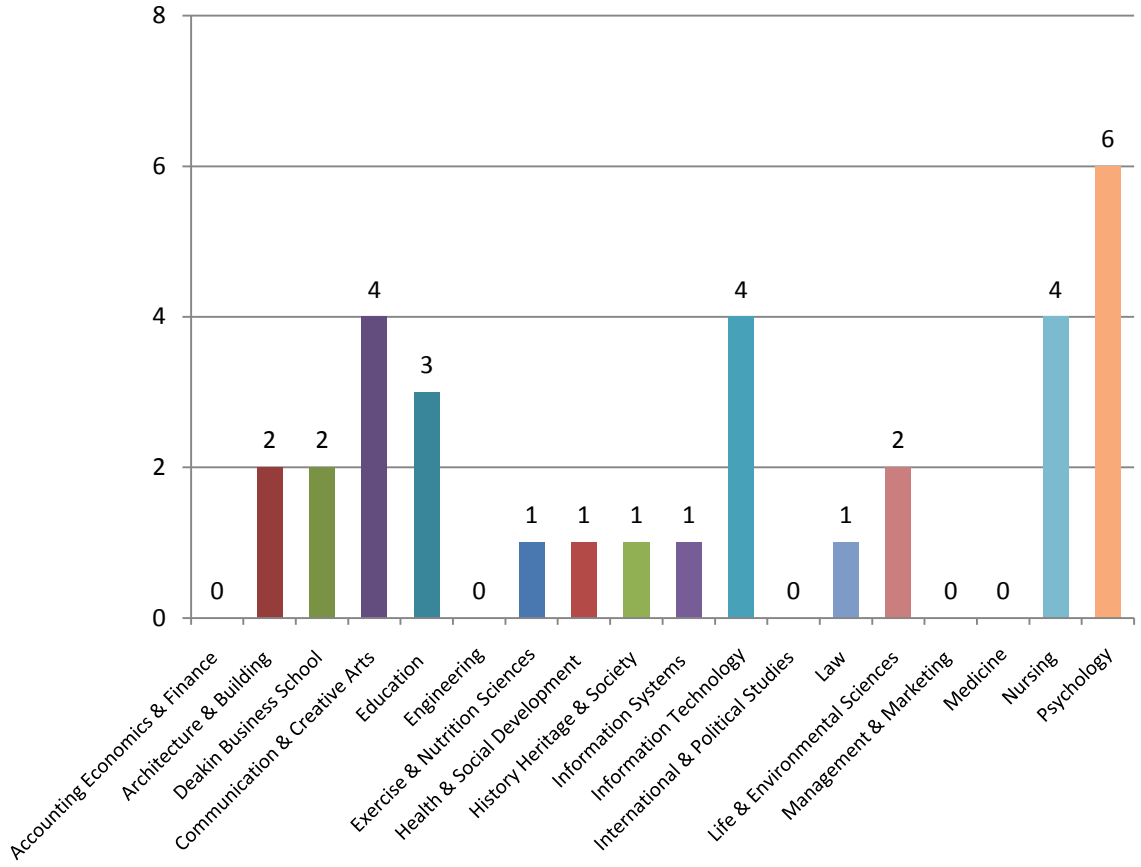


Figure 2: Staff participant distribution by School

Data analysis and management

Following Strauss and Corbin (2008), a grounded theory approach was used to systematically analyse the data which were mostly qualitative in nature. First the data were sorted and the key ideas were identified as a series of codes, and then grouped according to common concepts in order to classify them further. These concepts were further analysed and developed into eight key categories. The findings are reported according to these eight key categories or areas.

NVivo® software was used for data organisation, storage, management and retrieval and provided the archival system for all the source data (audio files of interviews, interview transcripts and field notes). Links between the source data and the categories developed during the analytical stage were also managed through NVivo® software (Bazeley, 2007) providing an audit trail useful for anyone who wishes to examine the process of how the data were organised and how the interpretations were arrived at, or for anyone who wishes to replicate the study.

Limitations

This is an exploratory investigation undertaken to obtain a preliminary understanding of the status of flexible education at Deakin University. Although the study has made progress in answering the research question, the results should be interpreted with an awareness of the following:

Sample selection: This relied heavily on availability of selected participants to contribute time for an interview within two weeks of the researchers contacting them. The interviews were conducted during the course of Trimester 2 and it might have been an inconvenient time for some key participants to respond. However, it could be argued that those who participated in the interviews had in depth knowledge and experience of flexible education and thus were able to comment and contribute to the study.

Ability to generalise: The study was designed to investigate the status of flexible education at Deakin University which raises issues related to transferability. It is therefore not appropriate to generalise these findings to a larger and potentially dissimilar group.

Findings

Findings of this study are reported under the following eight key areas:

- Staff understandings of flexible education;
- Advantages of flexible education;
- Challenges to flexible education;
- Enablers and drivers of flexible education;
- Implications of providing flexible education;
- Student readiness for flexible learning;
- Students' understanding of flexible learning; and
- Staff use of technologies.

Staff understandings of flexible education

Participants' understanding of flexible education was explored against the nine Deakin approaches of flexible education defined in the *Deakin University Functional Area Plan: Teaching and Learning 2009 (p. 6)*. Figure 3 shows the extent to which participants thought these approaches were important (or otherwise) in their delivery of flexible education.

Broadly, more than half the participants thought all the approaches of flexible education with the exception of pace of study were *very important*, while the majority thought all of them were *important*. There were more participants who thought options to collaborate or to learn independently were *somewhat important* or less important than the other approaches of flexibility.

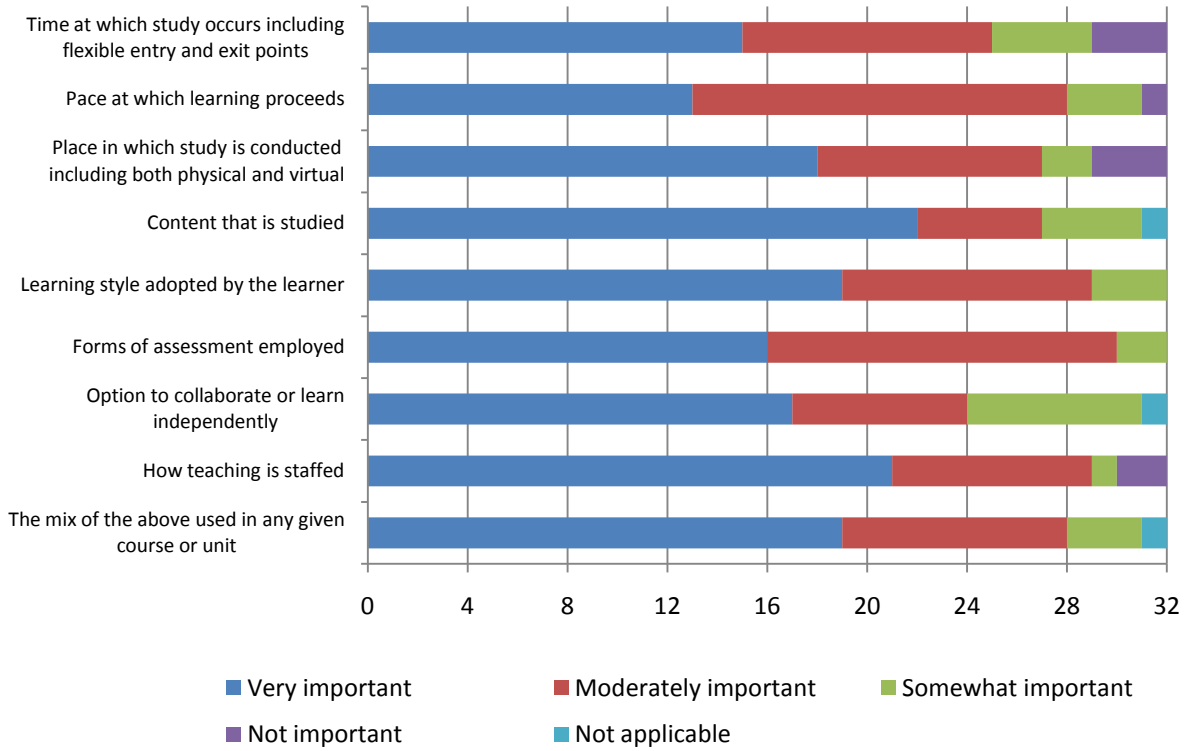


Figure 3: Staff participants' ratings of importance of the Deakin approaches of flexible education

However, the interview data revealed that participants' understandings and practice of flexible education extended beyond the Deakin approaches of flexible education. These understandings and practices are discussed herein.

Adaptability as flexibility

A few participants viewed adaptability of teaching approaches to suit learner needs as an extension of their work in providing flexibility.

'There is a practical side of things, being adaptable to you know changes in technology and requirements of communities, those sorts of things' (participant A).

Like all good teachers, one participant particularly valued the possibility of moving the classroom beside the creek nearby if it presented a good learning opportunity on a given day. The possibility to adapt to opportunities as they presented was viewed as part of providing a flexible education.

'. . . my understanding of flexible education is basically you're setting it up in a way that I can change the way I am teaching or adjust to the students' needs in a class' (participant B).

The role of technology in facilitating that adaptability was recognised by several participants:
'I think the technology is pretty good around being able to have readings available to them at any time, being able to put things up, in the sense that something might come up in a course or in a discussion and you can drop new resources into the discussion as you see fit. So there's a certain element of flexibility in that I think is pretty valuable' (participant C).

Technology as flexibility

Conceptions of flexible education were often articulated in connection with technology. While many participants referred to technology as a facilitator and a mode of delivery, a few, as illustrated in the following statement, saw the role of technology to be more central in flexible education:

'. . . my understanding of flexible education I suppose, is using education technologies, whatever they might be, whether it's the internet or DSO or eLive or whatever' (participant D).

Though, some participants made interconnections between flexible education and technology, a few clearly thought otherwise: '*I also don't think flexible education is being about technology so much'* (participant E).

Blended learning and flexible education

There was a clear understanding among the majority that flexible education was about providing learning options to suit learning needs and that there had to be an appropriate balance between the many dimensions of flexibility in order to facilitate the desired learner experience.

'I understand that that would be different forms of blended learning . . . So you would blend the tools and technology, you'd blend the processes, you'd blend the learning style approaches to people as flexibly as possible' (participant F).

This idea was confirmed by another participant *'. . . it is our capacity to deliver our courses in a range of different ways, from fully on-campus at one end of the extreme through to fully distance education on the other. So, flexible education is not the equivalent of distance education, it's a form of mixed mode delivery'* (participant G).

However, blended environments that included face-to-face components were deliberately designed to facilitate the required learning and participants felt that this was a necessary aspect. As one participant explained:

'The experience is not the same, you can actually access the material but if you don't turn up, you get a much reduced experience and we get a much reduced student and you know then the profession gets a much reduced teacher and the cycle sort of goes on' (participant C).

Boundaries to flexibility

While acknowledging the value and potential of the University's approaches of flexible education, participants were keen to point out that these operated within reasonable parameters and boundaries in order that they meet given learning needs.

'Flexible education to me is giving the students opportunity to manage their learning in a way that suits them but within very strict constraints. I don't see it as an opportunity for students to do what they like, when they want, how they want. They have to meet academic

requirements, they have to meet academic deadlines, they have to meet the constraints imposed on us by professional practice and they have to work to the University rules' (participant H).

It was also pointed out that the University's stand on flexible education was broad and ambiguous and therefore in danger of being interpreted by students as mere 'convenience'.

'I think it needs to be a lot better defined now. It needs to be more strictly defined in that there are constraints placed on it because at the moment it is very open ended, ambiguous and open to interpretation. The students are choosing to interpret it the way that's best for them' (participant H).

The evidence suggested that participants' understandings of flexible learning were uneven and demonstrated varying degrees of detail. It was noteworthy that while they all implemented the University's approaches to flexible education in varying degrees, some participants' understandings and practices extended beyond it demonstrating their varying levels of maturity in practice, experience and exposure in the area.

Advantages of flexible education

Participants were unanimous in their view that the University's flexible education offered real opportunities to both staff and students.

Advantageous to specific student groups

Student groups that found flexible modes of learning helpful were those who were located in regional areas or overseas, those on placement and those who were working. Promoting the case for flexible education, one participant felt that *'. . . a more structured approach would be more counterproductive'* (participant C) to these groups of students, and another cited an off-shore program offered in the Middle East and attributed its success to its flexible design and offering.

DSO and iLecture in particular were considered advantageous for these learners and its overall advantage was summed up in the following statement:

'. . . your flexible technologies allow you to engage the students who want more. And it's making it optional for them and it'll enhance their overall learning although it may not directly be assessed. So, a portion of the students will really embrace it and go with it and those who are more pragmatic or don't have the time or aren't interested, those who just want to know enough to get by, they won't. But, you know, it doesn't have to be one size fits all' (participant D).

Advantageous for staff working off site

Flexible education offered the benefit of working from various locations. As one participant admitted, *'. . . for a person who lives six months in [overseas location] and six months in Australia, this is absolutely perfect' (participant I). Others had similar views 'I've been to India and still taught, funnily enough you can go away and teach flexibly as well . . .'* (participant J) confirming possibilities of not only learning from anywhere in the world but also teaching from anywhere in the world.

'I think wholly on-line gives me lots of flexibility in terms of my time and my place and my whatever. I find that teaching a unit wholly online is just really great . . .. The convenience of online . . . yeah! Well, I do it at night at home but sometimes for example in the morning instead of getting to work by nine or whatever, I'll just sit there and go in and have a look at eight o'clock and then come in to work a bit later' (participant K).

Flexibility in content

Flexibility related to content was viewed as positive and desirable in some disciplines, especially those that were more capable of accommodating it.

'We can be flexible because a lot of what we teach is actually facilitated by what's going on in the world around us in terms of news and so on . . . I can literally pick up the newspaper each morning and pick out specific examples that are in the paper that morning and superimpose them over what I'm teaching as curriculum . . '. (participant L).

In contrast, there were other disciplines that were less able to accommodate flexibility related to content.

'Students can't approach my particular subjects in a flexible way because it's so unforgiving, programming, you get it wrong, you get it wrong, you get it wrong until you get it right. You have to get it right otherwise it's wrong. So it becomes really rigid in terms of the way we go about presenting and teaching . . .' (participant M).

In between these two extremes participants provided varying levels of flexibility related to content. Some offered '*a choice of say six modules and they complete four'* (participant K) and others agreed the importance of student input to give them '*a little bit of ownership*' (participant N).

While most participants agreed on the value of flexibility related to content, the majority believed that there was a strong academic rationale behind planned curriculum structures that served to scaffold students through their study programs. One participant insisted that:
'We are experts in our field and we have a long and broad experience of what our field is about. So surely we're the ones that should be specifying what the content is' (participant H).

However, student directed projects provide the *'opportunity to bring themselves fully into the course content'* (participant O) and greater flexibility related to content was offered in the later years of their undergraduate career.

Flexibility in delivery

Staff perceived that flexible delivery was greatly appreciated by students and all participants responded to this need in varying ways.

'Students very strongly require flexibility in the medium of delivery in other words where they learn and I guess that's also when they learn and I would say that's all they demand of flexibility. They are not keen on anything else. . . . what they really really want is all the material in as many different formats available online through DSO. . .' (participant P).

They also want '*the opportunity to grab and use those resources when it suits them as opposed to when it suits [the lecturer]*' (participant M). One participant explained that providing all resources online eliminates discriminating between different student groups.

'We try not to differentiate between on- and off-campus. We like to provide a smorgasbord of learning resources and they can choose which ones they want to use' (participant A).

'Especially that helps people who might have a disability, who have got a context that is very busy and they need to be able to be more organised beforehand etc' (participant N).

Flexibility accommodates learning styles

The ability to accommodate different learning styles was seen as an important capacity of flexible education. Participants were very conscious of the diverse student groups in their classes and were aware of the need to cater to different learning styles and values.

'I think flexibility is about catering to learning styles and in some ways it's better for me to worry about it like that than to think about all the different groups of students because there's so many groups . . . whereas if you just say these are all the different learning styles that are possible, how can I design an educational experience that's going to cater to them as best we can and at the same time not be overwhelming' (participant O).

In order to accommodate the different learning styles, students were provided with 'tutorials, small group activity, large group activity, workshops, reflective journaling that they can do at home . . . live sims [simulations] on the computer and also draw that into class' (participant P). Participants also offered a range of assessments such as multiple choice tests, assignments, examinations and short answer case studies to accommodate learning styles as well as individual learning difficulties as explained in the following statement:

'I had one student who had a learning difficulty and who couldn't write very well so the requirements were changed so that he could deliver via audio with images. He was better at being able to talk about it, he just couldn't write and spell so that was okay. To me it was more about the articulation of the argument or the persuasiveness of the commentary as the assessment items' (participant R).

Opportunities of technology

The majority of the participants were affirmative in their stand related to DSO and were convinced of the potential opportunities: '*I know when the Vice Chancellor first put the pressure on for all units to have a DSO presence, part of her thinking was that that really was helping give students a skill set for the future*' (participant D).

Many participants found DSO, eLive and iLecture particularly valuable in facilitating flexible learning because students were located in Afghanistan and Sudan and across the world and even though *'some of them didn't even have regular internet access'* (participant J), the technology still made them a part of the classroom. DSO is also useful as a repository of information as one participant pointed out:

'I can answer a question once, post the answer to DSO and I never have to answer it again because students go to the videos to find answers to the questions and they can watch it as many times as they want' (participant M).

Participants also saw value in being able to use e-portfolios to monitor professional growth of students and also provide support and commentary to portfolio entries. The ability to incorporate video, keypad technology, social software, blogs, photo sharing were identified as encouraging and positive aspects by many participants. Though technology was useful in their teaching, they were also clear that fundamentals of good teaching still had power over what they did.

'. . . we're talking about teaching and learning, the fact that it's online doesn't change some of the fundamentals, you know whether we're using the flexible technologies or not, we're still talking about principles of teaching and learning and so those fundamentals still have to hold true' (participant D).

However, the democratic platform DSO provided all was greatly appreciated by one participant as a great leveller:

'I think that is really really good flexibility to have that opportunity [DSO], and with different levels of English comprehension and different levels of quality of lectures and the material, it's not surprising all that doesn't fit and gel at the same time to the same quality, and then if you've driven a taxi all night and come in on a Monday morning at 9 o'clock to a three hour lecture, well you're not going to learn very much. So your opportunity then is to recover from that by what I call second-chance DSO. And DSO therefore is not just for off-campus students in Timbuktu or London, DSO is for everybody' (participant S).

Challenges to flexible education

Participants encountered a series of challenges in their practice of flexible education. These are identified as follows:

Compliance requirements

Compliance rules and procedures in the University precluded endeavours of flexibility. Study guides and resources must meet determined compliance guidelines and long lead times imposed on the preparation of these materials have hampered flexibility and the possibility of publishing materials that are current. These demands for long lead times do not allow teachers to respond to SETU results and make changes to the next set of resources accordingly. In fact, SETU feedback comes to the teacher long after the next Trimester has started making it impossible to promptly apply and respond to the feedback. Several participants observed that operational timetables were unreasonable and that planning cycles were too long. They pointed out that timetables for Trimester 1 of the following year were prepared as early as in Trimester 2 of the previous year inhibiting flexibility.

Several courses offered at Deakin have industry accreditation determining students to meet given industry requirements including curriculum content and assessment methods and criteria. The focus on meeting industry frameworks and needs have had Schools limiting the number of electives offered, further reducing the available flexibility to students. Courses such as primary education '*need to be in a class and see how classes operate with these*

activities for their own futures' (participant T). Participants saw no purpose in offering extensive online components to increase flexibility in courses such as this.

'So teaching as an industry, in a sense, is regulated and for our students to get endorsed or licensed to teach in Schools around Australia, they have to have completed certain elements of a program. So yeah we have an industry expectation that they will do a minimum of eighty days of practicum in Schools, they will have certain methods and things like that. Yes, there certainly are and again they can reduce flexibility' (participant H).

Accreditation conditions have also restricted flexibility related to assessment and the content that is offered.

Existing policies and structures

Existing policies and structures often restrict teachers from providing flexible education. For example, the University's decision to make wholly online units mandatory conflicted with the idea of flexibility and flexible options for learners. Participants also noted that the University budgetary models did not relate to the quantity of teaching or the number of units taught. They pointed out that funding did not correlate with the amount of teaching and was at odds with their large classes and the drive for increased flexibility.

Class size

The drive to increase student numbers has negatively impacted on flexibility. As one participant explained, *'property is all about getting out and looking at property. . . our lecture sizes are going to go from 40 or 60 up to 200 or 300 people. You just can't take 200 or 300 people to the local shopping centre and not get a back lash from the centre'* (participant U). Explaining how large class sizes hinder flexibility, another participant said:

'We have 1700 students in a unit. Now the administrative side of that is very, very difficult to do, even with your learning systems, with everything else. That hinders people in lots and lots of ways from being flexible, doing anything different, being exciting. Imagine trying to organise excursions for 1700 kids? You can't possibly do it, you wouldn't even try' (participant V).

While large class sizes clearly impeded flexibility, the University regulations strongly discouraged small classes by imposing substantial fines on units with enrolments below 30 students in order to ensure appropriate use of resources. Consequently, Schools have merged units in order to maintain student numbers resulting in limiting the variety available to students and curtailing choice and the flexibility to study what they want.

Concerns over possible low SETU

Several participants pointed out that SETU data had a controlling influence on new initiatives by staff. One explained,

'The University is generally risk averse. I think if you're going to be flexible you have to be willing to take some risk because some things you do won't work and that's okay. Sometimes you'll get it wrong and that's okay provided you learn something from it. So I

guess I'd argue that there's a bit of a culture in the University that is risk averse and I guess the consequence of that is that people are perhaps more conservative in their approach, less willing to adopt flexible approaches . . . sometimes I think people are being driven, and not just the staff but the University, by numbers like SETU that really are very crude indicators . . .' (participant W).

However, *'. . . they give you rave SETUs if you do something that they really didn't expect'* (participant X).

Trimester system

The introduction of the Trimester system has required Schools to ensure that enrolment numbers are maintained across all Trimesters through more marketing and encouraging more students to enrol. As one participant explained, it is having an impact on quality.

'. . . what's happening with our programs is our tail of mediocre students is getting longer and longer. . . . The rhetoric of the trimester system is that it provides flexible education. The reality on the ground is very different' (participant H).

One participant pointed out that the University Trimester system should be less rigid and offer units and courses that run outside the set Trimester timetable, particularly those that have industry accreditation to enable greater flexibility for those cohorts of students. Another participant pointed out that shortened courses to fit shortened teaching periods are already conflicting with some accredited courses as the following statement claims:

'. . . one of my students actually stood up in a lecture and said 'I've actually calculated how much less lectures I'm getting in my degree' and that's a real problem for an accredited program' (participant P).

Most participants believed that the Trimester system introduced to offer greater flexibility to students would be used most by students who fail subjects. However, they now find that '*many students over that summer period want to go out and do work experiences or travel . . .*' (participant Q), thus not helping greatly to fast track the majority of students.

The use of casual staff to teach

Casual staff hired by the hour are often not available for student consultation after the given teaching time. Increasing the number of units in a School and hiring casual staff to teach those units is seen as increasing choice and flexibility for students. While this may come at a cost to quality, casual staff themselves are constrained by their contract with the University and are often not authorised to make changes to resources or DSO sites.

Cross-campus teaching

Flexibility has its limits when units are taught across several Campuses and have several unit coordinators managed by one unit chair. Decisions need to be made early and all coordinators are required to follow an agreed plan, thus limiting possibilities for flexibility.

Learning spaces

A few participants were of the view that learning spaces are not designed for learning purposes. For example, regular classrooms are unsuitable for training counsellors and some classrooms offer only the very basic data projector and nothing more.

Inadequate learning spaces across the University have made it inconvenient to both staff and students. Large undergraduate classes that have several tutorial groups have rooms allocated for tutorials across the University in different buildings. This makes it difficult for the lecturer to manage the tutorial as a whole and oversee the session. While timetabling is awkward for staff, it is no different for students who have classes scheduled at 5pm or 6pm due to non-availability of rooms. Arrangements such as this are in contradiction with ideas of convenience and flexibility related to time.

Limitations are also imposed by rigid control regulations such as room audits which disallow teachers to use opportune moments as one participant explained.

'. . . if you have a class running in a room and then, for example, you decide to take the students down to the creek to have a look at something and then the room auditors come along and find that there's no-one in the room then you get a fine of whatever it is for not using the room' (participant P).

Management understanding of work

There was also concern about managerial understanding of work, the complexity involved in work, work requirements and professional development needs. It was felt that there was a lack of understanding which lead to a few frustrated comments by some participants.

Reluctance to change and pressures from colleagues

Some staff have preferred ways of teaching and are averse to adopting flexible approaches that demand rethinking of how materials are presented, new forms of assessments and methods of delivery. Two participants voiced concerns regarding the attitude of colleagues as: '*Pressures from other staff not to be too innovative because it raises the standards for all of us'* (participant E).

Time

All interview participants agreed on being time-poor. *Time pressures, the lack of time to create innovative and customised and diverse learning experiences and assessment tasks and of course content* (participant E).

They were convinced that investment in time was necessary to investigate and experiment flexible learning approaches and new technology, and their sheer lack of time prevented them from it. There was concern voiced about the shortened Trimester being insufficient to deliver the content designed for a longer semester, contributing to additional time pressures as illustrated in the following statement:

'. . . the course is accredited by APS and that doesn't mean that I can't be flexible, it's just that in the transition of the Trimester, I've gone from 13 weeks down to 11 weeks . . .' (participant O).

Technology

Technology posed several challenges to participants. It was felt that the appropriate persons to select technology would be persons who use the technology for teaching and learning. As one participant explained

'. . . maybe the people making decisions about software are not the right persons. So for example, Drupal has a quiz module, we don't have it because we didn't buy it . . . which has meant that I have had to get KMD to develop a quiz and do a work around . . .' (participant Y).

Participants were also frustrated by unstable and unreliable technology and unfortunate technical mishaps.

'DSO's not working, you know, the night before an assignment is due it crashes or whatever and when iLectures don't record properly because students come to expect that that will work' (participant Z).

While admitting that they were getting accustomed to DSO, some staff also pointed out that DSO was not user-friendly for new users, imposed pedagogical limitations for them and prevented outsiders such as guest experts to participate in online class activities. Participants also observed that support with technology was limited, that technical help was hard to access as much as technical support to create interactive online activities.

Constant changes, new versions and upgrades in the technology made it difficult for some participants to keep up with technological change for teaching and learning. One participant admitted that they '*all found it very challenging to learn how DSO works and I'm pretty mortified they're going to change it all to a new system'* (participant Q). Many '*whose motivations aren't as strong to learn technology, engage with these technologies because their interest is much more in their intellectual space of their discipline*' (participant H) and are apprehensive about possible changes to the learning management system.

Rigid policies related to technologies were also cited as a challenge. Two participants pointed out that set policies related to technology use did not support innovation. Not all were happy to comply with DSO and operate within the boundaries imposed by the system. There were several participants who clearly wished to draw on technologies outside DSO and felt impeded by the regulation, as one (participant E) pointed out.

'I feel a policy or an environment that supports innovation and the provision of flexible learning will support staff who want to invest time and resources in that direction. Also technical, or rules about what can be done and what can't be done that restrict flexible learning, such as not being able to put in lectures on i-Tunes or use Facebook and so on, are barriers' (participant E).

Workloads

Creating flexible resources in numerous forms has increased workloads for many staff. Providing flexible opportunities to communicate via discussion forums, eLive and email has exacerbated the problem. In addition the value placed on discipline based research over teaching in flexible modes inhibited teachers from extending their practice in flexible

education. Some also complained that existing workload formulae were not accommodating of tasks associated with flexible forms of teaching. Citing an example from the Master of Business Administration program (MBA) that offers a blended program, one participant explained that workload figures stipulate payments for residential sessions consisting of 60 hours when realistically residential sessions provide between 100-120 hours of teaching time offered by three academics.

Maintaining a balance

Referring to the nine forms of flexibility in the University's Teaching and Learning Plan, staff were concerned that the '*unlimited flexibility'* (participant H) would only challenge academic standards and serve to confuse and overwhelm some students. The need to control the extent of flexibility was voiced by several participants, especially in relation to controlling standards:

'We would prefer to have some requirement that they attend class because they've got to be out on clinical and you don't know whether they're capable of having the knowledge when they go out. We've got no sense of where they're at, when you send them out . . .. We've gone more flexible than inflexible I think in that we have no pre-requisites for them to go out except that they are enrolled' (participant P).

While the many forms of flexibility were useful, controls and balances to manage this were also considered beneficial as well as necessary.

Resource demands

Resources shortages were identified as obvious and real barriers to producing learning materials in multiple formats, by many participants. Other resource shortages identified were support for professional development and support for staff to develop content.

A few participants emphasised the need to be guided by research on flexible learning. Commenting on the many trials of new technologies, one stressed the need for the University to consolidate effort in a specific area instead of *'having a splatter approach'* (participant D).

'. . . we trial lots of things and, you know, so maybe people will get real excited about Second Life, but we don't have any, kind of, uniform way of knowing whether that's actually going to enhance students' learning in a very diverse range of things, you know. It may well be the absolutely perfect technique or technology for flexible learning in some specific areas . . .' (participant D).

Support needs

Participants identified a range of support needs. Technical help to use the technology; pedagogical help to use it more appropriately to facilitate the learning; educational designers' help; administrative assistance such as help to enter marks in spreadsheets; just-in-time help within the Faculty; guidance in making resources more interactive; and someone who has the time to be able to come to them physically and guide them through a technology-related problem were some support needs voiced by the participants.

Inadequate educational development assistance in Faculties, difficult materials production processes and limitations to the types of software one can use were considered barriers to participants' work.

Enablers and drivers of flexible education

Participants listed a range of factors that enabled and facilitated their use of flexible education. While personal motivation was a strong driver, participants also identified several enabling factors across the University. However, it was noteworthy that some of these enabling factors existed in pockets of the University only and were not spread evenly across the institution.

Student demand

Most participants were appreciative of and sympathetic to the students' need for flexible forms of education.

'I think there's an enormous amount of pressure actually coming from students borne out of the fact that education's not as free and cheap as it once was and they need to work and that's really going to push us if we're going to survive and get ahead to offer a lot more flexibility. Yeah, it's a very pragmatic driver' (participant E).

Participants were very understanding and accommodating of this need.

The role of the management as an enabler

Top-down directives from senior management in the form of goals to be achieved were important drivers of flexible education:

'. . . our Associate Head of School made the goal of having for every unit in the undergraduate curriculum having four eLive sessions per Trimester and that meant that we all did it' (participant E).

In contrast to being directive, some Schools articulated expectations related to flexible education which were also strong drivers: *'You know, it's an expectation in our School'* (participant H).

Support from School and Faculty management was an important enabling factor to some study participants in practising flexible education. A few were fortunate that their School management endorsed their efforts by accommodating it in their workload as confirmed in the following statement:

'Our workload model has been important in terms of allowing for time for DSO and for eLive and those sorts of things. So we actually, we make a clear allowance' (participant A).

Recognition from management for experimenting with and implementing flexible forms of education was also an important enabling factor:

'. . . the open mindedness of management, senior management, in terms of letting us try different things. Not being too harsh on us if it doesn't work out so well, yep . . .' (participant A).

This, participants believed came with *'having your managers trust you'* (participant N). However, one participant was quick to point out that recognition for innovation might be limited.

'I read in the strategic plan and I believe it's setting us on a course to do new things but our rewards and recognition actually may be about doing new things but within a box . . '. (participant Y).

Supportive environment

The study findings showed that participants had both formal and informal support networks within their Schools as well as across the University that encouraged and promoted the use of flexible forms of education. The informal support was greatly valued as these were mostly conversations with colleagues within the School. Formal support within the School and the Faculty in the form of Learning and Teaching groups and educational design assistance was also acknowledged by many as enabling their practice of flexible education.

Many acknowledged the satisfaction gained through their interactions with the Institute of Teaching and Learning and Knowledge Media Division. *'The more I can work with ITL and KMD, the happier I'll become. I love the whole process of the future of online teaching and learning'* (participant B).

Many also acknowledge the annual Teaching and Learning conference as a stronger enabler: *'I love the Teaching and Learning conference. Yep, show and tell and you get these great ideas . . .'* (participant K).

'The ITL conference every year is quite useful I think because it's a really good way and you think "wow, that's amazing, fantastic, oh my gosh" and you think maybe I could do something like that' (participant J).

'*ITL has actually tried very proactively through various initiatives to create communities of practice through its conferences and so ITL actually acts as a bridge* . . . (participant L). Conversations around specific needs with colleagues as well as conversations with those who teach wholly online units were also strong enablers.

One participant suggested that support be provided to '. . . *develop leaders in teaching and learning and support them and give them experience rather than just assume that if someone is a course coordinator or an Associate Head of School, Teaching and Learning that they automatically have all that . .* .' (participant W).

In addition to these useful avenues of assistance, several participants appreciated the assistance and support they received from the Institute of Teaching and Learning Teaching Support Help Desk saying: '*T and L [Institute of Teaching and Learning] people have been fantastic, they've been really really good in the support* . . .' (participant U). And another confirmed, '*oh, they're worth their weight in gold*' (participant I). Opportunities for exchange of ideas and discussion were recognised as facilitators of flexible education:

' . . . in our Faculty the Teaching Leaders Forum and events that occur across the University and around teaching and learning through the CDDE and ITL and so on. You know people interacting with people' (participant E).

One participant recognised the value of work teams as an enabling factor. '*I've worked with one person [from KMD] in particular who is very visual, spatial who has made sure that the ideas that I've had he's brought to fruition. So working in teams is very important . . .*' (participant F).

Overall, an enabling environment to practice flexible forms of education was appreciated by the majority of the participants. This they described as '*having tools and the staff with the capacity to support . . . capacity to be responsive'* (participant F).

'Obviously support from the organisation in terms of proper infrastructure around adopting those space, it's not just technology, it's learning spaces and those sorts of things' (participant A).

Technology

All participants used the technology, DSO in particular, extensively in offering flexible education. '*Certainly with the introduction of WebCT Vista, I think that was seen as a huge aide to flexibility'* (participant H). This notion was further enumerated upon by other participants who were convinced that the technology enabled flexible education through connections and interactions established with the learners:

'I think we have an opportunity though DSO to connect with every single student in a way that each student will begin to learn or continue to learn or be encouraged to take part in a debate' (participant S).

'. . . students who are quiet and not as confident feel that they, in their own time and in their own house they can post a message for the debate and not feel like they are going to be ridiculed . . .' (participant Z).

Other participants believed that the sheer variety of technology available to them at Deakin University enabled flexibility in their teaching: '*DSO definitely enables me; iLecture I think has been a terrific addition, probably the single biggest thing . . .*' (participant J). In addition, the range of technologies allowed them to choose what was most suitable for their students' needs. '*The technology, the internet enables me to do an enormous amount of variety in my resource development*' (participant M), enriching the learning experience. The technology also is critical when maintaining currency related to disciplinary issues.

'. . . we're actually quite lucky that because what we study and what we research is newsworthy, that can enhance the level of flexibility. So technology is sort of sitting alongside that helping to disseminate the message but the currency of the issue is really important' (participant L).

There were also a few participants who saw technology as '*a facilitator in flexible learning . . . given that the wiki platform enables that to happen'* (participant L). The possibility for learners to co-create content using the technology was seen as a promising asset.

Personal motivations

Many participants demonstrated strong personal motivations in their efforts in providing flexible education. 'It's just my motivation, it's an enabling factor because I think you could easily not do it' (participant O). Many participants were also driven by a strong sense of responsibility towards their students.

'I get accolades for research but will I get accolades for a flexible learning place? So those academics that provide brilliant flexible learning places, do it because of them [students]' (participant S).

The same caring spirit towards the learner was shared in the following statements:

'You know, I think it's worth it. If I really think there's a need to do it, I would do it regardless, it doesn't matter how much time' (participant K).

'. . . the only reason I would do it is for the benefit of the students, to enable them to learn according to their style and when they want to do it. That's the only reason I would do it. It doesn't really provide me with many benefits, in fact it creates more work for me' (participant M).

One participant stated that her sense of personal obligation and motivation was in fact a part of her disciplinary background:

'We all come from a strong practice ourselves, all of us have practiced as midwives, we understand the need to be flexible. So that's our practice background. It's also just flowed on to our lives in academia' (participant AA).

In addition to their caring interest and concern for students, a few participants also had specific technological skills which assisted in their work: '*having the skills to be able to manage my own and develop my own resources is the primary driver, I suppose that allows me to be flexible'* (participant M).

These participants were strongly motivated and were enthusiastic about the opportunities enabled through flexible forms of education which in turn was a strong driver in their use. In contrast, one participant voiced a less passionate, nevertheless a more real reason for adopting flexible education:

'. . . it's a more practical issue really, it's that universities are student driven, the more students you get the more money you get, you keep your job. There's a constant fear of losing your job now if student numbers drop' (participant M).

The Graduate Certificate in Higher Education

The Graduate Certificate in Higher Education (GCHE) received special mention as an enabler that gave a strong understanding of flexible forms of education and exposed a participant to research in the area.

'I've actually been exposed what the Graduate Cert does, which is what gets you on top of the research and I'm starting to actually understand much more the value of knowing what the experts in education are saying about this sort of stuff . . .' (participant L).

Attracting off-shore markets

Citing an off-shore offer of a study program for Emirati women in the United Arab Emirates, one participant was emphatic that the very attributes of flexible education was the key driver to attracting that specific client group.

Implications of providing flexible education

While all participants were practitioners of forms of flexible education and were generally optimistic about the approach they adopted, they also voiced their concerns. These are discussed below.

Flexibility related to pace

Participants were apprehensive about flexibility in relation to pace of study. While in theory there were advantages, many were concerned with its practicalities and possible consequences.

'Pace at which learning proceeds, I think we have to be very careful about that one' (participant H).

Fast tracking degrees could result in a much reduced quality of student though of course *'it was okay for getting a piece of paper in a quick space of time'* (participant N). This participant went on to explain:

'In terms of what I believe to be education and that's allowing new things, new knowledge, experience the time to sit. I mean I really value reflective practice and if you fast track and you race through your courses, it doesn't really give you a lot of time . . . I think a lot of that stuff goes out of the window if you race through a degree, and we're really doing our students a disservice not allowing them to sit with some of the things that they are learning and to take them on board . . .' (participant N).

Being more student-centred

While flexible education was seen by many as being *'. . . driven by students and oriented towards students' needs and sometimes nowadays students' work and . . . at the same time mature aged students . . .*' (participant W), one participant also confirmed it as a form of education that is strongly learner-centred in the following statement:

'. . . being learner-centred, strongly learner-centred, jointly planned, so it's got a pedagogical background to it from the expert but it's still in some ways driven by the learner needs and working to expand and enlarge students' expectations, not to bring them into a tighter or closer sort of situation. So to expand their expectations of themselves as well and to make them active learners' (participant F).

This has implications for both providers of flexible education as well as the design and pedagogy of the learning that is offered.

Implications on student study habits

Several participants felt that the availability of all resources online contributed to poor study habits among some students. They attributed low class attendance to the availability of all the resources online.

'. . . the down side of flexible learning is that we're providing a lot of content on DSO and allowing students to access that content whenever they like and I think we lose a lot of attendance at lectures and practicals that we used to have and I feel that for some students this is a recipe for disaster' (participant M).

Participants were concerned: *'. . . we don't get the opportunity to get in and engage the students as much'* (participant M). They were also worried about procrastination habits and poor time management on the part of the students as a result of providing all the resources online:

'I'm seeing more and more of our students who are accessing the stuff online, not coming to classes but coming to say 'Oh, it's week 8 and I haven't started the assignment', and you're going 'Week 8, the assignment was due last week'. . .' (participant I).

One participant was convinced that these negative study habits contributed to a significant failure rate in the subject.

'. . . the fact that they can get it online means they have to do it themselves and a lot of them just don't do it and that has a huge effect on our pass rate, especially in my subjects where we've got failure rates of 40%. So flexibility encourages in some students, I believe a perception that they can get away with doing nothing . . .' (participant M).

Participants were keen that strategies and controls were in place to manage flexibility and if not '. . . we're encouraging them to be superficial learners' (participant P).

Impact on staff workloads

'*Flexibility creates work'* (participant M) was the unanimously accepted view of all participants. This was particularly the case with online units as one participant explained:
'When you have to respond to student posts and I encourage the students to ask questions, I monitor student talk and if you have to write replies it takes a lot longer than if you're verbally saying it because you've got to read it, make sure it's not ambiguous, that it's saying exactly what you want it's not going to confuse the issue and that all takes time' (participant Q).

They also referred to the long hours of work related to teaching online:

'My teaching load for online is just through the roof. I'm online every day, five, six, ten hours a day answering student questions, reading student posts, responding to them. That can be off-putting' (participant R).

'You know you need to kind of provide a 24/7 service and that's not always easy' (participant J).

Participants also made several references to the quantity of work such as:

'I teach three units wholly on my own on this Campus, I coordinate physiology that runs across two Campuses, I run a wholly online unit and I'm involved with first year teaching . . . plus I have Honours and PhD students as well that I'm trying to juggle . . .' (participant Q).

A few participants were clearly annoyed about time consuming details related their jobs: '*Why is proofreading my job now and why is style-setting my job*?' (participant V) while several felt that teaching online contributed to their workload: *'. . . online units, they're way more work for the academics setting them up and maintaining them and participating in student discussions and things like that*' (participant Q).

One participant cautioned of possible consequences:

'One of the problems or traps of flexible learning is that you can become so flexible you don't have any time, you don't know where work ends and you know recreation starts or life in general starts and so a lot of us get a bit too carried away with it and end up answering DSO in the middle of the night or on weekends . . .' (participant A).

The stress was apparent in the voice of some: '*we're all exhausted, absolutely exhausted'* (participant B) and the ramification was clear in the statement of another:
'If you're so snowed under doing all that, then how can you possibly have the time that it takes to develop online programs, develop new ways of doing things, reassess, rewrite and change . . .' (participant P).

Providing resources in a range of media and accommodating diversity places great demand on workload. It is also particularly demanding on the teachers as the following statements from participants revealed:

'. . . time, place, pace. They're the things that I value the most because I can say to the students, you can do this anywhere you like, anytime you like and at any pace you like. On the flip side, it doesn't provide me with much flexibility. So I guess, the more flexibility the students have, the more difficult it is for the staff member because I find that I'm now having to be, particularly for my online unit, I have to be online sort of every single day, weekends, looking at what they're writing and that means I have less flexibility to attend to my other tasks' (participant Z).

'There's many times where I might not get to my online teaching until ten o'clock at night or I'll do it on a Sunday or I'll do it on a Saturday so it fits into my life much more than a more regulated sort of lecture process as such. So that side of it is pretty good. But the down side of that obviously is that it's never ending in a sense' (participant C).

Resource implications

Many participants pointed out the need for adequate resources in the form of funding and staffing in order to provide desired learning experiences for students. There was apprehension voiced by one participant:

'I describe the bucket as being full for most people and that's the case in the School for most people, the bucket is full and if we're going to add on things to the top, something has to pour out and the danger is if we just keep adding things in without resourcing it what will pour out will be people's goodwill and enthusiasm and motivation' (participant W).

While pointing out that flexible education was '*very very administrative intensive for academics'* (participant V) there was concern voiced about the large number of casual staff employed to carry out both administrative and teaching tasks. Several participants drew attention to this issue and the associated implications:

'Nobody is supposedly keeping an eye on what happens in the classroom until we get the evaluations or the fail rates back . . . and if you casualise you've got no one who cares eventually' (participant V).

'I would really like to hammer that point that if Deakin wants to be a leader in flexible learning, they need to resource it at the staff level. Staff need to have time to do it. They need to have the support in terms of other staff and proper infrastructure' (participant A).

Maintaining a balance between teaching and research

The challenge common to all participants was maintaining a balance between their teaching and their research. The choice was clear to some '*If it's a toss-up between writing a paper for publication or doing that [creating flexible learning resources], I'm going to write the paper'* (participant Y), while to others it was a more worrying concern: '*I don't know if I'm supposed to be a good teacher or a good researcher or both, or can I be both? I don't know'* (participant M). However, all participants were conscious of the need to be researchers as well as teachers but found they actually '*sacrificed research for their teaching'* (participant M).

'The constraints on getting your own research together for instance is quite a big one. So when you're busy trying to get publications done and get research done as well as introducing flexible, particularly if your research is outside of teaching, then that's a real tension . . .' (participant F).

Student readiness for flexible learning

Student readiness for flexible learning was a concern for several staff participants. Many felt that students, particularly in their first year lacked the required learning skills and were unprepared for flexible modes of learning because '*we've got students who don't know how to learn coming into an environment where they have to do it themselves and it just doesn't*

work' (participant M). This is substantiated by another comment: '*They don't want to have to design, in anyway, themselves their own education. In fact what I find our students want is as much structure and direction as they possibly can have*' (participant P). Another more specifically felt that:

'The best is the second year. After the first year when they tasted a little bit of flexibility but they're still not, to some extent, not prepared for choosing an option or being part of learning or education, they want someone to make a decision, they don't want to make a decision. But the second year, they're perfect' (participant W).

Concerns were raised about student readiness for flexible forms of learning and how commonly they mismanaged time, as a result. It was felt that the motivated students found flexibility '*an absolute bonus*' while '*lower the enter score, the more likely you're going to have problems with flexible learning, I think'* (participant M).

The student participants preferred face-to-face sessions because it 'forced' them to attend classes and stay up to date with the class topic even though they were not up to date with their studies. They acknowledged that they learned at their own pace in online classes but that they were easily distracted, corroborating with staff concerns related to flexible learning contributing to student mismanagement of time.

Commenting on students' readiness to use technology, one participant observed that *'[t]here's been the presumption that young people are digital natives but the repertoire of their skills is quite narrow'* (participant D). Students were happy to use the basic functions of DSO but needed guidance and assistance to learn from tools such as Facebook and YouTube despite regularly using them for socialising.

Students' use of, and preference for using technologies for learning is illustrated in Figure 4.

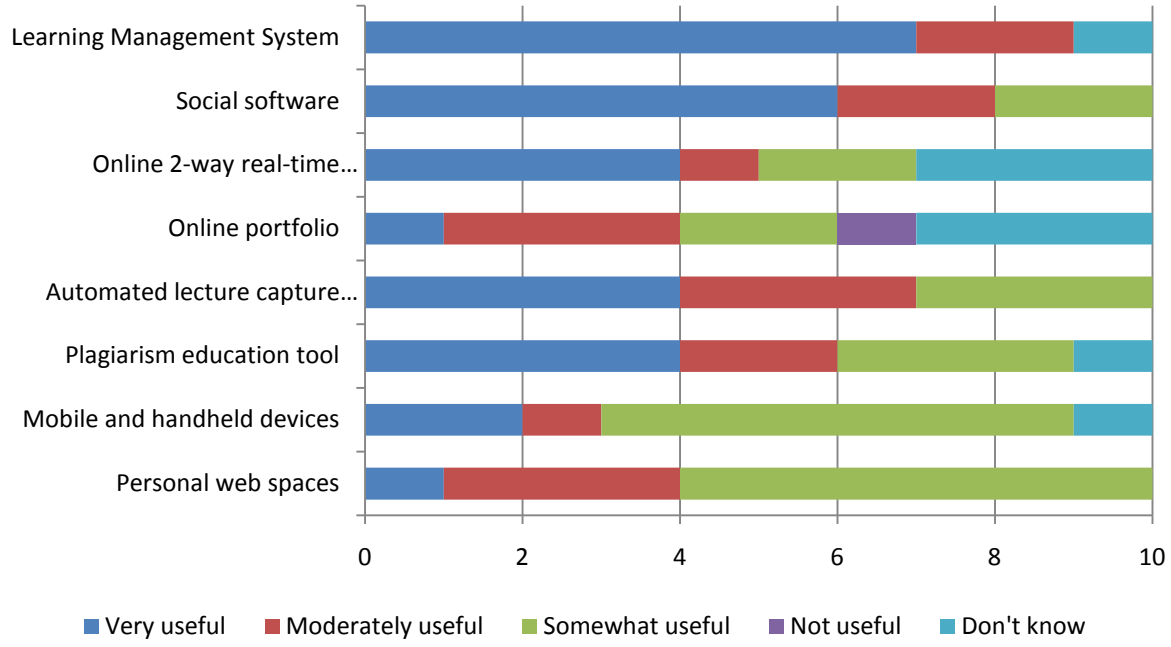


Figure 4: Students' perspective of how useful technologies are for learning

The majority of students rated the learning management system as very useful to their Deakin education. They all found social software useful with more than half rating it very useful. However, the online 2-way real-time communication tool had varying responses and less than half found it to be very useful. While they all agreed that automated lecture capture and online delivery systems are useful, only about half found the online portfolio and the plagiarism education tool as useful. About a third of the students found mobile and handheld devices as useful while they all felt that having a personal web space would be useful to their education.

Students' understanding of flexible learning

The questionnaire data indicated that the majority of student participants felt that approaches to flexible education at Deakin University were *somewhat important* to *very important*. The place in which study is conducted and the content that is studied were considered *very important* while the option to collaborate or learn independently was seen by less than half as *moderately important* (see Figure 5).

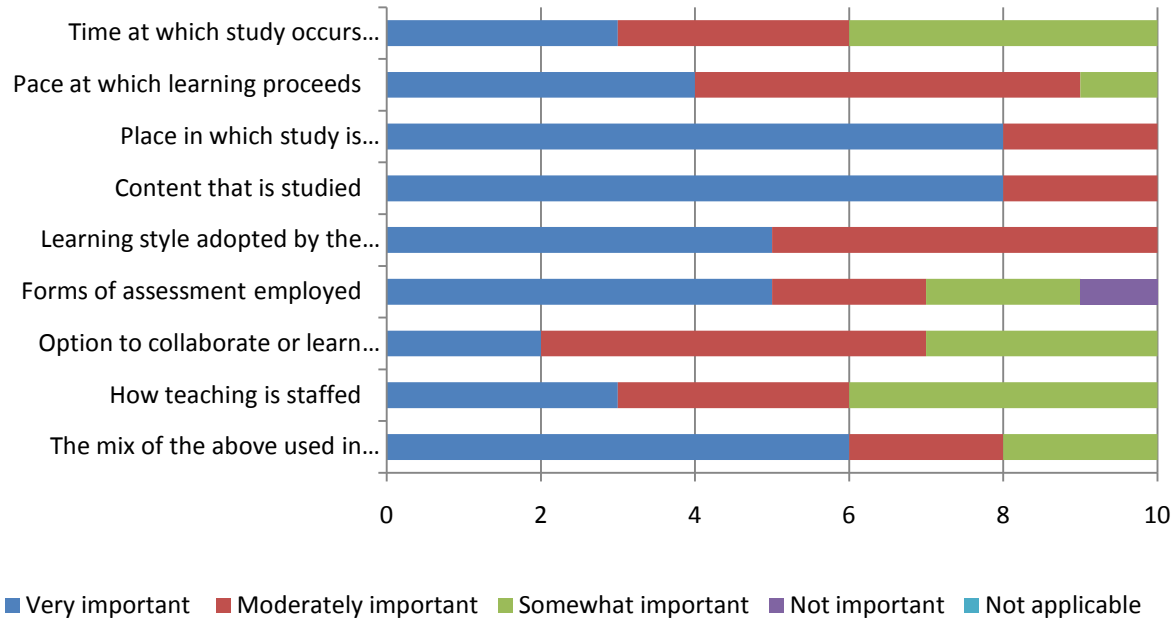


Figure 5: Students' perspective of the importance of the Deakin approaches of flexible education

Students' understanding of flexible education was to have multiple forms of content delivery, including iLecture and narrated PowerPoint, prompt responses to email and questions on discussion forums; a variety of assessments such as exams, assignments and online quizzes; and of course face-to-face classes.

They wanted learning material used in face-to-face on-campus units to be made available online via DSO giving them the option to attend classes or study from home. Their reasons for not attending classes included work commitments, travel time between Campuses, class clashes, and personal commitments. They believed that Deakin University could offer greater flexibility to them if they were provided with more face-to-face lectures on different

days and times to cater for class clashes, and longer semesters that allow for '*time to study after the last lecture'*. The general repeated request for more face-to-face lectures was underlined by the idea that they '*pay'* for lectures '*in a real lecture room'*.

They appreciated teachers who encourage and motivate students to learn; respond promptly to emails and discussions posts, and provide prompt feedback especially after hours and weekends; involve all students including '*quiet students to talk and participate in class'*; provide opportunities to lead the class; invite guest lecturers; challenge students; and adapt their teachings to suit the learning needs of the student.

The majority did not agree that the Trimester system allowed them to complete their degrees in shorter time because their Faculties did not offer core units in all three Trimesters which was not helpful.

The student participants also felt the Melbourne Campus at Burwood was not just a place to attend class but also a place for '*fun'*. They particularly appreciated the library as a learning space that was '*cosy'* and '*welcoming'*. These were understandably students who appreciated Campus life and also desired the convenience of flexible education.

Broadly, students wanted their teachers to be available to them to meet their needs and concerns. They wished for consistency of teaching material across all units of their course; a range of teaching and learning material that was more structured; and a choice of learning resources offered to them so they can pick and choose to suit their educational needs.

Staff use of technologies

Technology, especially DSO featured prominently in the participants' practice of flexible education. Though a few participants found the current learning management system not very user-friendly and '*. . . not very intuitive and so it often takes a bit of hunting around to find what buttons to press'* (participant Z), they had largely got used to it and appreciated its ability to deliver resources. In fact nearly all participants were regular users of the LMS. The other two tools that were used by nearly half the participants were the online 2-way real-time communication tool (eLive) and the automated lecture capture and online delivery system (iLecture). Personal web spaces and the online portfolio were used less frequently by the participants (see Figure 6).

Staff use of technology and teaching style

The varied technology use of participants is categorised according to the teaching styles they employed based on Ramsden's (2003) teaching theories (delivering content; organising and supervising student activity; and adapting to circumstances and context). Figure 7 shows how each of the technologies were used by the participants according to their teaching styles.

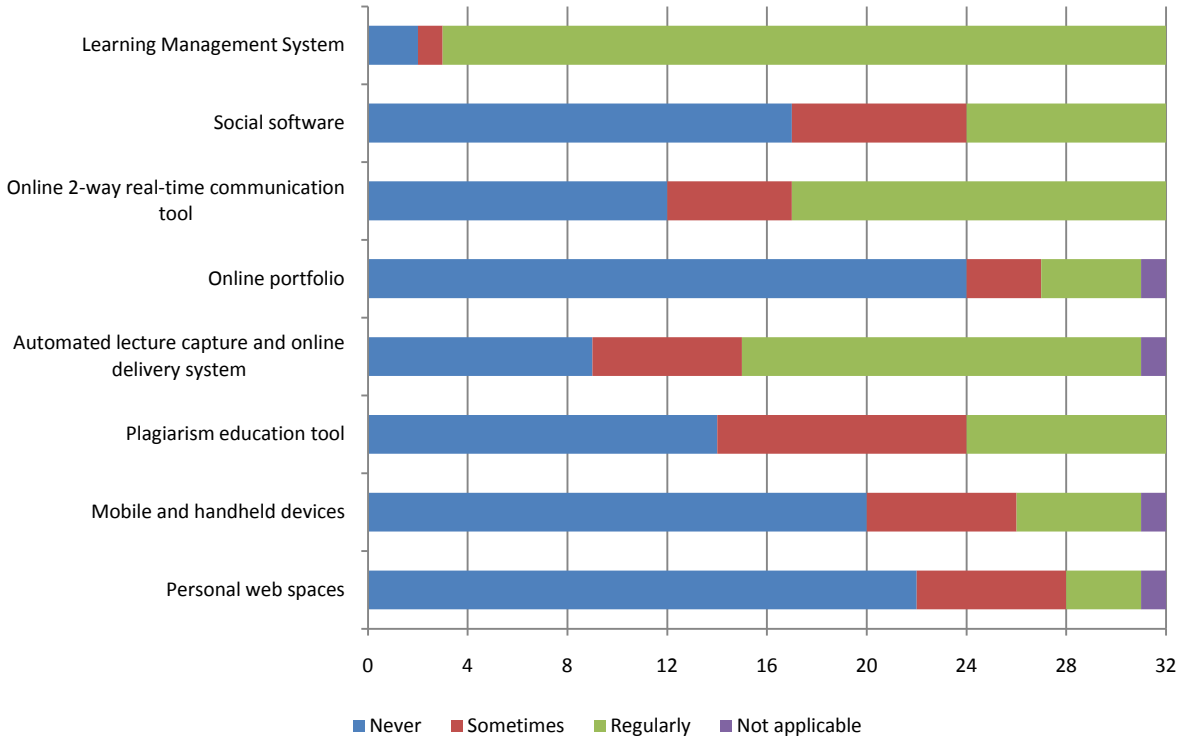


Figure 6: How often staff participants use technologies for teaching and learning

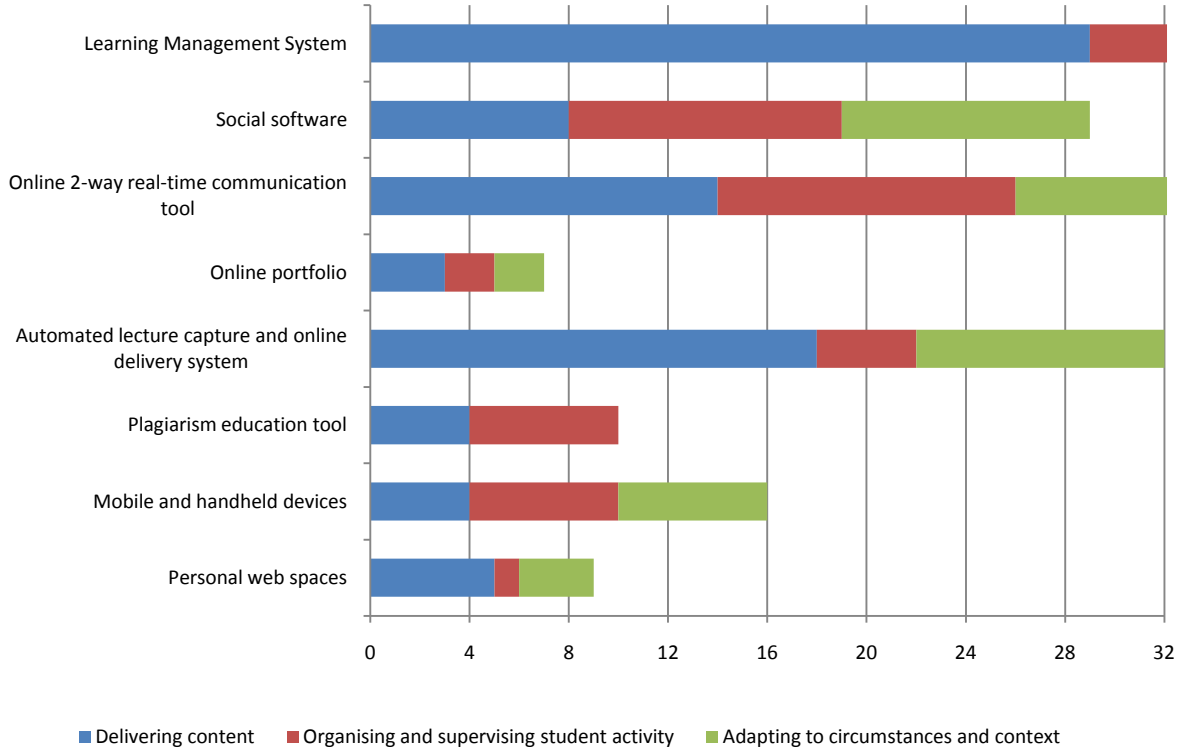


Figure 7: Staff participant's use of technologies and their teaching styles

All staff participants used the LMS, online 2-way real-time communication tool and automated lecture capture and online delivery system in their teachings. Nearly all used social software in their teaching. In contrast, less than a third of the participants used the online portfolio, personal web spaces and the plagiarism education tool.

While all the technologies were used for delivering content, the majority of the participants used the LMS for this purpose. More than half the participants used the automated lecture capture and online delivery system to deliver content while nearly half the participants used online 2-way real-time communication tool for the same purpose. All the technologies were used in varying degrees for content delivery which formed an important part of the participants' teaching style.

Participants used all the technologies in organising and supervising student activity but social software and online 2-way real-time communication tool were the two more popularly used technologies for this purpose.

Approximately a third of the participants used social software and the automated lecture capture and online delivery system to adapt to circumstances and contexts of learners. The fact that no one used the LMS for this purpose was noteworthy and the plagiarism education tool was not relevant for this purpose.

Staff use of technology to deliver learning experiences

The questionnaire data provided a picture on how staff participants used the technologies to assist the student learning experience. This use of technologies to facilitate learning was analysed against Laurillard's (2002) five descriptors: attending and apprehending; investigating and exploring; discussing and debating; experimenting and practising; and articulating and expressing. Figure 8 explains staff participants' use of technologies and the student learning experiences they facilitate.

All staff participants used the LMS, social software, online 2-way real-time communication tool, automated lecture capture and online delivery system to provide students with several of the learning experiences described by Laurillard (2002). Though online portfolios, the automated lecture capture and online delivery system, the plagiarism education tool, mobile and handheld devices and personal web spaces were used to encourage and facilitate all five learning experiences, except for automated lecture capture and online delivery system, not all participants used these technologies.

The LMS was by far the most popular with participants who were keen to promote attending and apprehending/understanding behaviours of students. Participants tended to use the LMS, social software and online 2-way real-time communication tool when they required students to investigate and explore.

Social software and automated lecture capture and online delivery system were the choice of many who wished to encourage discussion and debate. A majority of the technologies were also being used by a few participants to facilitate experimenting and practising and a significant minority used the automated lecture capture and online delivery system to encourage articulation and expression.

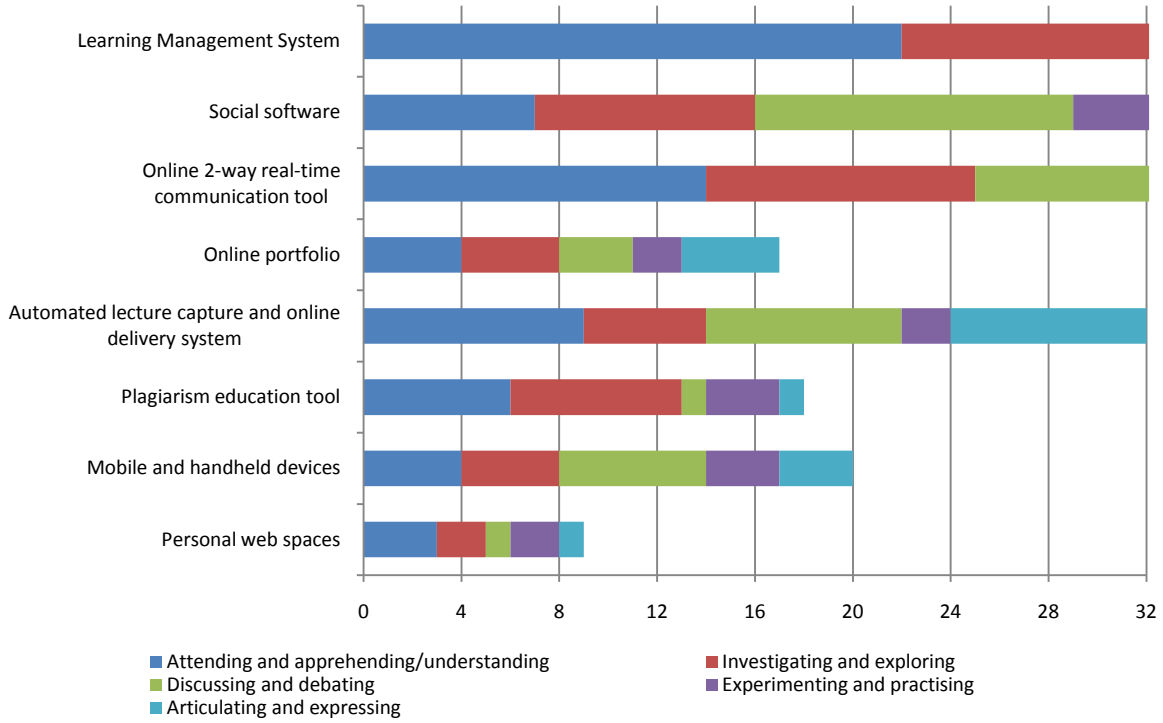


Figure 8: Staff participants' use of technologies and the learning experiences they facilitate

Technological needs of staff

While all staff used the LMS and many of the technologies made available through DSO, participants had moved with the times and had embraced newer technological options. They voiced their frustrations of being constrained by Deakin policies that are unhelpful proclaiming that '*Deakin blocks everything. Like even our staff websites, there's so much stuff we just can't do because they block it*' (participant O). In addition to policies that are more accommodating, participants specifically were keen to have the following capabilities:

Personal web spaces on the Deakin site: Participants felt that both staff and students needed personal web spaces on the University server as this would be helpful in some assignments.

Video: It was evident that student created work in video file formats would grow and have to be accommodated.

'. . . we are increasingly moving towards video as a tool, as a way of students making content and using video as a way of doing assignments. . . . Now at the moment, you can't do that on DSO, you can't get a student to file a video assignment . . .' (participant J)

Though it was pointed out that students currently use alternatives such as YouTube to do this, secure environments would have to be provided within the Deakin environment to do this.

Social networking: Functionalities such as blogs, wikis and photo sharing were needs voiced by some participants. While this was possible within the current DSO environment, it disallowed outside participants and collaborations with students in other universities and was therefore not considered ideal because it constrained the idea of social networking. A space where images both still and moving and audio content can be posted and used by others, including the ability to create repositories was important to participants.

Images and chat: Participants used tools outside DSO because they needed image posting and chat facilities. '*We've been using things like Facebook because it has instant chat on it and it can post pictures which makes it easier for them. The limitation of DSO is that students are unable to post pictures easily'* (participant R).

eLive: This tool was appreciated by most participants though a few raised concerns regarding its stability and hoped that it would soon be able to be streamed.

iLecture: iLecture greatly increased flexibility for students. Auto downloads of lecture recordings and easy access to them were considered enhancements that would increase convenience for learners.

Subtitling for the hearing impaired: One participant identified this as a service that Deakin does not currently have*. 'I tried to get Disability Services to put subtitles on and I tried to get KMD to do it and I tried to get the Library to do and nobody really said no but ..* '. (participant O).

Better supported mobile devices: A few participants were using mobile phones for creating video, and laptop computers for creating content. *'I guess I'm wanting us to go much more towards a cloud computing style here, the server holds the information and we just upload to it and draw references to it'* (participant R).

Other technologies: Other technologies participants had used in their provision of flexible education included:

- Video conference
- Interactive white boards
- Interactive free websites
- Narrated PowerPoint slides
- Audio and video equipment
- Turning point /Audience response - *interactive polling response system*
- Virtual worlds
- Computer simulation
- Global positioning system

Discussion

The 'voice' of thirty two Deakin teachers captured a microcosm of the different understandings related to flexible education held by the teachers across the University.

An exploration of their wide ranging understandings of flexible education against Deakin University's nine approaches to flexible education indicated that participant's practice varied according to disciplinary requirements and their understanding of the needs of their student cohort. It was clear that they all drew on the multiple dimensions of flexibility to varying

degrees to balance the learning needs and facilitate the desired experience for learners. Many offered flexibility to accommodate diversity in learning styles and to reach off-campus, off-shore and earner-learners that are unable to attend on-campus classes. While they valued flexibility, they accommodated aspects of flexibility according to their beliefs of what counted as good teaching.

It was also plain that while the University had a clearly articulated flexible education agenda to drive its learning and teaching, there were other agendas (sometimes competing) that had to be accommodated. For example, flexibility was also used by the University as part of its marketing agenda to attract diverse student groups and extend its student population. While it was a challenge to reconcile the learning and teaching agenda with the marketing agenda, it was also obvious that the agendas of the various external stakeholders as well as students' own agendas came into play. As a University that offers many courses that have professional accreditation and industry relevance, participants pointed out those boundaries to flexibility were exerted by those professional and industry needs, and flexibility as articulated by the University was not applicable in those courses. Servicing the students' agenda for flexibility found many participants extend themselves to offer almost unlimited flexibility in some areas, particularly by delivering the same learning resource in various forms of media including face-to-face lectures and some complained that this was merely done to satisfy student demand for learning resources in all formats.

There were a few participants who equated flexibility with technology use and viewed technology as playing a central role in providing flexible education in contrast to a facilitator role. DSO which includes the learning management system plus a suite of other technologies was in effect Deakin's unique signature of flexible education as it performed a pivotal role in the provision of flexible education. Connections were automatically made between flexible education and technology, leading one to ask the question 'is it because of the major role DSO plays?' Most participants were reliant on it as a space to deliver learning resources and a majority also depended on DSO to manage communication and interaction with students. While this stand seemed to assume that all learners wanted the flexibility of learning online, accommodating the learner who wants to come in and talk to the lecturer was also a level of flexibility many participants provided for.

There was undisputed agreement about the value of flexible education and its advantages to learners on the whole, but participants were quick to note its problems and restrictions. For instance, while flexible education can be an advantage to off-campus and working students, it called for a great deal of support for learners as well as teaching outside standard office hours. Though flexible education is an effort to widen participation, on Campus attendance can be predicted to drop significantly, particularly when course content is made available online as students use the convenience of access to exempt themselves from attending class.

Although the overarching philosophy of flexible education is to encourage learners to be independent and able to take control of and manage their learning, students' understanding of and readiness for flexible education caused concern to many participants who felt they were unprepared for that responsibility. Some forms of flexibility such as bringing in learners' own content and flexibility in relation to assessment were also uncomfortable to learners who preferred more teacher-driven and structured approaches to learning.

The study also showed that those participants, who were passionate about their teaching and keen on developing innovative forms of teaching, just did it regardless of workload, time pressures or concern for rewards and recognition. However, the belief of the majority was

that innovation is stressful, arduous and especially demanding in terms of time and resources and does not necessarily grant rewards. Provision of flexibility therefore needed recognition in staff workloads so that it was acknowledged alongside research thus benefiting both the individual researcher and the University.

Also to be noted was that practices of flexible education thrived in environments that aided it. For instance, some Faculties had formal support as well as opportunities for informal sharing of ideas with colleagues which provided a valuable enabling environment for participants to experiment and explore flexible learning approaches. However, formal support structures (e.g. teaching and learning support units) were not consistent across all Faculties and as such, access to support was not equal across the University. Central support through the Institute of Teaching and Learning was available to all University staff though there was some lack of awareness of the levels and extent of support it offered. Nevertheless, participants also identified several support needs such as educational design help and just-in-time assistance with operating the technology. They also mentioned the need for short hands-on workshops indicating their lack of knowledge of available help from within their own Faculties and from the Institute of Teaching and Learning.

There were also major concerns voiced regarding trends in technology and the future. New technology keeps changing so fast that users find it difficult to keep pace with change let alone settle down to a dependable habit of use or to think through its pedagogical values. The impending changes to the University's existing learning management system were causing anxiety already to some participants.

Conclusion

Flexible education is a Deakin strategy to provide an enhanced student-centred approach to learning in order to foster independent, creative, graduates capable of problem-solving. It is an overarching approach that emphasises increase in options, giving learners greater control over their learning.

The distinctive practice of flexible education at Deakin is enacted through a series of agendas: the learning and teaching agenda of the University, the marketing agenda, the agendas of the industry stakeholders and students' own agendas, to name a few. Although they are all valid from each perspective, they are nevertheless competing agendas that need to be productively managed and reconciled so that competing tensions are balanced constructively in a way that is beneficial to all.

Flexibility has constraints at varying levels from varying sectors across the University. There are aspects of this that can be controlled by the educators within the University and there are others that are less easily controlled. External stakeholders tend to constrain aspects of flexibility the University can offer. Their rigidity is often non-negotiable. Of course this varies from program to program and consequently this necessitates a clearer articulation of the forms and levels of flexibility that are relevant and therefore will be implemented within each of the courses. Careful planning and implementing program-wide design strategies will help to regulate flexibility based on sound educational rationales.

Similarly, student demand for convenience should be strongly guided by pedagogic rationales of what is essential, what constitutes good teaching and what adds value to learning. A clear expression of these guiding principles in relation to each course is essential and communicating these to students would also be useful in managing their expectations. Obviously, the responsibility of getting students involved, balancing participation and choice

and using technology to help students to engage rather than encouraging them to disengage, falls on the educators. While rationales related to flexibility need to cascade down to each unit, reiterating them to students in connecting them to learning goals would be essential, thus delineating the boundaries to flexibility.

Facilitating the adoption of flexible education approaches needs to be concurrently supported by a strong evidence base which will serve to convince Faculty members and ensure their commitment. Embedding Web 2.0 technologies and associated pedagogies, 3D simulations and Second Life, a new learning management system and new forms of flexible and blended teaching and learning models must be driven by evidence if there is to be any Faculty engagement. While this responsibility should be the mission of the Institute of Teaching and Learning, the Institute should also be charged with the responsibility of disseminating that knowledge, in partnership with Faculties.

Similarly, facilitating the adoption of flexible education also calls for strong support in several areas. Access to technology needs to be considered carefully rather than be taken for granted. Both students' access and ability to use the technology and staff capabilities must be recognised. Direct support during the course in terms of persons available to assist, support in preparation of the course and more general support such as help to gain new skills and insights related to pedagogical practice. Support also relates to technological infrastructure available for use in the teaching process. Support needs to be pre-planned but also prepared for just-in-time support when needs arise. Good support also entails constant monitoring, collecting feedback and responding effectively and reliably in a relevant and timely manner. While ongoing support is vital, embedding new forms of technology would call for support structures that are reliable and responsive to needs. Quality support is critical to success.

Supportive environments are also essential and constitute the University's social and professional climate, the management style of the leadership and the vision of the leaders and key persons. Often manifested in the form of policy frameworks, these should be realistic and encouraging to staff rather than yet another challenge to be overcome. For instance, realistic reward systems for innovative teaching, valuing research as well as teaching would be encouraging to staff.

In conclusion, the one certainty in the future is *change*. There will always be new challenges and opportunities related to flexible education.

References

Bazeley, P. (2007) Qualitative data analysis with NVivo. London: Sage Publications, Ltd.

Collis, B., & Moonen, J. (2001). Flexible learning in a digital world: Experiences and expectations. London: Kogan Page.

Deakin University (2009) Teaching and learning 2009. Functional area plan. Deakin University. http://www.deakin.edu.au/vc/docs/teaching-and-learning-plan-2009.pdf

Khan, B. (Ed.). (2007). Flexible learning in an information society. Hershey: Idea Group Publishing.

Laurillard, D. (2002). Rethinking University teaching: A framework for the effective use of learning technologies. London: RoutledgeFalmer.

Ramsden, P. (2003). Learning to teach in higher education. Oxon: RoutledgeFalmer.

Stake, R. E. (1978) The case study method in social inquiry. Educational Researcher, 7(2), 5-9.

Stake, R. E. & Trubull, D. J. (1982). Naturalistic generalisations. Review Journal of Philosophy and Social Science, 7(1), 1-12.

Strauss, A. L & Corbin, J. (2008) Basics of qualitative research: Techniques and procedures for developing grounded theory. Thousand Oaks, CA: Sage Publications, Inc.

Part C: Flexible Education International Symposium Report 2009

Future of Flexible Education in Higher Education

Introduction

The Institute of Teaching and Learning conducted a three day international symposium on the "**Future of Flexible Education in Higher Education**" on November 17 – 19, 2009 at the Melbourne Campus at Burwood featuring two international keynote speakers:

- Dr Terry Anderson, Professor and Canada Research Chair in Distance Education, Athabasca University, Canada's Open University (refer to Appendix 5: Terry Anderson's biography)
- Dr Malcolm Brown, Director Educause Learning Initiative, USA (refer to Appendix 6: Malcolm Brown's biography)

The purpose of this symposium was to hear and gather information from recognised international leaders in this field on current teaching practices and approaches to the provision of flexible education to assist with defining the future scope, innovation for and development of flexible education here at Deakin.

There were three components (refer to Appendix 7: Symposium program for more details):

- think tank sessions
- keynote presentations
- panel session with keynote speakers

'Next generation Pedagogies and Technologies' by Dr Terry Anderson

In this presentation, Terry provided an overview of the development of 3 generations of flexible learning pedagogies and the emerging connectivist ideas of teaching and learning in networked contexts. He also reviewed the use of technologies in teaching, especially those that are based on open access to the Net, while retaining privacy and persistence. He suggested that, together, new pedagogies and web based technologies can afford radically improved opportunities for both formal and informal learning.

Athabasca Open University provides 100% distance education, and therefore has no on-campus students. Their whole existence relies on the provision of facilities to deliver distance education. It was interesting to note that the term "flexible education" was not readily used in Canada, so a series of definitions were explored (refer to Appendix 8 – Definition of Flexible Learning).

However, they have a strong sense of values in regard to their distance education provision strategy as follows:

- we can (and must) continuously improve the quality, effectiveness, appeal, cost and time efficiency of the learning experience.
- student control and freedom is integral to 21st century life-long education and learning.
- education for elites is not sufficient for planetary survival.

T Anderson, Next Generation Pedagogies and Technologies presentation, 2009

They recognise three generations of flexible education pedagogies as follows:

1. *Behaviourist/Cognitive – Correspondence, Self Paced, Televised courses*

   Content is limited. The most important predictor of academic success is an achievement-oriented approach to learning**.** The second most important predictor is expectation of the learning process as an individual activity. *Ollssun, 2007*

2. *Constructivist – Paced online and blended programs*

   This pedagogy focuses on learning as an active rather than passive process, recognising the importance of multiple perspectives (groups) and the need for knowledge to be subject to social discussion, validation and application in a real world context. These groups, metaphorically known as *Virtual Classrooms*, have the following attributes:

   - conscious membership
   - leadership and organisation
   - cohorts and paced
   - rules and guidelines
   - access and privacy controls
   - focused and often time limited
   - may be blended F2F.

   Dron and Anderson, 2007

   The problems associated with group learning are as follows:

   - restrictions in time, space, pace, & relationship - NOT OPEN
   - often overly confined by leader expectation and institutional curriculum control
   - usually isolated from the authentic world of practice
   - "low tolerance of internal difference, sexist and ethicized regulation, high demand for obedience to its norms and exclusionary practices." *Cousin & Deepwell 2005*
   - "pathological politeness" and fear of debate
   - group think (Baron, 2005)
   - poor preparation for lifelong learning beyond the course

3. *Connectivist – Flexible learning future*

   Learning is building networks of information, contacts and resources that are applied to real problems. The core principles are as follows:

   - learning and knowledge rests in diversity of opinions.
   - learning is a process of connecting specialized nodes or information sources.
   - learning may reside in non-human appliances.
   - capacity to know more is more critical than what is currently known.
   - nurturing and maintaining connections is needed to facilitate continual learning.
   - ability to see connections between fields, ideas, and concepts is a core skill.
   - currency (accurate, up-to-date knowledge) is the intent of all connectivist learning activities.
   - decision-making is itself a learning process

Siemens 2004

This pedagogy recognises the importance of networks, metaphorically known as *Virtual Community of Practice*, which has the following attributes:

- shared interest/practice
- fluid membership
- friends of friends
- reputation and altruism driven
- emergent norms, structures
- activity ebbs and flows
- rarely F2F

Dron and Anderson, 2007

Multiple networks then lend themselves to the collective, metaphorically known as *Wisdom of Crowds*, which has the following attributes:

- 'aggregated other'
- unconscious 'wisdom of crowds'
- stigmergic aggregation
- algorithmic rules
- augmentation and annotation
- more used, more useful
- data Mining
- never F2F

Dron and Anderson, 2007

Examples of connectivist tools:

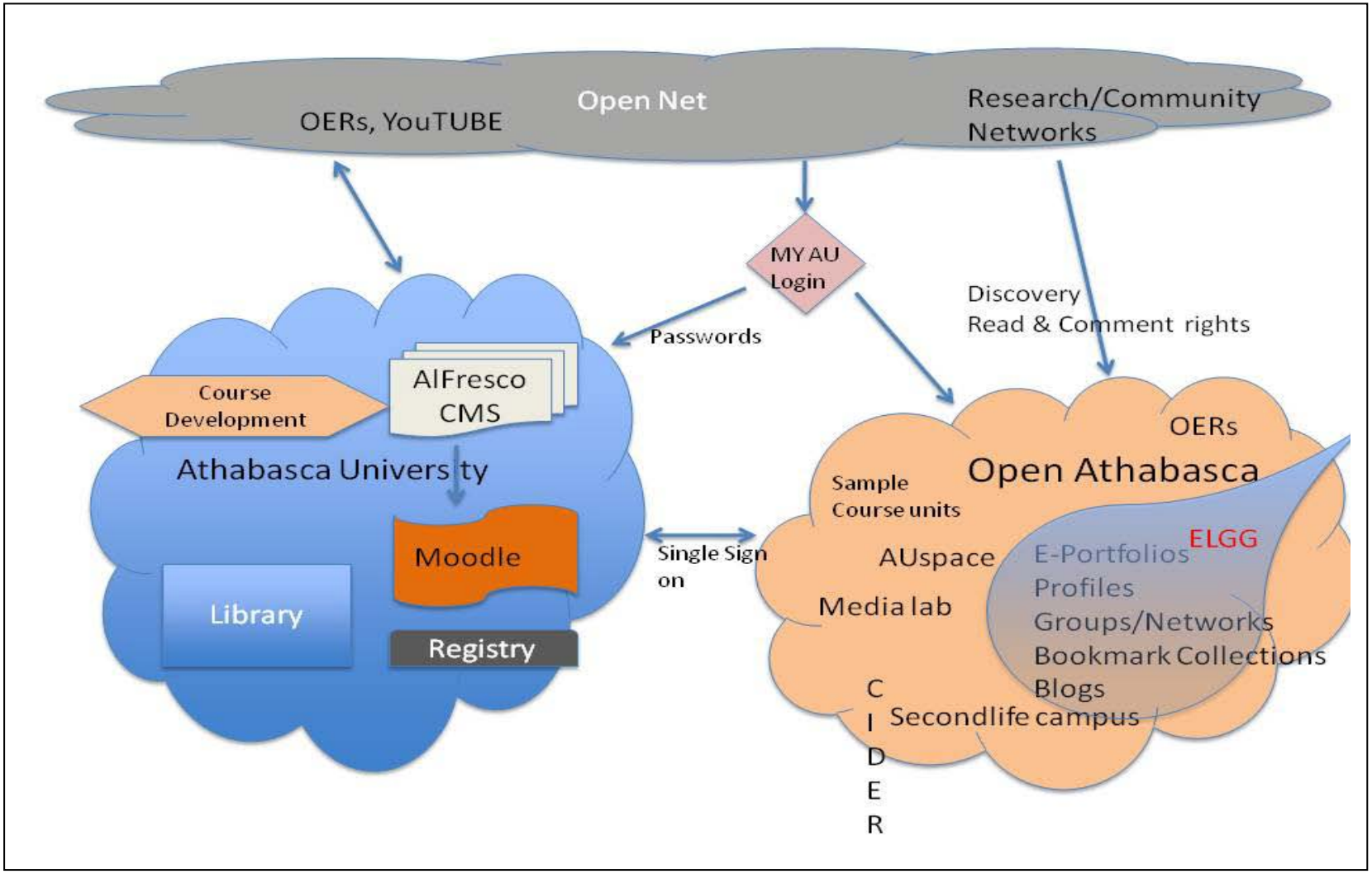
- open source movement
- open educational resources (e.g. iTunesU)
- social software (e.g. Facebook)
- casts (podcast, videocasts, screen casts)
- Wikipedia
- citizen journalism (blogs)
- immersive worlds (e.g. Second Life)
- distributed creativity (e.g. music, video, Flickr)

Challenges of moving to a connectivist pedagogy:

- personal competence, literacy and tools
- crystallised ways of thinking about our educational models
- resolving our own sense of privacy and net presence

Terry's full presentation is available via iLecture and can be found at http://www.deakin.edu.au/itl/workshops/past-presentations.php

Athabasca Open University has implemented an e-learning technology blueprint architecture where what requires security is inside their "Athabasca University" as opposed to other functionality that can sit within their "Open Athabasca", as per graphical representation below.



Conclusion

- Behavioural/Cognitive models are at an economic and pedagogical dead end for most forms of higher education
- Constructivist models seem OK for cohort groups, but have problems with scale, isolation and dependency
- Connectivist models and tools are flexible learning's future
- all of us need to develop our personal learning networks and net presence

'Charting our Course – Exploring 21st Century Learning' by Dr Malcolm Brown

In this presentation Malcolm suggests that there are forces in play -- some technical, some social, and some cultural -- that are challenging the traditional paradigms of higher education. He suggests that there is no doubt that higher education is changing and that it is in the area of teaching and learning that the change is most pronounced and happening most rapidly. As higher education strives to re-invent itself and to keep pace with these changes, there can be little doubt that flexibility and innovation will need to be a key characteristic of its future approach to teaching and learning. In this session, he examined the challenges that we face in supporting learning in higher education, and what flexibility and innovation might mean as strategies to meet those challenges.

The mission of Educause is "Advancing learning through IT innovation". Their main areas of focus are learners, learning principles, learning innovations and learning technologies.

What they are pondering includes:

- paradigm shift: the cloud (above the campus services such as LMS, Google Docs, Diigo, Voicethread, Poll Everywhere, Question Tool, Zoho and Open Text Book) and local IT
- fiscal challenges
- the pace of the 2.0
- paradigm under scrutiny: higher educations' future.

Change in communication technology use from 2006 to 2009 shows a dramatic increase across 39 institutions:

- use of social networking increased from 65.3% to 86.6%
- use of SMS (text messaging) increased from 76.8% (2008) to 84.9%
- instant messaging declined from 72.5% to 55.7%
- ownership of internet-capable hand held device is expected to be 63% at the start of the 2010/2011 academic year

ECAR 2009 study of undergraduates

They have identified five grand challenges for the implementation of future flexible learning:

- creating learning environments that promote active learning, critical thinking, collaborative learning, and knowledge creation
- developing 21st century literacies among students and faculty
- reaching and engaging today's learner
- encouraging faculty adoption and innovation
- advancing teaching and learning with technology in an era of budget cuts.

Options provided for students will include:

- multiple paths through content
- "tailor-ability" of the learning environment
- creation of their own course content
- getting mentoring and assistance
- participate in "real" research.

"Students desire multiple opportunities for learning through the use of technology"
ECAR 2009 undergraduate study roadmap

Malcolm's full presentation is available via iLecture and can be found at http://www.deakin.edu.au/itl/workshops/past-presentations.php

Summary

Both keynotes indicated that it is difficult to chart a course into the future to meet the flexible learning needs of students as we don't know where the paradigm shift will come to rest.

Learning environments are complex and need to take into account all of the following:

- campus, read/write and peer culture
- learning resources, practices and spaces
- personal, internet and campus technology
- personal goals, learning styles and context
- people
- support
- campus organisations.

If there is one thing that is certain we need to be innovative and provide options.

A closing remark was as follows:

Flexibility means options for students but what about flexibility for faculty staff?

Deakin's Teaching and Learning Plan 2009 provides the following:

Deakin University's teaching and learning agenda dictates a new approach to the integration of traditional classroom teaching, distance education and online education in ways most

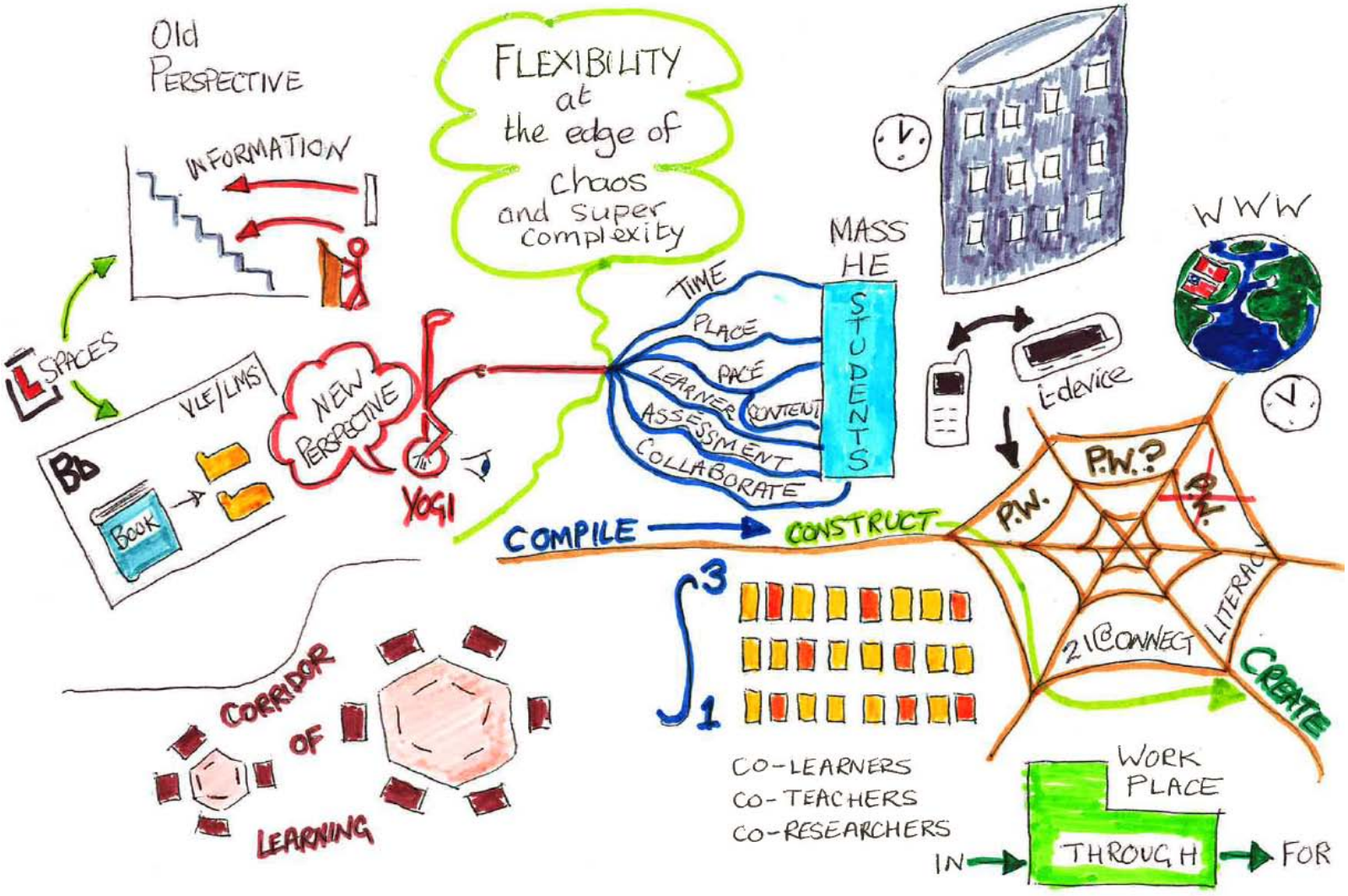
appropriate to the needs of its diverse student cohorts and the changing student environment. Deakin's vision of an integrated approach to flexible education is an environment which includes, where appropriate, choice in:

- the *time* (including flexible entry and exit points) at which study occurs;
- the *pace* at which the learning proceeds;
- the *place* (both physical and virtual) in which study is conducted;
- the *conten*t that is studied;
- the *learning style* adopted by the learner;
- the forms of *assessment* employed;
- the option to *collaborate* with others or to learn independently;
- how teaching is *staffed*; and
- the *mix* of the above used in any given course or unit.

These choices must be made within a framework which maintains sound and consistent academic standards.

It was suggested that 2 or 3 examples for each attribute should be written down to see which ones are complementary and which ones are contradictory. It may, in fact, not be possible to create such an environment which meets all of the above criteria.

In summary Colin Mason, Director Institute of Teaching and Learning, Deakin University offered the following mind map to represent the proceedings of the 3 days of the symposium.



Appendixes

Appendix 1: Staff questionnaire

Staff Questionnaire

Please complete all sections of the Staff Questionnaire before the interview:

Section 1: Participant Background Information

Section 2: Approaches to Flexible Education at Deakin University – how *important* is it?

Section 3: How often Technologies are used in Teaching and Learning

Section 4: How Technologies are used in Teaching and Learning

Section 1: Participant Background Information

Please tick (√) the appropriate boxes and fill in the gaps as necessary.

1. **Staff Level:** ☐ Sessional/Tutor ☐ Associate Lecturer ☐ Lecturer ☐ Senior Lecturer ☐ Associate Professor ☐ Professor

2. **Employment Status:** ☐ Casual ☐ Contract ☐ Continuing
3. **Campus(es) taught:** ☐ Burwood ☐ Waterfront ☐ Waurn Ponds ☐ Warrnambool ☐ Off-campus
4. **I have taught at Deakin University for:** ……. Years ……. Months
5. **I have taught Trimester 3 or Summer units:** ☐ Yes ☐ No
6. **I have taught wholly online units:** ☐ Yes ☐ No
7. **I work within the Faculty of:**

   ☐ Arts & Education, School of ……

   ☐ Business & Law, School of ……

   ☐ Health, Medicine, Nursing & Behavioural Sciences, School of ……

   ☐ Science & Technology, School of ……

Section 2: Approaches to Flexible Education at Deakin University – how *important* is it?

Please indicate with a tick (√) how **important** you rate the following approaches to flexible education at Deakin University.

Approaches to Flexible Education	Very important	Moderately important	Somewhat important	Not important	Not applicable
Time at which study occurs including flexible entry and exit points					
Pace at which learning proceeds					
Place in which study is conducted including both physical and virtual					
Content that is studied					
Learning style adopted by the learner					
Forms of assessment employed					
Option to collaborate or learn independently					
How teaching is staffed					
The mix of the above used in any given course or unit					

Section 3: How often Technologies are used in Teaching and Learning

Please indicate with a tick (√**)** how often you use these teaching and learning technologies in your current teaching and learning practices:

Teaching and Learning Technologies	Never	Sometimes	Regularly	Not applicable
Learning Management System used for managing and delivering course material and assessment tasks e.g. Blackboard				
Social Software used for sharing online work, collaborating, blogging, forums and etc e.g. wikis, Drupal, Facebook, Yammer				
Online 2-way real-time communication tool used for discussion and collaboration e.g. eLive!, instant messaging				
Online portfolio used for organising and showcasing student work e.g. ePortfolio				
Automated lecture capture and online delivery system used for delivering online video and audio lectures for pod cast, download or streaming e.g. iLecture				
Plagiarism education tool used for understanding and avoiding plagiarism e.g. Turnitin				
Mobile and handheld devices used to support learning e.g. Mobile phones				
Personal web space Used for organising personal customised learning and teaching content e.g. individual web page/site				
Other Teaching and Learning technologies used: ……				

Section 4: How Technologies are used in Teaching and Learning

Please indicate with a tick (√) how you use these technologies in your teaching and learning experiences of students.

	Teaching^			Learning Experiences*				
Teaching and Learning Technologies	**Delivering Content**	**Organising & supervising student activity**	**Adapting to circumstances & context**	**Attending & Apprehending/ Understanding**	**Investigating & Exploring**	**Discussing & Debating**	**Experimenting & Practising**	**Articulating & Expressing**
Learning Management System used for managing and delivering course material and assessment tasks e.g. Blackboard								
Social software used for sharing online work, collaborating, blogging, forums and etc e.g. wikis, Drupal, Facebook, Yammer								
Online 2-way real-time communication tool used for discussion and collaboration e.g. eLive!, instant messaging								
Online portfolio used for organising and showcasing student work e.g. ePortfolio								
Automated lecture capture and online delivery system used for delivering online video and audio lectures for pod cast, download or streaming e.g. iLecture								
Plagiarism education tool used for understanding and avoiding plagiarism e.g. Turnitin								
Mobile and handheld devices used to support learning e.g. Mobile phones								
Personal web space Used for organising personal customised learning and teaching content e.g. individual web page/site								
Other teaching & learning technologies used: ……								

^ Ramsden, P. 1991. *Learning to Teach in Higher Education*, Routledge, London

*Based Laurillard, D. 2002. *Rethinking University Teaching: a framework for the effective use of learning technologies*, 2nd Ed. Routledge, London

Appendix 2: Staff interview questions

1. What do you understand by the term ‘flexible education’? How would you define it?
2. How have you demonstrated *flexibility* in your current teaching practices in delivering quality teaching and learning?
3. Can you identify aspects of your teaching which would allow for greater flexibility?
4. What aspects of flexibility do you most value in your teaching? Give examples.
5. What factors enable and encourage you to adopt flexible teaching and learning approaches?
6. What factors hinder and discourage you to adopt flexible teaching and learning approaches?
7. Any other comments?

Appendix 3: Student questionnaire

Student Questionnaire

Please complete all sections of the Student Questionnaire before the focus group:

Section 1: Participant Background Information

Section 2: Approaches to Flexible Education at Deakin University – how *important* is it?

Section 3: Approaches to Flexible Education at Deakin University – how *satisfied* are you?

Section 4: Teaching and Learning Technologies – how *useful* to your Deakin education?

Section 1: Participant Background Information

Please tick (√) the appropriate boxes and fill in the gaps as necessary.

1. **Student type:** ☐ Domestic student ☐ International student
2. **Study level:** ☐ Undergraduate ☐ Postgraduate *by coursework* ☐ Postgraduate *by research*
3. **Attendance mode:** ☐ On-campus ☐ Off-campus ☐ Full-time ☐ Part-time

   If *On-campus*: ☐ Burwood ☐ Waterfront ☐ Waurn Ponds ☐ Warrnambool
4. **My age:** ☐ Under 25 years ☐ 26 – 35years ☐ 36 + years
5. **Course name:**

   _____
6. **Major(s):**

   _____
7. **How many semester/Trimesters have you studied at Deakin:** _____
8. **I have undertaken Trimester 3 (Summer) units:** ☐ Yes ☐ No
9. **I have undertaken *wholly online* unit(s)** ☐ Yes ☐ No

Section 2: Approaches to Flexible Education at Deakin University – how *important* is it?

Please indicate with a tick (√**)** how **important** the following approaches to flexible education are to your Deakin education.

Approaches to Flexible Education	**Very important**	**Moderately important**	**Somewhat important**	**Not important**	**Not applicable**
Time at which study occurs including flexible entry and exit points					
Pace at which learning proceeds					
Place in which study is conducted including both physical and virtual					
Content that is studied					
Learning style adopted by the learner					
Forms of assessment employed					
Option to collaborate or learn independently					
How teaching is staffed					
The mix of the above used in any given course or unit					

Section 3: Approaches to Flexible Education at Deakin University – how *satisfied* are you?

Please indicate with a tick (√**)** how **satisfied** you are with the current flexible approaches offered with your Deakin education.

Approaches to Flexible Education	Very satisfied	Moderately satisfied	Somewhat satisfied	Not satisfied	Not applicable
Time at which study occurs including flexible entry and exit points					
Pace at which learning proceeds					
Place in which study is conducted including both physical and virtual					
Content that is studied					
Learning style adopted by the learner					
Forms of assessment employed					
Option to collaborate or learn independently					
How teaching is staffed					
The mix of the above used in any given course or unit					

Section 4: Teaching and Learning Technologies – how useful to your Deakin education?

Please indicate with a tick (√**)** how useful each teaching and learning technologies are to your Deakin education.

Teaching and Learning Technologies	Very useful	Moderately useful	Somewhat useful	Not useful	Don't know
Learning Management System used for managing and delivering course material and assessment tasks e.g. Blackboard					
Social Software used for sharing online work, collaborating, blogging, forums and etc e.g. wikis, Drupal, Facebook, Yammer					
Online 2-way real-time communication tool used for discussion and collaboration e.g. eLive!, instant messaging					
Online portfolio used for organising and showcasing student work e.g. ePortfolio					
Automated lecture capture and online delivery system used for delivering online video and audio lectures for pod cast, download or streaming e.g. iLecture					
Plagiarism education tool used for understanding and avoiding plagiarism e.g. Turnitin					
Mobile and handheld devices used to support learning e.g. Mobile phones					
Personal web space Used for organising personal customised learning and teaching content e.g. individual web page/site					
Other teaching and learning technologies used: ……..					

Appendix 4: Student focus group questions

1. How has your Faculty and/or School demonstrated flexibility in your Deakin education? Provide some examples.
2. How has your lecturer/tutor demonstrated flexibility in their teaching? Provide some examples.
3. How can Deakin University provide you with more flexibility in your Deakin education?
4. What factors would hinder Deakin University from providing you quality teaching and learning?

Appendix 5: Dr Terry Anderson's biography

Keynote Speaker

Dr Terry Anderson

Professor and Canada Research Chair in Distance Education

Terry is involved in a variety of research, teaching and service activities which include:

Research

- Technology Enhanced Learning Research Institute – Athabasca University
- Canadian Institute for Distance Education Research (CIDER)
- References and/or full text of most of his research and professional publications are available from AUSpace, the Athabasca University archive

Teaching

Terry teaches and advises students in the Masters of Distance Education, Master of Arts Integrated Studies (MAIS) program and the Education Doctoral (EdD) program at Athabasca University.

He currently teaches:

- MDDE663 Emerging Distance Education Technologies and
- MDDE605 Planning and Management in Distance Education and Training

He also serves on committees and has acted as external examiner for Masters and PhD programs globally.

Academic and Professional Service:

Terry serves on advisory committees with the Alberta and Canadian governments.
He is currently the Editor of the International Review of Research in Open and Distance Learning and currently serves on editorial boards of the following Journals:

- Journal of Distance Education
- American Journal of Distance Education
- Internet in Higher Education
- Canadian Journal of Educational Communication
- Journal of Interactive Media in Education
- The Journal of e-Learning and Knowledge Society

Terry is an active keynote and regular session speaker at a variety of education, distance education and net based learning conferences. During the past 8 years he has been a keynote speaker at 31 such conferences.

For more information visit: http://cde.athabascau.ca/faculty/terrya.php

Appendix 6: Dr Malcolm Brown's biography

Keynote Speaker

Dr Malcolm Brown

Director EDUCAUSE Learning Initiative

Prior to assuming the position of director of the ELI, Malcolm was the Director of Academic Computing at Dartmouth College. His group supported faculty and students in the applications of information technology in research and in the curriculum, and oversaw classroom technology. He has worked actively with the ELI, contributing chapters to the ELI eBooks, helping to plan focus sessions, and serving on the ELI Advisory Board. He has been a member of the EDUCAUSE Evolving Technologies committee and is currently on the faculty of the EDUCAUSE Learning Technology Leadership program.

He has been on the board for the Horizon Report since its inception in 2004 and served as Chair of the Board of the New Medium Consortium. He is currently serving as the editor of the New Horizons column for the EDUCAUSE Review.

Malcolm holds a pair of BA degrees from UC Santa Cruz, studied in Freiburg, Germany, on a pair of Fulbright scholarships, and has a PhD in German Studies from Stanford University. He has taught several academic courses on Nietzsche and maintains the Nietzsche Chronicle web site. He is a member of the Frye Institute class of 2002.

He has given presentations recently at Duke University, Long Island University, 2008 Educause MARC, Bowdoin College, Coppin State, and the University of North Carolina Chapel Hill, Educause Live, and the ELI Fall Focus session.

For more information visit:

http://www.educause.edu/Community/MemDir/Profiles/MalcolmBBrown/40383

Appendix 7: Symposium Program

DEAKIN

International Flexible Education Symposium

DAY 1: Tuesday 17 November, 2009 *Dr Terry Anderson*	
Think tank - Melbourne Campus at Burwood – P3.05	
9.30am – 10.00am 10.00am – 12.00pm 12.00pm – 1.00pm	Morning tea/coffee Session with Dr Terry Anderson Lunch
Keynote presentation - Melbourne Campus at Burwood – LT12 (X.2.05)	
1.00pm – 1.15pm 1.15pm – 2.15pm 2.15pm – 2.30pm 2.30pm – 2.45pm 2.45pm – 3.45pm 3.45pm – 4.15pm	Welcome and Introduction (Prof. Colin Mason) Keynote Speaker – Dr Terry Anderson Question time Afternoon break Formal conversation session (Arlene Silvas facilitator) Informal discussion
DAY 2: Wednesday 18 November, 2009 *Malcolm Brown*	
Think tank - Melbourne Campus at Burwood – P3.05	
9.30am – 10.00am 10.00am – 12.00pm 12.00pm – 1.00pm	Morning tea/coffee Session with Dr Malcolm Brown Lunch
Keynote presentation - Melbourne Campus at Burwood – LT12 (X.2.05)	
1.00pm – 1.15pm 1.15pm – 2.15pm 2.15pm – 2.30pm 2.30pm – 2.45pm 2.45pm – 3.45pm 3.45pm – 4.15pm	Welcome and Introduction (Prof. Colin Mason) Keynote Speaker – Dr Malcolm Brown Question time Afternoon break Formal conversation session (Anne Horn facilitator) Informal discussion
DAY 3: Thursday 19 November, 2009 *Panel session* Melbourne Campus at Burwood – LT12 (X.2.05)	
12.00pm – 1.00pm 1.15pm – 1.30pm 1.30pm – 2.30pm 2.30pm – 2.45pm 2.45pm – 3.45pm 3.45pm – 4.15pm	Lunch Welcome and Introduction (Prof. Colin Mason) Summary presentations: Dr Anderson and Dr Brown Afternoon break Panel discussion: Dr Anderson and Dr Brown Wrap Up
Cocktail reception at 6.30pm followed by Symposium Dinner **Rydges on Swanston, 4th Floor, 701 Swanston St, Melbourne**	

Appendix 8: Definition of Flexible Learning

A number of definitions of Flexible Learning were offered

- **Flexible learning is a set of educational philosophies and systems**, concerned with providing learners with increased choice, convenience, and personalisation to suit the learner

  en.wikipedia.org/wiki/Flexible_Learning

- **An approach which allows for the adoption of a range of learning strategies** in a variety of learning environments to cater for differences in learning styles, learning interests and needs, and variations in learning opportunities and; Approaches to teaching and learning which are learner-centred, free up the place, time and method for learning and teaching, and use appropriate technologies in a networked environment.

  www.usq.edu.au/planstats/Docs/GlossaryTerms.doc

- Learning characterised by a **mixed mode of delivery** and assessment of instructional material.

  www.calendar.auckland.ac.nz/information/glossary.html

  Flexible learning, which includes e-learning, is about the learner deciding what, where, when and how they learn

  www.flexiblelearning.net.au/aboutus/jargonbuster.htm