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The Adoption of Multiple Modes of Delivery in Australian Universities

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Abstract

This paper reports the findings of a major national research project examining the use of multiple modes of delivery in Australian universities. A variety of factors including the increased use of on-line educational technology has pushed Australian universities in recent years to extend the ways in which they deliver learning and teaching. However, the extent of the uptake of these modes of delivery has remained somewhat unclear as have the precise reasons why universities have adopted multiple modes. The paper reports the result of a survey which clarifies the extent of the use of multiple modes of delivery in Australian universities and case study research that attempts to unpack the reasons for adoption. The research finds that traditional face to face delivery is still the dominant form of delivery but universities are experimenting with a surprisingly wide variety of alternatives.

The Adoption of Multiple Modes of Delivery in Australian Universities

It is frequently observed that universities operate in a dynamic global environment of technical development and social, economic and political change that demands a rethinking of approaches to the provision of higher education. (Inglis, Ling and Joosten, 2002). This has not only led to mass higher education and life-long learning in highly developed countries but has involved transnational education, which has extended the reach of universities and altered the nature of their clientele. Learners can be expected to have multiple commitments that need to be taken into account by educational providers. The university population has been claimed (Fry, 2001) to be changing from 'learner-earners to earner-learners'. The Australian government established the West committee to 'develop a policy framework for higher education that will allow universities to respond creatively and flexibly to change, whilst meeting the needs of students' (DEETYA, 1998). Some Australian universities have adopted radically new approaches to delivery working with international consortia to establish virtual universities, though not to good effect (Marginson, 2004). For the most part, however, changes to the forms of provision adopted by universities, at least with regard to their on-shore operations have been marginal rather than radical. To investigate the impact of these changes on the way that universities have responded through more flexible educational provision, a major national research project examining the use of multiple modes of delivery in Australian universities was undertaken.

A survey of on-line courses available from Australian universities was conducted by the Australian government Department of Education, Science and Training (DEST, 2002b) in order to ascertain the extent of on-line education in Australian universities. The survey found that there were 207 fully on-line courses offered by 23 Australian universities. Sixty-five of these courses (31 per cent) were delivered only by on-line mode, and the majority (90 per cent) of on-line courses were at postgraduate level. The DEST survey also investigated the extent to which units were available on-line.⁽¹⁾ Whilst 54 per cent of all units had content available on the web, with almost all of this being web-supplemented, fully on-line units represented only a small percentage of units (0.8 per cent of undergraduate units, 2.7 per cent of postgraduate units).

The numbers of students engaging in multi modal learning in Australian universities has gradually increased in recent years. Table 1 shows the changes in enrolment patterns from 2001.

Mode of attendance	2001	2002	2003	2004	%change 01-04	% of total 01	% of total 04
Internal	615501	655400	682554	698440	12.9	82.3	82.7
External	107164	1129650	117158	114937	7.3	14.3	13.6
Multi-modal	25160	26603	30346	31103	23.6	3.4	3.7
Total	747825	794993	830058	844480	12.9	100.0	100.0

Table 1: Mode of Attendance on University Students 2001-2004

Sources: DEST, 2001, 2002a, 2003, 2004.

The numbers of students in multi-modal delivery has increased at a far higher rate than internal or external enrolments, the increase is from a very small base so that multi-modal enrolments have remained below 4 per cent of total student enrolments.

Issues in Adopting Multiple Modes of Delivery

One concern for universities is positioning themselves in the market place. Universities have been exhorted to be entrepreneurial and creative (Katz and associates, 1999) in responding to the changing environment. Educational technologies open up a range of options but there are numerous issues in decision-making about multiple modes of delivery, including consequences for the traditional campus where institutions use technology to aid the growth of the academy (Rowley, Lujan and Dolence, 1998). Leydon (2001) warns institutions to be wary of 'mission creep' and attempting to be all things to all people. Daniel, Vice Chancellor of the U.K. Open University, advises that a university needs to determine what kind of university it wants to be (Daniel, 2001).

An issue identified in the literature on modes of delivery is the importance of determining what modes are best used for what purposes. Where on-line learning is an element of the delivery mode adopted, some commentators place an emphasis on delivery of content (for example Brahler, Nils and Johnson, 1999) while other writers focus on interactive communication (Hesketh, Gospar, Andrews and Sabaz, 1996). Where universities operate in mixed mode, they should be aware of a prevailing perception, for example as Daniel (2001) notes, that students prefer to use on-line facilities for down-loading documents, and discussion with peers - not for learning more generally. Laurillard (2001), however, suggests that educational technologies can involve interactive processes between learners and teachers in ways that accord with active learning as advocated by Biggs (2003) and with constructivist approaches to learning and teaching.

Flexibility in providing for an increasingly diverse student population can be a driver for multiple modes of delivery. Amongst other issues of access, flexible provision can help counter disadvantages faced by students in rural and remote locations. Flexible provision, however, can come at a cost, particularly in the case of institutions without experience in multiple modes of delivery. It can place additional demands on staff time, diverting staff time from other academic functions (Ling et al, 2001). A number of studies advocate the use of on-line activities to develop generic skills valued in employment, including but not restricted to information literacy skills (Collings and Pearce, 2002).

Taylor (2004) highlighted the need for organisational transformation in universities. He claims that 'traditional approaches based on conventional classroom-based teaching and learning will not be capable of meeting the escalating demand for higher education in the knowledge society. The development of a new mix of modes of delivery for education is seen as critical to both the nation and to individual universities. However, it is important to monitor these developments and to identify and disseminate what has been learned as a result. This paper reports the results of a survey of approaches adopted by Australian universities to multiple modes of delivery and an indication of some of the factors that influence decision-making about delivery modes. Mode of delivery refers here to broad approaches to the way that programs are provided, including by students' attendance at classes on campus, by print-based off-campus education, by video-based off-campus education, and by on-line learning. Multi-modal delivery is an approach in which more than one mode is employed as a requirement to access the program or as an option for students.

Methodology

This research investigated the factors affecting universities when setting priorities in relation to educational delivery, and the means by which they achieve the most effective combination of methodologies. The research questions were:

- What are the modes of delivery of learning and teaching in Australian universities?
- What are the factors that universities identify as the basis of selecting the modes of delivery in Australian universities?

The research was carried out using a survey of Australian universities to determine the extent of different modes of delivery, and case studies to probe in more depth the experience at particular universities. The survey questionnaire was sent to every Australian university in late 2002 and early 2003, together with a covering letter to Vice-Chancellors requesting that they participate in the survey. Twenty universities responded representing the diverse types of universities found in the Australian higher education sector. The survey asked respondents to indicate the predominant modes of delivery for their courses, and the proportion of courses delivered by different modes of delivery. The survey focused on the use of different modes of delivery at the course level rather than the numbers of students involved in the modes. The modes of delivery were defined by using three different aspects of delivery:

1. Where the course is offered (e.g. at a central campus or offshore)
2. When the course is offered (e.g. fixed session times or continuous enrolment)
3. How the course is offered (e.g. face-to-face or on line).

The results of the survey provided a snapshot of modes of delivery in Australian universities at a point in time.

The case studies were used to build a more complete picture of factors influencing university decision-making. Six cases were selected with particular emphasis on institutions moving to multiple mode of delivery and those with varying geographical and student bases. Individual case studies were each conducted by a member of a team of four researchers. Interviews were carried out with senior staff responsible for learning and teaching as well as staff of learning and teaching units at the universities. The accounts of these studies were circulated to team members and emerging themes identified. A panel of three then reviewed and expanded the scope and depth of the treatment of these themes. Two of the case study institutions wished to remain anonymous. These have been identified as Alpha University and Delta Institute. The other institutions selected were Charles Sturt University, Deakin University, Swinburne University of Technology and Queensland University. In addition to the survey and case study techniques, a range of relevant learning and teaching policies available on university web sites was incorporated into the study.

Survey Findings

In general, the respondents experienced some difficulty in completing the questionnaire. In particular, it was difficult for respondents to identify accurately the percentages of courses that were run in different modes. For this reason, only fourteen of the universities identified the numbers of courses run in different modes in such a way that permitted legitimate comparison. Table 2 summarises the responses from the universities that identified the percentage of courses in each delivery mode. The survey promised responding institutions anonymity, thus the universities are identified only by letter.

The following major delivery modes were identified from the responses:

Face-to-face	Face-to-face delivery on a fixed session basis at single or multi campuses of the university.
Multi campus	Courses offered at multiple campuses of the university, usually in face-to-face mode.
Resource-based	Course offered using resources other than traditional face-to-face delivery methods.
Distance education	Traditional, distance education using a variety of resources on a fixed session basis.
Off-shore	Courses offered by the university to students located in another country.
Partnerships	Courses offered by a partner institution in Australia or overseas.
Satellite campus	Courses offered exclusively at a small, satellite campus of the university.
Fully on-line	Courses offered only through on-line delivery.

Institution	Face-to-face	Multi campus	Resource based	Distance education	Off-shore	Partnerships	Satellite Campus	Fully on-line
A	80	5		10	5	15	5	
B	40	20	20		18	20		2
C	80	32		72		34		2
D	100			32		4		17
E	80	<5				<5		
F	80	30	52				12	
G	80							
H	80			26	6.5	1.5		1.5
I	80	<10		10		<10		<10
J	90			90		40		40
K	80		47			4		
L	90		<10		<10			<10
M	70			70		5	2	1
N	70	25				3.5		<1

Table 2: Modes of Delivery Adopted at Selected Universities (%)

Note: Some courses were delivered in more than one mode, thus percentages do not always add to 100.

Some clear outcomes emerge from an analysis of the response of the 14 universities in the table. First, the overwhelming dominance of the traditional face-to-face mode of delivery stands out starkly from this table. In commenting on their use of face-to-face delivery, most universities explained their preference for this mode of delivery in terms of tradition; this was the way in which teaching had always been carried out in universities and there was little likelihood of that situation changing in the near future. Also, institutions explained that face-to-face delivery was the best way of meeting the expectations of most of their students. Certainly, school leaver entrants to university were perceived to have an expectation that teaching would be carried out using a combination of lectures and tutorials, and universities felt that they had to meet these expectations from this student body. Face-to-face delivery was also seen as the most economical form of delivery. At a time when universities are very conscious of the future financing of the higher education sector, face-to-face delivery represents one of the cheapest methods of teaching available. For this reason alone, the survey findings suggest that it is unlikely we will witness the demise of traditional face-to-face methods in the foreseeable future.

Linked to the dominance of face-to-face teaching was the relatively low use of other modes of delivery. The most widely used methods apart from face-to-face teaching on a university campus were the traditional distance education (DE) mode and third party partnership arrangements. A few universities also reported that they were using resource-based learning for a large proportion of their courses. However, this latter response has to be interpreted carefully in the light of the differing understandings of modes of delivery apparent amongst respondents. In this case, resource based learning may refer to the use of supplementary resources in a traditional face-to-face mode as described above.

Distance education is not a new form of delivery. In this survey it was still very much concentrated in the traditional distance education universities (H, M, J, and C) but with some provision in other universities such as I and D. In this sense, distance education did not appear to be a mode of delivery that was spreading rapidly. It was the cornerstone of delivery for some universities but was only a small-scale mode of delivery for other universities that have not traditionally supported a DE activity.

Partnership arrangements were more common, with 11 of the 14 universities in the table reporting some partnerships. The degree of partnership activities varied considerably with some, such as B, C and J reporting that a significant number of their courses were offered through partners. In recent years, the level of partnership activity has been growing as off-shore partnerships have developed as a major form of international education. In some of these cases, student numbers in partner institutions may have been quite high although offerings may have been restricted to only a few, high demand courses, especially in business and information technology. Thus, although M reported that only 2 per cent of its courses were offered through partners, these courses accounted for over 5,000 students and were a significant activity for the university.

A third conclusion that may be drawn from the table refers to the number of modes of delivery reported by universities. It is clear that there is a considerable range of modes of delivery offered by Australian universities. Of the eight major modes of delivery identified in the analysis of the survey results, six of the 14 universities that enumerated their modes of delivery reported teaching in five or more modes. These were A, B, C, H, J, and M. It is interesting to note that four of these universities were formed during the Dawkins era and a fifth was a longstanding provider of distance education. The older universities, which have been traditionally on-campus, school leaver focused in their delivery, tend to offer fewer modes of delivery.

Outline of the Case Studies

Given the diversity of modes found in Australian universities, the research team focused on particular innovations in delivery in each of the case studies.

Alpha University is a relatively small regional university with almost all of its students attending on campus. It was included because of the recency and particular way it went about the process of adding modes of delivery and how it profited from the experience of universities that tackled this task somewhat earlier. Although a traditional provider of face-to-face education, staff members who wished to teach in other ways were free to experiment.

Features of this experimentation were taken up as part of the broader strategic planning of the institution as a direct result of the leadership of the Pro Vice Chancellor. Top-down planning within Alpha began at a relatively late stage and culminated in a decision to invest in Web CT. At the time of this study, a quality assurance system was being introduced for all web-based teaching that required staff to sign that they had complied with relevant copyright legislation before their site is made available to students. This was being expanded to include a diversity of issues related to quality including compliance with University policies and disability legislation, as well as basic technical issues such as link integrity and navigability.

Charles Sturt University (CSU) is Australia's largest distance education provider with over two thirds of its 38,000 students enrolled in DE mode. The case study focuses on the Dubbo campus established in 1997 in response to local demand and allied political pressures. The Dubbo Campus operates a single school unlike other campuses and exemplifies the notion of a node campus characterised by:

- Limited academic and administrative staff on site.
- Access to academic and administrative staff provided through information and communications technologies.
- Limited library facilities; provision of on site study and learning skills support; provision of a limited rather than comprehensive range of courses.
- The provision of an on-campus student association.

The original intention, based on the marginal student funding available at the time, was that the teaching at Dubbo would be done mainly by staff members based elsewhere in CSU, using information and communication technologies. However, students and the local community expected a traditional presence with locally based lecturers and infrastructure and what has emerged is a hybrid mode where students studying at Dubbo receive regular distance education subject materials with supplementary face-to-face or videoconference interactions. For this reason, the campus at Dubbo is currently not as 'virtual' as first imagined but still seeks to retain the 'clever campus' tag.

Deakin University operates as both a national DE provider and regional university with five major campuses located in Melbourne, Geelong and Warrnambool. The university claims that distance education and on-campus education are simply different modes of study. Not only do many on-campus students choose to enrol in DE mode but all have to complete at least one subject in this mode during their course. The case study focused on the development of Deakin's on-line learning system. On-line learning at Deakin began in the early 1990s with individual members of staff experimenting in the use of the World Wide Web to enhance their teaching. In 2002, a review of the five on-line learning management systems then in use was conducted. An outcome of this review was the adoption of WebCT Vista as the learning management system for the university.

This development was championed by a new Vice-Chancellor who claimed both the implementation of a common learning management system and the decision to make on-line learning a part of the experience of learning for all Deakin students from 2003, as evidence of a progressive and innovative organization. The Deakin on-line learning strategy is comprehensive and well supported. The key elements of Deakin Studies On-Line (DSO) involve the creation of an on-line presence, based on WebCT, for all subjects. This allows academics to put materials onto the on-line site for subjects as well communicate with students and for students to submit assignments electronically.

The implementation of the DSO has been strongly supported by the Learning Services Division, which combines the library with a dedicated IT group and the teaching and learning support group that was established in 2000. This powerful combination is responsible for both the DSO implementation and allied staff development. The success of the implementation has also been assured by the appointment of a Pro-Vice-Chancellor (Online Services) in 2003. Deakin also runs an internal conference on innovations in on-line learning at which staff members are encouraged to report the results of their research into on-line learning which helps embed new practices into the organisational culture. However, there is evidence that some staff do not regard all on-line-related developments favourably.

Delta Institute is a small, specialised, high profile, entrepreneurial higher education provider of professional education in one discipline. The Institute has strong leadership and is a leader in its field. Its core program was traditionally available only through face-to-face instruction. A new electronic program was first run in 1997. However, at this time it was decided not to offer programs on-line but to utilise print-based materials as the primary resource and to supplement the instruction with email and CDs. Delta Institute moved to an on-line delivery of its distance education programs in 2002 but required students to attend an interstate or overseas study centre or its main campus for a two-week residential school. The Institute's programs are underpinned by a constructivist philosophy that 'learning occurs through doing' and its staff members believe that certain components of its programs must be taught and discussed in a face-to-face fashion. The students are also required to re-visit the campus at the conclusion of their program to sit examinations and to undergo a viva following feedback after their examinations. The transition from a traditional on-campus provider in a single city to a provider of technologically enhanced distance education with increased student enrolment has been well managed. At the time of this study, about 85 per cent of its students chose to study by distance education (either full-time or part-time). Staff members at Delta Institute have been well supported in the transition by timely and appropriate training and development programs.

Swinburne University of Technology (SUT) is a dual sector institution combining both a higher education and a technical and vocational(TAFE) division. The focus for this case study was on the establishment of the regional campus at Lilydale. The university first established a campus at Mooroolbark in 1992 and in 1996 it was transferred to Lilydale. Lilydale is a separate division of the university and is quite small compared to the other divisions of the university and comprises about 17 per cent of the university's total student load. The three main driving factors behind the establishment of the Lilydale campus included the need to establish a regional presence for the delivery of higher education in the outer eastern sector of Melbourne and the desire to establish a campus that would take an innovative approach to teaching and learning.

The vision of the Vice-Chancellor at the time of the establishment was for an undergraduate teaching only campus with no research presence. His emphasis on the need for a learner-centred approach involved the development of a number of new learning resources. First, there was a conscious move away from the use of lectures and tutorials as the only learning and teaching methods, and the development of high quality printed learning material for all subjects. These were designed with specified learning outcomes, combined with an approach to assessment that gave students choice in the type of assessments they undertook.

Second, the style in lectures was modified to include motivational material and a variety of activities. These strategies were supplemented by computer-based materials, which provided opportunities for application and practice. This led to the early adoption of computer-based and on-line approaches to learning and teaching. Staff members on the Lilydale campus were enthusiastic adopters of the Swinburne learning management system and created a large amount of materials that could be used on the system. However, there have not been efforts made to ensure that the initiatives at Lilydale spread across the university. This lack of impact on the rest of Swinburne is also a reflection of the remoteness of the campus from the administrative centre that, in some ways, means that the Lilydale campus operates almost as a university within a university. Furthermore, it has developed very close links with its own community in the Yarra valley over time facilitated, in part, by having its own Council. Increasingly, the Lilydale campus is being perceived in the Yarra community as its own higher education provider with a degree of independence from the rest of the university.

As a result, the Lilydale campus has become more like a traditional university operation than it was 12 years ago. Although the innovations in learning and teaching delivery are still in evidence at Lilydale, it is increasingly operating as a fully-fledged regional campus. This was made possible by the arms length relationship with its parent institution.

The University of Queensland (UQ) is one of Australia's traditional, research intensive universities with over 33,000 students and was one of the first to offer an external studies program. It operates on the St Lucia campus in Brisbane, at Gatton, and from a purpose-built campus at Ipswich, opened in 1999. This case study focused mainly on the Ipswich campus and its innovative use of technology and multi-media to not only provide for *flexible delivery* but also to create a *flexible learning environment* for new and niche programs not available elsewhere in UQ. One of the goals of the five year Teaching and Learning Enhancement Plan for 2003 to 2007 refers to flexible and engaging teaching practice. It was concerned with:

1. Ensuring that the benefits of small group interaction can be provided in larger class contexts;
2. Exploring new forms of educational interaction supported by information and communications technology;
3. Supporting further development and evaluation for flexible learning approaches in programs and sequences of study;
4. Actively engaging students in learning.

UQ has continued to stress that on-campus face-to-face interaction will remain the predominant mode for undergraduate study at Ipswich. Thus the designers of the Ipswich campus provided teaching and learning spaces that would support the heavier use of on-line resources and, for that reason, the spaces were kept small. There was an emphasis on the on-campus experience involving small groups of students in tutorial-like, seminar modes. No large lecture theatres were built at the time but a need is emerging as the new pattern of working settles down and a more comprehensive understanding of flexible learning and what it entails. The learning and teaching philosophy at Ipswich is focused on the core activity of education, the learning process of the individual student, and learner choice regarding the methods employed in that process. There has been a shift from formal, whole class, didactic teaching towards individual or group management of learning, through the provision of structured resource materials and the use of IT to facilitate access. It should also be noted that (i) new teaching/learning practices that have evolved at Ipswich have not had a significant influence on practice at the other two campuses (ii) staff at Ipswich have a strong focus on teaching and were recruited on that basis or moved there from the higher status St Lucia campus cognisant of that orientation and (iii) special funding was made available to build campus facilities.

Discussion

Learning, Teaching and Modes of Delivery

The most obvious finding from this study was the overwhelming ongoing commitment of all the universities to face-to-face teaching. While face-to-face teaching may be supplemented by the use of other resources, especially an increasing use of on-line materials, the core teaching methods remain quite traditional. Universities emphasised the fact that this mode of delivery is expected by students and is economical to use.

In the surveys, most universities referred to the importance of the learner and meeting the learner's needs in their discussion of the use of flexible modes of delivery. Usually this discussion was couched in terms of creating a learner-centred environment so that more constructivist pedagogies could be used. Sometimes, the foregrounding of the learner was put in terms of enabling the development of best practice teaching. In this case, the suggestion is that flexible delivery modes not only suit learners better but also allow teachers the space to experiment with new and more innovative forms of teaching. In the case studies, the discourse of informants was generally aligned with a cognitive-constructivist framework. Students were usually referred to as learners and there was stress placed on the importance of choice and active mental activity on their part as they set about making sense of information and transforming it into organised knowledge. This was particularly evident in the distinction made between flexible delivery and flexible learning in the UQ case study. Objectives and learning outcomes were features of the SUT case study where staff members were seeking to move away from traditional transmission models in which students were passive learners who occupied seats in large theatres where they received lectures and watched videos.

In their survey responses many institutions claimed that their student bodies were becoming increasingly diverse. In particular, there are a growing number of mature age students studying part-time for their qualifications. At the same time, many traditional on-campus school leaver students have part-time jobs that demand that they be absent from the campus for long periods of time. For these students, access to the traditional face-to-face teaching methods is problematic and they require learning materials that will enable them to catch up on lectures and tutorials that may have been missed, or they may not be able to attend on-campus activities at all. In these cases, universities are increasingly supplementing their traditional methods of delivery with other forms of delivery. Resource based learning plays an important role in this supplementation of traditional modes of delivery, as does on-line learning. In these cases extra materials can be made available to students who find traditional attendance patterns difficult, or lectures might be recorded and made available for viewing at a later date by all students. The case studies demonstrated that universities had responded to this greater diversity of students in a range of ways that resulted in the gradual evolution of new patterns of delivery. In this respect, the changes went beyond the need for flexible delivery, discussed previously, and developed flexible learning arrangements. This was explained at UQ as follows:

The aim of flexible learning is to broaden the scope of students' learning interactions ... [and] to develop new learning strategies through courses that enable and empower them to explore a variety of [alternative] modes of interaction.

Similar comments were also made at SUT:

There was also an emphasis on getting students to think about their learning styles and to select from a number of alternative learning resources... We realised that these students needed to practise a lot more than the average student.

The surveys revealed that students living in rural, regional and remote locations have a very specific concern relating to access and equity. In the cases, as well as the supplementation of traditional delivery methods through resource-based learning and on-line learning, some institutions have established remote centres or campuses to service isolated groups of students. Three of the 14 institutions in table 1 confirmed that they used this form of delivery, although many other institutions administered remote and satellite campuses. Such remote centres vary considerably in size and scope of operations, ranging from very small drop in centres that have a few resources to full-blown regional campuses with large numbers of permanent staff and offering a wide range of courses. The logic underpinning such campuses, however, is consistent. Universities understand that they have an obligation to certain regions in their catchment areas that can only be served locally.

The establishment of local centres and satellite campuses is usually effected on a low cost basis so that access is provided for students in an isolated region but without incurring the full costs of a traditional campus.

Many of the institutions in the survey responded that the development of generic skills was an increasingly important part of the curriculum for universities. Skills such as the use of IT, information literacy and teamwork are not necessarily well developed using traditional modes of delivery. In particular, some institutions advocated the use of on-line learning as a means of developing IT and information skills that would otherwise be difficult to absorb into the traditional modes of delivery. This emphasis should be seen in the context of the general shift from behaviourist to a cognitive-constructivist pedagogy. This shift not only resulted in an emphasis on facilitation of learning but was accompanied by the development of teaching and learning centres and the development of new policies on teaching and learning (e.g. at UQ and SUT). These policies supported student-centred learning where the role of the learner became seen as important as the role of the lecturer/facilitator. At the same time there was a public recognition on the part of CSU, Deakin, Delta, and UQ, of the importance of generic skills and their role in gaining employment. This is not surprising since the AVCC initiated actions to ensure that undergraduate courses fostered the development of generic skills as early as 1993.

All respondents acknowledged the importance of parallel development of staff in successfully managing the transition from traditional teaching to multiple methods of delivery and learning. This was particularly evident in the cases of Delta and Deakin where existing staff had to achieve competence in both the development and delivery of on-line courses in a relatively short period. In the case of UQ and SUT, where new satellite campuses were developed, the issue of staff development appears to have been less important as staff either moved there of their own accord or were specifically recruited to work there.

Structural Impact and Institutional Change

There were differences in the extent to which the universities studied were satisfied with progress in the development of multiple modes of delivery. Those universities that had been significant providers of distance education for decades usually seemed to be more satisfied with progress and the others. It is worth noting that these traditional DE providers already had in place much of the infrastructure needed to implement multiple modes of delivery. In addition, they had staff with the appropriate skill set, ways of recognising staff loads in different modes and well-developed approaches to decision-making on key teaching/learning matters. Senior figures at Deakin University appeared to be most positive in regard to its progress in rolling out an on-line program and related teaching and technology decisions.

The case studies revealed that staff members appear somewhat divided on the issue of multiple modes of delivery. While some were opposed, others saw the need to capitalise on the technology. However, it was unlikely that representatives of the latter group were informants for these case studies and their explicit voice is largely missing except in the case of Alpha and, possibly, at Deakin. Moreover, in none of the case studies was there real evidence that those responsible for the implementation set out to manage the change process in a way that specifically addressed all the concerns of these stakeholders. For example, in the case of Deakin where staff might be expected to see on-line developments as an extension of flexible delivery rather than an entirely new initiative, it seems to have been assumed that the intensive staff development program to support DSO would be sufficient to address any such concerns. As the PVC (Online Services) acknowledged:

There's people at all different levels. If you go the faculty of Business and Law, you find most of the staff are at an advanced level because they have been doing it for so long.... In the faculty of Arts you find lots of people doing it but also you would find that this is the faculty with most resistance in it as well. But my general view is that most of the staff have embarked on it and want to use it.

At an institutional level, the motivation for adopting new approaches to teaching and learning via technology was often expressed in pragmatic terms such as needing to develop an image of an innovative institution (Alpha, CSU and Deakin), gaining market share (Delta), enhancing the employability of graduates (UQ) or to be seen as more cost-effective or efficient at a time when government funding for tertiary education was being reduced in real terms. It should be noted that in the cases of CSU, SUT and UQ, funding was a significant issue in relation to the development of the new regional campuses. Developments at CSU and SUT proceeded on the basis of marginal funding, and UQ depended on the availability of special funding.

The practice of universities has not only been influenced by external factors, such as government policy and incentives, the availability of particular delivery platforms and perceived market forces, but also by internal factors including the interests of powerful individuals and groups. In the cases of Alpha, CSU, Deakin, SUT and UQ, senior figures in the university seem to have either recognised the value of experimentation carried out by enthusiasts and championed them, or exercised effective leadership and successfully promoted top-down change in ways that harnessed the understandings and expertise that had been developed. The prominence given to technology in the case studies suggests that those who were most familiar with new developments were also initially in a powerful position and able to focus ongoing discussion on this aspect.

The Deakin case study indicates the importance of making appropriate choices of technology and the pervasive outcomes of such choices. The systems favoured by technical experts may not be well suited to the needs of other stakeholders. Unfortunately, there has not been much research into either the actual opportunity costs of implementing the various delivery systems reported in the case studies or the ongoing costs of maintaining these systems.

There was evidence in the case studies that successful innovation in the provision of flexible student-centred learning in one part of a university had little effect on other parts of the same institution. For example, the new practices that had developed on the Lilydale campus of SUT had not resulted in changes across the other five campuses of the university. The same is true for UQ. This is consistent with the description of universities as 'loosely-coupled' organisations with 'silo structures' but not consistent with the rhetoric of 'learning organisations' where technology transfer could be expected. However, isolation did have a positive effect in the case of SUT where the arms-length approach enabled the development of a campus with its own distinct approach to teaching and learning.

Conclusion

The universities that replied to the survey illustrate the range of modes of delivery that are being used in the higher education sector. However, despite the existence of a range of modes, the evidence suggests that the use of multi-modal delivery is still rather limited in Australian universities. The exceptions to this are mainly the traditional distance education universities that have been using DE and resource-based modes for many years. The dominant mode of delivery is still face-to-face, with multiple modes beginning to gain ground, largely as a result of the adoption of on-line teaching methods. Often this involves the supplementation of face to face delivery with on-line materials. There is little doubt that the investments in infrastructure and the greater understanding of multiple modes of delivery at a senior management level gives the DE universities something of an advantage over other universities in the adoption of new modes of delivery. A critical analysis of the six case studies confirms that Australian universities have made some progress towards achieving the outcomes originally expected from the development of multiple modes of delivery and have begun to make other related changes in teaching and administrative practice as a consequence of this experience.

However, such new directions appear to be evolving without the benefit of a solid research foundation. Whilst the study reported here summarises current developments and trends there is a lack of rigorous and substantial research in relation to multiple modes of delivery in areas such as quantitative cost-benefits and evaluations from the perspectives of key stakeholders. The need for research and on-the-ground intelligence seems necessary to inspire confidence in those who lead and manage organisational change in Australian universities.

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Notes

(1) On-line units were defined as subjects or course components, in which at least some of the content is delivered and/or some of the interaction is conducted via the Internet. This may be optional or compulsory. Web supplemented units are units in which participation on-line is optional for the student. Web dependent refers to units in which some on-line participation is compulsory. Fully on-line units contain no face-to-face component.(DEST, 2002b)

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