Operational issues

Online learning
How cost-effective?

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This chapter* outlines the settings in which online learning is or is not likely to be cost-effective. The main focus is on comparing the new internet-based delivery modes with the traditional classroom-based delivery mode in terms of costs and effectiveness. This is done by comparing relative costs based on available data and the relative effectiveness in terms of outcome measures and student satisfaction ratings. Three strategies to produce cost-effective outcomes using online learning are also described with reference to the case studies. One strategy is to reduce costs while maintaining current levels of effectiveness and volume. The second is to improve learning effectiveness while maintaining current cost and volume levels. The third strategy is to increase volumes while maintaining current levels of cost and effectiveness.

Introduction

ONLINE LEARNING IS undoubtedly one of the most significant changes to affect vocational education and training (VET) in the last century or more. Traditionally classroom learning has been based on low technology inputs. Students are now seeking a mix of support, guidance and supervision, which can be provided in a range of ways (Web-based Education Commission 2000). However, the question many educators and policy-makers ask is whether this can be done in a cost-effective way? (see Bates 1995; Rumble 1997).

As with all new technologies, online learning is taking a while to work through the ways whereby it can be used most effectively. This process is calling into question a number of assumptions about the modes of working of the VET sector:

> *Our work has indicated that what is happening is a profound shift in what is meant by 'education and training', how it is delivered, and its desired outcomes.*

* A summary of the report, *Online delivery in the vocational education and training sector: Improving cost effectiveness* (Curtain 2002).

We believe that … online learning is undergoing such growth that it requires a shift at all levels of management, process and operations to fully understand and appreciate its significance.

This shift will not occur consistently or quickly, but it is evident that these changes will need to occur across four major elements of the VET process: clients, providers, teaching strategies and support materials, and the organisational structure of the VET system itself.

(Stewart-Rattray, Moran & Schueler 2001, p.3)

Early efforts to make use of the new technology were often driven by people with a strong interest in the 'state of the art' aspects of the technology. This approach necessarily involved considerable upfront expense and limited outcomes in terms of learning effectiveness.

A second generation of online learning delivery is emerging based on a combination of the old and the new. The most successful examples of cost-effective learning using online delivery have drawn on the skills of established teachers who have adapted the technology to maximise learning outcomes. This chapter reports on case studies of online learning which demonstrate several strategies that can be applied more widely. These strategies involve careful attention to ways of lowering costs, increasing learning effectiveness and lifting the numbers in learning.

The findings of the research reported are based on a comparison of the relative costs and effectiveness of online learning with traditional face-to-face teaching methods. One straightforward finding from the research is that the range of different types and institutional settings in which online delivery takes place makes it impossible to offer a simple answer to the question of whether online learning is cost-effective or not. The successful use of online learning in a cost-effective way depends on the particular strategy used, backed by an appropriate configuration of the new technology and organisation structure changes.

Online learning differs according to its context. This means that it can vary by the type of institutional setting in which it is delivered, how the work is organised and allocated, the prior education and information technology background of the students served and the uses made of the available technology. In particular, the research findings reported in this chapter demonstrate how much the organisational context shapes the extent to which cost-effective outcomes can be achieved. The case studies, reported elsewhere in Curtain (2002), provide rich detail about the operating conditions under which different types of online delivery are likely to be cost-effective.

Nature of the evidence used

The six case studies which provide the research findings reported on in this chapter are located in three states (New South Wales, Victoria and South

Australia) (see table 1). They involve students resident in regional areas as well as in metropolitan areas. The backgrounds of students vary from those with basic literacy and computer skills, to students with a strong interest in computers and students taking degree-level courses. The employment status and motivation of the students also vary from job seekers wishing to gain additional skills, to full-time students seeking occupational skills and employees wanting to improve their career options within a large enterprise.

The type of vocational education and training course also varies from general or remedial education to courses with a specific vocational focus. The course levels range from certificate II to diploma and degree levels as well as professional development for teachers.

The case studies encompass two different types of online learning. One type is face-to-face delivery in a classroom setting in an on-campus location combined with online delivery using the computer and the internet (see table 1). The other is distance or 'arms length' use of online delivery to students in a remote location. However, the case studies do not follow a simple demarcation by focussing on one or the other mode. In three case studies, both delivery modes are represented.

Table 1:   Case studies of online learning: institution name and location, type of education provider, type of delivery mode, and student location

	Education provider					
	ACENET Werribee, ACE.online Victoria	Adult Multicultural Education Services (AMES), Springvale Melbourne	Open Training & Distance Education Network (OTEN–DE NSW)	Box Hill Institute of TAFE, Melbourne	Qantas College Online, Sydney	Regency Hotel School, Adelaide
Type of provider	Adult & community education (ACE)	TAFE	TAFE	TAFE	Private provider	Private joint venture with TAFE institute
Face to face & online with on-campus location	ESL (English as a second language) environment course	AMES Certificate of Spoken & Written English (CSWE)		Anatomy & Physiology 1 & 2		Degree course International hotel management
Online delivery with remote location	ACE.online teachers course		OTEN IT (PC Support) course Certificate IV course	Anatomy & Physiology 1 & 2	Courses related to broad range of skills	Degree course International hotel management

Difficulties measuring costs

The research task was not an easy one. Assessing the relative costs of flexible learning compared with traditional face-to-face teaching is often difficult because costs based on activities are not recorded in many cases (Australian National Training Authority Unit Costs Working Group 1997, 1998). Large institutions cannot easily track these costs in the absence of activity-based and lifecycle accounting systems. The constraints of limited time for each case study and the reluctance of most education and training providers to provide data they regard as confidential required the use of a simple estimation methodology. Instead of detailed data records, course co-ordinators and instructors were asked to assess the cost differential for particular items compared with a traditional delivery mode. This approach is based on the estimation model developed in an Australian setting by Webb and Cilesio (1999). However, in one case, absolute costs could also be reported due to its origins as a stand-alone project.

Defining online learning

Online learning can be broadly defined as the use of the internet in some way to enhance the interaction between teacher and student. Online delivery covers both asynchronous forms of interaction and the provision of web-based course materials, and synchronous interaction through email, newsgroups and conferencing tools such as chat groups. It includes both classroom-based instruction as well as distance education modes.

Flexible learning strategies involving the use of the internet have generated much interest in academia and industry. However, as Whalen and Wright (1999) note, cost-benefit analyses of web-based distance learning are sparse. Research on not only costs but also how these relate to effective outcomes is also rare. On the basis of a search of key sources, only 15 articles or books could be identified that report results of a study of the cost-effectiveness of flexible learning, broadly defined. Only one study, prior to this one, relates to an Australian context (Webb & Cilesio 1999; Webb & Gibson 2000).

Rating the cost-effectiveness of each case study

Different combinations of cost and learning outcomes for online learning are possible compared with the current training delivery. The optimal outcome is one where the costs are lower and the learning effectiveness is better than the delivery system it is being compared with. A situation where one or the other side of the equation performs less effectively than the current system is one that requires closer scrutiny to determine whether the benefits outweigh the costs. The worst-case scenario is where the costs of online delivery are more than the current delivery system and the learning effectiveness does not come up to the level achieved by the traditional teaching methods.

Table 2 presents broad assessments of the cost-effectiveness of each course or module studied, differentiated by mode of online delivery (distance or classroom-based and mixed-mode). These ratings indicate that only two courses come out meeting both criteria of lower costs compared with the current delivery system—lower costs and more effective learning outcomes. These are the classroom-based, online delivery mode for the Adult Multicultural Education Services Certificate of Spoken and Written English modules and the Anatomy and Physiology modules at Box Hill Institute of TAFE.

However, in other cases, better outcomes are recorded on one side of the equation. This applies to the lower costs only noted for the distance-based online delivery of the Qantas College Online courses. Better learning outcomes only are also noted for three of the distance learning-based courses/modules: OTEN IT (PC Support) course, ACE.online teachers course, and distance education-based students in the Anatomy and Physiology modules, and the International hotel management degree course. A better learning outcome only is also recorded for the classroom-based ACE English as a second language environment course. One course rates as on a par with the current delivery system both in terms of costs and learning effectiveness. No course or module achieves a rating worse than the current system on both counts.

Table 2:   Broad assessments of relative cost-effectiveness by course/module and type of online delivery

Course/module	Compared with current delivery system	
	Cost	Effectiveness
Distance learning		
Qantas College Online	Less	Worse
OTEN IT (PC Support)	More	Better
ACE.online teachers' course	More	Better
Distance education—Anatomy & physiology	On a par	Better
Distance education—International hotel management	More	Better
Mixed-mode delivery		
ACE English as a second language environment	More	Better
Adult Multicultural Education Services—Certificate of Spoken and Written English	Less	Better
Mixed mode—Anatomy & physiology	Less	Better
Mixed mode—International hotel management	On a par	On a par

Assessing the relative costs of online learning

Costs information can be separated into establishment and recurrent costs. The former includes not only capital costs but also the cost of planning and development. Capital expenditure required to deliver online learning typically involves providing networked computers linked to the internet. However, in

most instances this expenditure was not incurred solely in order to participate in online delivery.

Establishment costs

All the case studies noted that development costs are significantly higher than those required for the development of a traditionally delivered course. As the instructor for the ACE English as a second language course noted, developing the materials for online presentation required a considerable upfront investment of time compared with traditional teaching methods where the teacher can prepare learning materials immediately before each class. Extra time was also needed to prepare material for general distribution as online courses are on the internet for anyone to see and access. In some cases, the development costs are hidden because the course was developed using existing resources (a staff member, using work time and partly on her own time).

In several cases, significant resources were devoted to developing online courses from scratch. In the case of Department of Animal and Biological Sciences at Box Hill Institute, funding was provided for a total of 400 staff hours for online resource development using a content writer, an online expert, a programmer and a graphic artist. Staff estimated that this represents a 100% or more additional expense compared with course development for face-to-face delivery alone. The development of flexible learning resources for the OTEN IT (PC Support) was mostly funded by a grant of $200 000 from the Australian National Training Authority. A further $100 000 was spent on website development and project management.

The ACENET case study report offered an estimate of development costs based on a project-funding basis, independently of any institutional support or overheads. The costed conversion of an existing course to an online course was estimated to be $750, representing 15 hours work at $50 per hour. However, as there is likely to be more involved in developing an online course than merely converting existing materials for uploading to a website, this is likely to be an underestimate. The development of an online course from scratch for delivery entirely via the internet was costed by ACENET at $2400, representing 48 hours work at $50 per hour. This represents a fixed cost and does not vary with the number of students who take the course.

The project-based costings provide information on other important development costs. These refer to the need to fund the teaching of tutors in online delivery to provide support for courses delivered entirely online. These variable costs will change with the size of the class being taught online.

Recurrent costs

A number of the aspects of recurrent costs of delivering a course online differ markedly by whether the course is conducted in a classroom or in distance

education mode. The evidence from the case studies suggests that the recurrent costs of mixed-media online delivery in a classroom setting could be double or more than that of face-to-face delivery alone. The greater level of preparation required, the more intensive nature of the online interaction (for example, the need to answer student emails), and providing help with the software are all additional time-consuming tasks. Failure to note the new work processes involved can result in failure to anticipate major time and hence cost blow-outs. Navarro, based on United States evidence, has told how many instructors involved in online learning he surveyed are drawn into an 'endless time drain' (Navarro 2000, p.129).

This finding is confirmed in an Australian setting by an incident reported by the ACENET co-ordinator where an instructor was contracted to run a course, Introduction to the internet, available through the Victorian TAFE VC (a 'virtual campus'). Forty students enrolled in the course. However, due to the limited language and computer skills of the students, the unit had to be customised to meet their specific needs. This was done while the course was in progress. ACENET initially had budgeted to pay him $1000 for his work. However, it was not anticipated that throughout the course he would receive approximately 500 emails from students requiring help. As a result, the instructor suggested a more appropriate fee for the course would be $4500. ACENET were unable to pay him this amount and so a halfway figure of $2500 was agreed upon.

Where new work functions are not identified separately, the instructor and a 'helpdesk' function will be combined in the one work role. This means that the application of a traditional funding model based on one of these functions only— the traditional teaching role—is likely to produce a cost blow-out. Face-to-face teaching, by contrast, is a low-cost operation with few hidden or indirect expenses.

Online delivery for students in remote locations appears to be, on the surface, a low-cost operation because it does not include the fixed costs of classroom space, set lecturing times or printing costs. However, the Open Training Education Network estimates rate an online remote course to be twice the cost of a traditional distance education course due to the extra level of support required. Again, this is due to the extra time required for instructors to respond individually or in broadcast mode to a greater number of inquiries from students made possible through access to inexpensive email.

Assessing effectiveness

Learning effectiveness ideally should be assessed in terms of outcome measures such as working and completion rates. However, these data are only available for the Box Hill and Open Training Education Network case studies. These outcome measures show that online learning produced better outcomes in terms of completion rates compared with the traditional delivery modes.

The easier approach used to assessing learning effectiveness is to seek information from the learners about their perceptions of different aspects of the course compared to traditional delivery methods. The strongest form of evidence of learning effectiveness is to compare student satisfaction ratings from the online courses with those satisfaction ratings of technical and further education (TAFE) graduates overall. This is reported for the case studies in table 3.

Table 3: A comparison of student satisfaction ratings with the national average satisfaction ratings of TAFE graduates in 1999 (ratings out of 10)

Aspect of training	National	ESL Environment course	CSWE 1999 & 2000	OTEN IT	ACE. online	Anatomy & Physiology
Instructor's knowledge of subject content	8.2	9.7	8.9	7.4	9.4	8.4
The subject content reflects industry practice	7.6	7.0	8.6	6.5	8.3	6.5
The presentation of training material	7.5	8.9	8.6	7.1	6.0	6.8
The quality of the equipment provided for you to practise your skills	7.3	9.2	8.9	6.8	7.9	5.5
Having enough equipment for you to practise your skills	7.2	9.6	8.9	7.3	8.6	6.2
Access to learning resources	7.8	9.6	8.9	7.4	7.9	6.2
The convenience of both venue & class times	7.7	9.7	8.8	6.5	8.5	6.4
The usefulness of the training for your job prospects	7.7	8.7	8.7	7.8	8.5	6.9
The overall quality of the training you have received	7.9	9.8	8.8	7.5	8.0	7.8

Source: NCVER 2000 and surveys administered as part of the case studies, see Curtain 2002

On the overall quality of training received, the satisfaction rating of students in each of the online courses is close to or better than the overall satisfaction rating given by all TAFE graduates in 1999. The online courses delivered in a classroom setting achieved scores far higher than the national average. The courses delivered solely online or with some students involved in remote online delivery scored on a par with the national average.

The OTEN IT (PC Support) course scores 7.5 out of 10 compared with a national average satisfaction rating of 7.9. However, the more appropriate comparison should be against the average for traditional distance education courses. The high OTEN IT (PC Support) course rating, in fact, suggests that

online delivery for remote students is capable of reaching the level of satisfaction expressed by students in face-to-face delivery.

The variations in the satisfaction ratings for particular items related to quality, especially in relation to the courses delivered entirely online, suggest that there is scope to improve different aspects of the training delivery. In particular, the lower ratings for the items, 'presentation of training material' or 'subject matter reflects industry practice' for the ACE.online and OTEN IT (PC Support) courses respectively, suggest that these are aspects that could be improved.

The above finding about the relative effectiveness of online learning, especially in relation to mixed-mode or classroom-based delivery, is consistent with the evidence given to the Web-based Education Commission. The Director of the Sloan Foundation, an organisation which has provided over $US 35 million in grant support to over 50 higher education institutions to fund programs in online learning, noted that:

> *… based on our considerable experience, and based on experience with classes that are taught on campus and on internet by the same instructor giving the same examinations, on balance, we do not find any significant variation in learning effectiveness between classroom and online courses taught in the interactive mode.* (Mayadas 2000, p.3)

Two broad approaches to online learning illustrated

These research findings suggest that two broad models of cost-effectiveness can be identified. In relation to classroom-based, mixed-mode delivery, where there is low interactivity and heavy reliance on content, courses tend to be high in cost compared with traditional classroom instruction and low on effectiveness in terms of student satisfaction. On the other hand, where there are high levels of interactivity using the internet and the use of pre-existing web-based resources, the costs are often lower or at least not greater than traditional classroom instruction. In the latter instances, students rate effectiveness more highly compared with conventionally taught courses.

In relation to distance delivery, the contrast is between the traditional correspondence model with its low interactivity and heavy reliance on content, and online delivery with its potential for high levels of interactivity. Evidence from one case study suggests that using online communication for distance learning to provide high levels of interactivity can cost about twice that of a low-interaction, print-based correspondence course. However, learning effectiveness ratings are better than low-interaction, traditional distance education courses and are on a par with the student satisfaction levels for classroom-based courses.

Improving cost-effectiveness

Rumble (1988), in comparing the cost-effectiveness of distance education with conventional education, has noted that economies of scale can only be achieved if the:

❖ variable cost per student is less than that found in conventional systems operating at a similar education level

❖ number of students is large enough to bring down the average cost per student to a level where it is lower than the average cost found in conventional educational systems

❖ drop-out rate is kept at a reasonably low level

❖ fixed costs are kept at or below the level where it is 'competitive' with the average cost per student in conventional educational systems.

According to Rumble (1988), the issues likely to affect relative costs between distance education and conventional media are choice of media in terms of not only its absolute costs but also its effect on average student costs. In other words, if the upfront costs are high, can the average cost per student be brought lower by increasing the number of students served by the new media? Another likely factor to affect costs, notes Rumble, is the resources put into student services. Since these costs are variable, the degree of investment in student support services has to be weighed against the effect on the average cost per student and on drop-out rates:

> … a distance [education] system may cost more in absolute terms than the conventional systems with which it is being compared, but it can be more cost-efficient because it has sufficient students to bring the average cost per student down below that of conventional systems—thus making it more cost-effective.
>
> (Rumble 1988, p.258)

Three possible ways to improve cost-effectiveness

Shepherd (1999) has highlighted three strategies for improving the cost and effectiveness of online learning. These are to:

❖ reduce costs (while maintaining current levels of effectiveness and volume)

❖ improve effectiveness (while maintaining current levels of cost and volume) or to

❖ increase student volumes (while maintaining current levels of cost and effectiveness).

He notes that each of these strategies produces gains without associated losses. One way in which online learning could save costs is by reducing the time it takes to learn. Another, for enterprises in particular, is by reducing

delivery costs because no classroom space is required, and travel and accommodation costs for staff are also reduced. However, he also notes situations where costs are not reduced by online learning: where the design and development costs are too high for the size of the audience and where the online tutoring support provided is highly individualised and intensive (Shepherd 1999).

Conditions shaping effectiveness

Online learning has to meet certain conditions to be effective. Shepherd (1999) identifies four factors that are important to the effectiveness of online delivery: individualisation, immediate constructive feedback, active learner involvement and an appeal to multiple senses. He notes the following situations where online learning may result in less effective learning where the method:

❖ is mismatched to the stage in the learning process, for example, online learning may be all right for presenting the topic but not for practising it

❖ is mismatched to the learning style of the audience

❖ is mismatched to the type of learning, for example, using online learning for psychomotor skills, or

❖ does not provide the right mix of media for the topic, for example, to teach language skills may require audio or to teach face-to-face selling skills may require video.

An increase in the volume of people being trained may be an important strategy in particular situations. One instance of this situation is where a large number of people have to be trained in a short time; for example, where there has been a change of business or a new product or service has been introduced. The second situation is where there are many unmet training needs in relation to minority groups within the community. Here online delivery becomes a low-cost way of reaching out to new and untapped markets (Shepherd 1999).

Strategy focussed on cost reduction

The case studies suggest there are several ways to reduce costs, provided courses meet designated standards to ensure effectiveness is maintained. One means of doing this is to identify the range of new work roles required by online delivery and assign work based on the required skills.

New work roles

The Adult Multicultural Education Services case study offers some valuable insights in this regard. One reason the implementation of online delivery entails additional costs, particularly in attempting to diffuse the innovation to a larger group within an organisation, is the cost and difficulty of replicating the multi-skilled innovator. The case studies demonstrate that a common pattern for

online adoption is for the initiative to start from the efforts of an individual teacher to acquire the skills required to set up and operate online. For a variety of reasons, producing other such multiskilled innovators is often not possible and so the absence of innovators hinders the take-up of the new learning mode on a larger scale. Adult Multicultural Education Services has responded to this cost and organisational constraint by working out ways to redesign the work process to achieve more cost-effective outcomes.

A six-step process for identifying how to change work roles to achieve a lower cost outcome can be identified from this case study:

Step 1: discern the key skill sets or roles required by the new learning mode.

Step 2: redesign work roles to make it more cost-efficient to spread the new learning strategies throughout the organisation.

Step 3: identify those skills that are the most difficult to replace or reproduce and those that are relatively easy to transfer.

Step 4: set up a special position to retain and further foster the skills that are the most difficult to reproduce.

Step 5: identify and define the new work roles involving the more easily transferable (and less expensive) skills.

Step 6: select people for those work roles whose skills match those required by the new work role. This is also likely to involve providing opportunities for the new work role incumbents to learn on the job through mentoring with the initial innovator.

Addressing inherited organisational structures

The OTEN IT (PC Support) case study referred to the need to develop industrial arrangements that reflect the realities of the online environment. It was pointed out that this would not only make a fairer distribution of costs possible, but also make it easier to make sure of the full potential flexibility of the delivery method. The case study noted that further cost-efficiencies could be secured through the greater involvement of non-teaching staff in performing certain roles, such as monitoring emails and responding where appropriate, and in relation to website maintenance. However, there is, at present, no industrial classification in the NSW TAFE Award for a teacher's assistant or technical support person.

The process of closely examining the work process offers a range of opportunities to reduce costs. Redesigning the work process to change how student support services are delivered is another way to reduce costs. Enabling relatively simple help desk functions to be performed by lower cost resources can do this. Encouraging the greater use of asynchronous discussion groups within a course may also make it easier for students to help each other and therefore take the pressure off an over-reliance on the instructor.

Introducing new work systems

At an institutional level, upfront investment in new systems can offer ways of reducing (over the whole institution) the fixed costs associated with course design and production. Again, the Adult Multicultural Education Services case study offers an example. The Virtual Independent Learning Centre (www.virtualilc.com) contains a range of up-to-date online products in a variety of media for teachers, learners and other training providers. The centre brings together the work of experienced teachers from around Australia to allow teachers and learners to use their internet time most efficiently.

The University of Southern Queensland offers another example of the use of organisation-wide systems development to reduce fixed costs. This university is developing an automated courseware production system to permit cross-media publishing (for example, print, online, CD, DVD etc.) from a single document source based on an integrated document management, workflow and content editing (Taylor 2001).

Another means of improving productivity through better work organisation is the use of software to reduce the time instructors are required to spend answering students' individual email queries. Instructors can do this by making use of automated response systems. Taylor notes that storing the information generated by a threaded online discussion in a relational database is technically straightforward, and provides a rich resource for mining by keyword matching, so that such pedagogical resources can be used to assist new students time and time again through the operation of an automated response system (Taylor 2001). This process of capturing information and turning it into knowledge which has value through its capacity to be applied in other settings or contexts can be operationalised at a higher institutional level, as another University of Southern Queensland innovation demonstrates:

> Our work at USQ has reached the point, where we have developed prototypes of what we refer to as intelligent object databases, which can be searched by pre-specified key words. Upon receipt of an electronic query from a student, the search engine seeks an appropriate match with a previously asked question, which if successful, triggers a personalized response to the current question without concurrent human intervention. … If no appropriate match is discovered in the database of previously answered questions, the query is automatically routed to the relevant tutor for an appropriate response, which is then added to the database with a single point and click. Depending on the pedagogical design of the course, these responses can be directed to the whole cohort of students, to groups of students, or to individuals. The system has the advantage of providing more-or-less immediate pedagogical advice to students, a significant increase in institutional responsiveness, at minimal variable cost. (Taylor 2001, p.7)

Scope for improvements in fixed costs are likely also to come with the development of standardised education technology packages (for example,

hardware, software, training, service support, online content, and internet services). Other costs involved in the time spent in planning, installing, managing, and upgrading systems are also likely to reduce over time as integrated packages address the complexity of the planning required (Web-based Education Commission 2000). Lower costs are also likely to come from the development of an efficient network architecture which will make it easier to build economies of scale. The United States Web-based Education Commission (2000) reports that the use of better network and communications backbone architecture is critical to lowering communications costs.

Single point access for all users

The OTEN IT (PC Support) course case study noted that the course website did not link with student management/administrative systems. Therefore this required the use of a relatively complex manual reporting system to keep records of assessment events for submission to the TAFE student information system via a hand-completed mark sheet. The case study noted that integration with 'back office' administrative systems would enable major efficiencies to be achieved for both administrative staff and instructors. Variable costs can be reduced if better systems integration can be achieved. This needs to take place between the online courses themselves and other systems for managing enrolments, tracking students' progress and payment purposes.

Comprehensive online environments for unifying administrative services, student services and online learning within one institution and between institutions will be the standard in the future for defining a digital campus. This is best typified by easy, 'single-sign-on' access to a broad range of services for all users, from students, to lecturing staff and administrative staff and is the standard expected of a digital campus (Business Wire 2001). However, it needs to be acknowledged that the implementation of such integrated systems, like other efforts at achieving integrated enterprise platforms, often involve significant costs.

Strategy to increase effectiveness

The research findings reported in this chapter also provide insights into how to improve learning effectiveness while not exceeding current cost and/or reducing volume levels. The level and amount of interactivity was identified by several case studies as the key to improved effectiveness. Moore (1993) suggests that there are three types of interaction necessary for successful distance [or online] education:

- ❖ learner–content interaction
- ❖ learner–instructor interaction
- ❖ learner–learner interaction.

Online instructors need to ensure that all three forms of interaction are maximised in their course structure to improve learning effectiveness.

It is clear that there is a shift away from learner–content interaction to a greater emphasis on the other two forms of interaction. The Adult Multicultural Education Services case study noted that finding suitable websites to provide links for different aspects of the course was resource-intensive, so it was decided to reduce costs by cutting back in the 2000 course on the number of web links used in the online learning tasks. However, this did not adversely affect learning effectiveness. A comparison of the student satisfaction ratings for the course in 1999 and 2000 showed that, in fact, the rating (out of ten) for the presentation of training material increased from 8.3 to 9.1.

Importance of interaction

The case study of the Regency Hotel School in Adelaide noted that the initial emphasis was on the provision of high levels of multimedia presentation. However, with time the team moved to a new appreciation that successful online delivery is largely dependent on good basic instructional materials and quality facilitation by the instructor. The case study in the report (Curtain 2002) notes that if the development team were to write the same nine modules for online delivery with this new perspective, upfront costs would be considerably reduced.

The OTEN IT (PC Support) case study showed that, having attained a high level of effectiveness in terms of module completion rates, a subsequent reduction in the level of contact between instructors and students in 2000 caused a notable fall in the effectiveness rating. Due to staff shortages, the level of learner–instructor interaction was reduced. Teachers were no longer linked to specific modules, the amount of assistance available from the helpdesk was lower and newsletters were no longer issued. The result was in a marked drop in the module completion rate (from 72% in 1999 to 50% in 2000). Lower student satisfaction levels compared with overall satisfaction ratings provide other confirmatory evidence of the adverse learning outcome due to the reduction in learner–instructor interaction.

New ways of assessing

Assessment is another aspect of course delivery where more use of online interactive tools enhances learning effectiveness. The Anatomy and physiology course offered by the Box Hill institute had markedly improved their module completion rates with online delivery. The students' survey responses showed that the interactive assessment quiz was rated as the aspect of the course with which they were most satisfied, scoring 8.6 out of 10. Most students identified a key benefit of online learning to be their capacity to complete learning tasks when it suited them and at their own pace.

The report of the Web-based Education Commission has criticised the current forms of assessment as a major obstacle to improving learning effectiveness:

> *Perhaps the greatest barrier to innovative teaching is assessment that measures yesterday's learning goals. It is a classic dilemma: tests do a good job of measuring basic skills, which, in turn, influence the teaching of these skills so students can score well on the tests. Testing works well so long as we are testing the right things.* (Web-based Education Commission 2000, p.59)

The report points out that advances in testing technologies have made it possible to extend test item formats beyond the selected-response formats of past test designs. For example, through web-based testing a student may be asked to design a building to meet a set of constraints, or to troubleshoot a faulty system. With computer adaptive testing, the test 'adapts' to the examinee's performance on it. The individual is given a question and, if answered correctly, moves on to more difficult questions. Incorrect responses generate less difficult questions. Information is stored on the computer and the score reflects the skill level he or she has achieved.

Computer-adaptive testing is increasingly being used in the United States of America in enterprise-based training and for professional certification (including medicine) (Web-based Education Commission 2000). Assessment of student performance can be embedded, almost seamlessly, into online courses to provide instant and continuous feedback, thus providing a powerful incentive to learn.

Strategy based on increasing volume

A strategy to increase volume while maintaining current levels of cost and effectiveness can also be deployed. With higher fixed costs for online delivery (due to, among other things, more time required for the preparation of course materials), a major impact on the average cost per student can be achieved by lifting student numbers. However, much depends on existing institutional constraints. Where online delivery involves a significantly higher absolute cost, and student volume cannot be increased within existing operating parameters, it is likely to be cheaper to use conventional delivery methods.

How online enterprise-based training can reduce costs

The Qantas College Online case study illustrates how online delivery could be used to increase volume without increasing costs. Managerial resistance to staff release from the workplace for training was identified as a key barrier to supporting change in the organisation. Online learning was viewed as a key means to increase the opportunities to train and to distribute access to training on a global scale without incurring a huge infrastructure cost. The result is that nearly a quarter of Qantas' 30 000 staff has expressed an interest in taking an online course. The expansion in numbers came from the fact that nearly half

(47%) of learners had undertaken their online course at home and nearly four-fifths (78%) had undertaken it in their own time. The opportunity cost was shared between the enterprise and the learners.

However, none of the case studies of publicly funded training providers is able to show this strategy in place in a campus-based, mixed-mode setting. Nor do they provide evidence of an increase in the numbers of distance education students compared with conventional distance education methods. This may reflect the lack of compatibility between the requirements of a flexible delivery system and present funding models based on student contact hours (Stewart-Rattray, Moran & Schueler 2001).

Extending reach to new markets

However, one case study did illustrate the strategy of increasing volume. This has been done through the capacity of online delivery to tap markets that previously were beyond geographical or temporal reach. The Regency Hotel School case study demonstrates the success of such a strategy. Despite its initial start-up costs, it has been able to attract students from around the world who are prepared to pay full commercial fees for the course. The other client group the online degree course was able to tap is full-time employed staff within Australia working demanding schedules. Online delivery has the potential to generate high fees if it is delivering vocational skills that are in demand and well remunerated and the delivery mode fits students' working and family commitments.

Conclusion

The learning effectiveness of online delivery can be easily demonstrated. The evidence of effectiveness exists for a range of student types. These types vary from those students with basic literacy and computer skills, to students with a strong interest in computers and students taking degree-level courses. Evidence of learning effectiveness was also noted for courses that ranged from general education (for example, English as a second language environment, Certificate of Spoken and Written English) to those with a specific vocational focus (for example, Anatomy and physiology, International hotel management, and PC Support technicians). The background and motivation of the students varies from job seekers wishing to gain additional skills, full-time students seeking occupational skills and employees wanting to improve their career options within a large enterprise.

Reliable information on costs is more difficult to identify. The difficulties experienced in collecting appropriate data have been identified more generally by Stewart-Rattray, Moran and Schueler (2001, p.3) who have noted that 'there is a lack of understanding of what information is required to manage and measure the success of flexible learning'. They note that managers often 'do not know what they do not know about flexible learning and its outcomes'.

Despite the limitations of information on relative costs, two broad models of cost-effectiveness have been proposed. Where there is low interactivity and heavy reliance on upfront content, courses tend to be high in cost compared with traditional classroom instruction and low on effectiveness in terms of student satisfaction. On the other hand, in a classroom setting where there are high levels of interactivity using the internet, and the use of pre-existing web-based resources, there is a greater potential for costs to be lower and on a par with traditional classroom instruction costs, with effectiveness rated by students as better than conventionally taught courses. Also important will be productivity gains from better use of software such as the use of a relational database to provide automated or semi-automated responses by email.

However, cost-effectiveness will depend on increasing student numbers or otherwise reducing the costs of the resources deployed while maintaining effectiveness levels. This, in turn, will require identifying new work functions required by online delivery and applying lower cost inputs. This strategy has the best chance of working for enterprise-based training providers where the cost of staff time is a major component of the cost structure, as demonstrated by the Qantas example (see also Shea-Shultz & Fogarty 2002). However, attention also needs to be given to monitoring outcomes at the same time to ensure that learning effectiveness is not diminished.

Where online learning is conducted in a distance education mode, high levels of interactivity will be more expensive than a largely print-based correspondence course. However, learning effectiveness, assessed in terms of student satisfaction levels, will be much better than low-interaction, traditional distance education courses. Strategies for improving the cost-effectiveness of online delivery need to focus on finding an optimal combination of ways to simultaneously reduce costs, improve effectiveness and increase student reach.

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E-business and online learning
Connections and opportunities for VET

John Mitchell

This chapter* examines the connections between e-business and online learning and considers the opportunities for the vocational education and training (VET) sector arising from these connections. The discussion shows that there is value for the Australian VET sector in drawing on the new thinking emerging from the field of e-business. The range of business processes, strategies and models that e-business encourages can potentially reposition and strengthen online learning systems within VET organisations.

Introduction

T HE CONNECTIONS BETWEEN e-business and online learning begin with the shared use of electronic technology. E-business means conducting business electronically, both within an enterprise and externally. Online learning also uses electronic technology. Given this connection, it is interesting that the two activities are generally treated as independent of each other. For instance, research conducted for this study shows that it is common in VET organisations for online learning to be managed by educators in the 'front office' of the organisation, who are in direct contact with students, while e-business is often viewed as an information technology activity handled in the 'back office' by non-educators. Separating online learning as a front office activity with no connections to back office activities creates two sets of technologies in the one organisation, two distinct sets of staff and two islands of business processes.

On the other hand, some VET organisations, such as the Open Learning Institute in Queensland, Swinburne University of Technology in Victoria, WestOne in Western Australia and Central West Community College in New South Wales, are already part of the way towards bringing about a convergence

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* A summary of the report, *E-business and online learning: Connections and opportunities for vocational education and training* (Mitchell in press).

between e-business and online learning. A number of VET organisations are developing two pillars of e-business in education—customer relationship management systems and online enrolment systems, both of which link to their online learning systems. Some VET organisations are using e-marketing strategies to connect with their online learning students and others are using e-business to deliver a wide range of electronic services to their students. One of the services bundled for the student is online learning.

This chapter argues that, historically, e-business and online learning evolved separately within VET, although examples of convergence between the two fields are now emerging. The report argues that fostering this convergence will benefit both VET customers and organisations.

Definition of online learning

It is necessary to define, in more detail, online learning and e-business. The terms 'online learning' and 'online delivery' are used loosely in VET. For example, Harper et al. (2000) refer to the different dimensions of online delivery:

> *'Online delivery' in the education context is widely used to refer to all aspects of online activity, including the design, development and implementation of web materials as well as the teaching and learning activities.* (Harper et al. 2000, p.7)

This chapter does not explore 'all aspects of online activity'. Instead, it focusses on the connections between online learning and e-business and the opportunities for VET to exploit these connections.

Kilpatrick and Bound (2002) usefully distinguish between the delivery of online learning and the act of learning:

> *… a clear distinction is made between delivery and learning. Online delivery refers to a range of delivery modes where being online (e.g. email, using WebCT, Blackboard and so on) is a component of, or all of the processes designed for learning. Online learning is defined as learning processes, which use online delivery.* (Kilpatrick & Bound 2002, p.2)

This chapter discusses aspects of online learning that either do or can intersect with the principles and applications of e-business, so the focus is on the production, marketing and delivery of online learning, not on the student's learning processes when learning online. Online learning systems are referred to here and are taken to mean educational structures that include a web-based or intranet-based technological infrastructure, online course material and online enrolment, tutoring, communication, assessment and administration procedures. Online learning systems often use complementary delivery methods, such as printed course materials.

# Relationships with e-learning, blended learning and flexible learning

In order to isolate the specific place of online learning as a service within educational organisations, it is useful to identify the relationships between online learning, e-learning, blended learning and flexible learning.

Instead of seeking online learning, the student market in VET is responding more favourably to the concept of e-learning; that is, technology-based learning, including online delivery and CD-ROM and other technologies, supplemented by face-to-face support as appropriate (Mitchell 2000a; 2001c; TAFE Frontiers 2001). The Flexible Learning Advisory Group defined e-learning similarly as a wide set of applications and processes which use all available electronic media to deliver vocational education and training. It includes computer-based learning, web-based learning, virtual classrooms and digital collaboration (Flexible Learning Advisory Group 2001).

Research by Mitchell and Wood (2001) suggests that online learning (which is learning delivered via computer networks) has a more secure future if located within an e-learning framework (offering a variety of electronic technologies) and nested within a broader flexible learning framework (offering a variety of support mechanisms). Figure 1 illustrates this concept.

Beginning in the period 2000–01, e-learning content developers in the United States began promoting the concept of blended learning, which is the combined use of e-learning course materials and other learning support services, such as the use of texts or face-to-face interaction between a teacher or other students. In figure 1, blended learning fits with flexible learning and e-learning.

Figure 1: The relationship between flexible learning, e-learning and online learning, as viewed increasingly by the market
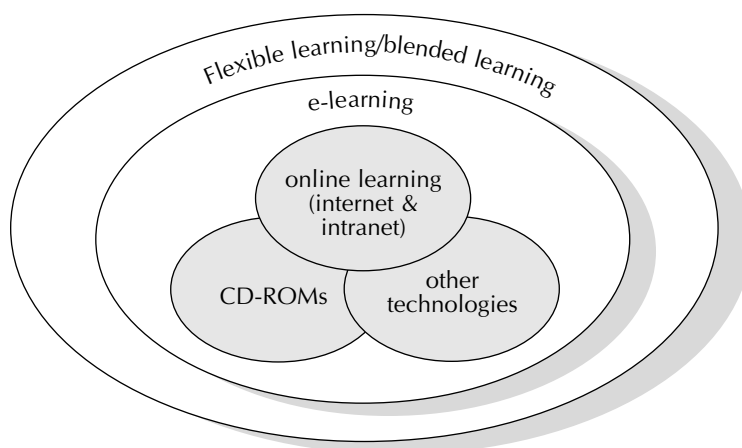
Source: Mitchell and Wood (2001)

Definition of e-business

Mitchell (2002, p.v) explains that e-business means conducting business electronically, both within an organisation and externally, with clients, communities and partners through redesigning business processes and the use of information and networking technologies, in order to achieve business goals, such as improving efficiencies, reducing costs, increasing speed of transactions, expanding markets, enhancing business partnerships and, most importantly, providing additional value for clients.

This definition shows that, although technology provides the opportunity for new business approaches, the technology needs to be driven by business goals and business processes. Similarly, Kalakota and Robinson (1999) maintain that 'e-business is about redefining old business models, with the aid of technology, to maximise customer value'.

E-business is impacting significantly on a wide range of industries in Australia and around the world. It is also expanding the scope of some occupations, creating new occupations, and over the next decade will result in the restructuring of entire industries (Mitchell 2000c). In some cases it will change the way business is conducted, lower costs, increase efficiencies, reduce inventories, expand market reach, increase speed to market and provide competitive advantages (National Office for the Information Economy 1999).

There are, of course, pitfalls, dangers and challenges associated with the new field of e-business, and considerable management is required to realise the benefits possible from e-business (Mitchell 2002). The pitfalls include over-estimating customer demand for electronic services, as happened in the lead-up to the collapse of so many 'dot coms' in 2000 (Cassidy 2002).

On the other hand, online learning systems sometimes enjoy only a peripheral position in a VET organisation, and are viewed as a luxury not a necessity. However, in an e-business-oriented VET organisation, online learning systems can become a valuable part of a customer-focussed organisation that uses electronic communication to provide an array of services to the individual student and to the community (Mitchell 2000b; Mitchell & Wood 2001).

Methods

The research methods for this study included: a literature review; an internet search; interviews with representatives from Australian educational organisations which have a full or partial e-business model for online learning systems; an analysis of the e-business models used by overseas educational organisations which have a clearly articulated e-business model and also provide online learning; and an analysis of the e-business models and solutions

which could be transferred to the VET environment and which have been implemented in a sample of non-educational organisations.

The selection of Australian organisations analysed for the study is set out in table 3 (see page 155). To provide the study with examples from different industries, a range of overseas non-educational organisations was also analysed. These were: Barnes & Noble, bookseller; Metrowerks, microprocessor manufacturer; Consignia, United Kingdom post office; and Deustche Bank. The overseas exemplars of educational organisations using e-business and online learning included in the study were the Canadian Virtual University, McGraw Hill Education, Stanford University, the Global Film School, Cardean University and the University of California Los Angeles.

The convergence of e-business and online learning in the 'information age'

In VET provider organisations throughout the 1980s and 1990s, computing and networking for administrative purposes evolved separately from those used for teaching and learning. Table 1 broadly summarises the two islands of technologies and business practices in the 1990s in VET organisations.

Table 1: Two islands of technologies and business practices in VET organisations in the 1990s

Administrative computing in the 1990s in VET	Computing for teaching and learning in the 1990s in VET
Focus in the early 1990s on student information management systems	Focus in the early 1990s on student computer laboratories
Focus in the late 1990s on linking student information with library records, enrolment and finance records	Focus in the late 1990s on learning materials available via the internet
Use of MS-DOS personal computers	Use of a mixture of MS-DOS and Apple Macintosh personal computers
Use of databases in the late 1990s for student and administrative records, finance, HR and facilities registers	Development in the late 1990s of internet-based learning management systems
Preference for campus-based local area networks in the early 1990s	Preference for CD-ROM delivery of technology-based learning and teleconferencing and videoconferencing in the early 1990s
Preference for wide area networks and secure intranets in the late 1990s	Preference for internet delivery of online learning in the late 1990s

Table 1 highlights the separate paths adopted by VET during this period by administrative computing areas and those associated with computing for teaching and learning. This separation was partly due to limitations of the available

technology and partly due to the tendency to see the two functional arenas of administration and teaching/learning as so different that separate computing systems were justified. In the late 1990s, this historical divide contributed to the separate development of e-business and online learning in VET.

The networking and other technologies available in the late 1990s started to move VET organisations towards the information age. The driving forces for this new era are not just technology, but new ways to make money and profit or to achieve other business goals. Cortada (2001) argues that, to manage in the information age, today's managers need to understand the informational features of economic activity, the emerging value propositions (how profits are made), the effects of globalisation, and the digitisation of many business activities. VET managers also need to understand these things.

Table 2 summarises the characteristics of the information age, including enablers, customer characteristics and organisational characteristics. The table provides a general backdrop for the emergence of online learning in VET in the late 1990s and for the rise of e-business in Australia in the same period. It also provides the platform for the eventual convergence of e-business and online learning.

In the mid-late 1990s the new information age, detailed above, provided the context for the growth of e-business. At this time the preconditions were created for online learning to develop within a framework where it is one of many online customer services available to students from VET providers which focus on customer needs.

Online learning re-positioned as a service of customer-centric VET organisations

Online learning—as a delivery system— is just one of many front office student services in a VET organisation where business is conducted electronically. Online learning benefits from organisations managing many of the business processes in the front office, back office and the supply chain electronically. The front office of an organisation performs direct customer services, the back office of an organisation performs functions in fields such as finance and stores, and the supply chain links partners or suppliers of goods and services to the organisation.

Table 2: Characteristics of the information age

Component	Characteristics
Preconditions	❖ Free trade ❖ Cheap capital ❖ Relatively good transportation ❖ Effective telecommunications networks
Enablers	❖ Growth of networked business strategies ❖ Increases in individual technical skills ❖ Expansion of digital and intellectual assets ❖ Continued technological innovation and the use of standards
Customers	❖ Have increased access to information ❖ Can negotiate better terms and conditions for goods and services ❖ Can return goods faster ❖ Can change suppliers quicker, more frequently and easier than in the past
Organisations	❖ Rely more and more on their ability to co-ordinate cost effectively across a variety of cross-unit dependencies (e.g. suppliers, customers) ❖ Pursue flexibility in responding to market conditions ❖ Often do well against the giants of the old environment if they are simple in form and agile ❖ In some cases, eliminate physical assets and employees in exchange for electronic access and construction of telecommunication networks, services and products
Critical success factors	❖ Information-based skills ❖ Use of knowledge management
Steps for corporate success	❖ Profitable pricing becomes more complex and dynamic as it desegregates and differentiates, e.g. airline ticket pricing is more complex ❖ The importance of branding remains as customers seek out trust, relationship, quality and familiarity ❖ Branding or co-branding and private labelling approaches are on the rise for target markets of one or few customers ❖ The global visibility of products, services and pricing offers customers the potential to build their own pricing and value propositions (e.g. no two Dell PCs purchased online or by phone need to have the same configuration) ❖ Companies are differentiating products by adding services and knowledge to them

Source: Cortada (2001, pp.18–20)

Mitchell (2001) identified major market trends in the field of VET online products and services and showed that consumers were less interested in focussing solely on online learning and more interested in accessing customised services, leading to improved learning outcomes. The market trends included:

❖ the move towards a more integrated approach to online learning by providers, offering not just online content, but support systems, learning management systems and other technologies and administrative mechanisms
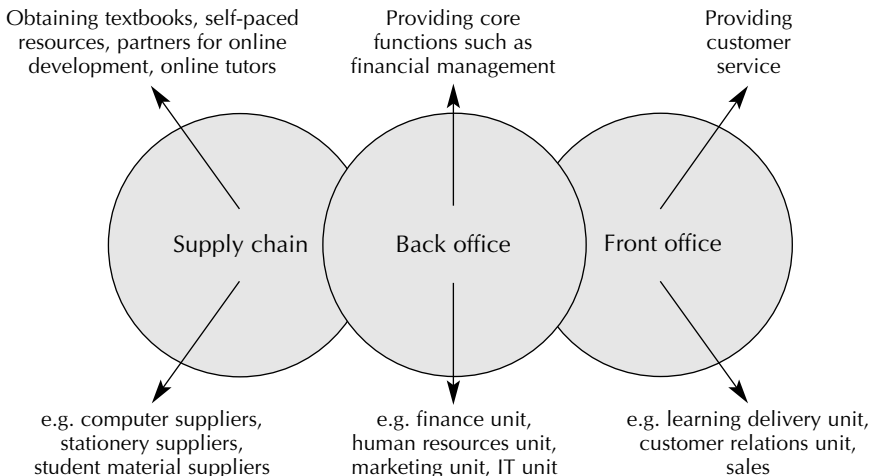
- ❖ the development of an holistic approach to the provision of student services, not just e-learning services but other services such as online enrolment, online information and online payment systems

- ❖ the increasing tendency towards customisation of online products and services to suit individual learning styles

- ❖ students' preference for e-learning and flexible learning, not just online learning

- ❖ the personalisation of online products and services, based on providing personal web pages for each student.

These findings demonstrate that VET consumers are starting to seek increased choice of services and customised, even personalised, services— consumer trends typical of customers in the service industries in the information age. These consumer trends are fed by e-business technology and business thinking. Consumers are beginning to drive the convergence of online learning, e-learning, flexible learning and e-business.

Front office, back office and supply chain

In order to facilitate a better understanding of their interconnectedness, e-business and online learning need to be seen in relation to the front office, the back office and the supply chain. Figure 2 captures the three organisational domains where e-business, or 'doing business electronically', occurs. In the front office e-business assists with the interaction with customers; in the back office it performs functions such as the provision of internal financial services; and in relation to the supply chain, e-business assists the process of interaction with suppliers and partners (Mitchell 2002).

Figure 2: Three domains where e-business occurs in the organisation

Obtaining textbooks, self-paced resources, partners for online development, online tutors

Providing core functions such as financial management

Providing customer service

Supply chain

Back office

Front office

e.g. computer suppliers, stationery suppliers, student material suppliers

e.g. finance unit, human resources unit, marketing unit, IT unit

e.g. learning delivery unit, customer relations unit, sales

This diagram demonstrates how e-business can support online learning in the three domains—the supply chain, the back office and the front office. Many aspects of online learning systems, such as online enrolment, tutoring, communication, assessment and administration procedures require the co-ordination of back office and front office systems as well as the co-ordination of relationships with suppliers in the supply chain.

Online learning is only one front office service that can be delivered electronically. WestOne in Western Australia which is helping VET organisations to implement a range of electronic services in addition to online learning, such as online enrolment, online assessment and online payment of fees illustrates this practice (box 1). WestOne provides services that assist VET providers in their front office, back office and supply chains.

WestOne is modelling good practice in using e-business to satisfy the holistic needs of the student, not just student's interest in online learning. For instance, WestOne is currently facilitating internet and email access for technical and further education (TAFE) students throughout Western Australia.

Box 1:   WA's WestOne's online services for the front office, back office and supply chain

WestOne Services assists TAFE colleges and other organisations in Western Australia to implement online learning and to access e-business technologies and services.

WestOne assists VET organisations to extend the number of front office services beyond online learning. Business products offered by WestOne include online enrolment, online admissions and continuous admissions through the WestOne Student and Corporate portal product. In addition, a revised skills recognition tool will enable users to analyse their skills and be assessed online against training packages by a nominated registered training organisation. The GetAccess service provides high-quality, cost-effective career, employment and labour market information, enabling users to view up to 300 career profiles.

WestOne assists VET organisations to improve efficiencies in their back office by providing a business process re-engineering service, accompanying the implementation of customer-focussed facilities such as online product and service catalogues, single-point student Identity Management System, and customer-managed (both online and on-campus) enrolments for short, award and adult and community education courses.

WestOne uses electronic communication as a partner in the supply chains of VET organisations. WestOne works with partners to source, develop, produce and distribute state-of-the-art learning resources and technology-enabled learning solutions. Partners of WestOne are assisted and supported in applying digital technology to provide efficient, customer-focussed training programs, processes and services.

E-business embraced by customer-centric, efficiency-conscious VET organisations

A number of VET organisations in Australia are using e-business to improve efficiencies in their supply chain, to improve their customer relationship

management, to integrate their back office functions and to improve their procurement practices. These e-business practices often impact directly or indirectly on online learning systems. This positioning of online learning is one component of an integrated, e-business approach of a customer-focussed organisation which complements the previous emphasis in VET of stimulating the adoption of online learning by improving pedagogy and quality measures (for example, Harper 2000 et al.; Brennan forthcoming; Cashion & Palmieri 2002).

To highlight the opportunities provided by e-business, the many web services provided to students at Swinburne University of Technology, including its TAFE Division, are shown in box 2. Clearly, Swinburne University of Technology has taken advantage of the considerable opportunities offered by e-business to provide a comprehensive suite of customer services.

New business models from overseas

A number of large corporations, such as the multinational bookstore chain Barnes & Noble, are providing free online learning for customers, so that customers will buy other products and services. Universities such as Stanford are providing some academic content online, free of charge, believing that the content is not the main or only value that the university offers. Australian VET providers are hesitant to embrace this new business practice of providing free online content, beyond taster courses. This hesitation is possibly justified until the model is proved to be relevant to VET.

A variation of the business model of providing free online learning is to give away online instruction which helps programmers learn how to use a product, so that they, in turn, can assist others to buy and use the same product. The above two business models are sometimes described as 'edu-commerce'.

Online learning is seen by some organisations, including the Canadian Virtual University, as just one aspect of an online customer service. The online medium is used by such organisations to cater for many other customer needs, such as information about career planning, library services and financial aid for students. A number of Australian VET providers are also modelling this business practice. The passage of time may show that online learning is not the predominant use of the online medium for Australian VET.

The Canadian Virtual University is a model of online collaboration for co-marketing purposes. While there are a number of similar examples of such collaboration in the Australian university sector, there are few examples in the Australian VET sector of similar online collaboration.

International publishing houses such as McGraw Hill and Thomson are powerful players within the global online learning arena and are able to offer a comprehensive combination of online learning courses, printed texts and

printed instructor materials, all available online. In the future, Australian VET providers may need to compete with or imitate these publishers' vast stores of digital information or to form alliances with such providers.

Using online learning to train staff in the use of a company's e-business tools and products is a popular business model, adopted by organisations such as post offices (Consignia in the United Kingdom) and banks (Deutsche Bank). There are few examples of Australian VET organisations using the same model, which is surprising, given that Australian VET organisations are enthusiastic about offering public training in e-business.

Box 2: Swinburne University of Technology's web services

Web services

- Course brochures—request detailed course brochures electronically
- Email forwarding
- Enrolment, re-enrolment, secure payment (due year end)
- Library e-catalogue, view/renew items on loan, view/place/cancel holds, access e-resources via hot links on the catalogue, access to free and restricted resources and online reserve

- Online course and subject materials
- Part-time employment and job searching
- Short course enrolments
- Student results
- Student self-allocation to classes
- Student timetables online

Web information services

- Accommodation—housing services
- Accommodation—residences
- Alumni
- Awards venues and schedules for ceremonies
- Calendars
- Campuses—contact details for campuses and links to campus descriptions
- Careers adviser information
- Child care facilities
- Computing information
- Course finder—a complete guide to the full range of studies available
- Course information—links to information on all courses at all campuses, including adult and continuing education and distance and online programs
- Credit transfer—database of credit available for study at other institutions
- Departments, schools and research centres—links to each of the university departments, schools, research centres, and corporate units

- Health services
- How to apply—application procedures for higher education and TAFE courses
- Industry consulting services
- International student information on admission, orientation and welfare of all international students
- News and events
- Parking
- Past exam papers
- Policies and procedures
- Public transport
- Sport and recreation
- Student administration forms
- Student finance
- Student union
- Study support
- Swinke—eNews, views and profiles
- TAFE services to industry
- Virtual campus tour

Examples of good practice

A number of Australian VET providers and corporations are inventive in the use of e-business practices, practices which impact positively on the provision of customer services such as online learning. There is notable experimentation by VET organisations in customer relationship management and online enrolments, and these new business practices often have flow-on benefits for online learning systems. Some VET organisations are using innovative partnerships and staff training schemes to foster the implementation of both e-business and online learning.

Table 3 sets out the major Australian organisations examined for this study and the connections they make between e-business and online learning.

Table 3:   Major Australian exemplars of e-business and online learning

Location	Organisation	Connections made between e-business and online learning
NSW	Central West Community College	Leverages off its strong e-business infrastructure to deliver many electronic services including online learning
QLD	Open Learning Institute	Uses customer relationship management (CRM) to achieve internal efficiencies and to provide many customer services such as online learning
WA	WestOne	Uses e-business to satisfy the holistic needs of the student, not just student's interest in online learning e.g. facilitating internet and email access for TAFE students statewide
VIC	Swinburne University's School of Business and eCommerce—TAFE Division	Provides a wide range of web-based services including support for online learning
NSW	Manly Warringah Community College	Uses websites to partner third parties to provide an expansive program of courses and services, including online learning
SA	Douglas Mawson Institute of Technology	Trialling the use of e-procurement to release back office staff from manual form-filling, potentially re-assigning them to customer-related activities, such as administrative support for online learners
NSW	Securities Institute of Australia	Uses customer relationship management to improve information handling, reduce manual processes and improve relationships with customers, as well as to support online learning
NSW	Sydney Community College	Uses e-business to provide customers with information 24 hours a day, 7 days a week, which is a priority over providing online earning
WA	Challenger TAFE	Currently implementing online enrolment and providing online learning as part of its strategic objective to provide customers with choice about how to access resources
ACT	Australian Taxation Office (ATO)	Uses online learning to train staff to deliver e-business services to the public, including electronic lodgement of taxation returns
VIC	ANZ Bank	Uses online learning to train staff to deliver e-business services to the public, including electronic banking

In progressive VET organisations, e-business is not merely concerned with providing online learning but is also concerned with providing students with a range of customer services. The reform of the back office to take advantage of electronic technology and improve relationships with suppliers and partners in the supply chain is also an objective of e-business.

Benefits, barriers and risks

The benefits of applying e-business principles and processes to online learning are different for customers (customers include students, industry, the community etc.) and for the provider organisation. Benefits for customers include user choice and access to personalised services delivered electronically. Benefits for organisations include increased market reach and enhanced relationships with customers.

Tables 4 and 5 summarise a range of benefits of the application of e-business principles and processes to online learning, firstly for customers (table 4) and secondly for the provider (table 5).

Table 4: Summary of benefits to customers and students of the application of e-business principles and processes to online learning in VET

Benefit	Description
24x7x365 service availability	Students potentially can access online learning and many other electronic services 24 hours a day, seven days a week, 365 days a year, from home or work or when travelling.
Fast response to enquiries	Students can receive, electronically, relevant and detailed responses to requests in seconds, rather than in days or weeks via the telephone or post.
Customer–customer interaction	Students can interact with other customers in virtual communities to exchange ideas as well as to compare experiences.
Customers can compare services	Potential customers can compare prices, response times and value-added services from educational organisations offering e-business services, providing students with a choice of both providers and products.
New suite of electronic services	Within an e-business framework, students and all potential customers benefit from online learning being positioned as just one of a range of online services made available electronically. Other electronic services include online enrolment, payment, library access and course information, timetables, results, careers resources and employment information, as well as counselling and support services.
Personalisation of services	E-business facilitates the personalisation of products and services, including the provision of individual web pages for each student.

Table 5: Summary of the benefits of the application to VET providers

Improved levels of student services	The introduction of back-office e-business applications such as online finance systems and electronic student information systems can result in improved services to students e.g. for online payment and students accessing their records online, enabling the organisation to better meet its customer service objectives.
New student markets	E-marketing facilitates the pursuit of and access to new student markets, which can be offered online among a suite of digital services.
New brands	E-marketing enables educational organisations to develop new brands to cater for target markets of online learners.
New profit sources	E-business gives educational organisations new ways to provide services and to make a profit.
New harnessing of intellectual assets	E-business facilitates the knowledge management of digital data and gives providers the ability to harness and deliver to the student more of the digitised, intellectual assets of the organisation, not just to inform online learning but to enrich all electronic services.
New relationships with customers	The development of new relationships with customers, based on more frequent contact and better understanding of students' needs can be facilitated by e-business software systems such as customer relationship management.
Relationships for life	Through ongoing electronic communication, e-business facilitates the development by the educational organisation of a relationship for life with the student, not just during the students' initial enrolment.
Repeat business	Electronic communication also facilitates repeat business, a key to profitable business.
New customer-centric models	E-business encourages a more customer-centric, demand-driven approach to service delivery.
Customisation of services	E-business allows for customisation of digital data, to differentiate products and for the delivery to different target markets
New business alliances	E-business facilitates the development of new relationships and alliances between providers, using shared technological platforms.
Small business growth	E-business enables small organisations that are nimble to compete in the marketplace.
Positive cost benefits	The introduction of labour-saving practices can lead to the achievement of positive cost benefits e.g. not having to mail out payslips, not having to publish a handbook.

Tables 4 and 5 show that e-business positions online learning as one of many online customer services and assists VET organisations to become more customer-focussed.

Barriers to achieving the customer services and improved business efficiencies made possible by incorporating online learning systems within an e-business framework, include costs, user resistance, technology availability, limited staff skills and organisational inexperience.

Significant risks are associated with e-business; for example, when key suppliers go out of business or when the technologies chosen are quickly replaced in the market by newer and better ones. Privacy invasions and legal issues also need to be addressed as risks when embedding online learning within an e-business framework.

Educational and organisational factors

It is no simple matter to merge online learning and e-business, as online learning on its own is a complex field. Furthermore, educational issues related to online learning are often interconnected with business, technological and marketing issues. For instance, there are ongoing debates in contemporary VET about business issues such as whether online content should be built in-house or the production outsourced or the content bought off the shelf. There are also debates about the benefits of rival off-the-shelf learning management systems.

Many organisational issues impact on the development of e-business models for online learning systems in VET, such as the range of new skills needed to develop, market and deliver online learning. VET managers will be challenged by the progressive rise of e-business; for example, by customers finding it easy to access the new suppliers of electronic learning products online.

Planning strategies

The study highlights the development of a new business philosophy among many VET managers where flexible learning and its sub-set, online learning, are seen as components of the essential way of being in business; that is, to be demand- and market-driven not supply- and technology-driven (Henry 2001a, 2001b; Mitchell et al. 2001). E-business is an aid in achieving these business goals.

The study also shows that e-business and its linkages with online learning will vary from one organisation to the next, so instead of seeking a planning template, managers are advised to examine their own organisation, their markets and their partnerships, and let this strategic analysis influence the identification of alternative directions.

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E-learning in companies

Think strategy

E-learning in four companies

Kaye Schofield

This chapter synthesises some of the findings from four exploratory case studies of how companies think about and experience e-learning. From these studies one overarching and paradoxical conclusion is drawn. At one level, corporate e-learning is simply another way of managing and delivering workforce training. As such it is often on the fringes of corporate agendas, and is subject to all the same pressures and constraints as traditional methods of training delivery, including cost constraints. On another level, e-learning offers the possibility of repositioning training within a company as a value-adding function and leveraging workforce development up the corporate agenda. Whether it does or does not achieve this repositioning is less about how e-learning is managed or delivered and more about how well it is integrated into a high-performance corporate strategy and how strategically it is used.

Introduction

THE E-LEARNING INITIATIVES examined in this study were Qantas College Online, ANZ eTrain, FORDSTAR (Ford Australia) and Thiess. The studies were undertaken in late 2001 as part of the core Australian National Training Authority (ANTA)-funded research program of the Research Centre for Vocational Education and Training at the University of Technology Sydney. The four case studies themselves provide a more detailed picture of the e-learning initiatives and are available at http://www.oval.uts.edu.au

Three factors prompted the study. First, a major weakness in the vocational education and training (VET) system today is the way it treats skills development as a stand-alone technical issue, disconnected from the competitive strategy which shapes the definition of and demand for skills by a company (Keep & Mayhew 2001; Buchanan et al. 2001). This pattern is repeated in the e-learning field. While there is a rapidly growing body of good research dealing with technological, pedagogical and management aspects of e-learning, little is known about the thinking which lies behind the decision to adopt or not to adopt e-learning solutions, or how the corporate context affects that decision.

Second, companies play a major role in skills formation, alongside education and training institutions. Corporate training in Australia—formal and informal—is big business and on some estimates may be worth up to $8 billion per year—as big as, and perhaps bigger than, publicly funded provision. Research sponsored by state training systems and through the Australian Flexible Learning Framework have resulted in a growing body of provider-oriented knowledge about e-learning in VET institutions. This research seems to be of marginal interest to companies. On the other hand, not a lot is known about how companies see and experience e-learning but there does seem to be a latent interest from public and private providers in knowing more about the corporate experience.

This interest should be encouraged given the negative effect e-learning may have on company demand for institutional delivery of VET as leading corporates begin to roll their e-learning beyond their own employees to their suppliers and distributors. Sharing experience across the VET institution–company border is important to achieving a more rounded view of e-learning in Australia and may well stimulate new partnerships and innovation.

Third, there is a paucity of independent research about corporate e-learning. What we know is largely provided by companies which have an interest in selling e-learning solutions. The most notable exception to this general rule is the comprehensive study of 'corporate universities' by Cunningham et al. (2000), funded by the Commonwealth Department of Education, Training and Youth Affairs.

> *We need a deep, clear picture of what is happening in the corporate sector … One of our biggest problems is we only know what people are doing by looking at website advertising, but these are propaganda exercises, testimonials rather than detailed evidence of what happens when people use e-learning systems.*
>
> (Lynette Schaverien, quoted in Marshall 2001)

Even where the information they provide is objective, reliable and credible, perceptions of conflict of interest remain.

The study was initially limited to online or internet-based learning but this proved to be too narrow to encompass what companies are actually doing through hybrid approaches and the study was broadened to e-learning. This is defined as technology-assisted learning encompassing a '…wide set of applications and processes such as web-based learning, computer-based learning, virtual classrooms, and digital collaboration. It includes the delivery of content via internet, intranet/extranet, audio/video tape, interactive satellite broadcast and CD-ROM' (Urdan & Weggen 2000, p.88).

Data were derived from three sources. The primary data were 19 interviews of between one and two hours with key company personnel, mainly but not exclusively human resource personnel and conducted in late 2001. These were

taped, transcribed and analysed. Company documentation was also sought but since a good deal about company e-learning is either undocumented or commercial-in-confidence, data from this source were limited. A small literature review was also undertaken. While this yielded multiple examples of implementation, largely overseas, it revealed little about the strategic decision-making associated with applying e-learning solutions to business problems.

The companies

Table 1 provides a comparative snapshot of the four case studies.

Qantas College Online and ANZ eTrain may be grouped together at one end of an e-learning spectrum with large numbers of courses available online, large numbers of online users and significant numbers of completions. At the other end of the spectrum was Thiess, a company keen on flexible learning but still deciding on the merits of e-learning, and somewhat sceptical given their past experiences with technology-assisted learning. In between is FORDSTAR, Ford's interactive real-time satellite network delivering training to staff employed in Ford dealerships. With a successful distance education system in place, Ford was experimenting with various online delivery possibilities but the business drivers were not compelling and the benefits of online learning did not yet outweigh the costs of making the transition as the following comment demonstrates:

> FORDSTAR will go online when the satellite goes away. When broadband becomes such a viable opportunity we will desist with the satellite and still run the studios and still do the training but then you can package it into a different environment.

The sample cannot be regarded in any way as representative of Australian business because of its extremely small size and because of the nature of the companies studied. They are all large global companies and highly exposed to the pressures of globalisation. Their workforces are diverse and geographically distributed. In each case, the training function was dispersed across the organisation, with individual business units exercising a high level of autonomy in how they approached training and their level of investment in it, whatever the mode of delivery. In those companies with a highly centralised training function, perspectives on and experiences of e-learning may well be quite different.

The following sections of the paper set out four propositions about e-learning derived from the case studies. They remain speculative and a larger-scale research program would be necessary to test their wider application.

Table 1: Snapshot of the four case study companies

	Qantas College Online	**ANZ eTrain**
Business context	Operates within a low-yield, labour-intensive, highly competitive and regulated global airline industry.	Financial services industry has undergone fundamental changes over past decade, impacting on the concept of a bank. Deregulation, processes of globalisation and market segmentation have led to a highly competitive industry.
Business drivers	❖ Access and equity for frontline staff ❖ Cultural change for customer service, staff satisfaction and return to shareholders	❖ Strategy focussed on sustainable competitive advantage based on strategic differentiation ❖ Working to transform to a high performance organisation with a strong focus on people and values
Human resource context	30 000 staff (around 70% on shift work) in more than 30 countries speaking more than 50 languages, majority of whom are involved in delivering service to customers. Decentralised training and human resources functions.	22 500 employees geographically distributed across Australia, New Zealand, United Kingdom, India and South East Asia. Around 745 Australian branches in 2002. 16 specialist businesses.
Stage of e-learning development	Delivering online since 1996; high level of individual take-up and increasing business unit take-up and high level of executive buy-in.	Delivering online since 2000; high level of individual and business unit take-up and executive buy-in.
Learning model	Mainly tutor-supported accredited training contextualised through the Odyssey Airline metaphoric environment.	Primarily just-in-time, short-cycle, non-accredited self-directed learning, based on distinction between procedural and declarative knowledge.
E-learning focus	Initially corporate-wide soft skills, now some technical and compliance; mostly accredited; an integrated human resource management approach to learning and development. Choice of learning mode is important. By 1998 all training available either online, classroom-based or combined mode. 5000 registered users (18% of Qantas staff).	Compliance training, new banking systems and product knowledge. Approaches that combine human and technological systems seen as critical to eTrain's success. Strategy is to get products to market quickly and learn from the experience. Ground is shifting too quickly for lengthy research and training needs analysis and products have a short shelf life. Biggest savings come from just-in-time training and faster time to market of new products and services.
Customers 2001	Employees of Qantas business units around the world; Qantas travel partners.	Employees of ANZ business units in Australia, New Zealand and London.
Potential customers	Contemplating commercialising externally but not considered core business.	Contractors and agents of ANZ businesses; financial services industry.

Table 1: Snapshot of the four case study companies (continued)

	FORDSTAR	Thiess
Business context	Ford Australia (subsidiary of Ford Motor Company) is in transition to a low-cost and high-value producer, based on continued innovation and ability to capture ongoing global investment funds.	Integrated construction, engineering and services provider (part of Leighton Holding Group); highly competitive business environment.
Business drivers	❖ Simultaneous communication with dispersed dealer network ❖ Customer service (fix right first time) ❖ Owner loyalty ❖ Going paperless	❖ Growth and diversification ❖ Migrating from project-based company/culture ❖ Recruit and retain (Talent Wars) ❖ Collaboration across the value chain, internally and externally
Human resource context	Ford Customer Service Division responsible for customer service in 11 countries in Asia Pacific; 350 Ford dealerships in Australia and NZ. Australian dealerships employ 11 000 staff. Ford directly employs some 5000 staff and their training is largely separate from dealership training.	13 000 employees, with around 6000 in Australia; highly autonomous business units (geographic and functional); federal structure.
Stage of e-learning development	Established satellite-based interactive distance education and communication system for dealer network in Australia and NZ (others in USA, Canada, Mexico). Started in October 1997; 10 000 users, 70 000 student hours p.a., real-time with trainer plus various dealer communications programs.	Began with CDs in 1993 and again in 1998; disappointed with take-up. Experimenting with e-learning; considering uses of internet to support 'learning is work' philosophy.
Learning model	Instructor-led accredited distance education through FORDSTAR complemented by structured workplace training and assessment.	Focus on work-based learning; 'At the project level, work and learning are the same thing'. Experimenting with a coaching model of a course model.
E-learning focus	Initially trade and technician training now broadening to soft skills impacting on customer service, linked to communication. Building on success of FORDSTAR and experimenting with ways of migrating parts of Fordstar broadcast online. Exploring potential benefit of internet-supported learning and dealer reaction to it; emphasis on parallel technological developments, especially online simulations, conferencing and CD-ROM.	Real-time, work-based collaboration and communication. Internet is simply another resource. Believe online courses are basically teacher-controlled and distance education is instructor-guided learning. Sceptical about up-front and recurrent costs of online programs. Looking for technology to support a more free-flowing approach. Excited by potential of simulation.
Customers 2001	Staff employed by Ford Dealerships in Australia and New Zealand.	Employees of Thiess business units in Australia and Indonesia.
Potential customers	Partners (e.g. Mazda, Jaguar) and other companies for shared use of training infrastructure.	Alliance partners.

Corporate strategy is the key

Much that is written about e-learning seeks to differentiate it from other more traditional forms of corporate training and development. This can obscure important similarities. The principal similarity is the link with corporate strategy.

Skills development (and e-learning as a specific tool to achieve it), is rarely the starting point of business planning. Rather, it is more likely to be a fourth-order issue.

> *First order issues relate to product market and competitive strategies and strategic investment decisions … second order decisions cover internal operating structures … HRM [human resource management] matters normally appear as third order decisions that follow on from decisions about first and second order strategies. Skills issues nest within HRM, often a relatively low level. Outside of a few areas, such as the performing arts, business consultancies and very knowledge intensive industries (such as high level software development), skills are rarely treated as the starting point for competitive strategies or impinge directly on other aspects of first order business planning.*
>
> (Keep & Mayhew 2001)

This 'fourth order' argument needs to be considered alongside the rise of the concept of strategic human resources in the 1990s. Strategic human resources has become a touchstone for many human resource professionals and was consciously embraced by the human resource people in Qantas, ANZ eTrain and Thiess and is implicit in the operations of FORDSTAR. However, FORDSTAR is managed by the Ford Customer Service Division and not through the human resources function. Therefore, Ford interviewees tended to emphasise the business objectives of the division and how skills contributed to them, rather than the concept of strategic human resources and the human resources function.

> *… does HR [human resources] add value? Is it seen as a cost and an overhead, or is it seen as value adding? And that's the message I've been trying to educate all of the senior management team that human resources is a benefit and it can add value.*

The concept, based in human capital theory, has been developed and described in a range of largely American studies (Thurow 1994; Ulrich 1997; Becker & Huselid 1998; Saint-Onge 2001). Strategic human resources are manifested in a growing measurable influence of human resources on firm performance and Becker and Huselid (1999, p.289) suggest this influence is reflected in three stages:

1 developing a professional human resources capability (getting the firm in the people game)

2 operational excellence in the human resources function

3 improving the value of the firm through human resources.

In the context of internet-enabled human resources, it has been noted that:

> *In many companies the HR function remains an obstacle to change. It lacks curiosity and cultivates old attitudes, ways of working and legacy cultures. The HR profession must reinvent itself and attend to a vital new resource: internet worked human capital.* (Tapscott, Ticoll & Lowy 2000)

There are certain recurring themes in discussions of strategic human resources: getting good alignment between business goals, management culture and human resources; a human resources function which achieves operational and professional excellence; and human resources managers that are effective business partners, with the human resources function structured to support that role (Becker & Huselid 1999, p.290).

Achieving a good alignment between business strategies, human resources management and training may seem relatively straightforward but the work of Keep and Mayhew suggests otherwise. They argue that the idealised version of strategic human resources assumes that companies have an explicit high-performance strategy, that this strategy is stable over time and that a single corporate strategy permeates the whole organisation. They cite many studies which suggest that these conditions do not apply to the majority of companies in the United Kingdom and, indeed, co-exist in very few. They argue that many companies do not choose a high-performance strategy, preferring to compete on price, a finding confirmed in the Australian context by Buchanan et al. (2001). In such circumstances, investment in high-skills development in any form is not likely to be a business priority. The problem is one of demand for skills rather than its supply.

While listed companies are more likely to make their strategy explicit, the majority of companies do not. Where they are explicit, they are not always supported by detailed plans for strategy execution in key areas such as people management. Most companies make organisational changes in ways which are '… incremental, ad hoc and often not the result of a coherent, long-term plan for skills' development' (Penn 1999, p.14).

The life-span of corporate strategies seems to be getting shorter and shorter as impatient capital seeks to maximise shareholder returns. And in larger companies, strategy is frequently devolved to individual business units with the centre adopting the role of investment banker. This makes company-wide strategies for skills formation (and therefore e-learning) problematic (Keep & Mayhew 2001).

Weak links between human relations development and corporate strategy are likely to be a key impediment to the successful implementation of e-learning, although research is needed to test this proposition. A survey of 326 human resource and personnel specialists in the United Kingdom in 2000 found that e-learning was linked to the strategic business plan in only 43% of respondent organisations (The Industrial Society 2000). The Australian context may or may not be different. A survey of 51 company clients of TMP Worldwide found that

92% of them link their training initiatives to their organisation's strategic plan (Williams 2001). Extrapolation of these results to the whole Australian corporate sector would depend on further analysis of the sample and the nature of the claimed links.

It is therefore of considerable interest that every person interviewed for this study was able to clearly articulate the changing dynamics of the industry in which the company operated, the competitive pressures the company faced and the corporate strategy for dealing with those pressures.

In three of the studies (Ford, ANZ and Qantas) e-learning was viewed as an integral part of the implementation of an explicit corporate strategy developed to deal with competitive pressures arising from privatisation, globalisation, technological change or deregulation. Behind the decision to adopt e-learning was the prior decision of each of these companies to adopt high-performance work systems to deal with those pressures and to focus on people management as a strategy for achieving business goals.

In the fourth case, Thiess, a new business strategy was in the process of being formulated at the time of the study. It too gave a high priority to changing work organisation, lifting organisational and individual capabilities and, in particular, to knowledge management across organisational units.

> *He [the managing director] is not just mouthing the words; he wants to make a real difference and is prepared to really push strategic HR, because it's the only way the business is going to grow.*

However, at the time of the study, Thiess was unconvinced that e-learning could contribute substantially to its human resource development strategy.

> *We haven't really got our mind around … the whole broad concept … of e-learning … where that can best serve the organisation.*

Workforce development was widely viewed by senior management in all the companies studied as a significant element of company strategy and all saw the need for good alignment between workforce development and company strategy.

> *… it's almost bringing a commercial sense to the training area to say if we're going to remain relevant to the organisation and to the people we've got to be moving with them constantly …*

> *… the core business is re-engineering banking into a web type of business. So what a great environment to start with … There's some real key ingredients that you're looking for … some alignment with corporate strategy …*

> *The business strategy was about staff satisfaction and employee satisfaction and return to shareholders … about … customer service skills, about skilling up the managers to create an environment in which people could deliver the sort of service that they wanted to deliver to the customer …*

This overview suggests that e-learning needs to be considered not as a stand-alone initiative but one within the broad corporate and human resource context. The studies suggest there are two overarching enablers of successful and sustainable e-learning. First there needs to be a demand for high-performance/high-skills work organisation and this needs to be reflected in an explicit corporate strategy which is widely understood throughout the company. Second is a high level of sensitivity amongst human resource development people to that strategy.

When these enablers exist, they provide an overarching framework for e-learning and give focus and direction to its implementation. In this sense, e-learning is not intrinsically different from learning and development generally.

E-learning enables a strategic re-positioning of the training function

Given the previous analysis, the question arises whether e-learning can be introduced successfully into companies where the two enablers suggested above are not present. If decision-making about e-learning is viewed as a linear lock-step process, then the answer is no. But if decision-making is viewed as an iterative and dynamic process, then other possibilities emerge. The studies suggest that e-learning, when combined with a strategic human resources focus, can help re-position learning and development closer to the heart of corporate strategy, moving it from, as one interviewee put it, the bottom of the food chain.

> If a major project's happening … we're usually included on the table within the first phase of planning, because they see us as a successful implementation—whereas before we were the typical training department where you might get involved two-thirds of the way through a project and they think oh, we need to train people and we need to implement this project and often it's very late and we come in and we're expected to do something in a very short time frame.
>
> … we're getting board papers being rejected because the training strategy hasn't been properly thought out in terms of how do we skill and accredit our staff …
>
> [In] our annual general reports and our annual general meetings, there's actually a fair bit talked about in terms of the online learning agenda.
>
> … in the tough environment, how can you try and demonstrate to the business that you can add value, particularly when there hasn't been a strong history of corporate learning … there's never been a strategic approach and I think one of the things that's very exciting is that by all the early work that other people have done, there's been opportunities, just sometimes by chance, to bring that all together.
>
> You start analysing and getting into the strategic side … and people say ooh, never realised that before … The organisation is learning more and more about itself and it really now … sees HR as having some intrinsic value.

Three aspects of e-learning appear to facilitate this re-positioning process: its impact on the human resources-business unit relationship; its impact on the training process; and its impact on training data.

New relationships with business units

In three of the studies—Qantas, Thiess and ANZ—e-learning was being led by the corporate human resource development function but the business units in each company operated with high levels of autonomy and discretion and own their own training budgets. While the models used in each company differ, e-learning has provided an opportunity to have new and different conversations with business units about training, to raise their awareness of its value and increase their investment in it.

> *This goes to the positioning of Qantas College. What Qantas College Online has enabled Qantas College to do is to really offer flexible solutions … so when we go and speak to the manager … you can say okay we can give you all this in classroom, we can give it to you all online, or you can do a blended approach, what's best for your business, and we'll talk around that. So there's a lot more negotiation with business units about how the training is delivered, and that leads to a lot of discussions around well, what are you trying to get out of it? So the internal consultancy role of Qantas College I think becomes more important because it frees up the learning and development unit from just being a deliverer and an administrator of training.*

> *You have to be very careful about the way you manage your relationship with … training because it's the business units that own it and you can't be seen to be forcing them down a pathway if they don't want to go there. By the same token, one of our roles is to really think through strategically how can you drive learning and development in the business and how can you improve its consistency, its quality and its cost, and senior management looks to us to do that. Then you've got to manage that relationship back with that senior management team and their trainers to say okay, well what are the implications for your business unit and how are you going to do it?*

E-learning, when combined with a strategic human resources perspective, appears to provide a valuable trigger for the emergence of a new kind of relationship between corporate human resource development and business units.

Re-engineering the training process

One of the interviewees argued strongly that: '… the use of the internet in learning is not a revolution in learning. It's a revolution in business process for learning'.

At its crudest, this means using technology to streamline training administration—the point at which e-learning merges with e-business. In

Qantas which consistently seeks to outsource non-core functions, a senior manager emphasised the importance of this to the organisation.

> *In terms of … e learning … what is it that we can do, what is it that I can do to get the transaction or the grunge out of the business, into a third party, or what is it we can do with tools, what is it we can do with e-enablement, self-help tools etc …*

In the three companies which have embraced e-learning, training transactions such as enrolments, evaluations, assessment records, certifications, compliance sign-offs etc. have become far more efficient. While this is a good result in itself, it has the more important effect of freeing learning and development people for other more value-adding activities.

> *What … online has freed us up to do and this is really how I think we've repositioned ourselves, is to say that no longer, thank God, do we just have to sit down and schedule huge wads of training menus and courses and just spend all our time shifting people in and out of classrooms. But we actually now start to focus on internal consultancy roles within the business.*

> *… we were able to redeploy some of the people who were involved in delivering training in the field back to training program development …*

This streamlining has delivered significant efficiencies to the companies as a whole and to individual business units.

> *… we [the corporate learning and development unit] still manage to get the money and the investment on behalf of the rest of the business for web enabling the whole training administration system, and that's still continuing despite budget cuts. And we took a leadership role with the training units out there in the business to manage it and to consult and it's very much a consultative process to change a whole recording of training administration across [the company] …*

This in turn has enhanced the organisational reputation of the human resource development function and repositioned it as a function which adds serious value.

Beyond streamlining administration, the companies still have some way to go before the training process is fully re-engineered to take full advantage of internet delivery.

> *Internet management is a tough process that needs to be taken seriously and it's really tough, it's hard and people are very entrenched in traditional ways of doing training.*

There is still a view in all the companies studied that some things are not amenable to e-learning but there is no common view on what these are. ANZ eTrain started with information technology and banking systems and compliance training. Qantas College Online started with so-called soft skills and is gradually moving to technical and compliance training although not all business units are prepared to move from traditional forms of training.

FORDSTAR started with apprenticeship and technical training and is moving to soft skills such as customer service. Thiess saw its entry points as information technology and business systems training and induction. There is also some reluctance in the companies to accept e-learning as a tool for leadership and management development beyond frontline supervisor level. On the other hand, FORDSTAR is used extensively for communicating with dealership managers as the distinction between training and communication is increasingly blurred.

More efficient training administration has changed company perceptions of the professionalism of the training function, developing what Becker and Huselid (1999, p.289) call a professional human resource capability. However, in the companies studied, the full use of technologies to reengineer the training process has yet to be realised.

> … people, organisations really still haven't fully seen how you've got to reengineer the training business using the internet as a vehicle, that just hasn't been kind of captured, very rarely captured by anyone that I've met or seen … there's much more to be gained.

Data collection and analysis

E-learning systems have made possible and in turn have driven the collection and analysis of increasingly sophisticated training data which have proved useful in raising corporate and business unit awareness of workforce development.

Data about e-learning are gathered for two main purposes. The first is obviously the need to track learner progress and adjust e-learning provision accordingly.

Embedded in FORDSTAR, for example, are a series of data analysis capabilities designed for accountability and for continuous instructional improvement. These data can now be cross-referenced with dealership performance, calls to the technical hotline, standards of tools and equipment, parts availability and a range of other measures. This allows the company to identify cause–effect in its 'fix it right first time' strategy and take corrective action which may or may not be training-related.

The learning management system used by Qantas College Online and ANZ eTrain automatically generates comprehensive utilisation data. In some cases extra databases have been built into e-learning programs to provide data about program quality and effectiveness.

> … one of the advantages of online too is that you can have data. I mean [for] some of our more sophisticated simulations for banking systems, we can track everything, like how long someone works through an exercise, it can be very statistically analytical.

Such data appear to be of most relevance to the learning and development people themselves.

> *To be honest, I'm not sure that senior managers really care whether learners are satisfied and all that sort of stuff. That's a great measure for us and it's a great measure for the learner, but selling up the line … you put it in but whether they really care about it, I don't know.*

The second and highly strategic purpose is to use data to demonstrate the value of training to the organisation. As learning management systems become increasingly sophisticated, they are able to gather performance data beyond traditional utilisation data and these are being fed back into product or service design and up to chief executive and board level.

> *Senior management is highly supportive and the board and CEO [chief executive officer] receive regular updates on progress. The investment community is also informed from time to time to show how the … strategy is being implemented.*

In Qantas College Online, website analysis reports are produced automatically through the learning management system and used to identify patterns of usage. These data are supplemented by online learner surveys, tutor evaluation, manager feedback and analysis of the business benefits. Regular feedback is then provided to management.

In terms of the paradox outlined at the start of this paper, even if training has traditionally been peripheral to the company's competitive strategy, e-learning has achieved a new and positive image for learning and development and moved it from the margins of strategy. Whether this is a passing fad or a more sustained repositioning of learning and development remains to be seen.

Cost savings are a driver but not *the* driver

Cost savings are frequently presented as a key driver of e-learning, yet none of the four companies saw cost savings as the primary factor in their decisions about e-learning. Rather, the overarching drivers for the introduction of e-learning were speed, access, consistency and customer service.

> *We didn't go out to say we've got to get more bang for our buck, I've got to show somebody that we're actually getting training across to x number of people for these dollars … There wasn't that sort of metric in there.*

> *We recognised there was a cost element to it … but the access was really the issue, it's about that skills development and customer service development that we needed to get out there.*

> *What we had to have was the ubiquitous network, so that all dealers received the same level of access, and the same level of service, and … that's something that you really have to do when you operate a franchise.*

> *I don't think I've ever seen the financials of what we invested, but it was a lot of money. It was never ever a consideration that this wasn't the right thing to do in a company mindset.*

On speed, all companies commented on the scope and pace of change and the need for the training function to keep pace. For ANZ and Ford in particular, speed also meant time-to-market, where training was necessary to support the fast roll-out of new products and services '… if we had to physically go around and facilitate at branches around Australia, we'd still be doing it'.

Increasing access to training was a major factor in considerations of e-learning. In some cases an equity perspective meant reaching out to frontline staff who had little access to training in the past.

> … the people who throw your bags and clean the toilets and all those really dirty jobs. They were ignored for years. They were very clear about an organisational change strategy that focussed on them as individuals.

> It was more about, we've got to make training more available to people and what's the most effective way of doing it. How do we get to them? That was the real driver.

Reaching those who may be fearful of training was also a consideration.

> It's all about access and equity really. I mean you're all treated the same online and you'll have access. And that's the beautiful thing. You can have access at home, you can have access at work, and … it's easy to get into, and no one can see what you're doing … There was only a small number of facilitators who could only get out to a few people, so online training was then the way to go, to reach those markets.

In some instances, access was about using e-learning to reach a geographically dispersed workforce with consistent and timely messages about products and services.

In the case-study companies, while costs were a driver, they were more of an implicit undercurrent rather than a decisive factor. However, costs do seem to be assuming increasing importance in the overall business case for e-learning.

> I guess I'm a little bit discouraged … because [I] see that … organisations are not looking at it from a purely strategic perspective but around a cost-cutting perspective … how can we deliver more training at less cost … that's valid, it's a valid driver for the business but … it's people fully … utilising the capabilities of the net to create and achieve learning outcomes that [are] well beyond, I believe what was ever achieved in the face-to-face environment.

No company can be oblivious to the need for greater cost-effectiveness in its business processes, and cost savings were a consideration in all four companies. These fell into two groups: training costs and business efficiency.

On training costs, the direct savings to be had at the corporate level from e-learning appear to depend on the physical infrastructure costs involved, the pre-existing learning model (face-to-face or distance) and the e-learning model chosen (tutor/instructor facilitated or self-directed).

> *I always … intuitively knew that the costs of delivery were always going to be line ball, there wasn't going to be much in the way of cost savings because of the model we'd chosen …*
>
> *… nett it ended up costing Ford Australia more than the traditional training method …*
>
> *… at the end it cost us more than we thought because we didn't know how to get a handle on the planning … but I mean nobody had a handle on it in those days.*

However, all companies were mindful of the indirect or hidden costs of training within business units

> *… but I knew that there are huge hidden costs of training, in travel, accommodation, overtime, down time, lost productivity.*
>
> *… it's not about less training it's about more cost-effective training. It's about smarter training … and e-learning is a pivotal part of that because that's one of the ways it can deliver huge savings in terms of the release costs for training, plus the flexibility to roster.*

At the same time most interviewees were somewhat sceptical about efforts to measure return on investment.

> *… I don't think anyone's ever been able to put a figure around the cost of training, not in a complex business …*
>
> *Companies very rarely understand the true costs of training because some of the true costs of training are tied up in the concept of human capital, and human capital as we know has not been adequately measured by the accounting profession.*
>
> *… cost of non-compliance, the cost of people not being trained in safety, the costs of damage to equipment, the cost of damage to people—all of that stuff—that's never quantified.*

The savings in training costs from e-learning are realised more at the business unit level rather than the corporate level, which in turn enhances the relationship between the human resource development function and business units and encourages business unit demand.

> *So now instead of the dealer losing the apprentice for say a block of a couple of weeks while he goes away and does training, [they] lose him for a couple of hours during each day while they do their Fordstar component and they go back on the job then and they're much more productive, and it's good for the dealer in an economic sense but it's good for the apprentice as well because their job's more fulfilling, they're able to do more, and they get much higher levels of self-satisfaction out of that.*

For most interviewees, the business efficiencies to be had from e-learning far exceeded any savings in direct or indirect training costs.

… the ROI [return on investment] often is in the efficiencies you can get from the business…that's where you can get your massive savings, being able to roll things out so rapidly.

The general view of those interviewed was that cost savings were useful for selling e-learning to business units, but they have to be kept in perspective.

To me, price is how you can sell the system to people who don't understand learning.

Many interviewees stressed that the initial decision to adopt e-learning was ultimately a leap of faith by senior management rather than the result of sophisticated return on investment metrics.

In the end you just have to do what you believe is going to be effective, and until you've done it you can't measure it.

When e-learning becomes established within a company, then it does become possible to appreciate more fully the financials and develop more sophisticated return on investment calculations. Nevertheless, the ultimate rationale is not savings on the cost of training but achieving business objectives.

E-learning facilitates collaboration throughout the value chain

Competitive advantage is a function of how well a company can manage the entire value chain by co-ordinating its links in that chain.

Perhaps one of the most interesting aspects of the case studies was the early trend to using e-learning as a tool to support value chain integration by taking training upstream to suppliers, across to partners and downstream to distributors such as agents and in some instances, direct to company clients.

The automotive industry has been a leader in this process. In Ford, supply chain initiatives involve working with suppliers to identify potential design, material, manufacturing and logistical efficiencies. Distribution chain initiatives include enhancing product knowledge as well as technical and customer service capabilities of staff working in Ford dealerships.

One interviewee commented that e-learning has the potential to facilitate greater value chain integration at least at the distribution end.

… in America the one thing they have started to pick up on is the concept of training your customer base and actually using online learning to disseminate training across not just your employees but your customers, your channels …

FORDSTAR is the most developed instance of this by delivering training to dealership franchises which links production to sales and service and has the added benefit of creating feedback loops between design, production, servicing and sales.

… you can go into a design phase and build a vehicle as to design … but it's not until you get real life information out there that tells us have we designed this fully and correctly, that you get this sort of information very quickly at launch phase, and you can make those corrections and you only have a very few vehicles that we need to correct in the field because we captured it very quickly …

FORDSTAR has also opened up new partnership possibilities between Ford and other companies in the Ford corporate brand portfolio—Mercury, Mazda, Aston Martin, Jaguar, Lincoln, Volvo and Land Rover. Ford is now planning to share FORDSTAR training across these companies.

Not only is it a cost-effective benefit to us, it is so powerful because as we align our processes in the years to come, there will be a lot of synergies that will be similar and by utilising these resources in a professional way it will be so much stronger as we go forward …

Qantas has also moved in this direction with its training for its travel partners. Historically, Qantas has always trained the travel industry in Australia, predominantly in technical areas such as reservations systems and fares and ticketing. The Qantas fares and ticketing program has long been the benchmark of all fares training in Australia, recognised by the respective regulatory boards across Australia for travel agency licensing and licensed in some instances to technical and further education (TAFE) institutes.

Qantas College Online provided an opportunity to provide employees of the travel industry with access to its online courses on a fee-for-service basis. A suite of 15 online courses was identified and posted on the travel partners' site of Qantas College Online. Travel partners have the choice of online or classroom-based delivery but there remains considerable resistance to online learning and it tends to be chosen by small travel agents who are geographically isolated where costs of classroom training are prohibitive.

For Thiess, the trend to alliance contracting may have implications for how the training and development function develops in the future and may stimulate greater use of collaborative learning tools. Alliance contracting involves all parties to the contract—the client, the design group, consultants, building contractors and building operators—working together to achieve the best overall approach and best result for all of the parties. One interviewee noted that this collaborative win–win culture will inevitably grow in the engineering industry. This has implications for the way learning is organised.

… it seems to me that if you're going to create a more co-operative working relationship within and between partners then you start to set up a set of expectations about how you might do some of your learning more co-operatively than … individually. And it seems to me that you might do some of the learning amongst the group. Value engineering, for example, which has come back, is done amongst the partners in an alliance, so they might all go off and do some training in that together. So I can see [that] training needs might straddle a

range of partners in a contract. You're not just training up your people to do their thing but you might have a wider set of responsibilities.

ANZ has now taken e-learning through three stages. Stage 1 involved strategically developing e-learning as an integral part of ANZ's training and development function. The ANZ eTrain brand was and remains important in this internally focussed service to the bank's business units. Stage 2 involved extending this capability to the ANZ supply chain—providing e-learning services to partners and customers and specialist niches in the wider reaches of the bank. Stage 3 has involved a fully commercial business, targeting medium-to-large enterprises in the general corporate market which creates new links between ANZ and other companies within the financial services industry and, potentially, in other industry sectors.

The studies suggest that, in terms of competitive strategy, there is considerable and as yet unrealised potential to use e-learning to link elements in the value chain and reach people who may not otherwise access training, especially small business suppliers, partners and distributors.

Conclusion

This exploratory study of some strategic dimensions of corporate e-learning has thrown up a range of further research possibilities, and three of these are worth highlighting here.

The first relates to company size and e-learning. Scale and reach have been key factors for the case-study companies in considering a move to e-learning. This raises the question of the application of e-learning in small and medium-sized companies. One of the key informants for this study, based on internal company research, suggested that a workforce of 400 was a threshold size to achieve the required economies of scale from e-learning. Studies consistently indicate that small and medium-sized companies are less likely than large companies to adopt e-learning (and invest in training generally). There is clearly room for research on how the benefits of e-learning could be made accessible to small and medium-sized enterprises.

The second relates to the use of e-learning within value chains. Work organisation continues to change rapidly, outsourcing continues to be a strategic choice of many firms and new concepts of networks, clusters and skill eco-systems are merging with the more established concept of the value chain. Does e-learning have the potential to help companies, especially small companies, to build on existing competitive strengths through collaborative relationships and training partnerships?

The third area for further research is the interesting differences between corporate e-learning and e-learning in training institutions. One interviewee suggested that introducing e-learning in corporations was easier than introducing it in training institutions.

Corporations like ANZ or corporations in general have got it a little bit easier in determining how to drive this learning because they've got distinct strategies and obviously those strategies are driving the kind of education that's required, and therefore at any given time we can decide to sit back and say we know what the organisation's strategy is, we know where they're headed and therefore we can start to anticipate what's needed.

This view confirms that of Urdan and Weggen in their report on corporate e-learning who predicted that:

We expect corporations to be the fastest to explore this new frontier and to adopt web-based learning on a broad scale. Companies face more economic and social pressures to find new ways of training delivery and encounter fewer regulatory, bureaucratic, financial, and technical barriers to implementation of e-learning than other segments of the education industry.

(Urdan & Weggen 2000, p.31)

From the small sample in this study, and from my own experience with flexible learning in VET, I think this view is correct to a large degree, at least when comparing large companies with TAFE institutes. The companies studied face far more severe financial constraints than VET institutions, although most VET institutions would not share this view. Companies seek to drive their funds further and faster and find clever alternatives. They do face bureaucratic constraints but deal with them positively. They do face often major technical barriers but work collaboratively with their technology people to overcome them. They do face fewer regulatory barriers, even within a highly regulated industry. But none of these are, to my mind, the differentiator between corporate and institutional provision. The central distinction is between organisations which have a clear strategy, compelling business imperatives and a strong sense of mission and which can move quickly. Perhaps a larger-scale and comparative study would be useful in helping institutions to gain a new understanding of how to maximise the value of new learning technologies by getting greater strategic clarity.

Overall, these four studies of e-learning confirm the research findings on innovation

… successful innovation does not just depend on R&D [research and development] or new technology. It also depends on the utilisation of a whole set of complementary assets including work practices, organisational behaviour, the development of soft structures (e.g. supply chain management and customer relationships) and market assessment and strategic decision making.

(Cairney 2001, p.17)

They suggest that a more holistic view of e-learning is required, a view which is able to blend the more traditional educational interests with new insights about business processes and competitive strategy in both companies and institutions.

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Online learning in regional and rural Australia

Online delivery and learning in regional Australia

Benefits and barriers

Sue Kilpatrick and Helen Bound

The potential for online learning to enhance learning opportunities of those living in regional Australia cannot be over-emphasised. This chapter* describes a study where online delivery was mapped to determine 'what' is happening and 'why'. This enabled the benefits, barriers and 'promoters' of online learning to be identified. However, an important conclusion of this study is that there is a lack of consistent, comparable enrolment data relating to online learning, which obviously affects funding allocation decisions. To ensure high-quality learning experiences and appropriate support for students and staff, institutions require adequate funding and resources based on models which reflect the reality of online delivery and learning.

Introduction

ONLINE LEARNING HAS the potential to expand the range of choice available to regional and rural Australia. However, little is known about how opportunities can be promoted and managed in regional communities, just as knowledge of the extent of the uptake of online delivery in regional and metropolitan Australia is uncertain. This is largely because of a lack of published information and the adoption of different models of implementation (Harper et al. 2000). The problem of getting a snapshot of the extent of online delivery is exacerbated by different definitions of the term 'online learning' (Brennan, McFadden & Law 2001).

Extensive interviewing in regional Australia in 1999 and 2000 (CRLRA 2000, 2001) found a very low but gradually increasing use of online learning by those living in these regional areas. The apparently low penetration of online learning

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* A summary of the report, *Learning online: Benefits and barriers in regional Australia* (Kilpatrick & Bound forthcoming).

is confirmed by the National Centre for Vocational Education Research's (NCVER) *Student outcomes survey* (NCVER 2000) which shows that only 2.2% of all graduates, regardless of residential location, experienced some online delivery. Over a third of graduates experienced multiple delivery modes but online was the majority mode of delivery for only a tiny 0.8% of this group of graduates.

Benefits of flexible delivery in regional areas, including online delivery, identified by the Centre for Research and Learning in Regional Australia (CRLRA 2001), included providing an educational option for the youth to enable them to remain in their home locality and the customisation of programs that delivered flexible and relevant training to workplaces. However, respondents reported that the quality of flexible training varied widely. There is some evidence to suggest that learning that is planned and negotiated with the involvement of local communities produces more successful outcomes, including building social capital in communities (OECD 2001; CRLRA 2001, 2000; Hugonnier 1999).

In many rural industries and non-metropolitan communities there is a lack of a tradition of education and training (Kilpatrick & Bell 1998). People and businesses with little experience of education and training lack confidence as consumers of education and training (Selby Smith, Selby Smith & Ferrier 1996). The Centre for Research and Learning in Regional Australia (CRLRA 2001) found that the isolation imposed on students in rural and remote locations by wholly or largely self-paced learning can be detrimental to learning outcomes. Specific groups do not relate well to flexible delivery. These include Indigenous people, migrants, the middle-aged and people with learning difficulties. The Centre for Research and Learning in Regional Australia study found a long list of reasons why students experienced problems accessing flexible delivery, including online delivery. These were lack of computer skills, preference for face-to-face learning, inadequate literacy skills, being accustomed to a traditional classroom environment, being unable to negotiate courses and lack of confidence. It seems fair to say that online delivery in regional Australia has particular barriers to overcome.

What is online learning?

We have made a clear distinction between delivery and learning. Online delivery refers to a range of delivery modes where being online (for example, email, using packages or systems such as WebCT, Blackboard and so on) is a component of, or all of the processes designed for learning. Online learning is defined as learning processes which use online delivery. We recognise that learning is a socially situated activity where the relationship between what the individual learns and the situation and context in which knowledge is acquired and used, shapes individual and collective cognition and practice.

Method

The study reported here used a multimethod, iterative research design that moved from a quantitative mapping of 'what' is happening in relation to online delivery in regional Australia to a qualitative examination of selected cases to investigate 'why' it is happening. Data on recent and current enrolments in online courses/modules were gathered from eight providers across four states. One provider in each state had its main campus in a regional location. Table 1 lists the providers, the number of online students, the number of courses and types and levels of courses. From the quantitative data collected, nine courses were selected for more detailed analysis, one from each provider, with the exception of Western Australia 2 where two courses were selected because of small course enrolments. Where available, summaries of existing course evaluations for selected courses with an online component and interviews with teachers (14 interviews) in these courses supplemented interviews with current and recent students (115 interviews) to gain a picture of benefits and barriers related to online learning. Stakeholders in eight communities with one or more students studying the selected courses were interviewed to provide information about the benefits and barriers related to online learning for regional communities (11 interviews).

Mapping online delivery

In collecting data on the number of students enrolled in online learning and their characteristics, we found that each provider used different procedures and different definitions of what was meant by the term 'online'. Most providers had to run special programs to retrieve data that pertained only to online delivery. This was supplemented in many cases by verbal information from the departments that taught the relevant courses. Inconsistencies in information recorded and difficulties in retrieving data from record systems are highlighted by the fact that one provider recorded some courses as online when the only online component was a bulletin board and chat room to supplement communication in what were otherwise print-based distance courses. Providers used unit/module codes not recognised by the National Training Information Service in a wide range of courses, indicating a considerable variety in ways of recording modules and units.

There is variation in the scope of online delivery by providers in both regional and metropolitan areas. Five of the providers offer a wide range of fields and levels of study online, while the other three providers have more specialised offerings. Student characteristics and study patterns by residential location are described in the next two sections. They reflect provider online offerings and the make-up of their online student cohort.

Table 1: Provider online delivery

Provider	No. of students	No. of units/ modules	Online courses	Levels of main online courses
Victoria 1	552	4462	Wide range, including horticulture, modules in electrical & electronics, mining safety, information technology	Certificate II, III, IV, Diploma
Tasmania 1	393	367	Wide range, including information technology, business, fire-fighting, tourism, hospitality building, library technician, engineering, law	Certificate II, III, IV, Advanced diploma
Queensland 1	167	1927	Wide range, including information technology, business, hospitality, tourism, workplace training, nursing	Certificate III & IV
Western Australia 1	173	640	Wide range, including information technology, business, tourism, hospitality, visual arts & technology, children's services	Certificate II & IV
Victoria 2	158	263	Hospitality, VET-in-schools	Certificate II
Western Australia 2	123	244	Wide range, including business management, agriculture, offender management, information technology, maritime operations & workplace training & assessment	Certificate II & III
Queensland 2	58	220	Hospitality & tourism, small business management & workplace training & assessment	Certificate IV
Tasmania 2	30	250	Community services*, VET-in-schools	Certificate II
Total	**1654**	**8373**		

* Other options are available. This study collected data only for the community services option.

Provider and student characteristics and student study patterns

An analysis of the data found that students enrolled in online learning had the following characteristics and study patterns:

❖ The largest group of students is studying at certificate IV level. Many of these students are also undertaking units at certificate II and III. Only two providers, Victoria 1 and Tasmania 1, have more than a handful of students studying at diploma or advanced diploma level.

❖ The spread of fields of study varies according to provider. Across the eight providers, services, hospitality and tourism are the most common

fields of study (27% of all students), followed by engineering and surveying (21%).

❖ Over a third of students studying online are employed. (It should be noted that employment status is unknown for 32% of students.)

❖ Student gender breakdowns by provider generally reflect provider specialties. For example, Tasmania 2 offers traditionally female-dominated aged, child and disability care courses online. Here 93% of the students are female, while at Victoria 1 which offers, for example, traditionally male-dominated electrical and mining, 85% are male. The sample has slightly more males than females.

❖ All age groups are represented, with a quarter being less than 20 years of age, partly due to the VET-in-schools emphasis of Victoria 2. Victoria 1 and Western Australia 1 both have approximately one-third of their cohort aged under 20. The sample includes students aged 80 and more.

❖ Student online enrolment patterns vary, but many enrol in only one or two units/modules with an online component.

Location of students: Rural or metropolitan?

The sample is biased toward students residing in rural postcodes (as defined by the classification used by NCVER), as is to be expected from the location of the providers and the focus of the study on online learning in regional Australia (see table 2). Online students are geographically scattered in relation to the location of the provider campus. With the exception of Tasmania 2, the regional providers have students who live in capital cities and in distant rural and remote locations, while the city-based providers have students living in rural and remote areas. Victoria 1 and Western Australia 1, situated in rural areas, have a high percentage of rural students. Queensland 1, with campuses in the metropolitan area and smaller rural centres in the north, and Queensland 2, with three rural campuses north of Brisbane, have about half of their online students living in metropolitan centres. Further analysis of postcodes shows these students are mainly in Brisbane and, to a lesser extent, Townsville.

All providers have some 'local' students who reside in the same postcode area as the provider's campuses or adjacent postcode areas. Overall, just over half the students fall into this local residential category. Many local students attend face-to-face classes for other units/modules. Sixty-nine students were studying with interstate providers.

A significant number of students studying online had a choice of delivery modes. Some 35% of students from the nine courses had access to nearby providers offering face-to-face delivery. These providers included other TAFE institutes, colleges, group training organisations, community houses and so on. Of this 35%, 46% had the choice of more than one provider, with up to six

within some postcodes. The data suggest that online learning is a choice for some students in metropolitan locations who are not prevented by distance from attending face-to-face classes.

Table 2: Student residential location by provider

Provider	Residential location									
	Metropolitan		Rural		Remote		Unknown		Total	
	No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
Victoria 1	27	4.9	518	93.8	6	1.1	1	0.2	**552**	**100.0**
Queensland 1	79	47.3	71	42.5	14	8.4	3	1.8	**167**	**100.0**
Victoria 2	119	75.3	36	22.8			3	1.9	**158**	**100.0**
Tasmania 1	189	48.1	200	50.9	1	0.3	3	0.8	**393**	**100.0**
Tasmania 2			30	100.0					**30**	**100.0**
Western Australia 1	6	3.5	139	80.3	28	16.2			**173**	**100.0**
Western Australia 2	111	90.2	12	9.8					**123**	**100.0**
Queensland 2	30	51.7	28	48.3					**58**	**100.0**
Total	**561**	**33.9**	**1034**	**62.5**	**49**	**3.0**	**10**	**0.6**	**1654**	**100.0**

The next section discusses the findings from interviews of students, teachers and community stakeholders from nine courses.

Nine courses

The nine courses selected for interviewing reflect a range of delivery modes, levels and fields of study.

Table 3: Online units/modules

Provider	Course	Nature of online delivery
1	Electronics Course Cert. IV	Two modules are 100% online, but provided in an optional classroom context, the remainder of course face to face
2	Information Technology Cert. IV	100% online
3	Hospitality (Operations) Cert. II	100% online in classroom, supplemented by teacher mentor, practicum at institute
4	Telecommunications (Call Centres) Cert. II/III	Some modules partly delivered online (mixed mode), remainder of course face to face
5	Visual Arts & Technology Cert. III	One module 100% online, remainder of course face to face
6	Community Services Cert. II	All units/modules mixed mode, plus work placement
7	Small Business Cert. III & Information Technology (Web Design) Cert. IV	Both 100% online
8	Assessor & Workplace Trainer Cert. IV	100% online

Five of the courses were delivered using mixed mode, with two of these courses having moved from 100% online to a mixed mode of delivery. Four courses were delivered 100% online. The data for this section are based on interviews with teachers, students and community stakeholders from nine courses, which are detailed in table 3.

Institutional support of student learning and of teachers

Student learning

Support of student learning involves far more than supporting students through difficulties in overcoming hardware or the operation of software. It requires collaborative learning strategies that produce deeper learning of concepts, theories and the co-creation of knowledge (Treleaven & Cecez-Kecmanovic 2001). McKavanagh et al. (2002) suggest that good teaching in web-based flexible learning will involve engaging learners in rich 'conversations'.

The mixed-mode delivery courses in this study involved face-to-face interaction between teacher and peers with regular opportunities for students to work through and engage in conversations in relation to information technology problems and course content. Students from these courses all used email, and although bulletin board discussion was available, many did not use it, as it was not designed into the learning activities. Only two courses included online dialogue and interactive learning activities in their design.

With the 100% online delivery courses, communication was online and via phone. Information technology support was provided by the institution which organised online delivery for the particular state, and content support was provided by teachers of the institute facilitating the course. Although bulletin boards were available, they tended not to be used, again because learning activities did not require peer exchange. Email between teacher and student was the major form of communication. This was generally used to clarify the meaning of terminology or instructions.

A considerable number of students from mixed-mode delivery courses and the 100% online delivery experienced various degrees of frustration. The tensions between reality and student expectations are highlighted when there is a total dependency on the teacher as the only source of clarification and where there was no communication between peers. This was the case in all the 100% online courses. Typical responses from students included:

> I had one [teacher] … when you enrol he actually emailed back saying hey, I'm responsible for this subject but that's the only time—that's once it ever happened, all the rest has just been confusion. They don't know who's doing what—so it's a bit confusing on that point of view.

and

> *It was so frustrating. I mean when you've got a lecturer or a tutor you can go to them and ask them questions, but online you have to email them, then they email you back and this can take a week. Because one of them—the [name of city] lecturer was as slack as anything. You're flat out getting an answer back from him.*

To overcome these problems, institutions delivering learning online can develop a learning culture and communities of practice, where teachers are supported in ways that allow them to support their students' learning. Centralised statewide delivery does not appear to allow for local input and adaptation. Students need comprehensive induction programs which include study skills, awareness of their learning styles, how to use the technology interactively, conventions for communicating electronically, what is expected of them as students and information relating to assessment requirements. Many of the students who had withdrawn from modules informed us that they preferred the motivation provided by peer and teacher contact and structured timelines. To assist in building student motivational momentum, teachers need to be proactive in contacting students using different modes (for example, phone as well as email).

Teachers

The over-riding perception from the research is that teachers are concerned to provide quality learning experiences but struggle to do so within the confines of institutional requirements, lack of support and the need to meet state and federal administrative requirements. It was not unusual for teachers to express disappointment at the lack of professional development in how best to deliver online, how to interact with students online, and how to make learning 'easy or fun'.

In this study many teachers spoke of their time for the delivery of online learning being allocated to duties other than teaching, so teachers were considered not to be 'taking a class'. An exception to this was the allocation of one hour per student over the whole course. Even this allocation was found to be insufficient to meet demand by students. Others had seen colleagues' hours cut back once they began facilitating online delivery, because these teachers 'did not see students'.

Teachers undertake multiple forms of delivery and reported that management has a poor understanding of the time required to deliver effectively online:

> *I look after trainees, so I'm out and about all the time. I could be gone for two days at a time. If I have to go out and visit a regional trainee, then I could be away for at least two days. So yes there is a problem there in that for me being involved in teaching online, also delivering face-to-face material and also dealing with trainees as well, it is difficult for me, even though I might sit down and*

allocate a certain amount of time each day for looking after … I can never guarantee that I'm going to be able to commit to that time. That's been my number one concern and I think it's also management don't necessarily understand just how long, just exactly what's involved.

Many teachers were aware of the need for dialogue, but were locked into the confines of the program or lacked the pedagogical and/or information technology skills or time and support to develop more interactive courses. Typical teacher responses to the limitations of online delivery include:

There's lots of technical difficulties … trying to get it so it's user-friendly …You can throw stuff on like a page of text, but to make it friendly to use and sort of meaningful, more than just a page torn out of a book and stuck on a screen, is actually quite hard.

and

There is so much you don't know or feel online. There's no body language, none of that sort of thing to give you that effective feedback. I don't sense at any stage I developed any personal contact with the people just purely through an online process and I'm always more inclined to have a chat to them on the phone and see where they're at, get to know them a little bit, get a picture of their background where they are working and so on, so that you can at least be somewhat in tune with their needs and where they're coming from.

For teachers interested in developing online materials, funding is not available, nor is there allocation of time and other resources. For example, one teacher who offered to develop resources in his own time, asked the institute to fund the costs of accessing the institute's online resources from home, and was 'laughed out of the board room'. Another teacher who had undertaken postgraduate study in online learning requested his higher education contribution fees be reimbursed as he had developed resources for the institute during his studies. This request was denied.

Online delivery appears to be a 'lonely' act where teachers spend increasing amounts of time in front of their computers, and less time interacting with each other. Not one of the teachers interviewed indicated that there was support in the form of peers working together either informally or formally. There appeared to be little opportunity for reflection, expression of and exploration of frustrations, highlights, and concerns.

It is essential that institutions develop a learning culture to support teachers and learning. To do this they must be adequately and appropriately funded and resourced. A whole-of-organisation approach is required to change management to ensure that management at all levels understands and has the skills and resources to support learning within the institution as well as student learning. Professional development needs to address the pedagogical implications for online learning and design and develop communities of practice to provide organisational and peer support and learning for teachers.

Design of online programs

This study highlights a number of issues in relation to design of online learning, including:

- ❖ the need for collaborative learning and peer interaction
- ❖ limitations of electronic communication
- ❖ student motivation, learning styles and skills
- ❖ assessment issues.

Collaborative learning and peer interaction

Many teachers view online learning not as a single learning strategy but as one of many strategies. One teacher suggested that it's: 'like cloning yourself in the classroom', allowing the teacher to provide students with individualised attention and use a range of classroom management techniques. This preference for mixed-mode delivery is a result of the recognised need for peer interaction and the difficulties of effectively designing this in and maintaining it for 100% electronic environments.

In this study only two courses (both mixed-mode delivery) had online interaction designed into their content. The teacher would post discussion points with most students participating in the subsequent discussions. Both these courses received an overwhelmingly positive response from students who enjoyed both the bulletin board discussions and the motivational contact with their teacher. Online dialogue in the call centre course was used as a means of keeping focus, motivation and deepening the learning experience between weekly face-to-face class sessions. Both these courses appeared to apply elements of Salmon's five-step model in e-moderation (Salmon 2002). Salmon suggests that to effectively facilitate online interaction, considerable time is required to establish access and motivation, time is required for online socialisation (in these courses this took place face to face). Subsequently, an information exchange stage takes place, followed by the construction of knowledge and development.

The need to design these stages in and also to facilitate problem-solving processes requires a range of skills for teachers. For example, a teacher of electronics noted that they have good information technology skills, but they do not necessarily have adequate knowledge about learning processes in online delivery. So then if you get:

> … *non-technical people [developing graphics and putting it on the web] they don't have the technical expertise to make it sensible either, so you need a good mix to actually make a clever design.*

Limitations of electronic communication

Electronic communication is problematic, requiring much consultation and consuming a great deal of time between student and teacher to clarify and problem solve issues. Electronic communication was considered not a 'very clever way of trying to solve a problem'.

> *Most of the time when people don't understand concepts it works best if there's one to one, you know, with someone assisting them verbally or graphically or whatever, next to them.*

Many students, but particularly those enrolled in the 100% online courses, commented on the slowness of communication. This contributed to high withdrawal or non-completion rates in these courses. One student commented that she withdrew from her course because she preferred not to communicate online and the cost of phone calls was prohibitive.

Mixed-mode delivery does provide opportunities for addressing these limitations. The call centre course offers an example of how the combination of online and face-to-face contact can provide rich conversations and reflection.

> *What I [the teacher] also do is I try to set them additional tasks each week which will be related to what we do in class face to face. So it's either reflection on what we've done the previous week and/or in preparation for the coming week. So they've got school holiday homework which is to answer a couple of customer queries they think went wrong or what would they do better, and in class the first day back we'll actually have a talk about those scenarios and they have to post their discussions on the web site during the holidays. And I've done that most weeks, tried to get the students to maintain that momentum. I'm finding it's a long time between classes.*

Student motivation, learning styles and skills

Student motivation and participation may depend significantly upon group processes and, in particular, 'notions of social cohesion and co-operation' (Lally & Barrett 1999). In the electronic environment many students lack the knowledge and motivation to make appropriate decisions regarding such conditions as pacing, sequencing of content, use of learning aids and amount of practice (Chung & Reigeluth 1992). Students also require skills to effectively navigate multimedia environments and exercise control. There is a need for teachers to feed back information on learning performance and make suggestions for routes to take to aid students in developing these skills.

The most common reasons students in this study chose online learning were because it provided flexibility in managing study, work and/or family commitments, it allowed them to 'work at their own pace', and/or because this was the only way the course or unit was offered.

Students who enjoyed online study and completed courses quickly and successfully describe themselves as motivated and organised. A small number of these students also indicated they did not find it necessary to take part in online discussions. Often these students completed their courses in less than the generally specified time. For example, one student studying information technology completed a six-month course in ten weeks.

Teachers would add to the list of characteristics of online students who thoroughly enjoyed online learning, the need for a problem-solving orientation and being self-reliant. The ability to be organised and have a problem-solving orientation is more than attitude: specific skills are required. Many students did not have these skills. They preferred the structure provided by face-to-face contact and/or the motivation provided through the face-to-face dialogue. It would appear that the opportunity to take part in an ongoing dialogue was an important factor in motivation for many students. This student gives what was a typical response:

> *It was—like you had to be really motivated to do it, and sometimes it was hard not actually having a class, because you couldn't discuss things much.*

Assessment

Assessment items ranged from objective tests to essays and videoing, or the design of web pages as demonstrations of skill development and knowledge application. Mixed-mode courses, such as the electronics, hospitality, and community services courses required practical work at the institution or, in the case of community services, in the workplace. Most courses included multiple-objective tests, designed to be corrected by the computer. Incorrect default settings caused considerable frustration. There was little evidence of assessment items requiring collaborative activity in most courses in this study. Students were not always clear on what was required for assessment.

These findings indicate that design of learning experiences/courses requires teachers and designers to address the development of 'the group' and to facilitate interaction in the online environment. Teachers require a range of pedagogical strategies and knowledge on how best to use them in an online environment. When designing learning experiences online, it would seem that this is best done with a team which includes teachers, those with technical expertise and, if required, content expertise, with assessment being integral to the learning experience.

Regional students

In this study more distant students experienced greater frustration than those closer to their provider. The sources of frustration ranged from technical difficulties, lack of or inadequate induction, relatively poor computer literacy

skills, time delays associated with asynchronous communication, to not being able to gain clarification of a problem easily and quickly. Those courses delivered 100% online had the least interaction designed into their course, and students from these courses experienced the greatest difficulties in gaining continued access to and support from teachers. The further away students are from their provider, the less likely their experience of online learning is to be positive.

Teachers of mixed-mode delivery courses noted that, in some instances, the more remote students were potentially disadvantaged compared to metropolitan students.

> *Some of the other schools and they're more regional ones, to some extent we have lost some of them because they may have only had small numbers and it's the remoteness, where there's kind of that lack of contact. A number of schools have problems with their system maybe slower than ours because of the restrictions on their systems in the schools …*

> *There was one, it was a school in the sticks and the teacher's wife was sick a lot and he was never around too often, I think they really didn't know quite who to turn to in the end, so they probably weren't kind of being kept on track and they do need to have somebody who says, 'Have you submitted this work today'.*

To address these issues we suggest that face-to-face contact with peers and teachers should take place early in the learning experience. If this is not possible then tele-tutorials are an alternative. When students are not responding or participating email contact is rarely adequate. Early intervention by teachers using personal contact, such as by telephone, is more likely to produce positive results (see, for example, Lally & Barrett 1999; Snewin 1999; Khan 1997; Weller 2000). To enable teachers to intervene early, institutions require the appropriate hardware and software and teachers need to be confident in their use. Skills specific to the electronic learning environment need to be integrated into the learning process and teachers require adequate time to enable them to provide regular feedback to students.

Communities and online delivery and learning

The community services course was an excellent example of co-operation between organisations within one small rural town. The town had put together a committee of representatives to facilitate the VET-in-schools program from the council, local businesses and public infrastructure, all of which provided work placements. The committee works through issues ranging from occupational health and safety, the workbook to workers' compensation. Contact and dialogue between the local school and organisations offering work placements is ongoing.

Committee members interviewed strongly believed that these programs (a range of courses was offered through the VET-in-schools program) were important in enabling young people to stay in the community for longer, and to

potentially gain employment locally. This was also the case for the many mature-aged students in this course.

> *Employment is an issue, we're in a depressed socio-economic climate anyway and being a rural area there's inherent issues around unemployment and isolation, access to services generally or access to training and opportunities.*

Stakeholders reported that having local people to draw on was important as locals were committed to the growth of the area. Furthermore, they tend to remain with the organisation for some time. These people provide a ready source of employment without the additional travel costs that outsiders would need to bear.

> *By employing local people, you get a commitment to the community because they live here and are committed to the growth of the area and to the facility, so normally you find they stay with you for quite some time. And they are also more likely to advance, to go on the pathway. So because of what they've already accomplished then they get confidence to move on. So it actually is a ready source, if you like, of employees.*

One course had developed strong links with industry. The program director explains that the development of these industry links provides ready opportunity to respond to industry needs.

> *We had a situation just recently whereby an employer was concerned that we were offering these pre-requisite units in total because it really jeopardised their funding for traineeship. … most of the students that do gain employment go through as trainees. Industry are suggesting to us that we don't offer the full core, we offer not all of the core but we can add an elective to that course which would mean that they would still be entitled to their full funding. It is quite important to employers and we need to take that feedback on board. So statewide we've made a decision just recently to offer an elective instead of one of the core units. We're working with industry not against industry and it doesn't jeopardise our students' prospects of getting employment in a job. So quite— we're very industry driven. We need to be. Our reason for being.*

The program works with industry to design customised training although the degree of customisation is limited due to the requirements of the national training package.

Relationships built over a number of years have led to an ongoing dialogue on an informal basis, resulting in the employers feeling that they have the capacity to contribute to the course development. Respondents reported that having local people with the necessary skills provided positive outcomes for the firm and for the state. The link between industry and an educational institution was highly valued because it provided the opportunity for exchanging information and for developing a sense of support within the industry in a regional centre, particularly since there is little professional specific peer support.

Developing relationships with industry through work placements or a culture of responding to industry needs assists in employment outcomes for students, and provides the rationale for developing community linkages. Despite this, other courses had limited or no contact with their local or industry community. The VET-in-schools hospitality course appeared to have some links to industry to help students enter a career path. Other community representatives expressed interest in online learning and the opportunities it could bring to their communities, but were unable to comment on specific courses, or in many cases, specific providers.

To assist community involvement, institutions require encouragement to develop ongoing relationships with local and regional organisations to more fully meet the needs of the local community. There appears to be a role for client-focussed training brokers in assisting clients to meet their needs and to establish relationships between client (individual and organisation) and provider (see Kilpatrick & Bound 2001).

Benefits, barriers and promoters

Benefits

Outcomes from the provision of online delivery and learning included study opportunities leading to careers and employment that would have otherwise required students to travel or move away from home. These courses included the VET-in-schools community services course—which attracted many mature-aged students—electronics, and hospitality. For many students study would not have otherwise been possible, due to costs and time constraints. The community services course was an excellent example of study opportunities leading to work in the local community. Many rural communities are depressed, and not surprisingly their youth, and often whole families, leave to seek further study opportunities or work.

Mature-aged students who had little or no computer literacy developed their skills through a range of computer programs, particularly the internet. Improved information literacy skills resulted in many mature-aged students proudly reporting they could now assist their children with homework by searching the net for information. For those students who responded well to online learning, skills in problem-solving and greater self-reliance developed further, increasing confidence. Confidence also increased as a result of undertaking study and working towards or gaining a qualification in the students' chosen field.

Opportunities for study and potential employment were increased for students undertaking study in subjects or courses not locally available. The lower cost of online study, compared to face-to-face delivery increased access opportunities for some students.

Online learning provides a number of benefits to learning processes, not least of which is increased flexibility in juggling multiple demands and responsibilities on student time. One student noted that:

> *You can do it in your pyjamas while you're stuffing your face with a cream bun.*

Some courses are particularly suited to online delivery, and given the nature of the work for which students are training, online learning almost becomes a requirement—as in the call centre course. For some students online learning better suits their learning style and they are able to work through the material quickly. For others it allows time to think about the materials and not to feel pressured. All these benefits are summarised in table 4.

Table 4: Benefits of online delivery and learning

Outcome	Increasing opportunities	Learning process
Career, study and employment opportunities not otherwise available	Being able to study a course or subject not otherwise available	Flexibility of pace, time and place of study
Keeps some students in their rural communities for longer	Training available in a depressed area with no other opportunities for training	Online delivery is an excellent way of learning some work-related skills (e.g. call centre work)
Improved information technology skills, better information literacy	Cost savings for students	Learning to learn online
Students develop independent learning skills		Able to express 'voice' online; not necessarily time in the classroom
Increased confidence		Suits learning style of some students

Barriers

The barriers to online learning outlined in table 5 centre round the lack of, or an inadequate industrial relations system as well as a lack of institutional cultures of online learning. Student access to online learning is decreased or denied when there are inadequate, institutional systems and cultures for teachers to support their students. Institutions lacked a learning culture and national industrial relations arrangements are predicated on traditional classroom delivery and permanent employment, practices which are increasingly becoming outdated.

Table 5: Barriers to online delivery and learning

Access issues	Learning processes hindered	Institutional culture and national system issues
Cost of home computers	Inadequacies of platform for subject content	Inadequate teacher skills
Information technology and bandwidth problems	Minor errors in material major impediments to learning	Insufficient professional development
Poor layout and unclear instructions	Insufficient/inadequate support for students from institute	Poor understanding by management of requirements to support online learning
Lack of clear instructions on how to study and about assessment processes and requirements	Slow response to student emails, no phone contact from teachers	Not enough teacher time allocated
	Lack of information about what was required for assessment	No resources to replace teacher, e.g. when ill
	Inadequate feedback on assessment	Lack of peer interaction

Promoters

Evidence of a number of factors promoting online learning and delivery (see table 6) was identified from the data. Access for students is increased when induction processes take place face to face and students are clear about expectations and requirements. When course design allows for limited or no peer and teacher interaction, students need to be self-motivated and well-organised—to have the 'right' learning style. A number of courses had excellent links with industry in the local community, with increased employment opportunities as a result. Factors which support online learning include an appropriate platform which allows interaction and teachers to track students and 'intervene' as required. Some courses provided good examples of teachers promoting discussion through bulletin boards and structuring or designing discussions into their teaching. As identified in barriers to online learning and delivery, institutional support in the form of adequate resource allocation is essential for successful online learning. Table 6 outlines the factors which promote successful online learning and delivery.

Table 6: Promoters of online delivery and learning

Access	Learning process	Resources
Good induction	The suitability of the platform	Teacher's skills and professional development activities
Student motivation and having the 'right' learning style	Face-to-face peer and teacher interaction	Time allocated by institution for teacher
Culture encouraging industry links	Teacher encouragement and modelling of bulletin board use	

Conclusion

This study highlights the lack of consistent, comparable enrolment data, indicating there is a lack of information on which to base resourcing allocation decisions. To ensure quality learning experiences and support for students and of staff, institutions require adequate funding and resources, based on models which reflect the reality of online delivery and learning. The lack of support felt by teachers indicates a need for the creation of learning cultures and professional development opportunities which provide support, skills and knowledge.

Metropolitan students have far greater choice between modes of delivery than do regional students, whose only choice may be online delivery. The further away students are from their provider, the less likely is their experience of online learning to be positive. Regional students, reliant on electronic communication, require not only interaction and collaborative learning but also face-to-face contact or at least regular telephone contact with teachers and fellow learners. There continues to be potential for collaboration between provider and community to meet local needs.

As a new tool for learning, the introduction of online delivery and learning necessarily highlights tensions and contradictions in existing systems. It also highlights tensions and contradictions in the boundaries between interacting systems such as registered training organisations, state training authorities, the Australian National Training Authority, policy-makers, funding bodies, teachers and students. As a new approach, online delivery and learning demands not only appropriate resourcing, but good change management.

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Regional perspectives on online learning

Chris Horton and Janet Osborne

Online learning has the potential to benefit people in regional areas significantly. This project* was designed to examine a number of key determinants of whether rural populations were, in fact, benefitting from online learning. The study identified who is accessing online learning and looked at their experiences—including the perceived barriers and benefits, as well as the public policy and investment implications, most notably the provision of adequate information technology to accommodate online learning.

Introduction

> *As I visited regional, rural and remote parts of Australia throughout 1998, 1999 and 2000, I heard the concerns of country people. They told me many things, including their concerns about the additional cost of living generally and of petrol prices in particular outside the capital cities. But these issues were subordinate to their far deeper concerns about the education prospects of their children and young people. Without exception, every community we visited expressed anxiety about whether children and young people had access to the quality education they needed to ensure them a future. They feared that their children and young people were slipping further behind, that their educational opportunities were far less than those of city children and young people, that as a result their children could not compete with the skills and qualifications of city children. … They expect these issues to be addressed as a top priority, more important by far than a reduction of 1.5 cents in the price of a litre of petrol.* (Sidoti 2001, p.18)

ONLINE LEARNING IS integral to the policy base of the Federal Government's *Networking the nation* strategy. The expansion of online learning opportunities since the development and implementation of the 1999

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* An outcome of this project is the report, *Online learning on location: Perspectives from regional Australia* (Brennan et al. forthcoming) which this chapter summarises.

Australian National Training Authority (ANTA) collaborative framework plan (EdNA VET Advisory Group 2000) has certainly enhanced access to education for some communities, groups and individuals. The purpose of this investigation was to look in depth at how well, and to what extent, regional and rural Australia are experiencing and capitalising on these innovations.

The research focus

The project team saw a need to investigate learning online in a regional environment because of the shortage of information available for policy-makers, information technology providers and educational developers as they devise strategies to enable people in regional and rural Australia to access education online and to improve their experiences and outcomes. The project set out to determine:

❖ whether there were different drivers of choice in rural and regional Australia than those affecting learning providers and learners in metropolitan Australia

❖ whether the generic problems identified in other research in online program provision and learning were exacerbated by distance from metropolitan centres

❖ how far the online alternatives had been exploited in regional areas

❖ the extent to which flexible learning options with an online component are viable options for providers and users in regional areas.

The research design identified four separate stakeholder interests within each delivery environment: learners, teachers, e-learning facilitators/flexible learning managers, and organisational leaders (chief executive officers). This finding accords with previous studies where these categories are detailed and explored. (See, for example, Brennan 2001; Horton 1999; Warner & Choy 2000.) The methodology draws on information provided from representatives of each of these interest groups within the four selected providers and regions of operation.

Participating providers were selected to ensure a spread across states and regional environments and from organisations with a stated commitment to the development and support of online learning. The provider sample and their locations offer some useful similarities for comparative purposes, particularly in terms of organisational dimensions, and the hub-and-spokes pattern of regional location/delivery from a key regional centre (or metropolitan fringe) to smaller towns and rural settlements. There is also a rich spread of demographic and occupational patterns across the provider locations, and a diversity of client needs and programs.

As noted above, this research explored online learning from the perspective of the learners, teachers, flexible learning managers, and chief executive officers of

four vocational education and training (VET) providers in different parts of regional Australia. Table 1 summarises the institutions and the numbers surveyed.

Table 1: Breakdown of the institutions and personnel surveyed

Whom we spoke with	Tropical North Queensland Institute of TAFE (Qld)	Goulburn Ovens Institute of TAFE (Vic.)	Onkaparinga Institute of TAFE (SA)	Wodonga Institute of TAFE (Vic.)	Totals
Learners	17	7	16	6	**46**
Teachers	6	4	8	5	**23**
Managers	2	1	1	1	**5**
Chief executive officers	1	1	1	1	**4**

The study was deliberately and specifically focussed on regional centres and their associated rural 'territory'. Eighty-nine per cent of Australia's non-metropolitan population (about 4.7 million people) live in such areas. However, the issues and needs of remote communities and populations are not directly addressed by this study. Nevertheless, the outcomes of this research may well clarify some aspects of the benefits of online learning and the barriers to online learning in remote Australia.

What we asked people

The project team structured discussions to explore the perspectives of the target group on seven key areas of interest:

❖ Who in regional Australia is accessing online learning? Where and how?

❖ What is the experience of current online learners in rural and regional areas?

❖ What are the perceived and projected benefits of enhancing access to online learning in regional Australia?

❖ What are the perceived barriers to extending the uptake of online learning in the four regions case-studied?

❖ What are the implications if these barriers are not successfully addressed?

❖ What do providers and communities within the four case studies identify as positive strategies to overcome barriers?

❖ What are the public policy and investment implications—perceived and real—in overcoming identified barriers?

What the current research is saying

The possibilities offered by online learning have provided a springboard for diversification and innovation in the delivery of education. Aspects of learning and teaching paradigms have been rethought and recontextualised and this has been a driver of much of the innovation and flexibility of online as an educational medium.

However, online learning has had a mixed response from learners and teachers. Among the reasons emerging from the literature and discussed by the project team in developing a coherent research methodology were:

❖ how easy or difficult they (learners) find it to access new technologies for communicating and learning because of issues such as:

– where they live or work which influences, for example, the quality of information and communication technologies infrastructure and their degree of awareness of new technologies

– their own or their organisation's financial situation—being able to afford to obtain necessary hardware, software and connections (internet)

– their literacy levels

– their ability to use a computer and the internet

❖ how skilled they are in an online environment searching for information, and making assessments of its quality, reliability, relevance and so on

❖ for learners, the extent of their ability to be self-directed, including being able to determine the expectations of courses and assessment tasks

❖ the availability and their knowledge of support structures (that is, who to contact for assistance, both technical and learning-related, and how and where)

❖ the time required to fulfill the demands of learning and teaching online. (The time required to access and research materials is often not taken into consideration when choosing this mode of teaching/study.)

Current research would seem to support the view that many learners are not suited to online learning for some of the reasons listed above (McNickle 1999; van Stavaren, Beverley & Bloch 1999; Warner, Christie & Choy 1998; Smith 2000). Research suggests that learners also experience difficulties because they do not feel secure in the same ways they do in a traditional classroom, where they experience a sense of guidance and community/social interaction (Mitchell & Bluer 1997; Warner & Choy 2000).

Hara and Kling (in Cashion 2000) report that many learners become frustrated with the technology and often drop out as a direct result of this

frustration. Many of these people are unable to differentiate or identify their problems as being related to hardware, software, or operational skills.

Difficulties in implementation and application are examined by Stewart-Rattray, Moran and Schueler (2000) who see variations in the implementation of flexible learning as being influenced by a number of factors, including access to education and training, especially for disadvantaged groups.

On the positive side, however, there are good news stories. Carroll and McNickle (2000) found that for learners who succeed in utilising an online mode of study, online learning has provided opportunities they would not have had previously. The flexibility associated with studying online becomes yet another positive attribute.

Brennan (2001) defines the preconditions for improving learner outcomes using online technologies as including:

❖ learners having a sense of ownership and community (Cochenour & Reynolds 1998)

❖ learning strategies that suit the individual needs of the learners

❖ reliable technology and intellectual material, and regular social interaction (Brennan 2001)

❖ well-planned, innovative and flexible learning materials

❖ evaluation of learner progress and attitudes to the delivery mode

❖ learners having knowledge and skills to use the technology (Misko 1999)

❖ learners having independent learning skills, including motivational skills (Misko 1999).

These preconditions both overlay and to some extent complement the preconditions for success identified by Kilpatrick (1997) in Brennan (2001). These included:

❖ lifestyle (Else & Hicks 1998)

❖ preferred mode of learning

❖ degree of comfort with the new learning technologies (Warner & Choy 2000)

❖ cost (Marquardt & Kearsley 1999)

❖ demands of the workplace or the educational institution

❖ comparisons with other available forms of delivery.

It would seem that all stakeholders in online learning—teachers, learners, managers and the organisations—are recognising and coming to grips with the complexities related to learning online and what influences their chances of being successful in that medium.

The case study sites

The providers and regional locations selected follow.

Onkaparinga Institute of TAFE, South Australia

Onkaparinga is based in outer suburban Adelaide, but its delivery covers much of the south-east of South Australia. It has five campuses located at Mount Barker, Murray Bridge, Noarlunga, O'Halloran Hill and Victor Harbor and learning centres on Kangaroo Island and at Pinnaroo. These facilities service a population of approximately 191 000.

Technical and further education (TAFE) in South Australia has a rich history of participating in the development and implementation of online learning approaches, with many teachers having been involved in a variety of types of online professional development for several years. Onkaparinga approaches flexible learning goals strategically. The goals for 2001–2004 are:

❖ increased availability of and more flexible delivery options

❖ increased enrolments in flexible delivery (5% per annum over three years).

Goulburn Ovens Institute of TAFE, Victoria

With its administrative centre and largest campus located in Shepparton in the Goulburn Valley, Goulburn Ovens TAFE has major campuses in Seymour, Benalla and Wangaratta and a number of smaller operational sites. The institute services a population of approximately 170 000.

Strategic goals related to flexible learning which will be supported by the provision of appropriate technology infrastructure to support learners' learning needs, identify the intention to:

❖ integrate information technology practices in program delivery options

❖ support the development of an 'online' program/course resources to meet customer needs

❖ provide all clients with access to a range of teaching delivery methodologies and options.

Wodonga Institute of TAFE, Victoria

Wodonga Institute of TAFE is situated approximately 300 kilometres north of Melbourne on the Victoria–New South Wales border. The institute has its main campus in Wodonga and two learning centres each over 100 kilometres distant in the small towns of Corryong and Mt Beauty. It services a regional population of approximately 100 000 on both sides of the Murray River.

Flexible delivery modes offered by the institute include self-paced distance learning, employing a range of resourcing modes, and partially online or in mixed mode where combinations of on- and off-campus study are customised to meet the needs of the learner.

Developing and promoting flexible learning is a strategic goal of the institute.

Tropical North Queensland Institute of TAFE, Far North Queensland

This institute is based around a major campus in Cairns with seven other campuses extending to the north as far as Thursday Island and south as far as Tully.

The eight campuses in Far North Queensland service an approximate population of 222 500. Enrolments for 2001 totalled 15 856 of which more than 670 enrolments were for partially or wholly online courses. Two hundred and thirty-eight courses across ten delivery areas were offered in 2002.

Research approach

For each of these sites, and consistent with our analysis of stakeholder interests, the research team determined that a 'layered' research design would deliver the richest and most useable data for addressing the key research questions. The primary methods selected were:

- ❖ structured individual interviews with learners, teachers, facilitators, chief executive officers
- ❖ progress/follow-up interviews with learners and teachers
- ❖ personal learner reportage/stories using 'learner diaries'
- ❖ provider case study data based on locally sourced demographics and corporate information supplied.

This range of methods was selected and developed to provide the capacity to gather personal observations and data over time, and from multiple points of view within the four delivery environments. In case study terms this provides triangulation on delivery functionality and issues. It also provides some challenges, with the analysis in terms of identifying and reinforcing patterns within and between the stakeholder data sets, and recognising patterns, relationships and exemplars between data sets and case studies, and across the multiple methods as a whole.

The research approach encountered a number of problems; for example, the learner diaries in practice required higher levels of researcher support to maintain the flow of information and observations than originally anticipated.

The research team had believed that the diaries would tell stories or report 'critical incidents'. Instead, in some cases, they became an active dialogue, with questions and prompts from the researchers informing the content of the diaries. Issues were reported and shared between researchers which were, in turn, passed onto other diarists. To this extent, these dialogues have an 'action research' element embedded in them—the self-conscious observation/reflection process, supported by an activating researcher.

The progress and follow-up interviews and diaries were designed to track people through the lived experience of learning flexibly and learning online. This became problematic for a number of reasons including:

❖ the difficulty in locating online learners in organisations

❖ the extent to which online learning was occurring

❖ the difficulty experienced in reconnecting with identified 'online learners' 4–6 weeks after the commencement interviews. Many are learning flexibly, and are therefore not often on campus, or are busy with other commitments such as work, family etc.

❖ the reluctance of students to commit to participating in online learner diaries because of the level of extra commitment and work involved.

What the learners said

Initially the research team was surprised to find that identifying groups of learners undertaking any form of learning online was not easy. Unless the learner was working in an exclusively distance mode, the case study organisations did not have a uniform way of recording which learners were studying online, whether wholly or partially.

The learners we did identify were mostly experiencing online learning as an integrated component of the course or module being delivered. We found very few 'purely' online learners, or learners experiencing online learning using a range of flexible delivery applications (chat, bulletin boards etc.).

The result of this first 'hurdle' was that some of the questions we asked did not generate the information needed to make conclusive judgements. We were not able to compare the perceptions of all students interviewed regarding their online experiences, as the learning experiences were extremely diverse, as were the applications of online learning as an educational technology.

Motivations for studying online

With regard to learners, responses indicated that they had a range of motivations for study and for using the online mode, including that it was:

❖ 'convenient'

- ❖ the only available mode at the time
- ❖ the only mode that would accommodate their personal and work commitments.

Students would generally study online again

Students generally reported positive experiences using online learning, even though many said it was not their preferred learning mode and that induction and information processes could be improved significantly.

The majority of respondents were sufficiently comfortable with their experience and felt it positive enough to persuade them to study online again—largely because of the convenience it offers. Those who would not use an online mode again included those who cited its slowness (an infrastructure issue) as their major concern and those with a strong preference for face-to-face learning modes. This latter group were prepared to consider a mixed mode of delivery (even if it incurred additional costs for travel, attending the institute etc.) if, in return, they were offered classroom interaction—the thing they missed most with online delivery.

Barriers to online learning: The learner perspective

There is a prevailing tenor of pragmatism in the remarks of the learners also present in the comments of teachers. It expresses itself in learner responses which talk about convenience, lack of choice and about the available options (if there are any) requiring travel. They also spoke of online study options being costly and of online options being incompatible with family and work commitments. These responses suggest that, while learners have some expectations of being able to overcome barriers, online learning has not been the panacea they had been looking for. From the learners' perspective, the failure to address the barriers to online learning provision in regional Australia will exacerbate the disadvantages that already exist in accessing a range of courses.

Included among the barriers are a range of infrastructure issues, including:

- ❖ lines that 'drop out'
- ❖ needing two lines (one to receive data, the other to communicate with a helpdesk or for the family to use while they are online)
- ❖ data transfer limitations that make the experience of online learning frustratingly slow.

These are also of concern to teachers and other organisational stakeholders. Many of these will require action at the state or national policy level to be addressed effectively.

What the teachers said

Our study included practitioners who were teaching in courses in a variety of disciplines from the health industry to business and information technology programs, to those supporting the professional development of other education professionals (workplace trainers and school support officers). Participants had been involved in the development of educational materials and tools, the development and trialling of platforms and in face-to-face and online delivery.

Most online learning is part of mixed-mode delivery

We discovered that much of the online teaching being done is embedded in classroom delivery or in off-campus/distance study. This meant that some of the research involved tracking down the teachers who had 'pockets' of online practice, which in itself meant finding the 'enthusiasts' or change agents in the organisation who were aware of the different practices going on. There seems no way (at least in the organisations we visited) of tracking 'online learners'.

The teachers we interviewed had vastly differing levels of experience in the use of information and communication technology as a communication and/or learning tool. They were also using the online medium in a range of different ways. At the most limited end of the online spectrum, teachers and students were communicating by email and using online resources. At the most sophisticated level, teachers were facilitating fully online programs, using video streaming, asynchronous and synchronous chat, bulletin boards, and using the web to enable students to access materials.

Most teachers do not prefer it as a mode of delivery

The vast majority of our teacher respondents indicated that online was not their preferred mode of teaching delivery. By including the online mode in their programs they were responding to the needs/demands of their institutions and/or their students. Only one practitioner chose to use the online mode because 'students learn better this way'. The others were concerned about the impact on students of the lack of face-to-face interaction, the impact of limited student literacy and computer skills, and the impact of telecommunication limitations. They believed that they were providing a positive experience for some of their students but that the problems identified above reduced the value of the experience for many others.

Barriers to online learning: The teacher perspective

The barriers to online uptake that teachers wanted to see addressed included the following:

- ❖ the lack of technical backup and trouble-shooting, helpdesk access, expertise etc.
- ❖ the limited computer/internet access that many students have outside their workplaces
- ❖ the information technology skills and knowledge base with which students begin courses.

In the previous section we suggested that teachers were pragmatically including online delivery in their personal and institutional range of offerings. The data we collected from them indicate that they are not entirely made up of enthusiastic 'early adopters'. Teachers are learning as they go and undertaking professional development. Many teachers saw themselves as 'learning as they went', developing tools, strategies, responses and materials as they learned with the learners. Several had been involved in the ANTA-funded professional development programs, Learnscope or Reframing the Future, and as a result of participation in one of these organisation-based professional development projects, had become interested in developing their skills.

A smaller number we spoke to had undertaken special professional development courses (such as the Graduate Diploma in Online and Flexible Learning) but these were in the minority. Many had also formed contacts and gained confidence through attending conferences and participating in online learning forums such as the ANTA Net*Working conferences.

What we witnessed, then, were teachers who had developed some materials (often in response to a professional development opportunity) that could be applied in a flexible way, but were primarily being delivered in the classroom context. The teachers explained that they were continuing to use and develop the materials because they could see value to their own career development, and to the range of alternatives they could offer to their students.

Teachers are in an interesting position in their institutions in relation to the implementation of online learning. They operationalise the strategic decisions of their chief executive officers and flexible learning managers, who are less connected with the teaching and learning situations on the ground. They are, however, given the responsibility to make those 'strategic decisions' work for learners. We felt that their responses to our questions were indicative of the tensions that exist in trying to bridge the competing expectations of organisational decision-makers and students.

What flexible learning managers and chief executive officers said

Speaking with chief executive officers and flexible learning managers, we wanted to establish what the strategic objectives and purposes of online learning were within organisations and compare these to the actual experiences of the learners and the understandings and practices of the teachers. We anticipated that they would articulate the vision and the aims of the organisation—in terms of developing an online teaching capability. They would also be able to indicate the extent to which they understood the level of progress within the organisation, what the issues were, and their actions to address the issues.

Online learning is not a major part of institutions' business strategies

Our specific questioning of the chief executive officers and the flexible learning managers gave us the impression that the implementation of flexible learning (and in particular online learning) was not a major part of the business strategy of the organisations in this study. This seems to be related to factors such as:

❖ the infrastructure difficulties of effective implementation

❖ problems with access to skilled staff and difficulties in skilling those staff who are available

❖ the lack of understanding of those responsible for the development of policy and communication platforms at a state level of the realities of the information and communication technologies situation in rural and regional Australia.

Managers seemed to be identifying online delivery 'stand alone options' as representing a major move away from core business. They appeared to remain unconvinced that either learners or teachers saw it as a viable learning alternative.

Online delivery is seen as part of the educational commitment to their community and the region

Many of those we interviewed saw online delivery as part of the educational commitment to being within, and part of, their regional area of operation. It:

❖ is a way of getting to remote learners and providing them with the tools to access a greater diversity of learning options

❖ gives learners the opportunity to experience a different range of subject areas, in addition to developing new technology-related skills

- ❖ is not a mode that suits everyone

- ❖ must be supported at least as well as traditional delivery

- ❖ should, in many cases, be developed inside a mixed-mode delivery model.

Flexible learning managers and chief executive officers placed a strong emphasis on the value of providing options for people within their communities. They talked about helping communities to stay together and to develop new pathways and opportunities. They also mentioned the needs of seasonal, and very isolated, workers—for whom online can form a link representing continuity. One interesting observation was that learners and communities may see online learning as 'less serious' and that communities may therefore not place a high value on it. Alternatively, some saw online learning as a means of both reaching across remote areas and alleviating isolation and increasing the social dimensions of learning.

Online learning offers flexibility for learners

Flexibility was cited frequently as a 'perceived' benefit of online learning for teachers and learners, but particularly for learners. This benefit is expressed in terms of allowing people to stay in their own regions, or to ensure the maintenance of links to other responsibilities such as families and work. Online learning may also improve flexibility for people who work in particular industries (for example, tourism, primary industry). It was also seen as affording the teaching organisation some flexibility, in that they can keep their materials in one place, update them regularly and allow easier access for other staff and learners.

Barriers to implementing online learning: The manager/ chief executive officer perspective

Flexible learning managers and chief executive officers did not see online learning as a cost-cutting exercise, and appeared well aware of the issues involved in implementing it. These included home access for teachers, solving industrial relations issues, and looking for new ways to value, maintain and replace infrastructure related to information technology services. Amongst the most frequently mentioned barriers were:

- ❖ telecommunications and bandwidth issues culminating in long download times and inaccessibility during business hours

- ❖ technical barriers—knowing what software to use, having appropriate hardware

- ❖ skills deficits (for teachers and learners)

- ❖ keeping equipment up to date

- ❖ learner readiness
- ❖ literacy and comprehension issues
- ❖ slow teacher adoption and adaptation.

The relationships at work in online learning

We reached a point in the development of the analysis of results where we found that our assumptions and design had powerfully differentiated the views of the various stakeholders. We felt that, through the development of a series of diagrams, these relationships could be examined and the differences in experience and perspective be explored.

Conventional teaching/learning relationships would suggest that the stakeholder relationships might be represented as shown in figure 1.

Figure 1: Assumption about conventional teaching/learning relationships
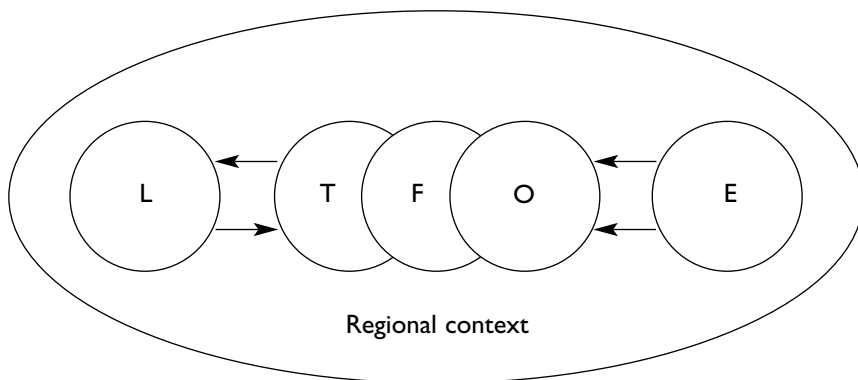
L = learners; T = teachers; F = flexible learning managers; O = chief executive officers/organisations;
E = external forces, especially state funding/policy

In figure 1, we see learners and teachers with a high degree of inter-relatedness, contact and communication. Teachers and flexible learning managers are shown as intersecting because of the supportive and sometimes overlapping relationships they have. (Indeed, some flexible learning managers are, or have recently been in teacher roles.)

The organisation has more contact and relationship with the flexible learning manager and rather less with the teachers' and learners' perspectives. The organisations form relationships with, and attempt to influence the policy elements in the equation.

There is certainly an overlap of experience/vision among the organisational interests, along with a congruence of values and purpose. There is, however, a degree of separation of experience (or perceived experience) between the

learners on the one hand, and the state (policy/funding) interests on the other. To successfully engage the learner, there is a significant gap to be worked on. This may be achieved through a more effective application of the organisation's resources. In the online setting, interaction with the teachers and the technology should assist with this. A highly effective system does eliminate this gap; however, failure to address it can lead to the learner disengaging from both the organisation and the learning process.

What we found in the case study environments were situations which could be represented by one of the following two variants.

Figure 2: The first variant
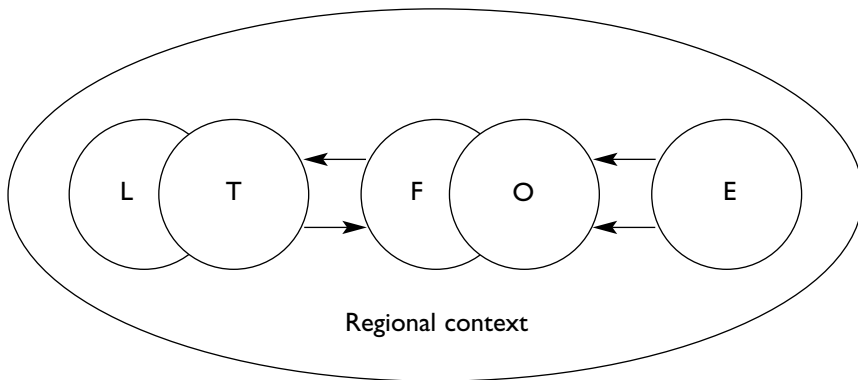
L = learners; T = teachers; F = flexible learning managers; O = chief executive officers/organisations;
E = external forces, especially state funding/policy

In variant 1 (figure 2) the learners and teachers have a high degree of congruence of goals, and shared experiences of the process. This includes similar perceptions of what makes it work and what the frustrations are. The teacher is the 'frontline operator' fighting to secure an effective alignment of resource to task, and trying to bridge gaps in service through the extra application of time and commitment. Typically, both the learners and teachers describe a lack of resources (money, skill, technology, time) and inadequate systems support as inhibiting effectiveness.

The separation experience and perceptions become apparent between those directly involved in the learning activity (learner/teacher), and the rest of the organisational setting (flexible learning managers/chief executive officers). Flexible learning managers/chief executive officers describe the alignment of values and experiences differently from learners and teachers, setting out the organisational perspective clearly, but often at odds with what is actually happening. The report of flexible learning managers/chief executive officers often does not match the current experiences of the learners and the teachers.

In variant 2 (figure 3) the flexible learning manager (who may also be an online teacher), experiences somewhat more detachment from the

organisational goals and systems, and becomes more of an advocate trying to meet the actual needs and interests of learners, and address the concerns of the teacher. Flexible learning managers endeavour to make the provider systems adapt to these needs, rather than the other way round.

In both cases a gap exists between goals and expectations at the provider level, and government policy, investment strategies, and telecommunication facilities. These may be exacerbated as a consequence of regional location and conditions.

Figure 3: The second variant
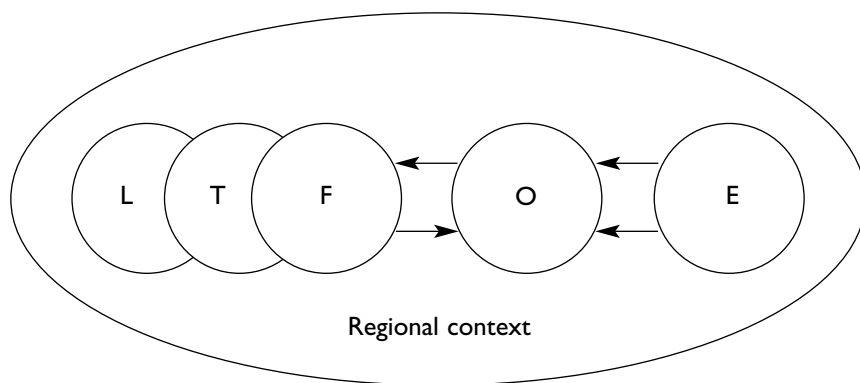
L = learners; T = teachers; F = flexible learning managers; O = chief executive officers/organisations;
E = external forces, especially state funding/policy

Conclusions and findings

This discussion represents a snapshot of our work to date and we are witnessing the emergence of a number of trends and patterns. Nevertheless, this study confirms much of what has been found in a range of the other studies commissioned and reported in this book of readings—whether the studies had a rural or regional base or not. It seems that, whatever the location, problems are similar—but may vary in degree because of the local context. Some of the patterns and trends which seem to be emerging are described below.

At the organisation (corporate) level there is:

❖ qualified commitment to online learning. The qualification stems from a lack of conviction about the current viability of online learning and the acceptability of online learning to the diverse client groups

❖ some mismatch between public (political) statements about the value and possibilities of online learning, and the realities of the telecommunication systems these organisations have to deal with

❖ little evidence of an integrated corporate approach to the development of systems and strategies related to online learning. This includes understanding how well (or poorly) or how much and where online learning is being developed and delivered.

In relation to program offerings and the choices made to employ an online mode we have noted:

❖ Courses or modules are being offered online if class sizes are found to be too small to run viably face to face, rather than having been planned as part of a deliberate online delivery strategy.

❖ Online learning is occurring in all sorts of patterns and styles—from fully online courses (although it was hard for us to find anyone doing these) to learners undertaking parts of modules online, including using online resources in a traditional classroom setting, with a substantial amount of face-to-face access to teachers and peers.

Teachers are telling us that:

❖ The online environment presents them with a range of challenges that we did not hear voiced with the same intensity at the corporate level.

❖ Their use of the online delivery medium is driven by a range of pragmatic considerations, including their own need to maintain their 'online' skills and options for career enhancement.

❖ They are still developing confidence in terms of understanding their own online learning style; they are also still experimenting with flexible materials and associated features (that is, chat rooms, bulletin boards, discussion forums etc.).

We are hearing from learners that:

❖ They are using (not necessarily choosing) the online mode because it is practical for their situation.

❖ Their experience of the online environment is sufficiently positive for them to consider using it again.

❖ They do not routinely use all the 'features' offered by online learning (for example, chat rooms, bulletin boards, discussion forums) and few had anything to say about these features, as most are experiencing online as a mixed mode of delivery.

❖ The promise of 'anywhere, anytime …' flexible delivery is not what they are experiencing when participating in online courses.

Regional providers are caught between promoting their state's construct of online learning, designed to support an expanding cohort of skilled users of web-based systems, and the local reality of learners not yet ready or willing to abandon familiar learning modes that offer them resources and reassurance.

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Online learning: Research readings
summarises and reflects on the research
conducted within the Australian Flexible
Learning Framework and from other
sources. Individual chapters address a
range of issues related to flexible
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