

At a glance



This 'At a glance' consolidates a range of research funded as one of the initiatives of the Australian Flexible Learning Framework to increase the vocational education and training (VET) sector's understanding of the pedagogical, technical and managerial aspects of flexible learning. It specifically focusses on issues related to online learning and delivery.

Key findings

- There appears to be relatively little pure online delivery of VET. Online approaches are being used in combination with other delivery methodologies.
- Most students who experience online learning do so as part of a program delivered by mixed mode using face-to-face and other strategies as well as an online approach.
- Because it is combined with other learning approaches it is difficult to determine the exact amount of online learning taking place.
- Cost-effectiveness of online delivery is difficult to determine accurately. However, it seems that online delivery is likely to be more expensive than conventional approaches, but is also likely to deliver better learning outcomes and levels of learner satisfaction.
- What learners value particularly about online delivery is its flexibility—the convenience and freedom it offers; that is, learning that is 'just in time, just enough and just for me'.
- Other qualities of the learning experience which are highly valued by learners include opportunities to communicate and interact with teachers and other students, responsive teaching staff who give frequent, thoughtful and informed feedback, well-planned and organised programs of learning, and well-designed, interactive, up-to-date and accessible learning resources and assessment materials.
- Teachers as well as students are positive and enthusiastic about online learning and its quality features but both recognise the need for support to ensure more effective online learning.
- The changing role of teachers and the way they are working to provide flexible training needs to be acknowledged and supported.
- A range of strategies has been identified to overcome key barriers to the successful adoption of online delivery, the most important being induction programs, cost-reduction strategies for delivery, use of e-business approaches, teachers' professional development and improved recognition of their work roles and the funding models being used.



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Australian Flexible Learning Framework
Supporting Flexible Learning Opportunities

Introduction

Considerable funds have been invested in technologies, equipment, and in the development of individual staff as part of the strategy developed by the Australian Flexible Learning Framework. Teaching and learning resources have been nationally funded through Flexible Learning Advisory Group (FLAG) programs such as Toolboxes and LearnScope. Considerable investment at the state/territory and provider levels has also taken place. A suite of research projects has been funded over the period 2000 to 2002 which has sought to capture and report on the amount, cost, variety and effectiveness of these new flexible, online practices.

The online environment

Computer and internet use has grown tremendously in recent years in Australian households and workplaces. The attraction of computer-based and internet-delivered education and training is therefore not surprising. Many people have access to the necessary hardware required either at work or at home, and individual households are hooking up to the internet in ever-increasing numbers. According to the last census figures around 6.1 million Australians aged 15 or over use a computer at home, while over 6.9 million use the internet at home, at work or elsewhere (ABS 2002).

The current size and scope of online delivery

One of the research projects investigated the size and scope of online learning and found that it is not clear-cut. Definitional issues arose, and different groups provided information on different aspects and technologies. Online learning is often combined with other approaches, making it difficult to isolate and measure.

In fact, pure online learning would rarely be the mode of first choice for students (Warner, Christie & Choy 1998) and would generally only be used when other approaches are not readily available. Students prefer hybrid approaches which mix modes of delivery, resources and technologies to achieve maximum flexibility and interaction with both teaching staff and their fellow students. In this way the learning processes accommodate a range of preferred learning styles.

Online technologies are used to facilitate contact and communication between staff and students and

between the students themselves. They are also used to introduce an element of face-to-face communication or to improve interaction where classroom delivery is impossible or difficult. Good communication is one of the key features students look for in a teaching program.

Calculating the precise nature and amount of online learning actually occurring was difficult. What researchers were able to measure probably only represents a relatively small proportion of the actual online delivery taking place across the vocational education and training (VET) sector. Improved information is needed on the full range of delivery approaches being used at provider level.

Harper et al. (2000) report that there is evidence of extensive exploration and experimentation in online learning. However, it has not yet become a mainstream delivery approach, and numbers using it appear low. Data from the most recent survey of student outcomes undertaken by the National Centre for Vocational Education Research (NCVER 2002) indicate that under 2.5% of respondents are participating in learning programs involving at least some online learning component. Of these, only a very small proportion said they were studying purely online.

A recent report commissioned by TAFE frontiers in Victoria and entitled *The current status of online learning in Australia* found that the number of organisations in their sample planning to use the internet or intranet to deliver training or provide access to learning appears set to more than double. They cite cost, accessibility, speed, consistency and improved learning outcomes as their reasons for choosing the online mode of delivery.

Cost-effectiveness in comparison with other modes of delivery

Curtain (2002) attempted to answer the following questions: Can technology improve the cost-effectiveness of vocational education and training? Is online delivery able to lower costs and widen access while lifting the quality of the learning experience and improving learning outcomes? Can learning effectiveness be increased, or more students taught to the same level or better for the same level of cost?

Curtain (2002) gathered information on all aspects of costs. Course effectiveness was measured using a student questionnaire and by obtaining course completion data where available.

Not unexpectedly, the findings of his research were equivocal since costs are difficult to calculate and the basic data required are often not collected. In addition, there is a wide variation in the way costs are determined, and what cost elements are included or excluded.

The six case studies Curtain undertook suggest that, by and large, the online programs were more effective but cost more when compared with current and more traditional delivery approaches. Establishment costs were higher. Recurrent costs were variable, dependent on the approaches used, the extent of online learning and the location of the students (on- or off-campus).

Curtain has estimated that the recurrent costs of mixed online delivery in a classroom could be double or more that of face-to-face delivery alone. However, his results also suggest that, for mixed-mode delivery that is classroom based (the most common form of online approach), high levels of interactivity using the internet and pre-existing web-based resources can contain costs and lead to levels of student satisfaction above that for conventionally taught courses.

Online delivery to students based off-campus may appear, on the surface, to be a low-cost option when compared with traditional distance education delivery by correspondence. However, when compared with traditional modes of distance delivery, it appeared to be more costly because of the extra support learners required or demanded. Much of the cost increase relates to the more

intensive staff–student interaction and new work functions, such as providing helpdesk support for students. Nevertheless, satisfaction levels are higher amongst off-campus students learning online than for traditional distance education students and on a par with those for students in classroom-based programs.

Curtain's case studies show that there needs to be a move away from learner–content interaction and towards learner–instructor and learner–learner interaction. This is not surprising as most students emphasise the importance of the social and networking aspects of learning. The interaction between people, and lots of it, is the key to success.

Other research suggests that we need to recognise what online learning can and cannot do. It is effective in areas with high theoretical content, less effective in those with a more practical basis, or where the processes of communication, critical thinking and values clarification are central to the subject area. It is effective in undertaking case studies ('what would you do if ...?'). If the processes are established correctly, it is useful for linking material, researching information and for discussion.



Key elements of good online learning and teaching

Learner and teacher views

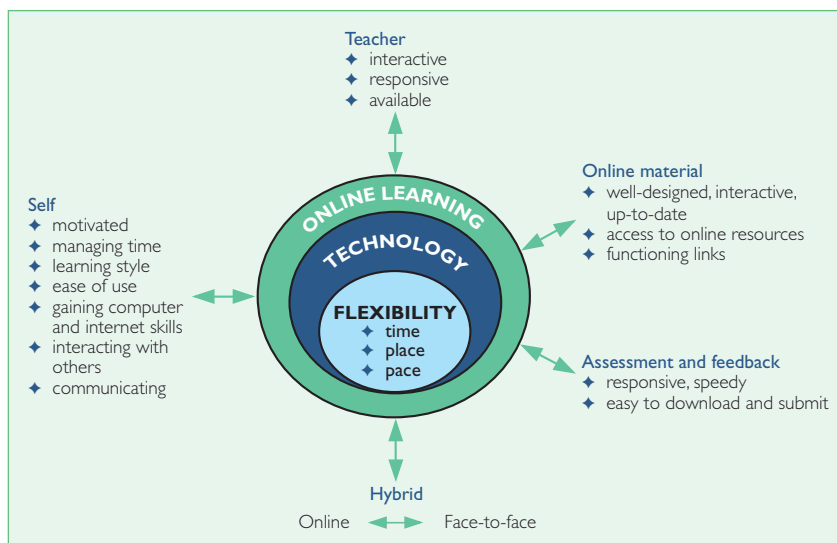
One of the projects (Cashion & Palmieri 2002) identified a range of key features which students believe constitute a high-quality online learning experience. The research has identified that the three most important quality features for students (in order) are:

- *flexibility*: the time, place, pace of learning
- *responsive teachers*: interactive, responsive, available, negotiated response times which are adhered to
- *quality of materials and course design*: well-designed, interactive, up-to-date, fast to download, easy to read, easy to navigate, good visual design.

These top priorities and other key features of a quality online learning experience are summarised in box 1 and were confirmed by findings from a number of the research projects. Figure 1 provides a visual presentation of these key quality features and also includes a fourth important feature of online learning from the learner's perspective. This is the 'self' feature—the individual attributes that learners require to 'succeed' online.

Box 1 The turn-ons: Features constituting quality online experiences	
Priority features	
Flexibility	flexibility to be able to work at the time, place and pace that the student chooses; accessibility, convenience, freedom and blending delivery approaches to provide a variety of learning outcomes and pathways
Teachers	teachers who are motivators and helpers and respond promptly, thoughtfully, comprehensively and in an informed way to requests for help and in other contexts; who keep in regular contact by bulletins, phone, email or other means and indicate their availability; who build good relationships with students and develop trust
Quality of materials and course design	materials that are fast to download, easy-to-read, up-to-date, interactive, comprehensive and well-designed, with clear navigation and structures, clear directions to learners, containing ways by which students can judge their progress
Other key features	
Access to resources	links to other resources online, including interesting people; resources and links that are updated continually to maintain their currency, and links that work
Online assessment and feedback	assessment that is valid, reliable and easy to use, download and submit, with rapid, informative and comprehensive feedback; clear assessment guidelines including details about when and how to submit work
Improving IT skills	experiences which give students the opportunity to use and further develop existing information technology (IT) skills; induction program to address IT skill needs and provide an orientation to studying online
Learning styles	online resources that cater for a variety of learning styles and approaches; online learning promotes independence and offers opportunities for reflection
Interaction and communication	using computer and other technologies (phone, email, fax etc.) to support interactions between individual learners and learners and teaching staff and to encourage both co-operative and self-directed learning by students, as well as teacher-directed learning; regular advice, directions and feedback from teachers expected by students
Ease of use	the use of processes and design features to minimise confusion and reduce download times for resources and make access to necessary information easy, quick and inexpensive

Figure 1 Factors contributing to a high-quality online learning experience: The learners' view



These 'self' attributes involve students' personal motivations, organisational and IT skills, their abilities to read, write and use the internet effectively as well as their abilities to work and communicate with both teaching staff and fellow students. Possessing these attributes will influence considerably the quality and effectiveness of their online learning experience. However, as the research found, online programs frequently make unequivocal assumptions about learner characteristics and traits (motivated, literate, well-organised and with high-order cognitive skills) that do not match the actual skills and attributes of the learners.

The key features of a quality online learning experience that were identified by teachers are very similar to those identified by students, but with an additional emphasis on student support issues and drawing attention to organisational and professional development aspects of the introduction and delivery of learning online.

Student support needs

One of the projects investigated the support students need when studying online (Choy, McNickle & Clayton 2002). The researchers presented the 'top 10' student support features that students valued most. Three of these relate to communication with staff and timely and helpful feedback. The students surveyed, like those in many of the other studies, clearly want responsive teachers. Of the remaining seven 'top 10' support services, almost all relate to being able to access detailed and high-quality information, to understand course and assessment requirements, how to enrol and how to get help when required.

The essential features of student support include:

- *Pre-enrolment support:* career advice/counselling, clear information about the course enrolment procedures and payment of fees
- *Teaching and learning support:* induction and orientation to the course and to online learning, communication strategies (including processes to keep students in touch with each other and with staff), access to study and research skills (time management, learning-to-learn skills/independent learning skills), information literacy, and using the web to access information, general learning support, and providing access to learning resources
- *Technical support:* IT support to provide students with a range of options to access assistance including phone, fax, email, frequently asked questions and helpdesks; provision of hardware and software support for students as well as ensuring that the systems function well, are easy to use and are reliable.

Teacher support needs

The nature of teachers' work

It is clear from the research that teachers are very important to students studying online. Boxes 1 and 4 show the importance of having teachers who are responsive to the needs of their students studying online. Rather than removing them from the learning equation, teachers are integral to the whole process of online delivery. But how teachers work when teaching online is very different from their delivery of programs purely in the classroom. Many teachers are now working in new and often unfamiliar ways which, in turn, may not be understood by both middle and senior management in their organisation.

Most of the learning that students do is in mixed mode, and so many of the traditional teaching skills are still valid. However, the online environment brings its own set of teaching and learning issues.

The research suggests that the online environment demands that teachers develop new ways of building relationships that rely more on emails, chat rooms and other devices, which require high-level written and other communication skills. An important success factor in online learning is developing rapport with the students: knowing them, their progress and their interests intimately to help to enrich their learning experiences as much as possible.

Teachers need to have mastered the range of technologies being used in the program and know intimately the content, learning resources and the learning options available to the students.

Teachers cannot depend on their students being at the same stage at the same time, especially when the program is self-paced. Because students may be working at any time of the day or night, providing continuity of support has become an issue, especially given a teaching workforce which is becoming increasingly part time or casualised.

Teachers suggested that their preparation of online learning materials is no more time-consuming than the preparation of print materials (assuming that the teacher has sufficient skills). However, all agreed that teaching and managing online demands more time than does teaching an equivalent group in class, especially when the program is self-paced.

Professional development needs

Professional development is needed in a wide range of areas to help teachers make better use of online learning and delivery. For example, focus group participants in one of the studies suggested that 'those who make the easiest transition to online teaching are those with experience with flexible learning or distance education: the qualities needed for online are the same, it is only the medium that is different'. For others it is harder.

Professional development needs were recognised in relation to reflecting on pedagogical issues, using the technologies, seeing what others are doing, keeping up to date with new developments in a fast-moving field, resource development and, importantly, the development of adequate levels of written and other communication skills for the online environment.

Several groups in one of the studies suggested that teachers need training in online facilitation, especially in the management of self-paced groups. Moderation of online discussion groups was an element of online teaching that was thought to need particular attention. As an example, teachers need to understand protocols that are available for online interaction in web discussion, chat and other approaches, to ensure that all those who wish to participate can do so. It was suggested that teachers who already have good management and teaching skills may find such tasks easier.

In the context of online teaching, the changing role of teachers and support staff should be recognised, and appropriate professional development made available. Teacher support needs are summarised in box 2.

Box 2 Identified teacher support/services required

- recognition by management of the need to support online teaching staff, taking into account management structures, casualisation of the teaching workforce, as well as changes related to new course content, learning resources and technology
- training in use of new technologies to ensure effective communication and interaction
- dealing with technology problems
- writing and other communication skills involved in using the online medium
- conducting assessment online
- market research skills
- skills in evaluating the effectiveness of learning experience provided online
- skills to facilitate the development, maintenance and improvement of online programs and resources

Assessing online

Booth et al. (forthcoming) argue that because assessment is an integral part of learning it needs to be planned at the stage when the learning strategies are being developed. Assessing online involves the same rules as all other forms of assessment: it needs to be valid, reliable, flexible and fair. However, being in its relative infancy, some concerns have been evinced; for example, the increased possibilities for cheating. But this can be overcome by designing assessment processes appropriately.

Online approaches seem to be used more extensively for formative than summative assessment. In formative assessment, which helps learners monitor their learning, quizzes, true/false questions and item banks are being used extensively to check learning progress. In summative assessment, where judgements about competence are made, email is being used for the submission of assignments and providing feedback, but it is generally acknowledged that there is a way to go before this form of assessment is used effectively and to its full potential online.

There are promising developments in relation to project-based assessment and the use of case studies, simulations and chat rooms and bulletin boards. Significantly however, the literature and the examples in one of the studies highlight a re-thinking of assessment in light of the potential for collaborative and online learning communities in open, distance and flexible learning arrangements.

Learner-centred assessment approaches, which include peer, group and self-assessment, create further opportunities for assessment processes online while assisting in the development of collaborative skills and other essential workplace and life skills. The objective is to make assessment a much more integrated and transparent process which can be supported by the new technologies, creating portfolios of evidence, developing assessment criteria available to all, and generating opportunities for a greater role to be taken by the learners themselves.

Nevertheless, a range of forms of evidence is needed to assess competence accurately, and online will not be appropriate for them all. Therefore a blend of off- and online assessment approaches may be utilised, the choice of approach being influenced by learner needs and access to technology, available resources, the nature of the discipline area being assessed and most importantly what is to be assessed.

Good pedagogy

One of the projects developed a list of pedagogical effectiveness indicators for online delivery of vocational education and training (Brennan, forthcoming). These are set out in box 3. It is suggested that these are ideals but that practice rarely conforms fully to these principles. The dominating influence of the technology has created assumptions about the nature of learning, the role of the teacher and the student characteristics that do not match well with teacher and learner expectations and/or experiences.

Box 3 Indicators of pedagogical effectiveness

There are a number of ideal indicators of pedagogical effectiveness which are clearly expressed by all stakeholders in the online delivery of VET. These can be organised under a series of headings.

Learning related

- a learner-centred environment
- teaching and learning strategies which develop cognitive skills
- high levels of interactivity between all participants
- engagement with the online materials
- learning experiences which encourage synthesis and analysis
- opportunities for 'deep learning'

Teaching related

- approaches enabling learners to build new knowledge and skills based on what they already have (constructivist approaches)
- consistent levels of feedback
- thoughtful matches between materials, learning styles and learning contexts
- a model of delivery that includes thorough planning, monitoring, reviewing and evaluating course materials and student progress
- teachers who are imaginative, flexible, technologically gymnastic, committed, responsible and expert communicators

Materials and resource related

- high-quality materials design
- a range of available navigational choices for students

Technology related

- guaranteed and reliable forms of access to the technology
- quick and easy access to the training site and the online technology

Communication, interactivity and the development of strong links between those who are learning and teaching are very important. Effective teacher–student relationships are regarded as a critical success factor to develop in an online environment.

The research findings show that effective student learning online requires teaching and learning environments where students have the opportunity to:

- reduce their reliance on text
- explore and value their intellectual, social and cultural backgrounds
- develop their knowledge beyond the transmission and assessment of content
- reflect on their own learning
- be part of an inclusive learning environment
- communicate extensively with their peers and their teachers
- become self-regulated and engaged with their own learning
- develop a group identity that connects them with their learning and with the broader social environment.

However, online learning takes place in an environment that frequently militates against achievement of these features.

Barriers to effective online learning and delivery

From the learner's perspective

The full range of potential deterrents for students is described in box 4. For the most part deterrents arise when quality and support features that should be good actually are not.

The greatest deterrents to a high-quality online learning experience for students are problems with technology and access to the internet (Cashion & Palmieri 2002). For students, barriers can include bandwidth, fast and affordable internet access, speed of software and access to up-to-date equipment. Significant issues which may also constitute barriers include the level of technical support available (help in downloading information, how to participate in discussion, web etiquette and quick response to problems), their literacy and IT skills and other aptitudes (such as their ability to be self-directed, confident, motivated and willing to interact with teachers and peers through email, chat rooms etc.)

The research also found that students believe technical systems and issues are the areas most in need of improvement and noted that quick and easy access to technical support is what they really need. Cashion and Palmieri (2002) also found that unemployed students or those who are employed part time are more concerned about hardware and software requirements for an online program than those employed full time, perhaps because they are less likely to have access to the necessary equipment, software and internet connections. Over half the students they surveyed (59%) study at home or mostly at home. Only 2% access the materials at a computer centre.

Box 4 The turn-offs: Features which detract from a quality online learning experience

The main turn-off

Problems with technology and internet access technologies that are confusing and difficult to use, especially for those without IT experience and skills; hardware and software requirements beyond the reach of some students; access problems to the internet; faulty technical features; provider IT facilities and technologies unable to support the level of student use

Other turn-offs

Self-motivation	maintaining motivation and self-discipline with little or no student or teacher interaction and few group-based activities
Unsatisfactory assessment	assignments that are hard to download and submit; slow, poor-quality feedback
Lack of teacher responsiveness	poor teacher response times; lack of availability when needed; changes in staff and lack of consistent and clear advice; teachers who have not mastered the content and the technologies
Confusion	unclear instructions and content
Poor or inadequate resource materials	resources that are poorly designed and structured with poor navigation and broken links; old and out-of-date resources; resources that are wrong or not available
Lack of support, including adequate helpdesk services	lack of prompt, responsive, knowledgeable and friendly assistance for students with technical and learning difficulties; lack of other student support services (e.g. facilities for enrolment and payment of fees); students not kept informed; support in a variety of forms—not just online

Australian Bureau of Statistics (ABS) data show that access to a computer is related to both income and employment status. Those with higher household incomes are also far more likely to have internet access at home (ABS 2001a, 2001b). Equity of access needs to be kept in mind as these technologies and learning approaches can exclude many who are on low incomes or who may not be in work.

Others live where the maintenance of a reliable and high-speed connection to the internet is problematic, such as rural and remote areas. In a world becoming increasingly dependent on computer technologies and access to information and knowledge there is a danger that, while online learning will open doors for some, others will become further marginalised. On the other hand, the research has shown that online learning can enhance opportunities for learners whose educational prospects are limited by distance, illness or disability.

From the teacher's perspective

For teachers, barriers relate to their ability to use the technology in ways which support a student-centred and facilitation approach to teaching and the institutional structures in which they work. The fact is that many structures and policies are still based on an assumption of face-to-face delivery.

The studies found that most teachers were enthusiastic about online teaching, finding it challenging, enlivening, rewarding and enriching. Their concerns centred on the fact that the changes it demands of teachers' working patterns are not recognised in budgets, working conditions or state reporting requirements. There is a need for greater staff availability throughout the day and across the week, with the associated industrial relations issues for their institutions—including more flexible views about the nature, hours and place of their 'work'.

Budgets, workloads and outcomes reporting are still framed in terms of student contact hours, which bear little relation to the way in which online teaching and learning takes place. As Stewart-Rattray, Moran and Schueler (2001) reported, online delivery is surrounded by rhetoric and policy that far exceeds implementation; it suffers from a lack of clear definition at all levels and is supply- rather than demand-driven. Furthermore, industrial relations issues associated with teaching awards and conditions covering teaching and technical support staff are likely to be problematic. It seems that it is mostly championed at the operational level by teachers and with little or no understanding and support of senior management at the institute and state and territory levels. They believe that if online teaching is successful it is despite the system not because of it.

Issues for stakeholders

This research has highlighted a variety of issues which need to be addressed if online learning is to be effectively implemented and has identified strategies to overcome these issues and improve cost-effectiveness. These strategies are summarised in box 5.

First and foremost, it needs to be recognised by both policy-makers and practitioners that online delivery is just one of a range of approaches that can be used in promoting more individualised and flexible learning and delivery. To place undue emphasis on it at the expense of other approaches may be to limit rather than enhance options for delivery and learning.

Booker (2000) presents a range of definitions of online learning but, in her view, one of the most encompassing is that used by Tony Bates (1997, p.9) or what he calls 'a distributed learning environment':

... a learner-centred approach to education, which integrates a number of technologies to enable opportunities for activities and interaction in both asynchronous and real-time modes. The model is based on blending a choice of appropriate technologies with aspects of campus-based delivery, open learning systems and distance education. The approach gives instructors the flexibility to customise learning environments to meet the needs of diverse student populations, while providing both high quality and cost-effective learning.

Online learning is sometimes defined more narrowly but it is most properly seen as a way of contributing to solving learning problems faced by individuals and enterprises in the most expeditious way, by enhancing, extending or replacing traditional teaching and training practices. It offers and enhances flexibility and options so that the learning is potentially of the highest quality. But it also needs to be more 'whole of organisation' so that it provides access to appropriate and comprehensive student support systems, information and other services. Online delivery needs to be set within appropriate pedagogical and business frameworks.

Greater use could be made of induction programs (awareness of technology, how to use technology interactively, the conventions associated with technology usage) to ensure that all students who enrol in courses are prepared for the use of online approaches. Induction programs should also cover study skills. Programs such as these may help to reduce unnecessary attrition and assist students to develop the 'technical' and other 'soft' skills they need to enable them to focus on learning, rather than focussing on mastering the technology.

Costs can be reduced by such strategies as redesigning work processes to change how student support is delivered; for example:

- using different people to deal with relatively simple helpdesk queries
- integrating back office systems for managing student enrolments, payment processes and other services, as well as tracking student progress
- having instructors use automated response systems to reduce time spent on dealing with individual queries or making use of synchronous discussion groups to make it easier for students to help each other.

Providers could adopt a more 'whole-of-organisation' approach to the use of online and other flexible approaches to delivery. Online learning is just one component of an integrated e-business approach, whereby organisations can use the opportunities provided by these technologies to improve systems, reduce costs where appropriate, and work in more integrated and effective ways. Mitchell (forthcoming) documents a number of Australian VET providers which are using e-business practices inventively—doing more business electronically—and are already moving towards bringing e-business and online learning closer together. Traditionally, administrative and support processes have been kept largely separate from those concerned with teaching and learning. Now, back and front office functions need to be merged and used to provide a wide range of other services for students, and for functions such as marketing, enrolment and information provision.

Even so, barriers within providers to achieving these improved customer services and business efficiencies still exist. These include costs, user resistance, technology availability, limited staff skills and organisational inexperience. There are significant risks associated with e-business and privacy invasions and legal issues also need to be addressed when embedding online learning within an e-business approach.

It is therefore no simple matter to merge online learning and e-business. The secret to success lies in good planning. Mitchell (forthcoming) highlights a new business philosophy that many VET managers are developing whereby more flexible approaches to learning are seen as an important part of being in the education and training business. It is about being demand-driven, not supply-driven. It is also about being market-driven, not ruled by technology. Adopting an e-business solution which meets the provider's—but especially its customers'—needs offers a way of achieving these business goals. But to do this, and to make the teaching and learning experience better, some things about the ways both staff and providers work need to change.

As noted earlier, professional development of teachers and other staff is needed to provide them with support and confidence to incorporate online learning into their practices. One suggestion is to develop guidelines for teachers and students in using this approach as well as a code of practice that outlines the roles and responsibilities of both teachers and learners. Furthermore, adequate time is needed to allow staff, both as individuals and as teams, to reflect, evaluate and learn from what they are currently doing so that practices can be improved.

Better information about the range of delivery approaches being used is needed at the provider and at both the state/territory and national levels to guide resource allocation, and better planning and decision-making. The learning approaches and strategies used by providers require ongoing evaluation to ensure improvement in learning and delivery.

Finally, more research is needed on online teachers' working patterns to ensure that staff receive adequate recognition of the ways they work in these new and more flexible learning and teaching arrangements. In addition, there needs to be a fundamental reappraisal of how online learning is funded so that it better reflects what is involved.

Box 5 Strategies to overcome barriers and improve cost-effectiveness

Induction programs	to ensure that all students who enrol in courses are prepared for the use of online approaches; induction programs should cover study skills, awareness of learning styles and interactive use of technology
Cost reduction	by redesigning work processes to change how student support is delivered, using different personnel to deal with relatively simple helpdesk queries, integrating back office systems for managing student enrolments; use by instructors of automated response systems to reduce time spent on individual queries; use of synchronous discussion groups
E-business approach	for enhanced service delivery and support for online learners; online learning to become one component of an integrated e-business approach in a customer-focussed organisation
Professional development of teachers	to provide them with support and confidence to incorporate online learning into their teaching practice; development of guidelines for teachers and students and a code of practice to outline roles and responsibilities of both teachers and learners
Better data collection	at the provider level, for which processes are currently underway
Further research	into online teachers' working patterns and services undertaken with a view to determining how best to fund online learning

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How can I find out more?

An overview of the program of initiatives that form part of the Australian Flexible Learning Framework can be obtained at <http://flexiblelearning.net.au>

Further information on the research can be found on the NCVET website at <http://www.ncver.edu.au/online.htm>



The VOCED international research database contains considerable information about both flexible and online delivery at <http://www.voced.edu.au>

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