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PUTTING LEARNING BACK into E-LEARNING

A Survey of Good Practice in E-Learning

ACSA LITERATURE REVIEW
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Executive Summary

To date, e-learning has been a largely under-utilised training and educational tool in the aged care industry despite the obvious advantages it would bring. In recognition of this, Aged and Community Services Australia (ACSA) determined to explore and support the use of e-learning by aged care organisations. ACSA was successful in attracting funding from the Department of Employment, Education and Workplace Relations to develop an aged care industry plan to:

- Embed e-learning, and its principles, into workforce development plans; and
- Identify strategies to assist the sector to realise the full potential of e-learning.

This literature review focuses on the barriers to the uptake of online training or 'e-learning' in the aged care industry, and the critical factors that will support its dissemination.

Barriers to e-learning are explored here under two principal headings: the barriers that inhibit the uptake of e-learning by employees, and the barriers that inhibit employers from offering e-learning to their workforce. We find that 'blended' models of e-learning are universally deemed to be the most successful, combining the convenience of online platforms with the advantages that come from learning in groups with ready, interactive access to mentors, tutors, and other learning support services, on either a face-to-face basis or through videoconferencing or Web3 interactive technologies. Comprehensive induction and orientation to technology, and ongoing technological guidance are fundamental to successful e-learning for older adult learners. The interaction that occurs between adult learners is a critical factor in maintaining the engagement of participants.

The review focuses on the barriers that may militate against the successful participation in e-learning of populations who make up the bulk of the aged care workforce: mature or older workers, women, people (predominantly women) of non-English speaking backgrounds, and Indigenous persons. The aged care industry is also keen to attract school leavers and tertiary graduates, hence barriers that might affect the participation of younger people in e-learning are also considered.

Despite the prevalent myth that older female workers are not keen participants in e-learning, many are well aware of the need to upgrade their skills and qualifications and are eager to participate when their particular needs are addressed, including their need for appropriate technological orientation, for literacy and/or English language support, for courses that acknowledge their existing 'shop floor' competency and professional expertise, and for courses that take account of their non-work time and energy commitments. Self-efficacy and self-confidence are more critical factors associated with successful e-learning than factors such as age, gender, previous computer experience, home computer ownership, job position, education levels, ethnicity or English language competency, though each of these factors may have to be actively addressed. Best practice e-learning programs have established that while each of these factors may provide an initial barrier, they can be neutralised or turned to advantage when directly addressed through careful planning of the introductory stages of programs and program design. Older workers want e-learning that stretches but does not stress them, and they prefer e-learning that brings them into contact with other learners, creating communities of practice. Employers who recognise e-learning as a shared investment by workers and management, who provide their staff with computer access and allocated e-learning time, and who actively champion e-learning in their workplace, are likely to reap the very substantial benefits of e-learning.

Effective online pedagogies for people with limited English language literacy are now well established, and may in fact provide a platform for enhanced language and literacy competence amongst the workforce. Non-mainstream e-learners have a right to expect cultural sensitivity and sensitivity to their language needs and these can be delivered through custom-designed e-learning. E-learning enables us to move beyond one-size-fits-all programs, fostering the inclusion of culturally and locally relevant materials and issues.

The Australian Flexible Learning Framework (AFLF) has an Indigenous Engagement strategy designed to address the high drop-out rate of Indigenous e-learners, and to bring the needs of Indigenous e-learners into focus.

Young e-learners, in general, have quite distinct preferences in terms of program design and presentation from older e-learners. While older learners are likely to want predictable navigation across a site, younger learners are likely to favour a game approach that requires them to choose how they navigate, has high levels of interactivity and is 'polyfocal', with scenarios that are relevant to their own experience. They want e-learning that is learner-directed rather than teacher-directed.

Technologies now enable the modification of e-learning program templates to include local issues, business or situation specific scenarios, locally relevant examples, problems and questions, as well as material to be customised for diverse target populations. The most successful programs see information and computer technologists come together with experienced teachers or industry trainers to talk through the specific needs of an e-learning program, and the specific needs of the target population of learners: the best programs are custom built for the target learner group, and actively address issues around access and equity. Some programs have seen the originating committee act as 'guinea pigs' conducting their meetings online and road-testing programs 'as if' they were e-learners, identifying and addressing problems and issues before courses are launched.

Despite this, some major barriers remain. Technological connectivity remains an issue beyond Australia's capital cities, and is especially an issue in remote Australia, compounding rural and Indigenous disadvantage in particular. There is also a lack of professional development opportunities for e-learning teachers and program designers. Registered Training Organisations (RTOs) have, in many cases, been slow to come on board with e-learning. There is, in addition, still a tendency for technology to direct program design, but there has recently been a call to put the focus back on the *learning* aspect of e-learning, and to give more prominence to the voices of experienced adult educationalists in e-learning. Online pedagogy is now recognised as a specific area of teaching expertise.

The AFLF has found that only about 12% of small businesses in Australia provide structured e-learning opportunities for their staff. For employers, the major barriers to e-learning involvement include the cost of technology, the belief that courses will not be specific to their training needs, resistance to change in some cases, a lack of knowledge about e-learning, and a lack of knowledge about how to go about setting up e-learning. Researchers have identified the need for local area or business-type e-learning champions, providing opportunities for e-learning-based skills and knowledge sharing, and the development of industry-specific and locally relevant e-learning options that show what e-learning looks like in practice. Again, the seeding of e-learning communities of practice is essential if e-learning is to take hold in small business in Australia, including the aged care sector.

1. Introduction

E-learning is a largely under-utilised training and educational tool in the aged care industry despite the obvious advantages it can bring. In recognition of this Aged and Community Services Australia (ACSA) determined to explore and support the use of e-learning by aged care organisations. ACSA was successful in attracting funding from the Department of Employment, Education and Workplace Relations to develop an aged care industry plan to:

- Embed e-learning, and its principles, into workforce development plans; and
- Identify strategies to assist the sector to realise the full potential of e-learning.

This literature review focuses on the barriers, and critical factors, to the uptake of online training or 'e-learning' in the aged care industry.

2. Methodology

The literature search was conducted using *Google* and *Google Scholar* for population groups which feature strongly in the (potential and actual) aged care workforce and are likely to experience barriers in relation to e-learning. These population groups are:

- mature or older workers;
- women;
- people (predominantly women) from non-English speaking backgrounds;
- workers in rural and remote Australia; and
- Indigenous workers

These people may be currently working in aged care, working in another field, or may be currently out of the workforce, by choice or by circumstance.

Another potential, but as yet largely untapped, source of workforce for aged care is younger people, including secondary school and tertiary graduates.

Likely 'hits' were given a preliminary relevance screen using search terms 'lifelong learning' 'mature' 'older' 'women' 'gender' 'English' 'language' 'barrier' 'problem' 'unable' 'disadvantage' and similar search word combinations. What we were looking for was a cross-match between aged care and barriers to up-take of e-learning. Virtually no Australian documents highlighted that cross-match. International sites similarly provided no leads that linked 'aged care' and 'e-learning'.

The most fruitful source of research, case studies and good practice guidelines in relation to barriers to participation in e-learning were located at the *Australian Flexible Learning* Framework (AFLF) website. Since Kaye Bowman and Peter Kearns (December 2007:4) found that 'Australian literature on the subject of e-learning for mature age/adult learners is not well developed', the *Australian Flexible Learning Framework* has released a considerable body of research on barriers to the uptake of e-learning by various population groups that feature strongly in aged care workforce profiles, particularly older workers. Older workers became a specific client target group for the *Framework* in 2007. Other 'target' populations include Indigenous workers and young workers. General research publications on barriers to the uptake of e-learning by these target groups can fairly readily be interpreted into an aged care workforce framework. There is also considerable literature on technical barriers to e-learning, for example, how to configure 'help' facilities to make them user friendly, and on pedagogical issues. These sorts of technical barriers and good practice responses are beyond the scope of this review.

At the suggestion of Kerry Manikis (at AFLF's *E-learning for Industry*) we also surveyed the 2007 'satisfaction reports' for currently funded e-learning business case demonstration projects, to draw out transferable lessons from those projects.

3. Barriers & Strategies for Successful E-learning

There are two principal domains of barriers to e-learning. There are the barriers that prevent potential trainees taking up e-learning when offered by an employer, and there are barriers that prevent employers offering and promoting e-learning amongst their staff. This review deals with each separately. A number of papers survey the barriers to employee uptake of e-learning but few consider the barriers that inhibit employers' uptake.

3.1 Employees

This section considers the different types of current and potential aged care employees and the barriers to e-learning they face, and identifies some successful strategies or good practice to support. The emphasis is on older workers given the current, and likely future, composition of the aged care workforce.

Older Workers and e-learning

Amongst the four e-learning for mature learners case studies evaluated by Bowman and Kearns (November 2007) was the *Certificate III Aged Care* e-learning program designed specifically for mature aged students of the Barrier Reef Institute of TAFE, Queensland. The model incorporates many of the key learnings from earlier studies and provides a good stepping-off point for this review of barriers to e-learning.

The Barrier Reef TAFE *Certificate III in Aged Care* consists of a blended e-learning model for delivery across six regional communities to 83 mature aged women returning to the workforce in Queensland, from Palm Island to Charters Towers. Interactive e-learning provides the perfect vehicle for delivering training across 'thin markets' where there are only a few students at any single centre. The program employed videoconferencing, local nurse-tutors, individual learner support from TAFE, face-to-face gatherings of the students in each community, and employed past graduates as mentors. The return to learning was 'navigated through a series of easy steps' which actively built self-esteem and confidence in using information and computer technology (ICT). The program began with a face-to-face orientation and induction to the technology. A literacy support unit provided support in each location. The program was supported locally by an 'e-learning champion' with an interest in the 'pedagogical parameters' of the program (Bowman and Kearns Nov 2007: 12).

Bowman and Kearns found that this combination of distance e-learning and face-to-face, individually supported social learning 'has very significant potential in meeting the needs of mature aged workers, including people returning to the workforce' (Bowman and Kearns December 2007:10). The most critical success factor demonstrated in this Barrier Reef program is:

> about connecting and socialising our use of computing and making it more personal. The tools are important … but the connecting networks of people, data and services that are emerging around them is what this is really about (Bowman and Kearns December 2007: 10, quoting Becta 2007).

This emphasis on 'connecting and socialising' in e-learning is repeated in Jasinski's 'key finding' that 'there is a shift away from the "e" [in e-learning] and back to "learning"', a shift 'from exploring technology tools to … a better understanding of e-learner pedagogies, client perspectives and demonstration of good examples of working models in local contexts' (Jasinski 2007: 5).

Debunking stereotypes that inhibit uptake of e-learning

The success of mature-age students in e-learning programs such as those surveyed by Bowman and Kearns – including the Barrier Reef TAFE program – challenges the powerful stereotype that older learners, and older female workers in particular will not, and cannot, learn new skills and concepts. Bowman and Kearns found that this stereotype affects the confidence of older learners themselves, *and* the likelihood that training managers will consider training options for older workers. US researcher Rod Githens, (2007) also finds that employers of older workers are often reluctant to pay for training because of stereotypes about older workers (especially older women) being not up to e-learning. In fact, a study by Lundberg and Marshallsay (2007, cited in Bowman and Kearns December 2007: 14) found that mature workers are often eager learners of IT skills, 'adventurous and keen'. More than one-third of mature aged Australian workers rated very positively on a continuum of attitudes to taking on formal learning, with 21% in the 'learning leaders group' and another 17% in the 'learn to earn' group who are strongly committed to continuing or resuming vocational education as a necessary pathway to employment (Bowman and Kearns December 2007: 18, citing ANTA 2000). Bowman and Kearns (Executive Summary December 2007) found that older workers' capacities and motivations for learning are ranged across the same continuum as the whole-of-community, from those who are 'not engaged', to those who are 'fully engaged passionate learners' with a high capacity to take on new learning and new challenges. These findings are supported by the AFLFs "*2007 E-learning Benchmark Project" E-learning for mature aged learners* (I&J Management Services November 2007).

Older adult learners do have particular needs that should be incorporated into training programs. They want flexibility in learning demands and time commitments, supportive and supported learning environments, and learning that actively and positively addresses their often initially low levels of technical competency. Older learners may also need literacy support and programs that incorporate adult learning strategies. Bowman and Kearns found that older learners want 'learning opportunities that stretch but [do] not stress them' (Bowman and Kearns December 2007:15). 'Those mature aged workers who engage with learning after a period of disengagement', and those who come to formal vocational learning for the first time, 'bring their fears, barriers and resistance to the class' and these need to be worked with positively (Bowman and Kearns December 2007:16). The Barrier Reef program addressed each of these needs.

Bowman and Kearns found that when appropriately presented and adapted to the specific needs and preferences of older learners, 'the benefits of e-learning in general are becoming increasingly recognised' especially with regard to older workers (Executive Summary: 3). Domain Aged Care's Lyn Turner has similarly observed a 'tipping point' marking a 'new acceptance of e-learning within our sector' amongst older workers (*Domain* media release).

Skills, Confidence and Self-efficacy

Bowman and Kearns interviewed a range of VET and TAFE teachers and managers to identify barriers to e-learning for older workers. In addition to the barrier created by false stereotyping, they identified a number of other barriers to the entry of mature aged workers into the e-learning community and to their successful and confident completion of training. Working out of New York's Masie Center, 'an international think-tank dedicated to exploring the intersections of

learning and technology', Penina Mungania used the 'Barriers in E-learning and Self-Efficacy' (BELSE) survey tool to gauge e-learner barriers against 12 factors:

- education;
- self-efficacy;
- age;
- gender;
- computer training;
- job position;
- computer ownership;
- computer competence;
- study location;
- organisation;
- ethnicity; and
- previous e-learning experience (Mungania: 3, 16).

She found that age *per se* is not a barrier to successful e-learning outcomes, provided the learning needs of older learners are directly and positively addressed in the design of e-learning training programs. Bowman and Kearns, and Mungania were in substantial agreement as to the principle barriers to e-learning for mature age e-learners.

While lack of ICT skills, low educational completion levels, computer literacy and prior ICT experience are often seen as the strongest barrier to mature aged workers, and potential workers, taking on ICT-based training, both Bowman and Kearns, and Mungania, found that lack of confidence, or a low sense of self-efficacy, is actually a more critical factor affecting the uptake of e-learning. Self-efficacy is not concerned with skills but measures 'the judgements of what one can do'. 'Highly self-efficacious students [are] usually quicker to discard faulty strategies and to display more positive attitudes towards a subject' (Mungania: 39). Self-efficacy influences task choice, amount of effort one puts into a task, persistence and perseverance in the face of obstacles, behaviour, motivation, performance, attitudes, outcome expectations, success or failure, nature of feedback received, psychosocial functioning, and perceived e-learning barriers (Mungania 39-40). When self-efficacy is actively fostered in e-learning programs, ICT skills can be learned even by mature learners with little or no previous ICT experience and low educational levels. Mature-age e-learners do not need or want to become ICT 'wiz kids'. Mastery of a limited range of task-specific skills will equip them quite adequately for successful e-learning.

Self-efficacy can be fostered by appropriate skills training, and coaching in time management skills early on in the course. Interventions may need to be in place to support or build that sense of self-efficacy, including nurturing feedback, and positive reinforcement, recognition of participants' efforts by managers including awards, certification, or other incentives. Self-efficacy does not necessarily correlate with skills, therefore it is necessary to provide positive experiences in the initial stages of the e-learning process as a platform for the positive sense of self-efficacy that will support problem-solving and independent learning at later stages (Mungania: 48-9). Mungania suggests pairing new e-learning participants with successful past participants as mentors. She also advocates the creation of 'e-learning communities where people can come together for support and experience sharing' (Mungania: 50).

'Situational' barriers

Life circumstances, lack of time, time management issues, prior commitments to multiple roles and responsibilities, interruptions during study (whether at home or at work) also loom large amongst the factors that inhibit uptake, and these may be especially pertinent barriers for older women

(Mungania 34, after Kramarae 2001). In contrast, factors such as 'age, ethnicity, level of education, prior experience with computers and e-learning, computer ownership, location of study and job position … are *not* statistically significant predictors of barriers' to e-learning (Mungania: Executive Summary, 5, 6, 20). Mangania notes, however (after Feldhaus 1999), that social factors that can prescribe disadvantage often come in clusters. Feldhaus (1999) found that in the US, ethnicity 'has a significant relationship with one's education level' and impacted in turn on uptake of e-learning. On the face of it, lower educational levels may impact on ability to engage in e-learning in Australia as well as in the US, but Mungania, and Bowman and Kearns found that low educational completion is not a barrier to e-learning success, provided *appropriate* induction and computer training occurs.

Lack of access to a computer at home or being unable to find time for e-learning at home will not necessarily impact on e-learning capacity, provided the workplace makes computers available to e-learners in work time. Employer support for e-learning, signified by allowing work time for e-learning and providing on-site computer access, is a positive incentive for uptake of such training (Bowman and Kearns December 2007: 24).

Lack of a home computer may, however, mean that comprehensive induction and skills enhancement will be a necessity within e-learning. Domain Aged Care's Lyn Turner has observed, significantly, that mature workers with computer savvy teenage and twenty-something children at home, are cashing in on the presence of these 'on-site' home-based 'tutors' to pick up on some basic e-learning competencies, raising their confidence in their own abilities to take on formal e-learning (*Domain* media release). For potential e-learners without this home resource, one-to-one ICT support must be built in as a fundamental component of training. The River Murray Training P/L program based at Berri, which piloted online training for mature age rural workers affected by drought, found that trainees new to IT required hands-on direct assistance that by-passed the internet interface, and 'this proved quite a challenge' (Hollis and Bass: 3).

Mungania also noted differing results from research in regard to the effects of low levels of education. Her own finding is that this is not a barrier to e-learning success, but she cites Feldhaus (1999) who found that 'educational background was the most significant factor causing barriers [to uptake of e-learning]' (Mungania: 40). This may be a more critical factor when basic literacy and English language competency is associated with limited formal education. While low levels of prior educational attainment may lead to an initial reticence to take up e-learning, programs that are marketed as directly work-relevant, skills focused, built around workers' existing 'expertise', and designed with low literacy in mind, can provide reticent participants with a platform for a positive learning experience. Mungania also found that 'having a *higher* level of education does not necessarily mean that one will be a successful online learner' (Mungania: 40).

Other factors considered by Mungania in relation to their impact on e-learning uptake included work position/status, location of study and prior e-learning experience. Each of these were found not to be primary inhibitors of e-learning success, but often a secondary or tertiary barrier insofar as they affected other factors such as ownership of a computer at home, which may mean limited revision opportunities and a lower initial sense of confidence and competence.

Overcoming the barriers for older workers

Bowman and Kearns, and Mungania agree that all of these barriers, actual and perceived, primary or secondary, can be overcome by e-learning programs that directly address each issue. 'Barrier reduction strategies have to be planned, continuous, and systematic' (Mungania: 8). These should address 'personal, situational, technological, organisational, instructional, and content strategies' (Mungania: 8). 'Computer [skills] training is fundamental', and 'even with highly educated and

experienced workers, computer and internet skills [may] fall short'; so these should *not* be assumed.(Mungania: 8). Appropriate induction, and *ongoing* skills building, will support the positive self-efficacy that appears to be the primary foundation for e-learning.

Mungania further argues that 'the three pillars that determine the success or failure of e-learning programs are the interconnectedness among persons, behaviour, and environment. These are the three major areas that interventions should target' (Mungania: 8).

- Personal: program managers must ensure that e-learners have the 'prerequisite knowledge and skills to participate', including computer competency through training, and time management skills.
- Beliefs and behaviours: e-learners must have high e-learning self-efficacy and take responsibility for their learning.
- Environmental: organisations must support e-learning by offering 'a supportive culture, incentives, models, resources, and fostering e-learning self-efficacy' (Mungania: 9).

These three domains operate in a 'triadic interchange': each needs to be present for a positive e-learning outcome, and neglect of any of the three will undermine success. Mungania emphasises that 'organisations need to pay attention to end-user experiences', and respond to the specific needs of their employees against her potential inhibitors (Mungania: 10). Training starting points should be based on identified learner needs, remembering that the initial experience of confidence and self-efficacy is the most crucial platform from which to launch self-confident and self-responsible e-learning.

What emerged from both studies is the importance of a carefully planned, staged entry into ICT-based learning, to build self-confidence and motivation amongst new learners. Mature aged learners are likely to prefer to learn and to absorb at their own pace.

> Once mature learners have confidence in using technology, they generally go on to learn more uses of the technology for learning purposes. … However … a bad first e-learning experience is likely to put a mature age learner off this approach for ever. … E-learning can be done well or badly (Bowman and Kearns December 2007: 20).

Good Practice Guidelines

Bowman and Kearns (December 2007) list '*Good practice guidelines for e-learning use for the mature age*' and Mungania provides an extensive list of 'barrier reduction strategies' (Mungania: 8). In summary they jointly advise that:

- Mature age trainees want to be clear about why they are undertaking training and will respond most positively to training that directly addresses workplace issues, and is up to date with content and issues.
- Programs should actively dispel myths and stereotypes about the learning abilities of older trainees, female trainees, and trainees with English and general literacy issues. At the outset, programs should outline the strategies that are in place to address these issues and emphasise that many mature learners are passionate, motivated and capable learners. The Community Services and Health Program at Gilles Plains Campus TAFE SA, actively built on the benefits to others of "seeing the outcomes and benefits of the early adopters' efforts", encouraging others to join in (Bowman and Kearns December 2007: 27).
- A critical success factor is a strong orientation and induction phase. This will instil confidence and motivation. Include all stakeholders in this phase: teachers, tutors, advisors, IT support people etc, as well as the students. This phase should set the tone for a friendly,

- Programs should build on the life and work experience of trainees. Action learning can be very effective in drawing on the tacit and professional knowledge of older workers, ensuring the direct relevance of the learning and building new knowledge in collaborative ways.
- Enable e-learners to share insights with each other and to build 'communities of practice' through interactive communications and in face-to-face sessions that promote 'lively, shared learning', a social experience, and fun. Blended learning strategies have been found to be the most effective for mature learners. In particular, blended learning environments provide the social learning that is most productive for mature learners. Provide a blended learning experience that is personal, social, flexible, creative and directly relevant to the learning aims and capacities of the individual and group.
- E-learning program design should enable the specific individual learning support needs of trainees to be addressed, remembering that within any group, these needs will be diverse. Programs should enable a personalised approach as far as possible through technology that enables individual tutorials, guidance and mentoring. Provide friendly and readily accessible support services. Ways of accessing these should be a feature of the induction process.
- Explore new e-learning technologies that enable learners to work flexibly in terms of time, place, manner of learning. Programs should expect and cater for a variety of learning styles and strategies. These can be ascertained early on by the use of recognised assessment tools.
- Technology is a tool for learning and it should not determine the content of e-learning or its processes. Content and learning processes should be determined by pedagogical experts and enabled by technology. The most effective programs see technologists and educators come together to develop targeted e-learning programs. Online teaching is a specific skill.
- Older learners are likely to have a preference for starting 'at the low end of the technology continuum, with a measured progression' through relevant technologies, including Web 2.0 technologies. Introduce selected learning technologies to mature age workers carefully in order to build confidence, self-esteem and motivation in their use for learning.
- Individual differences with regard to prior experience with IT, prior educational experience, learning confidence, language and literacy issues, access to a home computer for practice (etc) will affect the rate of learning and should be taken into consideration when devising the 'blended learning strategy'. Competence in using e-learning technologies in interactive ways is a key competency to be developed in older learners, as in all students.
- Learning to learn is a critical competency and a positive first e-learning experience can be a valuable platform for building confidence and capacity for life-long learning. Use technologies that encourage students' reflection on their own learning processes, habits and styles, and assist them to identify barriers in their learning habits and styles. Support them to address these.
- Stretch, challenge and celebrate, but don't leave anyone behind.
- Discuss, test, and develop these guidelines further. The move into e-learning is a new priority and the research base is at an early stage of development. Feedback from practitioners will be critical in building on these 'good practice guidelines'.

In essence, what is being described here is a process of learning in which pre-constructed online programs provide a course content framework and the interactive components, be they online or face-to-face, enable individualised interactions with and between students. Some programs, such as the 'Knowledge Spaces' technologies developed by Curtin University's 'Knowledge Technology Studio e-Central' provide 'personalised environments and adaptive user interfaces' which enable local components to be built into courses (Quinton, Dreher, Fisher 2006).

However, Oliver and McMahon (2006: 61) who evaluated the use of e-learning 'learning objects' by teachers found that very few teachers had the technical skills, or time, to customise course components, and many software programs also did not support content customisation. All of the 'good practice' reviews advocate a 'blended' learning model and none advocate unfacilitated, non-interactive learn-alone online programs.

Blended Learning

Bowman and Kearns found that a 'blended' learning model best suits most mature age e-learners and there is very strong support from other AFLF reports for blended e-learning models for other target populations. Such an approach is based around an e-learning platform but provides opportunities to interact with other learners through videoconferencing, and *Web 2* interfaces (blogging, chat rooms etc) and regular direct face-to-face/one-to-one support from tutors and/or mentors and from individually responsive teachers. Bowman and Kearns' study was focused on VET/TAFE-based courses delivered primarily through e-learning, backed up by TAFE professional teaching staff that enabled this 'blended' delivery model. Bowman and Kearns found that 'online learning in isolation was seen as generally lacking the benefits of blended learning combinations', and others have also reported a boredom factor amongst isolated e-learners (Mallet, Howard, and Thompson 2003). For older workers returning to vocational education, and especially for initially reluctant or unconfident learners, e-learning should be 'social and fun' and this is most easily done through blended e-learning (Bowman and Kearns December 2007: 35).

In contrast, US researcher Rod Githens (2007) recently found that older workers often prefer online learning because of the 'privacy and safety' aspects (i.e. they are not placed in a face-to-face learning situation). Githens offers no gender analysis here, but his study may indicate a differing preference between men and women. Indeed, Germany's Rainer Kuhlen (2006) has found differences in the preferences of male and female e-learners. According to Kuhlen, 'men tend to see distance education as a way to allow more access to education across vast distances' whereas women 'tend to see distance education as a way to connect people and work towards a common agenda' (Kuhlen 4). Women have a preference for group work, while men tend to favour individual e-learning (Kuhlen 5). These differing outlooks will influence the sorts of course compositions each will be drawn to. Non-blended e-learning may attract more male participants than female. Because the aged care industry now predominantly employs women, blended learning may be the best option. Kuhlen also found that women (including new IT graduates) tend to underestimate their computer competency compared to males (Kuhlen 4). This means that support systems and induction systems should be in place, even when higher competence is likely to be present.

Bowman and Kearns similarly found a preference for blended e-learning, but this is not surprising given that their interviewees were TAFE teachers and managers who may show some professional bias towards face-to-face learning. However, 'a few interviewees remarked that a social delivery approach is possible fully online' through the deployment of electronic white boards, chat rooms and discussion boards to enable 'synchronous and asynchronous interaction'. 'Shared online spaces provide social environments' which may be especially effective in remote area e-learning (Bowman and Kearns December 2007: 22). The point stressed by Bowman and Kearns is that interaction with other learners, whether that interaction is enabled by physical proximity or by 'virtual' proximity, creates 'learning communities' that add value to the learning process. Effective adult learning needs to be an iterative, rather than a purely 'reiterative' process: mature learners operating in a community of learners will want to put in, share, reflect and problem solve by drawing on their mutual experience as a platform for learning, rather than be limited to a one-sided in-take process (Bowman and Kearns Nov 2007: 14).

The blended learning 'mix' will be industry specific. In aged care the blend will need to address the learning needs and preferences of a combination of older, female workers, some of whom will have limited English literacy and limited experience of formal learning. In addition the blend will have to address the learning needs of the many formally qualified nurses employed in the sector.

Bowman and Kearns identify the need for TAFE, VET and private RTOs to further develop e-learning teaching practice specific to the needs and preferences of older learners. The increasing significance of older workers in the workforce requires policy directives in these learning/training institutions that re-focus technology teaching from its focus, to date, on 'the young and the new' to the harnessing of e-learning 'in innovative ways to meet the particular needs and preferences of older learners' (Bowman and Kearns, ES, Dec 2007: 4).

E-Learners with English Language and Functional Literacy Support Needs

Barriers

According to the Australian Bureau of Statistics' *Adult Literacy and Life Skills Survey* 2006, a considerable segment of Australia's 'older workers' experience difficulties with reading, writing and numeracy. Such issues will need to be specifically addressed in program design if this segment of older workers are to be enabled to take on e-learning (Bowman and Kearns ES December 2007: 3). Aged care may also provide employment openings for newly arrived younger migrants and refugees who may similarly experience difficulties with English literacy. US researcher Rod Githens calls on 'e-learning designers and planners [to] consider less educated groups when making design decisions' (eg reading level requirements, level of technical and computer expertise) (Githens 2007:7). For groups with functional literacy and ICT literacy issues, there are 'advantages [in] starting students in traditional [face-to-face teaching] mode [and] gradually introducing students to online learning as they gain their skills and confidence levels' (AFLF Summary: Digital Divide R019RS:3).

AFLFs *Summary: Learners with English Literacy Needs (R011RSc)* 2000 Project Report Access and Equity in Online Learning (August 2003) found that approximately 2.6 million Australians have low literacy skills and another 3.6 million experience 'some difficulty in using printed materials'. Approximately 1 million of these do not have English as a first language. Some proportion of these 1 million will be highly literate in their first language, but many will have low literacy in their first language as well. Low literacy *per se* will present different issues for e-learning program design than low English literacy alone.

The AFLF report found that:

> The literacy skills of more than 6 million Australians have been shown to fall short of those which software developers, Web designers and others in the ICT industry often appear to take for granted as normal and in the natural possession of all users (AFLF August 2003).

The AFLF report also found that there is a 'danger that online learning will exaggerate the gap where access and equity policies demand that the gap [between people with low and high literacy] be closed' (AFLF August 2003). In contrast, Wallace Galloway suggests that blogs, emails and chat rooms may be productively used by e-learners whose first language is not English to practice reading and writing skills, though the evidence as to the benefits for oral language acquisition are less clear (Galloway 2007).

Overcoming the Barriers

The AFLF report recommends that:

- Access and equity needs to become part of the online learning culture
- Advice from target population advocates and cultural specialists should be sought at all levels from policy development, program development and translation of online environments
- Hands-on, face to face support be provided by specialist language teachers who are also proficient in computer technology
- New manipulative skills such as typing, mouse clicking, scrolling, drop-down boxes and the specialist way language is applied to technology should be delivered with comprehensive language support
- Human interaction with teachers, mentors and other students should be fostered in the learning process
- Learning materials for students with low literacy should be intrinsically interesting, directly relevant to their own concerns and their information and action demands.

Low literacy/low English language learners are also likely to have low incomes due to the interplay of multiple social exclusion factors. Their access to home computers and software should not be assumed. Comprehensive technical support in accessible language should be readily available. Marketing information about e-learning opportunities should also be available in community languages. Otherwise, many potential learners may be lost at the first hurdle.

The detailed AFLF reports *Learners with English Literacy Needs* (August 2003) and *Digital Divide* (September 2003) should be consulted for detailed advice on low literacy e-learning pedagogies and program design.

The Multiplier Effect of Disadvantage and E-learning

The Digital Bridge Unit at the University of Adelaide's Australian Institute for Social Research (AISR) undertook research 'to evaluate the barriers to e-learning opportunities for women, people with a disability and indigenous people in metropolitan and regional areas' and to recommend ways of overcoming those barriers, particularly in relation to connectivity (access to hardware and bandwidth infrastructure), capability (skills and skills training), and content (appropriate language, culture and location).

Barriers

The study found that learners with low literacy and numeracy levels face significant challenges in participating in VET programs regardless of delivery mode and the new 'digital literacy' may see the gap widen. Low literacy individuals often acquire a basic digital literacy but this must be supported by formal learning opportunities to enable them to stay abreast of the continuing development of ICT infrastructure (AISR 2006: 8).

The study locates 'the digital divide' as a symptom of wider social inequities, with the potential to entrench or even exaggerate existing inequities and social exclusion (AISR 2006: 3, also Segarra 2004). It found increased take-up of e-learning in the two years to April 2006 (AISR 2006: 7), partly due to the increased availability of broadband, but also due to an apparent increase in demand, especially from young people in rural and remote areas, and from corporate sector employees.

The report concluded that demand seems to be coming 'from students rather than teachers', but predominantly from younger learners (AISR 2006: 7). RTOs report 'older age groups … as often being less interested in e-learning and more reliant on traditional delivery methods' (AISR 2006: 8). Small private RTOs have been slower to take up e-learning, due to costs, but large RTOs tend to see e-learning as an opportunity that 'is essential for their long term sustainability' (AISR 2006: 8).

Census data indicate considerable inequities in the ownership, access to and use of computers with variations in income and educational qualifications. People on low incomes, people who do not have tertiary education, women, people in rural and remote Australia, people of ATSI descent, people with a disability, people from non-English speaking backgrounds, unemployed people, and people over 55 years of age are less likely to have a home computer and internet connection than others. Aged care employees intersect a number of these categories (The Australian Institute for Social Research Adelaide University 2006: 9). The Digital Bridge Unit study recommended the development of e-learning deliveries that do not rely on text-based/written communication models (AISR 2006:17).

The major barriers identified by the Digital Bridge Unit as limiting the participation of disadvantaged population groups are:

- Connectivity:
    - Cost of hardware and software, and connection
    - Lack of appropriate infrastructure away from urban centres
    - Poor design and layout of web platforms

- Content-related:
    - Learning processes hindered by subject content that does not easily translate online
    - Lack of plain English usage online and in manuals

- Capability:
    - Inadequate induction for students *and* teachers
    - Inadequate or lack of support for students
    - Inadequate or lack of interaction between students and other students or teachers
    - Limited support and professional development for teachers
    - Lack of a supportive institutional learning culture (AISR 2006: 12).

Kilpatrick and Bound (2003, cited in AISR 2006: 13) found that geography is itself a barrier to successful e-learning. They found that the further away from the physical location of the RTO e-learning provider, 'the less likely was their experience of online learning to be positive'. 'For lower socioeconomic groups, connectivity-related costs are intensified thus compounding the disadvantage of distance'. Poor levels of digital literacy are associated with a lack of confidence in using ICT and in combination these lead to 'a self-perpetuating pattern of exclusion' in which a 'lack of knowledge underpins and is compounded by fear' (AISR 2006: 14,15).

Overcoming the Barriers

As with other researchers, the Digital Bridge Unit found that the most successful e-learning programs for "digitally disadvantaged" populations keep the specific needs of those populations in focus. Technologies must be made accessible through systems, programs and pedagogies that generate positive e-learning experiences as a platform for further, confident, self-motivated learning. A lack of provision of any of these factors will impact inequitably on socially, economically and geographically disadvantaged students. This study also noted, significantly, the "teachers' ability to use technology" as a critical success factor, both in regard to the teachers'

computer literacy and their understanding of effective online pedagogy (The Australian Institute for Social Research Adelaide University 200615). This research found few professional development courses to equip online teachers for effective e-learning delivery (AISR 2006:15). The Digital Bridge Unit notes studies by Ladyshesky (2005) and Brennan (2003) which address this relatively new field of online pedagogy for populations with limited ICT literacy and/or limited general literacy (AISR 2006:17).

Brennan (2003, cited in AISR 2006:15-18) found that effective online pedagogy for people with limited literacy skills focuses on 8 factors (which all build the ability to learn):

- Reducing reliance on text
- Enabling students to 'explore and value their intellectual, social and cultural backgrounds'
- Developing their knowledge beyond the transmission and assessment of content. (Researchers surveyed above would challenge this. The implication of other literature reviewed above is that skills acquisition will be most effective if it is built around the use of skills specific to the program in use: that regular use of these will generate confidence and competence to gradually extend capacity.)
- Reflecting on their own learning
- Being part of an inclusive learning environment
- Communicating extensively with their teachers *and* with their e-learning peers. This fosters a group identity which connects them with their learning and with the broader social environment
- Becoming self-regulating and engaged with their own learning

The Digital Bridge Unit study supports other findings noted above that a 'blended' approach is the most effective for disadvantaged learners, 'combining online delivery with face-to-face meetings, creating a learning community, enabling teachers to immediately assess and respond to individual difficulties and changing needs' (AISR 2006: 18 citing Gattas 2003). This is of particular relevance to aged care industry e-learners. Proactive support should encompass both learning issues and technology issues. This study argues that 'if the content is appropriately designed, and delivered with the appropriate pedagogy, the need for learner support is diminished' (AISR 2006: 19). It also finds that 'lack of culturally appropriate learning is considered to be a major cause of unsuccessful completions' as is teacher or provider insensitivity to cultural and language issues (AISR 2006: 19, 21).

In relation to the specific needs of the three target populations, the Digital Bridge Unit study identified the need to actively promote 'bottom-up ownership by indigenous communities' of e-learning; the need to build confidence, competence and digital literacy for older e-learners; and the need to have processes that support the inclusion of literacy-challenged participants. These are the necessary 'precondition' for successful uptake of e-learning. Good practice examples include the creative use of 'Toolboxes' such as those provided through the Australian Flexible Learning Framework, professional development initiatives to support e-learning teachers; and platforms to support 'social learning', eg audio conferencing for virtual classrooms (AISR 2006: 22, 28).

Women are not inherently disadvantaged by digital learning, but Arbaugh (2000, cited in AISR 2006: 26) found that 'women are more likely to show a preference for collaborative learning and interactive applications of these methods'. Women are likely to have family and child responsibilities, limited access to technology and to the internet, more limited information literacy, and less disposable income than men (AISR 2006:26-27).

When a group of low income women potential e-learners were provided with computers, internet access, online courses, a range of supports (including e-learning specific supports but also including child care) they and their families increased their computer-related literacy and were able to develop employment skills (AISR 2006 citing Gatta 2003).

There is some evidence that courses designed for a specific community produce positive results. The successful Barrier Reef demonstration program noted above, for example, invited participants to build on their own professional knowledge and experience. Kilpatrick and Bound (2003) consider that there may be 'a role for client-focused training brokers … to assist clients to establish self-sustaining relationships between clients (individuals and organisations) and providers' (AISR 2006: 29). The bigger point is that one-size-fits-all courses won't work: the most effective e-learning programs are the result of task-focused partnerships between organisations and RTOs.

A further component identified by the Digital Bridge Unit is the value of incentives to encourage people to engage in e-learning and to break the cycle of negative attitudes, limited understanding and lack of commitment to e-learning. Incentives may be certificates, workplace recognition or rostered time-off for e-learning. Organisation-based e-learning 'champions' will tend to promote e-learning within an organisation's culture (AISR 2006: 32-33). Kilpatrick and Bound (2003) also emphasise the value of locally relevant content, rather than centralised (eg state level) content in terms of the development of a sense of ownership (cited in AISR 2006: 33). This has the added advantage of drawing in a local 'community of practice', for example if the local library is brought in as an e-learning partner.[1]

Young People and E-learning

To date, the aged care sector has not attracted a large proportion of young people to its workforce. However, it is a potential source of workers at both 'shop floor' and professional entry levels, and e-learning can support entry pathways.

Barriers

Young e-learners, in general, have quite distinct preferences in terms of program design, and are likely to have substantial familiarity and competence with technology. However, many 'young people' will also feature as a subset of ICT disadvantaged populations. Some factors apply as much to younger learners as to older learners. For example, Drinis and Corrigan (2004) found that information needs to be relevant to the young person's work role, as it does for older e-learners; and that they will want to put their learning into practice. Hence, the close incorporation of the formal e-learning with shop-floor tasks may be an incentive for e-learning. But the AFLF researchers advise that young staff may prefer busier, less formal program layouts of the sort that might put off older e-learners (AFLF *what matters e-learning for youth*, citing E. Drinis & A. Corrigan 2004).

Overcoming the Barriers

Young people may respond positively to a 'game play' approach. Whereas older e-learners want to be directed through a process with predictable navigation, younger game-players want to 'compete' and 'choose the way to move within the learning experience'.

[1] A number of Victorian mental health services are piloting an online 'mental health triage scale project'. An entry to the online site is at http://www.learnprn.com/index.php?p=elearning . A feature of the website is the option "to further enhance your organisation's training portfolio", by "convert[ing] your existing in-house programs to eLearning, allowing you to offer a versatile training package for all staff".

Kristine Peters found that 'young trade learners need their online learning to be interactive, with small amounts of text' (Peters March 2005, citing Kavadis 2003). They want realistic scenarios with lifelike simulations that challenge them to move through different levels 'with more difficulty and added factors', presented via state of the art technology (AFLF *what matters e-learning for youth*, citing P.A. Sphika 2003). They want 'learner-directed rather than teacher-directed training'.

Research findings indicate that for younger e-learners, 'theory' is deemed an unnecessary distraction from the main game which is to test concepts. Computer savvy young people respond to learning that is 'more organic' inviting 'lateral learning with many applications for each concept'. They are 'more polyfocal, concentrating on many things at the same time, which also means reduced attention spans and the need for a "quick fix" when seeking information'. Research findings are also that e-learning presentations that seek to respond to this mode of learning may introduce 'the risk that learning is scattered, with insufficient reference to a theoretical structure that links learning to existing knowledge'. 'The absence of "theory" as a formal stage in the process means that it is essential to embed theory in the design of learning at the testing and practice stages' (AFLF *what matters e-learning for youth*). Short online time-span preferences are particularly seen in young males who also have little tolerance for delays (AFLF *what matters e-learning for youth*, citing AFLF *Women learners in Vocational Education and Training* 2003 and J Bowes 2004).

However, it appears that most of this research is gender-blind. Indeed, Peters notes that young females may respond to e-learning quite differently from their male counterparts. Young women, like their older female colleagues, 'value face-to-face interaction' (AFLF citing M. Dickie & I. Fitzgerald 2004; Peters 2004: 4). Both genders want training in 'bite sized chunks, just in time [ie, directly and immediately applicable] and that articulates into formal accreditation' which can be transported to their next position (AFLF citing K. Peters & C. Lloyd 2003). Individual organisations will have to take on board that they are training for 'the sector', so that the costs of an organisation's training will be mutually recouped as staff circulate between organisations in these days of casualised labour and short-term contracts.

The AFLF recognises that there may be some disadvantages consequent on the extensive roll out of e-learning made possible by the envisaged extension of broadband infrastructure in Australia. For example, the social interaction that comes with on-site group learning and which has so many benefits for young people in rural and remote locations, will be inhibited if e-learning becomes predominant (AFLF *what matters e-learning for youth*, after B. Golding 2001 and K. Peters & C. Lloyd 2003). On the other hand, e-learning enables culturally-specific materials appropriate to community and relationship frameworks to be provided to young Indigenous people in remote communities. In those situations, however, the e-learning should take place in a group situation with face-to-face support, especially where English literacy and technical skills may be limited. Where English language is limited, e-learning may enable the use of local Indigenous languages.

The AFLF reminds us that while young people may respond positively to e-learning delivered through new technologies such as 3G and palm-sized computers, mp3/podcasts, blogs and wikis, these 'new' platforms will rapidly be superseded by the 'next generation' of technologies. Obsolescence of technological platforms needs to be assumed. The AFLF also argues that for young people, 'learning is socially situated and needs to respond to the new forms of "tribal" community that are enabled through mobile technologies'.

Indigenous Learners and E-learning

The AFLF has had an 'Indigenous Engagement' strategy since 2005. It held a best practice forum in November 2007 and showcased Indigenous Engagement demonstrations in Brisbane in December 2007.

The AFLFs *Cross-cultural Issues in Content Development and Teaching Online* (July 2004) advises that the effectiveness of e-learning courses will reflect 'not just the appropriateness of curriculum content, but the pedagogical frameworks within which they are delivered', and different perspectives can be demonstrated through both practice and design (AFLF *Cross-cultural issues*, 2004: 2). Program designs should take account of differing communication patterns. The AFLF advises that 'instances of miscommunication in online exchanges between culturally diverse learners and facilitators' are common, and while these cannot be completely avoided, these may lead students to question the knowledge, the merit of participation, or feel disenfranchised, leading to unnecessarily high drop-out rates and unsuccessful completions. Cultural inclusion is a major focus of the work of the AFLF and their website should be consulted by course designers.

3.2 General Barriers & Strategies for all Types of Learners

Fears about approaching computer-based learning technologies will be particularly pronounced when ICT is a principal component of the learning/teaching mode. On a practical level, programs that are technically difficult to operate will have a negative impact, especially on the self-confidence of new learners. Program navigation should, as far as possible, be intuitive. Instructions must be clear and logical, from the most basic information on how to log on, to how to save, how to navigate around the site, how to manage files, how to download etc as well as the more program-specific instructions. Courses should build in the constant practice of ICT skills to embed them in the learners' skills repertoire. No part of the process should be assumed to be 'obvious' and all demonstrations and training in *all* procedures should be incorporated in an ongoing basis for new and returning e-learners (Mungania: 59). Frustration with technology should not create a barrier for inexperienced e-learners but often does. Initial and ongoing skills support for e-learners is a basic requirement.

Mungania also advises that students should not be overloaded with information. All unnecessary information should be removed and programs should enable participants to skip sections or move directly to the evaluation of sections they are comfortable with. Regular progress reporting should be available to encourage participants. Various online techniques can be used to ensure that only those reaching a required standard can progress to next stage. High quality course input will motivate participants to make high quality responses.

Action learning is a process that enables learning to be applied immediately, enabling practical feedback and reflection. Adult learning programs should provide opportunities during the course to practice the new learning. Similarly, testing and assessment should invite reflection, discussion and interaction with other students. A Department of Health and Human Services Tasmania e-learning demonstration program emphasised the value that comes form 'allow[ing] learners to interact with each other', even 'during the assessment if possible'. They advise training managers to 'trust your learners', and recognise that 'discussing the answers with work colleagues is not cheating: it is how adults learn – from each other'. Testing should actually add value to the learning process. Program managers should encourage feedback from learners who feel aspects of the course do not reflect best practice or the 'shop floor' experience of staff.

Technological factors also loomed as a barrier to uptake of e-learning in some parts of Australia with band-width problems inhibiting uptake. This problem, frequently noted in studies of the uptake of e-learning in rural and remote Australia, is now being addressed by the Commonwealth as a policy priority.

Program designers should not rely on businesses or home users having state of the art technology to carry the e-learning program. The size of downloads should be limited so that these are commensurate with the technology users are likely to have at home, which may be cheaper and older than 'state of the art' computer technology.

Best practice suggests that e-learners should have access to 'all hours' technology support, *with access that does not entirely depend on internet access*. A mechanism for reporting technological difficulties and ensuring a quick response process needs to be provided. Learners should be able to re-start a test in case of technology failure, rather than having to begin again. Search engine and help functions also need to be provided in the site.

3.3 Barriers to uptake of e-learning by Employers and Organisations

A recent literature survey and a survey of e-learning managers in 39 Industry Training Organisations (ITOs) in New Zealand found the following nine 'barriers to adopting e-learning':

- Lack of appropriate technology within an organisation, especially in small and medium organisations
- The lack of ongoing technical and learning support for participants with limited IT skills
- Lack of support and commitment from senior and middle management [a moderate barrier]
- The cost (in terms of time, human resources, and financial) of e-learning implementation and maintenance of e-learning, especially for small organisations
- The organisation being able to access educationally designed, organisation-specific and engaging content
- Resistance to change from those familiar and comfortable with traditional learning and teaching approaches, especially in small organisations
- Lack of basis IT skills in an industry, especially in small organisations
- Motivating particular learners to complete e-learning courses, especially in small organisations
- Organisational lack of knowledge on how to plan for the implementation of e-learning, again, especially in small organisations (Elliott and Clayton: 244-247).

Some of these barriers loom larger for small organisations than for bigger ones, for example availability of technology onsite. However, organisational cultural barriers may be as strong in large as in small or medium sized businesses.

'The majority of ITOs in NZ are conscious that e-learning increases organisational flexibility in the presentation of training', enabling flexibility in time, pace and place, as well as delivery to a large number of people simultaneously. However, 'the initial implementation and ongoing maintenance costs' in terms of time, financial and human resource costs, are seen as major barriers, especially to small and medium sized organisations (Elliott and Clayton 2007).

Mack Consulting and AFLF researchers (December 2007), investigating the enablers and barriers to small business uptake of e-learning, found that while most businesses provide some informal on-the-job training (often short-term and unplanned) only about 12% of small businesses provided 'structured training using computer assisted methods'. In contrast, some 40% of small businesses claimed to have a relationship with a training provider, providing a platform for the dissemination of more comprehensive e-training (Mack Consulting Group [a] December 2007; Mack Consulting Group [b] December 2007). These low levels of e-learning engagement contrast with big business where about 70% of businesses have some staff so engaged and most expect that figure to increase (APT Strategies September 2006: 5).

Mack Consulting found that users of e-learning recognise its benefits in terms of convenience, flexibility, provision of formal training materials, and easy access to training options, but many employers had not considered e-learning as an option. Others consider face-to-face learning to be more appropriate for their training needs.

Perceived barriers to the uptake of e-learning by small businesses include:

- the cost in terms of investments of time and money;
- technology limitations;
- workload pressures;
- lack of an e-learning 'champion' in the organisation;
- preference for informal hands-on learning;
- a belief that e-learning was not relevant to their business; and
- a general lack of awareness about e-learning training options.

Small business managers may also experience a lack of a sense of competence with computer based technologies and exposure to e-learning, and may themselves need assistance with reaching a confidence threshold that enables them to take their organisation into e-learning.

Persuading management to invest time and money in e-learning, (including providing technical capacity, ensuring supervisors are supportive, providing employees with time off for e-learning, ensuring that the e-learning is rewarded in terms of job pathways and business targets and assisting to overcome negative stereotypes about e-learning) may all require strategic input from training providers (AFLF *Practical Guide to e-learning for Industry,* Section 1.4).

Good Practice Lessons

Good practice lessons from these two AFLF studies, from the point of view of e-learning providers, demonstrate the need to recognise that small business is time-poor and that programs need to address specific and immediate needs of a business.

In small business, the owner/manager is the key determinant of culture and direction, so e-learning marketing needs to focus on the benefits for the business and be directed at that key person/s rather than government agendas (Dawe and Nguyen 2007). Dawe and Nguyen (2007) found that small business will pay for education and training if managers/owners see the value in it for their business. Small business learns 'through doing', with the focus on current or real issues in the workplace, and through social networks – learning from other business people. Business clusters and mentoring networks can provide an entry point for seeding e-learning.

RTOs may also offer training needs analysis, and benchmarking against other organisations as a means of alerting business to the role that e-learning might play in their business planning. The AFLF Industry Engagement Project *Review of business cases of the 2005-2007 industry e-learning demonstrations Final Report,* of February 2008 found that the skills and support of the partnering RTO was critical to the success of the e-learning implementation and that initial success produces further enthusiasm for e-learning and further uptake (4). Initial success is critical.

Dawe and Nguyen found that successful small business-focused e-learning will demonstrate three essential elements:

- a clear focus on business-specific needs
- a personal approach through a recognised local facilitator or business service organisation that is able to reach small business operators who may not be positive about training
- flexible provision which carefully individualises training information, content and delivery to the needs of each small business.

Dawe and Nguyen identified 10 strategies that encourage the uptake of e-learning by small business and advise that e-learning providers should market e-learning against these strategies. They are:

- providing opportunities to share skills, knowledge and experience with other small business people
- linking training to business performance – increased profit, growth or survival
- linking training to specific stages in the business cycle (that is start-up, crisis and/or survival, growth and/or expansion and export and/or internationalisation)
- contacting small business managers personally to analyse their business needs
- providing ongoing business-specific support through a business service organisation
- minimising time spent away from the workplace
- integrating formal training and learning with informal learning processes in the workplace
- lowering costs of training by collaborating with other businesses or through financial incentives, such as a government subsidy or 'interest free' loans
- ensuring that facilitators and trainers have the appropriate networks and experience to enable them to be trusted and respected by all business participants, especially in the case of Indigenous Australian small business operators
- planning the strategy with small businesses and business service organisations.

Marie Jasinski has distilled some key findings about the processes by which e-learning becomes embedded in VET offerings. She considers VET providers as essentially small businesses, bringing the same considerations to the adoption of innovations as any other small business. The interrelated enablers she identified are a work culture that:

- embraces and supports innovation;
- a robust technology infrastructure with attention to technologies that will support e-learning;
- a senior champion who drives the process;
- a willingness to consult and share;
- supportive managers and peers; and
- a general organisational commitment that e-learning is a desired and valued component of a teaching and learning repertoire and worth the time and effort (Jasinski 2007: 4).

Industry e-learning demonstration reviews

The AFLF Industry Engagement Project *Review of business cases of the 2005-2007 industry e-learning demonstrations Final Report* (February 2008) has found that their demonstration action research 'pilots' have enabled participants to develop e-learning communities of practice and technological prototypes that have allowed end-users to make quick-time amendment when difficulties are identified or when local responses have been required. One respondent identified a benefit as being 'a continuous and positive feedback loop to developing and sustaining training needs for the future' (*Review of business cases*: 7).

In each case, the ability to develop local, directly and instantly/short delay relevant materials that address real, identified workplace issues is a real benefit.

One barrier to the uptake of 'nationally provided' e-learning may be a perception that it can not be locally relevant. The local collegiate experience derived from developing locally relevant e-learning materials in conjunction with an RTO has the value-added spin-off of a general up-skilling in regard to IT (*Review of business cases*: 7). The review also notes 'unexpected negatives', primarily that the development of the projects at the local level often took longer than expected. It is intended that these demonstrations will provide prototypes for various industries and training components, but local input at any stage will require an investment in time. Most of the feedback indicated that the positive benefits of locally relevant amendments to programs outweighed the negatives and that the extra time was, on the whole, viewed as a positive investment in the future of the organisation, especially in terms of enhanced training capacity (*Review of business cases*: 7, 8).

Feedback from the AFLF demonstrations may be of relevance to ACSA's own business case demonstration. Most of the demonstrations moved fairly rapidly from pilot stage to incorporation of the new programs into the organisations' standard training offerings as 'real world' applications, however some were not successful in that transition. Barriers to the achievement of the business case goals were:

- Technical issues with applications
- Problems finding skilled educationalists to assist
- More re-work on the pilot than expected as a result of user feedback
- Logistics problems relating to computer access for e-learners for staff who do not typically have or require computer access (eg factory workers, kitchen staff)
- Internal organisational barriers with management or internal IT departments.

Project managers in all cases felt these barriers could be overcome with more time. 'Time' was itself a barrier in terms of the project time-frames, indicating that establishment phases – both 'proof of concept' or 'selling e-learning', and 'providing solutions' to e-learning issues as they arise – may often be longer than anticipated (*Review of business cases*: 8-9). Some demonstrations 'lost momentum' (*Review of business cases*: 9), suggesting that lack of enthusiasm, competence and leadership amongst the team may be a barrier to success. It is at this point that a 'champion' may be required to take hold of the project and guide it to completion.

One respondent from an apparently stalled project noted that 'if we implemented e-learning too quickly before everyone was ready for it we could end up killing it' (*Review of business cases*: 9) which is a learning that the aged care industry may find particularly relevant. The reviewers themselves note the need to bring everyone along for success but also note the motivational benefits that may accrue from having a deadline (*Review of business cases*: 9).

A point of interest to the success of ACSA's own program may relate to the identified importance of the 'diffusion process'. The experience of the demonstration project managers is that 'diffusion' should focus on three issues:

- 'explaining the key benefits of e-learning … *why* it is worth pursuing e-learning';
- 'what e-learning looks like in practice … [in terms of] tangible examples of what e-learning in practice actually was'; and
- 'how to implement e-learning', again on a practical, tangible level (*Review of business cases*: 12-13).

A lack of tangible 'what and how' information in the aged care sector may itself be a barrier to uptake at both management and staff levels. The specific message should, of course, be targeted to the specific audience, but a high level of pre-existing knowledge and motivation should not be assumed. 'A … thorough appreciation of where an audience might be placed with their training programs, knowledge of e-learning and capability for e-learning might guide the nature of the messages presented through diffusion activities' (*Review of business cases*: 14). The AFLF business case review (February 2008) also noted that peak bodies with strong existing links to their industry had been the most successful in diffusion (*Review of business cases*: 12).

The AFLF Industry Engagement Project further conducted 'strategic conversations' with industry which identified a perceived lack of understanding by RTOs of real industry needs and issues with the use of unskilled trainers rather than skilled and experienced teachers. The success of e-learning depends so much on deployment of appropriate pedagogies that the input of experienced teachers is vital (AFLF *Strategic conversation* September 2006). The conversation also revealed:

- Limited understanding of how to initiate e-learning at specific workplaces
- Learner perceptions that e-learning excludes face-to-face learning and social learning
- The belief that e-learning does not bring the expected benefits of training: travel, social networking etc
- Techno-phobia, lack of practical skills
- Resistance by mature age workers
- Concerns about upfront costs, actual and perceived
- Concerns about access to technology, server speed, computer overload
- Resistance from IT departments
- Perceived difficulties in keeping up with new technology
- Apprehensions about Telstra infrastructure issues (Strategic conversation: 12 of 28)

The strategic conversation also identified the business bottom-line benefit of 'just-in-time' training as a remedy to the challenges of skills and staff shortages, and to productivity and safety issues (Strategic conversation: 13 of 28) and endorsed the value of e-learning champions, strategic partnerships and 'the influencer model' linking the VTE, RTO and Industry partners. Along with the use of technological developments, 'blended learning' was seen as the way forward (Strategic conversation: 15 of 28).

4. Lessons from the Demonstrations.

The AFLF Industry Engagement Project conducted around 40 e-learning demonstration pilots in 2005-7. The satisfaction reports from these demonstrations have been reviewed for their relevance to ACSA's industry based project. The 2007 demonstration satisfaction reports provided more comprehensive feedback than those submitted in 2006.

Individual Demonstration Learnings

- The North Coast Area Health Service (NSW Health) Project.
  Key points from the satisfaction report were:

    - the variety of operating systems across participating 'campuses' presented a technical barrier;
    - the need for the sector to give the lead as to content and pedagogy, and not be lead by IT and multi-media developers; and
    - the need to lobby NSW Health to support a central e-learning system

The North Coast Area Health Service (NSW Health) Project e-learning was a blended model, involving a comprehensive face-to-face induction program where participants met their TAFE advisors and assessors and were given contact details at this face-to-face meeting. The induction day also functioned to bring all participants from rural locations together, creating something of a learning community. Each participant was allocated a learning mentor. Most were new to e-learning. Participants were given time-off from work duties to complete the e-learning, which asked participants to use a 'collecting evidence' assessment model, which also enables learners to skip direct to assessment on units they felt competent with already. The report notes that each screen provided easy navigation across the whole site and the process was deliberately 'intuitive'. The program was seen as providing 'lots of support' and practical encouragement to learners.

- Department of Health and Human Services, Tasmania (Fire and Emergency Awareness e-learning project).

Some members of 'the project team' had limited e-learning experience, so this was a collaborative learning experience from the start. TAFE Tasmania provided the e-learning expertise and training and 'Leaders' were also learners in this model. This team drew in experts and spent a lot of time identifying 'common and consistent content', thus the process again had a value-add component at the outset in terms of the development of a 'learning community'. 'The time spent debating and discussing the content, and how the learners should interact with the content was considered time very well spent. It reinforced to the project team that this project is about learning – Fire and Emergency Awareness – and that the e-learning format was the vehicle and method to deliver the learning'. Glitches included difficulties with navigation, font too small, the need for more detailed explanation for novice computer users, and requests for certificate on completion.

Learnings from the Tasmanian DHHS project included:

- The need to have the project overseen by a dedicated person to ensure it is kept on track
- Time spent getting the content and the language right is a valuable investment
- Concentrate on how the learners will interact with the material: learner-focused
- Use a variety of 'diffusion' methods.

One of the interesting aspects of the Tasmanian DHHS pilot was that those formulating the e-learning project themselves went through an 'online meeting' technology learning process 'so that each project team member could access the online meetings from their work computer or laptop', perhaps putting them into the frame of mind of their e-learners. In their online meetings they 'used the software to view and discuss the content for the e-learning module' on Fire and Emergency Awareness, a mandatory annual requirement for 100% of staff working in acute and primary health care, including aged care where it is covered by Australian Aged Care Standards. The e-learning module is intended to provide learning in conjunction with face-to-face delivery.

Attempting to provide a common learning platform relevant to diverse campuses proved a challenge, but:

> As the discussions of the Project Team [and drafted experts including from TAFE and OH&S experts] evolved, it became clear that there was a common set of information, responses and understanding that existed across all facilities, and that the differences that are in place, can be used as a prompt to have the learner find out about their own workplace, and therefore enhance the learning (Department of Health and Human Services, Tasmania Fire and Emergency Awareness e-learning project satisfaction report 2007).

They also found that 'the time spent debating and discussing the content, and how the learners should interact with the content was time very well spent'. This e-learning package, directly addressing potential emergency situations and staff and client survival, requires 100% accuracy and therefore perhaps requires more concerted application by learners than some other e-learning packages where lapses in applied learning may not be so costly. The package includes learning modules that are *not* part of the assessment but are designed to 'assist the learning'. They suggest that considerable thought has gone into getting the pedagogy right in this program. The whole package sees TAFE Tasmania staff provide ongoing skills training to the project co-ordinator so that s/he can train next-in-line DDHS staff to update the e-learning module or customise it to suit their business units in the future. This is, therefore, a total environment e-learning project which can be provided on internal intranet or from TAFE Tasmania's central WebCT system. Because this is a mandatory training module for all staff, annually, both systems enable centralised tracking of participant progress.

The actual learning process included a simultaneous 'group session' using a 'Mobile Wireless Laptop Classroom' with each workplace bringing its participants into a meeting room for the sessions; and individual revision. 'Participants were able to save each assessment answer and go back and review the learning content' where necessary. This means that the 'assessment' aspect also functions as learning tool. 60% of participants were new to e-learning. The learning was pitched at a level where most participants found that 'it required some thought' to answer correctly: most answers required process descriptions and choices of procedural pathways. Evaluation consisted of both a questionnaire and group discussions at completion. Comments from participants identified the need for more detailed instructions for some inexperienced computer users and that the font size was an issue for some older learners.

As a spin-off, the project team itself found the e-learning project provided an opportunity to examine local and Agency-wide issues on fire and emergency awareness, bringing about a number of best practice recommendations. The team particularly noted the need to:

- employ 'adult learning principles' into the design of the e-learning
- have a 'dedicated person project manage the development'
- partner with an RTO that has experience in the design, development and deployment of e-learning resources (in this case TAFE Tasmania)
- spend time getting the content right (which means relevant, realistic scenarios), including bringing in subject matter 'experts'
- use accessible language
- concentrate on how learners will interact with the technology and content: keep the navigation simple and make the instructions simple and clear
- 'devise ways for the learners to apply the learning messages to their own understanding'
- respond to difficulties of use by participants
- build in a lot of opportunities for interaction between participants, including opportunities to debate the correct answers because this process enhances learning.

This finding was of particular note: 'allow learners to interact with each other during the assessment if possible', 'trust your learners', and recognise that 'discussing the answers with work colleagues is not cheating: it is how adults learn – from each other'. The need to provide many flexible options for deployment of the e-learning is also vital to success. (There is quite a lot of technical detail in this report that may be worth consulting, and contact details of the Project Manager).

- Electrical Supply Industry Pilot Satisfaction Report

  Key findings include:

  - Experienced industry workers meeting frequently with the development team to resolve specific technical issues and to ensure the focus was on relevance and suitability rather than on the technology itself
  - Minimised bandwidth to maximise access for remote area workers.

- Crane Distribution (a wholesale distribution company).

While Crane learners had 'moderate to high levels of general computer skills', 'around half of the group experienced some difficulty either finding the host web site or registering and logging into the training'. The satisfaction report does not indicate how much hands-on assistance was required to bridge the skills gaps and overcome the frustrations. The report noted the need to 'bring about a cultural shift … amongst business line managers and participants' to establish e-learning, especially in regard to providing motivation and time allocation for e-learning, and identifies this as a barrier, especially amongst an 'ageing workforce' with 'relatively low general education'.

AFLF Aged Care Industry Specific Demonstration

Interest in e-learning in aged care is building and there have been a number of specific projects.

Domain Aged Care conducted a mandatory 30 minute Elder Abuse Awareness program for 15 employees, in response to abuse-awareness reforms in the Aged Care legislation. While the report is lacking in substance in regard to participant responses to the training, from an organisational point of view, Domain reports:

- economies in training costs through reduced need for trainers' time and easier and more flexible access for employees (saving time/money)
- less interruption of work rosters
- flexibility for employees who can take time at work or complete the training at home

Domain believes it has identified a 'tipping point' in the demand for e-learning by the aged care workforce, and, as noted above, signs that older e-learners are pro-active in exploiting available resources (including at-home teenagers) to enhance their ICT skills and confidence. Domain plans to provide the e-learning training to its 2000 employees and to all new employees before they begin working with the elderly. Beginning in August 2008, the AFLF has partnered with Domain Aged Care in the development of a more extensive e-learning training package using Toolbox exercises based on the simulated 'Grange House' aged care facility.

Sortel Catholic Care of the Aged partnered with New South Wales Health and the North Coast Area Health Service NSW to develop an 'edutainment' e-learning program on prevention and management of violent behaviours in the workplace. The modules present 'entertaining' animated scenarios with 'villains'. It was apparently well received. Rod Peardon, who managed the project, advises that experts be engaged so that each project is not 'reinventing the wheel'.

Aged Care E-learning beyond the AFLF

Lutheran Homes South Australia is soon to launch an e-learning program *Germ Stop* 'for the control of infectious linen in an aged care facility' but to date no more information on the program is available (*Kerry King's blog*, July 2008).

Meath Care Como W.A. has developed a training manual for an e-learning training program which was noted under Continuous Improvement in its Accreditation submissions in 2005 (located online).

NSW Transcultural Aged Care Service developed an e-learning CD-ROM for a cross-cultural training course in conjunction with Illawarra Institute of TAFE funded under the Howard Government's *Partners in Culturally Appropriate Care Initiative* (Julie Bishop Media Release 6 April 2006)

5. Conclusion

This review has highlighted a range of barriers for both employees and employers. More importantly, it has discovered a range of strategies that can be employed to overcome these barriers. One of the key findings of this review has been that *learning* needs to be put back into e-learning. Many of the strategies to overcome barriers are based on the need for a blended model which combines both the technology base of e-learning and face-to-face, interactive training.
The findings of this literature review will be particularly informative and useful for ACSA in developing an aged care industry plan to embed e-learning as a training option.

BIBLIOGRAPHY

Australian Flexible Learning Framework (AFLF)	*Cross-cultural Issues in Content Development and Teaching Online*. Australian Flexible Learning Quick Guide Series. (1 July 2004)
AFLF	*what matters research findings e-learning for youth* http://www.flexiblelearning.net.au/flx/webdav/site/flxsite/shared/Benchmarking%20and%20Research/E-learning%20For%20Youth%20A4.pdf
AFLF	*what matters research findings e-learning for mature age workers* http://www.flexiblelearning.net.au/flx/webdav/site/flxsite/shared/Benchmarking%20and%20Research/E-Learning%20For%20Mature%20Age%20Workers%20A4.pdf
AFLF	*Summary: Digital Divide (R019RS) Access and Equity in Online Learning* (08 September 2003)
AFLA	*Summary: Learners with English Literacy Needs (R011RSc) 2000 Project Report Access and Equity in Online Learning* (August 2003)
AFLF	E-learning for the mature age worker: good practice guidelines for e-learning use for the mature age [Summary] http://www.flexiblelearning.net.au/flx/webdav/site/flxsite/shared/Benchmarking%20and%20Research/E-learning_Mature_Age_Worker_Good_Practice.pdf
AFLF	*Domain Aged Care Group: Legislative changes trigger aged care provider's first e-learning initiative* (2007)
AFLF	*Domain Aged Care Satisfaction report on the pilot assessment of a 2007 Industry e-learning demonstration* (2007)
AFLF	Practical guide to e-learning for industry (2007) http://industry.flexiblelearning.net.au/guide/text_version.
AFLF	An investigation of the enablers and barriers to industry uptake of e-learning: Small business. Executive Summary (December 2007)
AFLF 'The Knowledge Tree'	Interview with Rod Peadon North Coast Area Health Service (NSW) *The Knowledge Tree: Edition 16*

AFLF Industry Engagement Project	*Strategic conversation with industry: Future of e-learning (summary report of a Strategic Conversation with industry on the future of e-learning …Melbourne, Thursday 14 September 2006)* *http://industry.flexiblelearning.net.au/2006/summary_report_industry_280906.pdf*
APT Strategies	*E-learning in industry growing: A review of the use of e-learning in six industries* (AFLF, Industry Engagement Project) September 2006
Bishop, Julie.	"New Service to Bridge the Aged Care Cultural Divide" (Media Release, 6 April 2005)
Bowman, Kaye and Peter Kearns	*E-learning for the mature age worker: Executive Summary* (AFLF December 2007)
Bowman, Kaye and Peter Kearns (Global Learning Services)	*E-learning for the mature age worker: Final Report* (AFLF December 2007)
Bowman, Kaye and Peter Kearns (Global Learning Services)	*E-learning for the mature age worker: case studies* (AFLF November 2007)
Central Queensland University	*Lifelong Learning Conference 2008: Reflecting on Successes and Framing Futures*: abstract of workshop by Dr Fred Lockwood, Emeritus Professor of Learning and Teaching, Manchester Metropolitan University, UK
Dawe, S. and Nguyen, N	Attachment 2: Reference Papers, in Mack Consulting Group, *An investigation of the enablers and barriers to industry uptake of e-learning: Small business* (Australian Flexible Learning Framework, December 2007)
Domain Aged Care media release	E-learning initiative for aged care providers (2007)
Elliot, Richard, and John Clayton	*E-learning activity in New Zealand industry training organisations: Perceived benefits and barriers*. (Proceedings ascilite Singapore 2007)
Galloway, Wallace	The Knowledge Tree, Edition 13 (2007) (AFLF) http://kt.flexiblelearning.net.au/tkt2007/

Githens, Rod. P.	*Older Adults and E-learning: Opportunities and Barriers* (University of Illinois at Urbana-Champaign) http://www.rodgithens.com/papers/older_adults_elearning_2007.pdf
Hollis, Barry and Kay Bass,	*Inclusive e-Learning (Learners with Disabilities/Youth/Mature Age) Project. Reskilling rural and remote mature age workers.* (River Murray Training, Australian Flexible Learning Framework, November 2007)
I&J Management Services	*2007 E-learning Benchmarking Project. E-learning for mature age learners* (AFLF, November 2007)
I&J Management Services	*Review of business cases of the 2005-2007 industry e-learning demonstrations: Final Report* (Industry Engagement Project). February 2008
Jasinski, Marie	Innovate and integrate: Embedding innovative practices (AFLF, 2007)
King, Kerry	'Kerry King's blog': *2008 E-Learning Innovations: Germ Stop!* http://me.edu.au/b/kking/entry/2008_e_learning_innovations_germ
Kuhlen, Rainer	*Collaborative e-learning – an opportunity to identify and to overcome gender barriers* (UNESCO Chair in Communication, Department of Computer and Information Science – University of Konstanz, Germany, 2006) http://www.inf-wiss.uni-konstanz.de/People/RK/Vortraege06-Web/RK-elearning-gender060106-WordV.pdf
Mack Consulting Group (a)	*An investigation of the enablers and barriers to industry uptake of e-learning: Small business* (Australian Flexible Learning Framework, December 2007)
Mack Consulting Group (b)	An investigation of the enablers and barriers to industry uptake of e-learning: Small business case studies (AFLF) December 2007
Mallett, Robert, Adrian Howard and Ellie Thompson	*Barriers to e-learning in the Community Pharmacy Sector* (AFLF 2003)
Mungania, Penina	*The Seven E-learning barriers Facing Employees: a Research Report Funded by the Masie Centre* (New York, 2003)

Oliver, Ron and Mark McMahon	*Trials of Learning Objects* (Series 7) (AFLF 2006)
Peters, Kristine	*E-learning for Target Learner Groups –Youth. Environmental Scan Research Paper to inform the 2005 E-learning for Target Learner Groups Project* (Australian Flexible Learning Framework, 31 March 2005)
Quinton, Stephen and H. Dreher, D. Fisher, P. Houghton	"Harnessing technology to empower mature age learners"(2006) *Fourth International Conference on Science, Mathematics and Technology Education*, Victoria, British Columbia, Canada, Aug 25 2005.Accessed via Curtin University of Technology Institutional Repository. http://espace.lis.curtin.edu.au/archive/00001262/
SA e-learning strategy	Advocate for e-learning for target groups http://www.e-learningstrategy.sa.gov.au/action.php?id=34
Segarra, David	"What Do ICTs Represent: A Bridge to Knowledge Or A New Exclusion Factor?" 19 July 2004 (elearningeuropa.info) http://www.elearningeuropa.info/directory/index.php?page=doc&doc_id=5103&doclng=6
The Australian Institute for Social Research (University of Adelaide)	*The Digital Divide – Barriers to e-learning: Final Report (presented to Digital Bridge Unit, Science, Technology and Innovation Directorate, DFEEST)* April 2006.

All AFLF (Industry Engagement Project) industry e-learning demonstrations Satisfaction Reports are available at http://industry.flexiblelearning.net.au