

Rural and Remote Learners (R018RL)

Literature Review

Access and Equity in Online Learning

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1. Rural and Remote Learners: Literature Review and Analysis

The Australian Flexible Learning Framework Strategy 2001 has as its overarching goal “an expanding core of VET learners who are empowered by a wide range of flexible delivery methods, particularly e-learning.” *Access and Equity in Online Learning* is one of 19 projects and 3 facilitating programs funded in 2001 to advance this goal.

This literature review examines current research in the fields of online learning, distance learning and vocational education and training. It asks what is being done in the field of online vocational education and training and how can it be applied to rural and remote learners. Finally, recommendations are made for devising future directions and examining existing and proposed modalities.

2. Definitions and Parameters

2.1 Rural and Remote

Australian Bureau of Statistics (ABS) uses the Australian Standard Geographical Classification (ASGC) for collection and dissemination of geographically classified statistics. The ASGC has had long standing definitions of rural and urban in Australia. These definitions are drawn via the establishment of Sections of State, which are Census Collection District categories that are assigned during census years (ABS, 2001; pp5-7). In broad terms, urban is defined as populations living in clusters of 1000 people or more. Rural includes Bounded Localities of greater than 200 population but less than 999, as well as the rest of the population not covered by the previous definitions, which is titled Rural Balance.

Until recently the ASGC has not dealt with the notion of remoteness. In January 2001 ABS proposed incorporating the concept of remoteness in a published information paper, *ABS views on Remoteness* (ABS, Cat. No. 1244.0). The paper proposed the introduction of the Accessibility/Remoteness Index of Australia (ARIA)(ABS, 2001; p9). This is an important development as it will facilitate identification of genuinely remote areas and also measure the facilities available in these areas including the online learning options in the VET sector.

The ARIA index is a “continuous variable...in which remoteness is defined on the basis of road distance from any point to the nearest town (service centre)”(ABS, 2001; p9). Service centres are assigned a value by using population size as a proxy for level of service provision. It is a purely geographical methodology and doesn’t take into account access factors, such as mobility.

ARIA provides a definition of remoteness, which may be used in the context of this study. However, it is important to note that telecommunication service provision is not one of the service groupings utilised by the ABS to analyse service centres in detail (ABS, 2001; p27). Given the integral relevance of telecommunications service provision to online technologies, it may be that future definitions of remoteness, in this context, will need to take into account the concept of telecommunications remoteness.

2.2 Online Learning

Online learning is “the use of cyber systems such as intranets and internet for communication for the purpose of teaching and learning” (Warner, Christie, & Choy, 1998). Online learning has become something of a catch all phrase. Initially in computing parlance the term online referred to a computer, which was connected to a network or to the Internet, as in *on-the-phone-line*. When coupled with learning, the phrase has been expanded to encompass any form of education process that involves the use of computer and communications technology (Booker, 2000).

Various formats can be encompassed in online learning. These can include forums for direct contact with staff and other students; course materials provided on CD ROM; web based interactive learning environments, such as Toolboxes; computer laboratory style learning activities. Choice and implementation of format has implications for the effectiveness of online VET delivery (Qayyum & Ruhe, 2000; p34).

A very simple model (Booker, 2000; p4) of an online course includes the following features:

- existing print materials (lecture notes, handouts etc.) are converted to HTML and graphics;
- placed on server, either as an Internet or Intranet site; and
- discussion groups are set up for interaction between students and lecturers and for assessment processes

This model can be used for either a whole course or parts of courses and as an adjunct to other media. It model is typical of those adopted in early approaches to online delivery and there are now more sophisticated approaches. A sophisticated model (Holzl, 1999; p3) for online learning may contain some or all of the following:

- an interactive learning environment, either network or web based - this forms the framework in which the online course is constructed
- information resources – a central information site, such as a website, for storage of core knowledge and providing links to other relevant sites
- cognitive tools including: problem/task representation such as graphical user interfaces which represent files and applications to be manipulated; static & dynamic knowledge modelling, such as databases, spreadsheets, semantic networks, expert systems and hypermedia construction
- performance support, such as calculators or database shells which may be embedded to help learners organise the information which they collect
- collaborative tools – systems such as email, bulletin boards and chat rooms, where interaction is dedicated to coursework related issues which encourage, facilitate and enhance interaction between students and between students and tutors in order to improve the overall learning quality
- social/contextual support – ensuring that teachers working with online courses have the necessary skills in computing and network administration and a commitment to facilitate learning in the online environment with a solution-focussed approach to difficulties, which may be encountered by students

2.3 Population in rural, regional and remote areas

A survey of the 1996 Census figures reveals that more than 48 % of population in the Northern Territory live in remote and very remote regions of Australia (ARIA values of 5.92 or greater). Seventy seven percent of the population in the other Territories, except the Australian Capital Territory, lives in very remote areas (ABS, 2001). In the State of Western Australia more than 9 % of population lives in remote and very remote areas. The states of South Australia, Victoria, Queensland, and Tasmania have less than 5% of population in the remote to very remote areas.

More than 51% of the population of the Northern Territory lived in outer regional areas. In the states, the population in the inner and outer regional areas ranges from nearly 6% in Victoria, through 8% in New South Wales, 13% in South Australia, 15% in Western Australia, 22% in Queensland to nearly 36% in Tasmania. Inner regional areas are those with ARIA values of between 0.2 and 2.4, outer regional areas are greater than 2.4 and less than 5.92 (ABS, 2001).

Because the Australian Bureau of Statistics parameters used to define “rural” and “remote” are different it is possible for an area to be rural and remote, rural only or remote only. For example a town of over 1000 population is defined as urban, however if this centre is a long distance from larger centres of population it may still fall into the category of remote. Settlements of fewer than 1000 people are rural, but if they are close to larger centres of population they may not fall into the ARIA definition of remote. The project definition of “rural and isolated rural” as those having non-metropolitan postcodes will encompass both “rural” and “remote” as defined by the Australian Bureau of Statistics, it may also include some areas which fall into neither category. The use of postcode to determine category in this way reduces overlap with the isolated urban category, which has been defined as learners with a metropolitan postcode. The definition based on non-metropolitan postcodes has implications in terms of access and equity, in that people living closer to large centres will have fewer barriers in terms of telecommunications links and costs, better access to groups of others for mutual support and also better access to courses enabling them to improve their literacy and computer literacy. They may also have better access to more recent technology and a wider choice of computer equipment.

2.4 VET Student Representation in Remote areas

In 1999 there were approximately 1.65 million students undertaking publicly funded vocational education and training programmes with 1.23 million in TAFE. Nearly 64% had a capital city as their home address, indicating that the majority of students were not from rural or remote areas (NCVER, 2000; p15).

The provision of traditional vocational education and training in many regional areas of Australia has presented difficulties. To some degree stagnating population growth, social alienation and low skill levels have influenced this. Awareness of this problem in rural areas strongly suggests a need for easy access to vocational education and training. However, for vocational education and training to be effective more than delivery is required. In this regard Kilpatrick *et al* (2000; pp188-194) found that in rural schools in Tasmania the success of VET programs was just as much a product of the teacher/learner, school/community relationships as the work skills offered. The ability to flexibly accommodate individual needs was strong, and significantly contributed to the effectiveness of rural programs. Development of online material that provides efficient and affordable access to flexible learning products and services are the key strategies outlined by ANTA (2000).

3 Review of Published Literature

A review of published literature has been undertaken. This encompasses material from both paper-based and online journals and reports and includes proceedings of conferences and forums on online delivery. Because of the innovative nature and rapid development of this mode of delivery the review has been sourced mainly from recent journals and proceedings (since 1997).

3.1 Introduction

Online learning or e-learning, is a rapidly expanding field of vocational education and training. Information and communications technology is being utilised in a variety of applications to enhance or facilitate the learning process. This variety includes the utilisation of computer technology in class based teaching and distance teaching.

The nature of certain elements of information technology, especially the internet, with the ability to involve participants interactively over a distance, has led many to see information technology as the next logical step in distance education. The development of online approaches to delivery has generated a considerable amount of research much of which relates to the pedagogic aspects. However there is an increasing body of research related to the perceived potential barriers to successful utilisation of online learning. Only a very limited amount of this research addresses those barriers with particular reference to remote and/or isolated learners.

Access to general vocational education and training in rural and remote Australia is problematic. "Many rural Australians do not have access to TAFE institutions because of the distance between where they live and work and the location of TAFE" (Kilpatrick & Bell, 1998; p12). It is this problem that it is hoped will be resolved by online education delivery. In this context, courses structured to be delivered completely through the Internet, or by a combination of Internet and other available distance education strategies (using postal, telecommunications and/or television services) for dissemination of materials and interaction between participants, would address this problem.

Literature indicates that access to vocational education and training is reduced in rural and remote contexts because of higher costs (ANTA, 2001). These costs are generated by the distances from capital cities and regional centres, and by the fact that the lower concentration of learners means that economies of scale are difficult to achieve. High costs can further reduce access because of the rationalisations which public providers are forced to make with limited budgets; "public provider efforts to maintain a presence in remote communities might not correspond with the provision of training most appropriate for community needs" (ANTA, 2001).

Online learning has been seen as a possible solution for learners who are distant from vocational education and training service providers Qayyum & Ruhe (2000; p56) have observed that information technology is often introduced into a learning environment expressly because of distance. Online learning is expected to "overcome the tyranny of distance" (Farrell, 1999). The ability of the Internet to deliver information at distance is the key motivation in this thinking. The view of information technology being a boon to anyone at distance from service providers is shared by other sectors of the community, such as state governments (Carpenter, 2001). However, as information technology is becoming more commonly implemented in distance vocational education and training, some of the barriers to education are becoming evident.

3.2 Research into Online VET in Rural and Remote Contexts

A number of potential barriers exist to accessing online learning. These can be grouped into four major issues

- Barriers related to cost, which include
 - cost to the learner of relevant hardware and software
 - availability of hardware and software on a community basis
 - cost of internet access

- Barriers related to availability of technology (including infrastructure), which include
 - range of hardware and software available to the individual
 - availability of internet access
 - sufficiency of internet access including speed and bandwidth
 - existence of relevant infrastructure, especially telecommunications

- Barriers related to learner and community perceptions, which include
 - relevance of available online courses to needs of learners
 - learner perceptions regarding information technology and online learning
 - learner prior experience with online learning
 - extent to which courses meet learner expectations
 - cultural background giving rise to stereotypical behaviour

- Barriers related to current relevant skills and the availability of learner services which include
 - current level of information technology skills and experience (information technology literacy) of the learner
 - literacy level of learners
 - learning style of learners
 - learner confidence
 - availability of student support (formal and informal)
 - availability of information technology training
 - availability of literacy support

All of these factors will impact on all online learners to a greater or lesser extent. All are influenced by distance from service centres of different levels of provision as defined by the Australian Bureau of Statistics (2001) in their ARIA classification of remoteness, which includes education availability as one of the parameters defining level of provision.

3.2.1 Barriers related to cost

Access to vocational education and training is reduced in rural and remote contexts because of the distances from capital cities and regional centres, and by the fact that the lower concentration of learners means that economies of scale are difficult to achieve (ANTA, 2001).

Because rural incomes are traditionally lower than those of urban dwellers the cost, to individuals, of purchasing appropriate technology for online learning will itself provide a barrier. The Australian Bureau of Statistics survey of incomes in Australia shows that rural income earners are disproportionately represented in the lower income brackets. Rural income earners are 40% of the lowest income earners but only 26.9% of the highest quintile of income earners (ABS, 2001a; pp10-12). This disproportionate representation is exacerbated by the fact that the rural cost of living is higher than the urban equivalent, as evidenced by the fact that rural income earners typically have less than the national average of disposable income, even after cost of housing is accounted for (ABS, 2001a). When this is combined with the inevitably higher transport costs of delivery to rural and remote areas the disparity becomes even higher.

Individual computer ownership is significant but is not necessarily the primary question. Of greater importance is likely to be the accessibility of the technology with relation to the wider community, whether this particular computer is on an isolated farm or small settlement. "Access...means foremost, access to a computer, and often one that is hooked up online" (Qayyum & Ruhe, 2000; p34). The Australian Bureau of Statistics studies indicate that the rate of uptake of computer technology on farms with an estimated value of agricultural operations of

\$5,000 or more is increasing. Forty-nine percent of these 147,181 farms owned or used a computer in March of 1999, a 27% increase from March of the previous year (ABS, 1999). This indicates that a sizable portion of the rural community has access to information technology.

Absent from these statistics are those groups who would reasonably be expected not to own computers, due to cost. Internet and computer technology is typically the preserve of the wealthy (Elsden, 1997). The unemployed, Aboriginal communities and low-income earners are all less likely to have personal access to the requisite hardware. As Qayyum & Ruhe (2000) point out, "...learning through old technologies, remains very important for learners who do not fall into middle- or high-income categories." Issues pertinent to the Aboriginal and Torres Strait Islander communities have been covered in depth in a previous stage of the Access and Equity in Online Learning project (ANTA, 2000).

Issues of cost apply to communities as well as to individuals, because rural communities are less affluent than urban communities and often schools or other community organisations have less information technology equipment than urban counterparts because they have higher costs both computer related (maintenance of computers and internet access) (HREOC, 2000) and also other high costs associated with remoteness.

Costs associated with the delivery of learning are also higher in rural areas because of the variation in needs between different rural and remote localities. Local planning of vocational education and training is necessary to tailor learning provision to community needs (Kilpatrick & Bell, 1998; p1). It is noted that "higher delivery costs per student/contact hour are not fully recognised in national and State resource allocation models" (Kilpatrick & Bell, 1998).

3.2.2 Potential strategies for addressing barriers involving cost

One approach to reducing barriers related to cost would be to extend any existing community links and utilise existing equipment in schools, telecentres and other community organisations. Another possibility would be to develop consortia (or to use existing government or education provider arrangements) to obtain discounts when purchasing equipment. This would enable remote individuals and communities to obtain equipment at prices closer to those available to urban dwellers.

3.2.3 Availability of technology (including infrastructure)

Telecommunications availability is another issue affecting access. *Telstra*, Australia's primary telecommunications service provider has a mandated obligation as "national universal service provider" (cf. *Telecommunications (Consumer Protection and Service Standards) Act 1999*) to ensure "equity of provision of the standard of telephone service" across Australia (Telstra, 2000; p6). However,

At present Telstra's universal service agreement is aimed at providing minimum line speeds of 2.4Kbps (which, of course, is too slow to access the World Wide Web satisfactorily), but Telstra officials privately concede that 1Kb per second is more likely, and even that low, slow speed will be subject to performance degradations resulting from line distances and sources of interference such as electric fences (Devlin, 1999).

Basic problems exist with the availability of telecommunications in more remote locations in terms of cost and availability. For example, as the NT government believes 'the basic services that are available in many [remote] areas of the NT have insufficient capability or capacity to attach any computing network device, consequently can provide audible service only'. This limits the opportunities and access for children in remote communities in the NT and other States with large remote communities to be able to gain the same levels of skills as their urban counterparts (HREOC, 2000; p97).

This problem is also observed in less isolated parts of rural Australia, such as the Western Australian wheatbelt

A disparity in the telecommunications infrastructure standards exists between rural towns and areas more than 5 kilometres outside towns (WDC, 1998). While plans exist to roll out a fibre optic network to enhance capacity and speed in the region, many rural and remote areas will remain unable to access the Internet (DCT, 1998; p19).

The Ministerial Council on Education, Employment, Training and Youth Affairs has set a National Education Data Standard, for the provision of a minimum bandwidth for every school and VET teaching location of at least 128Kbps by the year 2000, increasing to 256Kbps by 2001 and 2Mbps by 2004 (EdNA, 2001). Given the admitted bandwidth capabilities of *Telstra's* service in remote Australia, service provision in remote Australia already falls far short of the Ministerial Council's recommendations.

The Northern Territory Department of Education has commissioned its LATIS program (Learning And Technology In Schools), in order to overcome telecommunications barriers to online links between compulsory education providers in that state (NTDE, 2001). The plan proposes to equip schools with satellite hook ups, in order to overcome the lack of sufficient bandwidth telephone lines in remote and rural areas. The Western Australian Education Department's 'Education 2000 Strategy' has a similar aim of providing satellite connection services for Internet access (ATSIC, 2000; p98). However, there is no guarantee that any of these programs will impact upon vocational education and training, unless community based efforts are engaged, such as the model suggested by Kilpatrick *et al* (2000). Also, in the case of the Northern Territory LATIS project, a maximum bandwidth of 400 Kbps is anticipated through the satellite link. This means that the program will be behind current recommended standards by as early as 2004 (EdNA, 2001).

3.2.4 Potential strategies for overcoming lack of availability of technology

Government plans for upgrading telecommunications technology already exist but need to be more fully implemented. Longer term planning may also be useful in view of the rapid rate of development of information technology and the online economy. There is also the potential for further utilisation of existing satellite technology to provide internet access, which is not affected by land-based telecommunications factors such as distance from exchange and interference from electric fences.

3.2.5 Learner/community perceptions

Learner and community perceptions play a major part in access to online learning. These perceptions include issues about relevance of programs to potential learners, cultural and socio-geographic attitudes to learning, learner prior experience and learning style.

It seems that a real danger in the rapid introduction of online delivery is that the focus may be on the delivery medium, rather than on the quality of the learning experience (O'Keefe & McGrath, 2000).

The enthusiasm for the application of information and communications technology has led to a situation in vocational education and training where technology has been applied with relatively little thought to its genuine effectiveness, especially in rural and remote settings (CLT, 1999; p3). The research that does exist on this question indicates "...there is an considerable gap between our expectations of technology in education and the realities of their actual use" (Qayyum & Ruhe, 2000; p34).

Statistically, rural and remote Australian learners are more likely to be mature age as the youth portion of the population is significantly reduced by migration to metropolitan areas in search of work or further education (Kilpatrick & Bell, 1998). As a result, courses offered in rural and

remote vocational education and training will need to have a greater focus on re-skilling, updating and upgrading existing skills of the mature age learner. This is especially important “if rural communities are to contribute in a restructured economy” (Kilpatrick & Bell, 1998; p3).

Rural and remote Australians who participate in vocational education and training are more likely to participate in vocational programs than in personal enrichment programs, as defined by the Australian Vocational Education and Training Management Information Statistical (AVETMIS) standard (Kilpatrick & Bell 1998; p12).

Knowing the predominance of mature age learners in rural and remote vocational education and training, computer literacy among recipients becomes an issue that impacts both access and online pedagogy. Qayyum & Ruhe (2000; p8) found that participation learning courses tended to lead to satisfactory acquisition of competence with the learning technologies applied. However, their survey data is derived from students who had successfully completed the course on which they were being surveyed. It is possible that those who were unable to acquire a minimum level of computing skills as a corollary of their studies are not represented in Qayyum & Ruhe's research. However, if the notion of acquisition of computing skills and literacy is attached to other forms of vocational education and training, this might be seen as an additional reason to engage in online learning. That is, if the courses were perceived to provide online skills rather than require them, a greater proportion of the community would be inclined to engage in the relevant courses.

In spite of the possibilities for learner interaction which information and communications technology provide, the possibilities are not always effectively utilised or realised. Aspin (1997) highlights the fact that issues of power (in her case, gender related) can affect online interaction and learning just as they can face-to-face learning, such as classroom situations. Taynton (2000) also observes that (lack of) confidence is a major barrier to learning. Online learning courses must be constructed to empower the individual learner or else interaction is squashed and its benefits lost. There is no reason to assume that the apparent anonymity of the Internet will automatically overcome learner's fears, shyness or lack of confidence.

The culture of indigenous Australians needs to be considered when developing the educational tools. Strategies must be adopted to devise culturally and linguistically inclusive programmes that will sustain the interest of these groups. In addition to the indigenous population living in remote and regional areas, there is also the issue of migrants coming to Australia from various multicultural backgrounds and educational qualifications. More than 5.5 million settlers have established a new life in Australia over the past five decades. The 1996 Survey of Aspects of Literacy reports that 79% of people aged 55-74 years from NESB backgrounds have been identified as having very poor literacy skills. Culturally inclusive and easily accessible training programs will have a better impact on learning outcomes and will motivate these groups to join the training programs and enter the qualified workforce of Australia.

Bridging Pathways is a strategy with an accompanying blueprint for implementation, for increasing opportunities for people with a disability in VET and *Partners in a Learning Culture*, a national strategy for inclusive education and training for Aboriginal and Torres Strait Islander People, will help remove the barriers to learning. Inclusion of teachers and technical support workers from within these target groups and communities will facilitate access and equity in learning (Connelly, 2000).

There is also a wide range of personal responses to the application of online technology in vocational education and training. Some students enjoy computer moderated learning while others actively dislike it. As one student remarked, “I look at a [computer] screen all day, I don't want any more of that in training.” (OETTE, 2001)

3.2.6 Potential strategies for overcoming learner/community perceptions

Given that perceived relevance is the primary barrier to vocational education and training, then two approaches can be developed to overcome this. Firstly, the promotional material for courses must be directly focussed on promoting the relevance of the courses to the target community. At the same time, courses must be designed to be relevant – preferably through processes of community involvement and/or consultation. The perception of relevance must be addressed both from the point of view of perception and the point of view of relevance.

Engaging community role models, such as sports personalities, in the set up, promotion and continuation of vocational education and training is a successful method for improving learner perceptions.

Planning for long-term viability, especially in terms of budgeting and infrastructure, also would improve learner responses. The sense that institutions take online learning seriously would improve its profile in the community, especially in rural and remote regions, where so many barriers to success exist.

3.2.7 Current relevant skills and the availability of learner services

Lack of confidence and skills to use online technology is seen to be a major barrier to the success of online learning in remote and regional areas. For potential students in regional areas, especially those of lower socio-economic status, access to, and competence in, using computer technology is often outside their school and social environment (Barlow and Lacey, 1998). Weeks (2000) reported that, after cost, lack of confidence and skills for use of technology was the major reason for distance education students choosing to use paper-based course materials.

Poor literacy was viewed by stakeholders as a major mitigating factor against the uptake of online learning methods by vocational education and training students...(OETTE, 2001)

In order to effectively provide online learning in rural and remote regions, efforts will need to be made to ensure the provision of learner support services, both pedagogical support and information technology support. The National Centre for Vocational Education Research (NCVER) published a review of its research into vocational education and training in rural and remote Australia (Kilpatrick & Bell, 1998) which observed that “there is a paucity of training opportunities in the areas of both communications and advanced technologies for rural people...” Other research has found that many rural and remote learners feel that online learning “must be supplemented by access to tutors and other students” (OETTE, 2001: p84).

Research also indicates that because of the variation in needs between different rural and remote localities, local planning of vocational education and training is necessary to tailor learning provision to community needs (Kilpatrick & Bell, 1998; p3). It is noted that “higher delivery costs per student/contact hour are not fully recognised in national and State resource allocation models” (Kilpatrick & Bell, 1998; p1).

A necessary question in the provision of services is the meeting of learner needs. Potential participants in vocational education and training may not engage in such services because of a lack of perceived application. “Poor participation in post-compulsory education is often due to poor dissemination about programs...equitable access to vocational education and training involves appropriate information and marketing of programs” (Kilpatrick & Bell, 1998; p23).

Many of those people in rural and remote areas who already have access to Internet resources admit to not using them due to lack of knowledge or confidence (Carpenter, 2001). Therefore, lack of opportunities to gain skills may be an important barrier to the success and further development of online learning in regional areas, a factor which further complicates the access issues discussed above. With regard to the cost of online learning, in 1996 the Australian Bureau of Statistics reported that only 24% of regional populations owned a personal computer compared with 33% in capital cities.

Some solutions to the lack of Internet and computing skills are being explored in the rural and remote contexts. Rural Industry Training Alliance (RITA) is addressing the problem of lack of internet skills by providing a mobile computer laboratory, consisting of ten lap-top computers with a satellite connection, travelling to thirty West Australian country towns, providing day long sessions to teach internet use skills (Carpenter, 2001). Another option is the provision of Learning Centres – centralised facilities with computers available for learners to *learn* on, usually with staff to give assistance and information – such as the Flexible Learning Centre on the campus of the Western Institute of TAFE, Parkes, NSW (Kingham, 2000). However, both these approaches service rural towns and individuals without the ability to travel to townsites will be disadvantaged.

Kilpatrick *et al* (2000) cite country schools as another possible site for developing learning services in rural communities. Studying three rural schools in Tasmania they found that “building relationships between the VET staff, the school generally and local businesses is essential” (Kilpatrick, Bell & Kilpatrick, 2000; pp2, 5&6). Also important was the fact that although the schools were initially set up to service school age and recent school leaver learners, the programs generated significant enthusiasm from mature age learners seeking to retrain or expand their skills base.

Online learning requires a strong commitment from teaching staff, both in the initial set-up phase and in an ongoing capacity (Kilpatrick, *et al*, 2000). “The teachers providing this support have had to acquire a range of additional skills in multi-tasking being able meet the student’s study needs on a wide variety of topics in order to provide adequate support” (Kingham, 2000).

The literature makes reference to a notion that distance education, and since its advent, online education, might corrode the learner-teacher relationship, undermining the effectiveness of the teaching provided (Wilkinson, 2000). However, research indicates that with online learning it is possible to structure courses to emphasise contact between learners and staff and between learners as peers (Curtis & Lawson, 2001). In fact, interaction between learners is seen to enhance learning effectiveness in online environments.

“One of the most effective ways of bringing down these types of barriers [to online learning] is to work with members of the community to develop an action plan for the use of and survival of the community network” (CLT, 1999). This approach, developing community based learning networks, as well as developing online communities to facilitate online learning, is seen as one of the most promising for overcoming this barrier to online learning

Benson and Hewitt argue that it falls to the education provider to facilitate online community development (Benson & Hewitt, 1998; p84). However, one model asserts that the community at large must build its own network, to facilitate the learner.

Most importantly, they [community networks] take the creation of content and control of technology out of the hands of the elites and place it in the hands of the community. In a world that is increasingly threatened by a new division between Information-Haves and Information Have-Nots (Schiller 1996), community networks may play an important role in furthering a more egalitarian foundation of an information society (Surak, 1998).

Lynch (1999), quoting Levin (1995), highlights five features for effective interactive learning online:

- *Structure*: a social structure is important for supporting network interactions. The social structure maybe totally different to the parallel in a face-to-face situation and is determined in part by the goals and constraints of the participants, and partly by the network itself.
- *Process*: network activity is episodic with an initiation phase, activity phase and a wrap-up phase. With each phase the role of the learner changes, a change the learner may not be aware of which could result in disappointment in their expectations of the timing or nature of the interactions.
- *Mediation*: the importance of active, effective moderators who initiate and sustain the interaction. Another important role of a moderator is to know when to keep quite, and when to step in. Collins & Berge (1997) have produced a very valuable guide in how to moderate for a successful on-line discussion area.
- *Community building*: to build a successful on-line community, takes the involvement of all participants. Each participant needs to perceive a benefit to make the costs involved worthwhile. Whatever the learner gains from the community cannot be overshadowed by the effort they are required to put in.
- *Institutional support*: needs to embed educational network interaction within an institutional structure that will support and sustain the interaction over time.

From Lynch (1999)

3.2.8 Potential strategies to overcome barriers due to lack of learner skills and learner support

What is clear from the literature is that the effectiveness of online vocational education and training can be greatly enhanced and/or completely undermined by the level and type of support services provided. The quality of learner services is controlled by many factors and while nearly all authors agree that learning providers must work to provide learner support, some of the best results seem to be obtained in instances when communities become directly involved in constructing learner service systems.

Overcoming the lack of information technology skills could be addressed in several ways, one of which includes the extension of the existing initiatives. One possibility would be to broaden the RITA project to visit smaller communities in Western Australia and to introduce similar initiatives elsewhere. Learner training and support for those who lack information technology or literacy skills must initially be supplied in other ways than online in isolation. This type of support is often most effectively supplied through community organisations and in the early stages learners may need one-to-one support particularly if they lack confidence. Initially the current skill levels must be determined through some form of initial assessment to determine the level of training and support required.

Research focused on Aboriginal and Torres Strait Islander tertiary students (Webb, 1999) is reported to have found distance education through the use of interactive CD-ROM courseware and audio-teleconferencing in conjunction with online resources to be effective.

3.3 Best Practice Models

Numerous attempts are being made, both in Australia and internationally, to implement online learning in remote and rural regions. Programs are being established in a variety of institutions. Some, such as TAFE programs, are of direct relevance to this study. Others, such as the LATIS program of the Northern Territory Education Department, are indirectly relevant, providing useful insight into infrastructure and technical problems, but having different pedagogical foci. A list of potential best practice models has been provided in Appendix B.

An effective assessment protocol for best practice models can be derived from Web & Gibson (2000). In this model, the following aspects of online learning are assessed in terms of their benefits and barriers for students, teachers and administration

- Web-based Server
- Provision of Information
- Annotations Technology
- Email
- Chat
- Forums
- Assessment System
- Electronic Newsletters for course
- Weekly Role Call
- Modules are timetabled to have learner support
- Orientation Day
- Workshops
- Resources
- Results feedback
- Selection of Students
- Learning Community Student/staff biographies
- Online enrolment
- Online Assessment

Utilising these categories, a guide structure can be created for the future assessment of online learning programs, which has already proven to be effective in this role. With an established guide, a consistent assessment process can be conducted for all potential best practice models, ensuring that the models, which are finally adopted, are, in fact, “best practice”.

3.4 Additional Online Resources

Numerous additional resources exist on the World Wide Web, which could provide further relevant information. Frequently these are social research initiatives designed with a rural focus, such as The Centre for Rural Social Research website run under the auspices of the Charles Sturt University, and the Centre for Research and Learning in Regional Australia (CRLRA) website. There are similar sites for organisations not based in Australia, such as [Rural Policy Research Institute \(RUPRI\)](#) in the United States and the Rural Communities Research and Development Centre in Canada. Canadian sources are especially helpful as Australia and Canada share many of the characteristics of geography and population factors which impact online learning in vocational education and training in rural and remote regions.

Other resources include community based Web sources; such as the [School at the Centre Project](#) and the [Bush Telegraph](#) which is an online newsletter provided by the Queensland government for rural areas in Queensland. There are numerous national Web initiatives aimed at supporting and promoting online information exchange and interaction, such as the [Australian Rural Telecentre Association](#) and [Bushlink](#).

A comprehensive list of websites with relevant information can be found in the appendix A, attached to this report.

3.5 Conclusion and Recommendations

It appears that the most important barrier to online VET in rural and remote areas is the lack of effective infrastructure to support online courses, specifically, the lack of telecommunications infrastructure capable of handling internet data exchange (bandwidth) in the vast majority of remote regions. Although many other factors exist which present substantial barriers to online VET, overcoming any or all of these barriers would be pointless in any context where insufficient bandwidth was available. Any program seeking to improve the uptake of online VET will have to address available bandwidth early in their development.

By far the simplest way to address the bandwidth problem would be for the government to endorse funds to expand the universal telecommunications service to a minimum in line with the Ministerial Council on Education, Employment, Training and Youth Affairs' National Education Data Standard. However, this is unlikely to occur in the near future. A more practical solution is for individual communities to engage in generating local strategies, for example, Northern Territory communities finding ways to make use of the LATIS infrastructure or developing variations on the RITA travelling training centres in Western Australia. In essence these programmes offer community based solutions to the availability of infrastructure and technology. Such programmes would be well suited to engage other barriers, such as those related to community perceptions and, to a lesser extent, barriers related to cost.

The research indicates that the majority of the other barriers, including community attitudes, relevance to learners, online pedagogy issues and learner preparedness/skills, are best overcome when recipient communities work in concert with learning service providers. The experiences in remote Tasmania (Kilpatrick *et al*, 2000) suggest the same conclusions as experienced overseas (CLT, 1999; Qayyum & Ruhe, 2000), that success in online learning in rural and remote settings has been achieved in circumstances where the approaches are tailored to local conditions and needs.

It is recommended that the next stage of this project investigate both community oriented online education projects and projects which attempt to impact broader areas. There are several questions that should be addressed.

- Are there lessons that can be derived from community models, which could be applied to wider contexts?
- Are there instances where the community model breaks down? Are there barriers, which have not yet been identified?
- Are there barriers, which have not yet been overcome?
- Are there successful systems, which could become standard across courses and contexts?

Answering these questions will provide the most effective and coherent results from the research.

One of the strongest factors that emerges from our research into the virtual class is the strength of the socialising aspect of learning. People go to classes to meet people, people who live in the same place and share the same needs and pride in the achievement that go with that. Learning is mixed with sharing knowledge, socialising, sports, dances, dating, having friends and even getting married and having children who follow after and provide the continuity that constitutes community

Tiffin (1997)

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5 Appendix A

5.1 Relevant Websites and Online Resources

- Rural Communities Research and Development Centre Malaspina University-College, British Columbia <http://www.mala.bc.ca/www/discover/rcrdc/frame.htm>
- Centre for Rural Social Research Charles Sturt University, Australia. Includes links to general rural sites, with a section on Rural Education and Youth Issues. <http://www.csu.edu.au/research/crsr/>
- Centre for Research & Learning in Regional Australia (CRLRA) University of Tasmania. Deals with the role of vocational education and training and adult learning for rural and regional Australia <http://www.crlra.utas.edu.au>
- Institute for Sustainable Regional Development Central Queensland University, Australia <http://www.isrd.cqu.edu.au/isrd/home.htm>
- Centre for TeleLearning and Rural Education Memorial University of Newfoundland <http://www.tellearn.mun.ca>
- ARERA: Australian Rural Education Research Association <http://www.nexus.edu.au/TeachStud/arera/index.htm>
- National Rural Education Association (U.S.A.) <http://www.colostate.edu/Orgs/NREA>
- SPERA: Society for the Provision of Education in Rural Australia Links people with a diverse range of interests in education and training to promote the development of rural Australia <http://www.pa.ash.org.au/spera/default.htm>
- Affordable Access, Rural Online (AAROn) A resource for policymakers and others who want to help rural schools and communities use new information technologies. <http://www.itc.org/aaron>
- Australian Remote and Rural Training Systems An organisation which specialises in the development, implementation and management of accredited education and training programs for adults in remote and rural communities and the development of stand-alone teaching materials for distance learning. <http://www.arrts.com.au>
- Rural Clearinghouse for Lifelong Education and Development <http://www-personal.ksu.edu/~rcled>
- School at the Centre Project Pilot program in a small number of PCAP schools in North Queensland. <http://www.library.jcu.edu.au/Educ/RERDC/satc.doc>
- DETYA Strategic School to Work Project School to Work in Rural and Remote Areas

- [Rural and Remote Education Inquiry](#)
The Human Rights and Equal Opportunity Commission national inquiry into school education in rural and remote Australia http://www.hreoc.gov.au/human_rights/index.html
- [Bushlink](#) Inland Australia online. Includes education links <http://www.bushlink.com.au>
- [ABC Rural - Bush Telegraph](#) <http://www.abc.net.au/rural>
- [Australian Rural Telecentre Association](#)
- [Commonwealth Department of Transport and Regional Services](#) <http://www.dotrs.gov.au>
- [Foundation for Rural and Regional Renewal](#) <http://www.frrr.netconnect.com.au/>
- [Rural Industries and Development Corporation \(RIRDC\)](#) <http://dpi.gov.au/rirdc/home.html>
- [National Rural Network](#)
Aims to create awareness and understanding of those public policies which enhance the viability of Rural America. <http://www.nationalruralnetwork.org>
- [Rural Policy Research Institute \(RUPRI\)](#)
Conducts policy-relevant research and facilitates public dialogue to assist policymakers in understanding the rural impacts of U.S. public policies and programs. <http://www.rupri.org>
- [The Rural Educator](#) Journal of the National Rural Education Association (U.S.)
<http://www.colostate.edu/Orgs/NREA/RuralEducator/index.htm>
- [Rural News](#) from the ABC <http://www.abc.net.au/rural>
- [Bush Talks](#) News from the Human Rights and Equal Opportunity Commission
http://www.hreoc.gov.au/human_rights/rural_australians/bushtalks/index.html
- [Bush Telegraph](#) Queensland Government newsletter
- [WebCT](#) e-learning hub, offers centrally hosted, customisable services
<http://www.webct.com/>
- [Majordomo](#) provides free program for automating internet mailing lists
<http://www.majordomo.com/>
- [L-Soft International](#) provides LISTSERV, which functions similarly to Majordomo but is commercially licensed <http://www.lsoft.com/products/default.asp?item=listserv>
- [Regional Access WA](#) A website devoted to educational availability by region in rural and remote Western Australia <http://www.regionalaccess.com.au/>

6 Appendix B

6.1 Possible Best Practice Models

The following online learning courses offer possible best practice models from which to draw experience and future direction(s):

6.1.1 Wodonga Institute of TAFE

Online Learning Programs

Examples of online learning provisions include:

- Online learning products for Automotive industry;
- The institute supports three distance/flexible learning centres that operate as a community resource for remote/online learning as well as for face-to-face learning;
- Online course in mentoring designed as professional development courses for tutors; and
- Online Electronics and Welding course.

Strategies to Develop Online Learning

- Recognition of the increasing need for E-Business in a high tech society and commitment to retaining customer base as online learning becomes the norm;
- Development of a consultative planning approach focused on identifying and developing strategies for a number of key areas of change in online learning. This way, there is ownership of the change management process within the organisation.
- Actively sources partnerships with organisations both locally and outside their region through cooperation, not competition. Currently is a member of a consortium with Chisholm, Gordon and Northern Metropolitan Institutes; and
- Wodonga staff members are expected to be multi-skilled as both teachers and instructional designers in the delivery of online learning. Professional development in online learning is also provided to the staff members.

Reference

<http://flexiblelearning.net.au>

6.1.2 Northern Territory University

Online Learning Programs

Examples of online learning provisions include:

- Tropical Environment Management, common units in undergraduate study and the Indigenous Languages project are offered online; and
- Certificate II in Sport and Recreation are being developed online.

Strategies to Develop Online Learning

- Has a partnership with Open Learning Australia to provide flexible learning options;
- Student support offered in the form of courses designed to teach how to evaluate websites, access catalogues, and search the web;
- Discussion software as a means of communication tool is used instead of email;
- Course materials for online use are developed through a project team approach. Each team consists of a reference group, an educational designer, a subject specialist, project manager, web designer and a technical designer;
- Performance measures and outcomes are clearly stated;
- User testing is fundamental; and
- Both internal and external user testing takes place.

Challenges

- Web access is not robust and email unreliable so much of the delivery is supported by CD-ROMs.

Reference

<http://flexiblelearning.net.au>

6.1.3 National Fishing Industry Education

Online Learning Programs

Two modules are currently being offered at the National Fishing Industry Education Centre of TAFE (Natfish); one in agribusiness and the other in commercial aquaculture module. Eight other agribusiness modules are in development.

Strategies to Develop Online Learning

Natfish has a basic approach to developing online material:

- *Planning* – content and learning tools are established, tasks are allocated and timelines developed.
- *Writing* – content writing begins, usually as a word document. Photos and videos are gathered or developed. Material need not be converted to web pages but writer does need to be able to visualise how it will look and how interactive exercises will work on the net.
- *Web Page Development* – the text is imported into the template developed for the module and any interactive programming is done. External web developers are usually contracted for this phase. Review of the instructional design and refining of the materials are done accordingly.
- *External Reviewing* – an external consultant who has significant expertise in the content area reviews the module.
- *Editing* – changes are made to the module in response to the reviewers comments.
- *Piloting* – a group of students are run through the module and surveyed once editing is finished. A final editing may take place depending on their responses.

Reference

<http://www.flexiblelearning.net.au/nw2000/talkback/p15.htm>

6.1.4 West Coast College of TAFE

Online Learning Programs

The college offers a wide range of courses in study areas such as retail, hospitality and business studies.

Strategies to Develop Online Learning

- Has a close working relationship with WestOne, which is responsible for hosting
- the online delivery of Vocational Education and Training in WA.
- The college works closely with WestOne to provide staff development in online training such as the training of 15 Program Area Tutors (online tutors).
- Three individuals trained as College Online Co-ordinators to help facilitate online delivery in colleges.
- The college provides content experts to work with WestOne instructional designers for product development.
- Developed a college-wide approach to ensure that students were getting the services they needed; staff were operating within college business rules; recognition of staff who had completed WestOne training.
- The college has developed and implemented three Toolbox online learning systems
- It is developing a further six Toolbox online learning systems

Reference

<http://www.flexiblelearning.net.au/nw2000/talkback/p124.htm>

6.1.5 Parkes TAFE Campus

Online Learning Programs

The campus offers online courses from Certificate II to Diploma level in Information Technology.

Strategies to Develop Online Learning

- Has embraced the Janison Toolbox primary method of on-line delivery.
- Information technology modules are becoming more streamlined, enhancing the potential consistency of learning for students studying on-line at a variety of locations.

Reference

<http://flexiblelearning.net.au/>

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