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Effective use of the internet: Keeping professionals working in rural Australia

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Rural Industries Research and Development Corporation

Effective use of the internet

to help retain professionals employed in rural Australia

A report for the Rural Industries Research and Development Corporation

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In submitting this report, the researcher has agreed to RIRDC publishing this material in its edited form.

Foreword

Disparities between rural and metropolitan areas in the provision of essential services to Australian citizens, in health, education, employment and technology, have the potential to undermine national cohesion. Professionals working in rural and remote areas of Australia often feel isolated and unsupported, and little research attention has been given to determining effective ways to retain their professional services in rural Australia.

The innovative use of information and communication technologies (ICTs) to deliver online support, professional development and resources could help to remove a sense of professional isolation, and have a positive effect on professionals' morale, reduce attrition, and decrease government costs in the provision of services. Retaining able and experienced professionals in rural areas should help provide long term benefits to the rural economy.

This study considers the extent and nature of professional isolation in rural and remote regions of Australia (specifically Queensland and Western Australia) and examines professionals' use of the internet to support their professional development needs. It draws upon survey and interview data from 10 professions, and makes conclusions and recommendations based on the views and experiences of over 1200 respondents.

This project was funded from RIRDC Core Funds which are provided by the Australian Government.

This report, an addition to RIRDC's diverse range of over 1000 research publications, forms part of our Human Capital, Communications and Information Systems R&D program, which aims to facilitate innovation in the agricultural sector by improving the use of communication and education processes and appropriate information systems.

Most of our publications are available for viewing, downloading or purchasing online through our website:

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- purchases at www.rirdc.gov.au/eshop

Simon Hearn
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Introduction

Effective use of the internet has the potential to ameliorate the professional isolation that afflicts professionals throughout rural and remote Australia. The innovative use of information communication technologies to deliver online support, professional development and resources could help to remove the sense of professional isolation. In so doing, it could have a positive effect on professionals' morale, reduce attrition, and decrease government costs in the provision of services. Retaining able and experienced professionals in rural areas should help provide long-term benefits to the rural economy.

The professional development opportunities and services routinely available to metropolitan and regional professionals are often difficult to offer in the same face-to-face manner to their rural counterparts. However, the capabilities and affordances of new information and communication technologies mean that such opportunities, services and resources can be offered 'virtually', through the provision of web-based resources, online mentoring and the creation of online communities of practice.

Research aims

In order to assess the extent and nature of the use of the internet to support professional development, a study was conducted with the following aims:

- To identify the *level* of professional development and support that is available through the internet to professionals working in rural Australia
- To assess the *use* of professional development and support that is available through the Internet to professionals working in rural Australia
- To identify the perceived *needs* and *benefits* of professional development and support that is available through the Internet to professionals working in rural Australia

Sample

Ten professional groups were selected for in-depth study:

- Dentists
- Dietitians
- Medical Practitioners
- Nurses
- Occupational therapists
- Pharmacists
- Physiotherapists
- Psychologists
- Social workers, and
- Teachers (Primary and Secondary)

Methodology

A website analysis was conducted to assess the availability of professional assistance and advice for the ten professions. An anonymous questionnaire was developed to examine the nature and extent of the use of the internet to support the professional development and information needs of service professional employed in rural and remote areas of two states of Australia: Queensland and Western Australia. The survey was sent to a selection of identifiable service professionals in rural and remote

areas within these two states. Interviews were conducted with a sample of professionals who volunteered to provide further information.

Findings

The findings of the study suggest that while the internet has the capacity to revolutionise the way professionals in rural and remote areas maintain and strengthen their professional knowledge and skills, a range of varied and complex factors often intervene to prevent such professional growth occurring.

The study showed that web-based information and support was available for all the professions studied, and that professionals were generally aware of the types of support available. However, the reliable access to, and use of, the internet to support professional development was a much more inconsistent finding amongst the professionals studied. The ability of professionals to avail themselves of professional development support on the internet was not always within their own control, and depended on a number of complex factors.

A time and place for professional development

The increasingly time-poor status of professions and the difficulty of achieving a satisfactory work/life balance was a repeated theme throughout the responses received from across the professions. Finding the time for professional development is seen as necessary but problematic. Often professional development is only offered in metropolitan areas where problems of distance and travel cost can make attendance difficult. Using the internet for professional development competes with daily duties because there is no physical separation from daily work or home to allow dedicated attention to such issues.

Access to the internet

While most professionals surveyed in this study had access to the internet either at home or at work, the quality of access varied considerably. While some professionals had individual computers and free and unlimited access to websites and resources, for most, various factors intervened to the point where access was sporadic or limited. Some professionals were limited by their employers to sites only available on an intranet, with no access to outside websites. The number of computers able to access the internet was also a major factor in accessibility: while many workplaces had internet connections the number of computers in many of the locations were far fewer than the number of employees, with many professionals sharing computers or waiting their turn. Some professionals were denied access to the internet at all times at their workplace, and any professional development on the internet was done in their own time at home.

Internet reliability

Frequently, rural and remote professionals were plagued with unreliable connectivity resulting from the use of superseded computers, power surges and outages, server unreliability and computer viruses. Many professionals also admitted to their own lack of computer literacy and knowledge of more than basic computing strategies and skills.

Benefits of the internet

In spite of these identified problems, professionals in rural and remote areas of Australia generally recognised the potential benefits of the internet in providing for some of their professional development needs. Especially for beginning professionals in rural and remote areas of Australia, access to resources relevant to their own profession was an issue of paramount importance. Access to codes of practice and policy documents would help beginning professionals to more readily learn what it means to be a professional in each area. Most professionals expressed a need for resources and information that relate directly to their practice. Downloading information and resources was the most common use of the internet among the professions. The survey responses highlighted the need to access the latest research in their field through professional online journals.

Most professionals value face-to-face professional development activities but the large distances and high costs of travel in some cases is prohibitive. The internet was perceived as an environment that could offer online courses, seminars, lectures for postgraduate qualifications and credit points for professional continuing accreditation. Many professionals requested online professional development that matched the face-to-face activities found in metropolitan areas. As well as training in areas of their profession, many indicated the need for training in computer–based skills. Email was the most commonly used means of maintaining professional contact. Professional contact through listervs was also recognised as a simple and convenient means of engaging in professional conversation, and a means of receiving professional support and advice, and professional supervision where this is a requirement. Many professionals indicated the need for online mentoring and communication with more experienced colleagues.

Conclusion

This study has shown that the internet has the potential to not only provide a vast array of resources to professionally isolated rural and remote professionals in Australia, but also to provide the means to more enhanced communication, collaboration and community building. However, the current technological, institutional and social constraints associated with the use of the internet as a professional development tool, need to be addressed before it can more fully serve the development needs of rural professionals, and the communities and citizens they serve.

1. Introduction and literature review

1.1 Background

There is a growing concern that reduced outcomes in health, education, employment and technology in rural Australia have the potential to undermine national cohesion (House of Representatives Standing Committee on Primary Industries and Regional Services, 2000; Regional Australia Summit Steering Committee, 2000). As a consequence, strategic support for rural and regional areas has become a national priority (Anderson, 2001). Recommendations from these reports document specific strategies for establishing improved social infrastructures and equity of services to enable improved health and education outcomes, better employment pathways and improved telecommunications.

Attracting and retaining professional and para-professional staff in regional and rural areas is recognised as a significant factor in improving many of these outcomes.

Compared to their metropolitan counterparts, rural communities face a number of reduced health outcomes. These include higher mortality rates, higher incidence of cardiovascular disease, preventable accidents, cancer and diabetes, higher rates of youth suicide, higher rates of hospitalisation and reduced access to GPs, nurses, midwives, pharmacists, dentists and other allied health professionals (National Rural Health Alliance, 2001). This trend is also observed in American rural communities (National Rural Health Association, 1998).

Similarly, educational outcomes are reduced for rural compared to metropolitan communities. Schools in rural Australia experience a higher turnover rate of staff than metropolitan schools (Tomlinson, 1994). A high turnover of inexperienced staff results in schools lacking stability and program continuity, with clear disadvantages for students (Human Rights and Equal Opportunity Commission, 2000). The commission has documented the reduced quality of educational outcomes achieved by rural students in respect of literacy, numeracy, retention rates and participation in higher education.

1.2 Shortage of professionals in rural communities

While there are a number of factors that influence these outcomes, a significant one appears to be the shortage of able and experienced professionals employed in rural communities (House of Representatives Standing Committee on Primary Industries and Regional Services, 2000; Human Rights and Equal Opportunity Commission, 2000; American Association of School Administrators, 1999). This problem is widespread across many different professional groups such as medical practitioners, nurses, allied health professionals, dentists, and pharmacists (NRHA, 2001), teachers (Collins, 1999), speech therapists (Foster & Harvey, 1998), and social workers (Lonne & Cheers, 2000).

1.2.1 Recruiting professionals to rural areas

In recognition of this concern, State and Federal governments have introduced a number of initiatives to recruit professionals to rural areas. For example, incentives to attract practising teachers include preferential treatment for transfers; additional annual leave; monetary allowances, repaying HECS liabilities and subsidised housing. Other approaches have aimed specifically at attracting suitable preservice teachers by recruiting them from rural areas; providing practicum placements in rural areas, and offering preservice modules that provide information about teaching in rural and remote areas (Human Rights and Equal Opportunity Commission, 2000).

In the health area, strategies have been developed to attract health specialists to rural areas including scholarships, grants, specialist rural posts, training programs and locum programs (Regional Australia Summit Steering Committee, 2000) and recruitment from rural areas (Rabinowitz, Diamond, Markham, Nina & Paynter, 2001).

1.2.2 Retaining professionals in rural areas

While there are initiatives in place to *attract* professionals not enough research attention is being given to determining effective ways to *retain* them (Collins, 1999; Murphy & Angelski, 1996, National Rural Health Association, 1998). There are many reasons to explain the differential employment patterns of professionals in rural as compared to metropolitan communities. The reasons why rural and remote schools are difficult to staff include a number of disincentives such as travel costs, higher costs of living, and limited accommodation.

Another important disincentive appears to be lack of access to professional development, in particular, decreased contact and support from fellow professionals and administrators (Human Rights and Equal Opportunity Commission, 2000; Collins, 1999; Foster and Harvey, 1998; Hoover, & Aakhus, 1998; Westling & Whitten, 1996). Similarly, doctors and dentists do not take up rural practices because of the lack of professional support and development, as well as factors such as: lower earning capacity; and lack of employment, health and educational opportunities for spouses and children (National Rural Health Alliance, 1998). Some specialist areas of health care experience critical issues of recruitment and retention. Banks and Togno (1999) report that:

> Fewer newly graduated doctors trained in geriatric medicine are willing to relocate to rural and remote areas where there is little or no peer support and only limited access to ongoing professional education. (p.1)

1.3 The potential benefits of professional development and support

More adequate professional development and support could help remove the sense of isolation faced by professionals working in rural Australia, and could have a positive effect on their decisions to remain in rural communities. The benefits of developing and implementing professional development and support resources have been recognised in a number of government reports. For example, The House of Representatives Standing Committee on Primary Industries and Regional Services (2000) was advised that:

> A well designed, supported and integrated education and training, including postgraduate and continuing education, would help retain doctors for longer periods of time in regional areas. (p. 336)

1.3.1 Information and communication technologies (ICTs)

The innovative use of information and communication technologies (ICTs) is argued by a number of researchers as a viable option for providing professional development and support for rural professionals in the areas of health (e.g., Striffler, & Fire, 1999; Sykes, & McIntosh, 1999). Banks and Togno (1999) suggest that Telehealth can provide opportunities for teleconsultation, telemonitoring and teleinformation. The authors argue that of these, teleinformation has the greatest potential for rural health care workers. They suggest that email for communication between clients and other professionals, and the use of the World Wide Web in accessing information, are essential skills needed by rural health carers.

Overseas, the National Rural Health Association (1998) in the United States argues that although much effort has been expended in placement of physicians in rural areas, relatively little has been done to enhance their retention. The association argues that professional isolation is often a reason to leave a rural area and, as in Australia, the association suggests that innovations in information

technologies such as the Internet and tele-informatics can become resources for diminishing this isolation.

In a strategy that parallels that proposed for retaining health professionals, the Northern Territory Government in its submission to the House of Representatives Standing Committee on Primary Industries and Regional Services (2000) recommended the innovative use of information technologies in reducing professional isolation of teachers.

> Adequate communications services will enable schools to provide appropriate levels of education and assist to remove the sense of isolation for staff. Internet access for teachers in remote areas would enable the electronic delivery of course material, professional development and on-line assistance. …The provision of adequate communications as well as other infrastructure can have a positive impact on staff morale and a consequent reduction in the high staff turnover rates in remote community schools. This would have an overall effect of reducing the cost to Government of providing educational services to remote areas. (p. 267)

A number of websites have been developed to provide professional development and support to professionals in rural areas. For example, sites have been developed to provide information, resources and channels of communication for medical, nursing and allied health professionals working in the NSW public health system (Wensley, 1999). Shackcloth (1999) describes a CD-ROM and Internet interactive resource that provides professional development for dentists in rural and remote regions.

1.3.2 Professional websites

There are some insights into the effectiveness of these and similar professional development and support websites. Watson, Bannan, Clark, and Timmerman (1999) report that in early trials of Internet use, web-based discussion forums proved unsustainable mainly because allied health workers appeared not in the habit of accessing them on a regular basis. However, email–based discussion lists (listservs) appeared to be more successful with participants indicating that this form of communication helped reduce their professional isolation. Recent applications of the internet, such as online conferences, have the potential to offer avenues of professional development that are cost effective and time flexible (Anderson & Christiansen, 2004). The importance of good web site design is also critical, as Geissinger and Lloyd (2001) reflect that:

> All too many CPE [Continuing Professional Education] programs are developed for presentation to the 'general' membership rather than being designed with sections of relevance to professionals in different geographic locations with different client needs. (p.2)

Anecdotal evidence also suggests that many health professionals lack familiarity and confidence in the use of information and communication technologies (ICTs) (Whetton &Walker, 2001). The NRHA (2001) recommended that ongoing training in IT skills is essential if professionals are to gain confidence and benefit from the use of ICT.

Clearly, successful implementation of professional development and support through the Internet will hinge on the end-users' access to appropriate technologies, infrastructure and service levels. Inadequacies in these areas for rural and remote users are of ongoing concern (Besley, 2000). Nevertheless, important educational factors such as professional users' IT skills, appropriate and relevant web site design and functionality have received limited research attention to date and need to be considered if the Internet is to become a successful platform for ongoing professional development and support.

2.   Research objectives

2.1   Broad objective

The overall objective of this study was to examine the extent and nature of the use of the internet by professionals in rural and remote areas in Australia, and to identify effective ways in which the internet could be used to help overcome the isolation of such professionals.

2.2   Research aims

The broad research objective was expressed in the form of three research aims:

- To identify the *level* of professional development and support that is available through the internet to professionals working in rural Australia
- To assess the *use* of professional development and support that is available through the Internet to professionals working in rural Australia
- To identify the perceived *needs* and *benefits* of professional development and support that is available through the Internet to professionals working in rural Australia

The findings of the research provide the basis for recommendations that will inform decision making on the design, development and provision of professional development and support through the internet for a wide range of professions working in rural Australia, as well as the training needs to access such support.

Professional development and support are seen as significant factors in retaining professionals in rural communities. Retaining able and experienced professionals in rural areas could help provide long term benefits to the rural economy.

3. Methodology

The study employed a range of methodologies and data sources to examine the principal issues determined by the research focus, specifically to:

- Identify the *level* of professional development and support that is available through the Internet to professionals working in rural Australia
- Assess the *use* of professional development and support that is available through the Internet to professionals working in rural Australia
- Identify the perceived *needs* and *benefits* of professional development and support that is available through the Internet to professionals working in rural Australia

The methodology comprised extensive consultation and a literature review, a review and analysis of professional development websites, a survey of over 1200 rural workers in 10 professional areas in two states of Australia, and selected interviews.

3.1   Consultation and literature review

3.1.1   Consultation with interested parties/policy makers

Prior to any data collection with professionals, extensive consultation was undertaken with interested parties on the proposed focus of the study to gain expert advice and feedback. Consultation was sought from key personnel within professional organisations, in order to gain insights into the nature and extent of professional development in rural and remote areas.

Consultation was made with the following persons:

- Gordon Gregory, National Rural Health Alliance
- Ian McKay, Society for the Provision of Education in Remote Australia
- Ann Larson, Combined Universities Centre for Rural Health
- Peter Shaw, Combined Universities Centre for Rural Health
- Larry Hamilton, Education Department of Western Australia
- Julie Hewson, Western Australian Centre for Remote and Rural Medicine
- Denis Lennox, Rural Health Services Queensland Health
- Ken Rogers, Education Queensland

Information and feedback gained from these professional leaders helped to inform the overall conduct of the research, issues associated with the research, and more specifically, the design of the survey.

3.1.2   Literature review

A literature review was undertaken to identify research and case studies relevant to using the internet to assist the retention of professionals in rural communities. The search used a variety of relevant databases such as: ALISA, APAIS, ERIC, Australian Education Index, DETAA, Wilson Web, FAMILY, RURAL (HEALTH), Medline, HealthSTAR, Health & Society, Australasian Medical Index, AUSTHEALTH, ATSI Health and APAIS Health.

It is apparent that few studies exist in this area. The research that is reported both nationally and internationally is concerned mainly with identifying the reasons why professionals leave or are not attracted to positions in rural communities. The nascent and recent development of Internet-based professional development is reflected in the limited literature.

There are few reports of professional development using the Internet and those that exist typically involve only descriptive accounts of resources and offer little in the way of empirical evaluations. Nevertheless, the literature that was located on the use of web-based resources for the professional development and support of professionals working and living in rural communities was examined to provide information on such issues as:

- the professional needs and benefits in relation to web-based professional development and support,
- the factors that facilitate/hinder the professional use of web-based professional development and support
- the design and functionality of resources
- approaches to IT training for professionals.

3.2 Review and analysis of professional development and support sites

3.2.1 Website review

A systematic review of professional development websites was conducted to assess the nature and extent of systemic online support offered by professional organisations to their members. English language websites in Australia, New Zealand, UK and USA were sourced on advice from consultations with professional bodies, from the literature, from links provided within other professional websites and from general web searching using browsers such as *Google* and *AllTheWeb*.

3.2.2 Data analysis

The websites were analysed for the types of knowledge building services they provide, support services, information sharing opportunities, and the types of communication tools and resources offered. The data was assembled in tables to allow easy comparison of the forms of professional support provided in each site.

3.3 The survey

3.3.1 Selection of states

Professionals working in rural areas of Western Australia and Queensland were selected for the survey in the study. These states were chosen as they both have large remote areas with geographically dispersed rural communities, and both have a long history of responding to the special needs of these communities (as evidenced for example, by both states' extensive distance education and health initiatives). As such they provide a diverse sample from which generalisations can be made.

The decision to use professionals in Western Australia and Queensland was also based on the advice gained during the consultations with key personnel in professional organisations and employer groups.

3.3.2   Selection of professionals

Professionals were chosen on the basis that they would be working in remote and rural areas of Australia and were selected from three 'sub-major', 'minor' and 'unit' groups of professionals listed in the *Australian Standard Classification of Occupations* (Australian Bureau of Statistics, 1997), specifically:

Table 1: Professionals chosen by Australian Standard Classification of Occupations

Sub-Major Group	Minor Group	Unit Group
Health Professionals	Medical Practitioners	General Medical Practitioners
	Nursing Professionals	Registered Nurses
	Miscellaneous Health Professionals	Dental Practitioners
		Pharmacists
		Occupational Therapists
		Physiotherapists
		Dietitians
Education Professionals	School Teachers	Primary School Teachers
		Secondary School Teachers
Social, Arts and Misc. Professionals	Social Welfare Professionals	Social Workers
		Psychologists

3.3.3   Identifying and locating professionals

Names and addresses of professionals were required to invite them to complete the survey. The professionals were contacted by mail via the relevant government agencies which included the Education Departments of Western Australia and Queensland, and the Health Departments of Western Australia and Queensland.

Table 2 shows the professional groups that were approached to complete the survey, together with the organisations that assisted with names and addresses.

Table 2: Professional groups and organisations

Professional group	Organisations assisting with addresses
Dentists	Australian Dental Association (WA & QLD Branches)
Dietitians	Dietitians Association of Australia (WA & QLD Branches)
Medical Practitioners	Australasian Medical Publishing Company
Nurses	Nurses Board of Western Australia Queensland Nursing Council
Occupational Therapists	OT Australia – Queensland Occupational Therapists' Registration Board of Western Australia
Pharmacists	The Pharmaceutical Council of Western Australia Pharmaceutical Society of Australia QLD Branch
Physiotherapists	Australian Physiotherapy Association (WA & QLD Branches)
Psychologists	The Psychologists Board of Queensland The Psychologists Board of Western Australia
Social workers	Australian Association of Social Workers (WA & QLD Branches)
Teachers	WA Department of Education and Training Education Queensland

3.3.4 The questionnaire

An anonymous postal questionnaire (Appendix 1) was developed and sent to selected professionals identified as working in a rural area. Ethical approval was granted by both Edith Cowan University and the University of Wollongong to conduct the study.

Questions within the questionnaire sought to elicit information on:

- demographic data (e.g., age, qualifications, period of employment)
- needs, awareness, use and accessibility of professional development and support that uses the Internet
- benefits/drawbacks of professional development and support that uses the Internet
- beliefs about the impact of the Internet in ameliorating professional isolation
- perceived barriers to using the Internet
- perceived IT competence.

3.3.5 Identifying rural and remote areas

It was necessary to find a method to identify the areas of those professional who were working in rural and remote areas, as opposed to urban and regional areas. Rural and remote areas of Western Australia and Queensland were operationally defined by postcode, using the *Accessibility/ Remoteness Index of Australia* (ARIA) (Department of Health and Aged Care, 1999) developed by the *National Key Centre for Social Applications of Geographical Information Systems* (GISCA) at the University of Adelaide.

ARIA defines five categories of remoteness based on road distance to service centres. The five categories are:

1. *Highly Accessible* (ARIA score 0–1.84)
   Relatively unrestricted accessibility to a wide range of goods and services and opportunities for social interaction
2. *Accessible* (ARIA score >1.84–3.51)
   Some restrictions to accessibility of some goods, services and opportunities for social interaction
3. *Moderately Accessible* (ARIA score >3.51–5.80)
   Significantly restricted accessibility of goods, services and opportunities for social interaction
4. *Remote* (ARIA score >5.80–9.08)
   Very restricted accessibility of goods, services and opportunities for social interaction
5. *Very Remote* (ARIA score >9.08–12)
   Very little accessibility of goods, services and opportunities for social interaction

For the purposes of this study, professionals working in Western Australia or Queensland with postcodes falling within an ARIA score greater than 3.51 were surveyed, that is, ARIA categories 3, 4 and 5: *moderately accessible, remote* and *very remote*.

Names and addresses were sought from professional bodies relevant to the target groups. In many instances, to protect the privacy of individuals, plain envelopes containing the surveys were requested from the researchers, with address labels added by the professional organisations themselves. In some cases, labels were provided by the professional organisations, which were attached and posted by the researchers. In others cases, on the advice of the relevant professional association, publicly available information and listings were used by the researchers to identify names and addresses of relevant professionals.

The number of professionals surveyed, and the response rates are shown in Table 3

Table 3: Survey response rate

Profession	WA	QLD	Total	Returned	% Return
Dentists	120	110	230	50	22
Dietitians	12	4	16	8	50
Doctors	180	351	531	77	15
Nurses	1180[1]	1918[1]	3098	330	11
Occupational Therapists	79	224	303	80	26
Pharmacists	77	95	172	19	11
Physiotherapists	60	342	402	105	26
Psychologists	83	65	148	46	31
Social workers	135	0[2]	135	25	19
Teachers	3513	2352	5865	527	9[3]
TOTAL	**5439**	**5461**	**10790**[4]	**1267**	**12**

1. 50% random sample
2. This group was not included, as surveys were not posted out as intended
3. This is a conservative estimate as each school surveyed relied on the approval of individual school principals
4. 10900 less 95 'returned to sender' and 15 'other' professionals

3.3.6　Data analysis

Questionnaires were returned to the researchers in post-paid envelopes. All data was coded by questionnaire item number and entered into the SPSS (*Statistical Package for the Social Sciences*) statistical analysis program. It was analysed using descriptive statistics, and graphically represented using bar charts and tables. As the study did not aim at making state-by-state comparisons, the data was not analysed or reported by state.

3.4　The interviews

3.4.1　Interview protocol

While the survey was anonymous, one part of the questionnaire asked respondents to provide a name and telephone number, if they were willing to provide further information through interview. The purpose of the interviews was to probe in depth the issues and concerns raised in the initial survey.

Willing interviewees were contacted on the telephone number given in the questionnaire. Each professional was reminded of the survey, and his or her expressed willingness to be phone interviewed. They were asked if it was convenient for them to answer about seven questions at that time, or whether another time might be more suitable. Participants were asked their permission to record the interview on tape via speakerphone.

A general schedule of interview questions was used in the semi-structured interviews, but specific issues described in individuals' questionnaire responses, and further follow up issues resulting from participants' comments, were also explored in depth in the interviews.

The initial questions were:

- What is your job?
- What forms of professional development do you usually undertake?
- Do you feel adequately supported in your profession?
- Is the internet important for your professional learning? Why? Is it better than other approaches? What does it overcome?

- What would you like to see happen that would improve the way the internet could be used for your professional learning? Extra training? Better web site designs? Better technologies?
- [Is there any significant point that is highlighted on their questionnaire response that could be followed up?]
- Do you have any other comments?

Twelve in-depth interviews were conducted with the rural professionals who agreed to provide further information. Interviews lasted between 20 and 40 minutes each, and all were tape recorded.

3.4.2   Data analysis

Interviews were transcribed for analysis. Themes and issues of concern were identified using the three step process of *data reduction, data display*, and *conclusion drawing and verification,* recommended by Miles and Huberman (1994).

The data analysis of both the surveys and the interviews, sought to examine in detail the effectiveness of the internet in overcoming professional isolation, with an emphasis on:

- assessing rural professionals' *use* of web-based professional development and support resources. For example, are they aware of relevant sites? Do they access these sites? What level of interactivity do they engage in?
- identifying professionals' perceived *benefits* of web-based professional development and support resources. For example, are relevant sites helpful?
- identifying professionals' perceived *needs* for web-based professional development and support resources. For example, what other resources and supports are needed? What further training do they need to benefit from these sites?

The analyses of these data, together with discussion of the findings are given in the following chapters.

4.   Rural professionals and the internet

A search and analysis of professional association websites across the ten professions researched in the study, revealed that all professions had access to profession-specific websites from Australia and overseas. The websites were analysed for the types of knowledge building services they provide, support services, information sharing opportunities, and the types of communication tools and resources offered.

The anonymous questionnaire was developed to examine the nature and extent of the use of the internet to support the professional development and information needs of service professional employed in rural and remote areas of two states of Australia. The survey was sent to all identifiable service professionals, specifically:

- Dentists
- Dietitians
- Medical Practitioners
- Nurses
- Occupational Therapists
- Pharmacists
- Physiotherapists
- Psychologists
- Social workers
- Teachers (Primary and Secondary)

Interviews were conducted with those professionals who had volunteered on the returned questionnaires to provide further information.

Findings for each professional group are presented in the following sections.

4.1   Dentists

4.1.1   Website review

Professional association websites relevant to the profession of dentistry were identified in Australia, New Zealand, UK and USA. These sites, and their web addresses are given below:

> Australian Dental Association: www.ada.org.au
> New Zealand Dental Association: www.nzda.org.nz
> The Dental Council of New Zealand: www.dentalcouncil.org.nz
> British Dental Association: www.bda-dentistry.org.uk
> American Dental Association: www.ada.org

All sites were accessible through membership, and most included features such as publications and resources, research funding, awards, FAQs, career and conference information. Some sites included information for the public, links to global sites, links to online courses, and discussion forums.

4.1.2   Survey: Questionnaire and interviews

Dentists in rural and regional areas of Queensland and Western Australia were surveyed on their use of the internet to support their professional practice and development. Fifty dentists returned completed surveys.

The dentists surveyed were represented in all age ranges (Figure 1) from under 25 to over 56, with the majority of the respondents being in the 46-55 year age range, although just over half were under 45 (54% cumulative). As might reflect representation in the profession of dentistry as a whole, the majority of the respondents were male (78%) (Figure 2).

Figure 1: Age range of dentists surveyed
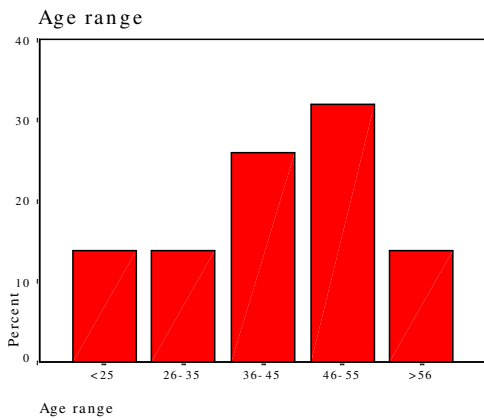
Figure 2: Gender of dentists surveyed
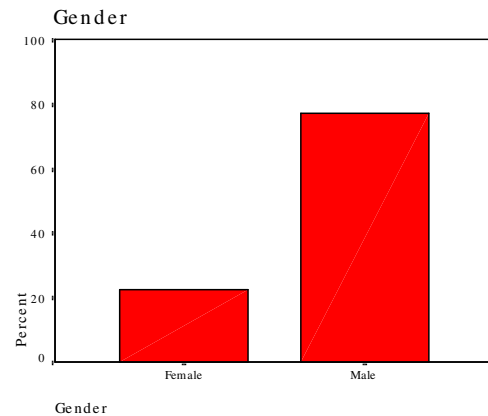
Professional qualifications and experience

The highest qualification for the majority of the dentists was a bachelor degree (90%) with five (10%) proceeding on to post-graduate study. Figure 3 shows that in terms of professional experience, the dentists have accumulated many years experience in rural and remote areas, with half having over 21 years experience (50%). Just over 20% of the dentists had less than 5 years experience at the time of the survey. Nevertheless, Figure 4 suggests that dentists are quite mobile, with 41% being employed in their current positions less than five years.

Figure 3: Professional experience of dentists

Professional experience

Professional experience

Figure 4: Years in current employment

Current position employment

Current position employment

Internet access and frequency of use

A large majority of dentists were able to access the internet from home (88%), with most of those using a telephone modem for connection (80%). Fewer used the internet at work with 58% reporting that they were able to connect at the workplace. Again, most of these connections were via telephone modem (55%), although 26% reported that at work they used broadband to connect to the internet. Regardless of where dentists went online, over half reported that they used the internet for professional purposes at least once or twice a week (Figure 5), with 34% using the internet daily. This is substantiated in their use of browser bookmarks for websites, with 65 % using the facility to mark frequently used professional sites (Figure 6).

Figure 5: Frequency of internet access

Access internet for professional purposes

Access internet for professional purposes
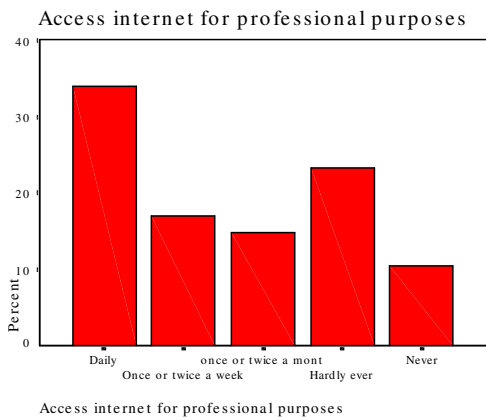
Figure 6: Number of bookmarked websites

Bookmarked professional sites

Bookmarked professional sites
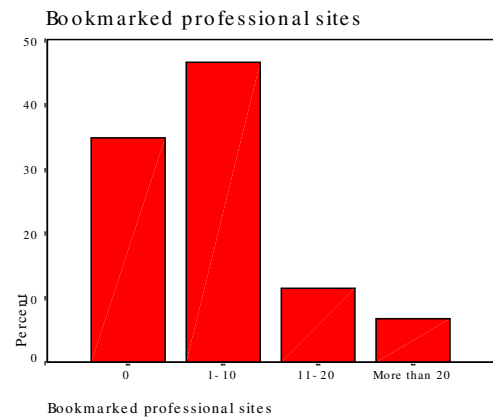
The dentists who responded to the survey were generally confident users of the internet with a total of 83% rating their competence as *Satisfactory, More competent than most* or *Very competent.* Of all the internet-based tools, email was used most frequently by the dentists, together with search engines (Figure 7). Listservs, chat rooms and discussion forums were accessed rarely, and the dentists were not generally web developers with 100% reporting that they used website development software (like Dreamweaver) *Hardly ever* or *Never*. Dentists perceived confidence in using internet tools generally mirrored their frequency of use (Figure 8), with greatest confidence shown in the use of email and search engines.

Figure 7: Frequency of use of internet tools

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
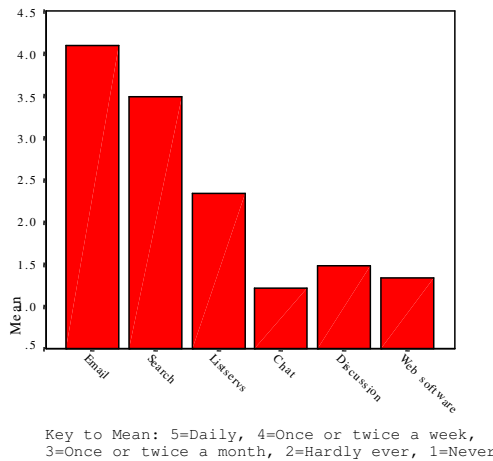
Figure 8: Competence as a user of internet tools

Key to Mean: 4=Very competent, 3=More competent
than most, 2=Satisfactory, 1=Incompetent
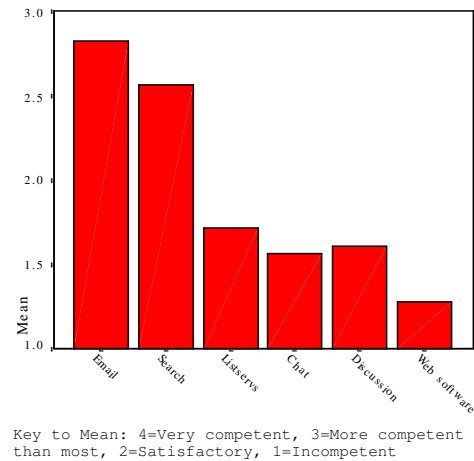
Use of the internet for professional learning

The professional reasons for use of the internet given by the dentists (Figure 9), were principally *Keeping in touch with colleagues* and *To gain work-related information*, such as articles, publications and resources, which on average they used several times per month. However, dentists also used the internet for other purposes less frequently, such as to gain information about conditions of employment, to access employment opportunities and job advertisements, to study online, or for professional information such as conference details.

When questioned about the types of websites that they accessed most frequently for professional purposes, dentists most often accessed the website at their own place of employment and their employer's main website (Figure 10). Other types of websites such as professional associations, community sites, higher education sites (such as universities) and private industry were accessed occasionally by the dentists. Interestingly, the websites of rural associations were accessed very infrequently.

Figure 9: Frequency of use for professional reasons

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
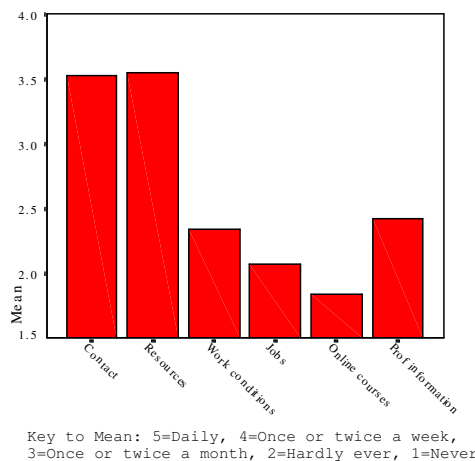
Figure 10: Frequency of use of professional websites

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
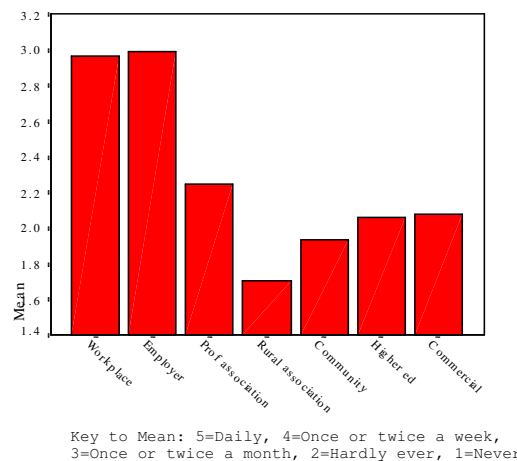
When asked to nominate the ways that dentists thought the internet could help in their professional learning (Figure 11), training (e.g., 'seminars, courses, online lectures') and resources (e.g., 'to read published papers but the library is too far away') were the most frequently mentioned features. Others mentioned included support services (such as advice, FAQs, online mentoring), and communication elements (such as networking and support for professional relationships). However, dentists also nominated some of the limitations they could see related to the use of the internet for their own professional purposes (Figure 12), such as a lack of accessibility (e.g., 'very slow access as no broadband', 'the world-wide-wait drives me stupid - as pages become more complex, the

download time for a 56k modem becomes a limiting factor', 'broadband is needed in regional Australia – if it were made available, more people would use it'), their own lack of time to go online, and the perceived lack of training and human interaction in the online environment.

Figure 11: How internet could help professional learning
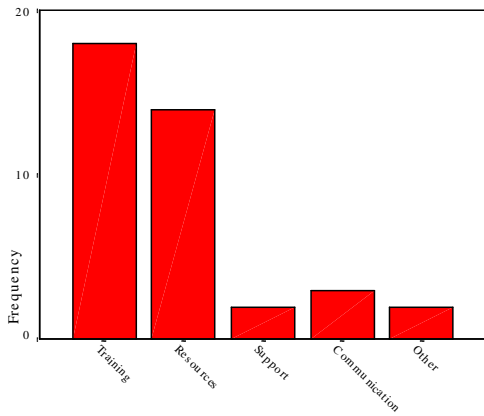
Key to Frequency: Number of times category mentioned

Figure 12: Limitations of internet for prof. learning
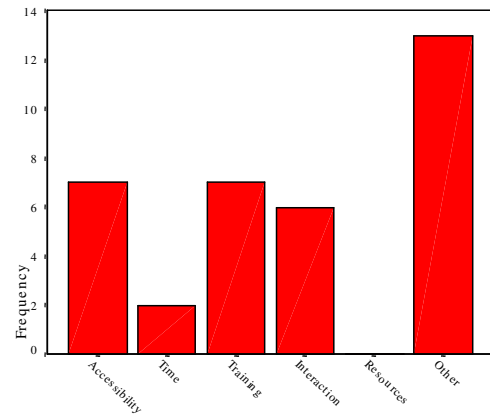
Key to Frequency: Number of times category mentioned

Professional isolation

While 24% of dentists reported not feeling any professional isolation at all in the rural and remote positions, 15% felt a great deal of isolation (Figure 13).

Of those who felt isolated, the most mentioned lack of human interaction with others in the profession as the most important reason (e.g., 'the only dentist in town'), but the reasons were complex and varied. Some mentioned travel costs and distance, the investment of time required (for professional development), lack of training and resources (Figure 14). One dentist described the isolation this way:

> The next dentist to the north is 700km, to the west over a 1000 km, to the south 700 km, and to the east 500km. The private dentist in town doesn't take out teeth and other dentists can't help me take teeth out via email.

Figure 13: Extent of feelings of professional isolation
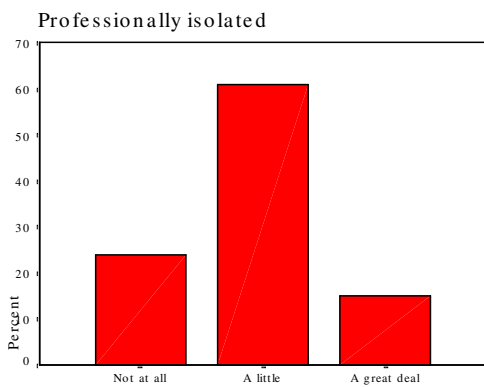
Figure 14: Types of professional isolation
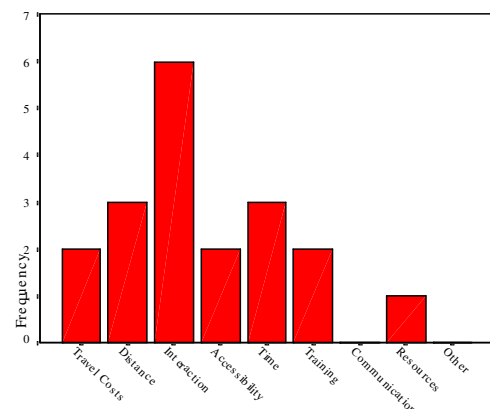
Key to Frequency: Number of times category mentioned

When asked what services might help to ameliorate professional isolation, dentists largely suggested the same kinds of support that would help with their professional learning, but with an emphasis on resources (mentioned 10 times) (e.g., 'it would be good if dental schools could give updates and advise on relevant papers that have been published to narrow the field'), communication (7) (e.g., 'daily discussions online') and training (6) (e.g., 'get lectures on the net – I wouldn't mind paying').

One dentist described the professional development affordances offered by technologies for rural dentists:

> Of late there has been a web cast which has been run by a [professional] group … It's a group called Dental Ed. The speakers are from all in sundry. It's really quite new technology. The speaker for instance we had last week was somewhere in the United States. He was an orthodontist talking about tooth additions. That blasted out to something like 50-60 sites in Australia … with one site in each rural area. All the dentists would gather at that particular site. We sit around, and the stuff comes through on some sort of proprietary software. You can see the power point presentation from the speaker. It goes up on a wall using a data projector that appears to be a screen because you can see a small video of the speaker and hear the speaker's words. You can use a microphone on your computer and that goes back to the speaker, and people can ask questions at the end.

Another dentist described the impact the internet has had in everyday practice:

> We have had internet access in every operatory for over two years. This has proved to be the most valuable improvement to our practice ever. The constant flow of information, patient referrals (even cardiographs) is invaluable and reduces the sense of isolation.

Professional interaction using the internet

The majority of dentists who responded to the survey regularly accessed the internet for professional information (70%). When asked to nominate the principal website each dentist accessed for professional information, most dentists nominated the website of a professional association (Figure 15) and the remainder, commercial or university websites.

Regular access to these websites appeared to be frequent with over 12% of dentists accessing their preferred website daily, and over 78% (cumulative) at least as frequently as once or twice a month (Figure 16).

Figure 15: Principal website accessed by dentists by type

Key to Frequency: Number of times category mentioned
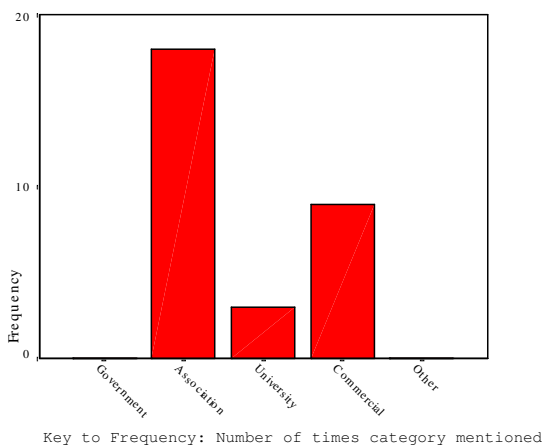
Figure 16: Frequency of access to preferred website
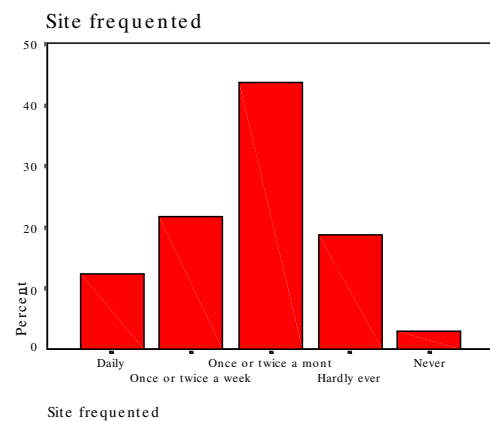
Dentists generally valued the resources provided on their preferred websites more than any other aspect with 22 mentioning this as the most helpful feature (Figure 17) (e.g., 'updates on continuing education'). Some dentists also appreciated the links that are available on the website, communication features, and support (e.g., 'the website has details of lecturers I can call or email for advice').

However, some dentists mentioned that much of the content on their preferred site was irrelevant to their professional development needs. In interacting with their preferred sites, dentists most frequently downloaded information and publications, and used email facilities within the site (Figure 18).

Figure 17: Most helpful features on preferred website website
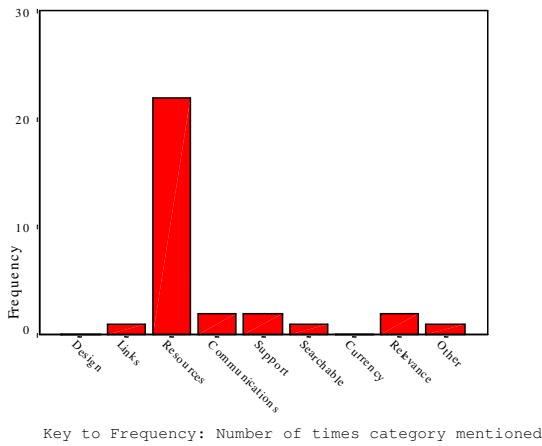
Figure 18: Ways dentists interact with preferred
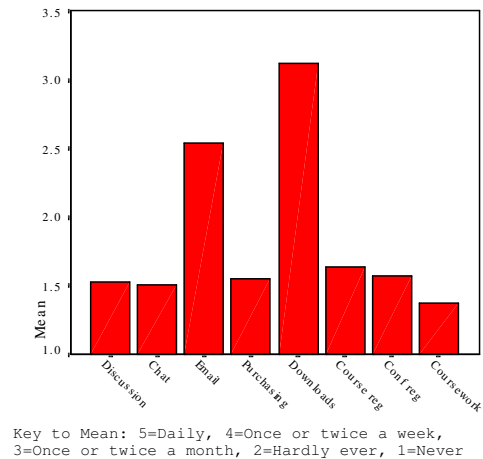
Key to Frequency: Number of times category mentioned

Key to Mean: 5=Daily, 4=Once or twice a week, 3=Once or twice a month, 2=Hardly ever, 1=Never

Web characteristics and features of professional websites

In the survey, a list of national, professional websites was given, one for each profession. Dentists were asked to consider the following website:

> Australian Dental Association: www.ada.org.au.

While 11% of dentists had never visited the site before, of those who had, 55% (cumulative) visited the site at least once or twice a month, with 2% accessing it daily. When asked what was most useful about the site, as with their own nominated sites, most dentists suggested the resources on the site as most value to them (mentioned 10 times) with others citing the links, communication facilities, support, and the fact that the site is a source of current and up-to-date information (e.g., 'latest news headlines negates need to actively search for this information').

One dentist requested support for continuing education from universities:

> All Australian universities should have websites devoted specifically to continuing education including the advertising of upcoming lectures/conferences/courses.

Another suggested how useful a reminder would be through email in helping dentists to keep in touch and continue their professional development:

> The dental association site is very useful. I don't use it enough and maybe regular emails advising what's new, etc. and having links would be very helpful in making me look at it more often.

4.1.3   Dentists' level of internet support, use, and needs for professional development

Level of support

In additional to the website of the *Australian Dental Association*, dental practitioners have access to a range of dedicated professional websites throughout English speaking countries. The range of support services provided on these websites, suggests that dentists are adequately served with websites to address their specific professional needs.

Use of professional development services and support

Very few dentists in the rural areas surveyed did not use the internet at all for professional purposes. Most dentists not only used the internet regularly, but also perceived themselves to be competent users of the technology. Email and internet searching were the most frequently used features, and dentists generally felt very confident using these tools for professional enhancement. Impediments to

more widespread use of the internet for professional development existed for dentists mainly in the form of accessibility where, for example, access via a 56k modem proved to be time-wasting and annoying. Most dentists felt at least a little professionally isolated in their rural and remote locations, with many explaining graphically how isolated they were in terms of being the only dentist in a vast geographical area.

Needs and benefits of professional development

Dentists generally were very positive in their view of the potential benefits of the internet to meet some of their professional needs and to help reduce feelings of isolation. The principal means by which the internet could assist the professional development of dentists was to meet the need to keep up to date with advances and current practice in dentistry. Some specific suggestions included using the internet:

- For sending patient referrals and cardiographs
- For web-casting meetings of professional groups
- For communicating with other dentists via daily online discussions
- For web-casting of expert lectures
- For receiving professional practice updates via email or listservs from dental schools.

As a profession, rural dentists were well-connected to the internet, were aware of resources available, were competent and confident users of the internet, and were mindful of its potential to help reduce professional isolation in rural practice.

4.2   Dietitians

4.2.1   Website review

Professional association websites relevant to dietitians were identified in Australia, New Zealand, UK and USA. These sites, and their web addresses are given below:

> The Dietitians Association of Australia: www.daa.asn.au
> British Dietetic Association: www.bda.uk.com
> The New Zealand Dietetic Association: www.dietitians.org.nz
> American Dietetic Association: www.eatright.org

All sites were accessible through membership, and all included features such as links to online courses, and publications and resources. Some sites included other resources such as links to global sites, and conference information.

4.2.2   Survey: Questionnaire and interviews

Dietitians from rural and remote areas of Queensland and Western Australia were surveyed on the their use of the internet for professional development and support. Although only eight dietitians responded to the survey, this represented a high rate of return for this professional group (50%).

Dietitians who responded to the survey were spread throughout the age ranges (Figure 19), although tending to the younger age ranges. Four dietitians were female, and three male (Figure 20) (one gender not disclosed). (Because of the low numbers in this professional group, frequencies rather than percentages are given throughout.)

Figure 19: Age range of dietitians surveyed

Figure 20: Gender of dietitians surveyed
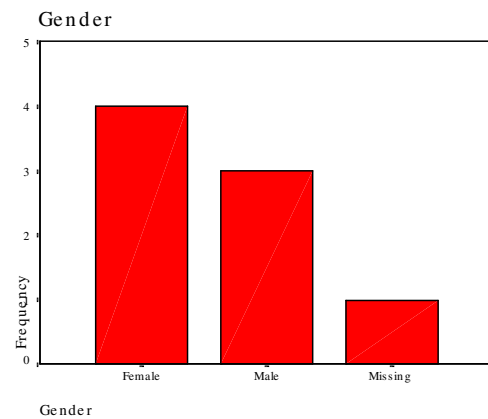
Professional qualifications and experience

Five of the eight dietitians were qualified at the post-graduate level, three with a graduate diploma, one masters degree and one a PhD. Only two dietitians had more than five years experience in the profession (Figure 21) and only one had been in his or her present place of employment for more than five years (Figure 22).

Figure 21: Professional experience of dietitians

Professional experience

Professional experience

Figure 22: Years in current employment

Current position employment

Current position employment

Internet access and frequency of use

All the dietitians who responded to the survey were able to access the internet, either at home or at work. However, for some the work connections were limited to their employer's intranet, thereby restricting access to many outside sites. Most reported that they used the internet for professional purposes daily (Figure 23). This was substantiated in their use of browser bookmarks for websites, with seven using the facility to mark frequently used professional sites (Figure 24).

Figure 23: Frequency of internet access

Access internet for professional purposes

Access internet for professional purposes
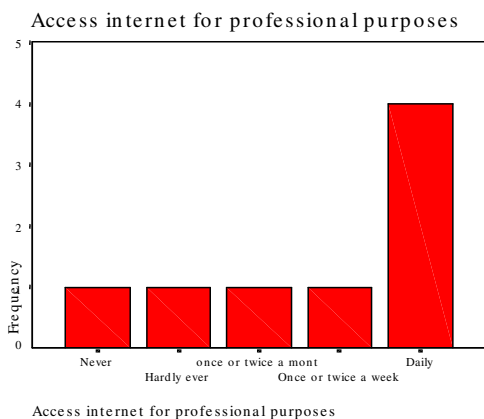
Figure 24: Number of bookmarked websites

Bookmarked professional sites

Bookmarked professional sites

All the dietitians who responded to the survey rated themselves as confident users of the internet. None rated themselves as incompetent. The most frequently used internet tool was email, where most dietitians reported that they used it daily, followed by search engines, and listservs (Figure 25). Chat rooms, website development software and discussion forums were accessed more rarely. Dietitians' competence in using the different internet tools reflected their frequency of use (Figure 26) with greatest confidence shown in the use of email and search engines.

Figure 25: Frequency of use of internet tools

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
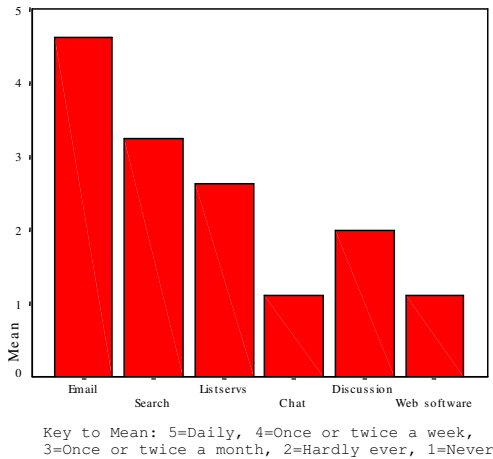
Figure 26: Competence as a user of internet tools

Key to Mean: 4=Very competent, 3=More competent
than most, 2=Satisfactory, 1=Incompetent
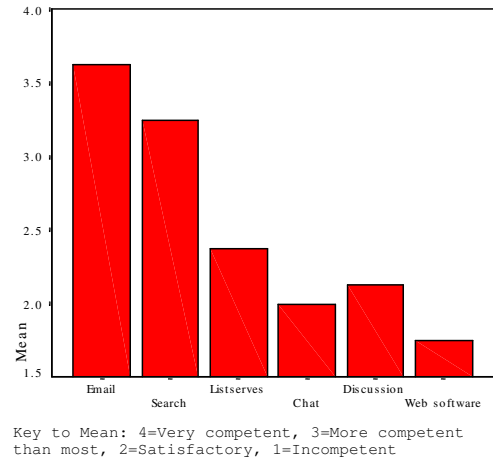
Use of the internet for professional learning

The dietitians who responded to the survey used email and search engines very frequently for professional reasons (Figure 27), principally for *Keeping in touch with colleagues*, and *To gain work-related information*, such as articles, publications and resources.

Dietitians also used the internet for other purposes less frequently, such as to gain information about conditions of employment, to access employment opportunities and job advertisements, and to study online. The types of websites that the dietitians used most often professionally ware principally those of their own workplace and employer (Figure 28), although other types were also accessed more rarely.

Figure 27: Frequency of use for professional reasons

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
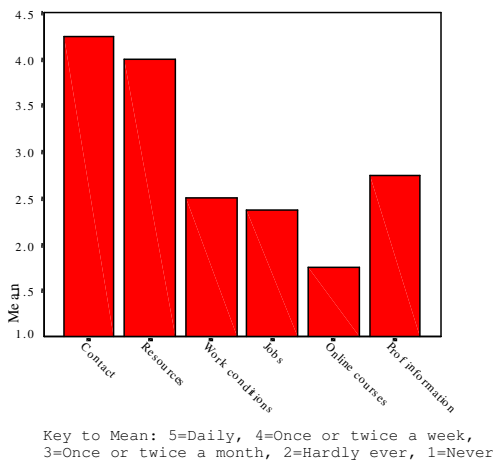
Figure 28: Frequency of use of professional websites

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
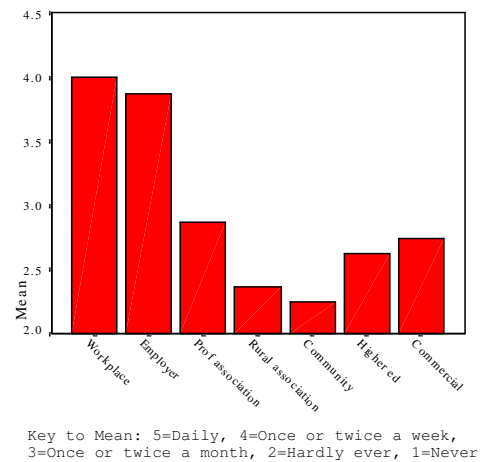
When asked to nominate the ways that dietitians thought the internet could help in their professional learning, half nominated access to resources (such as publications, information, and research reports) and two suggested training (such as professional development courses and continuing education) (Figure 29). Lack of human interaction (e.g., 'no face to face contact'), followed by problems with accessibility (e.g., 'need broadband – too slow') were the two most frequently mentioned limitations of using the internet for professional learning (Figure 30).

Figure 29: How internet could help professional learning
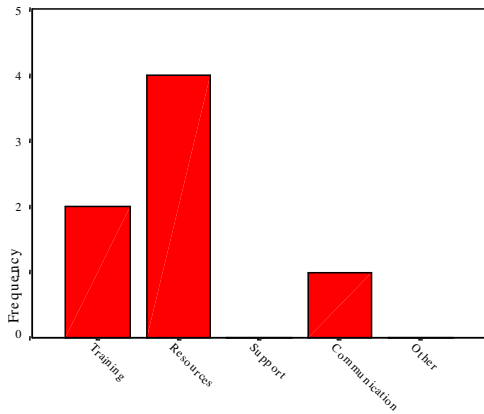
Key to Frequency: Number of times category mentioned

Figure 30: Limitations of internet for prof. learning
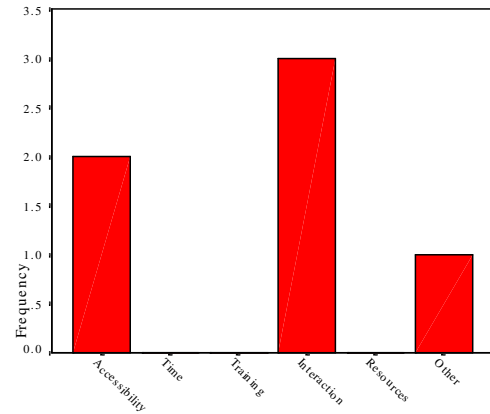
Key to Frequency: Number of times category mentioned

Professional isolation

While two dietitians who responded to the survey reported that they felt no professional isolation in their current employment positions, four admitted feeling at least a little professionally isolated, and one a great deal of isolation. Of those who felt isolated, the reasons included lack of human interaction with others in the profession (e.g., 'sole dietitian at the hospital'), and the lack of mentoring in professional development. When asked to nominate the kinds of services that could be provided on the internet to help alleviate professional isolation, some dietitians suggested factors such as enhanced opportunities for contact with other dietitians (e.g., 'discussions on patient care', 'regular contact with other colleagues in major cities') and online mentoring.

Professional interaction using the internet

Only one of the dietitians surveyed did not use the internet for professional information. When asked to suggest their preferred professional website, three nominated a website maintained by a government department, and three a professional association website. One dietitian suggested a commercial site. Regular access to these websites appeared to be frequent with only one dietitian accessing their preferred website less frequently than once or twice a month. Most dietitians valued the resources provided on their preferred websites than other features. One also valued the links provided on the website (Figure 31). In interacting with their preferred sites, dietitians most frequently downloaded information and publications to read, on average more frequently than once or twice a month (Figure 32). Other features, such as discussion forums, chat, email were used less frequently.

Figure 31: Most helpful features on preferred website
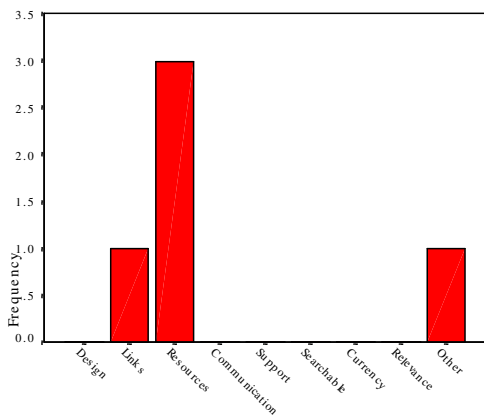
Key to Frequency: Number of times category mentioned

Figure 32: Ways dietitians interact with preferred website
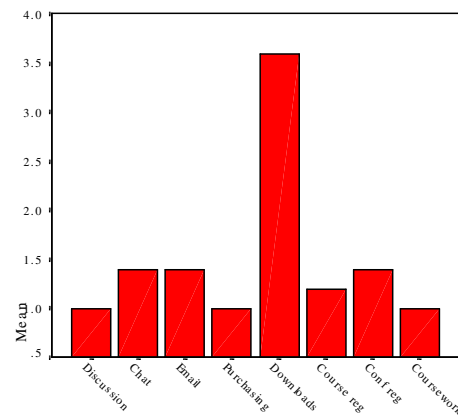
Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never

Web characteristics and features of professional websites

In order to seek dietitians' opinions on the usefulness of professional association websites, a list of national, professional websites was given in the survey, one for each profession. Dietitians were asked to consider the following website related to their profession:

Dietitians Association of Australia: www.daa.asn.au

While one had never visited the nominated site before, of those who had, the remainder visited the site at least once or twice a month. When asked what was most useful about the site, most dietitians mentioned job advertisements, resources, and information on upcoming events. All but one dietitian indicated that they intended to visit the site again.

When asked the kind of features that dietitians would like to see on professional association websites to help with their own professional development, suggestions included 'best practice guidelines', 'more clinical information', 'better access to professional development articles' and 'more information on community public health nutrition'. One dietitian suggested that a 'nutrition composition finder' would be a useful internet tool.

4.2.3 Dietitians' level of internet support, use, and needs for professional development

Level of support

As a profession, dietitians have access to a dedicated Australian professional website in the *Dietitians Association of Australia* site. Other professional association websites from a range of international countries are also accessible, suggesting that dieticians have ready access to information on the internet that is provided by a professional group.

Use of professional development services and support

Dieticians generally have integrated the internet well into their daily professional lives, with nearly all able to access it at home and at work. They rated themselves as competent and confident users of the internet, particularly for their most frequently used tools: email, web browsers and listservs. They used the internet for two primary purposes: to keep in touch with colleagues and to access professional information. While the internet was valued for these important purposes, the dietitians were also aware of the limitation of the internet for their profession, namely, its inability to provide contact as effective as real face-to-face contact, and frustrations encountered by problems with accessibility and the slowness of service with a telephone modem. Professional isolation was an issue for many dietitians, many of whom may be the only one in a large geographic area, and the internet was seen as a technology that could assist to relieve this sense of isolation.

Needs and benefits of professional development

Dietitians, because of their limited numbers in rural and remote areas, could see many advantages to the use of the internet to support their professional practices. Some specific suggestions included using the internet:

- For discussions on patient care
- For maintaining regular contact with colleagues in more populated centres
- For obtaining information on community public health nutrition
- For access to specific useful tools, such as a nutrition composition finder.

While small in numbers, dietitians represent the kind of professional group that stands to benefit greatly from advances in internet technology and expansion in the range and availability of online resources and services.

4.3 Medical practitioners

4.3.1 Website review

Professional association websites relevant to medical practitioners were identified in Australia, New Zealand, UK and USA. These sites, and their web addresses are given below:

Australian Medical Association (AMA): www.ama.com.au
New Zealand Medical Association: www.nzma.org.nz
Royal College of General Practitioners: www.rcgp.org.uk
British Medical Association: www.bma.org.uk
American Medical Association: www.ama-assn.org

All sites were accessible through membership, and included features such as publications and resources, latest news and conference information. Some sites included mailing lists, discussion forums, online surveys, links to global sites, and links to online courses.

4.3.2 Survey: Questionnaire and interviews

Seventy seven medical practitioners based in rural and remote areas of Queensland and Western Australia returned the survey on their use of the internet for professional development and support.

The age range of the medical practitioners was well spread over the age groups (Figure 33), with the largest group represented in the 36-45 years of age bracket (34%). However, over 52% of the medical practitioners were over 46 years of age. Most medical practitioners who responded to the survey were male (65%) and 35% were female (Figure 34).

Figure 33: Age range of medical practitioners surveyed
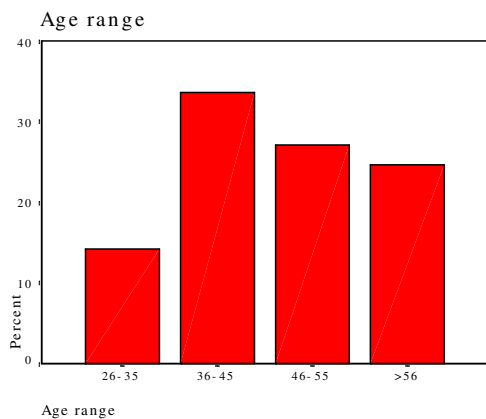
Figure 34: Gender of medical practitioners surveyed
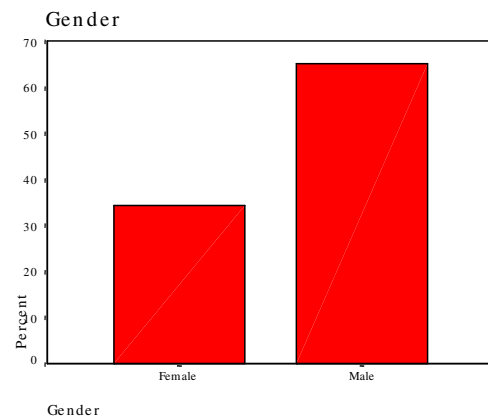
Professional qualifications and experience

The medical practitioners comprised a very well-qualified group with 17% qualified with a Doctorate or Masters degree, and over 37% obtaining post-graduate qualifications of one type or another. Fifty three percent had studied to the level of a Bachelor's degree.

The medical practitioners were also a very experienced group. Over half (52%) had more than 21 years experience in the professional (Figure 35), yet few of these have been in their current position for lengthy periods. Fifty five percent had been in their current employment for less than five years, with only 21% remaining in their present place of employment for more than 21 years (Figure 36).

Figure 35: Professional experience of medical practitioners   **Figure 36: Years in current employment**

Professional experience

Current position employment

Internet access and frequency of use

Medical practitioners were well connected to the internet. Over 92% had internet access at home, and 91% were connected online at work. Most accessed the internet via telephone modem both at home (72%) and at work (43%), although broadband connections for medical practitioners were commonly used: 22% at home, and 37% at work.

Access to the internet was also high amongst medical practitioners (Figure 37). More than half accessed web sites for professional purposes at least on a daily basis (52%). Fewer than 7% responded that they used the internet *Hardly ever* or *Never*. Seventy percent of medical practitioners bookmarked useful professional development website for frequent use, with 13% at the upper end of the scale, bookmarking more than 21 professional websites for regular access (Figure 38).

Figure 37: Frequency of internet access   **Figure 38: Number of bookmarked websites**
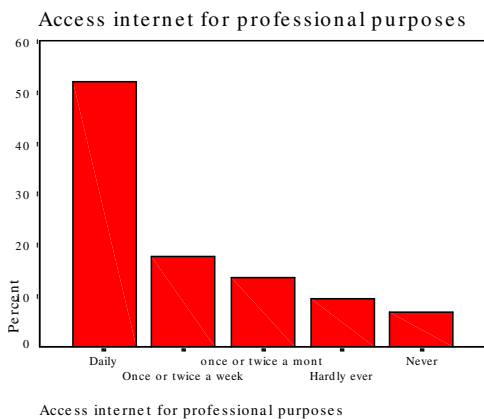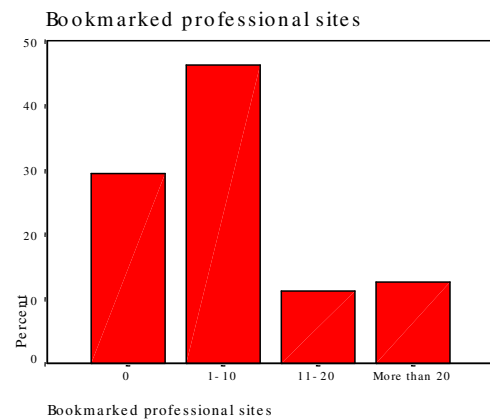
Access internet for professional purposes

Bookmarked professional sites

The medical practitioners who responded to the survey were generally confident users of the internet with a total of 80% rating their competence as *Satisfactory, More competent than most* or *Very competent.* Of all the internet-based tools, email was used most frequently by the medical practitioners, together with search engines (Figure 39). Listservs were also accessed on average a few times a month, but chat rooms and discussion forums were accessed rarely. Medical practitioners were not frequent users of web development software, suggesting that they used, but did not create resources on the internet. Medical practitioners' perceived confidence in using internet tools mirrored their frequency of use (Figure 40), with greatest confidence shown in the use of email and search engines.

Figure 39: Frequency of use of internet tools

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
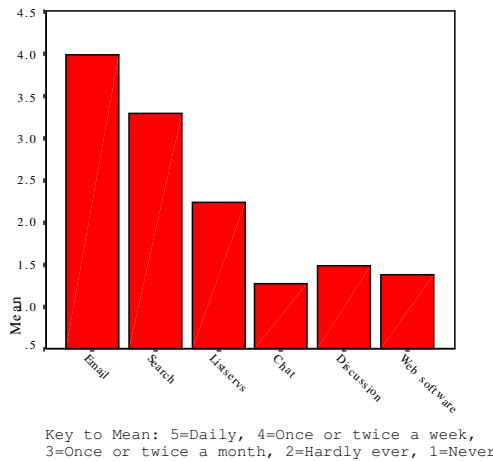
Figure 40: Competence as a user of internet tools

Key to Mean: 4=Very competent, 3=More competent
than most, 2=Satisfactory, 1=Incompetent
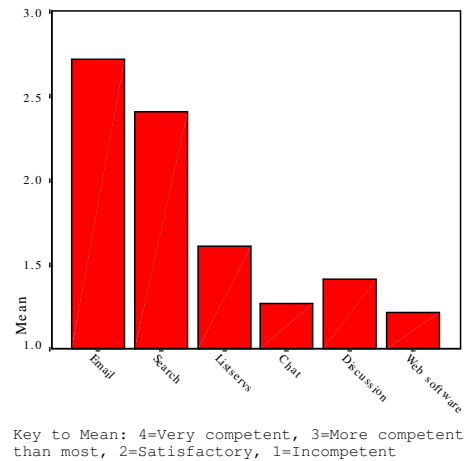
Use of the internet for professional learning

The reasons for professional use of the internet given by the medical practitioners (Figure 41), were principally *To gain work-related information*, such as articles, publications and resources, and *Keeping in touch with colleagues*, which on average they used more than several times per month. However, medical practitioners also used the internet for other purposes, such as to gain information about conditions of employment, to access employment opportunities and job advertisements, to study online, and for professional information such as conference details. When questioned about the types of websites that they accessed most frequently for professional purposes, medical practitioners most often accessed the website at their own place of employment followed by websites of professional associations, and higher education websites (Figure 42). Other types of websites such as employer sites, the websites of rural associations, community sites, and private industry were accessed occasionally by the medical practitioners.

Figure 41: Frequency of use for professional reasons

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
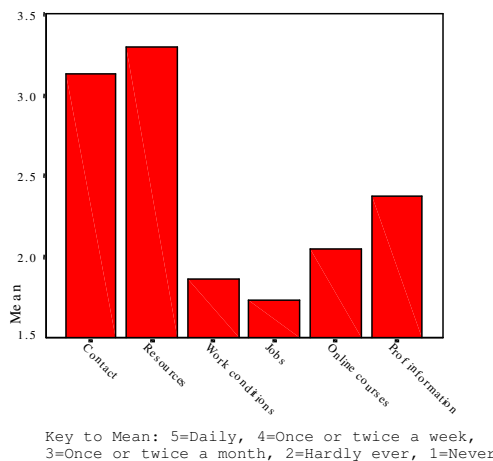
Figure 42: Frequency of use of professional websites

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
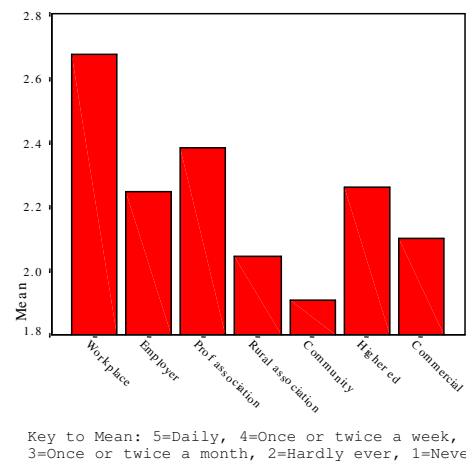
When medical practitioners were asked to nominate the ways they thought the internet could help in their professional learning (Figure 43), access to resources, training (e.g., 'I use it to get CME points but find it very slow', 'I have used the internet to complete my fellowship with general practice') and communication (such as networking and support for professional relationships) were the most frequently mentioned features. Some of the limitations nominated by medical practitioners, related to the use of the internet for their own professional purposes (Figure 44), lack of time to go online (e.g., 'a very busy GP who works 60-70 hours a week - there is no time left for wasting time on the computer'), difficulties of accessibility (e.g., 'all doctors need to have access to the internet – we cannot freely access the internet, only certain sites', 'broadband should be a priority for rural practice'), and the perceived lack of training and lack of human interaction in the online

environment). One doctor summed up the frustration involved with lack of access to technology when the doctor clearly believed that the internet and other technology have the capability to significantly assist with problems associated with rural practice:

> Very frustrating trying to cope with very poor IT service in the government/Dept of Health/ public system set up. We (doctors) do NOT have consistent access to a dedicated unit for internet access (there are five fulltime medical officers here). We also do remote clinic visits – a laptop would be ideal but [there are] so many barriers … The advance of the internet re speed of information is phenomenal. BUT we are still struggling with the abc's, eg, consistent non-surging power supply (yes, not all units have APS backup/surge protectors etc !!!), not enough actual computers, no good IT support, etc. etc. etc.

Figure 43: How internet could help professional learning
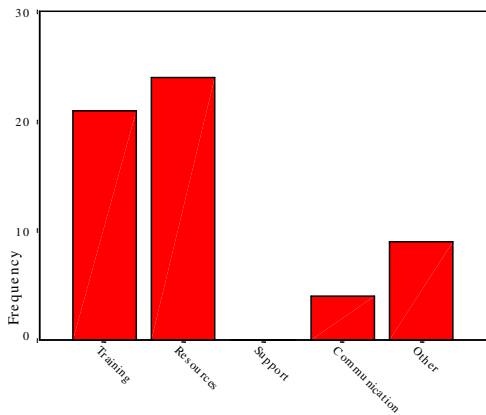
Key to Frequency: Number of times category mentioned

Figure 44: Limitations of internet for prof. learning
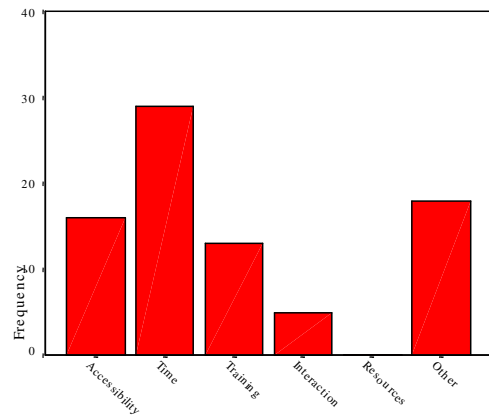
Key to Frequency: Number of times category mentioned

Professional isolation

While 29% of medical practitioners reported not feeling any professional isolation at all, 18% felt a great deal of isolation, with the majority feeling at least a little isolated (53%) (Figure 45). Of those who felt a great deal of isolation, the principal cause given was lack of human interaction with others in the profession (e.g., 'high work loads, long hours, critical care, birthing and post-natal care, where there is little contact with colleagues') (Figure 46). One medical practitioner wrote:

> I am a solo practitioner, so the phone and computer are my only avenues for professional support.

Figure 45: Extent of feelings of professional isolation
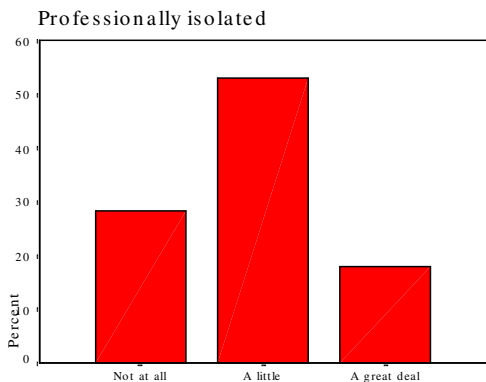
Figure 46: Types of professional isolation
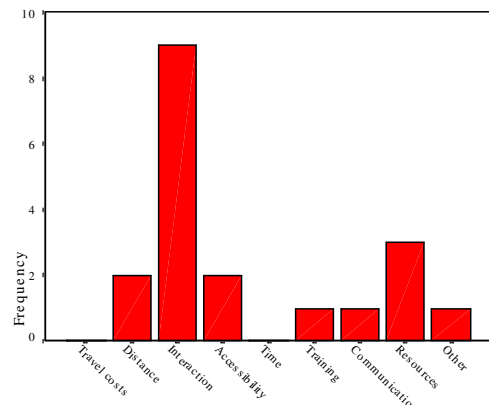
Key to Frequency: Number of times category mentioned

Medical practitioners suggested that the internet might help to overcome professional isolation by providing better channels of communication to other professionals (mentioned 15 times) (e.g., 'improved communication with our city-based colleagues so they can see, in the raw, how isolated

we are', '[the internet] is definitely second rate to actual professional contact, but bridges an enormous gap previously unavailable') and provide better access to professional development and training (7) (e.g., 'access to CME [Continuing Medical Education]', 'participation in ongoing CME activities, maybe via video-cam/web-cam type links, i.e., more live stuff than canned, pre-packages and dry CME programs').

One medical practitioner emphasised the importance of obtaining reliable and open internet access, and summed up the problems associated with internet services:

> As rural professionals, access to our continuing education and professional development is critical, and the internet is a prime solution, as we are too busy to travel to the cities for conferences. We need more access – the health departments need to prioritise that all doctors (and nursing/allied health) have access to the internet. We are also limited in Queensland and cannot freely use the internet, only certain sites.

Professional interaction using the internet

The majority of medical practitioners who responded to the survey, regularly accessed the internet for professional information (74%). When asked to nominate their own personal favourite professional website, most medical practitioners nominated the website of a professional association (Figure 47), and the remainder mainly commercial, government or university websites.

Regular access to these websites appeared to be very frequent with over 20% of medical practitioners accessing their preferred website daily, and a total of 90% accessing it as frequently as once or twice a month (Figure 48). Only 2% stated that they hardly ever accessed their nominated professional website.

Figure 47: Principal website accessed by type
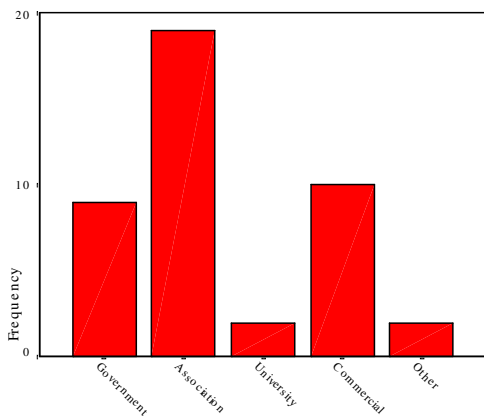
Key to Frequency: Number of times category mentioned

Figure 48: Frequency of access to preferred prof. website
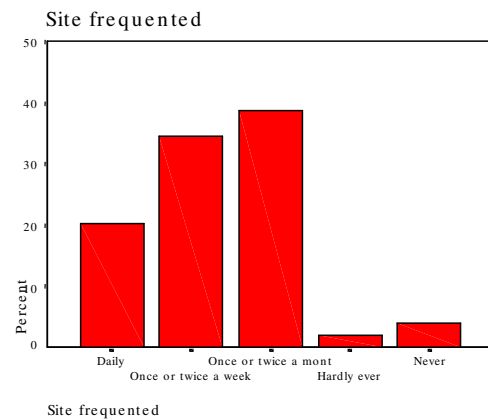
Medical practitioners overwhelmingly valued *Resources* provided on their preferred websites more than any other aspect with 29 mentioning this as the most helpful feature (Figure 49). Some medical practitioners also mentioned that the fact that information on the website is up-to-date and current is an important factor for them.

In interacting with their preferred sites, medical practitioners most frequently downloaded information and publications to read, and used email facilities within the site (Figure 50). They also frequently used their favourite site to participate in discussion forums, register for courses and complete online coursework.

Figure 49: Most helpful features on preferred website
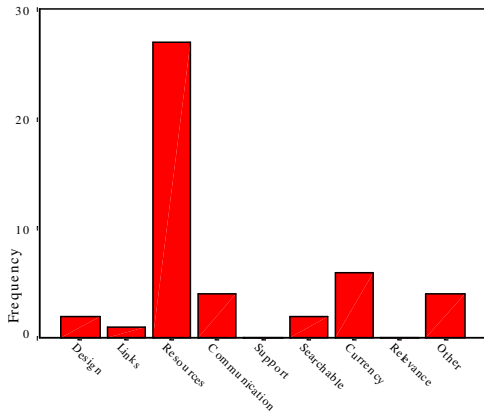
Key to Frequency: Number of times category mentioned

Figure 50: Ways medical practitioners interact
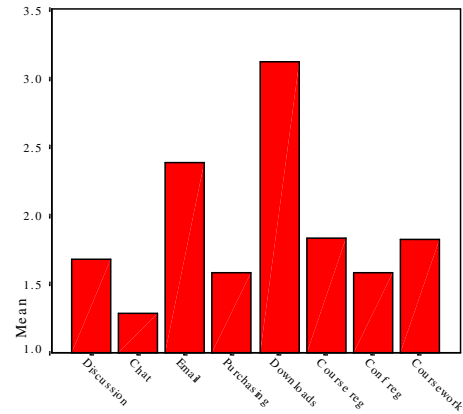
Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never

Web characteristics and features of professional websites

In order to explore useful features of websites with participants, a list of national, professional websites was given in the survey, one for each profession. Medical practitioners were given the following website:

Australian Medical Association: www.ama.com.au

Forty seven percent of medical practitioners had never visited the site before. Of those who had, 30% visited the site *Hardly ever*, and only 1% accessed it daily.

When asked what was most useful about the site, some medical practitioners mentioned the fact that the site is a source of current and up-to-date information (e.g., 'media releases, government policy and links', 'publications', 'clearly set out site', 'easy to navigate and find what I want'), and the least helpful features mentioned included the fact that the website included a lot of material that was irrelevant to their professional needs (e.g., 'politics', 'policy and issues of little relevance', 'focussed mainly on specialists and metropolitan GPs - very little if anything for rural GPs'). When asked to suggest resources and service that would improve the site, one medical practitioner suggested 'links to e-learning resources'.

Forty five percent of medical practitioners said that they would not visit the considered website again, although the remaining 55% said they would, or might, visit the site again.

4.3.3   Medical practitioners' level of internet support, use, and needs for professional development

Level of support

Medical practitioners had access to a range of professional websites including that of the *Australian Medical Association* (AMA). A range of other website hosted by overseas medical associations were also available to medical practitioners, together with a variety of other medical websites sponsored by companies and institutions. The medical profession in general appears to be well served by these sites.

Use of professional development services and support

Medical practitioners were frequent users of the internet to support their professional practice. Most used the internet daily, and very few did not regularly access it for services and information in one form or another. Those who used the internet were competent and confident in being able to use it to their advantage, especially in their preferred tools of email and search engines. The use of these tools also reflected the principal purposes for using the internet, that is, to keep in touch with colleagues and to access professional information. Most doctors saw the value of the internet to their

professional development, although a few mentioned that they thought it was a waste of time. Problems caused by unreliable connections, slow downloads and unreliable power supplies also added to the frustration of many.

Needs and benefits of professional development
Some doctors expressed the view that their city counterparts had no idea about the problems they faced because of isolation, and that the internet had the potential to significantly impact on their professional development. Some specific suggestions recommended by the medical practitioners included using the internet:

- For access to up-to-date information and resources
- For creating better channels of communication with other professionals, by 'bridging the gap'
- For professional development in the form of web-cam links and forums
- For remote participation in organised professional events.

Many medical practitioners were using the internet extensively for professional purposes and to keep up-to-date with recent developments and techniques in the field, and most saw the potential for its use to be more specifically adapted to the needs of isolated rural and remote professionals.

4.4   Nurses

4.4.1   Website review

Professional association websites relevant to the profession of nursing were identified in Australia, New Zealand, UK and USA. These sites, and their web addresses are given below:

> Australian Nursing Federation: www.anf.org.au
> Australian Nursing and Midwifery Council: www.anmc.org.au/
> New Zealand Nurses Organisation: www.nzno.org.nz
> British Nursing Association: www.bna.co.uk
> American Nursing Association: www.nursingworld.org

Most sites were accessible through membership, and included features such as publications and resources, latest news and career and conference information. Some sites included computer course information, professional standards, links to global sites, links to online courses, mailing lists and discussion forums.

4.4.2   Survey: Questionnaire and interviews

Nurses in rural and remote areas of Queensland and Western Australia were surveyed on their use of the internet for professional development and support. Of the nurses contacted, 330 responded to the survey.

Nurses were represented in all age ranges (Figure 51), with the largest single group in the 46-55 year old range (33%) As might represent the profession as a whole, most respondents were female (93%) (Figure 52).

Figure 51: Age range of nurses surveyed

Figure 52: Gender of nurses surveyed
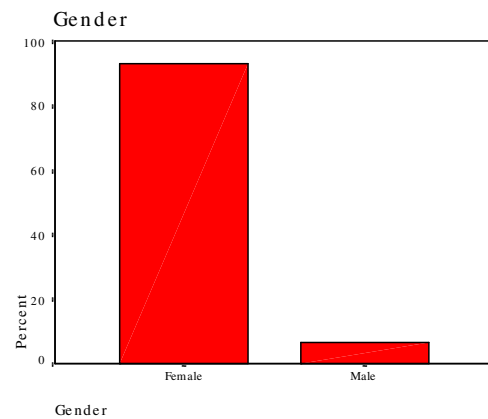
Professional qualifications and experience

Like the medical practitioners, the nurses were professionally well-qualified (Figure 53) with almost 45% obtaining post-graduate qualification beyond a Bachelor's degree. Four percent of respondents had Masters degrees, with the remaining post-graduate qualifications comprising Graduate Diplomas (18%) and Graduate Certificates (23%). This is possibly an indication of the professional orientation (rather than research orientation) of the further study undertaken by nurses.

The nurses who responded to the survey were generally well-experienced (Figure 54), with over 76% having more than 10 years experience. Indeed, the largest single group was comprised of those nurses who had accumulated more than 21 years experience (48%).

Figure 53: Professional experience of nurses

Professional experience

Professional experience

Figure 54: Years in current employment

Current position employment

Current position employment

Internet access and frequency of use

The nurses who were surveyed were generally connected to the internet both at home (78%) and at work (74%) (although restricted access existed in many institutions). The principal method for connection at home appeared to be a telephone modem (81%), while at work, as might be expected, modem access was not as frequently used (25%) (although over 52% of nurses did not answer this question or ticked *Not sure*). However, nurses were generally frequent users of the internet for professional purposes (Figure 55). Only 11% reported that they never use the internet for professional and work-related purposes, while 21% access it daily for information and professional support. Over 57% of nurses surveyed use bookmarks of professional websites to aid retrieval of sites (Figure 56).

Figure 55: Frequency of internet access

Access internet for professional purposes

Access internet for professional purposes
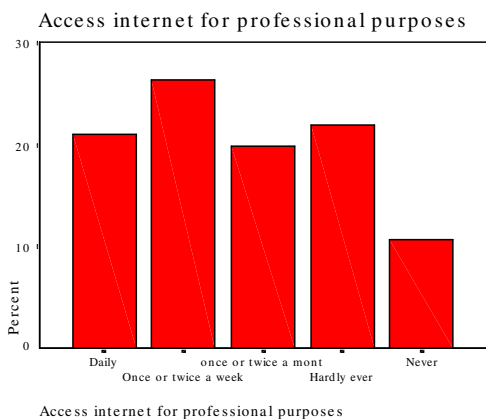
Figure 56: Number of bookmarked websites

Bookmarked professional sites

Bookmarked professional sites

The nurses who responded to the survey generally rated themselves as fairly confident users of the internet with a total of 80% rating their competence as *Satisfactory, More competent than most* or *Very competent.* Over one in ten nurses (11%) were very competent users of the internet. The most frequently used internet tool was email, where 45% of nurses reported that they used it daily, followed by search engines (Figure 57). Listservs, chat rooms, website development software and discussion forums were accessed comparatively rarely.

Nurses' competence in using internet tools mirrored almost exactly the frequency of use for these tools (Figure 58), with greatest confidence shown in the use of email and search engines.

Figure 57: Frequency of use of internet tools

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
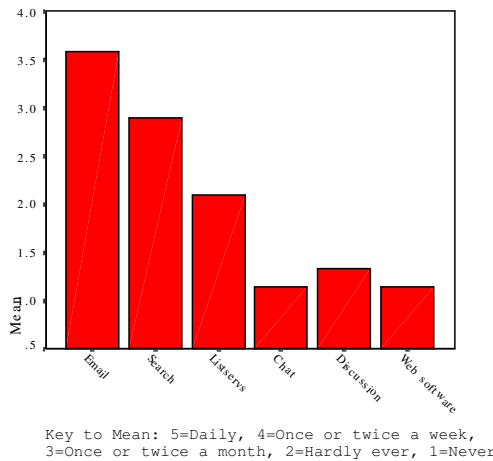
Figure 58: Competence as a user of internet tools

Key to Mean: 4=Very competent, 3=More competent
than most, 2=Satisfactory, 1=Incompetent
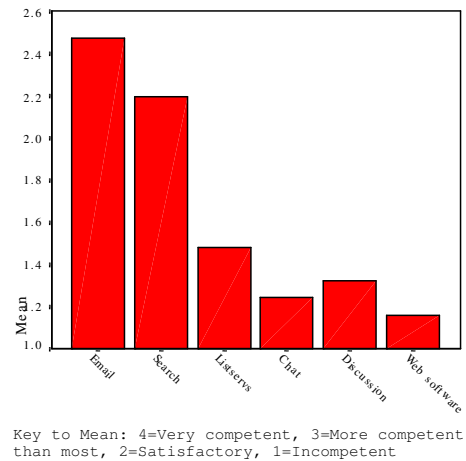
Use of the internet for professional learning

The nurses who responded to the survey used email and search engines very frequently for professional reasons (Figure 59), principally for *Keeping in touch with colleagues* and *To gain work-related information*, such as articles, publications and resources. Nurses also used the internet for other purposes less frequently but consistently, such as to gain information about conditions of employment, to access employment opportunities and job advertisements, to study online, and for professional information such as conference details.

The types of websites that nurses used most often professionally were principally those of their employers, closely followed by the website of their place of employment (Figure 60). Nurses also accessed the websites of universities either for information or as they study online. Other types of websites such as professional associations, the websites of rural associations, community sites, and private industry were also accessed occasionally by the nurses.

Figure 59: Frequency of use for professional reasons

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
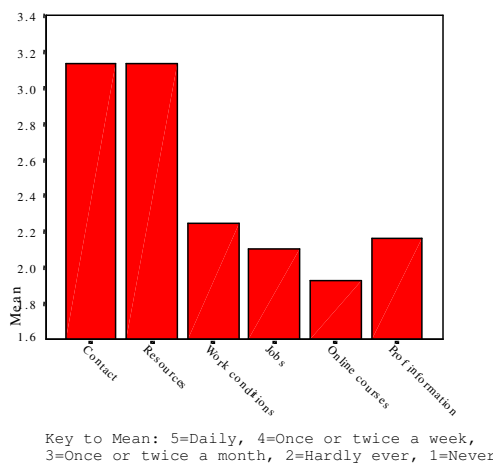
Figure 60: Frequency of use of professional websites

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
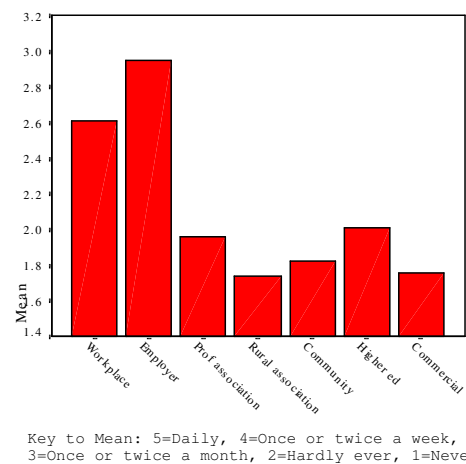
When asked to nominate the ways that nurses thought the internet could help in their professional learning, resources (e.g., 'rural hospitals are behind urban teaching hospitals – even accessing information on medications would be helpful', 'major source of practice protocols') and training (e.g., 'access to continuing education self-directed learning packages', 'access documents for training modules') were the most frequently mentioned features (Figure 61). Others mentioned by fewer nurses included support services (such as advice, FAQs, online mentoring), and communication elements (such as networking and support for professional relationships).

It is not surprising (given that 80% of nurses principally access the internet, at home at least, by telephone modem) that nurses nominated lack of accessibility to the use of the internet as a limitation for their own professional purposes (Figure 62). Further, many nurses have restricted access to the internet at work:

> Internet usage at work for our nursing staff is restricted to senior staff, so most nurses cannot access it. There is only one computer for the nurses in the staff development department for them to use the internet. It would be great, and make the job of staff development easier, if everyone (doctors and nurses) were treated equally - with respect, and these nurses given access too. It may seem there is the belief they might just 'sit in front of the computer' and not do their work. The opposite in fact is so – they barely have time to have a tea break.

They also suggested other limitations such as their own lack of time to go online, and the perceived lack of training and human interaction in the online environment.

Figure 61: How internet could help professional learning

Key to Frequency: Number of times category mentioned
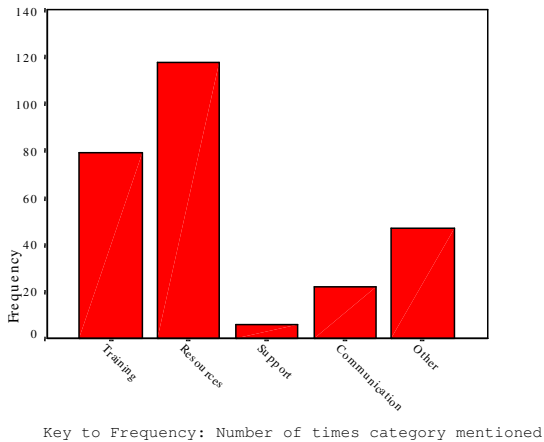
Figure 62: Limitations of internet for prof. learning

Key to Frequency: Number of times category mentioned
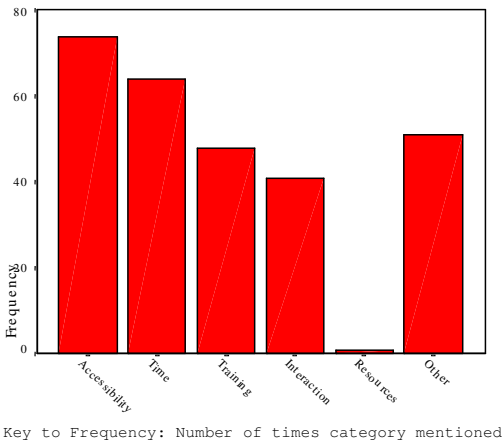
Professional isolation

Twenty percent of nurses who responded to the survey reported that they did not feel any professional isolation in their rural and remote positions. However, 52% felt a little professionally isolated and over 27% felt a great deal of isolation (Figure 63).

Of those who felt very isolated, the most mentioned contributing factor was the distance away from other professional centres, followed by the lack of human interaction with others in the profession. Some mentioned travel costs, the investment of time required (for professional development), and lack of training and resources (Figure 64). Many of these issues are encapsulated in the following response:

> Only a few teleconferences are held and there is no one to cover wards to attend them. Most conferences are in Perth 600km away. It is expensive to travel there even if given study leave. No internet access apart from the hospital website.

Figure 63: Extent of feelings of professional isolation

Professionally isolated

Figure 64: Types of professional isolation
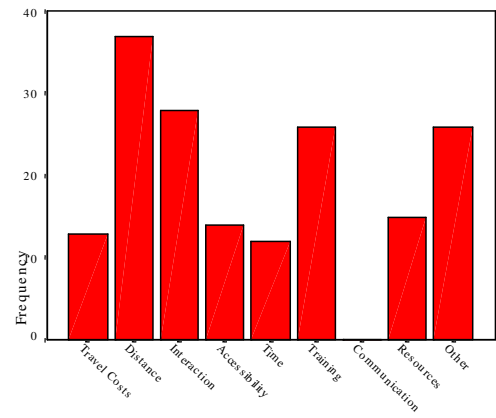
Key to Frequency: Number of times category mentioned

When asked to nominate the kinds of services that could be provided on the internet to help alleviate professional isolation, nurses largely suggested the same kinds of support that would help with their professional learning, but with an emphasis on professional communication (mentioned 79 times) (e.g., 'communication by email is essential', 'communication from rural to city and city to rural – interlinking all the major teaching hospitals would be ideal'), and reliable and up-to-date resources (76) (e.g., 'as there are no professional libraries available locally, access to papers and research would be handy', 'more information on what is happening in other hospitals re staffing conditions, clinical requirements, etc.'). Web-based training was also mentioned 37 times.

Professional interaction using the internet

Sixty two percent of nurses who responded to the survey regularly accessed the internet for professional information. When asked to nominate their preferred professional website, most nurses (89) nominated a website maintained by a government organisation (Figure 65). The remaining nominated websites were nursing association, commercial or university websites. Regular access to these websites appeared to be frequent with 13% of nurses accessing their preferred website daily, and 79% (cumulative) accessing it at least as frequently as once or twice a month (Figure 66).

Figure 65: Principal website accessed by nurses by type
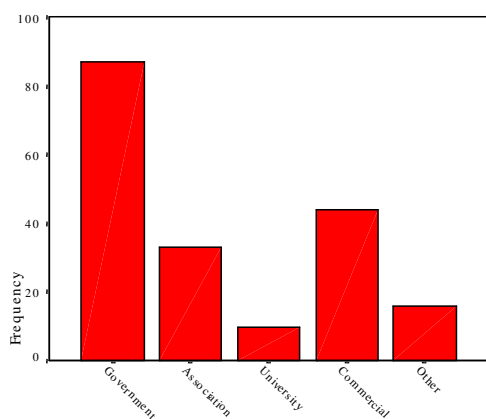
Key to Frequency: Number of times category mentioned

Figure 66: Frequency of access to preferred prof. website
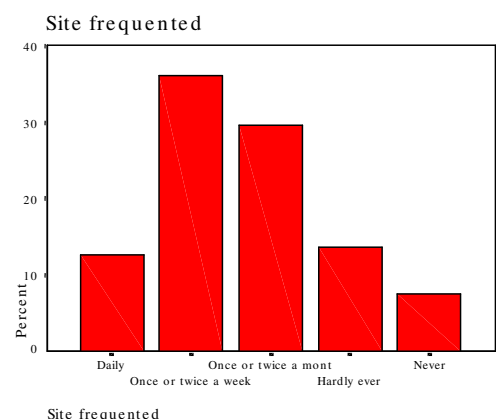
Site frequented

Nurses value the resources provided on their preferred websites much more than any other feature with 94 mentioning this as the most useful aspect (Figure 67) (e.g., 'policy documents'). Fewer nurses also valued the links that are available on the website, searching facilities, communication features, and support. In interacting with their preferred sites, nurses most frequently downloaded information and publications to read, on average more frequently than once or twice and month, and used email facilities within the site (Figure 68).

Figure 67: Most helpful features on preferred website
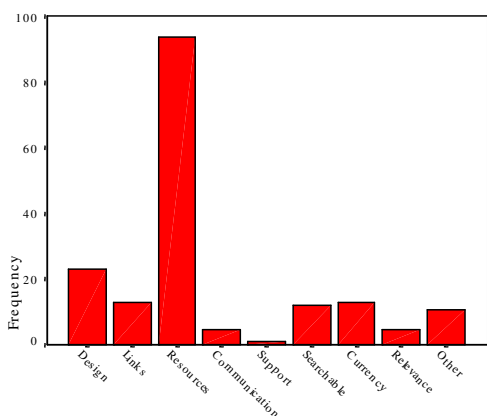
Key to Frequency: Number of times category mentioned

Figure 68: Ways nurses interact with preferred website
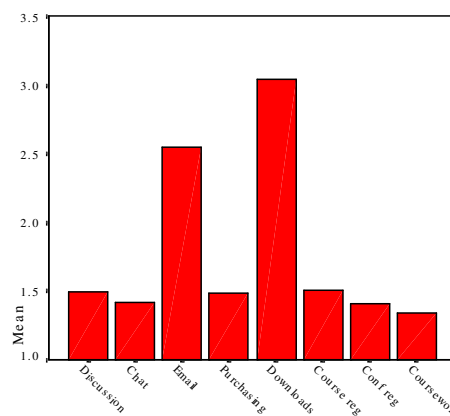
Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never

Web characteristics and features of professional websites

In order to seek nurses' opinions on the usefulness of professional association websites, a list of national, professional websites was given in the survey, one for each profession. Nurses were asked to consider the following website:

> Australian Nursing Council: www.anci.org.au

> (The current address is: www.anmc.org.au)

While 54% of nurses had never visited the nominated site before, of those who had, 14% (cumulative) visited the site at least once or twice a month. The high proportion of nurses who had not visited the site may be seen as an indication that most do not have access to sites outside of their own hospital intranet. Fifty eight percent of nurses indicated that they intended to visit the site again, although a quarter of all the nurses said that they would not.

When asked what was most useful about the site, as with their own nominated sites, most nurses nominated the resources on the site as most value to them (mentioned 46 times) (e.g., 'current practice standards as they discuss legal positions and responsibilities'), with others citing the design, and the fact that the site is a source of current and up-to-date information. Nurses' suggestions on useful features that would improve the site included: 'search access to current journal full-text articles', 'links to more relevant learning opportunities and courses', and 'links to reputable sites to provide medical information for nurses'.

The difficulties of finding time to keep on top of both professional demands and learning new IT skills was described by one nurse:

> As a professional who has worked most of my life, I have been left behind, because I have always been a 'hands on' person. In hindsight, I should have taken more seriously the effect IT has had. When staff shortages has always been the issue, these desires to pursue never took place, even though I could see where the future lay. For me, I am at the crossroads – I am fairly intolerant these days with the changes constantly set upon us. There is always the need for huge levels of documentation to justify time spent … Enthusiasm is replaced by burn-out, as there is yet another bench mark to meet.

4.4.3 Nurses' level of internet support, use, and needs for professional development

Level of support

Rural nurses had access to at least two Australian professional association websites: the *Australian Nursing Federation* website and the *Australian Nursing and Midwifery Council* website. They were

also able to access a range of international nursing association websites to source up to date professional information and resources.

Use of professional development services and support
Nurses made excellent use of the internet for professional development purposes when they had the opportunity. While nurses generally rated themselves as competent users of internet tools such as email and search engines, they often had difficulty obtaining regular access in the workplace, because of time restraints and limited access privileges (including access only to the workplace intranet). Professional isolation was an important factor in rural and remote nurses' work settings, and they generally recognised the potential of the internet to significantly reduce this condition. In particular, communication facilities and access to professional resources such as journal articles were considered important factors in assisting rural and remote nurses.

Needs and benefits of professional development
Nurses generally recognised the immense value of the internet in assisting their professional development. They recognised the wealth of appropriate information and resources that already exist on specific nursing websites and other health related websites that abound on the internet. Nevertheless, they had many ideas about how the internet could be used to assist their professional development even further. Specific suggestions included using the internet:

- For accessing information on medications and practice protocols
- For searching and retrieving full-text journal articles
- For access to accredited online courses and continuing education self-directed learning packages
- For communication, discussion and interaction with others in the profession
- For direct links with major teaching hospitals
- For access to information on other hospitals' conditions of employment, staffing and clinical requirements.

Nurses were generally well aware of the professional development opportunities that exist on the internet, and they made use of it to keep up to date and for information on current practice and procedures. However, greater availability and access at the workplace would greatly facilitate professional development and further assist in reducing professional isolation for rural and remote nurses.

4.5   Occupational therapists

4.5.1   Website review

Professional association websites relevant to professionals in the field of occupational therapy were identified in Australia, New Zealand, UK and USA. These sites, and their web addresses are given below:

Australian Association of Occupational Therapists: www.ausot.com.au
British Association of Occupational Therapists: www.cot.co.uk
The New Zealand Association of Occupational Therapists: www.nzaot.com
American Occupational Therapy Association Inc: www.aota.org

All sites were accessible through membership, and included features such as publications and resources, conference information and links to global sites. Some sites included links to online courses, research grants, specialist sections and discussion forums. One site has a tool for determining an individual's professional development plan.

4.5.2   Survey: Questionnaire and interviews

Eighty rural and remote occupational therapists responded to the survey on the use of the internet for professional development and support.

Although all age ranges were represented in the respondents (Figure 69), more than half the occupational therapists were 35 years of age or under. Only 3% were 56 years of age or older, and almost all were women (78%) (Figure 70). Surprisingly, only two male occupational therapists responded to the survey.

Figure 69: Age range of occupational therapists surveyed   **Figure 70: Gender of occupational therapists surveyed**
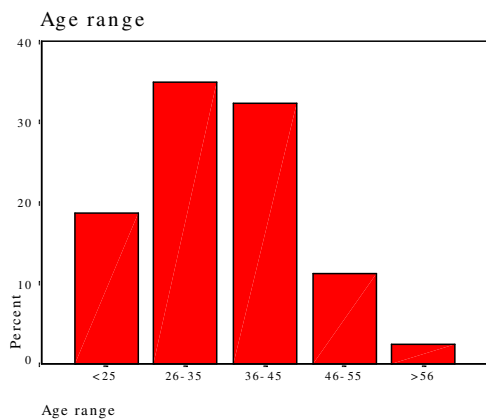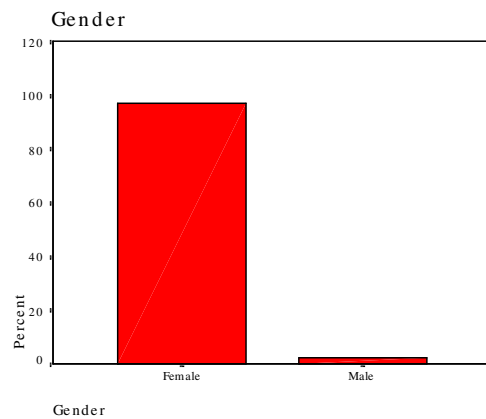
Professional qualifications and experience

The highest qualification for the majority of the occupational therapists was a bachelor degree (71%). However more than a quarter had gone on to do further post-graduate study with 19% pursuing graduate diplomas/certificates, and 9% graduating at the masters or doctoral level.

Figure 71 shows that in terms of professional experience, the occupational therapists who responded to the survey were relatively less experienced with only 8% accumulating more than 21 years experience. This suggests a relatively young, recently qualified group who are new to working in their profession and in their current positions. No occupational therapists had been in their current employment position for more than 15 years, and 85% had been employed in their current position for five years or less (Figure 72).

Figure 71: Professional experience of occupational therapists

Professional experience

Figure 72: Years in current employment

Current position employment

Internet access and frequency of use

Occupational therapists were well set up, both at home and at work, with access to the internet. Over 88% had internet access at work, and 85% were connected at home. Most accessed the internet via telephone modem at home (82%) although it is difficult to tell exactly which method was used at work as there was a high *Not sure* return (34%). Regular access to the internet was high amongst occupational therapists (Figure 73). More than half accessed the internet for professional purposes at least on a daily basis (56%). Fewer than 8% responded that they used the internet *Hardly ever* or *Never*. More than 80% of occupational therapists bookmarked useful professional development websites for frequent use, with 17% at the upper end of the scale, bookmarking more than 21 professional websites for regular access (Figure 74).

Figure 73: Frequency of internet access

Access internet for professional purposes
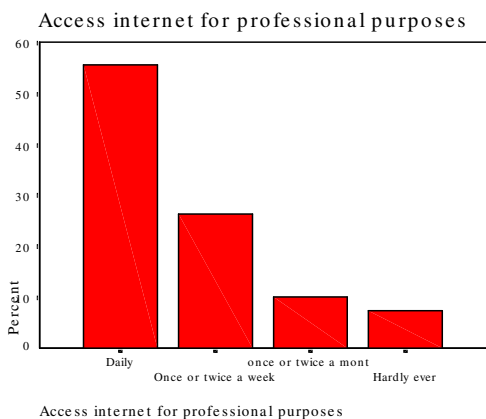
Figure 74: Number of bookmarked websites

Bookmarked professional sites

The occupational therapists were very confident users of the internet with a total of 96% rating their competence as *Satisfactory, More competent than most* or *Very competent.* Only 4% rated themselves as incompetent in this regard. Of all the internet-based tools, email was used most frequently by the occupational therapists, together with search engines and listservs (Figure 75). Chat rooms and discussion forums were accessed rarely, and few occupational therapists used web development software.

Occupational therapists' perceived confidence in using internet tools reflected their frequency of use (Figure 76), with greatest confidence shown in the use of email and search engines.

Figure 75: Frequency of use of internet tools

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
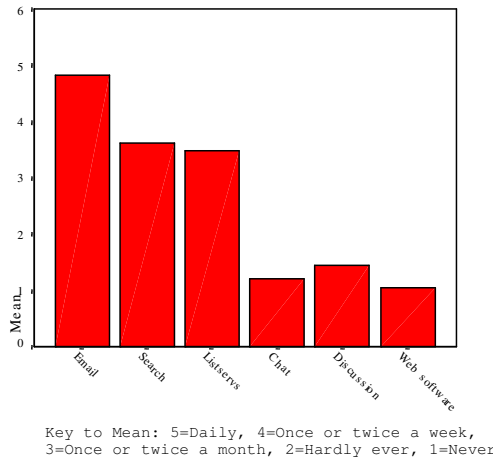
Figure 76: Competence as a user of internet tools

Key to Mean: 4=Very competent, 3=More competent
than most, 2=Satisfactory, 1=Incompetent
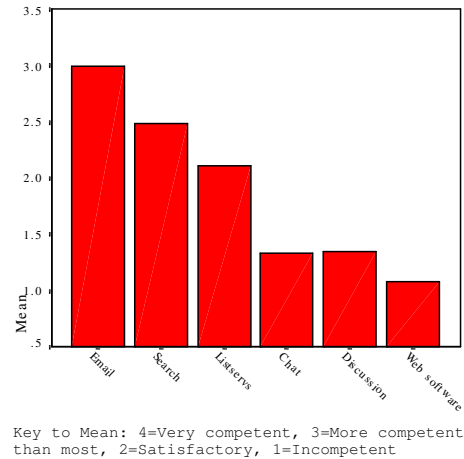
Use of the internet for professional learning

Occupational therapists used the internet well for professional purposes. When asked how often they used web-based tools for professional purposes, the most frequently given reason was to keep in contact with colleagues and other professionals (Figure 77). *To gain work-related information*, such as articles, publications and resources, and to access professional information were also important reasons to go online. Other purposes, such as to gain information about conditions of employment, to access employment opportunities and job advertisements, and to study online were also mentioned as more rarely accessed.

Occupational therapists accessed a variety of professional websites, most often the website of their employer. They also frequently accessed the website at their place of employment, and the websites of professional associations (Figure 78). Other types such as the websites of rural associations, community sites, higher education websites and private industry were accessed occasionally by the occupational therapists.

Figure 77: Frequency of use for professional reasons

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
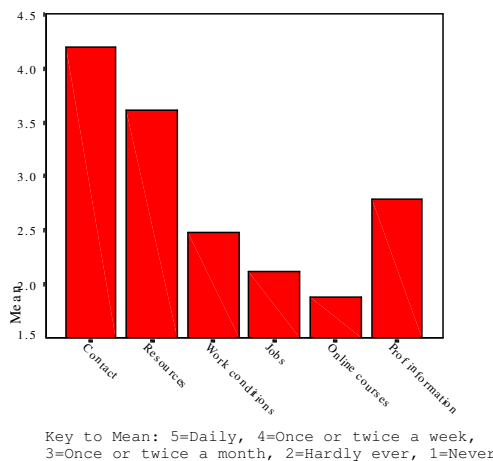
Figure 78: Frequency of use of professional websites

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
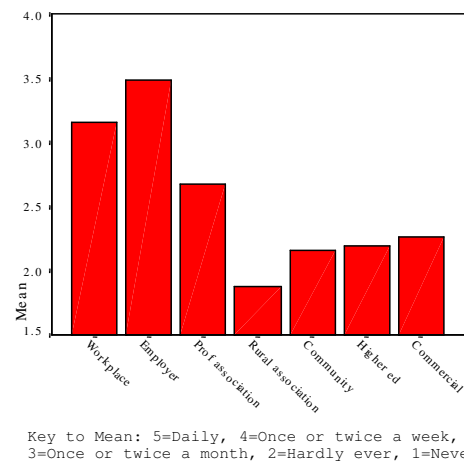
In terms of helping their professional learning (Figure 79), occupational therapists nominated access to resources (e.g., 'evidence-based practice resources', 'access to case studies', 'finding information on a particular condition or diagnoses that are unfamiliar to a clinician'), and training (e.g., 'post-graduate coursework', 'more online courses').

Some of the limitations mentioned by occupational therapists relating to the use of the internet for their own professional purposes (Figure 80), were principally lack of time to go online (e.g., 'as a sole practitioner, I have a large case load and waiting lists and would feel guilty using time to search

the internet'), the perceived lack of training, and lack of human interaction in the online environment. Availability of resources was considered a limitation, only in the sense of needing more (e.g., 'not enough reliable full text online information'). Difficulties of accessibility also limited professionals' use of the internet (e.g., 'sharing two computers between about seven staff members means I can't get on the computer to complete reports, let alone search the internet for professional reasons'). As one practitioner pointed out:

> I would probably use the internet a lot more at work if I had access to all sites. My line manager must put a password in the computer for me if I want to use sites like OT seeker, or a search engine. She is usually hard to get hold of so I often don't use the internet for this reason.

Figure 79: How internet could help professional learning
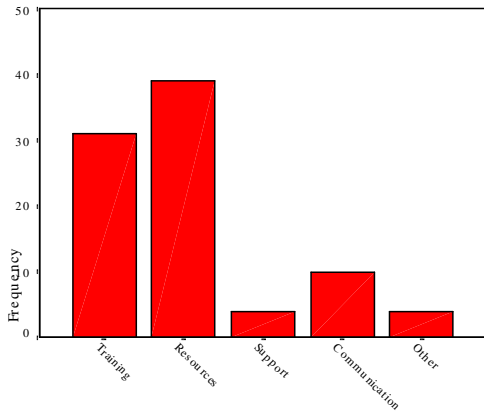
Key to Frequency: Number of times category mentioned

Figure 80: Limitations of internet for prof. learning
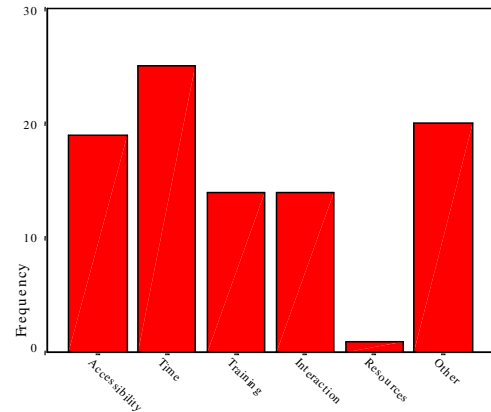
Key to Frequency: Number of times category mentioned

Professional isolation

While 23% of occupational therapists reported no feelings of professional isolation, 20% felt a great deal of isolation, with the majority feeling at least a little isolated (58%) (Figure 81). Of those who felt a great deal of isolation, the principal causes given were distance and lack of human interaction with others in the profession (Figure 82).

Figure 81: Extent of feelings of professional isolation
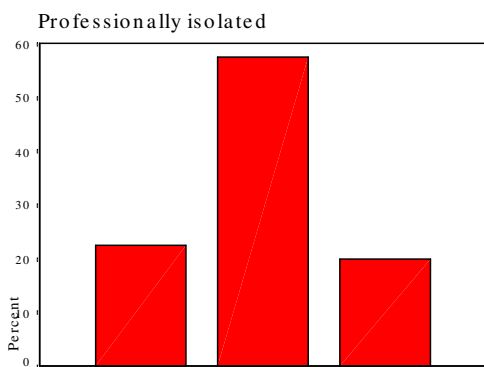
Figure 82: Types of professional isolation
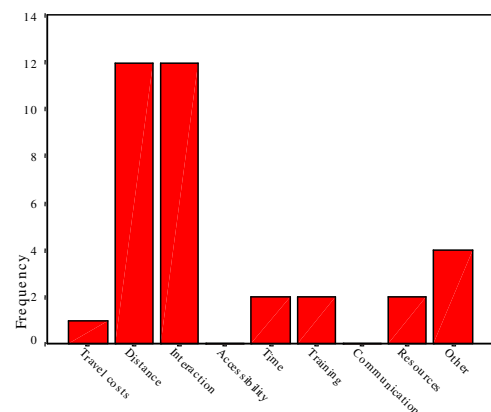
Key to Frequency: Number of times category mentioned

The suggestions given by occupational therapists on how the internet might help to overcome professional isolation included principally by providing better channels of communication to other professionals (mentioned 40 times) (e.g., 'listservs help you feel connected', 'networks and contacts with other professionals') provide a greater range and quality of resources (23) (e.g., 'provide a virtual library'), to provide better professional support (12) (e.g., 'link you with a mentor' 'mentoring, especially for newly graduated therapists') and to provide access to professional development and training (8).

Professional interaction using the internet

Ninety one percent of occupational therapists reported that they regularly used the internet for professional information. When asked to nominate their favourite professional website, most occupational therapists gave the website of a professional association (Figure 83), and the remainder mainly government, commercial, or university websites. Regular access to these websites was quite frequent with 12% of occupational therapists accessing their preferred website daily, and a total of 95% accessing it as frequently as once or twice a month (Figure 84).

Figure 83: Principal website accessed by type
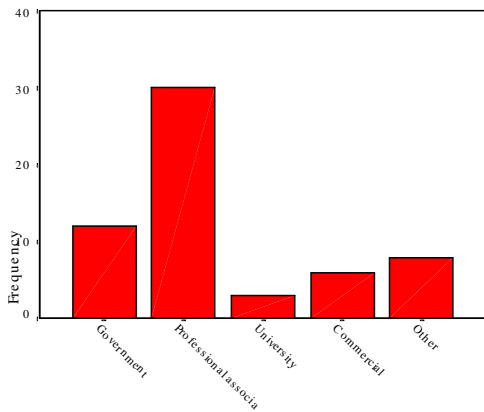
Figure 84: Frequency of access to preferred prof. website

Key to Frequency: Number of times category mentioned
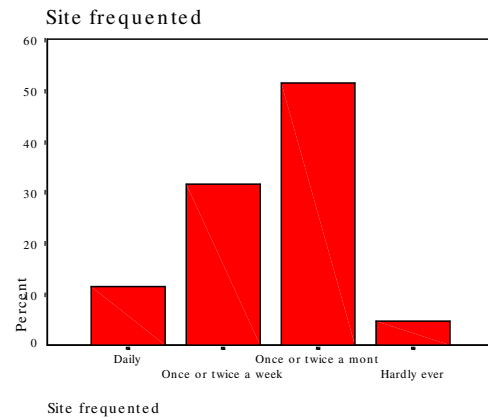
Like most of the other professions, occupational therapists overwhelmingly valued *Resources* provided on their preferred websites more than any other aspect, with 40 mentioning this as the most helpful feature (Figure 85). Other occupational therapists mentioned links on websites (7) and communication (7) as valued aspects of their favoured website.

In interacting with their preferred sites, occupational therapists most frequently downloaded information and publications to read (e.g., 'massive data base', 'accurate sources'), and used email facilities within the site (Figure 86). In referring to email, one occupational therapist included listservs, saying:

> Listservs are by far and away the most useful way of accessing professional support and knowledge through technology. There are specific speciality areas you can subscribe to and post questions that receive responses from all around the country. Responses are timely and relevant and often suggest further literature to explore. I use it often. Listservs are accessed through email rather than a particular website, therefore despite not having access to the internet beyond [name of employer's website] we are still able to access professional support.

Occupational therapists also frequently used their favourite site to participate in discussion forums and chats, to purchase books and other items, register for courses and conferences, and complete online coursework.

Figure 85: Most helpful features on preferred website
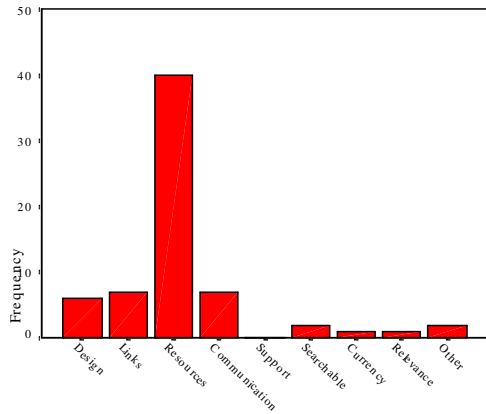
Key to Frequency: Number of times category mentioned

Figure 86: Ways occupational therapists interact
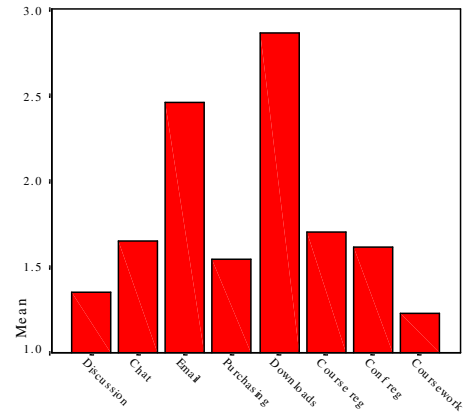
Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never

Web characteristics and features of professional websites

In order to explore useful features of websites with participants, a list of national, professional websites was given in the survey, one for each profession. Occupational therapists were asked to consider the following website:

Australian Association of Occupational Therapists: www.ausot.com.au

Only 9% of occupational therapists had never visited the site before. Of those who had, more than 50% visited the site *Once or twice a month, with* 4% accessing it weekly. Further, over 90% stated that they intended to visit the site again in the future, with the remaining 9% possibly intending to visit the site. No occupational therapists said that they would not visit again. However, when asked what was most useful about the site, the same pattern emerged with the largest number of occupational therapists mentioning the fact that the site was useful for its resources (mentioned 42 times) (e.g., 'information and interesting articles', 'more services and resources that rural practitioners would find useful') followed by the usefulness of the links on the site (19). Other suggestions included 'lists of online special interest groups for support', 'profiles of experts', 'advertising Australia-wide OT jobs'.

4.5.3 Occupational therapists' level of internet support, use, and needs for professional development

Level of support

Occupational therapists had access to professional information and support through an Australian website (the *Australian Association of Occupational Therapists* website) and also to the websites of other overseas professional associations.

Use of professional development services and support

Occupation therapists were very computer-literate and assured in their use of the internet as a professional development tool. They regularly used email and search engines to communicate with colleagues and to access information on their profession, but they also used listservs regularly as a ready means to stay in touch with professional developments. Nevertheless, many experienced difficulties accessing the web as often as they would like because of practical time constraints and restricted access privileges. Occupational therapists in general felt at least some professional isolation in their rural and remote workplaces.

Needs and benefits of professional development

Occupational therapists were aware of many ways that the internet could assist them both to reduce their sense of professional isolation and to advance their professional development. Most regularly

accessed professionally-related websites. Some specific suggestions made by occupational therapists included using the internet:

- For finding relevant information on unknown conditions or unfamiliar diagnoses
- For accessing post-graduate online courses, and other study modules
- For subscribing to a range of listservs that do not require access to the wider internet beyond the employer's intranet
- For accessing more targeted resources and services for rural and remote professionals
- For joining online special interest groups
- For finding information on advertised positions for occupational therapists.

Occupational therapists were generally skilled in using the internet to support their own professional development, but felt isolated and remote from the wider profession, and somewhat frustrated by the frequent lack of accessibility. They recognised the potential of the internet to support them in many ways beyond currently available services and supports.

4.6   Pharmacists

4.6.1   Website review

Professional association websites relevant to pharmacists were identified in Australia, New Zealand, UK and USA. These sites, and their web addresses are given below:

> Pharmaceutical Society of Australia: www.psa.org.au
> Pharmaceutical Society of New Zealand: www.psnz.org.nz
> Royal Pharmaceutical Society of Great Britain: www.rpsgb.org.uk
> American Pharmacists Association: www.aphanet.org

All sites included features such as publications and resources, latest news, career and conference information. Some sites included links to global sites, links to online courses, online journals and discussion forums.

4.6.2   Survey: Questionnaire and interviews

Pharmacists who responded to the survey on the use of the internet for professional development and support, were possibly the most evenly spread in terms of age range and gender, although only 19 responses were received.

Age range was quite evenly spread (Figure 87) although none of the pharmacists surveyed was a very young beginning professional, as there were no returns from pharmacists under the age of 26. Gender was evenly spread with 47% female, and 53% male (Figure 88).

Figure 87: Age range of pharmacists surveyed
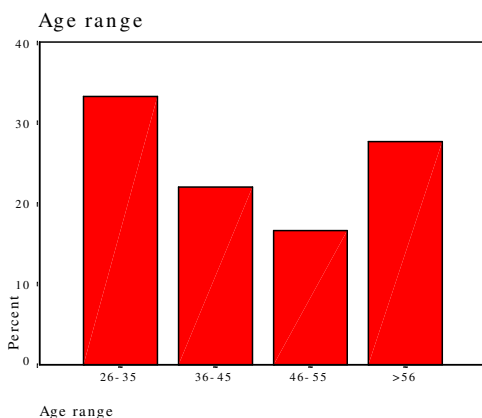
Figure 88: Gender of pharmacists surveyed

Professional qualifications and experience
The pharmacists were mainly qualified at the level of bachelor degree (74%), with five (26%) proceeding on to further study at the graduate diploma/certificate level. None of the respondents had qualifications at the masters or doctoral level.

The pharmacists were a very experienced group. Almost half (47%) had more than 21 years experience in the professional (Figure 89), yet they appeared to be a mobile group, with few of them remaining in their current positions for lengthy periods. Forty seven percent had been in their current employment for fewer than five years, with 26% remaining in their present place of employment for more than 21 years (Figure 90).

Figure 89: Professional experience of pharmacists

Professional experience

Professional experience

Figure 90: Years in current employment

Current position employment

Current position employment
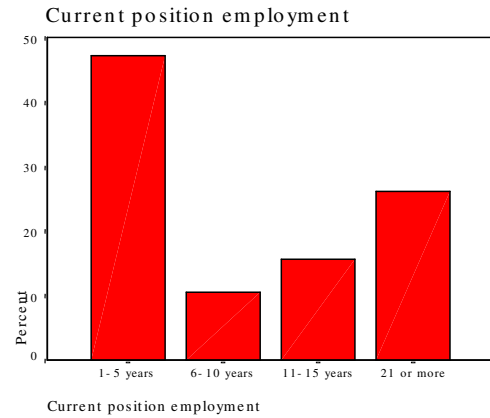
Internet access and frequency of use

Most pharmacists who responded to the survey were able to access the internet. Only three of the pharmacists (16%) were unable to access the internet from home, and four from work (22%). Of those who could connect, most used a telephone modem to access the internet both at home (77%) and at work (71%).

Most pharmacists reported that they used the internet for professional purposes at least once or twice a week (Figure 91), with 44% using the internet daily. This was substantiated in their use of browser bookmarks for websites, with 68% using the facility to mark frequently used professional sites (Figure 92).

Figure 91: Frequency of internet access

Access internet for professional purposes

Access internet for professional purposes
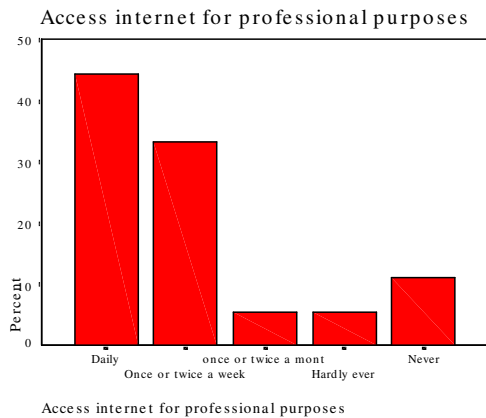
Figure 92: Number of bookmarked websites
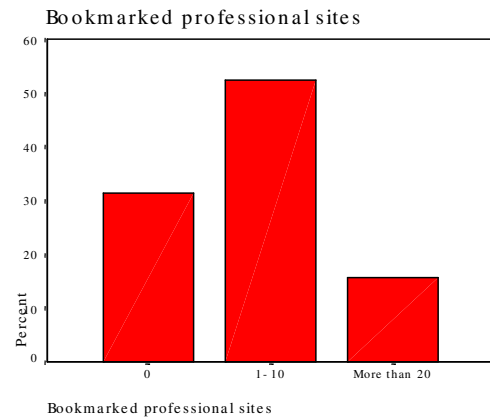
Bookmarked professional sites

Bookmarked professional sites

The pharmacists who responded to the survey generally rated themselves as fairly confident users of the internet with a total of 15 of the 19 (80%) rating their competence as *Satisfactory, More competent than most* or *Very competent.*

The most frequently used internet tool was email, where 10 of the pharmacists reported that they used it daily, followed by search engines (Figure 93). Listservs, chat rooms, website development software and discussion forums were accessed relatively rarely. Pharmacists' competence in using the different internet tools reflected their frequency of use (Figure 94) with greatest confidence shown in the use of email and search engines.

Figure 93: Frequency of use of internet tools

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
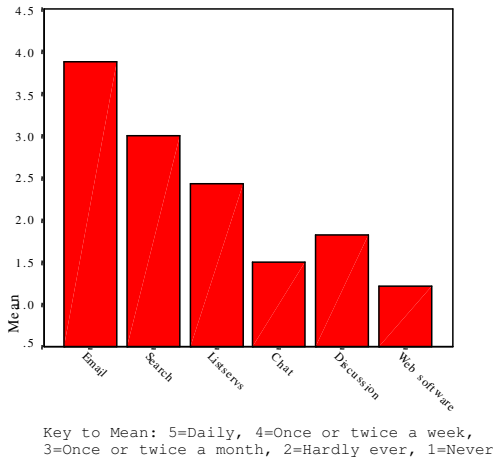
Figure 94: Competence as a user of internet tools

Key to Mean: 4=Very competent, 3=More competent
than most, 2=Satisfactory, 1=Incompetent
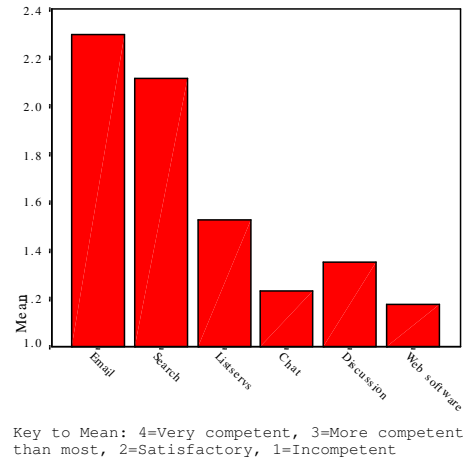
Use of the internet for professional learning

The pharmacists who responded to the survey used email and search engines very frequently for professional reasons (Figure 95), principally for *Keeping in touch with colleagues*, *To gain work-related information*, such as articles, publications and resources, and for *Professional information*, such as information about conferences and meetings. Pharmacists also used the internet for other purposes less frequently, such as to gain information about conditions of employment, to access employment opportunities and job advertisements, and to study online.

The types of websites that pharmacists used most often professionally were principally those of their own workplace, closely followed by the websites of professional associations (Figure 96). Some pharmacists also accessed the websites of universities, rural associations, community sites, and private industry.

Figure 95: Frequency of use for professional reasons

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
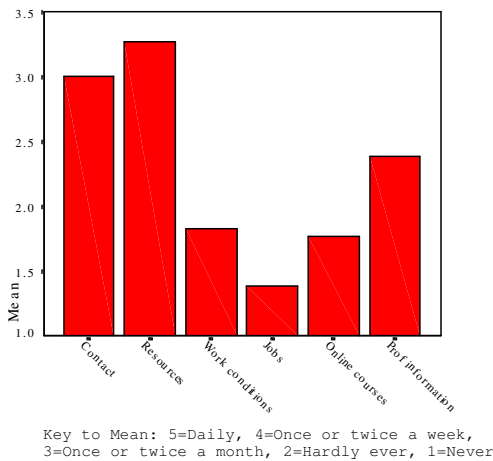
Figure 96: Frequency of use of professional websites

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
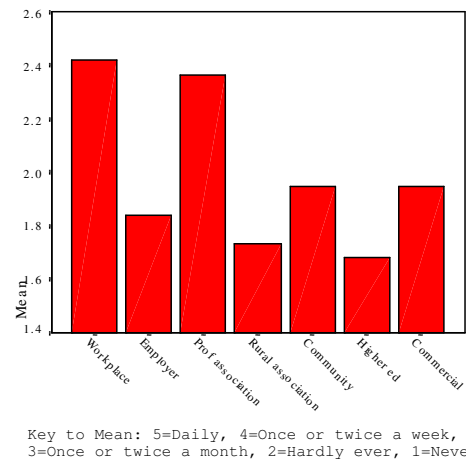
When asked to nominate the ways that pharmacists thought the internet could help in their professional learning, training (e.g., 'lectures online', 'access to city-based institutions and programs') was the most frequently mentioned feature (Figure 97). Access to resources (e.g., 'electronic documents', 'contents of seminars and reviews'), professional information (e.g., 'changes to the pharmacy and poisons act',) and communication elements (e.g., 'contact with far-flung colleagues') were also suggested.

Lack of time to go online (e.g., 'more contact if have enough hours in the day', 'always very busy in the pharmacy'), followed by problems with accessibility (e.g., 'takes ages to open some pages') were the two most frequently mentioned limitations of using the internet for professional learning (Figure 98).

Figure 97: How internet could help professional learning
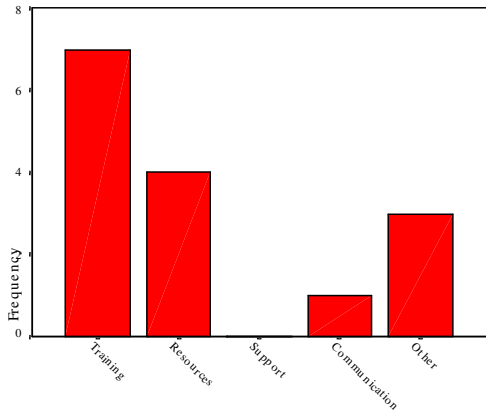
Key to Frequency: Number of times category mentioned

Figure 98: Limitations of internet for prof. learning
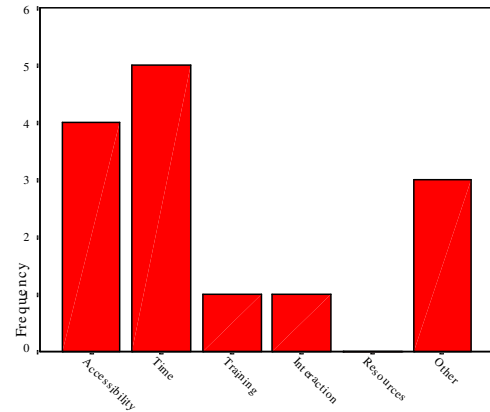
Key to Frequency: Number of times category mentioned

Professional isolation

Most pharmacists who responded to the survey reported that they felt at least a little professional isolation in their rural and remote positions (Figure 99).

Of those few who felt very isolated, the most mentioned contributing factor was the distance away from other professional centres (e.g., 'plenty of lectures advertised in capital but very few in rural areas or smaller cities'), followed by the lack of human interaction with others in the profession (e.g., 'little communication with other professionals'). Other factors mentioned included the investment of time required (for professional development), and lack of training opportunities (Figure 100).

Figure 99: Extent of feelings of professional isolation
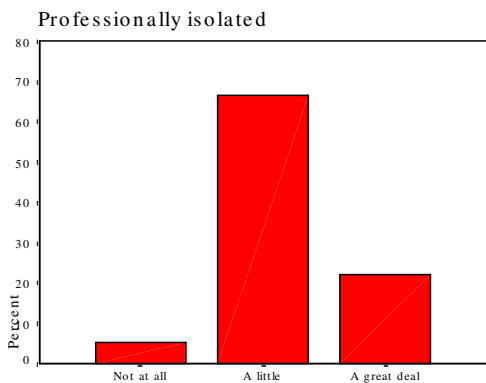
Figure 100: Types of professional isolation
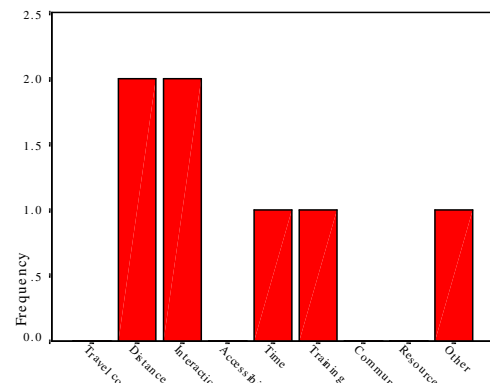
Key to Frequency: Number of times category mentioned

When asked to nominate the kinds of services that could be provided on the internet to help alleviate professional isolation, the pharmacists suggested the provision of reliable and up-to-date resources (mentioned 6 times) (e.g., 'more rapid updating of drug information'), facilities for professional communication (4) (e.g., 'discussion forums', 'conferencing'), web-based training (5) (e.g., 'more post-graduate education online', 'learning/courses to come to you via internet') and mentoring (e.g., 'mentor programs for business management').

Professional interaction using the internet

Eleven (61%) of the pharmacists who responded to the survey regularly accessed the internet for professional information. When asked to suggest their preferred professional website, most (5) nominated a website maintained by a professional association, followed by privately owned commercial sites (4) (Figure 101). Regular access to these websites was quite frequent with only two pharmacists accessing their preferred website less frequently than once or twice a month (Figure 102).

Figure 101: Principal website accessed by type
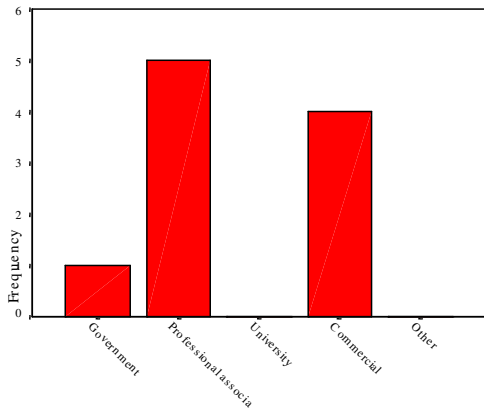
Key to Frequency: Number of times category mentioned

Figure 102: Frequency of access to preferred website
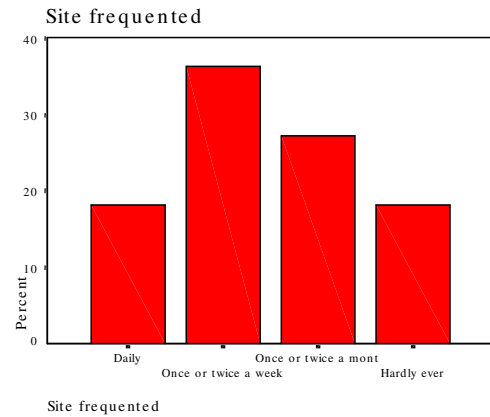
More pharmacists valued the resources provided on their preferred websites than other features. Some also valued the links provided on the website, as well as the design aspects that enabled them to easily navigate and find what they wanted (Figure 103).

In interacting with their preferred sites, pharmacists most frequently downloaded information and publications to read, on average more frequently than once or twice and month (Figure 104). Other features, such as discussion forums, chat, and email were used less frequently.

Figure 103: Most helpful features on preferred website
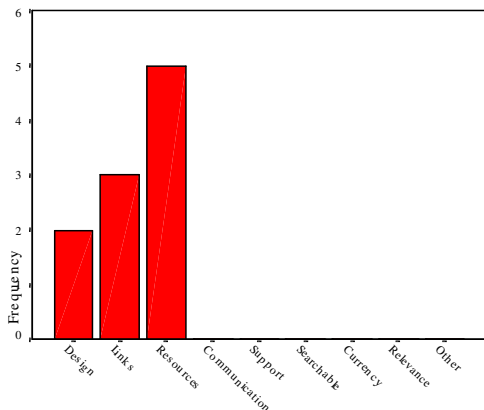
Key to Frequency: Number of times category mentioned

Figure 104: Ways pharmacists interact with website
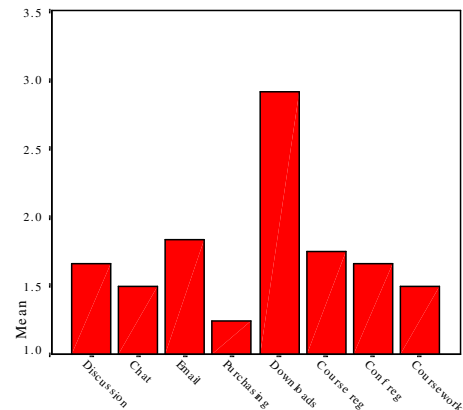
Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never

Web characteristics and features of professional websites

In order to seek pharmacists' opinions on the usefulness of professional association websites, a list of national, professional websites was given in the survey, one for each profession. Pharmacists were asked to consider the following website related to their profession:

The Pharmaceutical Society of Australia: www.psa.org.au

While five of the pharmacists had never visited the nominated site before, of those who had, five visited the site at least once or twice a month. When asked what was most useful about the site, most pharmacists nominated the resources on the site as most value to them (mentioned 5 times) (e.g., 'latest protocols', 'sales guide', 'information on medication and interaction', 'professional resources that are peer-reviewed – hard to obtain elsewhere'), with others also mentioning the search facilities and links. Almost all the pharmacists indicated that they intended to visit the site again, with only two saying that they would not.

Pharmacists suggested the following features would be useful if available on the internet: 'brief case studies', 'more helpful homepage and entry, it's hard to find what you are after', 'seminars should be put on the website earlier, not just one month before the event is on'.

In one interview, a pharmacist described how convenient online study would be, if only he or she could find the time:

> For example I've looked at doing a course on complementary medicines which would all be Internet based, but at this stage I've got so much on my plate that I can't entertain doing that. I'd like to. But that's how I would have to do it from this isolated part of the country. It's great, it's available by the Internet and I could certainly do it. I know I could actually do it if I could get myself organised.

4.6.3 Pharmacists' level of internet support, use, and needs for professional development

Level of support

Pharmacists generally have access to professional support provided on the websites hosted by professional associations. They were able to access the website of the *Pharmaceutical Society of Australia*, and also the sites of other overseas countries, and a range of other associated sites.

Use of professional development services and support

Most pharmacists, because of the nature and location of their work in pharmacies, were not able to access the internet during work hours as often as they would have liked. Nevertheless, most were also connected to the internet at home and most found time to use the internet for professional purposes, at least on a weekly basis. Pharmacists generally reported themselves as competent users of internet technology, in particular for their use of email and search engines. They used these tools principally to keep in touch with colleagues and to gain information on current developments with their field. Most pharmacists felt at least a little professionally isolated in their rural and remote positions, principally because of distance and the lack of human interaction with others in the profession.

Needs and benefits of professional development

Pharmacists were generally very positive in their belief that the internet could assist considerably to alleviate their sense of professional isolation and to support their own professional development in their remote locations. Some specific suggestions included using the internet:

- For more rapid dissemination of updates on drug information
- For participating in specific discussion forums and conferences

- For access to post-graduate education online and learning modules that are targeted at the needs of the profession, such as complementary medicines
- For mentoring programs on business management
- For disseminating case studies, and information on medications and interaction
- For advertising seminars in regional areas.

Pharmacists in rural and remote areas used the internet frequently, and were generally aware of the potential of the internet to further assist their professional development and their ability to remain current in their professional skills.

4.7   Physiotherapists

4.7.1   Website review

Professional association websites relevant to the profession of physiotherapy were identified in Australia, New Zealand, UK and USA. These sites, and their web addresses are given below:

> Australian Physiotherapy Association: www.physiotherapy.asn.au
> New Zealand Society of Physiotherapists: www.physiotherapy.org.nz/
> Chartered Society of Physiotherapists: www.csp.org.uk
> American Physical Therapy Association: www.apta.org/

All sites were accessible through membership, and included features such as publications and resources, links to global sites, and career and conference information. Some sites included links to online courses, codes of practice and discussion forums.

4.7.2   Survey: Questionnaire and interviews

One hundred and five physiotherapists responded to the survey on the use of the internet for professional development and support.

Age ranges were evenly spread amongst those who responded, with the majority occupying the middle groups (i.e., 26-55 years of age). Only 9% of physiotherapists were aged under 26 years, and only 8% were over 55 years (Figure 105). The majority of respondents were female (74%) with 26% male (Figure 106).

Figure 105: Age range of physiotherapists surveyed
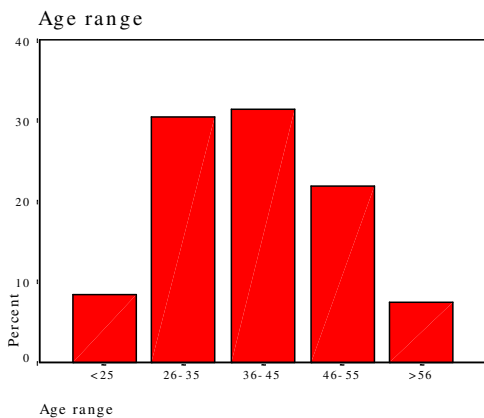
Figure 106: Gender of physiotherapists surveyed

Professional qualifications and experience

The physiotherapists who responded to the survey were professionally well-qualified with almost one in three proceeding beyond a bachelor's degree to post-graduate qualifications. No respondents had obtained a doctorate, 10% had masters degrees, with the remaining post-graduate qualifications comprising graduate diplomas (17%) and graduate certificates (5%).

The physiotherapists were generally very well experienced (Figure 107), with over 73% having more than 10 years experience. The largest single group was comprised of those physiotherapists who had accumulated more than 21 years experience (40%). Physiotherapists were also quite mobile, as more than half (51%) had been employed in their current positions for five years or less (Figure 108).

Figure 107: Professional experience of physiotherapists

Professional experience

Professional experience

Figure 108: Years in current employment

Current position employment

Current position employment

Internet access and frequency of use

The physiotherapists who returned the survey were generally well connected to the internet both at home (92%) and at work (76%). The principal method for accessing the internet at home was by telephone modem (80%), while at work, many respondents were unsure of the method of connection. However, at least 40% connected at work by modem.

Physiotherapists were generally frequent users of the internet for professional purposes (Figure 109). Only 5% reported that they never used the internet for professional and work-related purposes, while 27% accessed it daily for information and professional support. Over 76% of physiotherapists surveyed used bookmarks of professional websites to aid retrieval of sites (Figure 110) with 10% bookmarking more than 20 sites.

Figure 109: Frequency of internet access

Access internet for professional purposes

Access internet for professional purposes
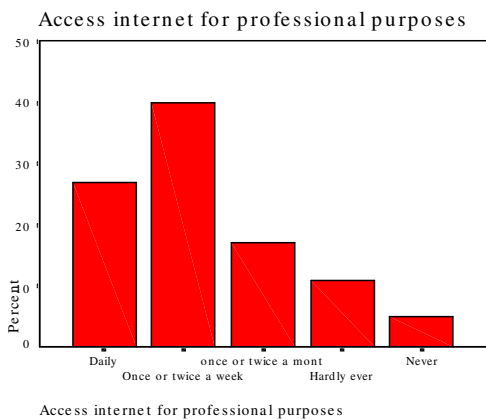
Figure 110: Number of bookmarked websites
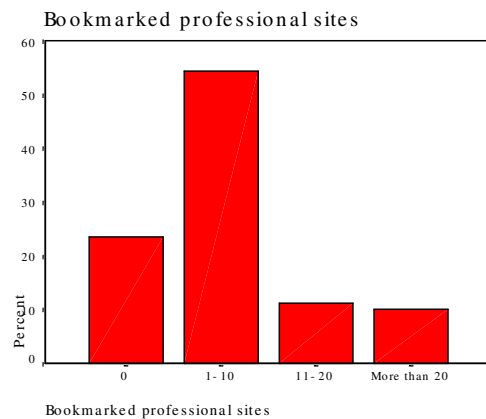
Bookmarked professional sites

Bookmarked professional sites

The physiotherapists who responded to the survey were generally very confident users of the internet with a total of 92% rating their competence as *Satisfactory, More competent than most* or *Very competent.*

Email was used most frequently by the physiotherapists of all the internet tools (Figure 111), with 54% using it daily for professional purposes. Also frequently used were search engines and listservs. Chat rooms, discussion forums and web software were used more rarely. Physiotherapists' perceived confidence in using internet tools generally mirrored their frequency of use (Figure 112).

Figure 111: Frequency of use of internet tools

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
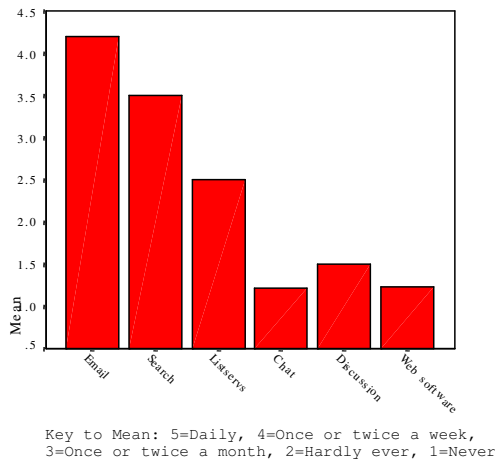
Figure 112: Competence as a user of internet tools

Key to Mean: 4=Very competent, 3=More competent
than most, 2=Satisfactory, 1=Incompetent
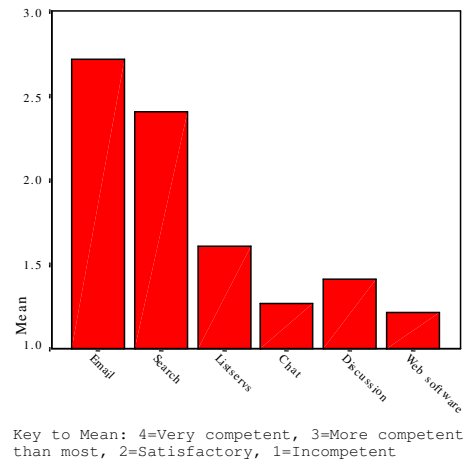
Use of the internet for professional learning

The physiotherapists were asked to indicate how often they used the internet for different specified professional reasons. *Keeping in touch with colleagues* and *To gain work-related information*, such as articles, publications and resources, were the principal reasons given, both occurring several times per month on average (Figure 113). However, physiotherapists also used the internet for other purposes less frequently, such as to gain information about conditions of employment, to access employment opportunities and job advertisements, to study online, or for professional information such as conference details.

When questioned about the types of websites that they accessed most frequently for professional purposes, physiotherapists most often accessed the websites of professional associations (Figure 114), followed by their own workplace website and their employer's main website. Other types of websites such as professional and rural associations and community sites, higher education sites and private industry were accessed occasionally by the physiotherapists.

Figure 113: Frequency of use for professional reasons

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
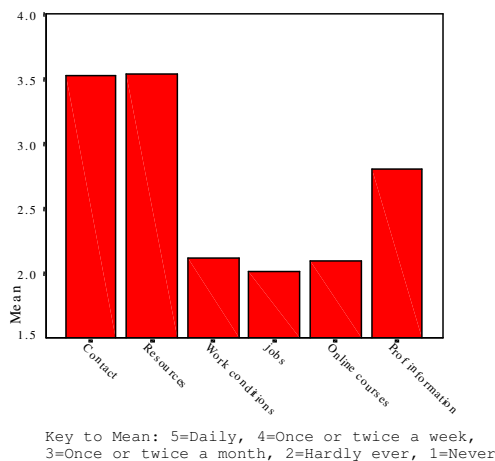
Figure 114: Frequency of use of professional websites

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
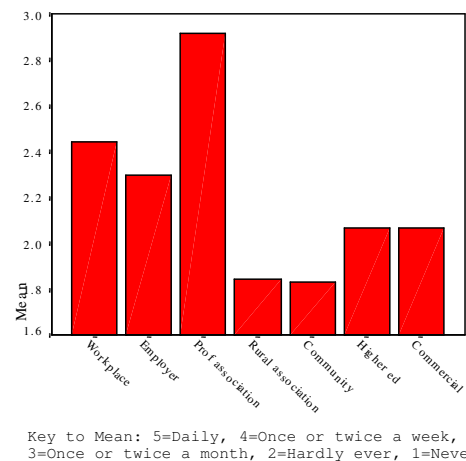
When asked to nominate the ways that physiotherapists thought the internet could help in their professional learning (Figure 115), accessibility to resources (e.g., 'when doing a locum, I use the internet to update my knowledge on different syndromes. I rely heavily on it as I do not have access to an up-to-date professional library', 'highlighting recent research findings of interest', 'protocols, pathways, and handouts for patient care') was the most frequently given response. Training (e.g., 'short courses', 'journal clubs', 'online completion of theory component of higher qualifications', 'business skills') and communication elements (e.g., 'professional discussions via a chat room for ideas') were also important.

However, physiotherapists also nominated some of the limitations they could see related to the use of the internet (Figure 116) such as their own lack of time to go online (e.g., 'life is already busy with a young family and full time employment'), and the perceived lack of training (e.g., 'inexperienced at using the internet'). Accessibility was often an important limiting factor on physiotherapists' use of the internet (e.g., 'our internet at work is currently only on our front reception – very difficult to access during the day'). The nature of the profession also caused some physiotherapists to question the usefulness of the internet:

> The internet in its present form is inappropriate to physiotherapy – it requires human body interaction, demonstrations etc. It has some use, but only as a way for peers to share data/information/tips.

Figure 115: How internet could help professional learning
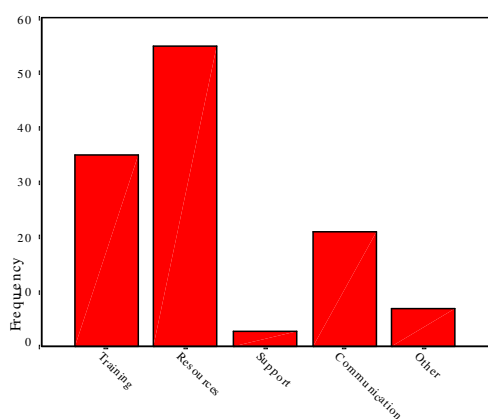
Key to Frequency: Number of times category mentioned

Figure 116: Limitations of internet for prof. learning
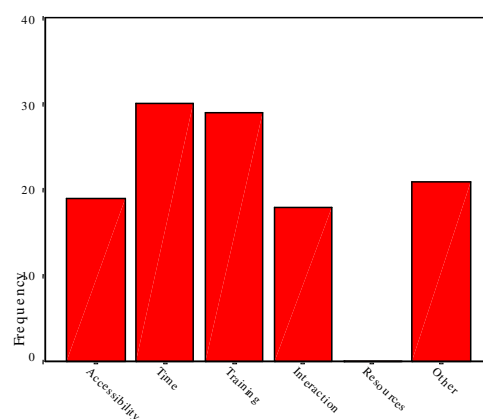
Key to Frequency: Number of times category mentioned

Professional isolation

One in five physiotherapists (20%) reported not feeling any professional isolation at all in their rural and remote positions. However, the remainder admitted to feeling at least some professional isolation with 26% indicating feelings of a great deal of isolation (Figure 117). Of those who felt isolated, most mentioned the distance from, and lack of human interaction with, others in the profession as the most important reasons. Some mentioned travel costs, the investment of time required (for professional development), and lack of training and resources (Figure 118). For example:

> As a sole practitioner, I am frequently forgotten about by colleagues in other regions … without face to face contact, many colleagues forget me.

> I currently work 1700km from nearest city. Cost and distance for PD is [a big factor]. In large metro/teaching hospital, we had hands on PD at least once per week. Now, I may only get to one course per year.

When asked what services would possibly help to alleviate professional isolation, physiotherapists suggested communication with their colleagues most frequently (mentioned 32 times) (e.g., 'discussion groups and online communities'). They also mentioned the availability of resources (26) (e.g., 'providing up-to-date information for professionals without them having to spend hours looking for it themselves') training (22) (e.g., 'short courses in pertinent topics, such as a 3 week course with time commitment requirement of 10 hours to review literature', 'teach us how to use chat rooms', 'access to PD even if it were PowerPoint or notes from those running sessions in metropolitan areas', 'practical demonstrations on video') and online support (14) (e.g., 'through email, having a direct contact person who you have confidence in and can be available for casual discussion, not just for important issues').

Figure 117: Extent of feelings of professional isolation

Professionally isolated
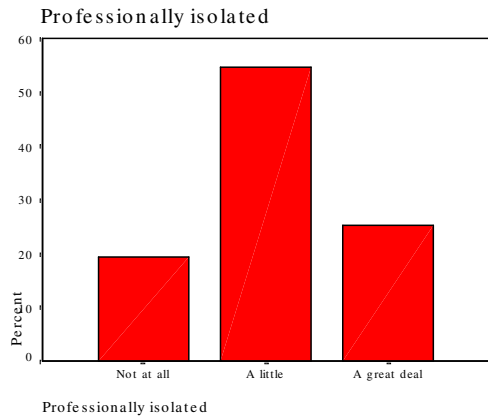
Figure 118: Types of professional isolation
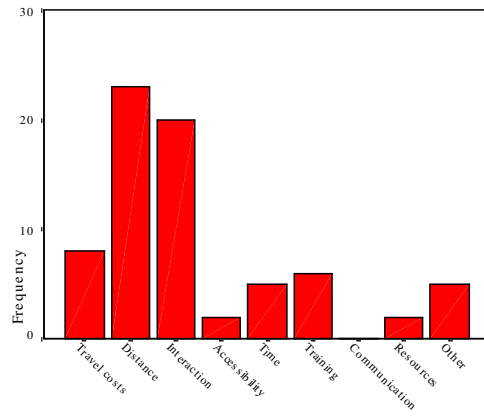
Key to Frequency: Number of times category mentioned

Professional interaction using the internet

Almost all the physiotherapists who responded to the survey regularly accessed the internet for professional information (90%). When asked to nominate the principal website each accessed for professional information, almost all physiotherapists nominated the website of a professional association (Figure 119).

Regular access to these websites appeared to be quite frequent with over 90% (cumulative) accessing their favoured site at least as frequently as once or twice a month (Figure 120).

Figure 119: Principal website accessed by physios by type
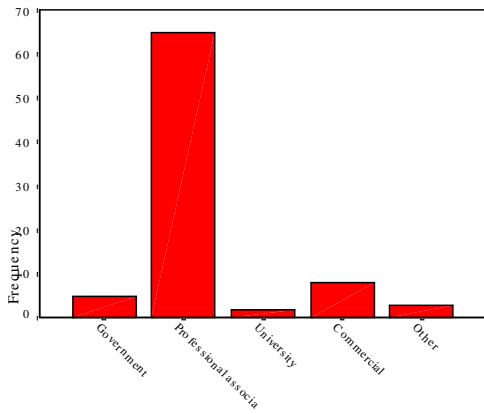
Key to Frequency: Number of times category mentioned

Figure 120: Frequency of access to preferred website

Site frequented

Site frequented
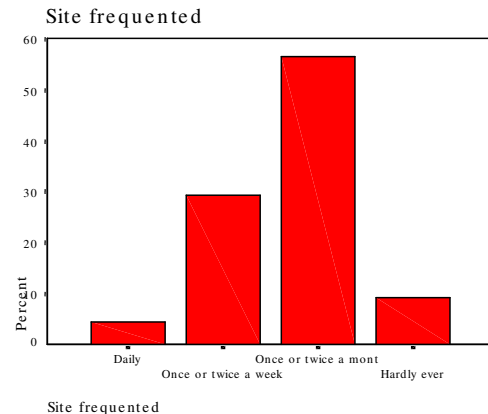
Of all the features on their preferred website, physiotherapists generally valued the *Resources* provided more than any other aspect, with 58 mentioning this as the most helpful feature (Figure 121). A few physiotherapists also valued the links that are available on the website, communication features, and support. When asked about the features of the website that they dislike or avoid, some mentioned that much of the content on their preferred site was irrelevant to their professional development needs, and that advertising on the site was annoying.

In interacting with their preferred sites, physiotherapists most frequently downloaded information and publications, and used email facilities within the site (Figure 122).

56

Figure 121: Most helpful features on preferred website
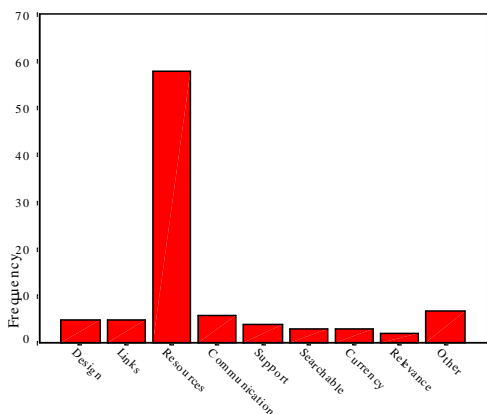
Key to Frequency: Number of times category mentioned

Figure 122: Ways physiotherapists interact with website
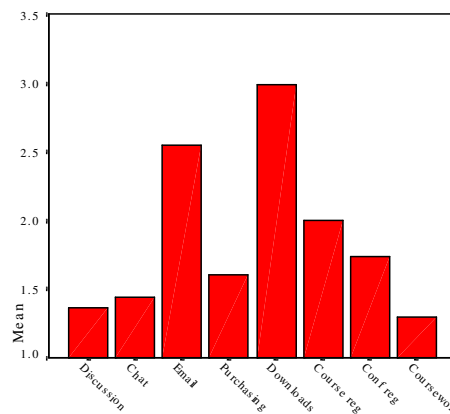
Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never

Web characteristics and features of professional websites

In the survey, a list of national, professional websites was given to explore professionals' responses to web features and characteristics in relation to their professional learning. Physiotherapists were given the following website:

Australian Physiotherapy Association: www.physiotherapy.asn.au

Only 3% of physiotherapists had never visited the site before, and of those who had, 75% (cumulative) visited the site at least once or twice a month, with 4% accessing it daily. When asked what was most useful about the site, most physiotherapists nominated the resources on the site as most value to them (mentioned 60 times) (e.g., 'news items, conference and course information, future plans for the profession, keeping up-to-date and planning for professional development), with others citing the communication facilities, support, and the fact that the site is a source of current and up-to-date information. Least helpful features were also given by the physiotherapists (e.g., 'chat rooms, no time to spend in this area and lack of confidence'). Most physiotherapists indicated that they would visit the site again, with only 4% saying they would not.

When asked to suggest features or services that would improve the professional development aspects of the website, physiotherapists made suggestions such as: 'Online information from professional development courses, due to my inability to access most of them due to distance, time, costs', 'actively mediated forums - not passively mediated'. One physiotherapist described the important role a mentor could play in supporting rural physiotherapists:

> I think at times support by fellow colleagues is much needed by rural employees. Reassurance
> that you have done everything you possibly could within your professional limits is sometimes
> all that is required. I personally would like a mentoring system via email – a more experienced
> physio I could contact occasionally to discuss specific cases.

4.7.3 Physiotherapists' level of internet support, use, and needs for professional development

Level of support

The website of at least one Australian professional association was available to physiotherapists for professional development purposes: the *Australian Physiotherapy Association* website. Many other websites were also accessible from overseas professional associations.

Use of professional development services and support

Physiotherapists used the internet regularly and consistently but they did not access it daily in large numbers for professional purposes. While most expressed confidence in their use of internet tools,

particularly email, search engines and listservs, the nature of physiotherapists' work may have made the support available on the internet less relevant to their daily professional needs. Problems of accessibility in the workplace also add to this. In general, physiotherapists felt at least a little professionally isolated, with many admitting that opportunities for professional development courses and seminars were rare.

Needs and benefits of professional development
Physiotherapists were generally positive about the potential of the internet to support their professional development. Some specific suggestions included using the internet:

- For supporting locum work and providing information on different syndromes
- For accessing a professional library
- For updating knowledge and finding out about recent research findings
- For accessing appropriate protocols and handouts for patient care
- For completing theory components of higher education courses
- For short courses and journal clubs
- For sharing professional knowledge via discussions online, on actively-mediated forums
- For online support and mentoring on important and day-to-day issues
- For practical demonstrations on web-cams.

Physiotherapists were generally aware of the internet and used it relatively frequently. However, they were also very mindful of its potential to further support their professional development in ways that are specific to their own unique needs.

4.8   Psychologists

4.8.1   Website review

Professional association websites relevant to psychologists were identified in Australia, New Zealand, UK and USA. These sites, and their web addresses are given below:

> Australian Psychological Society: www.psychology.org.au
> The New Zealand Psychological Society: www.psychology.org.nz
> British Psychological Society: www.bps.org.uk
> American Psychological Association: www.apa.org

All sites were accessible through membership, and included features such as publications and resources, and conference information. Some sites included an events calendar, links to global sites, links to online and other courses (including dedicated professional development pages), and discussion forums.

4.8.2   Survey: Questionnaire and interviews

Of the psychologists contacted in rural and remote areas of Queensland and Western Australia, 46 returned the survey on the use of the internet for professional development and support.

In age, the psychologists were well represented in all ranges, with the majority in the three middle brackets (ages 26-55, 76%) (Figure 123). The gender of the psychologists who returned the surveys was a majority female (76%) (Figure 124).

Figure 123: Age range of psychologists surveyed
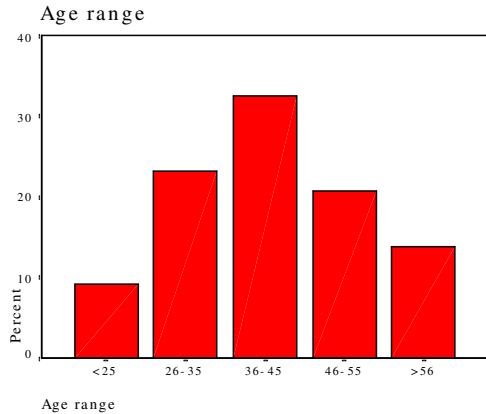
Figure 124: Gender of psychologists surveyed
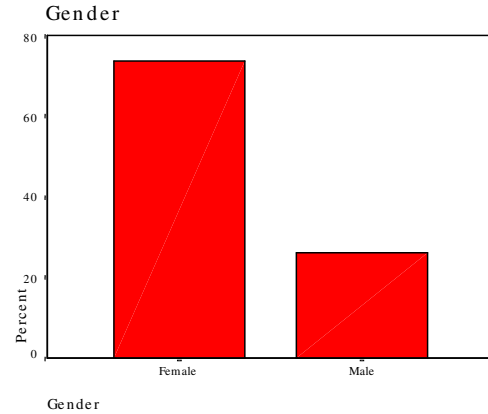
Professional qualifications and experience

Unlike most of the other professions, the highest qualification for the majority of the psychologists was a post-graduate qualification rather than a bachelor's degree (Figure 125), reflecting the requirements of the profession. Of the psychologists, 39% had been awarded a graduate diploma and 28% had achieved a masters degree.

Figure 125 shows that in terms of professional experience, the psychologists were, in the main, less experienced, with 60% having fewer than 10 years experience. In keeping with this, the psychologists were mainly new to their positions, with 78% being employed in their current employment less than five years (Figure 126). Only 2% had accumulated more than 21 years experience in their current positions.

Figure 125: Professional experience of psychologists

Professional experience

Figure 126: Years in current employment

Current position employment

Internet access and frequency of use

Psychologists were readily able to access the internet both at home and at work. Over 95% had internet access at work (only two psychologists did not have internet connections at work), and 78% were connected at home. Most accessed the internet via telephone modem at home (79%) although other methods were more frequent at work.

Frequent access to the internet was very high amongst psychologists (Figure 127). Over 66% accessed the internet for professional purposes at least on a daily basis. Fewer than 5% responded that they used the internet *Hardly ever* or *Never*. Eighty five percent of psychologists bookmarked useful professional development websites for frequent use, with almost one in four (23%) marking more than 20 professional websites for regular access (Figure 128).

Figure 127: Frequency of internet access

Access internet for professional purposes
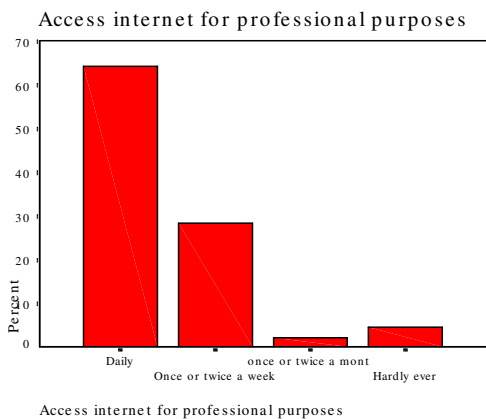
Figure 128: Number of bookmarked websites
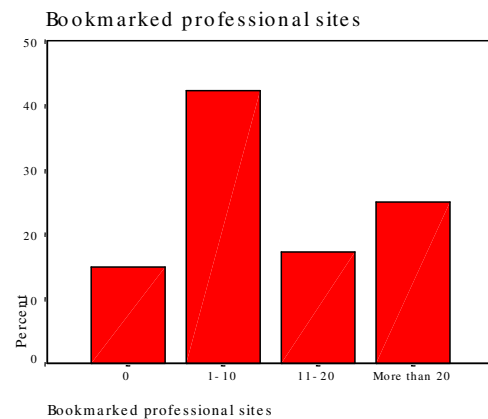
Bookmarked professional sites

The psychologists who responded to the survey generally rated themselves as fairly confident users of the internet with a total of 93% rating their competence as *Satisfactory, More competent than most* or *Very competent.* Thirty two percent of psychologists described themselves as very competent users of the internet. The internet tool used most frequently by psychologists was email, where 84% reported that they used it daily (Figure 129). Search engines were also used frequently by psychologists (with 93% using them more frequently than once or twice a month) and listservs (where 49% used them more frequently than once or twice a month). Chat rooms, website development software and discussion forums were also accessed regularly, although more rarely.

Psychologists' competence in using internet tools mirrored almost exactly the frequency of use for these tools (Figure 130), with greatest confidence shown in the use of email and search engines.

Figure 129: Frequency of use of internet tools

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
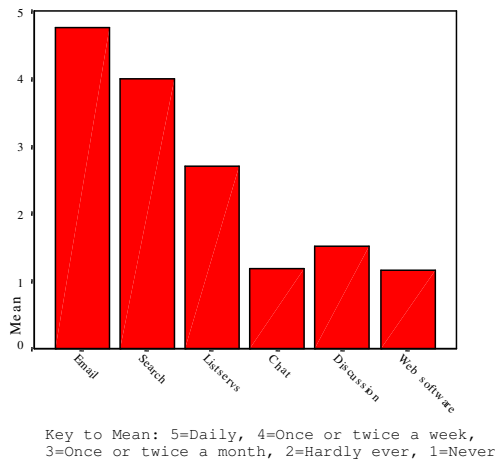
Figure 130: Competence as a user of internet tools

Key to Mean: 4=Very competent, 3=More competent
than most, 2=Satisfactory, 1=Incompetent
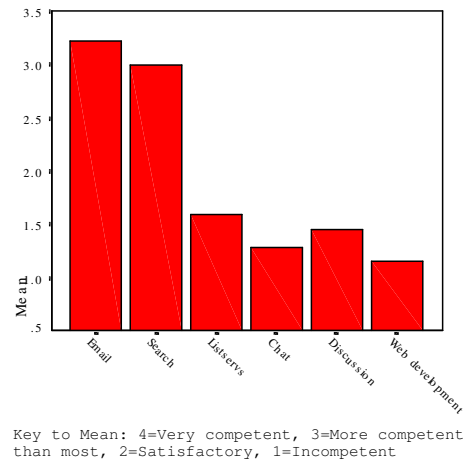
Use of the internet for professional learning

The psychologists who responded to the survey used email and search engines very frequently for professional reasons (Figure 131), principally for *Keeping in touch with colleagues* and *To gain work-related information*, such as articles, publications and resources, with the mean use more frequently than once or twice a week for both these tasks. Psychologists also used the internet for other purposes less frequently, such as to gain information about conditions of employment, to access employment opportunities, to study online, and for professional information such as conference details. The types of websites that psychologists use most often professionally are principally those of their employers, closely followed by the website of their place of employment (Figure 132). The websites of professional associations were also accessed often, at about once or twice a month on average. Other types of websites such as the websites of rural associations, community sites, higher education and private industry were also accessed occasionally by the psychologists.

Figure 131: Frequency of use for professional reasons

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
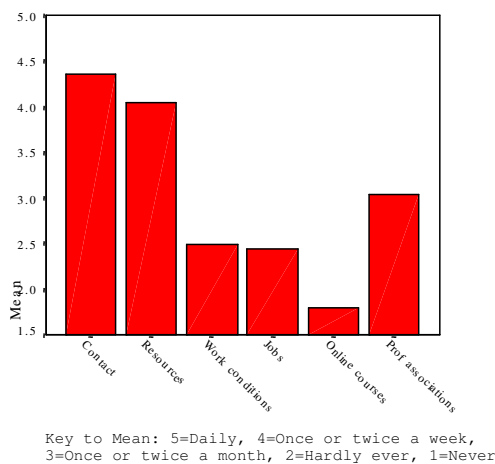
Figure 132: Frequency of use of professional websites

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
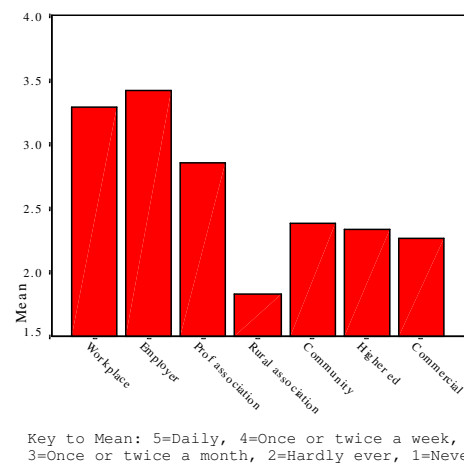
When psychologists were asked to nominate the ways they thought the internet might help in their professional learning, resources (e.g., 'treatment guidelines and education material for clients') was the most frequently mentioned features (Figure 133). This was a common theme, and many professionals pointed out that the facilities available to them as students were no longer available. As one psychologist pointed out:

> I'd like more access to latest research articles, but I think university libraries are only available to students and in-house academics.

Training was also important (e.g., 'development of online courses, particularly for upgrading qualifications, e.g., MPsych'). Others mentioned less frequently included support services (such as advice, FAQs, online mentoring), and communication elements (such as networking).

The psychologists suggested limitations of using the internet for professional learning included such factors as a lack of face-to-face human interaction online (e.g., 'don't like interacting in cyberspace', 'prefer the real thing, face-to-face'), their own lack of time to go online (e.g., 'too busy at work to even think to look! Need prompts of some form or other to actually use the internet in the first place'), and the lack of appropriate training (Figure 134). Others included: 'unreliability of information on the internet', 'need to verify the validity of information from some sites, 'electrical surges', and some significant professional development issues. For example, one psychologist suggested that compulsory, face-to-face elements of some professional development courses precluded completion at a distance:

> [There are] limited professional development courses available online … as most courses have compulsory in-person elements.

Figure 133: How internet could help professional learning
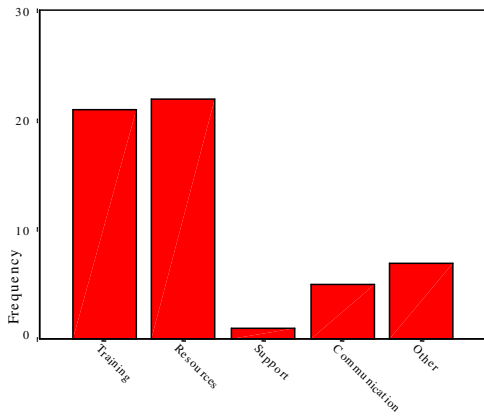
Key to Frequency: Number of times category mentioned

Figure 134: Limitations of internet for prof. learning
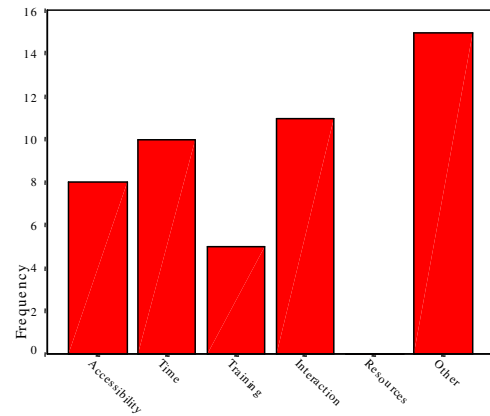
Key to Frequency: Number of times category mentioned

Professional isolation

Twenty percent of psychologists who responded to the survey reported that they did not feel any professional isolation in their rural and remote positions. However, 54% felt a little professionally isolated and over 28% felt a great deal of isolation (Figure 135). Of those who felt very isolated, the most frequently mentioned contributing factor was the lack of human interaction with others in the profession, followed by the distance away from other professional centres. Some mentioned travel costs, and difficulties associated with lack of communication, training and resources (Figure 136). For example, one psychologist pointed out:

> I am currently undertaking a supervised practice program, however, I have to travel 200 kilometres to receive professional supervision which is mandatory. I am also the only psychologist within 100 kilometre radius in private practice. Therefore, I have limited opportunities to interact with peers.

Others mentioned the fact that they have very little time to address the issue of professional development needs. For example:

> Run off my feet, lots of no-charge work, all things to all people, and I'm not! Lack of contact with peers! I have now reached the stage where I go it alone because I don't have the time to search for best practice that will meet my needs.

Figure 135: Extent of feelings of professional isolation

Professionally isolated

Figure 136: Types of professional isolation
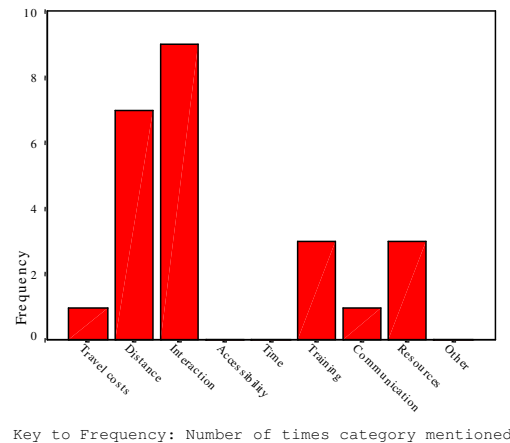
Key to Frequency: Number of times category mentioned

When asked to nominate the kinds of services that could be provided on the internet to help reduce professional isolation, psychologists suggested communication with other professionals (mentioned 22 times) (e.g., 'use of chat rooms to become virtual teams', 'videoconferences via webcam'), and reliable and up-to-date resources (15). (e.g., 'providing access to resources such as treatment guidelines') One psychologist expressed interest in more open access to publications:

> I am also interested in a UK initiative of open-access research on the web with different methods of paying for published articles.

Professional interaction using the internet

Eighty three percent of psychologists who responded to the survey regularly access the internet for professional information. When asked to nominate their preferred professional website, most psychologists (19) nominated a website owned by a professional association, and the next largest group (7) a website maintained by a government organisation (Figure 137).

Regular access to these websites appears frequent with 17% of psychologists accessing their preferred website daily, and 92% (cumulative) accessing it at least as frequently as once or twice a month (Figure 138).

Figure 137: Principal website accessed by type
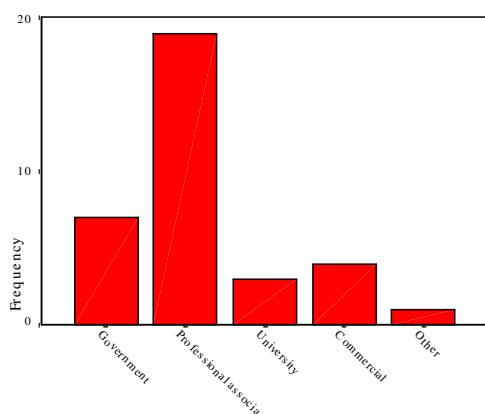
Key to Frequency: Number of times category mentioned

Figure 138: Frequency of access to preferred website
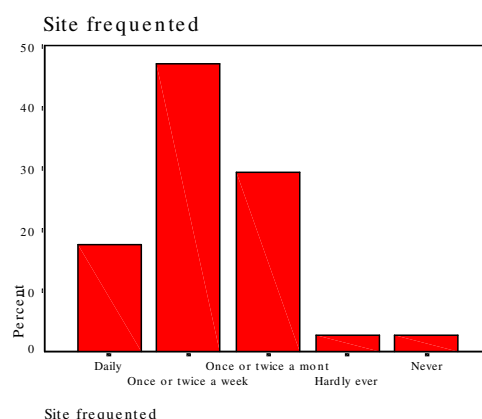
Site frequented

The psychologists valued the *Resources* provided on their preferred websites much more than any other feature with 22 mentioning this as the most useful aspect (Figure 139). Some psychologists also appreciated the easy to navigate design, links that are available on the website, searching facilities, communication features, and support. In interacting with their preferred sites, psychologists most frequently downloaded information and publications to read, on average more

frequently than once or twice and month. They also used email facilities within the site, although not as frequently (Figure 140).

Figure 139: Most helpful features on preferred website
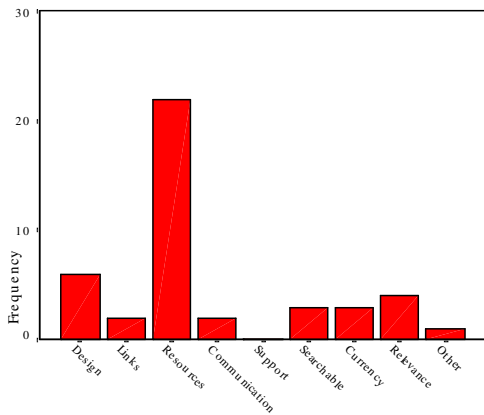
Key to Frequency: Number of times category mentioned

Figure 140: Ways psychologists interact with website
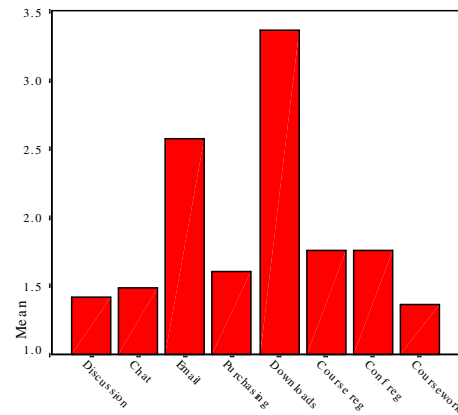
Key to Mean: 5=Daily, 4=Once or twice a week, 3=Once or twice a month, 2=Hardly ever, 1=Never

Web characteristics and features of professional websites

In order to seek professionals' opinions on the usefulness of professional association websites, a list of national, professional websites was given the survey. Psychologists were asked to consider the following website:

> Australian Psychological Society: www.aps.psychsociety.com.au (Current
> address: www.psychology.org.au)

While 9% of psychologists had never visited the nominated site before, of those who had, 54% (cumulative) visited the site at least once or twice a month, with 2% accessing it daily. When asked what was most useful about the site, as with their own nominated sites, most psychologists nominated the resources on the site as most value to them (mentioned 23 times), with others citing the design, and the fact that the site is a source of current and up-to-date information. When asked the least helpful aspects of the site, one psychologist wrote: 'Materials are only accessible to members, access for non-members is very limited'. Eighty five percent of psychologists indicated that they intended to visit the site again, ten percent said they might, and four percent of the psychologists said that they would not.

When asked the kinds of features they thought would improve the professional association site from the perspective of their own needs, the psychologists suggested resources and services such as: 'discounted membership for remote members', 'more tip sheets on a larger ranger of psychological disorders', 'strategies for treatment', 'ensuring event information is up to date', 'free access to ethical guidelines', and 'more hands on support information'.

One psychologist pointed out that the internet could be used to assist with coming to terms with what it means to run a business as a new professional, and to be included as an important link in the health services of a region:

> As the only psychologist in private practice in the region, I have no peer support, nor do any of
> the GPs have any understanding of 'appropriate' referrals. I find it doubly difficult to not only
> sort out the business and tax reporting issues, let alone having to teach a GP what a
> psychologist is and how they can support their patients.

4.8.3 Psychologists' level of internet support, use and needs for professional development

Level of support

Rural psychologists had access to the website of the *Australian Psychological Society*, as well as a range of other international professional association websites. From these and a number of other associated websites, psychologists can access professional information and in many cases resources and support.

Use of professional development services and support

Psychologists used internet tools relatively frequently although, with the exception of email, the technology is not woven consistently into their daily professional activities. Psychologists rated themselves as confident users of the internet, and they used the technology principally to keep in touch with or contact colleagues, and to access information. However, they also experienced impediments to their use of the internet principally lack of time to go online and a dislike of the lack of human face-to-face interactions in the online environment. Most psychologists felt at least a little professionally isolated in their positions in rural locations.

Needs and benefits of professional development

In spite of their concern about the de-humanising aspects of using the internet, psychologists were generally very positive in suggesting the ways that the internet could assist in their professional development. Specific ideas included using the internet:

- For referring to treatment guidelines and current treatment methods
- For access to research articles and research through a professional online library
- For studying online to upgrade qualifications
- For creating virtual teams
- For accessing videoconferences via web cam
- For access to ethical guidelines, treatment strategies, and information on psychological disorders
- For information and advise on how to run a business.

Psychologists generally did not believe that the internet could fully substitute for the face-to-face aspects that are so important in their profession. They did however, have many suggestions on how the internet could supplement and enrich their working lives by helping to reduce their feelings of professional isolation and assist with their own professional development.

4.9 Social workers

4.9.1 Website review

Professional association websites relevant to social workers were identified in Australia, New Zealand, UK and USA. These sites, and their web addresses are given below:

> Australian Association of Social Workers: www.aasw.asn.au
> British Association of Social Workers: www.basw.co.uk
> Aotearoa New Zealand Association of Social Workers: www.anzasw.org.nz
> National Association of Social Workers: www.naswdc.org

All sites were accessible through membership, and included features such as latest news, publications and resources, and conference information. Some sites included a code of ethics, links to global sites, links to online course providers, and discussion forums.

4.9.2 Survey: Questionnaire and interviews

Social workers in Queensland and Western Australia were surveyed on their use of the internet for professional development and support. Twenty five completed surveys were returned.

The social workers were represented in all age ranges (Figure 141) with the largest single group represented in the 46-55 year age bracket. There was a large fall off in age after this, with only 8% of the social workers surveyed over the age of 56. The majority of social workers surveyed were female (80%) (Figure 142).

Figure 141: Age range of social workers surveyed
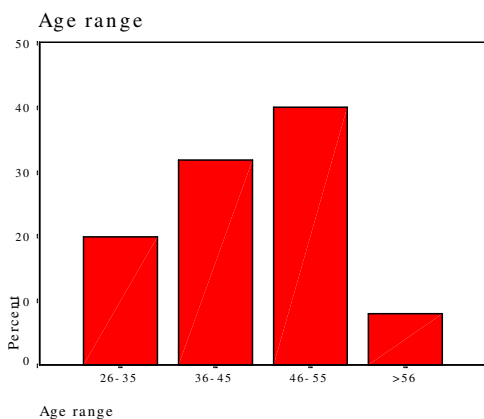
Figure 142: Gender of social workers surveyed

Professional qualifications and experience

The social workers were principally qualified at the level of bachelor degree (68%), with six (24%) proceeding on to further study of graduate diploma, masters and PhD degrees. Two of the respondents had qualifications at doctoral level.

The professional experience of the social workers was spread fairly evenly across the years of experience ranges (the exception being the 16-20 years range), with the largest single group evident in the 1-5 years range (32%). Almost a quarter (24%) had more than 21 years experience in the profession (Figure 143). Few social workers had remained in their current positions for lengthy periods, with 58% employed in their current position for fewer than five years (Figure 144).

Figure 143: Professional experience of social workers

Professional experience

Professional experience

Figure 144: Years in current employment

Current position employment

Current position employment
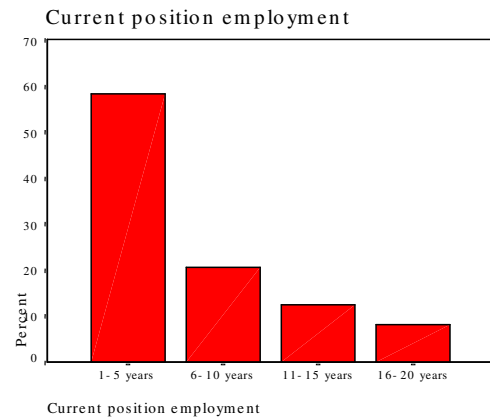
Internet access and frequency of use

A large majority of social workers were able to access the internet from home (80%), with most of those using a telephone modem for connection (95%). About the same number used the internet at work, with 84% reporting that they were able to connect at the workplace. Over 70% of the social workers reported that they used the internet for professional purposes at least once or twice a week (Figure 145), with 46% using the internet daily. This was substantiated in their use of browser bookmarks for websites, with 59% using the facility to mark frequently used professional sites (Figure 146).

Figure 145: Frequency of internet access

Access internet for professional purposes

Access internet for professional purposes
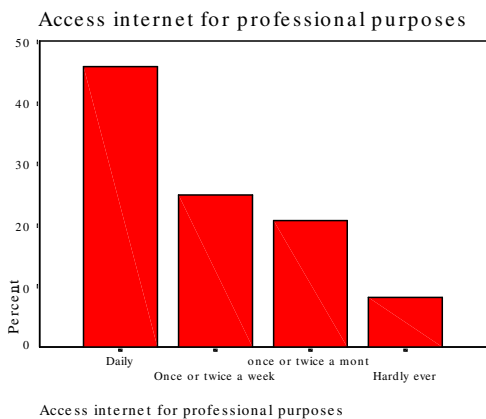
Figure 146: Number of bookmarked websites

Bookmarked professional sites

Bookmarked professional sites
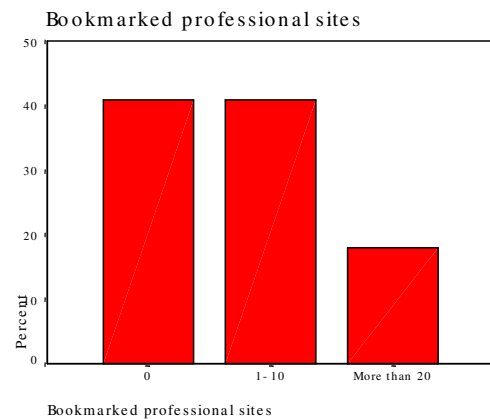
The social workers who responded to the survey were very confident users of the internet generally, with a total of 92% rating their competence as *Satisfactory, More competent than most* or *Very competent.* No social workers regarded themselves as incompetent users of the internet. Of all the internet-based tools, email was used most frequently by the social workers, together with search engines and listservs (Figure 147). Chat rooms and discussion forums were accessed relatively rarely, and few social workers used web development software.

Social workers' perceived confidence in using internet tools reflected their frequency of use (Figure 148), with greatest confidence shown in the use of email and search engines.

Figure 147: Frequency of use of internet tools

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
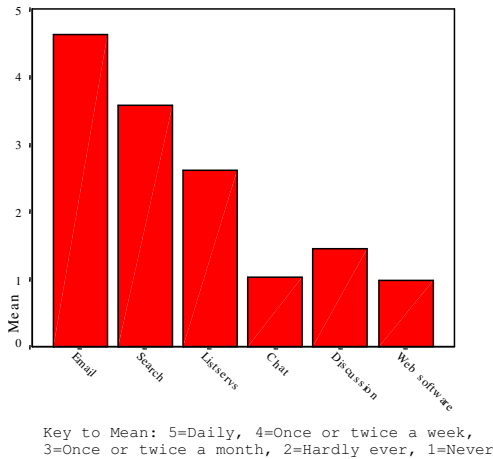
Figure 148: Competence as a user of internet tools

Key to Mean: 4=Very competent, 3=More competent
than most, 2=Satisfactory, 1=Incompetent
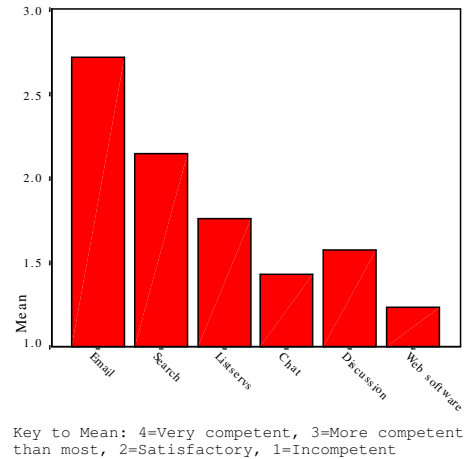
Use of the internet for professional learning

Social workers used the internet well for professional purposes. When asked how often they used web-based tools for professional purposes, the most frequently given reason was to keep in contact with colleagues and other professionals (Figure 149). To gain work-related information, such as articles, publications and resources, and to access professional information were also important reasons to go online. Other purposes, such as to gain information about conditions of employment, to access employment opportunities and job advertisements, and to find professional information were accessed at around the frequency of once or twice a month. Studying online was also mentioned as more rarely accessed.

Social workers accessed a variety of professional websites, most often the website of their employer (Figure 150). Other types such as the websites of professional and rural associations, community sites, higher education and private industry were accessed occasionally by the social workers.

Figure 149: Frequency of use for professional reasons

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
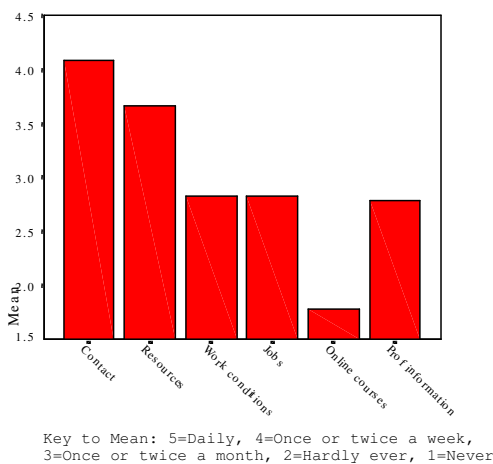
Figure 150: Frequency of use of professional websites

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
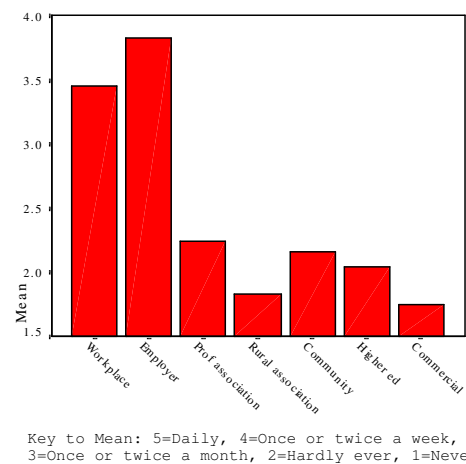
In terms of helping in their professional learning (Figure 151), social workers nominated access to resources (e.g., 'access to e-journals'), training (e.g., 'e-supervision', 'online post-graduate education in all fields – not just in business') and communication (e.g., 'keeping in touch with lecturers', 'networking') as the most frequently used features of the internet. Some of the limitations mentioned by social workers relating to the use of the internet for their own professional purposes (Figure 152), were principally lack of time to go online (e.g., 'one needs time set aside to do this and it is not possible with work overload'), difficulties of accessibility (e.g., 'not having the internet at home'), the perceived lack of training (e.g., 'my incompetence', 'I would need some tuition before I used the internet') and lack of human interaction in the online environment (e.g., 'not interactive' 'I prefer

face to face contact', 'I prefer a seminar where you can interact with others'). One pharmacist pointed out the cost involved in accessing relevant and current information: 'More sites are restricting access to information, requesting membership access fees'. Availability of resources was generally not considered a limitation, although access to 'Australian-based' information may be limited for social workers.

Figure 151: How internet could help professional learning
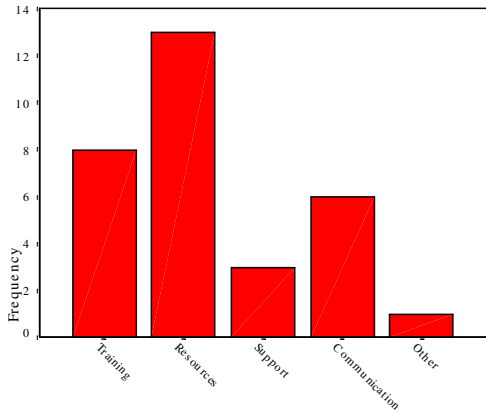
Key to Frequency: Number of times category mentioned

Figure 152: Limitations of internet for prof. learning
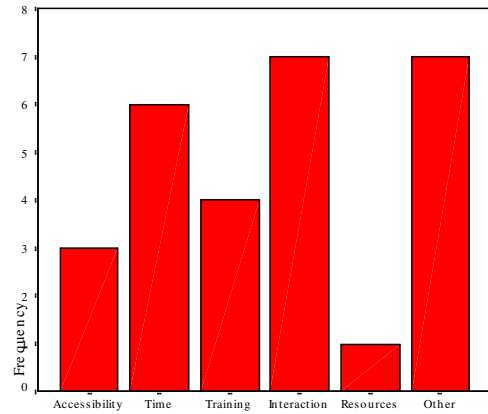
Key to Frequency: Number of times category mentioned

Professional isolation

While 17% of social workers reported no feelings of professional isolation, 29% felt a great deal of isolation, with the majority feeling at least a little isolated (54%) (Figure 153). Of those who felt a great deal of isolation, the principal causes given by nearly all the social workers were distance (e.g., 'I am 1000km from nearest work colleague in same field', 'I need to go to Perth to get the professional supervision and learning I want – costly in terms of distance and time') and lack of human interaction with others in the profession (e.g., 'sole social worker in rural communities over eight shires') (Figure 154). One social worker pointed out that he or she is: '[The] only social worker in health and community development in a geographical area three times the [size of] the state of Victoria'.

Figure 153: Extent of feelings of professional isolation
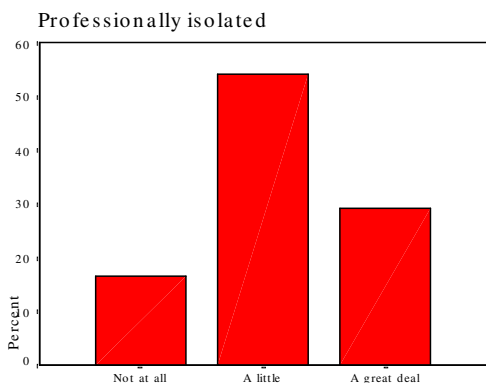
Figure 154: Types of professional isolation
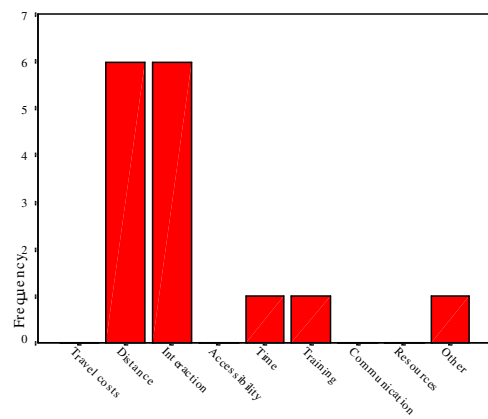
Key to Frequency: Number of times category mentioned

The suggestions given by social workers on how the internet might help to overcome professional isolation included principally by providing better channels of communication to other professionals (mentioned 10 times) (e.g., 'I am part of a virtual team so most of the communication with my colleagues is done through email', 'regular contact with like minded colleagues would be great'). Social workers also suggested that the availability of a greater range of resources on the internet (4), and better professional support (4) (e.g., 'professional supervision through e-supervision') would help to overcome isolation.

Professional interaction using the internet

Two thirds of social workers (67%) reported that they regularly used the internet for professional information. When asked to nominate their favourite professional website, most social workers who nominated a site gave the website of a professional association (Figure 155), and the remainder mainly commercial, government, or university websites. Regular access to these websites was quite frequent with 29% of social workers accessing their preferred website daily, and a total of 86% accessing it as frequently as once or twice a month (Figure 156).

Figure 155: Principal website accessed by type
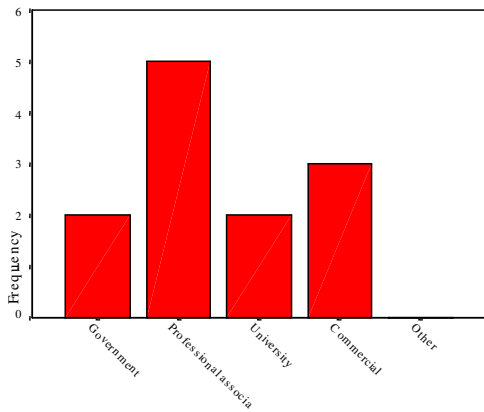
Key to Frequency: Number of times category mentioned

Figure 156: Frequency of access to preferred website
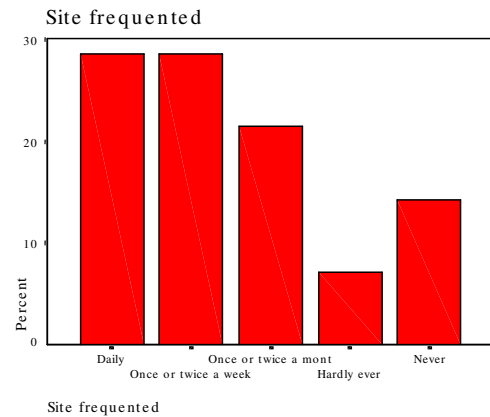
The social workers valued *Resources* provided on their preferred websites more than any other aspect, with four mentioning this as the most helpful feature (Figure 157). Other social workers mentioned links on websites (2) as a valued aspect of their favoured website. In interacting with their preferred sites, social workers most frequently downloaded information and publications to read, and used email and chat facilities within the site (Figure 158). More rarely, they used their favourite site to participate in discussion forums, to purchase books and other items, to register for courses and conferences and to complete online coursework.

Figure 157: Most helpful features on preferred website
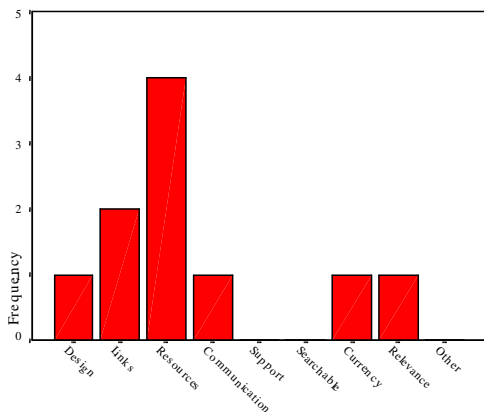
Key to Frequency: Number of times category mentioned

Figure 158: Ways social workers interact
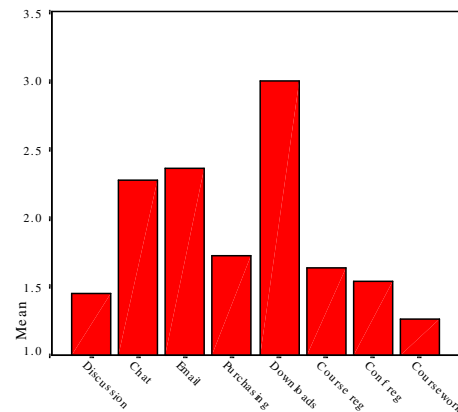
Key to Mean: 5=Daily, 4=Once or twice a week, 3=Once or twice a month, 2=Hardly ever, 1=Never

Web characteristics and features of professional websites

In order to explore useful features of websites with participants, a list of national, professional websites was given in the survey, one for each profession. Social workers were asked to consider the following website:

Australian Association of Social Workers: www.aasw.asn.au

Nearly a third of social workers (29%) had never visited the site before. Of those who had, only one visited the site more frequently than *Once or twice a month*. Nevertheless, over 89% stated that they intended to visit the site again in the future, with the remaining 11% possibly intending to visit the site. No social workers said that they would not visit again. When asked what was most useful about the site, the largest number of social workers indicated that the site was useful for its resources (mentioned 9 times) (e.g., 'useful pointers on moving to interstate jobs', 'updated key documents', 'code of ethics'), followed by the usefulness of the links on the site (2).

When asked their views on what internet features might help their professional development, social workers suggested that more appropriate resources for rural and remote professionals could be provided to recognise their particular needs. For example, one social worker suggested that 'more discussion on rural and remote practitioner issues, and support' was needed. Another noted:

> Professional associations need to create more space for rural and remote practitioners to raise their voice and concerns on country practice. They appear to be 'metro-centric' with rural and remote clinicians ignored to a great extent … [they need] to look outwards instead of inwards.

4.9.3   Social workers' level of internet support, use, and needs for professional development

Level of support
Social workers had access to an Australian professional association websites through the *Australian Association of Social Workers*. A variety of relevant websites are also accessible to social workers including the websites of overseas professional associations.

Use of professional development services and support
Social workers made substantial use of the internet for professional development purposes. They all rated themselves as competent users of internet tools such as email, search engines, and listservs, but they often had difficulty obtaining regular access in the workplace, because of time restraints and heavy workloads. Professional isolation was an important factor for social workers, many of whom were the only professional of their kind in a large geographical area. However, they generally recognised the potential of the internet to significantly reduce this condition.

Needs and benefits of professional development
Social workers were very positive in their view of the potential benefits of the internet to meet some of their professional needs and to help reduce feelings of isolation. Some specific suggestions included using the internet:

- For regular contact with other social workers
- For professional supervision (e-supervision)
- For access to a range of work-related resources
- For information on job opportunities and vacancies
- For information on different requirements in other states (useful if moving to interstate positions)
- For discussion and resources on problems unique to rural and remote practitioners.

As a profession, rural social workers were aware of resources available on the internet, were competent and confident users of the internet, and were aware of its potential to help reduce professional isolation, and to meet the unique professional development needs of those in rural practice.

4.10   Teachers

4.10.1   Website review
Professional association websites relevant to teaching were identified in Australia, New Zealand, UK and USA. Teaches are well served by a variety of professional associations through system, curriculum and technology-dedicated sites. These sites, and their web addresses are given below:

> Australian College of Educators: www.austcolled.com.au
> New Zealand Teachers Council: www.teacherscouncil.govt.nz
> National Association of Head Teachers: www.naht.org.uk
> Association of Teachers and Lecturers: www.askatl.org.uk
> General Teaching Council for England: www.gtce.org.uk
> Association of American Educators: www.aaeteachers.org/
> National Education Association: www.nea.org/index.html

Many sites were freely accessible, and some required membership with passwords. All included features such as latest news, publications and resources, and conference information. Some sites included a code of ethics, professional development planners, links to global sites, links to online courses, and discussion forums.

4.10.2   Survey: Questionnaire and interviews
Primary and secondary school teachers in rural and remote areas of Queensland and Western Australia were surveyed on their use of the internet for professional development and support. Of the teachers contacted, 527 responded to the survey. Teachers were represented in all age ranges (Figure 159), with the largest single group in the 46-55 year old range (30%). As might be evident in the gender balance of teaching across the levels as a profession, most respondents were female (69%) (Figure 160).

Figure 159: Age range of teachers surveyed
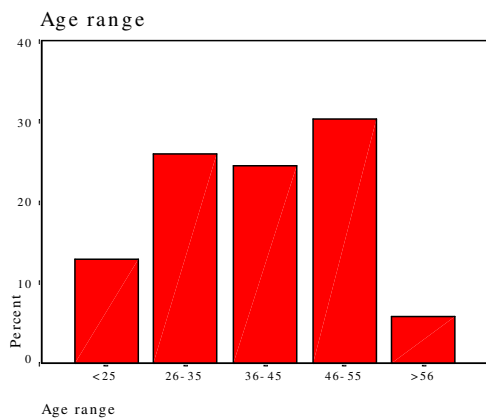
Figure 160: Gender of teachers surveyed
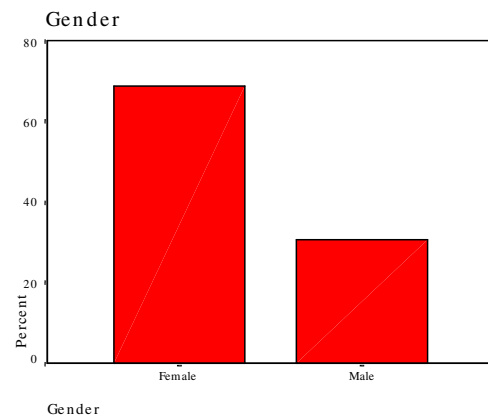
Professional qualifications and experience
The teachers were a well-qualified group with 42% obtaining post-graduate qualifications of one type or another: graduate certificate/diploma (35%), and masters degree (7%). Fifty five percent had studied to the level of a Bachelor's degree. The teachers were also a very interesting group in terms of their professional experience with the largest groupings at both ends of the scale (Figure 161). Those teachers with 1-5 years experience were the largest group (27%), while the next largest group was that accumulating more than 21 years experience (30%). Nevertheless, few teachers have been in their current position for any length of time. Fifty seven percent had been in their current school for less than five years, with only 9% remaining for more than 21 years (Figure 162).

Figure 161: Professional experience of teachers

Professional experience

Pro Experience

Figure 162: Years in current employment

Current position employment

Current position employment

Internet access and frequency of use

Teachers were almost fully able as a group to access the internet from work, with over 99% of respondents' schools connected online. A smaller, yet still substantial number (71%) were also connected at home. Most accessed the internet via telephone modem at home (87%).

Access to the internet for professional use was high amongst teachers (Figure 163). Almost half accessed it for professional purposes at least on a daily basis (53%). Fewer than 9% responded that they used the internet *Hardly ever* or *Never*. More than 75% of teachers bookmarked useful professional websites for frequent use, with 13% bookmarking more than 20 professional websites (Figure 164).

Figure 163: Frequency of internet access

Access internet for professional purposes

Access internet for pro purposes
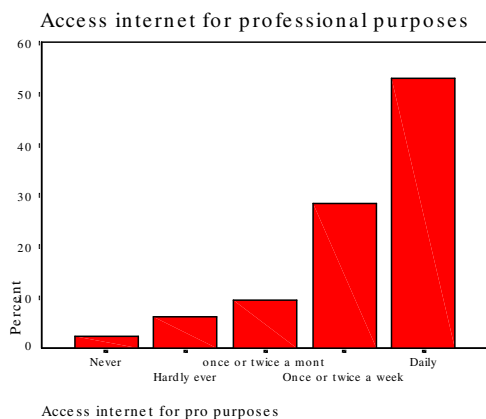
Figure 164: Number of bookmarked websites

Bookmarked professional sites

Bookmarked professional sites
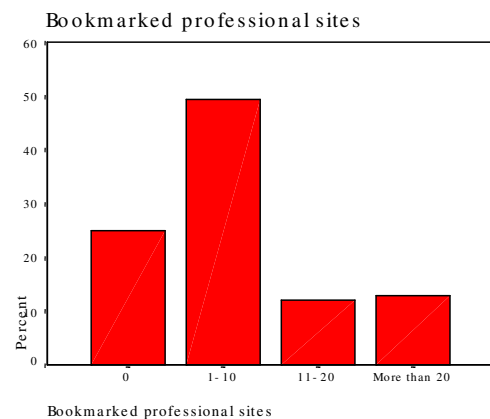
The teachers who responded to the survey were generally very confident users of the internet with a total of 93% rating their competence as *Satisfactory, More competent than most* or *Very competent.* Email and search engines were used most frequently by the teachers of all the internet tools (Figure 165), averaging once or twice a week for professional purposes. Listservs, chat rooms, discussion forums and web software were used more rarely. Teachers perceived confidence in using internet tools generally mirrored their frequency of use (Figure 166), with greatest confidence shown in the use of email and search engines.

Figure 165: Frequency of use of internet tools

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
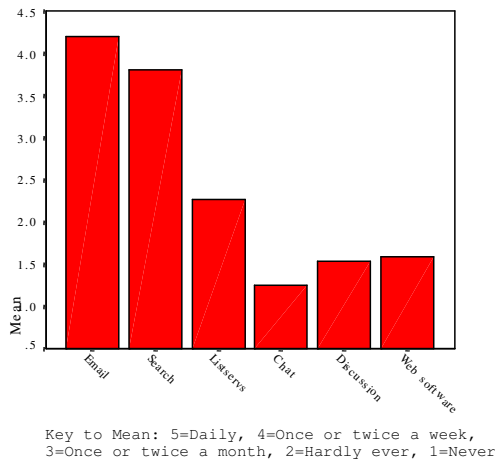
Figure 166: Competence as a user of internet tools

Key to Mean: 4=Very competent, 3=More competent
than most, 2=Satisfactory, 1=Incompetent
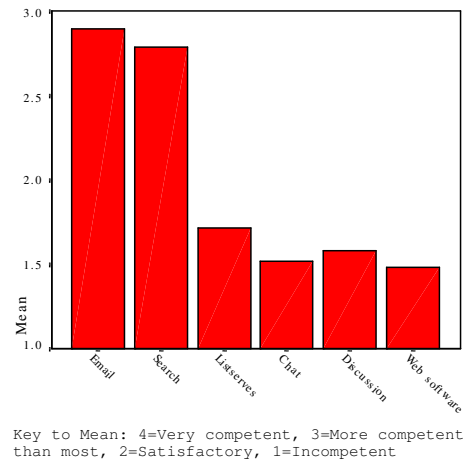
Use of the internet for professional learning

The teachers were asked to indicate how often they used the internet for specified professional reasons. *To gain work-related information*, such as teaching resources, lesson plans, articles and publications, and *Keeping in touch with colleagues* were the principal reasons given, both occurring several times per month on average (Figure 167). Teachers also used the internet for other purposes less frequently, such as to gain information about conditions of employment, to access employment opportunities and job advertisements, to study online, or for professional information such as conference details.

When questioned about the types of websites that they accessed most frequently for professional purposes, teachers accessed their own school websites (Figure 168), followed closely by their employer's main website. Other types of websites such as professional associations, rural associations and community sites, higher education sites (such as universities) and private industry were also accessed occasionally by the teachers.

Figure 167: Frequency of use for professional reasons

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
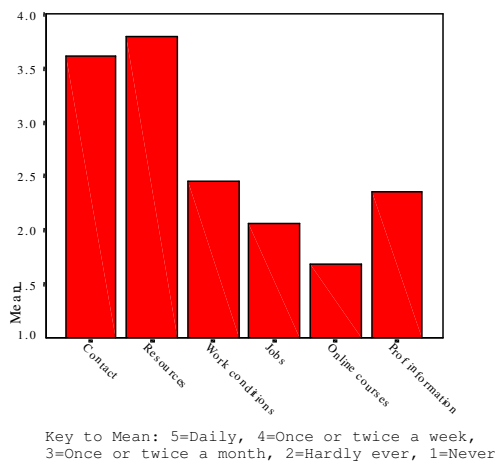
Figure 168: Frequency of use of professional websites

Key to Mean: 5=Daily, 4=Once or twice a week,
3=Once or twice a month, 2=Hardly ever, 1=Never
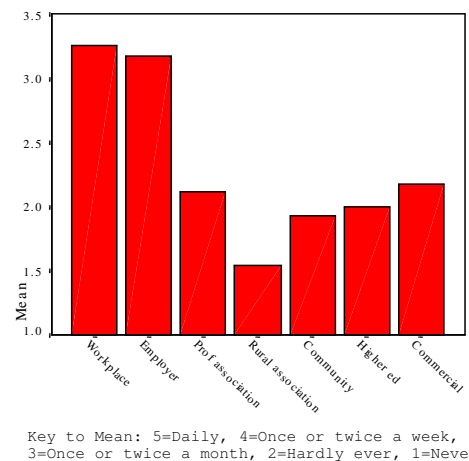
When asked to nominate the ways that teachers thought the internet could help in their professional learning (Figure 169), accessibility to resources was the most frequently given response (e.g., 'sharing of teaching ideas', 'programming, resources, behaviour management over email/websites', 'teaching resources, images, publications', 'ideas and downloads for resources in teaching'). Training was also considered important (e.g., 'being able to access quality professional development that is more readily available to capital city teachers', 'online training such as post-bachelor degrees').

However, teachers also nominated some of the limitations they could see related to the use of the internet for their own professional purposes (Figure 170) such as a lack of time to go online (e.g., 'having the time to sift the good information from the rubbish', 'access and time are the factors – it's another add on to another crammed and busy daily schedule'). In spite of the fact that nearly all schools have internet access, limited accessibility was still a problem (e.g., 'we have one computer for seven teachers in our staffroom - it has to be rebooted twice a day because it's a Windows machine', 'server fails regularly', 'the network is always broken at our school'). One teacher pointed out:

> Time on the internet is extremely limited while at work, as there are other professionals needing to use the same computer; I usually end up not researching my topic, therefore producing a standard of work below my own expectations.

Figure 169: How internet could help professional learning
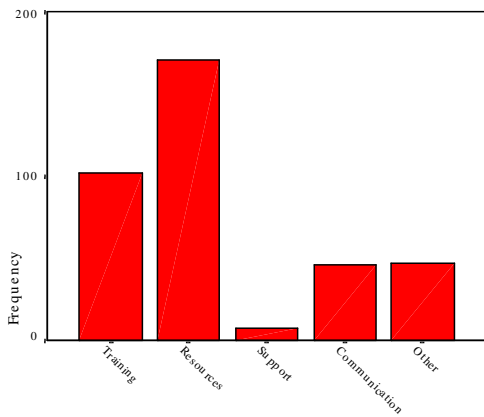
Key to Frequency: Number of times category mentioned

Figure 170: Limitations of internet for prof. learning
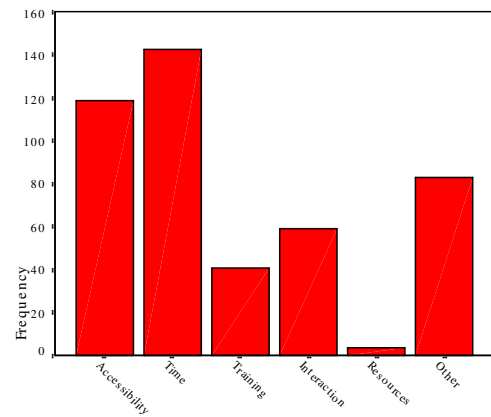
Key to Frequency: Number of times category mentioned

Professional isolation

Almost 30% of teachers reported not feeling any professional isolation at all in their rural and remote schools. However, the remainder admitted to feeling at least some professional isolation with 19% indicating feelings of a great deal of isolation (Figure 171). The majority of teachers admitted to feeling at least a little professionally isolated.

Of those who felt isolated, most mentioned the distance from, and lack of human interaction with, others in the profession as the most important reasons. Some mentioned travel costs, the investment of time required (for professional development), and lack of training and resources (Figure 172). For example:

> We are 120km from our regional office. The nearest university and other government high school. We might as well be on our own in many respects.

> I am professionally isolated, as PD is often located in the city. Travel from the country isn't considered, as starting times [are too] early.

When asked what services might help to ameliorate their professional isolation, teachers suggested communication with their colleagues most frequently (mentioned 138 times) (e.g., 'sharing experiences with similar people in my position', 'networking opportunities'). They also mentioned the availability of more quality resources (89) and training (48) (e.g., 'more access to online teaching courses'), and online support (23) (e.g., 'I enjoy study and enjoy contact with colleagues. The internet is the answer to my sense of professional isolation').

Figure 171: Extent of feelings of professional isolation

Professionally isolated

Figure 172: Types of professional isolation
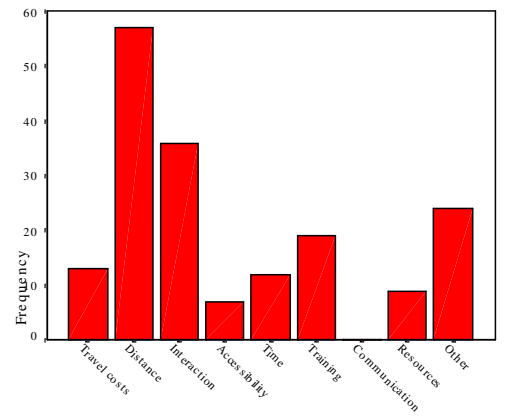
Key to Frequency: Number of times category mentioned

Professional interaction using the internet

More than two thirds of teachers who responded to the survey regularly accessed the internet for professional information (69%). When asked to nominate the principal website each accessed as the main source of professional information, almost all teachers nominated a government-owned website (Figure 173). Almost 90% (cumulative) accessed their favoured site at least as frequently as once or twice a month, and 22% of teachers referred to it daily (Figure 174).

Figure 173: Principal website accessed by teachers by type
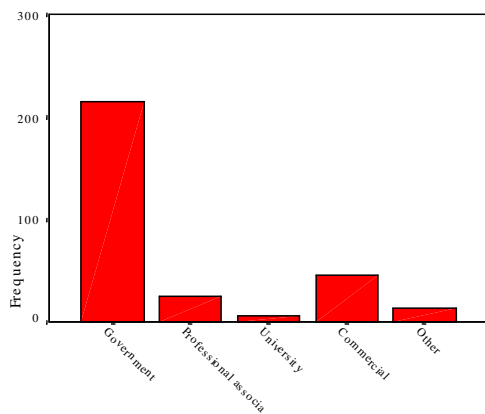
Key to Frequency: Number of times category mentioned

Figure 174: Frequency of access to preferred website

Site frequented

Site frequented
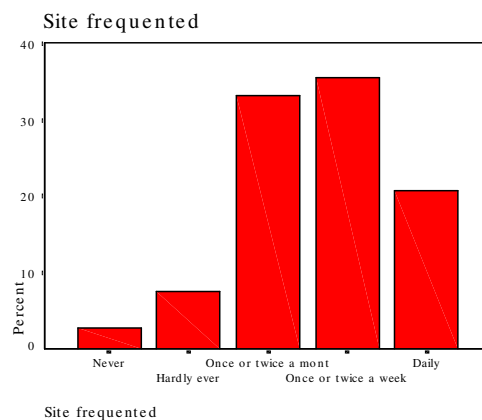
Of all the features on their preferred website, teachers value the *Resources* much more than any other aspect with 180 mentioning this as the most helpful feature (Figure 175) (e.g., 'lesson plans, curriculum information', 'policy and procedural information related to my job', 'curriculum frameworks', 'resources to purchase'). A few teachers also valued the links that are available on the website (35), and design features and ease of use (23). In interacting with their preferred sites, teachers most frequently downloaded resources, information and publications, and used email facilities within the site (Figure 176).

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Figure 175: Most helpful features on preferred website
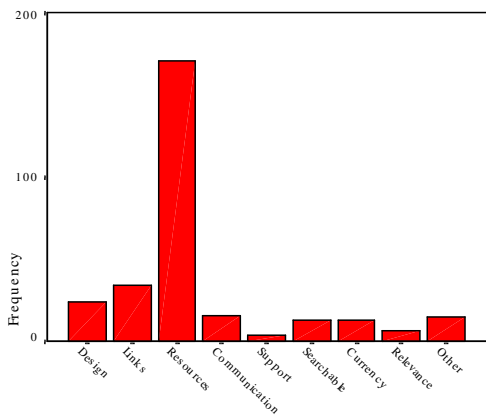
Key to Frequency: Number of times category mentioned

Figure 176: Ways teachers interact with preferred website
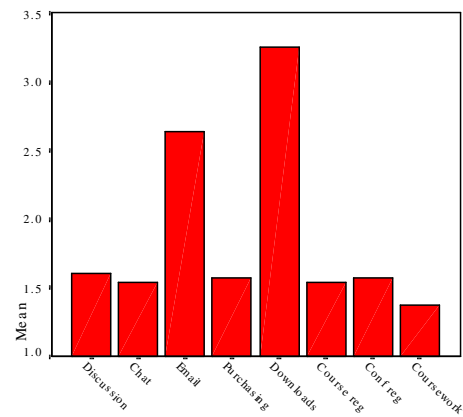
Key to Mean: 5=Daily, 4=Once or twice a week, 3=Once or twice a month, 2=Hardly ever, 1=Never

Web characteristics and features of professional websites

In the survey, a list of national, professional websites was given to explore professionals' responses to web features and characteristics in relation to their professional learning. Teachers were asked to consider the following website:

Australian College of Educators: www.austcolled.com.au

Surprisingly, 91% of teachers had never visited the site before. However, after examining the site, 39% of teachers indicated that they would visit the site again. When asked what they liked about the site, teachers suggested factors such as: 'information easily accessed', 'up-to-date information on professional development and support available, and grants which could be accessed'. In terms of improving the site, teachers suggested: 'more links to subject specific areas', 'more news and current events in education', 'flag information that is new to the site'.

One teacher described the difficulty in finding a balance between life and work, and that learning to use computers and associated skills was expected over and above current commitments at the school:

> Teachers have been given computers to work with but little or no professional development. With all the other demands placed on us, self-teaching on how to use the various aspects of the computer comes at a very low priority – it's too time consuming. Outside of school I have a family to care for, and I need time to chill out and do things that I find fulfilling, like art. But I'd gladly take computer PD if it was offered to me.

A seamless integration of technology between work and home, was the vision of one teacher, in recognition of the large amounts of preparation done at home:

> I believe that every teacher—we're talking fairyland here—should be given a laptop computer by the government for work purposes. It belongs to the school, so if you leave the school you hand your laptop computer in. So that teachers can go home and use that for professional development at home, and use it off site, and also provide Internet access to teachers like they do at school—off site at their homes as well. I think that more teachers would do professional development if they knew that the government was supporting them … Also we don't have access. If we had a computer at home we don't have access to our files at school. At the moment over the Internet we can't get onto our H drive at school … while you're off site because of the server. Rather than put everything down on the hard drive and take it home it would be good if you could access your schoolwork from home and school.

4.10.3 Teachers' level of internet support, use, and needs for professional development

Level of support

Teachers had access to many professional association websites as well as a range of employer, government, university and other relevant independent websites. Within Australia, both primary and secondary teachers had access to the website of the *Australian College of Educators*. They were also able to access a range of resources from other international and subject-specific association websites.

Use of professional development services and support

The teachers' pattern of internet use was one where almost all teachers (primary and secondary) accessed the internet regularly with more than half reporting daily access. The internet has clearly been integrated into their professional working patterns. They overwhelmingly saw themselves as competent users of the most frequently used internet tools (email and search engines), and they also felt confident in their use of the technology to aid their professional development. As most schools have their own website, teachers constantly referred to these local sites, but they also used the internet frequently for teaching resources, lesson ideas and to keep up-to-date. The main difficulties for teachers, in their use of the internet for professional development and support, was the unreliability of access and the difficulty they had in their teaching schedules to find the time to fully avail themselves of the range of services. While many teachers in school communities (as opposed to those in small or one-teacher schools) reported no feelings of professional isolation, the majority at least felt some isolation in their rural and remote schools.

Needs and benefits of professional development

While teachers were generally found to be avid and regular users of the internet for professional purposes, they were also keenly aware of its potential to ameliorate any sense of professional isolation and for its ability to provide them with a wide range of relevant, high quality teaching resources. They had many ideas and suggestions on how the technology could better suit their professional needs. Some specific suggestions made by teachers included using the internet:

- For more extensive and purposeful networking amongst colleagues
- For access to more quality resources, and resources provided under subject specific headings
- For completing professional development courses on how to use the internet more effectively
- For access to a more extensive range of online accredited courses
- For learning about current development and news in an efficient way (e.g. by flagging new information on teacher focussed websites).

Teachers were efficient, effective and regular users of the internet to support the core of their professional activities. They were also acutely aware of the limitations impeding its use such as insufficient time and access in the workplace, and inadequate and unreliable infrastructure.

5.   Discussion of results and implications

While the internet, and other advances in information and communication technologies, have the capacity to revolutionise the way professionals in rural and remote areas maintain and strengthen their professional knowledge and skills, the evidence of this study suggests that a range of varied and complex factors often intervene to prevent such professional growth occurring.

5.1   Availability of web-based professional information and support

Websites focussed on professional needs were identified for all the professions investigated in the study. No profession studied was without a dedicated Australian website, and many overseas websites were also located for all the professions.

As well as professional association websites, there are many other types of websites that professionals working in rural and remote regions of Australia can also access for professional development purposes. These include employer websites, specific workplace websites, university and commercial websites. In addition to professional information devoted to policy and practice guidelines, many of these sites also contain human resource information, career and job notices, event calendars, and various forms of interactive information. Some sites make use of discussion forums and chat rooms, and conduct events that involve web casting and audio conferencing.

The design of a website for professionals depends to a large degree on the type of profession and the purpose of the site. In the review of websites undertaken for this study, we concentrated on sites that offered professional development and support for the generalists in the profession. Sites from Australian, New Zealand, USA and UK were considered. In reviewing these sites, it was apparent that sites in the UK and USA had adopted internet-based forms of information and communication to a greater extent than was apparent in similar professional sites in Australia and New Zealand.

Other sites that had a specific focus such as specialist sites were not included in the review. With this in mind the following features of websites were recognised across professions and provide guidance to future designers and developers. Design guidelines are presented below.

5.1.1   Design guidelines for professional websites

Professional websites could include:
* A statement of mission, vision, goals, purpose, aims or objectives
* Differential access to members and non members.
* Readily accessible, logically categorised, menus and submenus
* A site map or 'quick index' facility with an option for site feedback.
* Information and resources target a variety of stakeholders: members, public, students, international
* Catering for special interest groups e.g., specialists, rural professionals
* Current information in the form of 'latest news' or 'hot topics'
* Information accessed through journals, newsletters, magazines, facts sheets, and handbooks
* An events calendar providing information on conferences, workshops, seminars, lectures
* Reports on advocacy, campaigns, media releases, industrial issues
* Links to relevant sites, such as employer, government, commercial and other associations and sub branches

- Electronic communication, professional development and support through listservs, discussion forums, email contacts, online modules, webstreaming, satellite telecasts, e-mentoring, and frequently-asked questions (FAQs)
- Public interaction and information such as 'find a professional'; 'ask a professional', register complaints, and information on fees.
- Professional development in the form of documents, courses, planning and recording tools
- Management of practice information and tools e.g., insurance and marketing
- Research information and tools, such as library databases
- Information on grants, awards and scholarships
- Policies and guidelines on governance, codes of conduct, practice, ethics, standards, accreditation, registration, assessment, exams, audits and advertising
- Support though supervision, advice and mentoring
- Legal and ethical advice
- Career information about salaries, training, employment, and classified advertisements
- A membership directory.

5.2   Knowledge of web-based professional information and support

The professionals studied were generally aware of the availability of professional support on the internet. All professions shared similarities, and no profession was remarkably different to any other in this regard. Awareness of professional support on the internet was also not distinguished by age range or years of experience, nor by gender.

Professionals generally recognised the potential value of the internet to support their professional development, while equally aware of its limitations for particular aspects of their own professional role. Nevertheless, there was a reported feeling that the internet was the 'way of the future' and that it potentially has significant implications for professional development, particularly for those professionals who are physically isolated from others in their field.

5.3   Use of web-based professional information and support

The study showed that web-based information and support was available for all the professions studied, and that professionals were generally aware of the nature of the support. However, the reliable accessibility and use of the internet to support professional development was a much more inconsistent finding amongst the professionals studied. The ability of professionals to avail themselves of professional development support on the internet is not always within their own control, and depends on a number of complex factors.

Time and the work/life balance
The increasingly time-poor status of professions and the difficulty of achieving a satisfactory work/life balance was a repeated theme throughout the responses received from across the professions. Most professionals lead very busy work and family lives, a situation, which has been exacerbated recently with increased accountability standards and associated documentation. To many, the internet is seen as an 'add on' or a luxury that draws them away from their daily work duties, and the perception abounds amongst some supervisors and colleagues that accessing the internet is time-wasting and not real work.

Finding the time for professional development is seen as necessary but problematic. Often professional development is only offered in metropolitan areas where problems of distance and travel cost can make attendance difficult. Using the internet for professional development competes

with daily duties because there is no physical separation from daily work or home to allow dedicated attention to such issues.

Accessibility of the internet

While most professionals surveyed in this study had access to the internet either at home or at work, the quality of access varied considerably. While some professionals had individual computers and free and unlimited access to websites and resources, for most, various factors have intervened to the point where access was sporadic or limited.

Low bandwidth, and differential telephone costs, meant that many professionals reported frustration in waiting the time it took for websites to download. In addition, some professionals were limited by their employers to sites only available on an intranet, with no access to outside websites. The number of computers able to access the internet was also a major factor in accessibility: while many workplaces had internet connections the number of computers may be far fewer than the number of employees, with many professionals sharing computers or waiting their turn. Some professionals were denied access to the internet at all times at their workplace, and any professional development on the internet was done in their own time at home.

Reliability of service and equipment

Some groups of professions have employers that provide, or they are themselves able to provide, up-to-date hardware and IT support services to access the internet. More frequently, rural and remote professionals are plagued with unreliable connectivity resulting from the use of superseded computers, power surges and outages, server unreliability and computer viruses.

Technological competence

Many professionals admit their own lack of computer literacy and enhanced ability to maximise their use of the technology, although a clear majority have basic skills. Professional development in this area is valued, with some professions such as nursing investing significant time in developing and offering assistance. The need, however, is apparent across professions.

5.4 Perceived needs and benefits of web-based professional information and support

Professionals in rural and remote areas of Australia generally recognise the potential benefits of the internet in providing for some of their professional development needs. Under ideal conditions of access and reliability, that is, when they have the competence, time and access, the professionals in the study identified several areas where the internet could be used to support their professional development needs.

Resources and information

Especially for beginning professionals in rural and remote areas of Australia, access to resources relevant to their own profession is of paramount importance. Access to codes of practice and policy documents would help beginning professionals to more readily learn what it means to 'be a professional' in each area.

Most professionals are desperate for resources and information that relate directly to their practice. Unfortunately, many professional development web sites fail to recognise the need to offer resources related to a rural and remote context. Downloading information and resources is a frequent activity, and the most common use of the internet among the professions. A common finding was the current absence of access to the latest research in their field through professional online journals. This proved to be difficult for many, as access to university libraries typically ends on graduation, and unless they continue with postgraduate study, this channel becomes unavailable.

Training

Most professionals value face-to-face professional development activities but the large distances and high costs of travel in some cases is prohibitive. The internet is perceived as a potentially powerful learning environment that could offer online courses, seminars, and lectures for postgraduate qualifications and points for professional continuing accreditation. Many professionals requested online professional development that matched the face-to-face activities found in metropolitan areas.

As well as training in areas of their profession, many indicated the need for training in more advanced computer related skills.

Communication

Email is the most frequent use of communication tools and was the most commonly used means of maintaining professional contact. This usually occurred with each professional's circle of contacts, and was a way of maintaining contact with distant colleagues. Email was also considered to have many benefits as a means of providing professional information and announcements, because many could access email without the problems associated with logging on to the internet and related bandwidth problems. Professional contact through listservs was also recognised as a simple and convenient means of engaging in professional conversation, and a means of receiving professional support and advice.

Support

The feeling of isolation for many professionals was graphic. For younger professionals the effect is amplified. Many of these professionals indicated the need for online mentoring and communication with more experienced colleagues. Where supervision is a requirement, the internet may offer some benefits in enabling a distant experienced professional to supervise practice using online technologies.

6. Recommendations for practice

The internet has the potential to not only provide a vast array of resources to professionally isolated rural and remote professionals in Australia, but also to provide the means to more enhanced communication, collaboration and community building. However, the current technological, institutional and social constraints associated with the use of the internet as a professional development tool, mean that its potential is only rarely realised.

The following recommendations are made for those in a position to change the current state: the employers, the universities that train the professionals, federal and state government departments and private institutions that oversee and accredit professionals, the professional associations, the providers of technical infrastructure and the professionals themselves.

In order for the internet to fully serve the development needs of rural professionals and the communities and citizens they serve, the following recommendations are made on the basis of this extensive consultation with rural and remote professionals:

1. *Professionals need to be recognised as professionals*
   Many professionals are treated as subordinate employees, rather than the fully accredited professionals they are. Many are given only limited access to the internet signifying a lack of trust that militates against a productive and harmonious workplace, and professional growth. State differences highlight these inequities. A national best practice standard needs to be identified, promoted and employed across the professions.

2. *Beginning professionals need to be mentored*
   Employers, training institutions and professional associations need to work together to provide online professional development, mentoring and support structures particularly for novice professionals in rural and remote Australia.

3. *Professionals need access to a professional library*
   Full-text online journal resources need to be made accessible to professionals. Enabling alumni access to online journals and databases found in most Australian universities, or the creation of a national online library for the professions, would be a major benefit to professionals in rural and remote areas.

4. *Professionals need access to post-graduate courses online*
   Universities, in collaboration with relevant stakeholders need to develop and offer a greater range of fully online courses for professionals in rural and remote regions.

5. *Professionals need appropriate up-to-date computer hardware and software*
   Professionals should have access to a personal computer, and technological support that enables each to develop as a professional while at the same time adding value to their organisations. As a goal to work towards, every professional should have available a laptop computer that can be accessed wirelessly either at work or at home.

6. *Professionals need reliable access to the internet*
   Telecommunication infrastructure and computer hardware that enables reliable, cost effective, broadband access is critical for successful online professional development.

7. *Professionals need customised and well-designed professional association websites*
Designers of websites for professionals should recognise and implement the increased use of ICT tools in providing professional development and support. These tools include the use of listservs, discussion forums, email contacts, online modules, webstreaming, satellite telecasts, e-mentoring, and FAQs.

8. *Professionals need training in the use of internet tools and processes*
Professionals can see the benefits of the internet in terms of professional development but many seek assistance in further developing their computer skills. Professional development in the area of computer skills needs to be developed and implemented within contexts appropriate for specific groups of professionals.

9. *Professionals need access to continuing business education*
Many professionals need access to information and advice on setting up and maintaining an efficient business, in addition to information relating specifically to their profession.

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8. Appendix

Professional development and the internet: Questionnaire

Professional Development and the Internet
Q U E S T I O N N A I R E

Many professionals, when first appointed to rural and remote areas, find themselves isolated and unsupported, not only in their physical location but professionally as well. The aim of the research is to identify the levels of support provided to professionals working in rural and remote areas of Australia, and to investigate the kinds of support available, or potentially available, on the internet. Please fill in the most appropriate response below with a pencil or pen. It should take approximately 20 minutes to complete. Your responses will be completely anonymous and confidential. Thank you for participating in this research.

1. Within which age range do you fall?
   - ❑ 25 years or younger
   - ❑ 26-35
   - ❑ 36-45
   - ❑ 46-55
   - ❑ 56 years or older

2. What is your gender?
   - ❑ Female
   - ❑ Male

3. What is the postcode where you work?

   ❑❑❑❑

4. Approximate distance from nearest post office?

   _____ kilometres

5. What is your profession?
   - ❑ Dental practitioner
   - ❑ Dietitian
   - ❑ Medical practitioner
   - ❑ Nurse
   - ❑ Occupational therapist
   - ❑ Pharmacist
   - ❑ Physiotherapist
   - ❑ Psychologist
   - ❑ Primary school teacher
   - ❑ Secondary school teacher
   - ❑ Social worker
   - ❑ Other

6. What is your highest qualification?
   - ❑ Doctorate
   - ❑ Masters
   - ❑ Graduate diploma
   - ❑ Graduate certificate
   - ❑ Bachelor degree
   - ❑ Other _____

7. Professional experience
   - ❑ 1-5 years
   - ❑ 6-10 years
   - ❑ 11-15 years
   - ❑ 16-20 years
   - ❑ 21 or more years

8. How long have you been employed in your current position?
   - ❑ 1-5 years
   - ❑ 6-10 years
   - ❑ 11-15 years
   - ❑ 16-20 years
   - ❑ 21 or more years

9. Do you have access to the internet at home?
   - ❑ Yes
   - ❑ No

10. How are you connected at home?
    - ❑ Telephone modem
    - ❑ Broadband (e.g., cable, ADSL)
    - ❑ Satellite
    - ❑ Other _____
    - ❑ Not sure

11. Do you have access to the internet at work?
    - ❑ Yes
    - ❑ No

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12. How are you connected at work?
- ❑ Telephone modem
- ❑ Broadband (e.g., cable, ADSL)
- ❑ Satellite
- ❑ Ethernet
- ❑ Other _____
- ❑ Not sure

13. How often do you access the internet for professional purposes?
- ❑ Daily
- ❑ Once or twice a week
- ❑ Once or twice a month
- ❑ Hardly ever
- ❑ Never

14. How would you rate your competence as a user of the internet generally?
- ❑ Very competent
- ❑ More competent than most
- ❑ Satisfactory
- ❑ Incompetent

15. How often do you use the following internet tools for professional purposes?

Email
- ❑ Daily
- ❑ Once or twice a week
- ❑ Once or twice a month
- ❑ Hardly ever
- ❑ Never

Search engines e.g. Google, AltaVista
- ❑ Daily
- ❑ Once or twice a week
- ❑ Once or twice a month
- ❑ Hardly ever
- ❑ Never

Listservs eg. email bulletins
- ❑ Daily
- ❑ Once or twice a week
- ❑ Once or twice a month
- ❑ Hardly ever
- ❑ Never

Chat rooms
- ❑ Daily
- ❑ Once or twice a week
- ❑ Once or twice a month
- ❑ Hardly ever
- ❑ Never

Discussion boards
- ❑ Daily
- ❑ Once or twice a week
- ❑ Once or twice a month
- ❑ Hardly ever
- ❑ Never

Web site development software e.g. Dreamweaver, FrontPage
- ❑ Daily
- ❑ Once or twice a week
- ❑ Once or twice a month
- ❑ Hardly ever
- ❑ Never

16. How would you rate your competence as a user of these internet tools?

Email
- ❑ Very competent
- ❑ More competent than most
- ❑ Satisfactory
- ❑ Incompetent

Search engines e.g. Google, AltaVista
- ❑ Very competent
- ❑ More competent than most
- ❑ Satisfactory
- ❑ Incompetent

Listservs eg. email bulletins
- ❑ Very competent
- ❑ More competent than most
- ❑ Satisfactory
- ❑ Incompetent

Chat rooms
- ❑ Very competent
- ❑ More competent than most
- ❑ Satisfactory
- ❑ Incompetent

Discussion boards
- ❑ Very competent
- ❑ More competent than most
- ❑ Satisfactory
- ❑ Incompetent

Web site development software
- ❑ Very competent
- ❑ More competent than most
- ❑ Satisfactory
- ❑ Incompetent

17. How often would you use the internet for these professional reasons?

Keeping in touch with colleagues
- ❑ Daily
- ❑ Once or twice a week
- ❑ Once or twice a month
- ❑ Hardly ever
- ❑ Never

To gain work-related information eg., articles, publications, resources
- ❑ Daily
- ❑ Once or twice a week
- ❑ Once or twice a month
- ❑ Hardly ever
- ❑ Never

Information about conditions of your employment eg., human resource (HR) information
- ❑ Daily
- ❑ Once or twice a week
- ❑ Once or twice a month
- ❑ Hardly ever
- ❑ Never

Employment opportunities eg., job adverts
- ❑ Daily
- ❑ Once or twice a week
- ❑ Once or twice a month
- ❑ Hardly ever
- ❑ Never

Online courses
- ❑ Daily
- ❑ Once or twice a week
- ❑ Once or twice a month
- ❑ Hardly ever
- ❑ Never

Professional information e.g. conferences
- ❑ Daily
- ❑ Once or twice a week
- ❑ Once or twice a month
- ❑ Hardly ever
- ❑ Never

Others:

18. How many professional sites have you bookmarked, or made a favourite site?
- ❑ 0
- ❑ 1-10
- ❑ 11-20
- ❑ More than 20

19. How often would you access these types of sites for professional purposes?

A website at your place of employment eg., school or hospital
- ❑ Daily
- ❑ Once or twice a week
- ❑ Once or twice a month
- ❑ Hardly ever
- ❑ Never

Your employer's main website, eg., government department or private company
- ❑ Daily
- ❑ Once or twice a week
- ❑ Once or twice a month
- ❑ Hardly ever
- ❑ Never

State, national and international professional associations, eg. AMA, APA, APS
- ❑ Daily
- ❑ Once or twice a week
- ❑ Once or twice a month
- ❑ Hardly ever
- ❑ Never

Rural associations, eg., Rural Nurses' Association
- ❑ Daily
- ❑ Once or twice a week
- ❑ Once or twice a month
- ❑ Hardly ever
- ❑ Never

Community sites, eg., local sites
- ❑ Daily
- ❑ Once or twice a week
- ❑ Once or twice a month
- ❑ Hardly ever
- ❑ Never

Higher Education eg., university, TAFE sites
- ❑ Daily
- ❑ Once or twice a week
- ❑ Once or twice a month
- ❑ Hardly ever
- ❑ Never

Private industry eg., publisher sites
- ❑ Daily
- ❑ Once or twice a week
- ❑ Once or twice a month
- ❑ Hardly ever
- ❑ Never

20. In what ways do you think the internet could help in your continuing professional learning? (If you have additional comments, please use blank page at end)

21. What limitations do you see in using the internet for your continuing professional learning?

22. To what extent do you feel professionally isolated in your current position?
❑ Not at all
❑ A little
❑ A great deal (please describe)

23. In what ways do you think the internet could help in overcoming professional isolation?

24. Do you access the internet for professional information?
❑ Yes
❑ No (please go to question 31)

25. What is the name of the main website that you access for your own professional information?

26. What is its URL? eg., www.aace.org

27. How often do you access this site?
❑ Daily
❑ Once or twice a week
❑ Once or twice a month
❑ Hardly ever
❑ Never

28. What features of this site do you find helpful?

29. What features of this site do you avoid? (if any)

30. In what ways do you interact with the site?
Post to a discussion board
❑ Daily
❑ Once or twice a week
❑ Once or twice a month
❑ Hardly ever
❑ Never
Chat with colleagues
❑ Daily
❑ Once or twice a week
❑ Once or twice a month
❑ Hardly ever
❑ Never
Send an email
❑ Daily
❑ Once or twice a week
❑ Once or twice a month
❑ Hardly ever
❑ Never
Purchase an item/s e.g. books
❑ Daily
❑ Once or twice a week
❑ Once or twice a month
❑ Hardly ever
❑ Never

30. In what ways do you interact with the site? (Cont.)

Read/download a publication
- ☐ Daily
- ☐ Once or twice a week
- ☐ Once or twice a month
- ☐ Hardly ever
- ☐ Never

Register for a course
- ☐ Daily
- ☐ Once or twice a week
- ☐ Once or twice a month
- ☐ Hardly ever
- ☐ Never

(continued next column to right)

Register for a conference
- ☐ Daily
- ☐ Once or twice a week
- ☐ Once or twice a month
- ☐ Hardly ever
- ☐ Never

Participate in an online course
- ☐ Daily
- ☐ Once or twice a week
- ☐ Once or twice a month
- ☐ Hardly ever
- ☐ Never

Others:

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31. We are interested in identifying the useful features of professional websites. Please access ONE of the following sites that relates closely to your profession:

1	Dental practitioner	Australian Dental Association	www.ada.org.au
2	Dietitian	Dietitians Association of Australia	www.daa.asn.au/
3	Medical practitioner	Australian Medical Association	www.ama.com.au
4	Nursing professional	Australian Nursing Council	www.anci.org.au
5	Occupational therapist	Australian Association of Occupational Therapists	www.ausot.com.au
6	Pharmacist	The Pharmaceutical Society of Australia	www.psa.org.au
7	Physiotherapist	Australian Physiotherapy Association	www.physiotherapy.asn.au
8	Psychologist	Australian Psychological Society	www.aps.psychsociety.com.au
9	School teacher	Australian College of Educators	www.austcolled.com.au
10	Social worker	Australian Association of Social Workers	www.aasw.asn.au

31. Which site did you choose?

Number _____

32. Have you visited this site before?
- ☐ Daily
- ☐ Once or twice a week
- ☐ Once or twice a month
- ☐ Hardly ever
- ☐ Never

33. Would you access this site again? Why?

34. What features of the site are most helpful? Why?

35. What features of the site are least helpful? Why?

36. What features would help to improve this site?

37. Are there any other comments you would like to make? (Please use the space below for this and any other responses)

Thank you for your valuable time.
Please return the questionnaire, in the post paid envelope, to:

Dr Tony Herrington
Faculty of Education
University of Wollongong
Wollongong, NSW, 2522

Would you be willing to undertake a follow-up telephone interview?

❑ Yes
❑ No

If yes, could you please fill in the attached *Statement of Disclosure and Informed Consent*, together with your telephone number and email address and return to the above address.

Thank you again.

Dr Tony Herrington & Dr Jan Herrington
University of Wollongong

On University letterhead:

STATEMENT OF DISCLOSURE AND INFORMED CONSENT
(Required for telephone interview only)

Dear Colleague,

This letter is to inform you of the nature and purpose of research into the use of the internet as a support for professionals employed in rural and remote areas.

The study is entitled *Effective use of the Internet to help retain professionals employed in rural Australia.* It is being conducted at the University of Wollongong, NSW, and supported by a grant from the Rural Industries Research and Development Corporation. The purpose of the study is to examine the extent of support provided to professionals working in rural and remote areas, and to explore the potential of the internet to provide effective professional development support.

The research is comprised of an anonymous survey, and follow-up interviews with willing participants. Your participation will be extremely beneficial in the long term, in helping employers, government agencies and academics to understand how people can be given essential support in sometimes difficult employment contexts.

If you agree to take part in the study, you will be interviewed on the telephone, and the telephone conversation will be audio taped for analysis. From your comments it may be possible to investigate in more detail the level of support (or lack of it) available to professionals, and the problems facing them in their day-to-day efforts to provide a professional service. There will be no discomfort to you, or any risks. Confidentiality is assured, and you will not be identified in any part of the research, that is, neither the survey, nor the interview. You are free to withdraw from the study at any time for any reason, and to withdraw any data you have provided to that point. If you have any concerns or complaints regarding the way the research is, or has been conducted, you can contact the Complaints Officer, Human Research Ethics Committee, University of Wollongong on (02) 4221 4457.

If you agree to take part in the research, please sign the consent form below. Return in the post-paid envelope to:
Dr Tony Herrington
Faculty of Education
University of Wollongong,
Wollongong, NSW, 2522

If you have any questions about the project, you can direct them to us on (02) 4221 4643 (Telephone), or tony_herrington@uow.edu.au (Email).

Dr Tony Herrington,   Dr Jan Herrington
University of Wollongong   University of Wollongong

CONSENT FORM (required for telephone interview only)

I _____(Name of participant)

Of (Address):

Phone:

Email:

have read the information above and any questions I have asked have been answered to my satisfaction. I agree to participate in this research, realising I may withdraw at any time. If I have any concerns or complaints regarding the way the research is, or has been conducted, I can contact the Complaints Officer, Human Research Ethics Committee, University of Wollongong on (02) 4221 4457.

Signed_____   **Date** _____