FINAL REPORT

Scoping Study to Investigate Online Learning Environments to Facilitate Evidence Sharing by Literacy and Numeracy Practitioners

(LNET project)

Michele Lonsdale, Alana Deery, Gerry White and Carol Skyring

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The purpose of the *Scoping Study to Investigate Online Learning Environments to Facilitate Evidence Sharing by Literacy and Numeracy Practitioners* (LNET) study was to identify effective online interfaces or learning environments that provide education stakeholders with opportunities to share examples of good practice, ideas and quality resources.

A review of the literature was undertaken and consultations carried out with a wide range of education stakeholders via focus groups, telephone interviews, videoconference and online survey. Those consulted included ICT experts, representatives of professional education associations, teachers, and personnel from state and territory Independent, Catholic and government jurisdictions.

Two main areas of investigation were online databases, with a particular focus on exemplary international and national models, and social networking services, with a particular focus on online communities. Two other types of online interfaces and learning environments were examined briefly: learning management and conferencing systems.

The findings of the literature search are consistent with the findings from the consultations, review of gateways, research on online communities, and online survey results. The literature shows a growing array of online spaces and tools that are potentially available for use by educators, although take-up for professional learning purposes among classroom teachers remains well behind that of leading educators who are working daily with these new technologies to enhance their professional learning.

The review of online gateways/portals showed a substantial number of repositories that offer teachers access to quality assured resources, most with some interactivity, and a smaller number of databases that offer access to a wider range of online tools and services. The best of these online interfaces provide opportunities for professional learning to occur among communities of educators. These can be interest-based, topic-based or created around groups of educators in particular education sectors. While there are few longitudinal studies of online communities, the research shows that highly effective online communities generally have a shared purpose and need, a strong sense of trust and support, are voluntary rather than mandated, and have a skilled moderator.

The research shows that membership of an online community is potentially a rich source of professional learning for educators. The capacity of these communities to provide teachers with just-in-time learning, professional communication and support, opportunities to reflect on their own learning and practice, and access to a diverse and potentially rich pool of expertise, makes online communities an invaluable resource.

The main users of these resources are teachers, students, education authorities, librarians, academics and researchers. The main reasons for use by teachers are to find resources and information, share information, participate in discussion, access online publications and gain updated industry news.

The main obstacles to usage continue to be lack of time and lack of confidence among teachers. School leadership that does not model a strong commitment to ICT and professional learning was also raised as an issue. Another reason identified in the

literature and supported by anecdotal evidence through the consultations is that not all teachers are willing to share resources. In part this is due to a sense of being exposed, opening up practices and strategies that could be the subject of peer criticism. To share resources requires a level of trust that the end user will be respectful of the material that has been developed. For some education authorities, there are issues to do with copyright, licensing and intellectual property that mean access to online resources are restricted.

The consultations and research indicate the following conditions as being potentially effective strategies for improving teacher use of online services and tools:

- Teachers are given access to reliable networked computers, appropriate resources and readily available technical support.
- Teachers are supported to gain an appropriate level of skills that will enable effective use of the various online services and tools. This includes the ability to locate in a timely manner portals providing links to high quality resources.
- Schools, organisations and systems value the use of teachers' time to improve professional learning via the online services and tools.
- There is high quality facilitation, leadership or moderation of online communities, particularly in the early stages when the online environment is being set up.
- Participants feel their professional reputation is enhanced through engagement in online communities and access to online repositories.
- There are clear goals and a shared sense of purpose for the online community.
- Trust is established and participants are willing to be honest and open in their contributions. Participants feel a strong connection with the online community.
- Participants recognise that knowledge is a public good, and that it belongs to the whole community of educators rather than individuals or particular schools.

The report concludes with three key recommendations:

- That a national, integrated, online interface for literacy and numeracy educators is developed. This would be *comprehensive* in the range of services and tools offered to support an evidence base and the professional learning of literacy and numeracy practitioners; draw on *the best features* of existing national and international services; and be *multi-modal*, particularly in the range of options available for teachers to engage in professional learning, including support for face-to-face and peer-to-peer learning opportunities.
- That a strategy is developed to provide routine, structured time for teachers to explore online tools and services, and confidently engage in online professional learning. This would be written into the allocated time of teachers.
- That a national quantitative survey of practitioners be conducted to identify ICT awareness and skill capabilities among stratified sub-groups of practitioners.

INTRODUCTION

The Australian Council for Educational Research (ACER) commenced work on the *Scoping Study to Investigate Online Learning Environments to Facilitate Evidence Sharing by Literacy and Numeracy Practitioners* (LNET project) in mid-January 2009. ACER project staff met with DEEWR representatives at the beginning of the project to clarify expectations and the parameters of the study.

Aims of the project

The purpose of the LNET study was to identify effective online interfaces or environments that provide education stakeholders with opportunities to share examples of good practice, ideas and quality resources. It was intended that the study highlighted the benefits to be derived from the development of a literacy and numeracy information-sharing interface and its possibilities. The research would also investigate whether education practitioners and others are likely to use such a resource, barriers to such usage, and the type of professional learning needed to encourage effective usage. Additionally, the study would also identify alternative options to online methods for sharing the evidence base.

The findings of the study are intended to inform DEEWR decision-making in relation to the development of a literacy and numeracy online information-sharing interface, and the feasibility of linking to existing high quality Australian education networks.

Objectives of the project

The LNET project has been implemented in accordance with the following main objectives:

Objective 1

To investigate the range of online approaches that are currently being used for evidence sharing by international and national education sectors, and to describe the features of these approaches.

Objective 2

To identify what works best.

Objective 3

To include an analysis of online environment users and usability, specifically the types of teachers that are using available online interfaces, where there are gaps in participation, and any barriers to usage.

Objective 4

To investigate what and how much professional development and/or training is available to users, and what professional development would be required to ensure educators could and would engage with an online evidence-sharing interface.

To include a comparative study identifying similarities and differences in the range of online interfaces across national and international education jurisdictions.

Objective 6

To identify possibilities for making linkages with existing online approaches used by Australian education jurisdictions and professional organisations.

Defining online interfaces

The subject of this study was described in the original DEEWR tender documentation as *online learning environments* and *online interfaces*. A review of the literature yielded additional descriptions of related types of services, such as online communities, virtual communities of practice, and social networks. While each has its own particular characteristics, there is also a common feature – the use of online technologies to enable knowledge to be shared.

For the purposes of the LNET project, online learning environments and online interfaces have been re-defined as being:

Any network- or Internet-based service used by educators (such as TKI, Wikipedia, EdNA) or collaborative tool enabled by the Internet (such as a blog, wiki, Moodle, Elluminate) to establish, develop or maintain a professional learning community for the purposes of creating, communicating and using knowledge.

Defining evidence-based online interface

An online evidence–based interface is one in which the content of the interface – which could include a wide range of initiatives, programs, ideas, strategies and resources – has been validated by data collected during the course of the activity. Changes have been documented in some way and do not rely merely on anecdotes or subjective opinion. Assessment could take the form of pre and post student engagement surveys, test results, video performance, portfolios of work and other forms of data collection.

Structure of the report

The Final Report incorporates the findings reported in an earlier Interim Report for DEEWR in March 2009 and the findings of subsequent data collection. To make better sense of all the data collected from so many different sources, this report is divided into two main parts. Part One focuses on the methodology and findings from each data collection and Part Two provides a synthesis and analysis of all the findings. The report concludes with recommendations based on what has been learnt from the study. The appendices contain lists of the organisations and experts consulted, gateways reviewed, and the online survey tool used to consult literacy and numeracy teachers.

METHODOLOGY

This section of the report describes the methodology undertaken as part of the LNET study. There were two parts to the data collection: a desktop analysis and a series of consultations.

Stage 1: Literature review

Stage 1 of the research involved both a review of the literature and an online search for examples of effective models of online information-sharing interfaces. The main purpose of the literature review was to provide a context for the investigation of online learning environments and to identify the services and tools that are at the heart of this research. The review was intended to show how these interfaces have developed, what the research says about their use and effectiveness, and some effective models.

The review identified recent and current research on the use and effectiveness of online information-sharing interfaces, with a particular focus on education and user interface design. The following questions formed the basis of the review:

- Context: When was the interface established? By whom? For what purpose? How is it funded?
- Key Features: What services/functions does it offer? What kind of information is being shared? How regularly is information shared and updated? How is the information organised/structured? How accessible is it? What is the site navigation plan? What technical inter-operability standards have been used? Is the information only in English or are multilingual options available? Is the information freely available? Is it peer-reviewed or otherwise quality controlled? What other services are provided to participants? Do the interface administrators/facilitators work collaboratively with other developers of this kind of interface? What professional development and/or training is available to users?
- Users: Who are the main users of the service? What types of teachers are using the interfaces? For what main purposes do they use it? How frequently? What else do we know about patterns of usage?
- Issues: Which, if any, education groups are not using the service and why? What are the barriers to usage and what is being done/could be done to improve access and use?
- Impact: What evidence is there of the online interface's effectiveness? How often is it reviewed, by whom, and by what means?

The review was expected to identify successful examples of local, national and international online information-sharing interfaces. The following characteristics, based on an earlier study of international gateways (Lonsdale, 2003), were used as a guide for identifying exemplary online interfaces:

- The service is targeted at educators
- It offers an interactive and participatory service
- Navigation of the site is intuitive
- The information is evidence-based
- The service is funded by government or not-for-profit sources
- The service is freely available and easily accessed

- The resources and information are quality controlled
- Information is updated regularly
- There is a clear indication of the purpose and intended audience for the service
- There is an opportunity for user help and feedback
- There are additional 'value added' services.

These expected characteristics of effective online interfaces would be 'tested' against existing research and amended as appropriate, including adding any newly identified/ additional characteristics of effective online interfaces.

Email survey of administrators/facilitators

A short email survey of a selection of online interface (gateway or portal) administrators/developers was carried out in order to find out more about the services being offered, users of the service, usage patterns, professional learning opportunities provided to users, evidence of effectiveness, and suggestions for maximising usage.

The site administrators/developers to be contacted were identified on the basis of the review of gateways/portals. The information contained in the surveys supplemented the information gained through a review of the gateways and enabled a small number of models to be identified.

Stage 2: Consultations

In the second stage of the project, a series of consultations was carried out with key stakeholder groups in Australia and a targeted group of ICT experts from overseas. The following key stakeholders were engaged in a range of consultation activities. The consultations were intended to engage education stakeholders in the discussions around the feasibility of developing an online evidence-sharing interface, what it might look like, and how it could best serve the needs of educators, and literacy and numeracy educators more specifically, involved with delivering current literacy and numeracy pilots. The consultations also investigated whether or not alternative models to online interfaces might be more feasible. The key stakeholders consulted during the project included international education jurisdictions, national education jurisdictions, and Australian professional education and subject associations.

Online survey

An online survey was conducted targeting practitioners involved with the literacy and numeracy pilots so that the findings reflected the views of pilot participants. The survey was designed to investigate current (and likely) usage of online interfaces by literacy and numeracy practitioners and the factors that could increase such usage.

A short online survey of open-ended and closed questions was developed to identify:

- the main users of education online interfaces
- the main reasons for using or not using them
- which services are used and how often
- what, if any, are perceived to be the strengths/benefits
- what, if any, are perceived to be the drawbacks/limitations
- what actions or steps could be taken to improve use of these sites

- what kind of functionality would practitioners like to see in such an interface
- how likely are they to use such an interface
- what kind of professional training would be useful to support usage.

The survey was hosted online by *education.au limited*. An email and link to the survey was sent to all participating schools in the 30 literacy and numeracy pilots.

Videoconferences

A series of discussions was held with representatives from each state and territory education authority. These were conducted by a combination of videoconference and teleconference. The videoconferences provided an opportunity for education authorities in the literacy and numeracy pilots to come together via technology and discuss current usage of online interfaces and how this usage could be maximised. It was expected that the videoconferences would provide relevant and insightful information about current attitudes within the education sector towards online interfaces, a strong sense of whether these interfaces are likely to be used by practitioners in the future, and the actions needed to maximise usage.

Phone interviews

Eighteen professional education associations were contacted, with fifteen agreeing to participate in the phone interviews. The interviews were intended to find out what is currently being offered online by professional associations, and the ways in which practitioners use these online interfaces. In this way a sense could be gained of how usage could be maximised within particular domains.

Focus groups

It was decided to conduct three focus group sessions for teaching practitioners in Perth, Brisbane and regional Victoria. The purpose of the focus groups was to engage with a broad range of teacher practitioners and explore issues around non-engagement with, or resistance to, online interfaces. The discussions also considered the possibility of alternative methods to online information-sharing interfaces as a means of sharing the evidence base.

The questions for focus group participants were developed within the broader context of the need to build an evidence base of good practice, work being done currently by the various literacy and numeracy pilots, and developments in online interfaces that facilitate information sharing. This formed the starting point for identifying how participants feel about using such interfaces to share information, and what alternative models they would be willing to use and why. Questions for the discussions were intended to identify factors or circumstances that inhibit engagement with online interfaces, the kind of professional learning that participants are willing to undertake in order to maximise both the use and potential of the service, and the likely level of support needed in the future.

PART ONE   DATA COLLECTION AND FINDINGS

The study gathered data from a wide range of sources using the following methodologies:

- a review of the literature on online learning environments
- a review of online learning environments (such as gateways, portals, wikis, blogs)
- consultations with subject associations
- consultations with ICT experts in the field
- interviews with professional education associations
- interviews with education authorities via videoconference and teleconference
- focus group discussions
- an online survey of teachers involved in the DEEWR-funded literacy and numeracy pilots.

Part One of the report provides an overview of each of the main data collection methods, related issues and findings.

1. LITERATURE REVIEW

The purpose of the literature review was to investigate the use, characteristics and effectiveness of online services for educators. The main focus of the review was on the following questions:

- What are the main types of online services and tools being used by educators/practitioners?
- What are the main benefits of these online services and tools?
- What are the main issues associated with their use?
- What are the main reasons for non-use by educators/practitioners?
- How could usage be improved?

An initial search of several education databases identified around 90 potentially relevant articles, which were subsequently culled to enable a focus on the most relevant and useful sources. Search terms included combinations of the following: online knowledge network, online community of practice, online learning community, knowledge exchange network, information exchange, information sharing, information networks, knowledge networks, gateway, portal, websites, Internet, online, and virtual.

Information about social networking services was mainly sourced from the Internet via Google, as many of the collaborative tools are too recent for much research to have been conducted on their use by educators. Several case studies mentioned in the literature were explored further through information supplied by gateway/portal administrators, responses from several overseas ICT experts, and interviews with subject association representatives.

The nature of these rapidly evolving technologies means that much of what is written around social networking tends to be by advocates, including leading educators who value online services and regularly employ them to connect to other leading educators, rather than by researchers investigating usage by practitioners.

Overall, there appears to be few longitudinal studies of these online services, making it difficult to find examples of good practice that are sustained over a long period. In part this is because of the fluid nature of the technology, which is developing at such a rapid rate that new means of engaging and collaborating are constantly emerging. The very nature of these online communities also makes it difficult to evaluate their effectiveness as many come together for a specific purpose and dissolve once that purpose has been served. Membership can be fluid depending on the needs of individual users. In keeping with the nature of many of these technologies, the focus is generally on the here and now, fulfilling immediate needs. The real-time, short messaging and chronicling services of Twitter and Plurk embody the dynamic, almost staccato style approach to timely delivery of digestible bits of information for a busy audience.[1]

Definitions

Because of the rapidly changing nature of online technologies and the evolving use of these for and by educators, it has been a challenge to develop a typology of services that makes meaningful sense of the vast array of tools, spaces, communities, concepts and views that exist. The literature yields an array of different interpretations, conceptualisations and definitions around online services. For example, the range and type of information provided by TKI, the New Zealand Ministry of Education's online learning centre, is quite different from the user-generated and edited information provided in Wikipedia.[2] Similarly, while wikis and blogs are both collaborative tools, they are different in kind from the learning management system Moodle or conferencing tool Elluminate.[3] Additionally, while a wiki is predominantly a collaborative activity and a blog is a more individualistic experience, in practice, the boundaries are blurred. Thus a wiki can be both a tool and a storage place for documents (Groenwegen & Treloar, 2008), while a blog can function as an individual tool, and also become a community space for exchanging information, such as the collaborative blog set-up by a group of Australian librarians to encourage library-related contributions.[4]

Care needs also to be taken when using the terms 'training', 'professional development' and 'professional learning'.[5] While these terms are sometimes used synonymously, they denote quite different things. In the context of online learning environments, *training* involves teaching practitioners how to use particular tools and resources, such as a wiki or a conferencing tool. *Professional development* means creating the imperative for the use of these tools and services. It involves encouraging teachers to recognise the ways in which these tools and services can be used to enhance teaching and learning. *Professional learning*, on the other hand, is less about instruction and more about knowledge sharing. Rather than relying on an expert transmitting information, professional learning increasingly involves building knowledge through participation in communities of practitioners. The focus is on a collaborative approach to creating and sharing knowledge facilitated by online technologies, particularly social networking tools. It is this latter meaning that is most relevant to the findings of the literature review.

---

[1] See (http://twitter.com and www.plurk.com (accessed February 2009)
[2] See http://www.tki.org.nz/ and http://en.wikipedia.org/wiki/Main_Page (accessed February 2009)
[3] See http://moodle.org/ and http://www.elluminate.com/ (accessed February 2009)
[4] See http://librariesinteract.info/about (accessed March 2009)
[5] Graeme Oswin, Regional ICT Coordinator, Ballarat, Victoria, contributed to this distinction in a phone interview, Tuesday 31st March, 2009.

Types of online services

Fundamental to the online services for educators investigated in this study is the assumption that sharing information is inherently desirable and valuable. This represents a shift from an older model of knowledge as the prerogative of experts to a more democratic model that recognises the expertise of potentially any contributor to an online community. This assumption is consistent with the shift enabled by the Internet for consumers to become producers; that is, for users of the Internet to be able to write as well as read in order to disseminate a message, express an opinion or share knowledge.

Despite their common commitment to the creation and sharing of information, online services differ substantially in the nature of the information provided and the ways in which this information is assembled and transmitted. In the case of older online models, predominantly databases, there is a strong focus on classifying and linking to resources based on quality criteria. In the newer services, many of which come under the banner of social networking tools, there is a focus on user-created knowledge and information sharing. Expertise resides in the community of learners itself rather than a quality controlled repository.

Four main types of online service have been identified in the literature:

- Databases
- Social networking services
- Learning management tools
- Conferencing tools.

Databases

The main function of this kind of online service is to classify and provide links to high quality information. Examples of this kind of resource include gateways, exchanges, portals, vortals and knowledge networks. Resources are assembled and classified by experts according to a set of criteria and peer-reviewed. Content is transmitted from experts to users with little opportunity for users to shape or add to the knowledge accumulated.

Databases can be static, dynamic and/or interactive. Static databases are generally a collection of web pages. These older database-driven services offer a directory of web information links and provide information quickly and cheaply. They do not lend themselves readily to the building of online communities. The Awesome Library, for example, offers a collection of around 36,000 reviewed resources for teachers, principals, counsellors, school nurses, students and families.[6] Education World provides resources for teachers and administrators.[7] There is evidence of a slight movement away from being merely a repository with the inclusion of a message board, but while the 'posts' on the message board often attract large numbers of viewers they rarely attract the active engagement of users with either each other or Education World administrators. Use of the message board is largely passive.

Dynamic online services, such as the NSW Teaching and Learning Exchange (TaLe) are more sophisticated than static web pages and, in addition to the resources and web

---

[6] See Awesome Library at www.awesomelibrary.org (accessed February 2009)
[7] See Education World at www.education-world.com (accessed February 2009)

links, offer additional services to users, such as opportunities for online discussion.[8] Primarily, though, TaLe is a gateway to quality-controlled resources for teachers, allowing them to identify and access course material and professional learning resources, national and state news, and information about professional learning opportunities and other education-related information.

Interactive databases provide opportunities for a reciprocal sharing of ideas, information and resources. EdNA is an example of an online service for educators that contains static, dynamic and interactive elements.[9] One of its strengths has been its capacity to evolve and make innovative use of the emerging technologies to meet the needs of educators. In addition to the extensive resources it provides to education stakeholders, there are Podcasts, EdNA Groups, EdNA Lists, RSS feeds, me.edu.au (an online professional networking site for Australian educators), newsletters, up-to-date international and national news, EdNA workshops and many other services available free to users.

An international example of an effective interactive service is European SchoolNet, which has a large number of school communities networking and collaborating on projects, such as myEUROPE and eTwinning, which are web-based projects aimed at helping teachers to raise student awareness of what it means to be a young citizen or a teacher in Europe.[10]

Like EdNA, BECTA provides static, dynamic and interactive services.[11] BECTA has evolved into a research and grants service that also offers news and media, events, publications, news archives, information about awards and vacancies, newsletters, videos, and RSS feeds. It has a strong interactive component, too, with users being able to join a range of online communities supported by BECTA. Each community focuses on a different aspect of ICT in education. These communities offer opportunities for participants to be involved in:

- sharing knowledge, advice, expertise and experiences with colleagues and peers
- sharing and discussing research into the use of ICT in education
- exchanging different professional views and opinions
- fostering change in the education ICT community
- BECTA events and follow up discussions.

Members are encouraged to post discussion topics and to make suggestions for new sub-communities.

One example of this kind of online repository is the *subject gateway*, which emerged in response to the needs of professionals for easily retrievable, quality resources. While search engines are becoming more sophisticated, they are still not reliable in terms of finding relevant items quickly. Subject gateways provide a mechanism for accessing a collection of high quality, evaluated resources to support research in particular subject areas. Resources typically include websites, e-journals, and databases. During the period 2001–2005 in particular many effective subject gateway services emerged.

---

[8] See Teaching and Learning Exchange at http://www.tale.edu.au (accessed February 2009
[9] See EdNA at www.edna.edu.au (accessed February 2009)
[10] See European Schoolnet at www.eun.org (accessed February 2009).
[11] See BECTA at http://www.becta.org.uk/ (accessed February 2009)

While few have gone on to develop interactive services, subject gateways can nevertheless make a substantial contribution to supporting learning and teaching in the new online environment (Rozmus, 2002). Examples of popular subject gateways include WebLaw, which provides annotated links to up-to-date, quality assessed legal resources for students, lawyers, researchers and professionals, and INTUTE, an online service providing resources for education and research across science and technology, arts and humanities, health and life sciences, and social sciences.[12] Other popular subject gateways include MERLOT (Multimedia Educational Resource for Learning and Online Teaching), which offers peer-reviewed teaching and learning materials in a range of subject disciplines;[13] Deutscher Bildungsserver (German Education Server – eduserver), which provides resources and information aimed at all education sectors, including RSS feeds, and a small number of eduserver blogs and wikis;[14] and GEM (Gateway to Educational Materials), a repository of over 50,000 education-related resources.[15] These are excellent models of their kind but do not offer the more interactive services offered by EdNA and BECTA and others.

Email feedback from a range of subject gateway administrators indicates some of the strategies used to ensure that the service provided remains relevant and of high quality. These include:

- focusing on the quality rather than the quantity of resources by using rigorous, pre-agreed scope and selection policies (usually made public on their website)
- enabling effective resource discovery via subject headings
- using standard metadata schemas to ensure inter-operability with other systems.

The gateway/portal is examined in more detail in the section on online learning environments later in this report.

Social networking services

The focus of social networking services is on building online communities for self-expression, sharing opinions, communicating, or entertainment. This type of service or interface featured prominently in the research and is generally characterised by:

- having a shared purpose or common interest
- having enough public interaction to stimulate discussion
- being voluntary rather than mandating the sharing of knowledge
- involving no-cost participation
- providing ready access.

The technology underpinning social network services has enabled new ways of communicating and sharing information. For example, LinkedIn connects experienced professionals globally by their declared interests.[16] Ning offers blogs, wikis, a discussion forum and participation platform and can easily be adapted for use by educators for

---

[12] See WebLaw at www.weblaw.edu.au and INTUTE at www.intute.ac.uk (accessed February 2009)
[13] See MERLOT at www.merlot.org (accessed February 2009)
[14] See Deutscher Bildungsserver at www.bildungsserver.de/start_e.html (accessed February 2009)
[15] See GEM at www.thegateway.org (accessed February 2009)
[16] See LinkedIn at www.linkedin.com (accessed February 2009)

professional learning.[17] Most of the literature reviewed here focuses on the use of social networking tools and spaces for educators that have emerged in the past few years.

This section of the report looks briefly at some of the online services and tools associated with social networking services: blogs, wikis, social networking sites, social bookmarking, and podcasts.

Blogs

Perhaps surprisingly, given the popularity of blogging, including among participants in professional education communities, there are few refereed published studies on the subject of blogs in general, let alone research that focuses specifically on blogs in education (Williams & Jacobs, 235). Blog is a contraction of the term *weblog*, which the Oxford English Dictionary defines as: 'a frequently updated website consisting of personal observations, excerpts from other sources, typically run by a single person, and usually with hyperlinks to other sites; an online journal or diary' (cited in Leech, 2006). A blog can include graphics or video and is updated on a regular basis. It functions like an online diary and can be made accessible to the public or limited to registered visitors. Readers of a blog can comment on the posts by the author. Anyone can start a blog, and many hosting sites will host blogs for free.

Blogging is a type of asynchronous communication (Loving et al. 2007). The number of personal and organisation blogs has increased dramatically in recent years (Sifry, 2006; cited in Goodfellow & Graham, 2007). The research suggests blogs are popular because they:

- are inexpensive or free to produce
- do not require propriety software to be installed
- do not need specialist computer skills
- have easily disseminated content that can be updated regularly
- give instant notification to users of new posts using RSS feeds
- are accessible.

The idea of building an online community through blogging is based on the constructivist theory of learning, which emphasises the personal construction of knowledge based on experience. Blogging can be used to build a 'community diary' around a large project 'in which a group of learners can establish and maintain thoughts and share their insights' (Oravec, 2003, cited in Loving et al, 2007). In research by Loving et al. (p. 183) community college faculty members found blogging to be very helpful in sharing ideas and keeping a record of users' experiences. 'EduBlogs', a new type of blog, have begun to emerge in educational circles (Williams & Jacobs, 2004). Microblogging is a web service that enables individuals to broadcast short messages to others in a network, letting them know what they are doing at that moment. The appeal of this kind of tool lies in its immediacy and portability.

A good example of an education blog is http://allanahk.edublogs.org, set up and maintained by a New Zealand primary school teacher. It offers relevant and topical blogs of a reasonable length on issues of interest to educators and RSS feeds. It categorises the blog entries by subject (such as cyber-safety, K12 online, collaboration) rather than chronologically, provides access to archived blogs, and is visually appealing and accessible.

---

[17] See Ning at www.ning.com (accessed February 2009)

<u>Wikis</u>

Wiki, meaning 'fast' or 'quick', is a collection of web pages in which users create and edit the content via a browser. Wikis support hyperlinks, have simple text syntax for creating new pages, and can be used to build collaborative communities. Wikipedia is the best example of this kind of collaboratively built resource. One disadvantage is that the quality of the input varies and is not always evidence-based or credible. An example of a wiki used in education is the Adult Literacy Education wiki, which invites users to 'add knowledge from your experience teaching adult learners, from research or professional wisdom, or from your experiences as an adult learner'.[18] It describes itself as 'a community of practice with links to research for practitioners, researchers, learners and others'.

While blogs are generally maintained by individuals and wikis are collaborative endeavours, Williams & Jacobs (2004) suggest that, in comparison with wikis, blogs boast a level of participation not previously experienced by earlier wiki initiatives, and a greater sense of community and debate is encouraged as a consequence. Good examples of education wikis are the Rosetown cluster's professional learning wiki at http://rosetown.wikispaces.com and the NSW North Coast Institute TAFE wiki at http://ltt.nciwiki.com.au, which is developed and managed by about 20 teachers in the learning technology team.

<u>Social Networking Sites</u>

Social Networking Sites (SNSs) have become a global phenomenon, with communities such as MySpace, Facebook and Bebo reporting user figures in the hundreds of millions. Participants are able to publish multimedia content about themselves, their interests and concerns, establish links to existing friends or discover new friendships. These social networking sites help users to identify others who share common interests and pastimes and to build relationships with people right across the globe and from all walks of life.

These sites can be categorised in a number of ways. The following categorisation was developed by Digizen[19], an organisation that promotes safe activities on the web (Communities & Local Government, 2008):

- *Profile-based social networks*: These are primarily organised around members' profile pages. Bebo, Facebook and MySpace are all good examples of this kind of social network.[20] Users develop their 'web space' in various ways and can often contribute to each other's spaces – typically leaving text, embedded content or links to external content.
- *Content-based networks*: Here, the user's profile remains an important means of organising connections. However, these networks play a secondary role in the posting of content. Photo-sharing site Flickr is an example of this type of service, where groups and comments are based around pictures.[21]
- *White-label social networks*: Users can create and join communities and make their own mini, personalised social networking sites about anything they want.

---

[18] See Adult Literacy Education wiki at http://wiki.literacytent.org (accessed February 2009)

[19] See Digizen at http://www.digizen.org/socialnetworking/what.aspx (accessed March 2009)

[20] See Bebo at www.bebo.com; Facebook at www.facebook.com; and MySpace at www.myspace.com (accessed February 2009)

[21] See Flickr at www.flickr.com (accessed February 2009)

- *Multi-user virtual environments*: Users of gaming sites such as Runescape and virtual worlds such as Second Life can interact with each other's avatars.[22]
- *Mobile social networks*: Members can interact with their personal networks via their mobile phones.
- *Microblogging*: Users can send short message updates to let others know what they are doing or thinking. Twitter and Wayn are examples of this type of network, which allows users to be in constant touch with what their network is doing, thinking and talking about.[23]
- *Social search*: Sites like Wink and Spokeo allow individuals to search by name, interest, location and other information, across the public profiles of multiple social networking sites.[24]
- *Thematic websites*: Users are brought together around areas of common interest.

Real Simple Syndication (RSS) Feeds

RSS allows users to subscribe to online news and updates that are important to them. Subscription is free and the service saves individuals from having to search websites to check for updates (Wagner, 2007). EdNA, for example, provides RSS feeds 'that deliver information and news from your favourite websites, blogs and podcasts as they are updated'. To receive RSS feeds, a feed reader or aggregator is needed, some of which are web-based and some of which require a small software program to be downloaded, although browsers usually include an RSS capacity. Subscription to an RSS Reader allows users to view information as it is published, information to be organised by subject, information to be displayed and kept up-to-date, and users to participate in discussions through blogs.

Social bookmarking

Social bookmarking is the practice of saving bookmarks to a public website and 'tagging' them with keywords. Bookmarking, on the other hand, is the practice of saving the address of an online site that is to be visited again in the future. Visitors to social bookmarking sites can search for resources by keyword, person, or popularity and view the public bookmarks, tags, and classification schemes that registered users have created and saved (Educause, 2005).

Social bookmarking opens the door to new ways of organising information and categorising resources by sharing them publicly. Because social bookmarking services indicate who created each bookmark, and provide access to that person's other bookmarked resources, users can easily make social connections with other individuals interested in particular topics. Users can also see how many people have used a tag and search for all resources that have been assigned that tag. In this way, the community of users over time will develop a unique structure of keywords to define resources – something that has come to be known as a 'folksonomy' (Educause Learning Initiative, 2005). Folksomonies can be organised in many ways, from text to dynamic graphic presentations, which can be very useful for locating relevant topics.

---

[22] See Runescape at www.runescape.com; and Second Life at www.secondlife.com (accessed February 2009)
[23] See Wayn at www.wayn.com (accessed February 2009)
[24] See Wink at www.wink.com; and Spokeo at www.spokeo.com (accessed February 2009)

<u>Podcasting</u>

'Podcasting' refers to any software and hardware combination that enables automatic downloading of audio files (most commonly in MP3 format) for listening at the user's convenience. Unlike traditional radio or other web-based streaming media, podcasts give listeners control over when they hear the recording. Podcasting makes use of the Internet's RSS standard. It differs from broadcasting and webcasting in the way that content is published and transmitted via the Web. Instead of a central audio stream, podcasting sends audio content directly to an iPod or other MP3 player. Podcast technology empowers users to publish audio content directly and seamlessly onto the Web.

The literature suggests these kinds of online tools and technologies are growing in popularity although it is not clear how widespread their usage is among educators for professional learning purposes. The online survey of practitioners, which is covered later in this report, shows that just over 50 per cent of respondents to the survey (n=199) are using online tools, resources and services, although it is not clear how much of this is related to professional learning as opposed to private use.

<u>Other online interfaces</u>

Other types of interfaces include: email, listservs, instant messaging/chat, people networks, discussion forums, online conferencing, interactive whiteboards and Voice over IP (VoIP). These technologies on their own do not make collaboration or learning happen; they need to be used in appropriate ways for this to occur (education.au, 2009).

Learning management tools

Some services, which are neither databases nor social networking services, offer educators tools for managing learning. Variously known as course management systems, virtual learning environments (VLE), learning platforms, learning management systems (LMS) and learning content management systems (LCMS), their purpose is to facilitate the creation, use and management of course content. Popular examples include Moodle, Desire2Learn and Blackboard.

Conferencing Tools

Services such as Elluminate and Yugma enable live e-learning and web collaboration. Communication features include instant messaging, teleconferencing, videoconferencing, podcasts and Voice over Internet Protocol (VoIP).

Online communities

The most common online service highlighted in the literature is the online community, sometimes called a virtual community or online community of practice. These communities fulfil a number of functions in regard to knowledge creation and sharing (Wenger, 2002):

- They are nodes for the exchange and interpretation of information
- They can retain knowledge in 'living' ways unlike a database or manual (that is, they do not have the rigidity associated with these other forms of knowledge)
- They are dynamic and cutting edge, keeping up with novel ideas and discussing trends and developments

- They have their own identity, and are organised around what matters to members.

Wenger (1998) identifies three key characteristics that, taken together, constitute a community of practice:
- Its identity is defined by a shared domain of interest. 'Membership therefore implies a commitment to the domain, and therefore a shared competence that distinguishes members from other people'.
- Its members engage in joint activities and build relationships 'that enable them to learn from each other'.
- Its members are practitioners. They 'develop a shared repertoire of resources: experiences, stories, tools, ways of addressing recurring problems. In short a shared practice'.

Technology enables these communities to engage more easily at times that are convenient to individual members.

Consistent with Wenger's conceptualisation, Tu and Corry (2002: 2) identify four basic components of an online learning community*: community of practice (community), collaborative learning (learning), social presence (network), and knowledge construction (technology).
- *Community* – 'community seems to take place within social interaction about common interests, while location is less important'.
- *Learning* – in this kind of service, 'community members learn and the community itself also learns'.
- *Network* – community networks enable participants 'to access and share resources more easily, to stimulate their knowledge, and to contribute to their empowerment'.
- *Technology* – can be synchronous or asynchronous in an online learning community.

Tu and Corry suggest that 'the fundamentals' of a community require more time to develop in online social environments than in fact-to-face social environments.

Few studies have addressed the factors that can help sustain long-term knowledge sharing within a community of practice. After conducting research on the types of activities that nurses undertake in an online community of practice, Hara and Hew (2007) categorised the different types of activities and knowledge shared. Despite focusing on the nursing profession, their typology has relevance for other professional online communities, including the education profession. This typology contributes to a better understanding of the factors that can sustain knowledge sharing among members of an online community of practice.

The types of activities categorised by Hara and Hew were as follows:
- *Solicitation:* request for help or ideas
- *Appreciation:* offering thanks for some action
- *Administration:* related to the administrative purposes on the online community as well as the use of the communication medium
- *Job posting:* announcement of some job openings or positions
- *Clarification:* giving more pertinent details about a topic
- *Compliment:* expressing praise or admiration

- *Empathy:* expressing feelings regarding the experience of another person
- *Encouragement:* expressing words with the aim of inspiring another person with hope
- *Greetings:* acknowledging someone
- *Knowledge sharing:* sharing book knowledge or practical knowledge.

The findings of this study suggest that the most common type of activity undertaken by nurses in a listserv was 'knowledge sharing', followed by 'solicitation'. The most common types of knowledge that were shared were found to be 'institutional practice' and 'personal opinion' (Hara and Hew, 2007).

Common features of effective online communities

A review of the literature suggests the following characteristics are present in effective online communities.

Interactive discussion

An online community is based on asynchronous, text-based communication using an online, Internet-based discussion forum (as opposed to email solely) (Crompton & Murchland, 2002). A successful online community has sufficient public interaction to act as a stimulus for discussion, and has a high level of use (Carr & Chambers, 2006: 146).

Needs-based

Given that ongoing interaction among members in successful online communities is based on constructive dialogue, online communities must have a need to create and share knowledge (Crompton & Murchland, 2002: 87; Charalambos & Michalinos, 2004; Donoghue 2003). For an online community to be successful, prospective members need to know why it is being created – that is, what need has led to its existence – and how they will benefit from the community.

Shared purpose and mutual support

Successful online communities display a strong sense of commitment to an idea and 'a shared sense of purpose or well-defined domain of interest' (Carr & Chambers, 2006: 146). They consist of autonomous individuals who cannot meet face-to-face because of place and time constraints and who are 'drawn together by shared values, goals, and interests, and committed to knowledge construction through intensive dialogues, interactions, and collaboration' (Loving et al. 2007: 178). Their vision, control and ownership of the community are shared equally among members of the community and there is a common sense of responsibility towards activities and peers (Charalambos & Michalinos, 2004). Participation and sharing occurs on a voluntary or no cost basis (Crompton & Murchland, 2002). There is mutual support among members and sub-groups because it is seen as a safe environment where participants can freely express their opinion and ask questions without the fear of being attacked by others (Charalambos & Michalinos, 2004).

Clear understanding of roles/rules

In a successful online community, the tasks and sub-tasks on which members work online are clearly defined and participants have a clear understanding of the expectations and rules that govern participation in the community (Charalambos & Michalinos, 2004).

<u>Effective moderation</u>

To be successful, an online community requires capable moderation that provides guidance and support as needed to the members of the community. The moderator should provide good leadership and co-ordination of online activities. Moderation may also involve monitoring member participation and behaviour, and sanctioning certain inappropriate behaviours (Charalambos & Michalinos, 2004).

The task of facilitating a learning network is the key to the success of the community as a whole (Huckvale & Towell, 2002). The moderator or facilitator is responsible for:

- stimulating debate within the community and increasing the involvement of members
- keeping the debate moving and ensuring that discussions are relevant
- managing time-specific events, such as collaborative drafting of documents
- managing the information and documents available through the network
- managing users of the network in terms of setting up and administering user accounts and ensuring that users have sufficient training to play an active role.

Salmon (1997, cited in education.au, 2009) lists the pedagogical, social, managerial and technical skills required in a facilitator. These include skills associated with:

- using a range of tools (email, forums, chat, website building tools, video and audio conferencing tools)
- engaging participation
- providing direction and support
- asking appropriate questions and having good listening and feedback skills
- building online teams
- managing online discussions by guarding against those who seek to dominate, and encouraging non-participants
- building relationships
- motivating participants
- time management
- establishing and maintaining guidelines
- planning.

Salmon acknowledges the challenges associated with moderating an online community, including:

- encouraging ownership of learning
- constructing the conditions of the learner's interaction so that they can learn
- facilitating meaningful collaboration
- maintaining regular contact with learners
- motivating group learning
- ensuring mutual respect among members.

The literature yielded a small number of online communities, some more successful than others. Even those that were less effective, however, were still worth investigating in terms of the insights they yielded into what works and does not work in online communities. The communities mentioned below have been included as an indication of the diversity that exists among online communities. The literature did not yield many examples of effective and evaluated online communities.

National Quality Schooling Framework Pilot Project

Funded by the Australian Government's Department of Education, Science and Training in 2002 as a pilot, this project had over 100 teachers from 46 national schools/pre-schools participating over a six-month period. Schools nominated to participate and were selected on the basis of their school improvement plan.

The project was set up to support schools in the implementation of their school improvement projects. It was intended to support teacher learning and school innovation, enhance the evidence base that schools could draw on to improve and demonstrate the quality of student learning outcomes, ensure a continued focus on quality learning outcomes for all students, and research and develop the capacity of schools to access and engage teachers (Carr & Chambers: 146).

The online site comprised two main sections. The information section contained a repository of resources and tools 'designed to support evidence-based school improvement practices and processes' (Carr & Chambers: 147). The community section was intended to foster 'ongoing teacher professional learning through the exchange of ideas and building a sense of community of practice' (Carr & Chambers: 147).

This online community was set up after a series of introductory workshops and telephone-based training sessions. Schools participating in the pilot were required, as part of their funding agreement, to submit four reports 'outlining the progress of their school improvement project against using templates provided on the web site' (p. 147). These reports were then made available to all participants in the community section. The NQSF project team also encouraged participants to contribute to the community section 'and to share experiences in the implementation of their school improvement projects and learn from each other through reflective, collegial sharing' (p. 147). Participants could interact via synchronous chat rooms, a forum, or a range of asynchronous tools.

Carr & Chambers (2006) studied 13 NQSF pilot participants to understand better the factors that facilitate or inhibit participation in the online community. They found relatively low level of contributions with only 25 per cent of the potential number of contributors making one or more contributions (p. 149). Few discussions generated ongoing or sustained conversations. They also found a high level of lurking, which is a passive kind of engagement whereby 'participants' stay on the periphery of discussions.

The single biggest reason given for the relatively low participation rate was lack of time. This suggests there was little direct support from schools for participating in the NQSF online community (p. 150). Other factors included that there was not 'a well-defined domain of interest' among participants; they did not expect participation to help with their school improvement plans; they defined the area of commonality quite narrowly and did not see that the processes of school change and improvement as a common factor that could form the basis for useful shared discourse online (p. 151).

Carr & Chambers found that some participants in the study saw the lack of face-to-face interactions with other NQSF participants as a barrier because they could not pick up on the non-verbal communication cues. For some 'the idea of conversing with someone they had not met' became a barrier as they were reluctant to share ideas and experiences at anything deeper than a superficial exchange of information about programs (p. 152). Those lacking in confidence were reluctant to risk personal exposure to people they did not know (p. 152).

Overall, there was not a strong culture of using computer-mediated communication among the research subjects, with some participants only being comfortable using email. There was insufficient time in the school schedule for shared reflective practice. For participants in these schools, participation in the NQSF community meant two significant changes: 'a completely new way of talking about practice and the use of new technology tools to facilitate such communication' (p. 153).

Only three of the 12 schools in the study had a culture of reflective sharing of practice. While there was recognition of the importance for this model of teacher professional learning, teachers were reluctant to participate in professional learning that was potentially personally confronting (p. 153). The low level of use of the online community suggests the NQSF pilot was in the 'pre-birth' stage; that is, when user numbers and levels of activity are low and development is high. Community members were still trying to get to know each other at this point; the six months of the pilot was not long enough to allow the community to move beyond this phase (p. 154).

A significant barrier to use was the lack of access to a computer combined with the time demands of classroom teachers (p. 154). Leaders with access to their own computers had fewer barriers. The design, navigation and functionality of the site generally facilitated its use but accessing the Think.com area within the site required the use of up to three different passwords (p. 154). The study did not show that low ICT skills would be a barrier. Those who self-reported low skills still accessed the NQSF site (p. 154).

Despite the low level of use, participants were positive in their support of online communication tools and resources. The fact that it could be done in their own time and place was appealing when compared with traditional methods of professional development. However, those in leadership positions recognised the need for schools to create the conditions that would encourage collegial engagement online.

Carr & Chambers found general support for the idea of online communities as a model of professional development but found that three conditions need to be overcome if this is to occur:

- lack of perceived commonality of purpose among participants, which influenced how teachers prioritised their time
- lack of a culture of shared, critical reflection about practice
- lack of familiarity and experience in using computer-mediated communications tools (Carr & Chambers, 155).

MirandaNet[25]

This service was established in 1992 for an international fellowship of educators engaged in using ICT to improve practice. It uses peer mentoring and action research strategies, and ongoing discussion underpins the research and evaluation. The central research interest of MirandaNet is 'the use of action research methodology as a means of empowering teachers using ICT in the classroom' (Cuthell, 2004: 5).

MirandaNet has a range of voices, requires relatively light moderation, is self-regulatory, runs through listserv, and is distributed via email. Cuthell regards this online learning environment as a successful community of practice for several reasons:

---

[25] See www.mirandanet.ac.uk (accessed February 2009)

- Its members, while predominantly UK-based, also include international colleagues, and come from education, teacher education, research, the media, and industry.
- Because it is based on a listserv, items appear in people's email inboxes (p. 8). Individuals don't have to log in, enter passwords or scroll through old messages to find relevant contributions (p. 8).
- MirandaNet is supported by regular face-to-face socialisation (p. 8).
- This service has had good leadership to establish, nurture, facilitate and lead.

Currently MirandaNet has 850 members in 43 countries globally. The Braided Learning Ejournal enables MirandaNet participants 'to develop work openly and collaboratively, sharing resources and allowing comments on the forum of peer reviews and structured discussion'.

Centre for Inter-professional e-learning (CIPeL) (UK)[26]

CIPeL is based at Coventry University and Sheffield Hallam University. It was set up 'to develop and disseminate solutions to the barriers to inter-professional learning. Its focus is on innovative approaches to inter-professional learning which exploit new pedagogies and new technologies' (Courtney, 2007: 262). A strong emphasis is placed on e-learning and the development and use of inter-professional Learning Objects (LOs). CIPeL is in the process of establishing a repository of learning objects that will be made available to the wider community within the two universities.

Academic staff wishing to develop an inter-professional learning object on a part-time basis can be funded through CIPeL to do so and work within a team. The developers are called 'secondees' and are supported by other professionals, including a CIPeL staff member who acts as a mentor. Because these are generally full-time academics, face-to-face meetings are hard to arrange. As a result, 'the idea of an online community space was proposed, which would enable members to meet virtually, as well as asynchronously' (Courtney: 263).

The online space is password protected, accessible only to members of the CIPeL community and invited guests. 'It thus proves a safe and secure place for making early versions of inter-professional LOs available to the community for viewing and for giving members the opportunity to provide feedback' (p. 263).

A pressing issue at the beginning was how to develop a critical mass of participation that would make the site worth visiting. CIPeL used various strategies to engage participation, including:
- opening up the site to CIPeL staff first, enabling and inviting them to seed discussion topics
- promoting the site during face-to-face CIPeL events
- sending out invitations to community members via email
- 'seeking to create an online space that has a clear structure, is user-friendly, offers relevant content and provides a range of opportunities for members to contribute' (p. 263).

---

[26] See CIPeL at http://www.cipel.ac.uk/ (Accessed February 2009)

Some of the available online tracking data was investigated in August 2007 to gain a broader picture of use and found that the number of discussion postings was low compared with other figures. The most popular discussion topic was the introductions by members.

STAR-Online (US)

STAR-Online (Supporting Teachers with Anywhere/Anytime Resources) is an online community sponsored by the United States Distance Learning Consortium. It has been designed as a model for continuing education and professional development for teachers, and provides teachers with training, support and communication links. Teachers can also access mentors, colleagues and resources via a web-based Virtual Teaching and Learning Community system (VTLC). The online staff development provides pre-service, new and veteran teachers with training, support and communication links.

After registration and a pre-survey, teachers can use any of the available professional development resources in the VTLC. The communication tools are available to help support peer collaboration, mentoring and technical support of teachers. These communication tools are: listserv, chat room, bulletin board, and the SHARE database of lesson plans. There is not much information available about this program but on the basis of their research, Charalambos & Michalinos (2004) drew up a list of characteristics that they believe are features of effective online communities.

CSIRO Online learning community

This is an example of a short-lived, purpose-made, online community. Participants in this case were CSIRO staff and the shared topic of interest was values in water use in Australia. The purpose of the learning community was to identify what these values were and to account for them. The discussion lasted two weeks and 400 CSIRO staff participated. The purpose of the study was to identify how 'participation in a research program of high national interest could be developed and supported online' (Alem & Kravis, 2005: 20). The intention was to bring together a large number of CSIRO scientists and investigate what could be achieved through a moderated online discussion. This was then evaluated using survey data and data from the online discussion itself. Alem and Kravis (2005) evaluated the pilot using Preece's framework for designing and evaluating the success of online communities (Nonnecke & Preece, 2000).

Community needs are assessed prior to making decisions about the technology

- In the case of the CSIRO interface, participants were able to contribute anonymously if they preferred this.
- Access to a discussion archive was provided for those who might have missed some of the content.

Usability is designed

- Email-based discussion was chosen as most CSIRO staff used Outlook and it provided easy access as participants did not need to register.

Sociability is planned

- The goal of the discussion was defined.
- A limit of two weeks was set to focus participants' attention.
- A highly inclusive mailing list was constructed.
- Discussion was carefully planned, with initial 'seeding' briefing papers to identify gaps in knowledge, and a 'priming' email with provocative questions based on the briefing papers was sent to generate discussion.
- The moderator sent regular summaries of the discussion to participants.
- The needs of the community were reassessed.

Alem & Kravis (2005) found that of the 389 participants, only 39 were active – that is, they contributed to the discussion by posting at least one email – and 350 were 'lurkers' or passive observers. The study attributed the relatively low participation rate to several factors, including:

- The technical nature of the discussion may have inhibited some participants from joining the discussion.
- Respondents identified a lack of clarity of purpose of the discussion.
- Participants were not brought together by a specific desire to join the discussion.
- A small sub-group discussed content outside the forum, which meant discussion could be dominated by a small group of people; active participants were more prone to further participate, while the less active participants felt discouraged
- Lack of time was identified as a reason for nonparticipation by some respondents.

Benefits of online communities

The literature suggests several key benefits from participation in online communities and information sharing:

- Individual teachers can participate at a time and place that are convenient to them.
- Participation encourages self-reflection among those who participate and can provide mentoring support to individual teachers.
- As a group, teachers can draw on the skills, knowledge and experiences of a broader range of people than might be the case within one organisation or location.
- As a profession, teaching benefits from the professional learning that can take place via online communities.

Flexibility of time and place

Carr and Chambers (2006: 145) argue that the asynchronous nature of much online discussion enables participants to participate in the discussion when convenient for them and to reflect before sharing their views with other community members. The convenience of being able to participate at a time that suits participation enhances the potential contribution of members (Crompton & Murchland, 2002). Another attractive feature of online discussions is that they are not location dependent (Carr and Chambers, 2006). Teachers and students located anywhere in the world are now able to 'meet', collaborate, and exchange views at will (Quinton & Houghton, 2005). Membership of online communities that can be accessed at a time and place of their own choosing allows teachers to be in control of their learning (Duncan-Howell, 2007).

Self reflection

Sharing information in online communities encourages teacher self-reflection and supports 'the risk taking and struggle entailed in transforming practice' (Carr & Chambers, 2006: 143). Li (2003, cited in Loving et al. 2007) found that online asynchronous (non-real time) communication enhanced critical thinking skills. Crompton and Murchland (2002: 88) and Li (2003, cited in Loving, 2007) also found that participants will often disclose more personal information in online communication than through face-to-face interaction. Vavasseur & MacGregor (2008) found that teachers who normally do not communicate with one another were able to engage in reflective practice through online communities and provide support for each other in adopting innovation. Compared to synchronous (real-time) communication, asynchronous communities allow learners more time to engage in their higher order, in-depth knowledge building and to organise and compose their written responses (Huang, 2000; Moller, 1998; Schwier & Balbar, 2002; cited in Loving et al. 2007).

Mentoring for beginning teachers

Online community members can be a useful source of support for beginning teachers. Schuck (2003, cited in Herrington, Rowland, Herrington & Hearne, 2006) found that 'electronic support communities are of value to beginning teachers and mentors and that many of the problems experienced by traditional dyadic mentoring relationships … can be overcome through this medium' (p. 1909). Evidence shows that online communities have led to 'increased emotional support, decreased feelings of isolation, increased confidence as teachers, more enthusiasm for work, increased reflection, ability to adopt a more critical perspective, and improved problem-solving skills' (DeWert, Babinsk & Jones, 2003, cited in Herrington et al. 2006). The results so far indicate that online mentoring has the potential to provide real support for teachers in their first few years of teaching and give participants a sense of connectedness to the teaching profession (Herrington et al. 2006).

Group sharing

Various studies suggest that group collaboration produces a wider variety and higher quality of ideas and solutions than a single individual or organisation could assemble, and that online collaboration can be more successful than face-to-face interaction as it allows a much larger and more diverse group of people to come together to exchange information and ideas. Crompton and Murchland (2002) argue that online communities increase the value derived from the participation and interaction that occurs by drawing on a broader range of people potentially with a greater range of knowledge than might

be found in one organisation or locality (p. 88). Sharing information in a public forum also allows it to be reviewed and analysed.

Increased communication

Vavasseur & MacGregor's research (2008) demonstrates that an online community of practice, added to existing face-to-face professional development, can be used to increase communication and collaboration among teachers. Studies of interactions within communities have shown that teacher participants were engaged in collaborative reflection, including explanations of events within the context of their practice and references to ethical issues (Vavasseur & MacGregor, 2008). Implementing online communities of practice encourages communication beyond weekly team planning sessions and provides opportunities for ongoing dialogue. Evans (2006) found that social software is valuable in enhancing knowledge sharing, capability development, and the teaching and learning experience. Ardichvili (2008) notes the most widely recognised benefit of communities of practice as being 'their ability to allow for the generation and dissemination of tacit knowledge, that is, knowledge which is hard to communicate because it is mostly intuitive and embedded in a specific context' (p. 542).

Enhancing the professional learning of teachers

There is growing recognition of the importance of using online communities of practice to support teachers and educators in reflecting on their practice in a collaborative and supportive environment (Kirschner & Lai, 2007). The literature on effective teacher professional development indicates that teachers' learning is facilitated and sustained in collaborative communities that acknowledge and value participants with different levels of expertise, and that focus on practice-related issues (Guskey, 2003; Hargreaves, 2003; Huberman, 1992; Lieberman, 1995; Loucks-Horsley et al. 1987; Loucks-Horsley, Hewson, Love & Stiles, 1998; cited in Najafi & Clarke, 2008). Such results justify the potential benefits of including an online dimension to teacher professional learning (Harasim, Hiltz, Teles, & Turoff, 1997; Dillon, 2005; Muscella & DiMauro, 1995; cited in Najafi & Clarke, 2008). Dillon (2005) found that online learning communities can provide appropriate contexts for teacher professional learning.

Carr & Chambers (2006) refer to a body of literature that shows 'that the most effective forms of teacher professional learning and development are those that require teachers to engage in reflective practices, preferably through sharing experiences with teacher colleagues engaged in similar practices or areas of interest' (p. 143). Communication between colleagues is often reduced to brief face-to-face settings because of limited time and access to peers, whereas online communities can foster 'the conditions in which collegial, reflective, practice-based teacher professional learning can occur' (p. 144).

Duncan-Howell (2007) demonstrated that online communities of practice can support teachers in adapting well to constant change and the need to acquire new skills and knowledge. The strength of the online community model lies in its ability to be self-sustaining and generative. Teachers have access to relevant and flexible learning that is not constrained by time and can be accessed according to members' needs. Online communities facilitate the building of relationships and encourage professional communication among peers. The online community becomes a resource for participants. Membership of online communities has also been shown to lead to changes in teacher practices that result in positive changes in student learning (Duncan-Howell, 2007).

Factors facilitating participation

The main enablers of participation in online communities, and the sharing of information that characterises them, include technical access and ease of use; professional support and training; social cohesion and openness; events; external incentives or intrinsic motivation; and an effective facilitator.

Technical access and ease of use

Schools need to provide teachers with sufficient technical support, including reliable networked computers, so that they can readily access the technology required to participate in online communities (Carr & Chambers, 2006: 145; education.au, 2009). The online communities themselves need to be simple and easy to use. Crompton and Murchland (2002) highlight the importance of the online community's virtual environment. For example, the interface should identify the author, time, topic, and keywords for each contribution. It should provide the capacity to edit contributions. There should be search facilities based on forum, keywords, text, date ranges and authors; and tools for monitoring participation and for surveying and determining opinions. The research shows that a high level of facilitation is needed at the beginning of an online community. Such a community needs to be nurtured with the necessary resources, structure and systems (Tu & Corry, 2002).

Professional support and training

To be able to participate successfully in online communities, teachers must have an appropriate level of skill to use the tools. However, teachers are not going to be allocated sufficient time to be trained in these tools until schools begin to value this use of their time (Carr & Chambers, 2006). Cuthell supports this view (2008: 8), arguing that, given all the demands made of educators, participation in online communities should not be seen as simply another task to be completed at the end of an already busy day. Teachers should be given professional learning opportunities, ICT training to learn how to use online communities (education.au, 2009) and, importantly, be allocated in-work time to participate in them.

Social cohesion and openness

A key enabler of participation in an online community is a sense of sociability or community. Individual members must feel as though they belong to the group. Research suggests that when the level of 'social presence' is high, learners are more likely to engage interactively in online activities (Tu & Corry, 2002). The successful use of social software relies on a spirit of openness and willingness to share and collaborate (Crompton & Murchland, 2002: 88). Building strong relationships is essential to a viable online community. 'This requires a willingness of participants to be honest and open, to show respect for others, to act with integrity and through each of these to develop and enhance trust between the members' (Evans, 2006).

A key success factor is whether the members of a community feel that they belong to the group, and are comfortable in their virtual work environment. Only if people feel welcomed by the community are they likely to join in debate (Huckvale & Towell, 2002). If this sense of community inclusiveness is created, and if the network responds to participants with relevant and appropriate knowledge about new trends and tools, this may ensure that networked communities are sustainable for educators in the future (Riverin & Stacey, 2008).

It has also been shown that motivation to participate in an online discussion can increase if the activities are related to the face-to-face community (Barab, MaKinster & Scheckler, 2004). Klecka, Clift & Thomas (2002; cited in Najafi & Clarke, 2008) observed the positive effects of relating online discussions to face-to-face teachers' meetings. They found that face-to-face meetings could set the stage for online discussions. Furthermore, research suggests that in order for busy teachers to use an online learning environment they must feel part of a shared vision, have a sense of ownership of some part of the site, and benefit from the shared perspective of others (Robertson, 2007; cited in Loving et al. 2007).

Events

Structured online events can be an effective way of engaging an online community in discussion, bringing specialist knowledge to a group through a guest, and to having input into decision making (Bowes, 2002). Online events use communication tools and techniques to enable people to participate and interact. Various examples have been described in the literature (Bowes, 1998; Williams, 2000; cited in Bowes, 2002), including:

- panel discussion with audience interaction
- pre-recorded interview with a specialist including email/chat/forum feedback
- online guest as presenter with facilitated discussion
- hybrid events that use presenters at face-to-face events
- staged asynchronous conversation among a small group of specialists with audience participation
- real-time interview with a specialist
- email games for facilitated group processes.

Online events can help generate new knowledge through the synthesis and reconstruction of existing knowledge. However, engaging an audience for such events is a challenging task given the already substantial demands on teacher time. To combat this, a limited number of events that are carefully targeted so they do not compete with existing opportunities could be held (Bowes, 2002).

Incentives or intrinsic motivation

The research shows that people are more likely to contribute actively to online communities when they perceive that participation 'enhances their professional reputations (Ardichvili, 2008: 544). Potential members may also be enticed to participate in an online community if it involves credible experienced teachers and provides external incentives in the beginning phases of community development (Klecka, Clift & Cheng, 2005; Reynolds, Treahy, Chao & Barab, 2001; cited in Najafi & Clarke, 2008).

On the other hand, participation in online discussions can also be motivated by a more intrinsic motive. When participants see knowledge as a public good, 'belonging not to them individually but to the whole organisation', it encourages participation in online communities (Ardichvili, 2008: 544). When this exists, knowledge sharing becomes motivated not by self-interest but by moral obligation and community interest.

Effective facilitator

Crompton & Murchland (2002) found that a successful online community has some form of leadership (shared or otherwise) that helps clarify goals for the group and provides effective facilitation of discussions (p. 88). Howard (2006) reports that knowledge

exchange networks, which are based on the transfer of knowledge through electronic web-based technologies, have limited impact without the involvement of people and organisations performing the roles of facilitator and/or broker.

The importance of a facilitator or moderator in the success of an online community was referred to earlier. Kirkley, Savery and Grabner-Hagen (1998; cited in Hew and Cheung, 2003) focused on the intellectual roles of the online moderator or instructor, by evaluating the different means of assistance to support learning, such as:

- scaffolding
- feedback on performance
- cognitive structuring
- modelling
- contingency management
- instructing
- questioning.

Barriers to participation in online communities

Participation in online learning environments can be inhibited by range of factors, including:

- the inherent characteristics of the online environment
- technical issues and lack of structural support
- personal issues such as lack of time and low confidence
- a reluctance to share
- the non-organic creation of the community.

Inherent characteristics that inhibit participation

Crompton & Murchland (2002) identify several characteristics of the online environment that can lead to reluctance to participate. Because participants in an online community are not given the range of non-verbal cues that can assist face-to-face dialogue, it is difficult to maintain a sense of community without any face-to-face contact (Carr & Chambers, 2006: 145). Participants can skim over a substantial discussion, missing important details. Misinterpretation can arise in the absence of socio-cultural cues. If a participant withdraws from a conversation it can affect the momentum and dynamics of the online discussion. Discussions can become stilted and slow due to the longer timeframes that can exist to complete a discussion, especially if participants are in different time zones (Crompton & Murchland, 2002).

Technical issues and lack of structural support at school

Technical difficulties, such as slow downloading time, lack of storage of information, and limited access to computers can prevent teachers from becoming active members of an online community (Harmon & Jones, 2001; Maor, 2003; cited in Loving et al. 2007). It is also a constant challenge for school ICT departments to maintain and improve the technical tools that will allow participants to use them confidently and easily (Charalambos & Michalinos, 2004).

School infrastructure

School infrastructure and practices can also inhibit participation with some studies reporting that teachers can only participate in this type of online environment late at night or after hours. On the other hand, regular contact with colleagues may have the effect of removing 'any perceived need for a virtual space for dialogue and collaboration' (Cuthell, 2004: 7).

Personal issues

There are many activities and events competing for teachers' time (Bowes, 2002). Many teachers are so stretched in their personal time, with after-hours commitments such as staff meetings and parent teacher interviews, that they are not able to access online communities at home. Participating in, leading and managing an online community requires time. Given all the demands made of educators, participation in online communities should not be seen as yet another imposition, another task to be completed at the end of a long day (Cuthell, 2004, p.9; cited in Riverin & Stacey, 2008).

Jones, 2004 (cited in Loveless, 2006) argues that low levels of confidence in using such technology, and the associated general resistance to change, is a reason why many teachers do not choose to participate in an online community.

In cases where discussions are not adequately monitored or facilitated, participants can be discouraged by dominant contributors. Some studies indicate participants can be intimidated, feeling that they lack the necessary technical skills and knowledge to participate. This was found to be one of the factors inhibiting participation for some individuals in the CSIRO online community (Alem & Kravis, 2005).

Views of knowledge

The literature also suggests that, for some teachers, knowledge is still viewed as something that is sought or disseminated rather than constructed. This has implications for an online service that relies on the active engagement of teachers to create knowledge. Ardichvili (2008: 544) identifies several reasons for a reluctance to share knowledge:

- Individuals may have a lack of understanding about why knowledge sharing is important for the organisation, system or themselves.
- There may be ignorance about the best ways of sharing knowledge.
- These ways of knowledge sharing may not always be seen to be effective.
- There is a failure to see the personal benefits of sharing.

Non-organic creation

If an education authority or organisation sets up the online environment without adequate consultation, potential participants might not share the goals of the developers and thus not have the same commitment to its success. The community in this case will not have emerged organically in response to a clearly identified need but be expected to participate in something that has been identified on their behalf. Cuthell (2004) identifies several factors that limited online participation in the General Teaching Council for England (GTC) when it was initially established, including resentment among some teachers at the government's imposition of the GTC on teachers.

Carr & Chambers (2006: 155) identify a weakness of online communities developed by education authorities as being that 'the purpose may remain unclear to the intended audience, and goals may not be shared by participants'. They suggest that generic online communities are less likely to succeed than online communities that specifically target groups of teachers with common needs and interests (p. 155). The authors further assert that online communities set up by education systems are likely to fail to reach their potential until 'there is a more widespread culture of shared critical reflection among the teaching profession combined with greater familiarity with and practice in using computer-mediated communications' (pp. 155–156). Carr and Chambers caution that 'it is unclear whether the teaching profession is ready for a model of professional learning using computer-mediated communication, particularly when created for them by an education authority, rather than developed organically by teachers themselves' (2006: 144).

Evaluating the effectiveness of online communities

Few evaluations have been done of these rapidly changing online tools and communities. Based on Hiltz's (1994, 1998) work, Preece developed a set of criteria for evaluating the sociability and usability of online learning communities (Alem & Kravis, 2005, summarising Preece). The criteria included:

- number of participants in the community
- number of lurkers
- number of messages
- number of messages sent per participant
- amount of on-topic discussion
- degree of empathy evident in the interaction
- level of trust
- participants' discussion with social interaction
- amount of uncivil behaviour.

Herrington & Herrington (2004) came up with a different set of criteria for evaluating the effectiveness of an online community of practice, focusing on nine characteristics of 'authentic' learning environments:

- authentic context
- authentic activity (this could be compared to Preece's number of participants, messages, amount of discussion)
- expert performances
- multiple perspectives

- collaboration
- reflection
- articulation
- coaching and scaffolding
- authentic assessment.

Dawson et al. (2004) used quantitative methods to analyse the learning that occurred in asynchronous discussions at Queensland University of Technology. They analysed contributions (posts and replies to posts) during 2003–2004. In particular, the researchers looked at the discussion forum page, discussion forum/s, and topics. They found that 30 per cent of the 70,000 contributions were by academic staff members and 70 per cent were by students. Of the 70 per cent of students, only 20 per cent of contributions were learner-to-learner interactions, suggesting the forum resource was mainly used as a medium for content delivery/discussion between students and academic staff. Overall, the research yielded little in the way of formal evaluation of the effectiveness of online communities.

Suggestions for building and sustaining online communities

Simply employing the technological tools and hoping the conditions will be conducive to the formation of community is not likely to result in community development (Brook & Oliver, 2003). The literature in this area provides a number of recommendations designed to increase participation in online communities, and thus their effectiveness, including stimulating discussion, support of various kinds, working together, market research, increasing awareness, and assessment of the online community. On the basis of the literature, the following suggestions are put forward as means of encouraging the development of effective online learning communities.

Stimulating discussion

Alem & Kravis (2005) recommend designing appropriate moderation intervention for increasing participation. Specifically, they suggest that language and content need to be accessible and not overladen with jargon; and that discussion needs to be stimulated and broadened among sub-groups (p. 21). Ardichvili (2008) similarly argues that a critical factor determining the success of an online community is the motivation of its members to actively participate in community knowledge-sharing activities. These include posting questions on community boards, engaging in live chats, participating in synchronous conference discussions and asynchronous answers, and feedback in discussion threads (p. 543).

Charalambos & Michalinos (2004: 141) state that interaction is at the core of every learning environment. Online environments and communities allow multiple kinds of interactions. However, interaction will not take place unless it is required and contributes to the overall goals of the community. Structuring collaborative projects is a good way to promote interaction among community participants. Strategies that promote interaction include assigning participants to moderate online discussions, engaging in debates, summarising results, and reflecting on postings.

<u>Support</u>

Teachers are looking for professional learning opportunities that are personal, authentic and flexible. This form of learning needs to be formally acknowledged and accepted as a viable alternative means of professional learning.

A number of researchers suggest different types of support should be given to teachers to encourage their participation in online communities. Carr and Chambers (2006: 144) believe that organisational and cultural support is needed to facilitate teacher participation and could include outside experts, travel, meeting facilities, and communications technology. Schools must acknowledge the value of online communities, legitimise participation, and give members time to participate in activities (Wenger, 1998). The potential amount of time teachers are engaged in online community activities is significantly more than the total amount of time spent on formal professional learning. This amount of time is significant and should be recognised by authorities as valid and measurable (Duncan-Howell, 2007). White argues that to provide teachers with proper support, online knowledge standards frameworks for pedagogy, technical issues, and professional development and values must be established (White, 2002: 10).

Charalambos & Michalinos (2004: 141) note the importance of both facilitators and participants having the skills to engage in technology-mediated interaction. Before developing and facilitating an online community, professional development of the facilitators is essential. Without these skills, facilitators will not be able to make the most of the medium and provide the best learning experience for community members. Facilitators will also not be able to model expert behaviour unless they have previous experience. If they cannot support community participants, and if these participants in turn do not have the necessary skills, then it is not likely they will persevere with the online community.

<u>Working together</u>

At a global summit of online knowledge networks, delegates called for members of online communities to work together towards common aims, emphasising the value of thinking globally, sharing that thinking and acting locally (White, 2002: 10). The recommendation for online community members to work together towards a common aim has also been urged by Wenger (1998): 'Only the understanding that online communities of practice form a commonwealth, rather than areas of vested interest, will help to embed them in teacher praxis and build a new pedagogy for this century' (Wenger, 1998: 8). Collaboration is a key feature of the ways in which people are using the new online technologies.

Market research

A key recommendation from the Global Gateways paper was for site developers and managers to take a learner-centred approach in designing and delivering their services and to undertake market research to inform their decision making. This is coupled with the need to monitor trends continually (White, 2002, 11).

Increasing awareness

It is important that online education and training services are demystified so that teachers are aware of their benefits and that more people are involved in the use of these services through expanded access and greater public awareness (White, 2002: 10). In particular, more effort needs to be put into exposing teachers to online communities. The number of teachers currently involved in such activities represents a small percentage of the profession (Duncan-Howell, 2007).

Evaluation

To ensure online communities have value and make a contribution to the organisations and individual members who participate, a diverse range of methods is needed to evaluate them. These could include information gathered from participants' work, participants' moderations of online discussions, their postings in online conferences, and other resources developed and used while participating in the online community (Charalambos & Michalinos (2004: 141).

Preconditions

For these online communities to succeed, however, the literature shows that the following preconditions need to be met:

- A critical factor in the success or otherwise of an online learning environment is the motivation of participants to engage in knowledge-sharing activities. Developers of these communities need to understand both what motivates educators to contribute to online communities and the factors that inhibit this willingness to participate (Carr & Chambers, 2006: 144). Participants need to feel that their professional reputation is enhanced. Teachers would benefit from professional development that raises awareness about the benefits for teaching and learning that online communities of practice can bring. In addition to an awareness of the benefits, teachers would also benefit from learning the skills to enable active participation and use of the various tools.
- This kind of activity needs to be seen as a routine part of teaching and learning. That is, schools and systems need to acknowledge the value of online knowledge creation/sharing and provide the time, infrastructure and support for participation to occur and be sustained. Participants need to have access to reliable networked computers and appropriate resources.
- The qualities and skills of the facilitator are critical to the success of an online learning environment. The literature shows the kinds of skills that are needed, including an ability to create a sense of trust among members. Participants need to be willing to be honest and open in their contributions and to feel a strong connection with the online community. Language needs to be accessible and participants need to feel that they can make a legitimate contribution.
- The online community is not a mandated or imposed entity but an organic community created from a recognised need. Participants need to have common goals and sense of purpose. They need also to recognise that knowledge is a

public good, 'belonging not to them individually but to the whole organisation' or community of educators (Ardichvili, 2008: 544). The success of the online community ultimately will be derived not from individual contributions but from the sum of these contributions. The power of an online learning environment resides in the skills and experience brought by individuals that collectively form a body of expertise and knowledge aimed at improving teaching and learning.

2. REVIEW OF ONLINE LEARNING ENVIRONMENTS

The most common form of online information service is the *gateway* or *portal*, here defined as 'a single access point to an online collection of quality-controlled and classified resources' (Lonsdale, 2003: 6). Various names have been used to describe services that function as online repositories, including vortal, hub, knowledge network, grid, virtual or digital library, clearinghouse, directory, and Internet resource guide. The purpose of conducting a review of this kind of service was to identify its key characteristics, benefits to educators, usage patterns and issues associated with this online interface.

The questions that informed the review were grouped around context, key features, users, issues and impact. The main questions focused on:

- When, why, and by whom was the gateway/portal set up?
- What services and functions does it offer? What are its main features?
- Who are the main users of the services?

This review of gateways involved three steps: identifying the gateways to be reviewed, undertaking the review, and emailing several questions to a small group of site administrators seeking additional information that was not evident on the sites themselves.

The initial list of 34 gateways was drawn from an earlier study of online education interfaces (Lonsdale, 2003) (and refined on the basis of the literature review), an online search of existing education gateways, and information received from an email survey of a selection of overseas ICT experts. Email responses were received from 13 of the gateway site administrators. For a list of the gateway sites reviewed see Appendix 1.

This section of the Final Report summarises the key features, strengths, limitations and future plans of a range of education gateway sites and a small sample of non-educational sites.

Context

The vast majority of gateways reviewed were established in the 1990s, with a small number developed either prior to 1985 or after 2000. Most have been set up by government education departments or commissions, and research institutes or associations in the United States, Europe, Asia, Africa and Oceania. A small number of the gateways are commercial providers. Funding comes from governments, research grants, sponsorship or advertising, and commercial profit.

The sites reviewed as part of the LNET study are aimed at a range of sectors and audiences. Sectors include early childhood, primary and secondary schools, tertiary, vocational education and training (VET) and the community sector. Target audiences within these sectors include educators, students (current and potential), volunteers, librarians, parents, researchers and the general community. Some gateways specialise in particular subject or academic areas while others cover a wide variety of content.

The most commonly cited purpose on gateway websites for their existence is to provide ICT and/or other resources, tools or support for educators or learners, with the aim of improving effective teaching and learning. The second most commonly cited purpose is to improve education by providing access to quality assured and reviewed educational resources from the World Wide Web. Another objective is to provide information about what is happening in the world of education in a certain area or subject. A number of gateways are aimed primarily at promoting educational research and improving policy-making.

Key features of gateways

Content

The most common types of content on the gateway sites are:
- educational resources and resource directories or links
- information on projects, programs, workshops and conferences
- news
- research findings, journal articles and publications
- teaching support material (for example, lesson plans).

Scope

The scope of information provided by the gateways varies considerably, with some sites providing information relevant only to the country in which the site was founded, and others offering a more global approach. The gateways reviewed provided information relevant to African, American, Latin American, Canadian, British, Scottish, Chinese, Korean, Australian, New Zealand, German, European and world contexts.

Language

The majority of gateways offer resources in English only. Four of the reviewed sites provide resources in two languages, and eight sites provide information in multiple languages. Some gateways have over 20 languages to choose from.

Access

Almost all the reviewed gateways provide easy access to their information and resources. For a small number of gateways, new users need to subscribe to the site or become a member to gain full access to all sections.

Administration

Most of the gateways reviewed show no evidence of administrators/developers working collaboratively with other administrators. However, this does not necessarily mean that collaboration does not occur. It could simply be the case that administrators do not state it explicitly on their site. Those gateways that do acknowledge collaboration with other administrators do so in a variety of ways, such as featuring external websites that are associated with the gateway in some way, allowing schools and libraries to place their directories on the gateway site, and collaborating with other countries that administer the same gateway site in a different language.

Quality of resources

More than half the gateways reviewed do not explicitly state their criteria for the selection/review of resources or links. Of those that do mention their quality control methods, most have a framework, policy or committee that enables quality to be monitored. In some cases the resources are peer-reviewed. Less frequently, users themselves can nominate their top-rated resources.

Popularity

The gateways reviewed are so varied in their context, purpose, features and content that it is difficult to comment overall on the kind of services and sections of the gateway sites that have proved most popular with educators. The services/sections identified as most popular by administrators cover a wide range of types and include 'what's new', resource portals, 'finding a job', conference information, journal papers and abstracts, directory of links, library, and training suite.

Current levels of interactivity

About half the gateways reviewed did not feature any interactive service. None of the sites had a noticeboard (messaging) service or online chat sessions. Of those that do provide an interactive service, the most common tool used is the online forum.

Interactive online services

An *online forum* is a space for users to interact with each other and be part of an online community. To be able to participate in a forum, a new user must subscribe or register and this is usually free. All forums reviewed as part of the LNET study are moderated and the general rule of engagement is simply not to be a 'troll' (that is, one who posts irrelevant comments or directly attacks other forum users). Discussions are archived and usually arranged in order of last post.

Discussion lists are another popular form of interaction among users of the gateway sites. The gateway uses its list of subscriber email addresses to send notifications and discussion topics. When subscribers reply to an email they receive, it will be sent to the whole list and an exchange of views can take place among the group of subscribers via email. The discussion lists in the gateways reviewed here are moderated.

A couple of gateway sites use *blogs or wikis* as interactive services for their users. The blogs reviewed in this study are maintained by one or two individuals, with regular entries of news items, commentary, descriptions of events, or other material related to education. Subscribers to the blog can make comments in response to a person who posts the items in the blog or other users who have made comments.

As indicated earlier, a wiki is a page or collection of web pages designed to enable anyone who accesses it to contribute or modify content. Groups can collaboratively work on the content of the site using nothing but a standard web browser. Gateways generally require users to subscribe in order to be able to continue improving, enhancing and enriching the quality of a particular collection.

A small number of gateway sites that did not offer discussion services of their own provided links to external websites with interactive services. Providing links at the bottom of gateway sites to social networking pages is another way to promote discussion among interested people about the content of a gateway, external to the site. Some of the reviewed gateways used this kind of tool. Social bookmarking sites allow participants to save, categorise or 'tag' and otherwise share links across the Internet.

Proposed interactivity

Gateway administrators were asked if they have plans to introduce a more interactive element (such as forums, discussion lists) and the reasons for their response. Most were open to this possibility but unsure which tools would be used. Some of the gateways that do not have plans to introduce a more interactive element are satisfied with their existing interactive services. One particularly large site has micro-networks within it, which work independently and develop their own resources and communication facilities. Other gateways mentioned the specific communication tools they already provide – blogs, wikis, and forums – that give their members the opportunity to discuss issues.

One gateway acknowledged that 'Interactive services have to be strengthened in order to build on their added value … accessibility and ergonomics of interactive services have to be reviewed'. By increasing the quality of interactive services, gateway administrators believe they can attract new users. Another gateway administrator indicated that they had already tried interactive forums and discussion lists in the past and these had not worked well: 'Our experience was that they were too labour intensive to justify. We are a small operation with very limited staff'. This issue was also raised by another gateway administrator who is currently discussing the option of offering more interactive services: 'Monitoring these (and the staff power involved) is a challenge, especially if we move in the direction of letting random users upload videos of teaching or other materials that they consider exemplary'.

Training/professional development

Most of the gateways feature some sort of professional development section, link or information. These come in a variety of forms, including:
- job search and career opportunities sections
- information and links on workshops, online or external courses, seminars and conferences
- training opportunities, tools and support.

Usage

According to the administrators who responded to the short email survey, the most commonly identified groups of users are students, followed by teachers/educators, and then school support staff or management (including librarians, development staff or school directors). The fourth most cited group are academics.

The main reason given for users coming to the gateway is to find quality educational resources and materials. The next most popular reason for visiting the websites is to obtain general or topical information, such as statistics, education news, and current events. The other two reasons that gateway administrators cite for users visiting their websites are to participate in discussion groups for professional development or networking, and to obtain abstracts or papers from conferences.

Two of the best education gateways for interactive information sharing are EdNA and EUN (European SchoolNet). The National Grid for Learning Scotland is another high-quality education portal while BECTA is a leading example of technology being used in innovative ways to improve learning.[27] More information about these four online learning environments is provided in Appendix 2. These four gateways have been able to adapt to the demands of changing technologies and expectations around the use of these technologies for the purposes of improving learning and teaching.

3. CONSULTATIONS WITH PROFESSIONAL ASSOCIATIONS

As part of the data collection for the LNET study, representatives of a range of professional and subject associations in Australia were interviewed by phone. For the purposes of this report, the organisations that took part in the phone interviews are referred to as 'professional associations'. The main focus of the consultations with these groups was on online services that facilitate information sharing among practitioners. The interviews were intended to provide insights into the kind of online services and technologies that educators currently use, or would be willing to use, for professional learning purposes. A list of professional and subject associations consulted by phone is provided in Appendix 3.

The following questions were used as the basis for the phone interviews:

- What online services do you currently provide to engage your members in association activities?
- What features of your online services are most used by your members?
- What additional services/features do you anticipate offering in the future?
- What online service features have you introduced that did not work with your members? Why not?
- Are you aware of any other excellent or high-quality online services that might be worthwhile considering as part of this study?

---

[27] See EdNA at http://www.edna.edu.au/edna/go; EUN at http://www.eun.org/portal/index.htm; NGfL at http://www.ngflscotland.gov.uk; and BECTA at http://www.becta.org.uk/.

- From your perspective, what are some of the difficulties in getting your members to use these online services (for example, time pressure, low IT skills)?

Of the 18 professional associations contacted, 15 responded and provided valuable insights into what is currently being done in the world of online services for practitioners. The phone interview took around half an hour. In one case a detailed written response to the questions was also provided. Respondents were provided with the questions beforehand.

Online services provided by professional associations

The online services provided by the professional associations in this study varied considerably in terms of content, presentation and degree of interactivity. Many associations have information-based websites with common services, such as educational resources, electronic journals, online catalogues of books and educational materials, job listings, information for upcoming events, conference information and papers, e-newsletters and links to state and territory or associated bodies.

Other less common, but nonetheless valuable, services provided by a small number of associations are forums, email listservs, RSS feeds, Wikis and Ning. The phone interviews highlighted the usefulness of several services in particular:

- Online forums encourage members to interact with each other and become part of an online community. Members can post a news item, question or query on a webpage, and others can reply to this by posting (typing) a response, which then appears underneath the original post.
- Email listservs are becoming an increasingly popular feature of professional associations' websites. This type of service supports email discussion among members. Information or a discussion topic is sent out to all members who have an opportunity to reply. In this way an exchange of views can take place via the email list.
- RSS feeds are used to alert association members via email to updated information on the website, such as news headlines or conference information. The advantage of this service is that members of the association do not need to keep checking the website to see if information has been added or amended.
- Wikis were identified by some interviewees as an easy-to-use information-sharing space for association members. Members can collaborate, edit and share materials with each other.
- Some associations use Ning as their social network site, creating a space where members can post items, photos, videos and participate in discussions. The unique feature of Ning is that anyone can create their own social network for a particular topic or need, catering to specific membership bases.

One recent addition to the websites of two associations was an online conference registration tool with a payment gateway, which allows conference delegates to register online for a conference and pay the conference/registration fee using a credit card facility.

Most popular online services

Conference information, news, registration and workshops were reported to be the most popular sections of many association websites. Interviewees suggested that interest peaks before and after a conference and at the time the conference is promoted. One interviewee suggested that the conference section is so popular because it gives teachers an opportunity to engage in professional development. Email newsletters are the second most popular feature of associations' online services, providing industry news and promoting events and other activities or services.

Access to online journals is reportedly the third most-used feature of associations' online services. Some associations were able to provide this information as a result of website monitoring and official gathering of usage statistics, while the opinions of other interviewees were based on more informal feedback.

Possible future services or features

When asked if any additional online services or features were being planned for the future, interviewees indicated a range of different ideas and intentions. A common response was the proposed introduction of more interactive and collaborative services so members can exchange views with one another in an online environment. For example, online forums, discussion boards, blogs, and wikis were all mentioned as possible additions to association websites. Some associations are still quite general in their thinking about 'Web 2.0' technologies and social networking tools. They have not yet decided on the specific tools they would like to introduce, but are thinking about a general move towards this type of technology because they would like to have 'more communication and discussions'. From the interviews it appears that the impetus for this thinking is coming more from the associations' management teams and website administrators than from teachers themselves.

At the time of the phone interviews, one association was exploring ways in which 'Web 2.0' technology could be integrated into their online services. In particular, the association was investigating how they might set up interactive communication tools, how these tools could be rolled out, kept active, and used for strategic planning, and how their effectiveness might be evaluated. This association appeared very aware of the importance of choosing tools that are time-efficient for educators, and also recognised that this choice would depend largely on context and audience. The association's management team wants something that is new and smart – a tool that can be used in a variety of modes, such as using a wiki as a classroom tool for improving collaborative learning. The association identified generational issues, such as older teachers not being as comfortable with the new technologies as younger teachers, and varying degrees of interest in 'Web 2.0' technology as challenges. However they also believe that tapping into universities, and new teachers whose training includes ICT skills and knowledge, would assist the future direction of interactive online services in their organisation.

Several interviewees reported more specific plans for the future. One association would like to introduce an online bulletin board consisting of information, news and notices relevant to their association, and provide members with the opportunity to contribute to the discussions. The interviewee hoped it would operate like an email listerv but with the added advantage of not clogging up members' email inboxes. This association was well

aware of the challenges of keeping a discussion board active: 'Setting one up, attracting people, getting discussions going, can be very tricky'. One solution they have trialled is to bring together a core group of staff in advance to initiate the discussions. Every discussion will have a skilled moderator to keep the conversation on track. The association is also intending to promote the bulletin board strongly among members.

An innovative proposal being considered by another association is a collaborative Internet-based tool called 'CiteULike', which uses social bookmarking, blogging and RSS technologies. It is possible to upload Endnote library references, and bookmark journal articles located while browsing internet databases. Teachers can start their own group, post a personal profile, build commentaries using the built-in blogging feature, and receive notifications when new articles are posted by peers. They can 'tag' bookmarked articles and search for articles based on keywords, ultimately building their own collaborative body of information. This process of folksonomy, or user-initiated classification of information, might be currently beyond the comfort level of some teachers however. The only concern the interviewee has with this tool is that those members with less information technology experience may need to be coaxed into learning how to use it.

RSS feeds were mentioned by a number of associations as a likely addition to their collection of online services. One interviewee commented that people are keen to know what is new on their website to learn more about important events, so RSS feeds can notify members of these changes without members having to continually check the site.

The management team at one association has discussed the possibility of enhancing what they currently offer in the way of research. For example, their research officer could assemble a clearinghouse of resources that are of interest to members, such as research papers and lists of journal references. The aim would be to save members time and effort from extensive internet searches.

One association is in the process of transferring their hard copy journal to electronic format, believing this will provide an opportunity for reaching a wider readership than simply current members. The association can then use the e-journal to encourage people to become members of their organisation.

Even as they are thinking about introducing more interactive services for their members, some interviewees also expressed reservations about such tools. For example, there was concern that a resource-sharing space might experience difficulties with copyright infringements if teachers are not careful about the material they share with each other. Another common concern was the need for an experienced moderator – 'someone who can monitor the discussion a couple of times a day and ensure it is appropriate' – and the costs associated with such a service. Many of the associations interviewed are not-for-profit organisations and do not have money set aside for improving their online services. One interviewee indicated they had 'thought about a blog but it would need a moderator and we don't have time or money for this'. This particular association already has someone to update their website and this alone costs $6,000 a year.

There is goodwill among associations for interactive technologies that promote information sharing among educators, but many cite the harsh realities of the teaching profession as a reason for not wanting to pour a lot of time and resources into interactive services: 'People are so busy so I don't think they will get much use'. It was noted that primary teachers for example, do not sit at a computer during the day and so will often

not use a computer until night time. Even then, some have family responsibilities and do not have the time to use a computer at night for professional learning purposes. This is especially true when one thinks of all the after-school commitments teachers already have. Thus, for the associations, lack of time was one of the most commonly cited issues offered as a reason for their hesitation about, or resistance to, implementing more interactive services.

Online service features that did not work with members

Interviewees were asked if they had introduced any online services that had been unsuccessful with members. They reported that interactive services such as discussion/bulletin boards, forums, and chat rooms had often failed with members. For example, while one association had set up an online discussion forum with the potential for a community of 10,000, only 180 people were using it. The interviewee commented that traffic has been relatively low for these kinds of services.

Another association recently held a summer school conference. Three-hundred teachers were emailed invitations to the event, but almost a third did not use email to reply. The association representative attributed this relatively high rate of non-email response to the fact that many teachers do not use email as their primary mode of communication. After the conference, the association set up a discussion board for teachers to exchange views with each other, but only 17 per cent of those who started stayed with the discussion forum. There was also a group at the conference that set up a blog and forum afterwards on the summer school website but few went on to make use of this.

While interviewees suggested a wide range of reasons as to why such interactive services had not worked so well with members, the two strongest issues to emerge were educators' lack of time and generational habits.

Lack of time

'The number one reason for a lack of success with interactive online technologies is lack of time'. This was a common refrain among association representatives. One interviewee suggested that 'it is important to look at who the members are … teachers do not sit in a classroom on a laptop browsing forums or chat rooms'. Association representatives generally felt that teachers who do access such services do so in their own time, have a passion for online technologies, and have learnt to use them. One association commented that responsibility for allowing teachers time release to access services or to have professional development in online technologies does not rest only with schools, but is also the responsibility of educational systems. Teachers need time and opportunities to access these tools. Becoming proficient in information technology can be problematic for teachers because, on the one hand, they need a computer as an administrative tool (for example, to complete student reports using a particular program) but on the other hand they are also expected to use computers as a pedagogical tool, with innovative and interesting features common to 'Web 2.0' technology.

Generational issues

Several interviewees identified the age of teachers as a factor influencing whether or not they are likely to embrace or reject interactive discussion tools. 'The current group of teachers is not very strong on this technology' was one comment. Some interviewees see the older generation of teachers as lacking in IT skills and somewhat resistant to interactive communication services: 'Generally, people who are 40-plus don't see this as

good or useful. They prefer email or phone. They are not the YouTube, MySpace type of people'. Another association representative suggested that 'teachers who are 21–26 are in a very different place from those who are 45-plus' and that the key to turning this situation around is to change people's attitudes towards their work–home life separation. It was suggested by this particular interviewee that younger people generally tend to blur their work and home lives. 'They are happy to quickly switch from one mode to the other', whereas most older people tend to compartmentalise into separate sections of their life, and are thus not as willing to participate in work-related activities while at home. This becomes an issue when teachers cannot access the interactive services at school during the day and do not see it as something they should be doing after hours.

Another reason given by a different association representative was that older teachers resist using interactive services because of a lack of confidence in handling the technology. There is a fear that they will not use the technology correctly. This could be overcome, it was suggested, by making clear the purpose of the service and providing appropriate professional development.

Difficulty of maintaining interest

Another reason given for the lack of success in introducing interactive services in some associations is the difficulty associated with initiating and maintaining discussion. One interviewee reported that it was 'difficult to get people communicating about things. Discussion wasn't generated'. Another commented that in the case of their online forum, 'some people were interested in it, but these were the same people all the time, so it became old' and discussion was not sustained.

Not relevant to individual members

One interviewee believed that the interactive services of his association had been unsuccessful in the past because the discussions and resources were about general information, such as industry policy, whereas most users are more interested in resources and discussions that help them as individuals in their profession. It was suggested that teachers want mainly to participate in activities that will produce a benefit for themselves rather than contribute to the greater good of their industry. If correct, this has implications for a national online service that seeks to encourage a more collaborative, less self-interested approach among practitioners.

Anonymity

It was suggested by one interviewee that some association members might not have participated in interactive online services for fear of not having anonymity. 'Participants didn't want to jeopardise their positions by giving their real names. They wanted to be anonymous because of possible ramifications if their name and school were identified'. Another interviewee suggested this was a common feature of teacher online discussions. Some educators are reluctant to share things that don't work at their school or to publicly explain the factors that went wrong with something (such as an unsupportive senior management) if they or their schools are readily identifiable.

Other less than successful online services

In addition to the interactive services that have not always proved successful with association members, interviewees mentioned a wiki, photo gallery and online professional development as services that did not prove popular with members. It is

believed that the wiki did not take-off because of a lack of professional development. People did not have the skills to use the wiki and were not clear about its purpose or why they should use it. One association tried photo galleries but abandoned this as being too difficult. They needed to obtain permission from teachers to appear in photos and this was not always given or was too time-consuming to obtain. Another association reported that their online professional development worked better as an individual rather than a group activity: 'It works well when individuals can watch the material themselves … but not when you have to hook up'.

For one association, the process of online resource delivery to members was problematic when the resources had to be delivered first to each state or territory before being re-directed to teachers. The association could not collect data on use of the resources and had no control over what happened to the material. The interviewee reported that jurisdictions differed in the level of encouragement given to teachers to use the resources. However this process has since been amended and now the association offers direct access to teachers who can obtain materials themselves directly from the site. The association is finding this a much better system and has not experienced problems since making this change.

Difficulties in getting members to use online services

Throughout the phone interviews, teachers' lack of time was the strongest theme to emerge when interviewees were describing the difficulties they face in getting members to use their online services: 'A big issue is how to free-up teachers', so that they have the time to learn how to master the online tools. As mentioned earlier, teachers are not spending their school day on the computer: 'They are hands-on with their classroom and don't, for example, check emails everyday'. To demonstrate this, one association representative said that they still send out a lot of hard copy material as it suits their members better. They can sit anywhere, anytime and read their material.

A number of interviewees described being constantly bombarded to join various collaborative groups, such as email lists, Facebook, Linked-in, Slideshow, Twitter, and 'it gets beyond a joke'. One interviewee commented that 'This is the biggest deterrent and turn-off'. To combat this, an interviewee suggested that it would be 'good to have a list of the good ones'. She believed the teachers need someone to skim and scan for the good resources given the array of resources and services that exist.

Another hurdle in getting members to use online services is simply getting people started, according to association representatives. To overcome this hurdle, it was suggested that the services need to be visible and easy to access. 'The user interface is crucial. It needs to be easy to drive. People need to be able to get what they want, when they want it, and be able to use it'.

Bandwidth was also mentioned as a potential constraint for members wanting to participate in an interactive discussion tool, especially in remote areas. However, association representatives said that this situation is improving. Sites and services can be designed to be on low bandwidths and made as accessible as possible.

Additional comments

Interviewees were invited to make additional comments and a number of association representatives had suggestions for improving the uptake and usage of online services among practitioners.

Quality-assured directory

One of the problems experienced by associations in getting members to use online services is that educators can feel overwhelmed by the sheer number of services and resources available to them: 'There are millions of websites around. So it's not about making more, but about teaching people to use them or use them wisely'. Teachers would benefit from professional learning that helped them identify authoritative resources.

It was also suggested that a national clearinghouse for professional development could be established that would provide links to relevant and quality-assured sites and online services. Teachers accessing such a repository could be confident that the resources have been through a rigorous quality control process.

Promotion

It was suggested that care needs to be taken in setting up a site that teachers will use. It is one thing to provide online resources but another thing to be attracting and maintaining usage, particularly among those not passionate about the technology. The existence, purpose and benefits of such a site would need to be promoted strongly and in a way that makes its relevance clear to practitioners.

Joint initiatives

Another suggestion was to improve the level of collaboration among associations. To avoid duplication and/or unnecessary multiplication of services, associations could identify opportunities for participating in joint ventures. For example, if one group is holding an event that would be useful to the members of another, members of both associations could be encouraged to participate.

How to attract people to online services

Various association representatives commented on the importance of first impressions. Is the site easy to use, for example? Do documents take too long to download? An online resource needs to be functional so that people will use it. Members need to see that they can sit down in the classroom and make it work straight away. Updating information and links is also seen to be very important. Dead links undermine site credibility and have the potential to turn off users. Training and support to help people

learn how to use the online tools are also vital. One association goes out on a 'road show' and trains people in this technology.

School–association liaison

One interviewee described how some teachers have inadvertently become leaders in their school, responsible for feeding external information about their professional association's interactive online service to teachers (in the way that librarians used to communicate information about their resources to teachers). This role was seen as very useful by this particular association. It was suggested that other schools would benefit from having someone with a similar role to this. For example, the teacher representative could arrange and instruct colleagues on usernames and passwords.

Ways to keep an online service active

A number of associations identified the need for heavy promotion as a means of raising awareness about what currently exists and encouraging ongoing usage. Such promotion could be done through newsletters, magazines and online polls. Additionally, regular monitoring of usage and online interaction means that an association can step in when a discussion is flagging to stimulate renewed interest.

Another idea to come out of the interviews is to have a consulting directory or expert panel set up alongside a public forum. This would enable association members who might be reluctant to submit a query publicly to have their question answered privately from another member of the association with the relevant expertise.

4. CONSULTATIONS WITH EXPERTS IN THE FIELD

The main purpose of the email survey of overseas ICT experts was to identify the latest trends in use of online services and tools from those who are at the cutting edge of technology use in education. The questions provided to the international experts were as follows:

- What in your view are the top two or three high quality online services that assist, support and engage educators?
- Why did you choose these online services?
- What makes these online services outstanding?
- What trends, if any, have you noticed lately in the use of online services by educators?

See Appendix 4 for the names of the ICT experts contacted.

Methodology

ACER contacted thirteen international experts by email and sought responses to four broad questions about online communities that engage educators. The questions to each respondent included a contextual statement about the LNET project and the reasons for the questions. The experts were asked to identify the top two or three high quality online services for educators, explain why these were chosen, identify the features that made the sites outstanding and highlight any trends they have become aware of in the work of online services for educators. In some cases these questions were passed on to people more closely involved with managing online communities of educators.

Analysis of responses

There would appear to be two quite different types of services about which comments have been made in response to the question about online services for educators. The first is about the types of community-based or professional conferencing tools, and the second is about the online communities themselves, some of which incorporate a number of the tools mentioned.

Online services for educators

The most common online service tools to be mentioned by the experts were:
- Skype – a communication tool
- Elluminate – a conferencing and communication tool
- Moodle – a social networking or project/course management and communication tool
- Diigo - a bookmarking, communication and research tool, and
- Ning –a social and information networking and communication tool.

Although other tools such as Twitter (a micro-blogging tool) were also mentioned, there were several features of the above named tools that caused them to be singled out. First, they are all online web-based tools that are easy to use. They use mid-range

bandwidth for communicating and connecting with other people and they are stable, scale well and are multi-platform. Secondly, Skype and Elluminate have video, audio and text facilities so that users can see and hear one another, whereas Moodle, Diigo and Ning include forums, blogs, have the capacity to connect to other people through their declared interests, and can self-publish. Thirdly, while Diigo connects users through declared interests, it also enables users to research and discuss topics of interest.

The communities that were referred to as models of online communities were of special interest because of their wide penetration into education. A service called eTwinning managed by the European Schoolnet engages over 40,000 schools throughout Europe. This community was initiated through a series of meetings and workshops over a period of five years, was serviced by a regular and highly valued monthly newsletter, and built a web-based service on the advice of the participants. The eTwinning web service includes regular newsfeeds and interviews with education experts, spaces for discussion based on school subjects and interaction, communication services, registrations of interest, the capacity to link by interests, kits to help eTwinning beginners, and awards for exemplary online engagement and sharing between schools.

Trends

There was frequent mention of the use of micro-blogging tools, such as blogs where short text messages at frequent intervals are exchanged between colleagues, and interactive personal networking – known by its marketing term Web 2.0, technical term 'cloud computing', or acronym SaaS (software as a service).

Social/professional networking and information networking have become common with groups that are comfortable operating online, although two trends are observable. The first is that educators use stable and scalable free services, such as those mentioned above, and the second is that educators can be quite discriminating by rejecting poor quality offerings.

The key elements associated with usage by educators would appear to be the ease of use, flexibility, and diverse range of accessible information and communication tools. While some tools have become community forming, such as Google, YouTube and Facebook, these types of services can also be integrated within custom-made online community services, such as has occurred in New Zealand with the ICT professional development program, and in Europe with eTwinning. In New Zealand, for example, the Ministry of Education conducts a number of professional development conferences for teachers online and also encourages schools and teachers to manage online discussions through their professional development programs.

Based on the responses from the ICT experts contacted, two interesting trends are discernible: the increasing use of bookmarks and tags to support self organisation around areas of interest to form communities, and continual experimentation and trialling of virtual interactive educational environments. However, there is no evidence at this stage that either have become mainstream for online education users.

Themes

Several reasons for educators to use online services have emerged from the responses, focused on three main themes: sharing, collaboration and professionalism. The online

sharing that has occurred appears to focus on educational resources (print and online), reports and publications, and news from a variety of sources of interest to the participants. One respondent also pointed out how sharing online and being part of events online provided a catalogue of the learning journey by enabling the recall of events, interactions and teaching experiences, reflecting a high degree of professionalism.

Collaborating online, on the other hand, had many dimensions from getting to know other colleagues locally to engaging with other educators and being part of global knowledge and support networks. Communicating with colleagues and people interested in the same knowledge occurred through online community tools such as Twitter, Skype, blogs and forums.

Finally, through the sharing and collaborative activities there emerged an impression of a high level of professionalism on the part of those participating in and leading online communities. In the words of one respondent, 'I like to think that we can hold our own in innovative and 21st century learning practices. We are no longer isolated.'

5. INTERVIEWS WITH EDUCATION AUTHORITIES

Interviews were conducted with education authorities nationally to identify whether or not the perspectives of those involved in the literacy and numeracy pilots were consistent with the findings from the literature review and other consultations. In particular, it was intended to discuss current usage of online interfaces and identify how usage among practitioners could be improved. The interview questions were the same for each group discussion:

- Do your teachers use online services?
- If yes, which online services do they use?
- If no, why don't they use online services?
- What would help teachers to use online services more?

Seven videoconference interview sessions were organised with education experts from all state departments and included Catholic education offices and independent school education offices. The sessions went for about an hour. In two cases, teleconferences were held instead of videoconferences because of technical issues. See Appendix 5 for a list of participants in the videoconferences.

Teacher use of online services

There was some initial discussion around the notion that younger teachers use ICT because they are comfortable with the technologies, whereas older teachers become somewhat nervous when ICT does not work and so go back to using more traditional methods of teaching and learning. However, the discussions moved towards suggesting that ICT usage is not age dependent and that all teachers experience frustration when the technology does not behave as expected. There was agreement that when things go wrong with the technology, teachers delay using ICT, but that teachers do come back to ICT at a later stage and try again.

Some uses of ICT

Participants agreed that ICT is being used by all education systems for professional learning activities, especially literacy and numeracy, and for professional meetings. There is considerable information sharing among educators even though ICT use is regarded as quite random. The main focus for online professional learning currently is teaching and learning and the sharing of good practice, although some emerging online communities are also developing curriculum materials. Two online curriculum packages, HOTmaths and Mathletics, have been deployed in some education systems to support numeracy in schools.

Services used

Education systems are using a range of online services, such as *Centra*, wikis, Liveclassroom*,* WebCT, Sharepoint, Communicator, Moodle, Elluminate, Skype, My Internet/MyClass pages and Janison Toolbox. It was suggested that the use of email, and especially email distribution lists (listservs), is quite common among teachers. Teachers use the NSW portal, TaLe, for webmail, messages, content, calendar, K-10 syllabus phases of learning, forum chats, a dedicated NAPLAN site, and literacy and numeracy learning. Online campuses for specialist programs, such as for gifted and talented students, have been developed and webinars are becoming more common among the technology-competent teacher groups. Some use is also being made of Harvard Business online courses for professional learning.

Administration is an area of high use, particularly where education systems require that schools develop a technology plan. Considerable use is made of online surveys by principals and specialist teacher groups for collecting administrative data. All participants agreed that online services in schools are also being used for collecting school data and for system administrative purposes, such as attendance, which is perceived to be helping improve teacher confidence in using ICT. Use of wireless technologies for access and interactive whiteboards for general education purposes is also growing.

Teachers use search engines and Wikipedia quite frequently. Scootle is used by teachers and students for accessing learning objects from The Learning Federation with the most frequently used learning objects in schools being the mathematics ones.

Several issues were raised that affect the use of ICT by teachers. Participants reported that some country schools have access issues. A small number of schools had philosophical objections to the use of ICT. Concern was also raised about the level of teacher experience in using online technologies in schools.

Interactive technologies

Some use is made of the newer technologies, including website applications such as blogs and wikis (Wikispaces), which are free to education, and social bookmarking (Wordpress, Plurk), messaging (Twitter) and RSS feeds. There was also the suggestion that Web 2.0 applications are being used by advisers working with whole school staff. Some schools are trialling social networking services such as Facebook and TeacherTube. Two education systems have made available free-to-education portal services where teachers can develop online communities for professional learning purposes. However, interviewees reported that teachers observe rather than participate

in social networking services because they think they will be judged on their writing or opinion. Teachers prefer not to participate in wikis or blogs for these reasons. However, when teachers are experienced in the use of interactive technologies, they use the blogs and wikis, particularly if there is trust in the coordinator.

Blended learning in the classroom is more likely to occur when school leaders encourage and demonstrate its use. Internet searching is common and teachers cut and paste online resources to prepare lessons. The publishing of information online is increasing and online communities are forming in key areas using Scootle and EdNA groups. One education system has provided support software for merging curriculum with assessment and an increasing use of online demand testing was noted. Libraries use online magazines, blogs and wikis to gain information and communicate with parents.

Special projects

A number of special projects are under way, such as DESCANT (developed by the University of Technology in Sydney for professional learning in science and technology), QuickSmart for literacy and numeracy, and a trial of EPICT, the European approach to professional development in the pedagogical application of ICT in teaching and learning. However, these types of programs would appear to be the exception rather than the rule.

A good model of professional learning

The Australian Government Quality Teacher Program (AGQTP) project has been a very effective model for professional learning. This program uses both face-to-face sessions and online modes, and its strength is in the ongoing online input and follow up that has been timely and relevant.

Barriers to the use of online services

Many barriers to the use of ICT in education were discussed by participants in the videoconferences, although both leadership in schools and the perceptions of teachers appeared to be the dominant obstacles to use. While technical difficulties were often mentioned this was in the context of leadership, teacher perceptions and the availability of ICT support.

Leadership

A key issue that surfaced during the discussions related to the role of school leadership in enabling or impeding ICT use among teachers. Where school leaders advocate the use of online services and tools, and where schools have seamless access to the Internet, this can be a powerful incentive for teachers to adopt the new technologies. However, where the school leadership lacks confidence in using ICT, there is likely to be a general lack of confidence among school staff. School leadership needs to model positive engagement with ICT and its relevance to education needs to be made clear.

Teachers' perceptions

Several issues were highlighted in the discussions:

- Teachers' use of online technologies is characterised by a lack of confidence in using ICT and a lack of time.
- Teachers are frustrated at having to evaluate online materials or explore Internet services in order to find resources.
- Access to computers is an issue.
- Teachers are unwilling to be seen as technically less able than students.
- Online services are regarded as unreliable by some practitioners.
- The quality of online content was also raised as an issue.

Teachers also need opportunities to practise using technology and sharing good practice. The school environment needs to make such opportunities available, and blended learning needs to be made relevant to school structures, for ICT is sometimes seen as an add-on that imposes extra work on teachers.

Technical

A number of technical concerns were raised, including a lack of confidence in the technology itself, bandwith constrictions and technical constraints, satellite access in some schools, and the need for technical support in all schools.

Training and online professional learning

Online services are dependent on establishing relationships and trust among participants. Online collaboration works well if participants have met each other face-to-face. This point was confirmed in a conversation with an online educator from one jurisdiction who commented that teachers preferred to set up online communities for information sharing with people they already know rather then set up new ones. There is a strong need for training teachers in the use of ICT and in how to evaluate online content and services. Online services are not part of the curriculum services and whole school program or service agreements with education jurisdictions. Licensing remains an issue because of the costs of information and services that are relevant to education.

Improving usage

Much of the discussion about online learning centred on the need for teachers to be encouraged to undertake professional learning, share good practice, and engage in reflective feedback about their use of online services. Professional learning projects need to be relevant or teachers will find reasons not to take part because their time is precious. Teachers also need time to develop blended learning techniques.

When projects are satisfying, relevant and directly related to teaching practice, then teachers are likely to so for the benefit of the students. ICT services need to target curriculum subjects with explicit links to a curriculum framework in a similar way to The Learning Federation.

Professional learning

Teachers and principals need good quality professional learning, particularly in relation to improving literacy and numeracy results.. ICT experts need to be available for schools to help with changing school culture. Teachers could be supported by wikis and blogs and helped to learn the principles of using ICT. Relationships in classrooms are changed by the use of ICT and teachers need to be supported in learning about the impact of using it. Professional learning can take place inside and outside the classroom with teachers having access to laptops. Leadership was seen to be a key factor in helping teachers to gain access to high quality professional learning in the area of ICTs. Having a mentor or e-coach at each year level to assist with blended learning delivery has also been found to be very successful in some jurisdictions.. Many education regions have ICT mentors to assist colleagues with an ICT framework.

Participants suggested there is a need to rethink education human resource policies to include ICT skills in job specifications for selecting teachers. It was also suggested that much more could be done online to assist and support Indigenous youth/adults.

Technical

Laptops have been provided to many school teachers but school systems must also fund ongoing infrastructure support to avoid system failure. There needs to be single sign-on for ICT systems and anywhere, anytime services. Participants acknowledged that when the barriers of access, connectivity, speed of connection, support, and time are addressed, then the use of ICT is likely to increase.

The videoconference discussions suggest that there is good use of ICT in education and a growing disposition among teachers towards online professional learning. However, the best use is made of ICT when it is associated with an educational vision, strong leadership and where help and support are both timely and flexible. When interactive systems are deployed to develop learning communities led by sound educational leaders, and where good practice is shared and valued in an environment of trust, then the use of ICT appears to increase pedagogically and in learning programs. It was agreed by participants that online resources and professional learning programs need to be high quality and relevant if they are to be used by teachers.

Participants also agreed that what is needed is time for teachers and principals to learn about the use of ICT and a school environment that supports teachers to use ICT in education. A reliable and responsive helpdesk was seen as essential for the successful use of ICT in the initial stages until teachers became confident in its use.

Although there were barriers to the use of ICT, they did not appear to be insurmountable but were mainly associated with cultural or leadership issues. This is not to suggest that technical issues such as the availability of computers, access to the internet, speed of connectivity, security and reliability are not important. Where such technical issues are not overcome then the use of ICT is frustrating and perceived as overly time consuming.

6. FOCUS GROUP DISCUSSIONS

The purpose of the focus groups was to identify teacher use of, and attitudes towards, online services and tools. In particular, the discussions were intended to give teachers who are not involved in the literacy and numeracy pilots an opportunity to describe their use, or lack of use, of the different technologies available to educators.

Participants were first asked to identify which online services and tools they used from a wide range of examples, including EdNA, blog, wiki, Facebook, Ning, Google, podcast, Skype and a range of others. Other questions were as follows:
- How do you prefer to receive your professional development?
- How do you use online technologies for professional development?
- Why don't you use any (or all) of these technologies (as provided in the list above)?
- How can these barriers to use be overcome?
- What is the best way of sharing best practice & resources with colleagues?

Methodology

The views of teachers were obtained through three focus groups held in Ballarat, Brisbane and Perth. Participants were practising teachers from public and private schools. In total, fifteen teachers participated. This was less than anticipated but school holidays made it difficult to organise participation in the time available. While the numbers are relatively small, there was a high level of consensus around key issues. Participants were chosen at random from schools in the three areas. The intention was to hear the views of a group of teachers not currently involved in the literacy and numeracy pilots.

Preferred delivery modes

Currently, most teacher professional development is delivered face-to-face and this is the preferred method of delivery by the majority of teachers who participated in the focus groups. Focus group teachers enjoy sharing stories and ideas with teachers from a number of different schools by taking examples and discussing. They particularly enjoy discussing what has worked (i.e. the positive) and don't like concentrating on negative experiences.

However, most reported that opportunities of this nature are infrequent and much of their professional development relating to online services and ICT is self-directed from sources that they discover themselves, such as software manuals and online tutorials. Professional associations are the most frequent providers of non-school based professional development.

Below is an overview of the themes that emerged in regards to preferred delivery modes.

On-site or off-site delivery

Teachers were divided on their preference for on-site or off-site delivery. Those who preferred on-site delivery cited time-saving as the major reason and said that they liked the professional development to 'come to them'.

Those who preferred off-site delivery said that it was easier to concentrate and they were not interrupted when they were away from their school. Teachers reported that professional development programs were increasingly being delivered on Saturdays.

Group size

Currently, many professional development sessions are delivered face-to-face in a lecture theatre to large groups. The focus group teachers feel that this is not satisfactory. If delivered in this way, it is most beneficial if followed by small group sessions where six to eight teachers can discuss the content with each other. The maximum group size suggested by these teachers was twenty to thirty. They also suggested that face-to-face delivery be accompanied by online support (see 'Mixed mode delivery' p. 61).

Peer-to-peer delivery and support

All teachers in the focus groups reported that the majority of professional development is delivered in-house by staff members. This occurs in two distinct ways:
- Teachers share expertise and ideas with colleagues in formal training sessions.
- Training sessions are conducted off-site and are attended by one teacher, who then returns to the school and trains teachers internally. Some states have formal train-the-trainer programs where teachers become facilitators in their school.

In many cases these models are used because of budgetary constraints. However teachers reported that they like both of these methods because:
- the facilitating teacher already has a relationship with other staff
- the content is made 'school specific'
- they are more likely to listen to a colleague than an external person
- they can tap into resources they already have.

Several teachers reported that Professional Learning Teams (PLTs) have been successful and would be a suitable model to follow. They noted in particular the use of Literacy PLTs and Curriculum PLTs. The structure of these varies slightly but generally involves using the professional skills within the school, which are sometimes supported with the use of external trainers. These PLTs meet regularly at one to three week intervals depending on the school.

All teachers in the focus groups said they preferred a 'hands on' approach to their own learning. They like to be able to use the new skill or idea in their own context. They value getting feedback from their colleagues in order to reflect on their own practice.

Recognition for their work is important. Teachers thought there should be a review process whereby they could submit a program that they had implemented and provide evidence of its success in order to obtain recognition.

'Just in time' learning was noted as being powerful because teachers had a purpose and reason for undertaking it.

Mixed mode delivery

Most teachers in the focus groups preferred a multi-modal delivery where they could meet face-to-face to discuss the topic and be supported at home or in their workplace by a website or podcast. The online support should provide them with opportunities to investigate the topic further. Some teachers were particularly opposed to the use of printed notes while others (the less computer literate) liked to have printed notes to support their learning. Some teachers have been involved in videoconferences and web-conferences and reported that these varied in their effectiveness.

Methods of note

Some schools have their own initiatives that are worthy of note. These include:
- A school portal used for everything from tracking student attendance to Twitter to vodcasts that are filmed and archived at school.
- An online staff journal.
- A mentor program within the school.
- 'Learning walks' where three or four teachers walk in and out of classrooms with a classroom teacher, view part of the lesson, and debrief afterwards.
- 'Lab' lessons where teachers communally script a lesson that three or four of them teach and then debrief afterwards.
- Coaching conversations where, after observing a lesson, colleagues pose questions to the teacher.
- Web-link sharing via De.licio.us – all staff share a common account and use agreed upon tags.

Use of online technologies

There was a wide range of experience and expertise in the use of online technologies with some teachers using them 'not at all' and others using them regularly. Many felt that there was too much information delivered to them on the computer, with email being noted as the major problem.

Teachers reported that they informally share online resources and that there was no formal mechanism for sharing these with colleagues. The online spaces being used by participants in the focus groups were:
- various online resources provided by State Education Departments (for example, Learning Place in Queensland, DET K-12 in West Australia)
- online discussion forums
- Google – in most cases this was limited to Google's search engine with very few teachers being aware of other Google applications
- UK resources – these were not specified
- Moodle
- Edna – knowledge of this resource was limited with some teachers not being aware of it at all
- Wikis

- Facebook
- Communicator – an instant messaging service implemented system-wide by the Department of Education and Children's Services, South Australia.
- webinars and webcasts (archived)
- De.licio.us – all staff share web links and use agreed upon tags.

Several teachers noted that their search queries are not very effective. Teachers indicated they like web pages that give them a variety of links to other resources. One group of focus group teachers noted the use of a government-funded numeracy specialist who is well used by teachers. One teacher liked the model used by a private company whereby short (five minute) weekly tutorials are sent via email and contained within the body of the email.

Barriers to use of online technologies

Several common themes emerged in relation to barriers to the use of online technologies.

Time

A lack of time was reported by all focus group teachers as the major barrier to their use of online technologies. They indicated that it takes a long time to become proficient at each new computer system or online tool – time that they do not have. Some teachers feel that they spend a lot of time on the computer at work and do not wish to work on the computer once they arrive home. They would prefer that someone could direct them to relevant online resources and tools. (It is to be noted that most teachers in the focus groups had no knowledge of RSS feeds and how they might help them filter information from the Web.)

Access

Teachers reported that access was a problem at various levels:
- Many sites are blocked, with this being more severe in the public sector than the private sector.
- Servers are too slow at school if everyone is using the Internet at the same time.
- Some schools have an unreliable Internet service.
- There are not enough computers for a class.
- Access to computer labs is limited with not enough labs for the number of classes wanting to use them.
- There is a lack of technical support for both computers and the Internet.

Awareness

Many teachers in the focus groups were aware that they 'didn't know what they didn't know'. As well as lacking knowledge about online technologies, they were not aware of how the technologies might be integrated into their curriculum planning. Although teachers initially did not understand why or how they could use online technologies, once they were shown, they incorporated them into their practice and learning. They also noted that it was important to have a reason to use online technologies and that

often this knowledge was gained in an informal way through word of mouth.

Attitudinal barriers

It was suggested that many teachers have negative attitudes towards online technologies. In general, this observation was directed at older teachers.

Communication

Better methods of communicating the availability of workshops and resources are needed. Notifications are usually sent to the principal and these are not disseminated widely or in a timely manner.

Rate of change

The rate of change in the online environment causes problems for teachers. They feel that they only just become aware or proficient in the use of a technology and it becomes obsolete, thus necessitating new learning. The time factor for this new learning was noted as a problem.

Amount of information

Teachers feel bombarded with information. They cited emails as being the major problem and said they were overwhelmed by the amount of information that is conveyed to them in this way. Several teachers acknowledged that they lacked good online search skills and this discouraged them in their online activities.

Preferred learning styles

It was felt that there is an outdated notion by many teachers that professional learning is done on certain days and not something that is ongoing. Some teachers have procedural learning styles that are incongruent with online learning.

Copyright issues

Copyright issues were cited by some teachers as a problem in the use of resources.

Overcoming barriers to use of online technologies

Some schools are 'forcing' teachers into online environments by setting up staff spaces in, for example, Moodle. They use these online spaces to provide information and resources for teachers, thus giving them a familiarity with the environment. In Queensland (and perhaps in other states) teachers are able to obtain an ICT Licence. This is completed online and, from this, teachers create their own virtual classroom which becomes their ePortfolio. This course is not mandatory.

The following themes emerged in relation to addressing the barriers that currently exist to greater use of online services and tools.

Time

Some teachers suggested shortening the school day so that they had more time to use online technologies. Although no other viable solution was offered, it was obvious from the discussions that allocating more time for teachers to become knowledgeable and proficient with online technologies is paramount.

Access

Most teachers suggested that better Internet connections and speed would facilitate better use of online resources. (Some said that they access online resources at home, but others did not want to do this.) It was suggested that teachers should have access to specific sites that are blocked to students. An example given was YouTube, where teachers knew they could access good resources, but did not need students to have access.

Professional development

Teachers feel that professional development is needed on how to access and use online technologies. It was apparent to the facilitator of the focus groups that two levels of in-service are needed:

- awareness sessions where teachers are shown the range of online technologies available and how they might use them
- in-depth sessions on how to use particular technologies.

Teachers are happy to participate in professional development activities merely for their own learning (that is, with no accreditation required). However, they feel that there should be a higher level of proficiency offered that does provide recognition, even if this is only a certificate of completion. This certificate can be used as proof for their on-going registration.

They prefer online tutorials to be short (between five and thirty minutes) and they would like these to be in a central repository that they can access. Teachers would also like more 'sandpit' time with new technologies, that is, time to play with the technology in a safe setting.

Best methods for evidence sharing with colleagues

In addition to the methods discussed above, teachers specifically noted the following as good methods for evidence sharing:

- Webring – an online discussion board
- a private forum for posting videos
- practitioners in practice – show a teacher in practice and show the results (that is, student work)
- record lessons and have them available through an online portal
- have the school or department set up RSS feeds for relevant topics

- provide a repository for repositories (it was suggested that this would be an ideal role for DEEWR)
- cluster meetings – these could be via web or video conferencing
- there should be more resource sharing through sites like De.licio.us
- experts could be brought to teachers via web conferencing
- case studies available online (the InTel model was cited as a good example)
- more access for more teachers to attend conferences
- teachers love visiting other schools to look at implementation and discuss teacher 'journeys' (not a common occurrence)
- peer observation & discussion – where a teacher requests a peer to observe them or for them to observe a peer on a topic of concern
- group observation and discussion of a recorded mini lesson that worked well.

7. ONLINE SURVEY

The purpose of the online survey was to identify the level of usage of online services among teachers, the reasons for usage/non-usage of these services, and the measures/strategies that could potentially be adopted to encourage greater usage. The LNET Online Survey aimed to identify the:

- main users of education online interfaces
- main reasons for the use or non-use of these interfaces
- services used and their frequency of use
- strengths/benefits of these services
- drawbacks/limitations
- actions or steps that could be taken to improve use of these sites
- kind of functionality that practitioners would like to see in such an interface
- likelihood of practitioners using such an interface
- kind of professional training that would be useful to support usage.

Survey questions can be found in Appendix 6.

Methodology

ACER developed the online survey, which was hosted by *education.au*. The survey offered a combination of open-ended and closed questions. It was intended to sample as many teachers as possible who are involved in the DEEWR literacy and numeracy pilots. This focus was chosen in consultation with DEEWR as teachers in the pilots will be the target group, at least in the short-term, for any online services that might be developed subsequent to this report.

There were a few issues that affected the timing and sampling of the survey. Not all schools were aware that they were in a DEEWR pilot. Some jurisdictions asked that schools in a particular project not be contacted, either because the pilot had not yet commenced or because teachers in those schools already had a heavy involvement in another activity in and around the same time as the survey. The considerable time it took for some jurisdictions to provide permission to approach schools meant the original dates for the survey were pushed back, ultimately coinciding with NAPLAN testing and school holidays. The original two week timeline for the survey was therefore extended for another two weeks. Two schools had difficulty accessing the survey and their teachers completed email versions of the same survey instead.

For the majority of survey items, respondents were able to select more than one response. This means that total percentages will at times equal more than one hundred. Furthermore, percentages have not been calculated from the entire sample of respondents, but from those who answered the specific question with a valid response.

For the purposes of this survey, an online *tool* refers to a software application that is accessible via the web while an online *service* represents a service that is provided via the web. Technically, an online service is usually, although not exclusively, a web service that has been defined by the World Wide Web Consortium as 'a software system

designed to support interoperable machine-to-machine interaction over a network'.[28] That is, a user operates one machine to talk to another, using the web, to perform a service. However, for the purposes of this report, we have used the term 'online service'.

Respondents' profile

One-hundred and ninety-nine teachers completed the LNET Online Survey.[29] It needs to be kept in mind that this sample of teachers is from the literacy and numeracy pilots, and thus from a group that is likely to have a predisposition towards using online services and tools to share and use good practice.

State or territory

Teachers were asked 'In which state or territory is your school located?' The results are displayed in Figure 1.
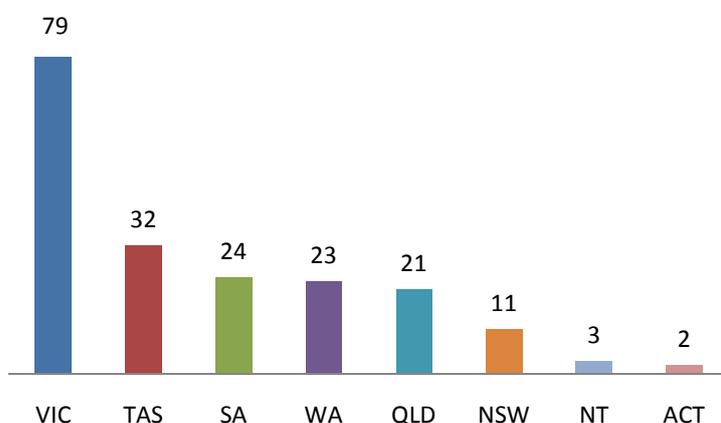
Figure 1. State and territory

Figure 1 shows that the most highly represented state in the survey was Victoria, with 79 respondents. Tasmania followed with 32 teachers completing the survey. South Australia, Western Australia and Queensland all had similar numbers of respondents (24, 23 and 21 respectively). Eleven of the survey respondents' schools are in New South Wales, while the Northern Territory and Australian Capital Territory had three and two respondents respectively.[30]
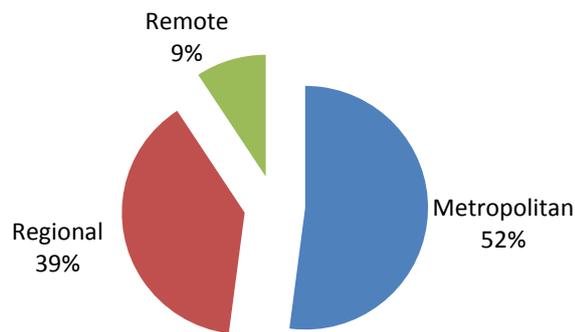
Geographic location

Survey respondents were asked to identify the geographic location of the school in which they teach and were given three options: metropolitan, regional or remote. The results are shown in Figure 2.

---

[28] Web Services Glossary, W3C Working Group Note 11 February 2004, http://www.w3.org/TR/ws-gloss/

[29] In total, 214 completed the survey but 15 didn't respond to the question 'Do you use online tools or services'?

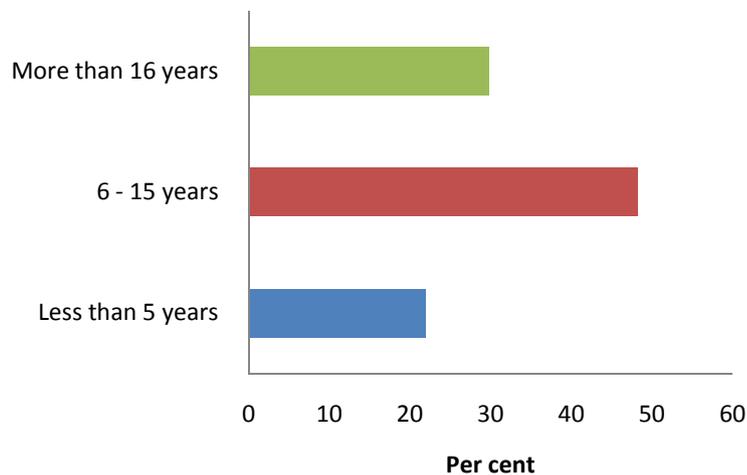[30] Four respondents did not answer this question.

Figure 2. Geographic location of respondents' schools (pie chart)

Figure 2 demonstrates that 52% of survey respondents teach in a school in a metropolitan region, 39% teach in a regional area, while 9% of respondents teach at a remote school.[31]

Teaching experience

The survey asked the teachers completing the survey to indicate how long they had been teaching. They were given three options: less than 5 years; 6 –15 years; and more than 16 years.


Figure 3. Years of teaching

---

[31] Three per cent of respondents did not answer this question.

Figure 3 shows that almost half of the survey respondents have six to fifteen years of teaching experience, while a third have been teaching for more than 16 years and almost a quarter, less than five years.[32]

Pilot literacy and numeracy programs

Survey respondents were asked to provide the name of the pilot literacy or numeracy program in which they are involved. One hundred and seven respondents identified the name of their pilot literacy or numeracy program. Figure 4 shows the names of the programs and numbers of respondents who cited them.
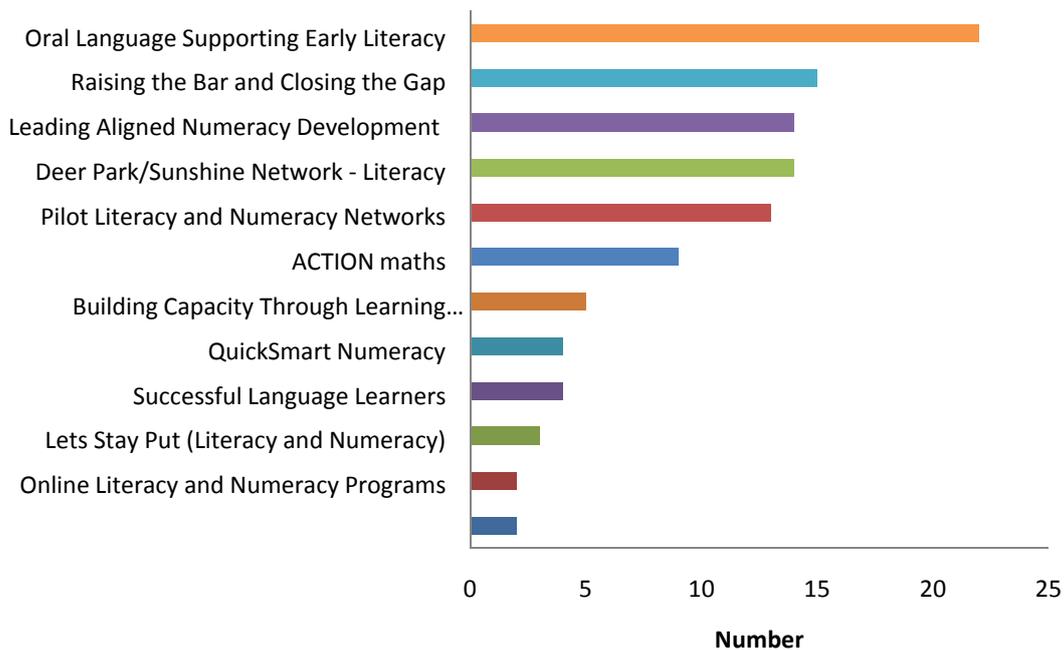
Figure 4. Pilot literacy or numeracy programs

Figure 4 shows that the pilot literacy or numeracy program with the most respondents was 'Oral Language Supporting Early Literacy', with 22 teachers identifying this program as the one they were involved in. 'Raising the Bar and Closing the Gap' was mentioned by 15 respondents, while 'Deer Park/Sunshine Network – Literacy' and 'Leading Aligned Numeracy Development' were each nominated by 14 respondents, followed closely by 13 respondents from the 'Pilot Literacy and Numeracy Networks' project. There were a number of other programs mentioned, but these had fewer than ten respondents referring to them.

Seventy respondents did not answer this question at all, while a further 22 respondents provided a name of a pilot that was not an official name and thereby could not be identified as a pilot program. Teachers were told to 'leave this question blank if you are not sure', suggesting that many respondents either do not know the name of their

---

[32] Four per cent of respondents did not answer this question.

literacy or numeracy pilot, or are unaware that their school is participating in a pilot program. This latter point was further evidenced by a small number of phone calls or emails from principals/teachers querying the fact that they were involved in a pilot.

Online tools or services

Survey respondents were asked if they use online tools or services, such as 'blogs, wikis, websites where you can contribute content or participate in discussions'. The question did not specify that this usage needed to be related to professional learning but left it open to either private or professional usage. Figure 5 shows the results.
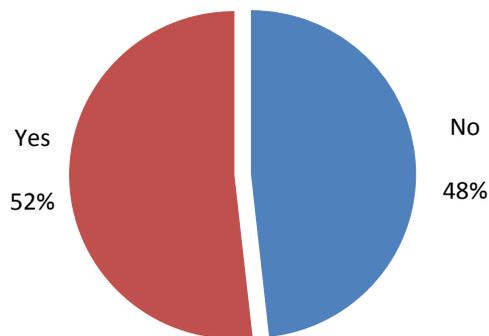
Figure 5. Use of online tools or services

Figure 5 shows that 52% of teacher respondents use online tools or services, leaving 48% who do *not*.[33] There are several interpretive possibilities here. On the basis of these responses it is too simplistic to conclude that the use of online tools and services for professional learning is not endemic to the teaching profession, and is perhaps a result of more personal or unsystematic factors. It could also be, for example, that there are not suitable programs available or that technical considerations act as barriers.

Of those who responded yes, they do use an online tool or service, around half had more than 16 years teaching experience, while the other half of respondents were evenly distributed across the two categories of 'Less than 5 years' and 'Between 6 to 15 years'.

Depending on their response to this question, respondents were then directed through one series of questions or another. The questions were similar.

Survey respondents who use online tools or services

Survey respondents who use online tools or services were presented with a list of seven online tools and asked if they used any on the list for professional learning purposes. 'Professional learning purposes' were defined as '*those related to the development of your knowledge and skills as a teacher and the sharing of these with your colleagues.*

---

[33] Fifteen respondents did not answer this question and were thus removed from subsequent analysis.

They include formal activities such as workshops, conferences and courses of study, as well as informal networking, mentoring and sharing with collegial peers.' Respondents were also given the opportunity to provide details of any other tools they use for professional learning, and were able to select more than one response. Results for this survey item are displayed in Figure 6.
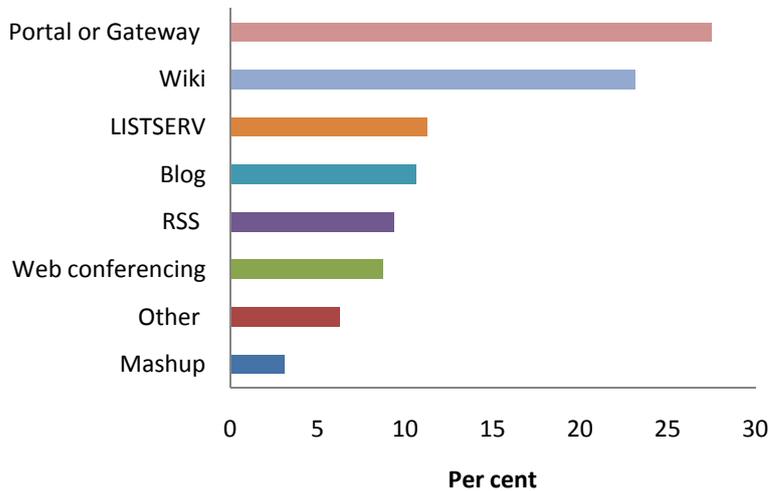
Figure 6. Online tools for professional learning purposes

Figure 6 demonstrates that the most popular online tool for professional learning was a portal or gateway, such as the Education Network Australia (EdNA) with 28% of respondents indicating they use this tool. This is not unusual because portals were the first web services provided for education in Australia and EdNA has provided both information and web services for education users.

A wiki was the second most popular online tool, with 23% of teachers who completed the survey nominating this as a tool they use for professional learning. Wikis are becoming more popular for online collaborative work because they are a simple form of website that enables users to share and collaborate using online documents, graphics, audio, text and animations. Wikis are easy to use and accessible.

Of those respondents who reported using a Portal or Gateway more than half had over 16 years teaching experience. A similar result was evident in relation to the use of wikis.

A listserv (an electronic subscription mailing list about specific topics, such as EdNA lists) and blogs were each selected by 11% of survey respondents as specific tools used for professional learning. RSS feeds (automatic updates/feeds from multiple websites) and web-conferencing were both chosen by 9% of the teachers surveyed. Six per cent of survey respondents reported using online tools other than those provided in the list. These included three respondents reporting the use of Ning and two using Scootle.

Reasons for using online tools

Respondents who reported using online tools and services were asked about the main reasons for their use of online tools and were presented with a list of seven options.

Teachers could select more than one response and detail reasons not on the list of options given to them. Figure 7 shows the responses to this question.
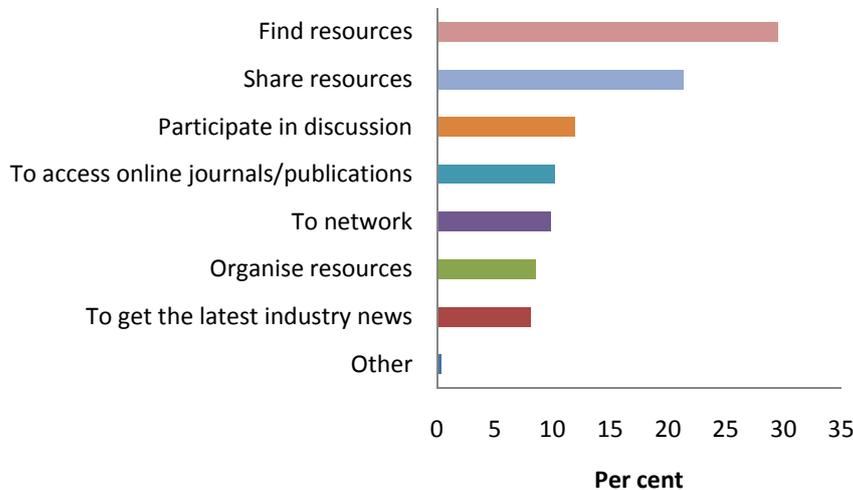

Figure 7. Main reasons for using online tools

Figure 7 indicates that around one-third of survey respondents use online tools mainly to find resources, while approximately one-fifth of teachers who responded to the survey reported they use online tools to share resources. These responses suggest that sharing and finding resources using online tools is one of the main reasons for this cohort of teachers using the Web. To participate in discussion was the third most popular reason given for using online tools, with 12% of respondents selecting this reason. Ten per cent of teachers indicated that they use online tools to access online journals or publications, and to network. If sharing and finding online resources is combined with accessing online journals or publications then it is reasonable to suggest that the dominant reason that teachers use online tools and services is for research. A reason not provided in the list, but cited by one respondent as one of the main reasons for using online tools, was to complete project tasks.

These findings indicate that, for the teachers in this survey, finding and sharing resources including journals and publications for research purposes, are the primary motivations for using online tools, above and beyond the more social elements of participating in discussions or networking with peers.

Top online services

Teacher respondents who use online tools and services were presented with a list of 18 online services and asked to indicate if they use any on the list for professional learning purposes. Respondents were also given the opportunity to provide details of any services they use that were not on the list and to select more than one response. Figure 8 illustrates the ten most popular online services selected by survey respondents.
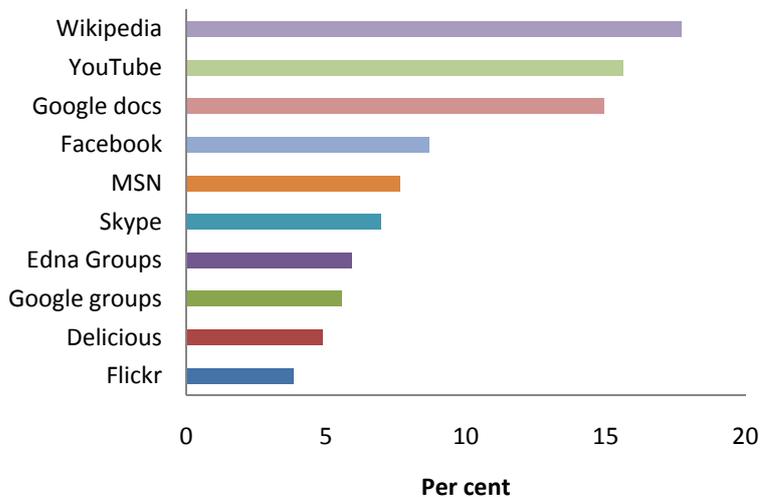
**Figure 8. Top ten online services for professional learning purposes**

Figure 8 shows that the most popular online service for professional learning according to survey respondents was Wikipedia, with 18% of respondents indicating they use this service. YouTube and Google docs were the second and third most popular online services, with 16% and 15% of teachers nominating these services respectively as resources used for professional learning. Of those who reported using Wikipedia and Google docs, about half were teachers of more than 16 years experience. The use of YouTube was more evenly spread across the three experience group levels.

Around ten per cent of those who responded to this question selected Facebook as an online service used by them for professional learning. MSN Messenger (8%), Skype (7%), EdNA Groups, Google Groups (6%), del.icio.us (5%) and Flickr (4%) were all in the top ten ranked online services used by teachers but were all reported as being used by less than 10% of survey respondents. Other online services outside of the 'Top 10', used by three per cent or less of respondents, include: Ning, Twitter, Microsoft Office Communicator, EdNA Me (me.edu.au) and Slideshare. One online service not in the survey list provided, but cited as a resource used for professional learning by one respondent, was 'TeacherTube'.

Interestingly, the most popular online services are ones that are reasonably well established, easy to understand and use, extremely widespread in the general community, and are not education-specific services. In contrast, the least popular online services are relatively new and unique, for example, Ning and Twitter.

Frequency of use of online services

Those teachers who completed the survey and indicated that they use online tools or services were asked how often they would use the above online services overall. Figure 9 shows the results of this survey item.
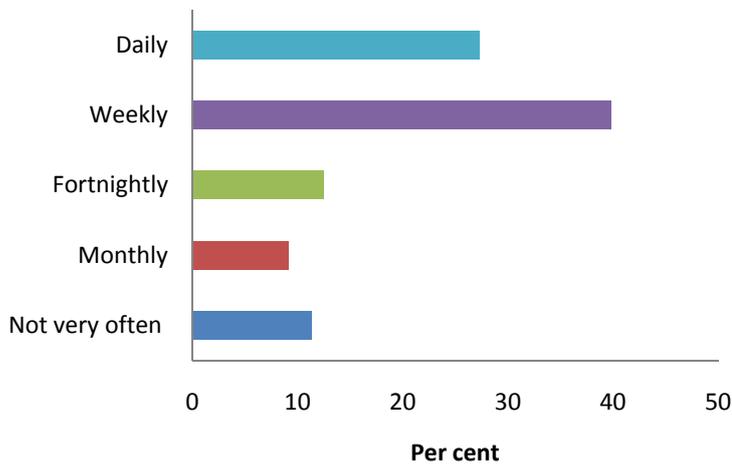
**Figure 9. Frequency of use of online services**

Figure 9 demonstrates that 40% of survey respondents to this question use online services *weekly*, while 27% reported that they use online services *daily*. A similar number of respondents said they use services *fortnightly* or *not very often* (13% and 11% respectively). *Monthly* was the least selected frequency for using online services, with 9% selecting this option.[34] It is interesting to note that 67% of respondents use online services daily or weekly whereas only 20% said that they used it infrequently, that is, monthly or not very often. This finding indicates just over two-thirds of respondents using online tools and services quite frequently.

Creating online resources

Teachers who completed the online survey were presented with a list of four online resources and asked if they created any of these for professional learning purposes. Teachers were also given the opportunity to select 'none of these' and to provide details of any other resources they create. Respondents were able to select more than one response. Figure 10 illustrates those online resources that were created by survey respondents.

---

[34] Eight per cent of respondents who read this question, did not respond.
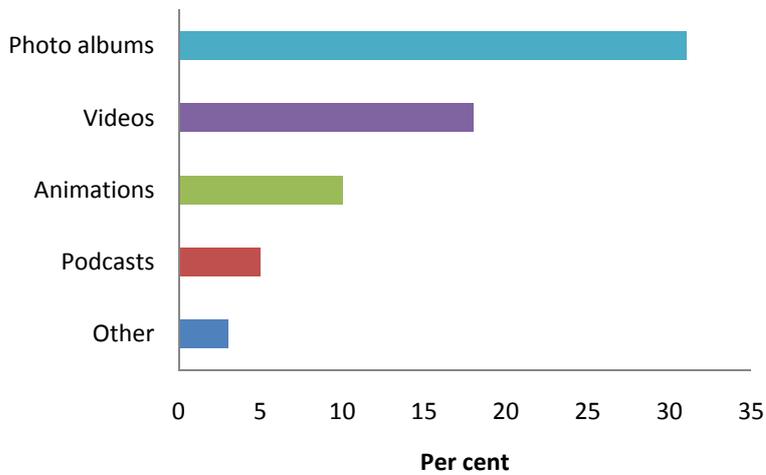
Figure 10. Online Resources Created for Professional Learning

Figure 10 demonstrates that photo albums were the most popular online resource created by survey respondents, with 31% of respondents selecting this option. Videos were the next most commonly cited resource with 18% of respondents indicating they create videos online. Ten per cent of respondents said that they created animations, while five per cent created Podcasts. Thirty-three per cent of respondents indicated that they created 'none of these' online resources.

Reasons for Non-Use Online Services by Educators

Teacher respondents who use online tools and services were also presented with a list of seven reasons for why not all educators use online services. They were asked to indicate in their experience, what they believed to be the main reasons for this reluctance. Figure 11 displays the results for this survey item.
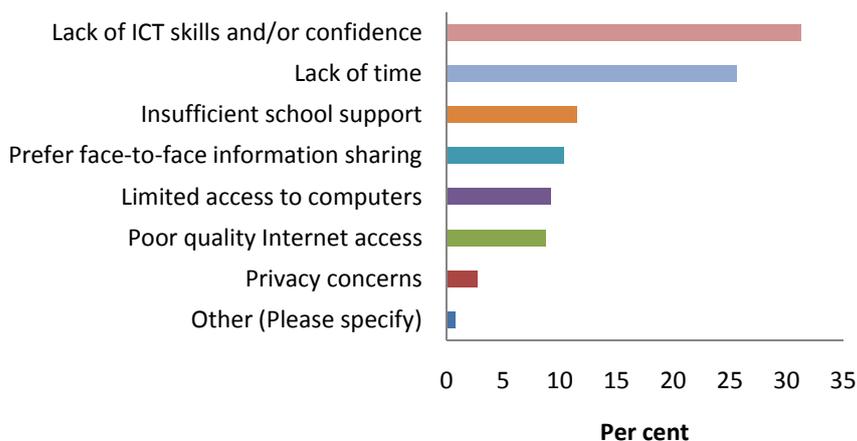
Figure 11. Reasons for non-use of online services by educators

Figure 11 illustrates that the most common reason selected by respondents (31%) to explain why not all educators use online services was lack of ICT and/or confidence. This was closely followed by lack of time, which was chosen by 26% of respondents. Insufficient school support and a preference for face-to-face information sharing were selected as the main reasons for educators' non-use of online services by 11% and 10% of survey respondents respectively. Nine per cent of teacher respondents selected limited access to computers and poor quality Internet access as the main reasons why not all educators use online services. It appears that privacy concerns are not a major issue, with only three per cent of respondents choosing this as a reason. The survey shows that over 50% of teachers who responded to this question believed that the main barrier to use of online resources by educators is either lack of confidence in using, or time to use, online resources. This suggests that teacher capacity and lack of time are the main barriers to use. This is consistent with findings elsewhere in this report.

Making it easier for teachers to use online services

Survey respondents were then asked what could be done to make it easier for teachers to use online services. This question was an open-ended one with no list of options provided. The open-ended responses were subsequently read through and grouped into categories of similar responses. A response could mention more than one suggestion and therefore be grouped into more than one category. These categories are displayed in Figure 12.
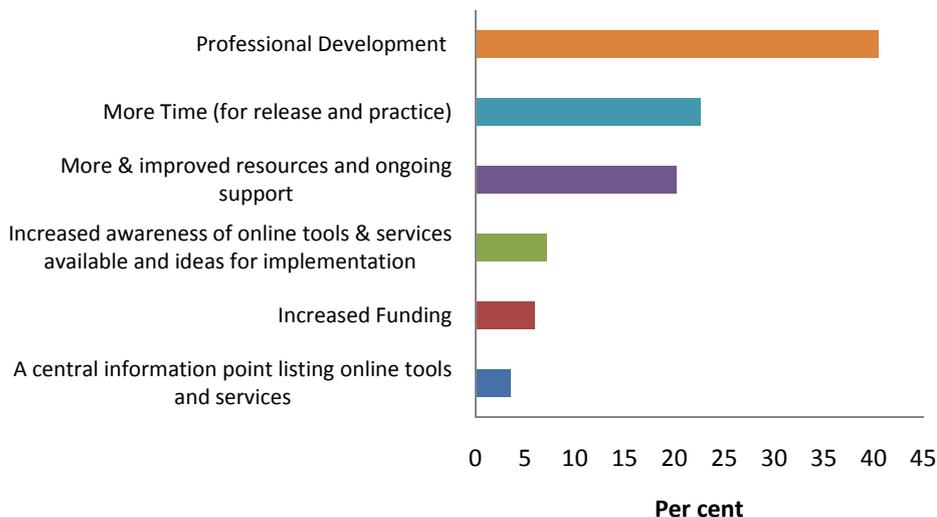
Figure 12. Suggestions to make it easier for teachers to use online services

Sixty-five respondents provided an answer to this question. Figure 12 shows that the most commonly cited means of facilitating greater use of online services among teachers is to provide them with opportunities for professional development, with 40% of respondents suggesting this. For example: '*Teachers need to be more skilled in this area. Staff need more PD and training'*. Twenty-three per cent of respondents suggested that more time was needed if teachers were to use online services more. It was suggested that *'accessing online services [be considered] as a part of their work time'*.

More and improved resources and ongoing support was suggested by 20% of survey respondents as a way in which use of online services could be made easier for teachers. For example, *'Technology that really works and plenty of real support'*. Seven per cent of teacher respondents suggested that an increased awareness of the online tools and services available, and ideas for implementing these, would make it easier for teachers to engage with online services. For example, *'Better training in the availability of online resources and how to implement them into your teaching strategies'*. Increased funding and a central information point listing online tools and services were other suggestions made by 6% and 4% of respondents respectively.

There were a small number of other suggestions that did not fit into any of the above categories but were nonetheless valuable suggestions for what could be done to make it easier for teachers to use online services. For example, one respondent suggested that the following was needed:

Encouragement to teachers to make just one small step each time they interact with this technology. Sometimes the teacher may feel overwhelmed with the vast array of technological resources and in doing so then feel that they lack the skill or perhaps just don't have the time to explore these learning mediums. It has been my experience that if teachers are encouraged to share with one another just one small step – something new that they learned to do in a week – they are more likely to feel less threatened by the vast array of tools available to them.

Survey respondents who do **not** *use online services*

Teachers who completed the survey but who do **not** use online tools and services were presented with fewer questions than those who do use such resources. As mentioned earlier, 48% of respondents indicated they do not use online resources.

Reasons for personal non-use online services

Those teachers who indicated they do not use online tools and services were asked: 'What are the main reasons for *you* not using online services?' A list of eight reasons was provided to survey respondents and they were permitted to choose as many options as applied and detail any reasons not on the list. Figure 13 displays the most selected reasons for not using online services.
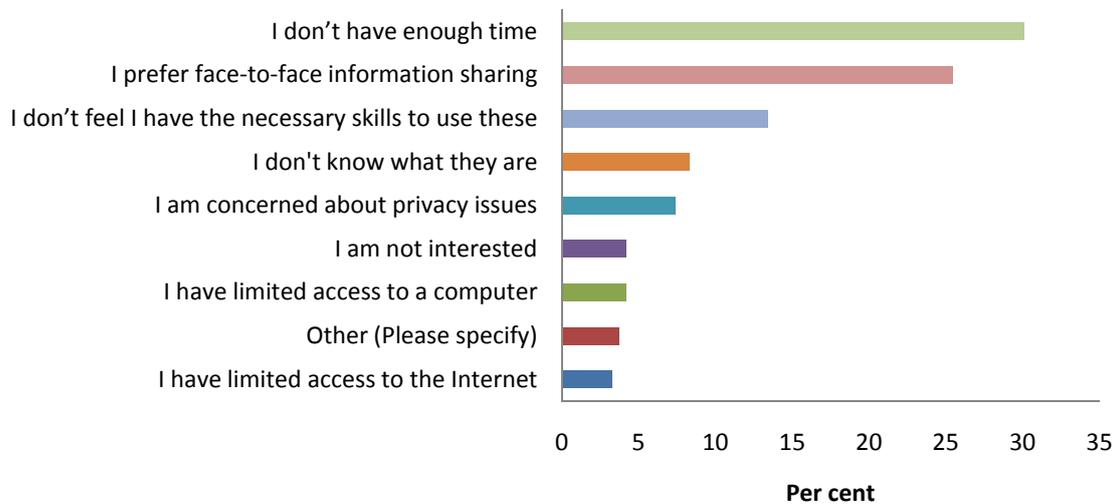
**Figure 13. Reasons for personal non-use of online services**

The most commonly cited reason for not using online services was lack of time, selected by 30% of respondents. This was closely followed by a preference for face-to-face information sharing, which was chosen by 25% of respondents. 'Lack of necessary skills' was selected as the main reason for non-use of online services by 13% of respondents. 'I don't know what they are' and 'I am concerned about privacy issues' were selected by 8% and 7% per cent of teacher respondents respectively. It appears that lack of interest (4%), and limited access to a computer (4%) or the internet (3%) are not major reasons for non-use, with minimal numbers of respondents choosing these as a reason for their non-use of online services. Four per cent of respondents cited reasons other than those provided in the list as to why they do not use online services. For example: '*typed communications can easily lead to misunderstandings due to interpretation by the receiver or lack of clarity by the sender. Once it is sent it is not removable'.*

Making it easier for you to use online services

Survey respondents who do *not* use online tools or services were then asked what could be done to make it easier for them to use such tools and services. This question was an open-ended one with no list of options provided. These open-ended responses were subsequently read through and then grouped into categories of similar responses. A response could mention more than one suggestion and therefore be grouped into more than one category. These categories are displayed in Figure 14.

78
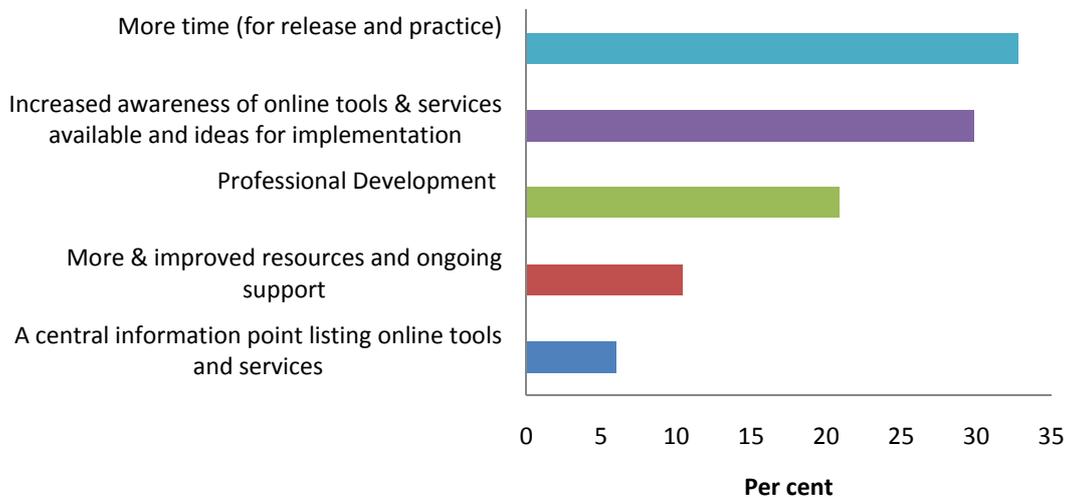
Figure 14. Suggestions to make it easier for you to use online services

Sixty-four respondents in total provided an answer to this question. Figure 14 shows that more time (for release and practice) was the most commonly cited means of making it easier to use online services, with 33% of respondents making this comment. For example, *'Having the time to have Professional Learning first and time to explore the services [would be helpful]'*. This was closely followed by a suggestion for increasing teacher awareness of the online tools and services available and ideas for implementing these, mentioned by 30% of respondents. A common response in this category was the desire to know *'more about what the services offered and the purpose of each of the services'*. Professional development was suggested by 21% of survey respondents as a way in which using online services could be made easier for themselves. Taken together, these three responses show clearly that a powerful strategy for encouraging greater use of online services among these teachers would be to provide more time to explore tools and services so that teachers can engage in both professional development and, ultimately, professional learning.

Ten per cent of teacher respondents said that more and improved resources and ongoing support would make it easier to engage with online services. For example: *'Upgrade the computer systems in our school'*. A central information point listing online tools and services was another suggestion made by 6% of respondents. Both suggestions, if implemented, could potentially lead to better use of teacher time in relation to online tools and services.

There were a small number of other suggestions that did not fit into any of the above categories but were nonetheless valuable suggestions for what could be done to make it easier for teachers to use online services. For example: *'There could be a central website with links to appropriate pages with this information. I don't know where to go!'*

Key findings of the online survey

Survey respondents are teaching mostly in Victoria and Tasmania, largely in metropolitan and regional areas, and a significant proportion have been teaching for between six and fifteen years. Around half of the sample reported that they do use online tools and services, while the other half reported they do not.

Of those respondents who used online tools and services, the most popular tools for professional learning are portals or gateways, Wikis, and email alert services, such as listservs and RSS feeds. The services most commonly used for professional purposes are Wikipedia and YouTube. The most popular online services among respondents are extremely widespread in the general community and are not education-specific services.

The main reasons reported for using online tools were to find and share resources and to access journals and publications, suggesting that teacher research is a dominant use for online services. It appears that those who use online tools and services do so quite frequently, with most respondents reporting they access the tools and services on a weekly, followed by daily basis. If users of online tools and services create their online resources, it is most likely to be a photo album or video.

Taken together, both survey respondents who use online tools and services, and those who do not use them, identified a lack of ICT skills and/or confidence, a lack of time, and a lack of knowledge about online tools and services as the key reasons for non- usage of online tools and resources. For non-users, there was the additional reason of an expressed preference for face-to-face information sharing. Consistent with these findings is the finding that professional development and more time being made available for teachers to become familiar with these online resources could encourage greater use by practitioners.

PART TWO   THE FINDINGS

This section of the report identifies the key findings against each of the objectives listed in the Introduction of this report.

Objective 1

To investigate the range of online approaches that are currently being used for evidence sharing by international and national education sectors and to describe the features of these approaches.

Objective 2

To identify what works best.

Objective 3

To include an analysis of online environment users and usability, specifically the types of teachers that are using available online interfaces, where there are gaps in participation, and any barriers to usage.

Objective 4

To investigate what and how much professional development and/or training is available to users, and what professional development would be required to ensure educators could and would engage with an online evidence-sharing interface.

Objective 5

To include a comparative study identifying similarities and differences in the range of online interfaces across national and international education jurisdictions.

Objective 6

To identify possibilities for making linkages with existing online approaches used by Australian education jurisdictions and professional organisations.

This section presents the main findings of the LNET study related to each of the above objectives.

Types of online interfaces

Objective 1: To investigate the range of online approaches that are currently being utilised for evidence sharing by international and national education sectors and to describe the features of these approaches.

From the literature, four main types of online services and tools were identified:
- Databases
- Social networking services
- Learning management tools
- Conferencing tools

Databases are online repositories of high quality resources and information, and include gateways and portals, knowledge networks, vortals, clearinghouses and other forms of

online resource collection. Their main function is to provide users with access to categorised and easily retrieved resources. Examples of this kind of interface include SchoolNet Africa, the Latin American Network Information Centre (LANIC), and Outreach and Technical Assistance Network (OTAN) for adult educators.[35]

Most of the older models are static with users merely accessing materials and not contributing in any way to their creation or dissemination. The more recently established online databases, or at least those that have been able to adapt as the technologies have evolved, provide interactive opportunities for users to communicate and/or collaborate with others. The best databases use selection criteria to identify high quality, evaluated resources. They use standard metadata schemes to ensure interoperability. The most common form of online repository is the gateway or portal. Educational resources offered by gateways/portals include information about conferences, programs, workshops and other events; research findings; teacher support materials, such as lesson plans; news; and links to a wide range of other resources. The most distinctive feature of these databases is their quality controlled content.

The online survey indicates that the gateway or portal was the most commonly used online tool for this particular group of teacher respondents. The literature search also highlighted the popularity of the gateway or portal although only one of the ICT experts identified an education portal as an important professional learning tool. Market research carried out by EdNA in 2008, which involved nine focus groups and a quantitative online survey, found the four most popular online services being used by educators to be search engines (such as Google or Yahoo), online communities, learning management systems and subject discipline databases.[36]

Social networking services are a more recent phenomenon and include the creation of online communities for the purpose of sharing information and good practice. Examples of online collaboration include Ning, LinkedIn, blogs and wikis. While databases often have peer-reviewed or evaluated resources, members of online communities create, use and share their own resources. Effective online communities provide excellent professional learning opportunities for participants, who can draw on a wide range of expertise and resources. Diigo, for example, is a social bookmarking site that allows individuals to create groups and collaborate on research. According to one of the ICT experts consulted as part of this study, Diigo also has 'an annotation feature which allows you to highlight and make comments on bookmarked sites. This is very powerful in terms of assisting groups with building collective knowledge management systems that can support a community of learners.'

Social networking services and tools are based on the concept of creating and sharing knowledge and include blogs, wikis, online communities, podcasting and discussion forums. Common features of these online social networks are an ability to create and customise a personal profile, post comments, block unwanted members, have individual blog pages, and be a member of a community. 'Some social networks have additional features, such as the ability to create groups that share common interests or affiliations,

---

[35] See SchoolNet Africa at http://www.schoolnetafrica.org/; LANIC at http://lanic.utexas.edu/; and Outreach and Technical Assistance Network (OTAN) *at* www.otan.us (accessed March 2009).
[36] Education.au, 2008, *Educators and ICT Usage: Market Research Report*, http://www.educationau.edu.au/jahia/Jahia/home/pid/664 (accessed June 2009).

upload or stream live videos, and hold discussions in forums'.[37] The most distinctive feature of these services is the provision of opportunities to collaborate and communicate with others.

While introducing online social networking services for their members had brought mixed results for professional education associations, there was still a willingness to persevere with some of these tools and services in the hope that familiarity would lead to greater uptake.

As the name implies, *learning management tools* enable educators to manage educational courses or learning environments. Examples include Moodle, Desire2Learn and Blackboard. Moodle, in particular, is generally considered to be reliable, easy on bandwidth, affordable, and user friendly. Moodle was praised by one ICT expert in the consultations as being 'great for organising and presenting content and having teachers reflect and share with one another in discussion boards'. A key feature of these tools is the ability to manage student assessment, messages, instructors and facilities. They can also generate reports and academic transcripts and provide web-based or blended course delivery.

Conferencing tools facilitate e-learning and web collaboration and include podcasts and Voice over Internet Protocols (VoIP). Examples include Elluminate and Yugma. Elluminate, for example, enables students to come together from diverse remote locations with or without a teacher and collaborate in their learning. For teachers it can also be used to deliver professional learning and online mentoring. Typical features of online tools for managing conferences is an ability to give PowerPoint or slide presentations, VoIP, web tours, video clips, recording, whiteboard, text chat.

Effective models

Objective 2: To identify what works best

This section examines several models that have been identified through the literature review and consultations as being highly effective. The original criteria for determining 'effectiveness' outlined at the beginning of the report (and listed below) are still relevant:

- The service is targeted at educators.
- It offers an interactive and participatory service.
- Navigation of the site is intuitive.
- The information is evidence-based.
- The service is funded by government or not-for-profit sources.
- The service is freely available and easily accessed.
- The resources and information are quality controlled.
- Information is updated regularly.
- There is a clear indication of the purpose and intended audience for the service.
- There is an opportunity for user help and feedback.
- There are additional 'value added' services.

---

[37] See Social Network Service, Wikipedia, http://en.wikipedia.org/wiki/Social_network_service (accessed April 2009).

The literature and consultations indicate an additional criterion to be added to this original list: *The service provides opportunities for quality online collaboration and information sharing*. This is in addition to the existing criterion: *It offers an interactive and participatory service*. The former refers to opportunities for teachers to join an online community to share examples of good practice, resources and ideas; the latter refers to a more limited kind of participation, such as receiving RSS feeds or emailing feedback. A quality online community is characterised by a shared purpose, skilful facilitation, a clear understanding of roles and sufficient public interaction to provide a stimulus for discussion.

Based on teacher responses to the online survey, the most popular online tool for practitioners is the gateway or portal. Databases, such as EdNA and European SchoolNet, offer access to excellent resources and opportunities for knowledge sharing and dissemination. They combine the traditional repository function with opportunities to share knowledge with other educators.

EdNA

EdNA began as a directory and has evolved into an extensive online service. EdNA 'supports over 120,000 Australian educators with digital resources, ICT professional learning and online tools, Web 2.0 participative networks and ICT innovation spaces'.[38] EdNA currently offers three main services:

- Provision of high quality digital teaching and learning resources.
- Provision of networks and tools for communities of practice and professional learning in ICT, including communities based around topics of interest.
- Shared e-learning infrastructure.

EdNA offers a wide range of online tools for use by these EdNA communities, including live text chat, wiki collaboration, blogging, creating a searchable database of resources, instant messaging, conducting a live web conference, saving and sharing web links, files and images, and creating a lesson or workflow sequence. EdNA boasts well over 700 education discussion groups, with 277 groups or organisations in vocational education alone and 244 in school education. Interestingly, there are few communities around early childhood, suggesting that this sector is still at an early stage of adopting ICT. By contrast, vocational education teachers have been using these technologies routinely for a long time and have embedded them into courses.

Despite the fact that EdNA is an exemplary online interface, both the online survey and focus group discussions revealed a relatively low level of awareness of EdNA among these particular teachers. One of the ICT experts consulted as part of this study also made the point that since the advent of Google the traditional gateway is no longer the first port of call for busy teachers. On the other hand, several teachers expressed the desire for a single repository of quality controlled resources that are easy to locate.

---

[38] Cited in education.au, 2009, Education Network Australia: 2009-10 strategic directions discussion paper, http://me.edu.au/b/marktf/resource/2009/0905_edna_futures_discussion_v1.2.pdf (accessed June 2009)

BECTA

BECTA offers practitioners a repository of resources designed to integrate technology into classroom practice, such as using a wiki to help students understand the characters in a Shakespeare play or analysing poetry through podcasts. Like EdNA, BECTA supports a range of online communities but each of the BECTA communities focuses on a different aspect of ICT in education, such as digital learning resources, games and education, and learning platforms and management information. The BECTA ICT Research Network, for example, has over 1,600 members and caters for teachers, school managers, ICT coordinators and advisers, researchers, policy makers, industry and research sponsors. Members of this community can use email discussion lists, publications and conferences to exchange information about projects, develop partnerships, identify priorities for future research or explore issues of importance.

eTwinning

One of the more effective online communities in education is eTwinning, part of the European SchoolNet. eTwinning promotes school collaboration through the use of ICT. This online service was set up as part of the European Commission's eLearning program in 2004 with the specific purpose of pairing schools in Europe to allow teachers to collaborate in informal ways. The schools communicate by email, video conferencing and other means to share ideas and resources and learn from each other. Teachers register for free and then are helped to find partners and work together with them. Being 'twinned' with a school from another country facilitates cross-cultural exchanges of knowledge.

The eTwinning portal is available in 21 languages and offers a wide range of tools for teachers. It also offers both central support services at the European level and national support services. At the European level, for example, teachers are provided with a helpdesk, published pedagogical and information materials on eTwinning and regular professional development workshops.

One of the characteristics of an effective online community is a high level of use by participants. On any given day eTwinning, a community of schools in Europe, has over 60,000 active members and over 5,000 active projects online. Another characteristic is a shared sense of purpose and shared examples of good practice and resources. User statistics show the concept of eTwinning has been very successful with teachers. The features that have contributed to this effectiveness are that it:

- is easy to use.
- is non bureaucratic.
- has a highly developed online platform.
- has very active support services at national and European level – a unique feature in terms of the level of support that is offered to teachers.
- offers a sound professional development program that offers workshops at both national and European level.

- offers a flexible approach to school collaborative work.[39]

As evidence of its rapidly growing popularity, the 2007 eTwinning *Handbook for Teachers* notes that eTwinning went from having 6,000 schools registered in September 2005 to having over 23,000 schools registered in February 2007.[40]

Other online services and tools that have been mentioned in the literature and/or consultations as being effective for particular educational purposes and audiences are Moodle, Diigo, Ning, Elluminate, Wordpress, Twitter, Wikispaces, Googledocs, Slideshare, TeacherTube, Google earth, Mindmeister, Sketchup, Animoto, Flickr, Del.icio.us, Bloglines, iGoogle, Pageflakes, Netvibes, Curriki, Open Educational Resources and TED talks.

Users and usability

Objective 3: To include an analysis of online environment users and usability, specifically the types of teachers that are using available online interfaces, where there are gaps in participation, and any barriers to usage

Teachers and students, education authorities, librarians, academics and researchers are among the users of these online interfaces. It is not clear from the literature which types of teachers are using online interfaces as the numbers involved in the focus groups, which represent a broad cross section of teachers, are too small for the findings to be generalisable. However, if the EdNA groups are any guide, it appears that vocational education and school teachers are among the biggest users of online technologies and early childhood teachers among the least prolific users.

Teachers in the online survey and focus groups used online services and tools mainly for:
- finding resources and information
- sharing resources and information
- participating in discussion
- accessing online publications
- gaining industry news.

The literature and consultations both highlight the importance of information gathering as the key reason for using these online interfaces, regardless of whether the user is trying to access an online database or participate in an online community.

Obstacles to use

The literature review and consultations indicate that many teachers still do not use online services and tools for professional learning purposes. There are a number of factors that can inhibit usage of online interfaces:

---

[39] See Crawley, C., Dumitru, P., & Gilleran, A, 2007, *Learning with eTwinning: A Handbook for Teachers*, eTwining Central Support Service, Brussels, http://www.etwinning.net/ww/en/pub/etwinning/news/articles/handbook.htm (accessed July 2009).
[40] Crawley et al, p. 5.

Personal issues

The most commonly cited reason given for the relatively low participation rate of teachers in online communities and discussions is lack of time. This is consistent across focus groups, online surveys and the literature. The EdNA market research also found that teachers felt they did not have time to learn how to use the Internet properly, and took too long to find things on the Internet.

Some professional associations reported that they had tried to introduce interactive services such as discussion/bulletin boards, forums, and chat rooms but these had not been successful so far. Reasons given included members' lack of time, generational habits, difficulty maintaining interest, members feeling overwhelmed, and the challenge for members in getting started.

A lack of confidence in using online services and tools was also a commonly cited reason for non-usage in the consultations and literature. Consistent with findings mentioned already from other educational groups, two of the biggest reasons for non-use of online tools and services according to educational authority representatives were teachers' lack confidence in using ICT and lack of time. Teachers were especially frustrated at having to evaluate online materials or explore internet services to find these resources. Many teachers were said to be overwhelmed by ICT and unsure where to look for suitable resources in the first place. Teachers were also unwilling to be seen as technically less able than the students.

The focus groups of teachers echoed these sentiments in regards to lack of time, difficulty of access and feelings of being overwhelmed. They also raised concerns about attitudinal barriers to ICT use, suggesting that many teachers have negative attitudes towards online technologies. In general, this observation was directed at older teachers. The rate of change in the online environment also causes problems for teachers. They feel that they only just become aware of, or proficient in the use, of a technology and it becomes obsolete, thus necessitating new learning. The time factor for this new learning was noted as a problem.

Leadership

One issue raised in the consultations was the notion of poor ICT leadership in a school contributing to a lack of confidence among staff. If school leaders are not ICT aware themselves and strongly committed to using ICT to enhance teaching and learning, then they are modelling actions and ways of thinking that are not conducive to a high take-up of online professional learning.

Online environments

For some teachers it is the nature of the online environment itself that is the issue. Several teachers in the online survey expressed a preference for face-to-face engagement with peers. In an online community it is the absence of those non-verbal communication and socio-cultural cues that assist communication which can hinder genuine engagement with others.

Another common concern was for the need for an experienced moderator and the costs associated with such a service. Many of the professional associations, for example, are

not-for-profit organisations and do not have money set aside for improving their online services.

Another worry was that a resource-sharing space might experience difficulties with copyright infringements if teachers are not careful about the material. The issues of copyright, licensing and intellectual property were also raised by some educational authorities as reasons for not having publicly available resources on their portals.

<u>Cultural issues</u>

Both the literature and consultations suggest that teachers do not yet have a culture of evidence sharing. In the National Quality Schooling Framework (NQSF), for example, few schools in the study had a culture of reflective sharing of practice and while there was recognition of the importance of this model of professional learning, teachers were reluctant to participate in professional learning that was potentially personally confronting (Carr & Chambers, 2006: 153). Anecdotal evidence from some education authorities during the course of the consultations also suggested that teachers were more likely to want to share good practice examples with colleagues they already knew and trusted than with strangers.

<u>Technical issues</u>

Other barriers to use included difficulties accessing a computer, lack of readily available technical support, difficulties with bandwidth, and a lack of confidence in the technology.

Improving usage

While there are some strategies that are common to a wide range of online services and tools, there are also some measures that are more suited to particular interfaces. The consultations in particular provided suggestions for encouraging greater use of online services and tools. Usage of online communities, for example, could be improved in several ways. The literature suggests some participants would prefer to contribute anonymously and that for a community to be successful there needs to be clear goals, a shared sense of purpose and a need that brings people together.

A number of professional associations are intending to introduce more collaborative services so members can exchange views with one another online. Online forums, discussion boards, blogs, and wikis are all seen as potentially attractive to teachers.

One suggestion for improving the uptake and usage of online services among practitioners was to provide a quality-assured directory of online resources. This would save teachers time that might otherwise be spent searching and would also give teachers confidence that the resources are quality controlled.

There was agreement among education authorities that there needs to be strong leadership committed to the creation of an online learning environment and prepared to give teachers time to learn about the relevant technologies. The school environment needs to support teachers so that the infrastructure and techniques are not likely to let them down in the middle of a lesson.

In addition to these approaches and sources of support, teachers specifically noted the following as good methods for evidence sharing: an online discussion board; a private

forum for posting videos; RSS feeds for relevant topics; and the provision of a 'repository for repositories'.

The online survey results regarding how the use of online tools and services could be improved are consistent with suggestions provided from other education groups who participated in this project. The most popular suggestions for what could be done to make it easier for teachers to use online services were: professional development, more time for teachers, more/improved resources and ongoing support, and an increased awareness of the online tools and services available and ideas for implementation.

Professional development and/or training

Objective 4: To investigate what and how much professional development and/or training is available to users, and what professional development would be required to ensure educators could and would engage with an online evidence sharing interface

One of the aims of the LNET study was to identify the nature of the professional development/training that exists and determine what would be needed to encourage usage of online services and tools in an Australian context. The consultations provided insights into the different meanings of training, professional development and professional learning. While training involves use of particular tools and resources, professional development enables teachers to recognise the ways in which these tools and resources can be used to enhance teaching and learning. Professional learning, on the other hand, is less about instruction and more about the building and sharing of knowledge. While training and professional development are more traditional models for providing teachers with the knowledge and skills to improve teaching and learning, the concept of professional learning, with its connotations of ongoing, mutually rewarding sharing of knowledge, is well suited to an online environment. Participation in communities of practitioners encourages a collaborative approach to creating and sharing knowledge facilitated by online technologies.

Teachers have identified two types of professional learning in particular that would be useful for enhancing ICT skills and awareness: information and resources that can be used for day-to-day practice to improve learning, and the kind of knowledge sharing that leads to self-reflection. The former can be provided via access to the databases and the latter by access to online communities. To be able to use these online services and tools effectively, however, requires training and professional development. Professional learning is the third stage – where knowledge is created and shared through online technologies – once the understanding of these tools and the skills to use them have been gained.

Given that professional learning was such a strong theme running through all forms of data collection, it is worth noting some of the points made by teachers in the course of the study. The most detailed discussion around professional learning occurred during the focus groups. The preferred mode of delivery for the majority of teachers in these discussions was face-to-face, although teachers were divided in their preferences for on- or off-site delivery. Those who preferred on-site delivery did so because it saved time. Many preferred multi-modal delivery where they could meet instructors face-to-face to discuss the topic and be supported at home or in the workplace by a website or podcast.

Focus group participants also spoke favourably of Professional Learning Teams, which are set up around a particular domain, such as literacy or curriculum, and consist mainly of teachers from within a school who meet regularly to share resources and ideas. These teachers favoured a 'hands on' approach to professional learning, enjoyed receiving feedback from colleagues, and welcomed opportunities to reflect on their own practice. Sometimes these models are supplemented with external trainers but preference was expressed for the peer-to-peer delivery and support.

Comparative study

Objective 5: To include a comparative study to identify the similarities and differences of the range of online interfaces across national and international education jurisdictions

As part of the LNET study, a search was conducted to identify the online resources and collaborative opportunities being offered in each state and territory through the respective education departments. Four of these have been included in Table 1 below alongside the national online interface, EdNA, and five quality international interfaces. This table is a snapshot of the key services and tools offered by each.

In general, the international online interfaces promote collaborative learning and provide the tools and services to promote this. In Australia, this is done to a greater or lesser degree by the state and territory education departments. There are different approaches to the sharing of resources with some jurisdictions offering links to a limited amount of resources and some offering access to a substantial and diverse range of materials and information. Finding these resources on the various departmental education portals is not always easy. Some departmental sites link to EdNA groups and/or The Learning Federation learning objects. All provide information around professional development though the nature and quality of this information varies across the sites.

Not all Australian states and territories have been included in Table 1 as not all have dedicated online repositories of resources for teachers that are in the public domain. To access the West Australian Department of Education portal for online resources, for example, requires teachers to log in and enter a password. Similarly, the Tasmanian eCentre for teachers is a secure web portal. Part of the Online Learning Network unit within the Department of Education, eCentre for teachers functions as a 'one stop shop' for digital resources, tools and curriculum materials, including:

- Teacher-contributed resources and learning objects from The Learning Federation
- Access to tools that enable teachers to create virtual learning environments
- Interactive web sites (SharePoint) that enable intranets and collaborative workspaces for teachers to be set up.
- Web forums, email lists, links to email, assessment and reporting tools
- Information about professional learning opportunities and events and a help service for teachers using Departmental tools for planning.

There is a strong focus on providing teachers with the resources and tools to enable them to set up their own communities and produce and share resources.

Some portals, like NSW's Teaching and Learning Exchange (TALE) have log-in sections for particular groups of teachers in addition to the open section, although no log-in is required for the section dedicated to parents and community members. TALE has a

substantial repository of over 20,000 resources for primary, secondary and TAFE teachers and parents and community members. It provides interactive resources and supports online discussions, Professional Learning Communities and resource sharing.

The Learning Place, Education Queensland's e-learning environment, has an extensive range of resources organised around four main areas: online learning, online communication, communities and curriculum exchange.[41] The online communities are of two types: professional communities (staff) and collaborative online projects (students). Online communications offers a range of tools, including project rooms, an online temporary 'playground' for planning projects, asynchronous forums, synchronous chats, online journals for students and teachers, voice and data conferencing and a media room. Curriculum exchange provides entry to student and professional learning resources, including learning objects, teaching ideas and lesson plans/units of work, digital resources such as video and audio and images, and learning objects.

The Victorian Department of Education and Early Childhood Development portal, Connect, is a publicly accessible service that offers a broad range of resources organised around early childhood, primary students, secondary students and teacher resources, with material catering for the specific audience.[42] The portal connects to a diverse range of external links, each of which is subject to a 'safety and quality assurance process before being added to the repository. In addition to the content the portal also provides a number of online tools for teacher use and a structured and integrated approach to assessing ICT capacity. Victorian teachers can also access ICT resources via Digilearn, a repository of digital learning resources with links to The Learning Federation, using a log-in and password, and use Knowledge Bank, 'a dedicated online site for teachers and other educators to share, discuss and collate innovative ideas and examples of "next" practices'.[43]

Restricting access to all or some of a jursidiction's portal can occur for a number of reasons, including issues to do with copyright or licensing laws, duty of care around students and staff, and intellectual property. Additionally, both the literature review and consultations highlighted the importance of trust in establishing a successful online community and of face-to-face engagement, whether this occurs prior to online engagement or as a supplement to the online activities. For some teachers, sharing good practice locally among trusted and known colleagues at the same school or in schools within a district is likely to be easier than being expected to share more widely, at least initially. This has implications for the development of a national online interface.

Another issue for state and territory departments is deciding how much time, energy and resources should be invested in setting up a state-based online interface given the existence of a national online interface in the form of EdNA. The development of a national curriculum means reviewing current practices and relationships and making the best use of the new technologies to foster a culture of sharing among teachers across jurisdictions.

---

[41] See The Learning Place at http://education.qld.gov.au/learningplace/ (accessed June 2009)
[42] See DEECD Connect at http://www.education.vic.gov.au/teacher/ (accessed June 2009)
[43] See http://www.education.vic.gov.au/knowledgebank/ (accessed June 2009).

The five international gateways/portals are generally publicly accessible. The Consortium of School Networking (CoSN), which is a not for profit service supported by corporate sponsors such as Adobe, Microsoft, Dell, IBM and Cisco Systems, has a strong focus on facilitating online communities of interest.[44] CoSN describes its mission as being to empower K-12 school district technology leaders to use technology strategically to improve teaching and learning.

EdNA, BECTA and the European SchoolNet have all been identified as appropriate models earlier in this report. TKI, the New Zealand Ministry of Education's education gateway/portal, describes itself 'a bilingual portal and web community which provides quality-assured educational material for teachers, school managers, and the wider education community'.[45] The strength of this gateway/portal lies in the wealth of material and content provided to assist teachers. It is not as strong on the online tools and services as EdNA, BECTA or the European SchoolNet, but does provide opportunities for teachers to participate in theme-based online discussion forums as part of Teacher Talk, receive RSS feeds, and give feedback via links.

On the basis of this scan of the various state and territory education portals, it seems that, in general, there is still some way to go in terms of creating an online interface for practitioners that is easily located, accessible to teachers in other jurisdictions, and offers a wide range of both quality resources and collaborative opportunities. All Australian education department portals recognise the importance of giving teachers access to information about professional learning, while the best of the international and Australian online interfaces start from the premise that information sharing of quality resources and ideas is a key element in improving the professional learning of teachers.

The possibilities of linking with existing online approaches in Australia

Objective 6: To identify possibilities for making linkages with existing online approaches used by Australian education jurisdictions and professional organisations

The most obvious online interfaces with which to develop linkages are state/territory and national gateways that offer opportunities for practitioners to collaborate and share examples of good practice. Of the Australian gateways, EdNA would seem to be the most flexible and innovative in relation to ICT and learning. It has a history of working collaboratively with other online developers and of using technology to improve learning opportunities for Australian educators. EdNA is currently undergoing a process of review and there is some uncertainty as to what it might look like in the future. Suggested linkages could include professional education associations at the national and state/territory level and literacy and numeracy resources held online by each jurisdiction. Recommendation One in this report notes some of the key linkages that could be made from a national online interface.

---

[44] See Consortium of School Networking at http://www.cosn.org/ (accessed June 2009)
[45] See TKI at http://www.tki.org.nz/e/tki/ (accessed February 2009)

Table 1. Comparative study of online interfaces

Online interface	Target audience	Online services	Interactivity	Professional learning	Comment
AUSTRALIA					
EdNA Education Network Australia National http://www.edna.edu.au/edna/go	Educators, learners, researchers, educational policy-makers and authorities	Very large collection of information, resources, links & interactive services. News, Events, Resources, Links, Groups/Communities, Discussion Lists, Personal networks	Has over 800 Edna groups across school, early childhood, vocational education, higher education, general and adult education Edna lists Me.edu.au, which supports communities of interest	EdNA workshops provide training in the use of online services and collaborative tools	Very strong focus on online communities for professional learning purposes
TaLe Teaching and Learning Exchange NSW Government portal for teaching and learning resources http://www.tale.edu.au/	Parents & community Primary teachers Secondary teachers TAFE teachers	Personalised functions/resources for 4 target groups Portal to over 20,000 resources News, events, files, 'What's hot', 'What's new' Some links to resources for parents broken down by age of child (4-9, 10-15, 16+, beyond school) Links to The Learning Federation and Curriculum Support Online magazine for parents	Professional Learning Communities for discussion and resource sharing	Interactive resources and online discussion opportunities	Underwent expansion in 2008 Teachers need to log in to access resources No log in required for parents and community section
The Learning Place http://education.qld.gov		Extensive range of resources	Create own courses	Calendar of PD	Open/closed online learning spaces and

Online interface	Target audience	Online services	Interactivity	Professional learning	Comment
.au/learningplace/ Education Queensland's e-Learning environment.		organised under four areas: Online learning (virtual spaces for delivering learning utilizing Blackboard™) Online communication (via blogs, chatrooms and forum spaces) Communities (professional networking; and student collaborative projects) Curriculum Exchange (resource centre)	Web conferencing services Contribute items to Curriculum Exchange Create quizzes, surveys and tests offline and then export them into courses or units of work (via Respondus™ and StudyMate™) *Ollie up* – targeting at risk and rural/remote students through innovative ICT modules Feedback invited via: - Ask a question form - Tel/fax/email contact details	activities Blackboard™ users support group Hosts and maintains PLOT (Professional Learning Online Tool). This is a strategic leadership resource that supports whole school professional learning.	virtual classrooms utilising the Blackboard™ Learning Management system
DEECD Connect http://www.education.vic.gov.au/connect/default.htm Victorian Department of Education & Early Childhood Development	Schools and families	Broad range of learning and teaching links and resources organised under 4 areas: Early childhood Primary Students Secondary Students Teacher Resources Design and content differs according to the particular target audience	Strong focus on providing resources via search (for sites, images, audio, video) *Connect Blog* (find and comment on the latest websites) *Global Teacher Blog* *KnowledgeBank* – case studies, funding opportunities, PD events, online conferencing via Elluminate™		Users can search for websites, images, video and audio with all resources tagged according to audience
INTERNATIONAL					
BECTA British Educational Communications and	Learners of all ages: Early Childhood	News and media, Events, Publications, Awards, Links	High level of interactivity through targeted online communities, discussion	Links to PD for teachers	The Becta website has been developed so that the majority of

Online interface	Target audience	Online services	Interactivity	Professional learning	Comment
Technology Agency	Education; School Education; Vocational Education and Training; Adult and Community Education; and Higher Education	*Technews*	lists, noticeboards, online forums and online chat sessions		content is also available in an alternative text-only version.
Consortium of School Networking (CoSN) United States	K-12 school district technology leaders	Events calendar\n\nSeries of monographs in the form of a compendium each year\n\nEmerging technology reports\n\nLinks to BECTA, Educause, Horizon report	Online communities of interest\n\nUsers can set up their own pages with RSS feeds, links to Facebook, twitter, LinkedIn accounts\n\nForums around initiatives and trends in technology\n\nBlogs, technology leadership wiki, webcasts,	annual conference and international symposium\n\nleadership forums	Strong advocacy role in policy making
EUN European SchoolNet Europe	Educators, students	Provides links to national education sites, education portals\n\nProjects, published research, competitions, awards, newsletters, news, corporate partners, committees	Feedback invited via links\n\neTwinning supports schools pairing up and working collaboratively on projects\n\nFacebook page, LinkedIn, Flikr, twitter	Supports professional learning workshops across Europe	Access to national and European resources and communities
LTS Scotland	Teachers, schools, local authorities	Information, case studies, pedagogy papers, news, competitions, research\n\nLinks to websites	Interactive tutorials, blogs, podcasts, videos, discussion forum	PD section, including Information about conferences, classes	Extensive range of information, resources and links with equally strong focus on interactive features

Online interface	Target audience	Online services	Interactivity	Professional learning	Comment
TKI **Te Kete Ipurangi -** **The Online Learning** **Centre** New Zealand http://www.tki.org.nz/e/tki/	Principals, Teachers, Parents, *whanau* (extended family), to be expanded to include students	Gateway to extensive collection of online collections of references & resources Portal to companion Ministry of Education sites Communities (grouped by curriculum subject eg. English, with some general topics eg. Media Studies; Professional Learning) Dedicated search engine (with filters and categories) Online discussion forums Newsletters: - TKI newsletter - Hot Topics - Resource Link Online	*Teacher Talk:* theme-based online discussion forums (eg. The Arts, ICT, Gifted & Talented) RSS feed for newsletters Telephone tutorials (free tours of the site, over the telephone, for individuals or groups) Feedback invited via links for: - alerting about problem links - contacting the site manager - suggesting a site - general feedback	PL community site: links to PD workshops, tertiary education courses, fellowships, awards, contact details for professional advisors Career planning resources Links to Virtual Learning Network	Language – English & Maori Extensive range of content made accessible via home page (tabs, menu list, and drop down topics)

RECOMMENDATIONS

These recommendations are based on the literature and the feedback gained from a range of stakeholders during the consultations. While Recommendations One and Two assume the 'end users' will be literacy and numeracy educators, Recommendation Three is aimed at a broader representation of teachers.

RECOMMENDATION ONE

That a national, integrated, online interface for literacy and numeracy educators be developed

This online interface would:

- be *comprehensive* in the range of services and tools offered to support an evidence base and the professional learning of literacy and numeracy practitioners
- draw on *the best features* of existing national and international services
- be multi-modal, particularly in the range of options available for teachers to engage in professional learning, including support for face-to-face and peer-to-peer learning opportunities.

Based on the research, such an integrated interactive service would include text, audio, graphic (photo) and video capabilities. The interactive components would enable the following activities:

- discussion (for example, forums)
- sharing resources (for example, wiki, portal)
- messaging or microblogging (for example, Twitter)
- social bookmarking (for example, Delicious, Diigo)
- conferencing (for example, Elluminate, Yugma)
- group sharing (for example, EdNA Groups)
- professional linking (for example, me.edu.au, LinkedIn)

Based on the research, a resource component would include embedded links to globally reputable and authoritative online literacy and numeracy resource packages from services such as:

- EdNA
- Peak professional associations (Australia, UK, USA and New Zealand)
- Comprehensive state collections of literacy and numeracy resources
- Scootle[46]
- ACER research
- Education gateways/portals (for example, TKI, National Learning and Teaching Scotland)
- Video services (for example, TeacherTube)
- Professional expositions (for example, TED Talks)[47]
- Audio services (for example, Learn Out Loud)[48]
- Open educational resources (for example, Curriki, OER)[49]

---

[46] Scootle provides access to the digital curriculum content of The Learning Federation.

[47] TED talks provide access to high profile and interesting speakers, including on technology. See TED talks at http://www.ted.com/ (accessed February 2009).

[48] Learn Out Loud provides a catalogue of educational audio books, podcasts, downloads and audio and video resources. Some are free; others need to be purchased. See http://www.learnoutloud.com/ (accessed July 2009).

- Successful online communities of educators.

These services would be accompanied by intuitive search capability (for example, Google); advanced search capability (for example, EdNA); audio, image and video search capability; browse facility such as word clouds based on folksonomies, and journal or blog (eg EdNA Groups, edublogs) and wiki search capability.

Alert services

The service would include email (listserv and RSS) and other alert services, by user choice, about changes on wikis, blogs, graphics, podcasts and vodcasts, as well as information posted from news and research services.

Conditions

The service should include user access policies and registration requirements to enable quality moderating and service monitoring plus advice for safe Internet use. Criteria would also be needed for the inclusion of resources on the service.

The service will need to enable the development of trusted peer-to-peer environments where users are valued and encouraged to contribute from their own experiences or to seek answers without fear of ridicule or criticism.

Support

The online interface service would need to include a reliable and responsive helpdesk service, which initially might be human intervention, but in time could be based on automatic responses to common questions, and include tutorial sessions for users. Featured sessions of experts could also be made available to users for limited periods in order to further stimulate discussion and interactivity on specific topics of interest.

The capacities mentioned above for an interactive, integrated, multi-modal, online service are those that have emerged from the research and consultations and could well be complemented by other services and tools.

---

[49]   Curriki is an online education community where content is created and edited by members. See http://www.curriki.org (accessed July 2009); OER stands for Open Educational Resources and can be found at http://www.oercommons.org/ (accessed July 2009).

RECOMMENDATION TWO

That a strategy be developed to provide routine, structured time for teachers to explore online tools and services, and confidently engage in online professional learning that encompasses sharing, feedback and reflection on good practice.

This recommendation takes into account the barriers to the take-up of online services based on the responses from participants in the consultations. The main barriers to using online services were nominated as time, ICT skills, knowledge of Internet services and confidence in using online services. Although technical considerations such as availability of technology and connectivity were raised by respondents, these were not regarded as dominant barriers.

The differing levels of ICT readiness and adoption that exist among educators suggest there will be teachers with different needs and at different stages of training, professional development and professional learning.

If giving teachers access to professional learning around the use of online services and tools to improve teaching and learning is to be implemented, if a culture of collaborative activities is to be fostered, and if a solid evidence base in literacy and numeracy is to be developed, then time for teachers to become confident in the use of ICT needs to be written into their time allocations. On the basis of the consultations it is suggested that this time should be an extended or concentrated period (for example, half a day a month) rather than a smaller amount of time each day or week which can be easily lost. If professional learning is to be valued by teachers, it has also to be valued by system and school leaders. Providing time in working hours sends a clear message that the school places a high priority on its staff being able to use the rich array of online services and tools that exist to improve teaching and learning.

RECOMMENDATION THREE

That a national quantitative survey of practitioners be conducted to identify ICT awareness, and skill capabilities among stratified sub-groups of practitioners.

In his work on the diffusion of innovations, Rogers (2003) identifies five categories of adopters:

- Innovators
- Early adopters
- Early majority
- Late majority
- Laggards.

The innovators are those who are closest to the researchers/developers of the innovation and are the first individuals to adopt the innovation. The early adopters are the next fastest to adopt and are leaders in terms of shaping opinion. Both the innovators and early adopters constitute about 15% of the teaching population.[50] The early majority (34%) adopt an innovation after it has been around for some time. The late majority (34%) are the slower adopters who need to be convinced about the merits of the innovation and/or its relevance to their own lives. The 'laggards' have an aversion to change and change agents and are the last to adopt an innovation. It is possible that they will not adopt an innovation at all.

---

[50] Rogers, E, (2003) *Diffusion of Innovations*, The Free Press, New York, p. 15.

Assuming this model is appropriate for conceptualising levels of ICT awareness, acceptance and adoption among the population of practitioners and educators, there are some uncertainties that could be clarified and used as the basis for developing the professional learning strategy outlined in Recommendation Two.

Taking into account the distinction made earlier in the report around the difference between training (teaching practitioners how to use particular tools and resources, such as a wiki or conferencing tool), professional development (assisting teachers to integrate the tools and resources into their practice to enhance learning) and professional learning (sharing these methods of integration as models of good practice), it would be useful to know:

- Which sub-groups of practitioners are in each of the above adopter categories? That is, are there generalisations that could be made about the ICT readiness of practitioners according to the following breakdown:
  - Jurisdiction (state/territory; government/Independent/Catholic)
  - Sector (early childhood, primary education, secondary education, vocational education in the school sector)
  - Location (metropolitan, regional, remote)
  - Grade (early years, middle primary, late primary, early secondary, middle secondary, late secondary)
  - Male/female teachers
  - Years of experience (graduates, early career teachers, between 5-16 years; more than 16 years' experience)
  - Subject area or field of expertise
  - Size of school (small, single campus, large multi-campus)
  - Type of school (K-6, P-12, junior campus, special school)
  -
- It is assumed that all teachers would benefit from professional learning but which sub-groups of teachers need training? Which need professional development?
- What kind of training, professional development and professional learning modes of delivery are most appropriate to these different groups? That is, how can we ensure the needs of particular sub-groups are met?

The online survey and other consultations have laid the groundwork for understanding the professional learning of teachers around ICT and learning. However, the survey was limited to those in the literacy and numeracy pilots. A national survey that is more representative of practitioners and their stratified segments would help inform the development of both a professional learning strategy and an online interface as outlined in Recommendations One and Two.

REFERENCES

Alem, L. & Kravis, S. (2005) 'Design and Evaluation of an online Learning Community: A case study at CSIRO'. *Siggroup Bulletin*. 25 (1).

Ardichvili, A. (2008) 'Learning and knowledge sharing in virtual communities of practice: motivators, barriers and enablers'. In *Advances in Developing Human Resources*. 10 (4). pp. 541-554.

Bowes, J. (2002) *Online information and interaction – getting the balance right: The National Information Exchange on Quality Teaching*. ACEC 2002 paper.

Brook, C., & Oliver, R. (2003) Online learning communities. *Australian Journal of Educational Technology,* 19 (2), 139-160.

Cafolla, R. (2006) Project MERLOT: Bringing Peer Review to Web-Based Educational Resources. *Journal of Technology and Teacher Education*, 14 (2), 313-323.

Carr, N. & Chambers, D. P. (2006) 'Teacher professional learning in an online community: the experiences of the National Quality Schooling Framework Pilot Project'. *Technology, Pedagogy and Education*. 15 (2) pp. 143-157.

Charalambos, V., Michalinos, Z., & Chamberlain, R. (2004) The Design of Online Learning Communities: Critical Issues. *Educational Media International*, 41 (2) http://www.tandf.co.uk/journals.

Courtney, K. (2007) 'Exploring virtual opportunities to enhance and promote an emergent community of practice'. *The Electronic Learning Journal of e-Learning*. 5 (4). pp. 261-270. http://www.ejel.org/Volume-5/v5-i4/v5-i4-art-2.htm.

Cox, A. (2008) 'An exploration of concepts of community through a case study of UK university web production'. *Journal of Information Sciences*. 34 (3). pp. 327-345.

See Crawley, C., Dumitru, P., & Gilleran, A. (2007) *Learning with eTwinning: A Handbook for Teachers*, eTwining Central Support Service, Brussels, http://www.etwinning.net/ww/en/pub/etwinning/news/articles/handbook.htm (accessed July 2009).

Cuthell, J. P. (2004) 'What does it take to be active? Teacher participation in online communities'. Web-based Communities Conference Proceedings. http://www.virtuallearning.org.uk/changemanage/e-communities/Teacher%20participation%233912A.pdf (accessed February 2009).

Dawson, S., Winslett, G. & Burr, L. (2004) 'Toward a quantitative analysis of online communities'. In Online Learning and Teaching Conference: Exploring integrated learning environments. http://eprints.qut.edu.au/2084/1/Dawson_Winslett_Burr.pdf (accessed February 2099).

Dillon, K. (2005) A study in the role of an online community in the professional learning of teacher librarians. PhD thesis. Faculty of Education. University of Southern Queensland.

Donoghue, P. (2003) Making Online Communities Successful Learning Tools. 16th Educational Conference Melbourne 2003.

Duncan-Howell, J. (2007) Online Communities of Practice and their Role in the Professional Development of Teachers. Ph.D thesis. Centre for Learning Innovation, Queensland University of Technology, Brisbane.

education.au (2009). Collaboration in teaching and learning: strategic ICT advisory service. http://www.educationau.edu.au/jahia/Jahia/pid/693 (accessed February 2009)

Educause Learning Initiative. http://net.educause.edu/ir/library/pdf/eli7001.pdf May 2005. (accessed January 2009)

Educause Learning Initiative. http://net.educause.edu/ir/library/pdf/ELI7003.pdf June 2005. (accessed January 2009)

Evans, V., & Larri, L. J. (2006). Networks, Connections and Community: Learning with Social Software. *Australian Flexible Learning Framework.*

Goodfellow. T., & Graham, S. (2007) The blog as a high-impact institutional communication tool. *The Electronic Library,* 25 (4), 395–400.

Groenwegen, D., & Treloar, A. (2008) Building the ARRPW Community. Conference Paper for 14th Victorian Association for Library Automation Conference and Exhibition. http://arrow.monash.edu.au/hdl/1959.1/43305. (accessed February 2009)

Hara, N., & Hew, K. H. (2007) Knowledge-sharing in an online community of health-care professionals. *Informational Technology & People*, *20(3),* 235-261.

Herrington, A. & Herrington, J. (2004) University to work transition: Implications for the evaluation and design of online communities of practice. In R. Atkinson, C. McBeath, D. Jonas-Dwyer & R. Phillips (Eds) *Beyond the Comfort Zone: Proceedings of the 21st ASCILITE Conference* (pp. 379-386). Perth, 5-8 December. http://www.ascilite.org.au/conference (accessed February 2009)

Herrington, A., Rowland, G., Herrington, J. & Hearne, D. (2006) The BEST approaches to online mentoring. University of Wollongong. (HER06680) http://www.aare.edu.au/06pap/her06680.pdf. (accessed February 2009)

Hew, K. F., & Cheung, W. S. (2003) Models to evaluate online learning communities of asynchronous discussion forums, *Australian Journal of Educational Technology*, 19 (2), 241-259.

Howard, J. (2005) *Knowledge exchange networks in Australia's innovative system: overview and strategic analysis.* Report of a Study Commissioned by the Department of Education, Science, and Training to Howard Partners.

Huckvale, I. & Towell, P. (2002) *Modernising government though online knowledge networks. Global Summit 2002. education.au limited.*

Johnson, G. M. & Kulpa, A. (2007) *Dimensions of Online Behavior: Towards a User Typology. CyberPsychology & Behavior*, 10 (6), 773-779.

Kirschner, P. A., & Lai, K-W. (2007) Online communities of practice in education. *Technology, Pedagogy and Education.* 16 (2), 127-131.

Lee, S. & Berry, M. (2006) 'Effective e-Learning through collaboration' in Freedman, T (ed.) Coming of Age: An Introduction to the New World Wide Web. http://fullmeasure.co.uk/Coming_of_age_v1-2.pdf (accessed 29 March 2009)

Leech, R. (2006) Online communities: Welcome to the edublogosphere. *Teacher Magazine.* March 2006.

Lonsdale, M. (2003) *Global Gateways: A Guide to Online Knowledge Networks*. ACER.

Loveless, A. (2006) Professional development for technology and education: Barriers and enablers. *Technology, Pedagogy and Education.* 15 (2), 139-141.

Loving, C. C., Schroeder, C., Kang, R., Shimek, C., & Herbert, B, (2007) Blogs: Enhancing links in a professional learning community of science and mathematics teachers. *Contemporary Issues in Technology and Teacher Education*, *7(3),* 178–198.
Najafi, H., & Clarke, A. (2008) Web-Supported Communities for Professional Development: Five Cautions. *Contemporary Issues in Technology and teacher Education*, 8 (3), 244-263.

Quinton, S., & Houghton, P. (2005). Augmenting the power of online collaboration and innovation through networked learning. In Koul, R. and Fisher, D. and Zandvliet, D. and Gaynor, I. (ed), Fourth International Conference on Science, Mathematics and Technology Education, Aug 25 2005, pp. 500-508. Victoria, British Columbia, Canada: Curtin University of Technology.

Riverin, S., & Stacey, E. (2008). Sustaining an Online Community of Practice: A Case Study. *Journal of Distance Education*, 22(2), 43-58.

Rogers, E, (2003) *Diffusion of Innovations*, The Free Press, New York.

Rozmus, B. (2002), Australian Subject Gateways Forum: how the Australian subject gateways contribute to Internet use in learning, education and training, Global Summit of Online Knowledge Networks, Adelaide. Available: http://www.nla.gov.au/nla/staffpaper/2002/rozmus1.html (accessed February 2009)

Tu, C-H. & Corry, M. (2002) 'Research in Online Learning Community'. http://www.usq.edu.au/electpub/e-jist/docs/html2002/chtu.html (accessed February 2009)

Vavasseur, C. B. & MacGregor, S. K. (2008) Extending Content-Focused Professional Development through Online Communities of Practice, *Journal of Research on Technology in Education.* 40 (4), 517-536.

Wagner, M. (2007) *It Really Is Really Simple: RSS for Educators*. Posted 5 April. http://www.infinitethinking.org/2007/04/it-really-is-really-simple-rss-for.html (accessed February 2009).

Wells, M. In T. Townsend and R. Bates (eds). (2007) *Handbook of Teacher Education*, 657-674. Springer.

Wenger, E. (1998) 'Communities of practice: learning as a social system'. http://www.co-i-l.com/coil/knowledge-garden/cop/lss.shtml (accessed February 2009). See also Wenger, http://www.ewenger.com/theory) (accessed March 2009).

White, G. (2002) Towards collaborative global education networks. *Professional Educator*, 1 (1), 10-11.

Williams, J. B., & Jacobs, J. (2004) Exploring the use of blogs as learning spaces in the higher education sector. *Australasian Journal of Educational Technology*, 20 (2) 232-247.

APPENDIX 1: LIST OF GATEWAYS REVIEWED (JANUARY 2009)

Africa Education
http://africaeducation.org/

The Awesome Library
http://www.awesomelibrary.org/

BECTA (British Educational
Communications and Technology Agency)
http://www.becta.org.uk/

CEDEFOP
http://www.cedefop.europa.eu/
(ETV (European Training Village)
http://www.trainingvillage.gr/etv/default.asp

Deutscher Bildungsserver (German
Education Server)
http://www.bildungsserver.de/start_e.html

Doing What Works
http://dww.ed.gov/index.cfm?

EdNA
http://www.edna.edu.au/edna/go

Education World
http://www.education-world.com/

EERA
http://www.eera.ac.uk/

EUN (European SchoolNet)
http://www.eun.org/portal/index.htm

EURYDICE (European Education
Information Network)
http://eacea.ec.europa.eu/portal/page/portal
/Eurydice

GEM (Gateway to Educational Materials)
http://www.thegateway.org/

Global SchoolNet (The Global
Schoolhouse)
http://www.globalschoolnet.org/index.cfm

HERO (Higher Education and Research
Opportunities in the UK)
http://www.hero.ac.uk/uk/home/index.cfm

INTUTE
http://www.intute.ac.uk/sciences/

KNE (Knowledge Network Explorer)
http://www.kn.pacbell.com/

LANIC (Latin American Network Information
Centre)
http://lanic.utexas.edu/

MERLOT (Multimedia Educational
Resource for Leaning and Online Teaching)
http://www.merlot.org/merlot/index.htm

Learning and Teaching Scotland
http://www.ltscotland.org.uk/

OTAN – Outreach and Technical
Assistance Network
http://www.otan.dni.us/

PADI (Preserving Access to Digital
Information)
http://www.nla.gov.au/padi/

SEGWAY (Science Education Gateway)
http://cse.ssl.berkeley.edu/segway/

TaLe (Teaching and Learning Exchange)
http://www.tale.edu.au

The Learning Place
http://education.qld.gov.au/learningplace/

TKI (Te Kete Ipurangi – The Online
Learning Centre)
http://www.tki.org.nz/e/tki/

WebLaw
http://weblaw.edu.au

APPENDIX 2: REVIEW OF FOUR GATEWAYS

The following summaries provide an overview of four high quality gateways used by educators.

Edna (Education Network Australia) http://www.edna.edu.au/edna/go

Background/context

Country of origin:	Australia
Date of origin:	Inception of EdNA 1995, Standard Operating Environment for EdNA Online implemented in 1999.
Administrator/originator:	Education.au
Funding source:	The site is partly funded by the Australian Government Department of Education, Employment and Workplace Relations, and is a joint initiative of the State and Territory Governments
Stated purpose/objectives:	The site's main goal is to provide the Australian education and training community with Australia's leading, quality assured, online resources and a collaborative network for education and training. Edna is a large repository referencing thousands of online resources for education, training and research. Visitors to the site can search, browse and even contribute their own education news, events and resources to the education community.
Target sectors	Early Childhood Education; School Education; Vocational Education and Training; Adult and Community Education; and Higher Education.
Target audience	The content is designed for the Australian education and training community for educational and research purposes (ie. teachers, students, parents, practitioners, Government and non-Government departments, stakeholders and communities).
Main function	Edna provides a range of digital resources for education and training. It is a large repository referencing thousands of online resources for education, training and research. Users can search, browse and even contribute their own education news, events and resources to the education community.

Key features

Content	News, Events, Resources, Links, Groups/Communities, Discussion Lists, Personal networks
Currency	The site is regularly updated (weekly or more frequently)
Scope	Australia
Language	English only
Access	The site is very accessible, has a simple and clear format, and straightforward navigation.
Collaborative Administration	The websites available as links from Edna are significant education and training websites associated with Edna in some way ie. they

may use Edna services, be hosted by Edna, or be the website of other projects managed by Education.au (who manages and maintains Edna), the national agency jointly funded by the State, Territory and Commonwealth.

Edna has also made national and international alliances. These alliances are designed to encourage cooperation and collaboration between sectors, systems, organisations and countries to share expertise, ideas and solutions about information and communication technologies used in education and training, and to promote and share ideas, learning and solutions developed.

Resources

Quality of the resources: The site states that they provide quality, evaluated resources, selected in accordance with their Collection Policy (downloadable as a PDF)

Size: Edna offers a very large collection of information, resources, links & interactive services.

Interactive services: Users can contact the site via the 'Suggest a site' or 'Contact Us" links. Edna Groups and 'me.edu.au' incorporate discussion lists, noticeboards, online forums, online chat sessions, and blogs.

Edna Groups is a fully-featured collaborative toolset based on open source Moodle system software. Groups can be public (open to all) or private (invitation only). Each group receives a space in which it can choose from a range of tools to facilitate communication and collaboration. For example, users can set up web forums and live chats; share web links, files and images; collaborate on web pages and wikis; poll or survey members; blog news and opinion, add RSS newsfeeds, create a lesson or workflow, instant messaging between members, conduct a live web conference with presentations, audio and video-conferencing and shared whiteboard and more. Users must become a member to access Edna groups.

'me.edu.au' is an online professional network for educators. 'me.edu.au' provides Australian education and training professionals with a free online networking and profile space where educators can identify their professional interests, join communities with similar interests, and view and respond to the activities of their online colleagues. It incorporates features of social networking sites to build professional communities without the limitation of distance, cross borders, sectors, jurisdictions and institutions. The new system provides an online professional network.

Users can use 'me.edu.au' to:

- create an online professional profile
- connect with educators who have similar interests
- share links, news, photos, ideas, opinions
- blog about individual work and professional learning
- aggregate individual online activity to show what users are doing online

Training/PD

2009 Edna workshop tour: Edna's hands on workshops provide training in the use of online services and collaborative tools. Workshops also provide opportunities for networking with the Edna team and other education professionals.

Edna also advertises conferences and events in Australia.

Other services

Wikis, blogs, podcasts, RSS feeds.

Podcast: 'E-learning Insights' is a cross-sectoral podcast for the Australian education and training community covering issues, people and technology related to the use of technology in education.

RSS feeds enable users to:
- Receive the latest education news
- Monitor national and international education events
- Individually select and receive sector-specific RSS feeds
- Integrate Edna into an individual website.

Newsletter:

Edna publishes several newsletters for different audiences in the education and training community. The newsletters present information from a wide variety of sources both within Australia and internationally; items or stories are chosen by Information Officers.

Users

The main reasons for using this site would be to find resources for teaching, learning and research, and secondly, to join online communities.

Impact

Statistics for 2008 are as follows:

	edna	groups	me.edu.au
Site visits	585,487	187,412	189,499
Total unique visitors	409, 457	71,803	99,935
Total page views	2,165,616	1,967,187	676,025

EUN (European SchoolNet) http://www.eun.org/portal/index.htm

Background/context

Country of origin:	Brussels, Belgium
Date of origin:	1997
Administrator/originator:	Senior manager internet portals: Santi Scimeca; Web Editor: Paul Gerhard
Funding source:	Corporate partners (EUN is a not-for-profit organisation) - Elluminate, Inc., Intel® Education Initiative, Sun Microsystems
Stated purpose/objectives:	EUN provides major European education portals for teaching, learning and collaboration and leads the way in bringing about change in schooling through the use of new technology.
Target sector:	Schools
Target audience:	Educators & Learners
Main function:	EUN is an international partnership of 31 European Ministries of Education developing learning for schools, teachers and pupils across Europe.
	EUN has been at the forefront in supporting the European dimension in schools. This goal is achieved through projects, competitions, activities, communication and information exchange at all levels of school education using innovative technologies.

Key features

Content:	• Portals / links • Projects • Competitions • Awards • Media services (news, newsletters, Press releases) • Corporate partners • Committees
Currency	The site is regularly updated (several times a month).
Scope:	Europe
Language:	The main page is in English, however members can select their country and be transferred to a similar page in their language
Access:	The site is very easy to access, with a simple and clear format, and easy navigation.
Administration:	EUN appears to collaborate with other administrators in member countries, as there are links to national sites

Resources

Quality of the resources:	The resources selected for inclusion are guided by the EUN Policy and Innovation Committee and the advice and recommendations provided through the associated Insight portal.
Size:	EUN offers a very large collection of resources and links

Interactive services	Users can contact the site via an email address or postal address
	Although not displayed particularly prominently, (Info > About > Contact us), the site offers a Facebook profile, allows Discussion lists, Noticeboards, Online forums, and online chat sessions. See 'other services' below for further details.
Training/PD	Development Youth Prize
Other services	**Facebook:** requires users to join and approval is straightforward.
	Linkedin: has a group specialised in business networking. This site allows members to add connections of professionals that they trust. Users can be part of the EUN professional network for current, former employees and anyone interested in EUN networks.
	Flickr is an image and video hosting website, web services suite, and online community platform.
	Twitter is a free social networking and micro-blogging service that allows users to post text updates via SMS, instant messaging, email, Twitter's website and third party applications.
Newsletter:	Users can subscribe to these email newsletters:
	• 'European Schoolnet News' provides information about European Schoolnet events and activities organised for schools and the projects currently underway, the services and portals the EUN team is providing teachers, researchers, pupils and policy-makers alike. The newsletter service is sent out once a month.
	• European Schoolnet Teachers' Newsletter is an update of events, projects, calls for collaboration, resources and any other topics of interest to teachers. It is written by Sylia Binger, Pedagogical adviser in the EUN Office and sent out every three weeks in English, French and German.
Users	Main reason for use: people interested in developing learning through the use of technology for schools, teachers and pupils across Europe. Also, for those interested in improving the European dimension in schools.

LTS (Learning & Teaching Scotland) (previously known as NGfL Scotland (National Grid for Learning Scotland) http://www.ltscotland.org.uk/

Background/context

Country of origin:	Glasgow, Scotland
Date of origin:	2000
Administrator/originator:	Learning and Teaching Scotland,
Funding source:	Scottish Government Education Department, sales of software & other sources
Stated purpose/objectives:	Learning and Teaching Scotland (LTS) provides advice, support, resources and staff development to the education community, creating a culture of innovation, ambition and excellence throughout Scottish education.
Target sector:	Schools
Target audience:	Teachers, schools and local authorities
Main function:	LTS is the main organisation for the development and support of the Scottish curriculum, combining expertise in the curriculum 0–18 years with advice on the use of ICT in education.

Key features

Content:	• Information, case studies, pedagogy papers • Interactive tutorials, networking system between schools • News, competitions, schemes, statistics, research findings • Blog, podcasts/videos, discussion forum • Personal development (info conferences, classes) • Email updates (subscribe) • Links to websites • Order resources
Currency	The site is updated regularly (at least monthly)
Scope:	Scotland
Language:	English only
Access:	The site is very easy access, with a simple and clear format and easy navigation. The website staff ensure that all pages produced on the LTS Online Service conform to the AA standard of the Web Content Accessibility Guidelines produced by the Web Accessibility Initiative (WAI) of the World Wide Web Consortium (W3C).
Administration:	LTS works closely with many organisations and has formal partnership agreements with key bodies in Scottish education.LTS It employs Area Advisors (responsible for liaising closely with key contacts within education authorities) and Professional Advisers (responsible for liaising with all stakeholders in developing well informed educational advice for LTS managers.

Resources

Quality of the resources:	The website content and resources are developed in accordance with the <u>Guidelines, standards and procedures for the LTS Online Service</u>
Size:	LTS offers an extremely large collection of information, resources and links across a vast range of topics.
Interactive services	The site provides a feedback form for questions & comments. Users can contact the LTS headquarters via an email address; postal address, phone and fax, or in person (a map and directions are provided).
	There is an online discussion forum and a news blog which allows users to add comments.
Training/PD	Interactive tutorials, podcast/videos, Professional Development section (conferences & courses)
Other services	Podcasting / videos / social bookmarking
	Allows teachers and students to publish anything on the web: text, images, audio or video. The blog invites conversations with others by providing the possibility to comment on each post made by the author. Social bookmarking is facilitated by digg this' and del.icio.us'
Newsletter:	Users can subscribe to email updates
Users	The main reasons for using this site are for people in the education community seeking advice, support, resources and staff development, particularly advice on the use of ICT in education.
Impact	There is a stated commitment to evaluating impact via web statistics (available to members); reports on external evaluations; and peer review procedures.

British Educational Communications and Technology Agency (BECTA)
http://www.becta.org.uk/

Background/context

Country of origin:	United Kingdom
Date of origin:	British Educational Communications and Technology Agency (Becta) was established in 1998 through the reconstitution of the National Council for Educational Technology (NCET).
Administrator/originator:	Webkeeper: webkeeper@becta.org.uk
Funding source:	Becta is a Government agency
Stated purpose/objectives:	The website aims to lead the national drive to ensure the effective and innovative use of technology throughout learning. Becta's ambition is to utilise the benefits of technology to create a more exciting, rewarding and successful experience for learners of all ages and abilities, enabling them to achieve their potential.
Target sector:	Learners of all ages, so: Early Childhood Education; School Education; Vocational Education and Training; Adult and Community Education; and Higher Education
Target audience:	Learners of all ages
Main function:	To ensure the effective and innovative use of technology throughout learning:

- Improve schools: Develop and follow a strategy that uses technology to achieve better outcomes for learners.
- Achieve best value: Provide or purchase quality, fit-for-purpose technology, with the right support, at the right price.
- Inspire parental engagement: Enable parents to access and use technology for a positive impact of their children's learning.
- Plan sustainable success: Balance the economic, social and environmental aspects of technology for learning.
- Safeguard learners online: Protect, educate and empower everyone to keep safe and secure online.
- Make learning personal: Support learners to make effective, discriminating use of technology that meets their needs.

Key features

Content:	News and media, Events, Publications, Awards, Links
Currency:	The website is updated regularly (at least monthly)
Scope:	United Kingdom
Language:	English
Access:	The site is very easy to access, with a simple and clear format, and easy navigation.
	The Becta website has been developed so that the majority of content is also available in an alternative text-only version.

Administration:	Becta works closely with partners across the education system. Together, we create the conditions that result in technology being used to benefit learners.

Resources

Quality of the resources:	The site states that every care has been taken in the compilation of information on Becta websites to ensure that it is accurate at the time of publication and all references to external sources (including any sites linked to Becta sites) are checked both at the time of compilation and on a regular basis. Limited liability is stated via legal disclaimer.
Size:	Large collection of information, resources and links across a vast range of topics

Interactive services

There are many online communities supported by Becta. Each community focuses on a different aspect of ICT in education. Communities are great places to become involved in:

- sharing knowledge, advice, expertise and experiences with colleagues and peers
- exchanging different professional views and opinions
- fostering change in the education ICT community
- Becta events and follow up discussion

These online communities incorporate discussion lists, noticeboards, online forums, online chat sessions, and links to external blogs (eg. the Strategic Content Alliance).

There is a feedback form for questions & comments.

Training/PD

Links to Professional Development, especially for teachers

Other services

Newsletter:

Becta publishes newsletters for users to catch up with the latest news, features and publications. The newsletters feature details of upcoming events and ways to get involved in Next Generation Learning activities.

- Becta Update: A monthly round up of key news and features from across the Becta website
- Schools Update: Quarterly update of news and features for schools
- Industry Update: Quarterly update of news and features for industry
- TechNews: A technology news and analysis service, aimed at anyone in the education sector keen to stay informed about technology developments, trends and issues.

Users

The main reason for using this site is to access news and media, events, publications, awards, links in relation to the effective and innovative use of technology in education

APPENDIX 3: PROFESSIONAL AND SUBJECT ORGANISATIONS

The following professional and subject associations participated in phone interviews as part of the LNET study.

- Australian Association for the Teaching of English (AATE)

- Australian Association of Mathematics Teachers (AAMT)

- Australian Joint Council of Professional Teaching Associations

- Australian Literacy Education Association

- Australian School Library Association (ASLA)

- Australian Science Teachers Association

- Australian Teacher Education Association

- Curriculum Corporation

- Early Childhood Australia

- Early Childhood Teachers Association (ECTA).

- Education.au Limited

- Mathematics Teachers' Association of the NT (MTANT)

- Western Australian Maths Teachers Association

APPENDIX 4: ICT EXPERTS CONTACTED BY ACER

The following overseas experts were contacted by email and asked several questions designed to identify exemplary online learning environments and current trends in ICT usage by and for educators.

- Roger Blamire, Senior Manager Policies and Practice, European Schoolnet (EU)

- Dr Vanesa Pittard, Director - Evidence and Evaluation, BECTa (UK)

- Ms Anne Jackson, Deputy Secretary, Schooling, Ministry of Education, New Zealand.

- Ms Shafika Isaacs, ICT4D Professional, Telkomsa (SA)

- Keith Krueger, CEO, Consortium of School Networking (USA)

- Karen Henke, Director, CoSN Board (USA)

- Tammy Stephens, Director, CoSN Board (USA)

- David Wilson, Communications Manager, Commonwealth of Learning (Canada)

- Paul West, Director, Knowledge Management, Commonwealth of Learning (Canada)

- Neil Melluish, MoE Project Leader responsible for the ICT PD Programme (New Zealand)

- Miriam Nisbet, Director, Secretary of the IFAP Council (UNESCO)

- Stephen Downes, Senior Researcher, National Research Council of Canada

- George Siemens, Associate Director, Learning Technologies Centre, University of Manitoba, Canada

APPENDIX 5: VIDEOCONFERENCE PARTICIPANTS

The following representatives took part in the videoconference and teleconference sessions as part of the LNET study.

New South Wales

Manager, Multicultural Programs Unit
NSW Department of Education and Training
Sydney, New South Wales

Executive Officer
Catholic Education Commission (NSW)
Sydney, New South Wales

Director of Professional Studies Association
of Independent Schools of NSW
Sydney, New South Wales

Northern Territory

Teaching and Learning Manager
Department of Education and Training (NT)
Darwin, Northern Territory

Education Officer School Improvement
Framework
Catholic Education Office (NT)
Berrimah, Northern Territory

Queensland

Assistant Director
Curriculum Strategy Branch
Department of Education, Training and The
Arts
Brisbane, Queensland

Senior Education Officer
Queensland Catholic Education
Commission
Brisbane, Queensland

Director (Education Services)
Manager (Teaching and Learning)
Association of Independent Schools of
Queensland
Spring Hill, Queensland

South Australia

Senior Project Officer
Department of Education and Children's
Services
Adelaide, South Australia

Assistant Director:
Catholic Education SA
Thebarton, South Australia

Assistant Director Educational Services
(Early Childhood/Primary/External
Programs)
Association of Independent Schools of
South Australia
Malvern, South Australia

Tasmania
Principal Policy Analyst
Department of Education
Hobart, Tasmania

Manager Targeted Programs
Association of Independent Schools of
Tasmania
Hobart, Tasmania

Victoria

Group Manager, Literacy and Numeracy
Department of Education and Early
Childhood Development
Melbourne, Victoria

Manager, Student Learning Programs
School Advisor – Student Services
Catholic Education Commission VIC
East Melbourne, Victoria

Director, Teaching and Learning
Association of Independent Schools of
Victoria
South Yarra, Victoria

Western Australia

A/Manager, Primary Directorate
Department of Education and Training
East Perth, Western Australia

Curriculum Section
Catholic Education Office of Western
Australia
Leederville, Western Australia

Early Childhood Consultant
Association of Independent Schools of
Western Australia
Osborne Park, Western Australia

APPENDIX 6: ONLINE SURVEY QUESTIONS

1.   In which state or territory is your school located?

2.   Is your school:

- ○   Remote
- ○   Regional
- ○   Metropolitan

3.   About how many years have you been teaching?

- ○   Less than 5 years
- ○   Between 6-16 years
- ○   More than 16 years

4.   In which literacy/numeracy pilot are you involved? *(Leave this question blank if you are not sure.)*

5.   Do you use online tools or services? *(For example, blogs, wikis, websites where you can contribute content or participate in discussions etc)*

- ○   Yes
- ○   No

If you answered YES to Q5, please go on to the next questions.

If you answered NO to Q5, please go to Q13 and Q4.

6.   Which of the following tools do you use for professional learning purposes? *(You may choose more than one response.)*

- ○   a blog
- ○   a wiki
- ○   a portal or gateway (e.g. EdNA (Education Network Australia)
- ○   RSS (automatic updates/feeds from multiple websites e.g. via Google Reader)
- ○   a LISTSERVE (an electronic subscription mailing list about specific topics e.g. EdNA Lists)
- ○   Web conferencing (eg Blackboard, Elluminate)
- ○   Mashup (personalised) screen (eg Page Flakes, iGoogle)
- ○   Other *(Please specify)*

7.   What are your main reasons for using these online tools?

- ○   Find resources
- ○   Share resources
- ○   Organise resources
- ○   To get the latest industry news
- ○   Participate in discussion
- ○   To access online journals/publications
- ○   To network
- ○   Other *(Please specify)*

8.   Do you use any of the following online services for professional learning purposes?
        (Choose as many as apply.)

        ○   CiteULike
        ○   Delicious
        ○   Diigo
        ○   EdNA Groups
        ○   EdNA Me (me.edu.au)
        ○   Facebook
        ○   Flickr
        ○   Google docs
        ○   Google groups
        ○   LinkedIn
        ○   Microsoft Office Communicator
        ○   MSN
        ○   Ning
        ○   Slideshare
        ○   Skype
        ○   Twitter
        ○   Wikipedia
        ○   YouTube
        ○   Other *(Please specify)*

9.   How often would you use these online services overall?

        ○   Daily
        ○   Weekly
        ○   Fortnightly
        ○   Monthly
        ○   Not very often
        ○   Other *(Please specify)*

10.   Do you create any of the following for professional learning purposes? If yes, please indicate which ones.

        ○   Podcasts
        ○   Photo albums
        ○   Videos
        ○   Animations
        ○   None of these
        ○   Other *(Please specify)*

11.   Not all educators use online services. From your experience what are the main reasons for this? *(You may choose more than one response.)*

        ○   Lack of ICT skills and/or confidence
        ○   Lack of time
        ○   Insufficient school support
        ○   Limited access to computers
        ○   Prefer face-to-face information sharing
        ○   Privacy concerns
        ○   Other *(Please specify)*

12.   What could be done to make it easier for teachers to use online services?

If you answered No to Question 5, please complete the Q13 and Q14 below

13.   What are the main reasons for you not using online services? *(Choose as many as apply.)*

- ○   I don't feel I have the necessary skills to use these
- ○   I don't have enough time
- ○   I have limited access to a computer
- ○   I have limited access to the Internet
- ○   I prefer face-to-face information sharing
- ○   I am concerned about privacy issues
- ○   I am not interested
- ○   I don't know what they are
- ○   Other *(Please specify)*

14.   What could be done to make it easier for you to use online services?

Thank you very much for completing this survey. We really appreciate your participation.