OLDER ADULTS AND THE DIGITAL DIVIDE: COMMUNITY TRAINING TO INCREASE DEMOCRATIC PARTICIPATION

The Democratic Problem of Older Adults' Overcoming the Digital Divide

Information and Communication Technologies (ICT) play a substantive and necessary role in daily life. They are increasingly becoming a necessity in order to access information resources. Participation in societies that use computer networks to distribute information is constrained by many factors. Lack of access to online information can seriously limit a person's ability to make democratic decisions about the direction of their lives. To address this problem affordable training and access is an important factor in increasing participation in democratic societies.

The digital divide is a disparity between those that have or do not have access to information technology and communications (Eamon 2004). The digital divide is a major issue in society for people over 50 years of age. For example, in the United Kingdom, a study reflected a common theme found in digital divide research; digitally excluded adults are more likely to be older (over 55) then the rest of the digital excluded population (BT 2004). Studies suggest that although income and access to computer hardware is a major concern, education in the use of technologies needs to be addressed to skill people in how to find information for their daily lives (NITA 2004).

This paper will focus on how training older adults improves participation in democratic societies by illustrating, through a community case study, how one organisation is addressing the digital divide. It is an important democratic issue because access to technology has a large impact on people's ability to acquire needed knowledge (Fallis 2004). An effective way of increasing older adults' participation in a democracy is by training in the use of computer software and the internet.

Structure of and Definitions of Terms Used in Paper

This paper will discuss the digital divide in relation to the effects non-participation and lack of access can have on older adults in democratic societies. The questions this paper poses are then presented. To demonstrate how theoretical ideas can be utilised to advance older adult's participation in society, the community organisation will be discussed. A brief discussion of methods and the study is then given. A discussion, with examples from the study, of practical suggestions to improve the teaching of ICT's to access information is offered.

Throughout the paper, terms will be used which are unique to the field of information technology, democracy and the digital divide. They include:

Computer Software:

Software is any computer program people use in their daily life in order to achieve a goal. They can be systems software, the software enabling the computer to run, or applications software, such as word processing or internet browsers (Webopedia 2009).

Democracy:

Democracy means a society is ruled by the people for the people, where the decisions of one's lives are decided by people and governed by those elected to carry out those decisions.

Digital Divide:

The digital divide is defined by the Organisation for Economic Co-Operation and Development (2001, p. 5) as:

"As used here, the term "digital divide" refers to the gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard both to their opportunities to access information and communication technologies (ICTs) and to their use of the Internet for a wide variety of activities."

Digital Inclusion:

The process of a society ensuring its citizens has access to the necessary technology to obtain information pertaining to the running of their daily lives.

Information:

This can be anything a person values that will give them what they want in order to fill a need in text or pictures. Buckland (1991) describes information as a process because its acquisition causes a change now that the person is informed about something. Information is knowledge because its acquisition reduces uncertainty about something the person wanted to know. Information is also a thing because it is data or documents that contain needed information.

Information and Technology Communications (ICT):

Any type of information or technology communication used by citizens, usually computers and the internet, but can also mean mobile (cell) phones, personal organisers or other types of electronic technology.

Information Literacy:

The ability to access, evaluate and use information from a variety of sources (Wijetunge & Alahakoon 2005) and assessing the trust and validity of the information.

Information Society:

A society where low-cost information and storage, and information technologies such as the internet, are in general use and access to such data changes the life of its citizens socially, at work and in society in general (Nassimberi 1998)

The Internet:

The interconnected network of computer hardware servers and cables that house and transmit internet information, described in terms of hardware infrastructure that supports the data contained on it, the demographics of the people who use it and software that facilitates its use (Lehnert 1998).

Why is the Digital Divide a Democratic Problem?

Governments have recognised that the digital divide is a serious problem for its citizens in the current information society. In Australia, for example, the government's view is that accessing and being able to effectively use ICT's is vital to social inclusion (Australian Government Department of Broadband, Communications and the Digital Economy 2008). A consistent argument equates participation in democratic societies with ICT use and access. There is also no shortage of academics and governments that state the digital divide, particularly for older citizens, must be overcome for an equitable society.

Why is the overcoming of the digital divide important in improving the lives of a society's citizens in? A strong argument from Helen Milner of the United Kingdom Online Centres (2007, p. 1) is reproduced from a report on the digital divide commissioned in 2007 because it illustrates the importance of this issue:

> "The digital divide is still a problem, and it's not going to respond to the ostrich treatment. But why does it matter? Aren't there bigger social, economic and political issues of the day to take up our time and energy? Isn't digital inclusion a bit, well, peripheral? Certainly the digital divide isn't making the headlines in the way education, health, employment and crime do, but I believe it has an underlying impact on all of these areas, and more. Connecting people to ICT skills can connect them to new or better jobs, to new forms of communication and social interaction, to community infrastructures and government services, to information to help with homework, to consumer power and convenience. It can save people time and money, open new doors and new worlds. Digital inequality matters because those without the right combination of access, skill, motivation or knowledge to make digital decisions are missing out in all areas of life. And that doesn't just impact on individual lives but on families, communities, on political processes, democracy, public services and the economic and social health of the nation as a whole."

Access to ICT's equates to one's opportunities to participate in society. Sherman (2003) stated the benefits of using the internet in one's life is about connection to opportunity and reconnection to community, educational opportunities, overcoming isolation and to one's culture. The engagement of a society is enhanced by the internet's ability to share information as horizontal interpersonal mass communication occurs, fostering discussion and advice giving on many topics (DiMaggio et al 2001). There is also the mechanism to exchange information in multiple types of information transmission channels, such as one to many, in shared virtual communities (Rothaermel & Sugiyama, 2001). These advantages do bridge divides; yet inequalities in democratic societies still exist that prevent access to information gathering and sharing.

Research into the digital divide has identified geographic areas, economic status of people, gender and a person's ethnicity as barriers to ICT access. For example, rural regions have less access to internet infrastructure which though recognised in the early 21st Century still exists (Lloyd et al 2000) still exists in many countries. Social marginalisation has always existed due to geographic and economic factors. But much research has concentrated on the individual's circumstances in a society that hinders or prevents access. Though many factors exist to prevent access to ICT's, governments will still try to formulate policies, particularly through funding educational opportunities and training, to overcome this problem.

Though it is argued that if a person is excluded in dealings with government and peers, access to broadband internet and ICT's may make little difference to participation in society and marginalisation will continue (Firth & Mellor 2005). However, research does equate the reduction of social exclusion with ICT access, training and ownership. As Phipps (2000) states, whilst ICT's are not an automatic solution to multiple disadvantage, the potential for enhancing networking and communication, as well as sharing knowledge and experiences, can bring opportunities to democratic participation in a society. ICT's can assist in maintaining close and meaningful interactions with peers, which is recognised as a part of a human's indicator of their own well-being, as society's isolation from face-to-face contact grows (Gross et al 2002).

Why are Older Adult Computer User Marginalised in Democratic Societies?

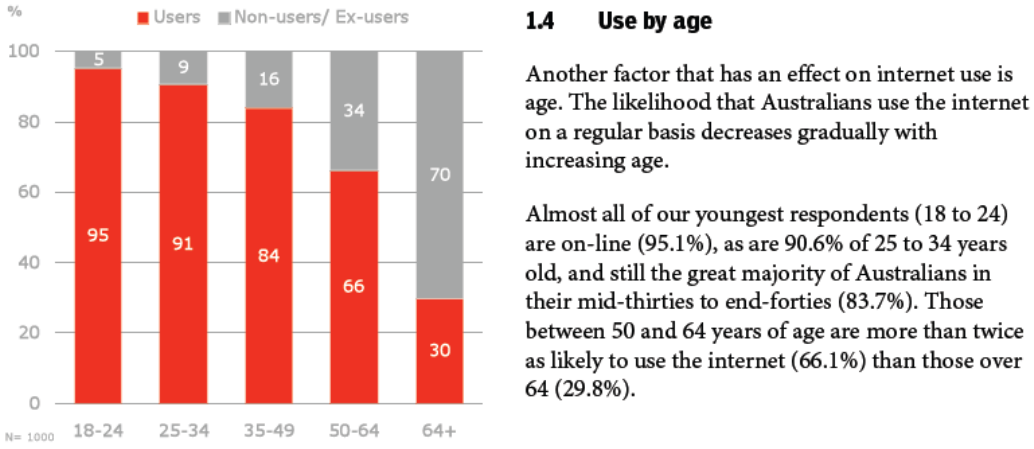
An older adult computer user is recognised as anyone over 60 years of age who wants to, or currently does, use ICT's. It can be argued that as time progresses, those that are currently younger will have grown up with ICT's and be comfortable with their use. Nevertheless, for many reasons, including no exposure to computers over their lifetime and in their occupations, income levels, physical disability and access to affordable ICT training, older people may think they are inadequate without ICT skills (Russell 2004).

A growing concern has been that older adults who do not engage with ICT's will face disadvantage and social exclusion (Selwyn 2004). Older adults do not avoid using ICT's in all cases, but often feel less comfortable with them (Selwyn et al 2003). However, they are using the ICT's for advice, socialising, health information, support and many other reasons (Coulson 2000). Studies also refute that older people are resistant to using technology than younger people (Czaja & Sharit 1998). The problems of why ICT adoption is not a quick phenomenon in democratic societies and its link to the digital divide, still requires research to find out why this is still occurring (Brabazon 2005).

This paper suggests marginalisation of older adults in accessing ICT's to participate in a democratic society is because of the cost, type and quality of ICT skills training. Those over 50 years of age are an increasing group of ICT users. For example, in Australia older adult user demographics are growing as their purchase of hardware and software, as well as their access to computers through libraries, family members or community centres, increases. This is reflected in use of the internet and email. Ewing et al (2008, p.2) in surveying 1000

households showed in figure one those over 60 are less likely to use the internet. This may be due to decreased mobility, interest or lack of access to ICT equipment.

Figure 1: Ewing et al 2007 Survey Results Use of Internet by Age



However, internet use is increasing rapidly in Australian society. A recent finding from a sample of the Australian population that use the internet demonstrates generational increases in ICT use (ABS 2008):

> Between 2004-05 and 2006-07 the rate of household Internet use increased across all age groups. The increase in use of the Internet was greatest for people aged 65-74 years, where 40% more people were using the Internet at home in 2006-07 (28%) compared with 2004-05 (20%). Despite this growth, people aged 55 years and over continued to use the Internet at home less than those in younger age groups.

This example supports an abundance of research literature suggesting generational divisions of ICT use are decreasing. The consistent findings have been that, regardless of the pressure to use ICT's, older adults do learn computer skills willingly. Training them to use ICT's effectively and for their own needs becomes the major barrier to using these technologies

Views of older adults not being able to acquire computer skills has resulted in the label 'technophobe' aimed at this group (Gietzelt 2001). It is recognised that current and future technologies have the potential to enhance the well-being of older people and increase social interaction and contact with families and others (Cutler 2006). Therefore, the key to assisting older adults to learn ICT skills is through supportive and affordable ICT training. Not all older adults are necessarily reluctant to learn or have a desire to learn ICT skills. Rather, as Mayhorn et al (2004) state older people's goals, abilities and desire to learn particular topics are often neglected when developing computer courses.

The type of and delivery of, ICT training is of major concern to educators. Langer (2002) has described older adults as being motivated to learn on a needs rather than a forced requirements basis. Older adults may want to learn ICT skills to overcome an informational, personal or financial issue in their life. Most adult learners are strongly motivated by wishing to acquire skills and knowledge to use in practical ways to solve their ICT issues (Langer 2002). Additionally, older people want training in skills such as email and internet searching to be connected to others who are sharing their experiences and interests (Ito et al 2001). People over 50 especially want to be connected to others who share their experiences and interests (Ito el al 2001). Motivation for ICT training participation will increase when ICT material is made relevant to solving the problem at hand rather than imposing a fixed curriculum on the older adult (Stanberry & Azria-Evans 2001).

Formal classroom training in educational institutions is generally expensive, material to learn is fast-paced and courses assume already learnt computer skills and competencies even in introductory level classes. Older adults tend to structure their learning according to their past experiences (Knowles 1990) and their self-identified needs and desires (Partridge 2007). Students want to learn topics according to their past experiences and they want a tutor interested in their skill and personal development.

Solutions to Overcoming the Digital Divide for Older Learners

The solutions to overcoming the democratic problem of skills training lies in providing information on ICT use as well as formal and informal computer tuition (Paul & Stegbauer 2005), lower lesson costs and the utilisation of partnerships between community centres, government and industry. Involving the community in providing ICT access and training is an important factor in decreasing digital divides in society.

To illustrate this, a case study of a long-term research project will be discussed. Before doing so, it is important to give examples that communities and governments do respond to the problem of the digital divide that older adults experience. Most research makes use of the case study approach and is rich in explaining reasons why this group is disadvantaged with ICT use. Some organisations partner with corporations, an Australian example being The Smith Family's partnership in Melbourne with Microsoft. The Smith's 2006 report suggested the Community Technology Learning Centres overall raised older adults confidence with using ICT's (Feeny et al 2006). Other organisations, such as Senior Net in Brisbane (http://www.seniornet.com.au/), also provide such services, generally having good outcomes in raising ICT skill levels (Senior Net 2009). Important factors in forming these local communities that will teach ICT skills are the marshalling of human resources that are aware of the aspirations of learners and take into account the needs of the community (Coco & Jolly 2003; Coco & Short 2004), which are often different to formal delivery of ICT skill instruction and teaching.

However, it is the mode of delivering the teaching of ICT skills that assists with overcoming the digital divide for older adults. Older adults do need particular learning strategies to be used when teaching ICT skills. An illustration of such needs are stated by Cody et al (1999)

1. Active and co-operative learning rather than forced quick paced learning with formal testing

2. Learning ICT's requires substantial hands on experiences to facilitate exploration of new technologies over time

3. Focus on the attitudes towards technology, especially reducing anxiety

Older respondents do evaluate the internet as now being central to their lives as younger people do (Loges & Jung 2001). A computer is often still financially out of reach for low and fixed income earners, particularly older people (Tay 2001). But often it is the people's lack of ICT skills, how to use internet and productive software to achieve goals effectively, that causes a barrier.

Community centres are effective in providing ICT skill training. Central to this is the ability the tutors have to pass on their ICT knowledge. Older people may have less readily available helpers; hence they may not persist with learning ICT skills (Cameron et al 2001). Older adults, particularly those retired, may want to learn purely for enjoyment. Many older adults find formal ICT training classes geared towards younger learner (Gietzelt 2001) or assume vast amounts of knowledge is present before starting classes. Older adults are not averse to experimenting with new technology to join adult education programs as Swindell (2000) found in his research studies. Life changes, such as retirement from work, increasingly impact on the desire to learn ICT's for their personal development which indirectly contribute to older adults participating in a democratic society (Bowman & Burden 2002). To illustrate how effective ICT training is achievable, a case study Skylarkers Healthy Ageing program in Brisbane Australia is now presented.

Skylarkers Healthy Ageing Program Computer Lessons

This centre has provided ICT skills training for older adults since 1996. The centre's philosophy is based on healthy ageing principles as ascribed by The World Health Organisation (1946) where health is not just absence of disease but total physical, mental and social well-being. The web site for Skylarkers confirms a commitment to allow older adults to participate democratically in society. Its mission statement is 'to enable older people at the local community level to participate in decisions and activities which affect their health and well-being' (Skylarkers 2009). Certainly ICT training is a major activity offered to access skills that, for income, health or other reasons, may not be available to be obtained at home.

The ICT tuition program offers mainly individual tutoring, though occasional group lessons are held. There are usually five voluntary tutors working three days a week, most of whom are younger than the students. Computers have a large range of software available for teaching. Microsoft Word, internet browsers and how to search for information, photo

editing software and advice on hardware, choosing internet service providers and virus protection are ICT skills requested most by the students.

Tutors cover topics much in the way suggested by Mayhorn et al (2004) by tutors analysing what ICT skills the person wants to learn. They respond to students' specific ICT needs and, after an introductory session, ask specifically the student's goals and what areas are causing them problems in using ICT's. The students are both genders and mostly over sixty years of age and from other countries. The tutors offer support during centre hours, but through the centre can be contacted out of hours should an issue arise. Additionally, the centre has a CD ROM of licence free software and computer instructions that students can purchase. The lessons are normally of 50 minutes duration and are of low cost.

The tutor student relationship is a mentoring one consisting of younger people mentoring older adults. Aside from this bridging a digital divide, the program has allowed the bridging of generations, which Johnson (2003) asserts is a successful outcome of ICT training. What Skylarkers advocate is that ICT skills overcome isolation, facilitate information finding and has its students be aware of technical issues that ICT's can bring, such as choosing an internet service provider and costs of software. It is in this that Skylarkers recognises the value of good tutoring practices, which the research findings will explain assist in older adults persisting in attending classes.

The Research Study

Brief details of the study are presented to show how reported findings were arrived at. The study was longitudinal conducted over 4 years part-time. Research was designed by using the methods advocated by Strauss and Corbin (1998) called Grounded Theory Research. The prime method of data collection was by observation of lessons and consensual asking tutors and students questions about their learning experiences. Data was recorded by field notes, which record and describe behaviours and practices, in turn presenting a picture of what actually is going on in a setting (Emerson et al 1995). Also, a set of interviews was done to ask more in-depth questions and to confirm the observations in lessons. Types of questions covered finding out the sorts of issues older adults have with ICT training. The study also supported previous work by White and Weatherall (2000) who undertook a similar study in New Zealand. They argued that Grounded Theory allowed themes to emerge from data relevant to older adults' experiences with learning ICT. In turn it showed why the program was a considered a successful ICT training organisation. The results are now presented, which suggest that the teaching of ICT skills and overcoming the digital divide are indeed linked in democratic societies.

Effective Tutoring Practices for Older Adults

The findings that emerged from the study were the observed positive effects the tutoring practices and policies had on the well-being and access to participation in society as a consequence of ICT training. Tutors, centre management and older learners had an effective mentoring relationship based on effective teaching practices that solved the learner's ICT

issues. Tutoring lessons also increased access to informal community networks, such as the centre's other activities, and virtual community networks such as message boards and chat rooms. All this in turn has an effect on the well-being of the student.

Centre management and the tutors created a set of tutoring styles and procedures which became effective teaching policies. Table 1 shows the types of practices and policies the centre adopts when the learner presents with an ICT issue:

Table 1: Learner ICT Issues and Practices to Solve Them

LEARNER ISSUES	POLICY OR TUTORING PRACTICE
Learner did not know how to find internet information	Tutors asked questions to ascertain specific information issue and showed learner appropriate internet searching strategy
Learner is frustrated by an ICT problem or has a gap in knowledge about an ICT issue	Learner is encouraged to bring in problem in any way, for example software being used, hardware or documents, and tutor uses resources to solve the gap in knowledge learner has
Tutors problem solve specific learner problems to a resolution	Tutors use resources, such as each other, the internet, outside experts, businesses or written material to solve learner issues to a resolution rather than leaving learner with unresolved issues
Tutors use a step-by-step approach to ICT skill teaching	The tutor will explain, in a step-by-step process, ICT procedures and repeat the explanations until the learner says they understand the material being taught
Tutors may use appropriate humour to relax learner when material becomes difficult to learn	The tutors encourage the learner to be relaxed when using the computer and not fear making mistakes, using humour to encourage learner to look at errors as simply corrections to practice
The centre considers it important to learn skills to use the internet and keep in contact with family, friends and others	The tutors understand the need the learner has for social physical and online contact and teach

The tutors are trained in empathic ICT training skills; not to consider an older learner as lacking abilities to learn but rather that older learners do need the reassurance they have the ability to learn such skills. Each tutor is also encouraged to develop a professional but deeper relationship that is often not possible in formal ICT training environments. Tutors often

reported that the learnt much from their intergenerational relationships as they listened to the learner's life experiences.

Six examples of tutoring practices are provided to show what practical action takes place at the lesson. All names have been changed for confidentiality. It is important to reiterate that learning ICT skills does play a part in democratic participation for older learners because they are taught how to access information and perform procedures for a required outcome. This training in turn allows the older adult learner to find, or be able to call on resources such as others to find, needed information.

Example one shows a learner concerned about the problem of paying for what she thought was an always free email account. The tutor reassured her that this was not the case:

> *Andrea and John look over the Junk Mail folder. Andrea notices that you can pay for Hotmail. Andrea: I thought Hotmail was free? John reassures that it is not the case to pay for it and that paying money to them is just for more data storage.*

Example two showed the consequences of good tutoring practice. The learner was asked what benefits are there in being taught email composition and sending skills. She said:

> *I'm really interested in using the Internet and sending e-mails, mostly sending emails which my family; I'm not very good at letter writing and I find it so easy, and I keep in touch with my daughter in the UK and I used to live in Kenya and keep in touch with friends there. So it's very, very good.*

The outcome was she was able to keep in contact with her family and friends to see what was occurring in their lives. Distance as a divide was overcome and the ICT skill provided her with the means to access those she was not living with.

In example three, the learner describes how they benefitted from the personal, unhurried pace of the centre's lessons compared to attending formal structured ICT training programs:

> *Can you describe that difference to me how you feel coming here as compared to going to a formal class?*
>
> *Well it's much better having a one on one, you know, because anything you don't understand you can ask and the tutor sort of goes over it with you again*
>
> *Because of the one on one. And as I mentioned, anything I don't understand or, you know, Gary will show me again and I find that most helpful.*
>
> *In terms of their patience or their explanation?*
>
> *Yes.*
>
> *Specifically their explanation.*
>
> *Yes. And also very patient with old people like me.*

Whereas with a tutor here I can always say well hold it what does that mean, I'll get the proper explanation. I find it much better help then any book or any CD

Example four illustrates further how the tutors structure the lesson to take into account the needs of the older learner without condescending them:

I watch and I'm very relaxed, very relaxed. I find that they don't, none of the tutors inclined to get me excited or, I find that somebody my age, I can, they see that, they seem to know how to deal with people my age and they don't push it too far. They do it slowly for your benefit and you are, when you do get older, you are a bit slower. So you need somebody that's going to be like that with you.

Example five shows how teaching chat software to the older learner can provide a means to interact with those in other cultures:

Lately I've been chatting, I like chatting to people but on a private basis, you know, I've got a microphone on my system and I talk to people in Germany, mainly Germany which is great if it's only for the fact one hears the different dialects in different parts of the country. And I was put onto that here by Skylarkers through Paltalk, you know, which gave me an insight of the possibilities and joy of it that it can bring and the downfalls if it doesn't work you know which I had a problem with a fortnight ago and my microphone didn't work wouldn't read my text and yet when I shared it with another on ICQ it worked perfectly but this Paltalk it wouldn't.

Example six is illustrative of the types of the successful outcomes the tutors produced. This example is important because without access to the knowledge that ICT software can produce this result, the learner may have ceased seeking further ICT skills:

It encouraged me to keep going because you know when you took some of these photographs to look at them you think oh that's too far gone you know I'd love to be able to use but their just beyond repair but now I realise we can do something with them. I had one family photograph computer enhanced at Days Road. One photograph cost me one hundred and ten dollars. A hundred and ten dollars for one photograph. Magnificent job that was done on it. But I couldn't afford to do all of these that I got here today with that sort of price tag, I just couldn't afford to do it but what we've done with the help of the tutor here is restored some of these photographs, not the computer enhanced quality, but to a useable quality.

What these extracts from the research show are the practical daily tuition practices that are unique to Skylarkers. They serve two functions: ICT skills are taught according to solving the learner's unique problems and they allow access to technical knowledge and procedures they learner needs to complete the task. However, participation in society is enhanced because these skills are affordable taught and put in the context of the individual's need to access information and all that such skills can bring to the older adult's life. Recently, Godfrey and Johnson (2009) conducted a similar study which concluded that the older adult skilled in ICT

procedures become pro-active helpers and teachers themselves as they discover the potential of ICT knowledge to keep participating in a changing society. That in itself is healthy for society that can marginalise the older citizen and lock them out of democratic rights they enjoyed throughout their lives.

A Way of Solving the Democratic Problem of Overcoming the Digital Divide for Older Adults

This paper has suggested that the digital divide is democratic problem for older adults that can be practically addressed by affordable and relevant computer training. Helen Milner's (2007) comment began this paper by commenting how the digital divide prevents inclusion in a democratic society. Information on the internet, the functions available to facilitate access to needed information and the ability to keep in contact with society, family, friends and peers all contribute to continued participation when older adults can be excluded. The paper illustrated this by a brief case study of Skylarkers ICT training program of what is possible to educate older adults in needed skills. Democracy needs participation and electronic access to information is now a part of that process. Older adults can experience the digital divide severely; training, such as that offered by Skylarkers, can be that bridge to help them not lose touch with the ability to determine their own destiny in a changing world.

References

Australian Bureau of Statistics 2008, *4102.0 - Australian social trends, 2008 Internet use at home*. viewed 2 December 2008, <http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4102.0Chapter10002008>.

Australian Government Department of Broadband, Communications and the Digital Economy 2008, *Digital inclusion*. viewed 10 March 2009, <http://www.archive.dbcde.gov.au/2008/01/social_impacts_of_ict/digital_inclusionAccessed November 12, 2008>.

Bowman, H & Burden, T 2002, 'Ageing, community adult education, and training' *Education and Ageing*, vol. 17, no. 2 & 3, pp. 147-167.

Brabazon, T 2005, 'From Eleanor Rigby to Nannanet: the greying of the world wide web', *First Monday*, vol. 10, no. 12, viewed 12 December 2008, <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/1298/1218>.

BT Group 2004, *The Digital Divide in 2025*, BT Group, London, viewed 15 February 2009, < http://www.btplc.com/societyandenvironment/pdf/digitaldivide2025.pdf>.

Buckland, M 1991, 'Information as thing', *Journal of the American Society of Information Science*, vol. 42, no. 5, pp. 351-360.

Cameron, D, Marquis, R & Webster, B 2001, Older adults' perceptions, experiences and anxieties with emerging technologies. *Australasian Journal on Ageing*, vol. 20, no. 3, pp. 50-56.

Coco, A & Jolly, L 2003, 'Transformation starts at home: understanding ereadiness in a local community', in *Closing the digital divide: transforming regional economies and communities with information technology*, eds. M Marshall, T Taylor & X Yu, Praeger, Westport, Connecticut.

Coco, A & Short, P 2004, 'History and habit in the mobilization of ICT resources', *The Information Society*, vol. 20, pp. 39-51.

Cody, M, Dunn, D, Hoppin, S & Wendt, P 1999, 'Silver surfers: training and evaluating internet use among older adult learners', *Communication Education*, vol. 48, pp. 269-286.

Coulson, I 2000, 'Introduction: technological challenges for Gerontologists in the 21st Century', *Educational Gerontology*, vol. 26, pp. 307-315.

Cutler, S 2006, 'Technological change and aging', in *Handbook of aging and the social sciences*, eds. R Binstock & L George, Elsevier Academic Press, Sydney, Australia.

Czaja, S & Sharit, J 1998, 'Age differences in attitudes towards computers', *The Journals of Gerontology*, vol. 53B, no. 5, pp. 329-340.

DiMaggio, P, Hargittai, E, Russell, W & Robinson, J 2001, 'Social implications of the internet', *Annual Review of Sociology*, vol. 27, pp. 307-36.

Eamon, M 2004, 'Digital divide in computer access and use between poor and non-poor Youth', *Journal of Sociology and Social Welfare*, vol. 31, no. 2, pp. 91-112.

Emerson, R, Fretz, R & Shaw, L 1995, *Writing ethnographic fieldnotes*, The University of Chicago Press, Chicago.

Ewin, S, Thomas, J & Schiessl, J 2008, *CCi Digital Futures Report The Internet in Australia*, ARC Centre of Excellence for Creative Industries and Innovation, Melbourne, Australia, viewed 2 January 2009, <http://www.cci.edu.au/sites/default/files/pbrowne/AuDigitalFutures2008.pdf>.

Fallis, D 2004, 'Social epistemology and the digital divide', *Computing and Philosophy Conference*, eds. J Weckert & Y Al-Saggaf, Australian Computer Society Conferences in Research and Practice in Information Technology, Canberra, ACT.

Feeny, T, Dean J & Moore S 2006, *Technology Enabled Inclusion: Educating and empowering through Community Learning Centres*, The Smith Family, Sydney.

Firth, L & Mellor, D 2005, 'Broadband: benefits and problems', *Telecommunications Policy*, vol. 29, pp. 223-236.

Fresh Minds UK Online Centres, 2007, *Understanding Digital Inclusion- A Research Summary*, London, viewed 28 November 2008, <http://epractice.eu/files/documents/cases/311-1186658960.pdf>.

Gietzelt, D 2001, 'Computer and internet use among a group of Sydney seniors: a pilot study', *Australia Academic and Research Libraries*, vol. 32, no. 2, pp. 15-21.

Godfrey, M & Johnson O 2009, 'Digital circles of support: meeting the information needs of older people', *Computers in Human Behavior*, vol. 25, pp. 633-642.

Gross, E, Juvonen, J & Gable, S 2002, 'Internet use and well-being in adolescence' *Journal of Social Issues* vol. 58, no. 1, pp. 75-90.

Ito, M, O'Day, V, Adler, A, Linde, C and Mynatt, E 2001, 'Making a place for seniors on the net: SeniorNet, senior identity, and the digital divide', *Computers and Society*, vol. 31, no. 3, pp. 15-21.

Johnson, H 2003, 'Gender, technology, and the potential for social marginalization: Kuala Lumpur and Singapore', *Asian Journal of Women's Studies*, vol. 9, no. 1, pp. 60-79.

Knowles, M 1990, *The Adult learner a neglected species*, 4th edn, Gulf Publishing Company, Houston.

Lehnert, W 1998, *Internet 101 A Beginner's guide to the Internet and the World Wide Web*, Addison-Wesley, Massachussetts.

Langer, N 2002, 'Enhancing adult learning in aging studies', *Educational Gerontology*, vol. 28, pp. 895-904.

Lloyd, R, Given, J & Hellwig, O 2000, 'The Digital Divide: some explanations', Agenda, vol. 7, no. 4, pp. 345-358.

Loges, W & Jung J 2001, 'Exploring the digital divide internet connectedness and age', *Communication Research*, vol. 28, no. 4, pp 536-562.

Mayhorn, C, Stronge, A, Collins-McLaughlin, A & Rogers, W 2004, 'Older adults, computer training, and the systems approach: a formula for success', *Educational Gerontology*, vol. 30, pp. 185-203.

Nassimberi, M 2004, 'The Information Society in South Africa: From Global Origins to Local Vision', *South African Journal of Library and Information Science*, vol. 66 no. 4, viewed 13 December 2008, <http://cbdd.wsu.edu/kewlcontent/cdoutput/TR501/page8.htm>.

National Telecommunication and Information Administration (NTIA) 2004, *A Nation Online: Entering the Broadband Age*, United States Department of Commerce, Washington, viewed 1 March 2009, <http://www.ntia.doc.gov/reports/anol/NationOnlineBroadband04.pdf>.

Organisation for Economic Co-Operation and Development (OECD) 2001, *Understanding the Digital Divide*, Paris, France, viewed 4 March 2009, <http://www.oecd.org/dataoecd/38/57/1888451.pdf>.

Paul, G & Stegbauer C 2005, 'Is the digital divide between young and elderly people increasing?' *First Monday*, vol. 10, no. 10, viewed 23 December 2008, <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/1286/1206>.

Partridge, H 2007, Redefining the digital divide in the 'smart state'. Proceedings Australasian World Wide Web Conference, 13th conference in Coffs Harbour Australia, viewed 4 December 2008, <http://eprints.qut.edu.au/11231/1/11231a.pdf>.

Phipps, L 2000, 'New communication technologies: a conduit for social inclusion', *Information, Communication and Society*, vol. 3, no. 1, pp. 39-68.

Wijetunge P & Alahakoon U 2005, 'Empowering 8: the Information Literacy model developed in Sri Lanka to underpin changing education paradigms of Sri Lanka', *Sri Lanka Journal of Librarianship and Information Management*, vol. 1, no. 1, pp. 31-41.

Rothaermel, F & Sugiyama, S 2001, 'Virtual internet communities and commercial success: individual and community-level theory grounded in the atypical case of TimeZone.com', *Journal of Management* vol. 27, pp. 297-312.

Russell, H 2004, 'Older adult computer learners and the update imperative', *International Journal of Learning*, vol. 11, pp. 709-715.

Selwyn, N 2004, 'The information aged: a qualitative study of older adults' use of information and communications technology', *Journal of Aging Studies* vol. 18, pp. 369-384.

Selwyn, N, Gorard, S, Furlong, J & Madden, L 2003, 'Older adults' use of information and communications technology in everyday life', *Ageing and Society*, vol. 23, pp. 561-582.

Sherman, C 2003, 'Strategies for Reconnecting Communities: Creative Uses of ICTS for Social and Economic Transformation', in *Closing the digital divide: transforming regional economies and communities with information technology*, eds. M Marshall, T Taylor & X Yu, Praeger, Westport, Connecticut.

Skylarkers 2009, About Skylarkers, viewed 6 April 2009, <http://users.bigpond.net.au/skylark/about.htm>.

Stanberry, A & Azria-Evans, M 2001, 'Perspectives in teaching gerontology: Matching strategies with purpose and context', *Educational Gerontology*, vol. 27, pp. 1-18.

Strauss, A & Corbin, J 1998, *Basics of Qualitative Research*. 2nd edn, Sage Publications, California.

Swindell, R 2000, 'U3A without walls: using the internet to reach out to isolated older people', *Education and Ageing*, vol. 15, no. 2, pp. 251-263.

Tay, A 2001, 'Ageing and technology is there a slow lane on the information superhighway? Issues of exclusion and discrimination confronting older people in the information aged', *Australasian Journal on Ageing*, vol. 20, no. 3, Supplement 2, pp. 42-49.

Webopedia 2009, What is Software? A Word Definition, viewed 4 March 2009, <http://www.webopedia.com/TERM/s/software.html>.

White, J & Weatherall, A 2000, 'A grounded theory analysis of older adults and information technology', *Educational Gerontology*, vol. 26, pp. 371-386.

World Health Organization 1946, Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946. World Health Organisation, viewed 5 November 2008, <http://www.who.int/about/en>.