

# Influences and Experiences of Using Digital Devices in Laterlife

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## INTRODUCTION

An important dimension of understanding the lives of older adults is the historical period in which they are living. For the purposes of this paper older adults are defined as aged 70+ years of age. The current cohort of older adults living in Australia parallels the growth of affordable and accessible digital technological devices. The ubiquity and pervasiveness of digital technologies means that such technologies have become "central to our lives ... and profoundly affect how we live and how society functions" (Mauger, 2009, p. 5). This is a period in history where a generation of older adults, who have not grown up with digital technology and who may not have used digital technology in their working lives, are now faced with a technology-dense world in which most communication and entertainment devices are digital.

As a result, it is reasonable to assume that with the digitisation of devices, people in laterlife will be faced with the need to learn new ways of using, operating, and managing the appliances and devices that form part of their daily lives. Laterlife is a period when the general population in developed countries over the age of 70 is not in full-time employment. As increasing numbers of older adults are encouraged to remain independent and in their own homes they will rely on digital technologies for assistance, entertainment, communication, support, security and health care. There may also be a "profound interaction between the elder's community and the ICT applications which are directed towards them" (Loeb, 2012). In order to remain autonomous and functionally independent, older people will have the need to use technological applications and digital devices (Slegers, van Boxtel & Jolles, 2007).

Given the pervasiveness of technology and the speed at which new technology equipment comes onto the market, learning to use, and using, new devices will have important advantages for older Australians. Through the use of computers and the internet and access to online services and information those in laterlife may experience a higher quality of life (Liu & Park, 2003). For instance, Russell (2005) found that older Australians who regularly used technology with a sense of self-efficacy experienced a sense of independence and autonomy. Other researchers have postulated that this increased level of independent functioning may also provide older persons with an improved sense of well-being (Hernandez-Encuentra, Pousada & Gomez-Zuniga, 2009).

It is therefore suggested that increased technology use will result in increased social cohesion (reduce marginalisation and facilitate meaningful participation and engagement with the community). The interplay between the benefits of information and communication technologies (ICT) and the strengthened community may improve the well-being for older Australians who may be at risk of becoming isolated or house-bound, even as the post-retirement period may be offering fewer opportunities for social interaction, meaningful participation in the community and support.

Increasingly, government bodies and financial institutions in Australia are phasing out personal interview sources of information, and relying on online information to be accessed. For older adults the need for functional independence and political empowerment may be dependent on their use and familiarity with digital technologies. Access to the technologies are available from many sources, such as local libraries, government offices and community centres, however "access in itself is insufficient - rather it is what is and can be done with the access that makes ICT meaningful" (Gurstein, 2007, pp. 12-13). Further there exists an imperative for older Australians to become familiar with digital technologies as entertainment systems (an important aspect of life after retirement) become digital. The current research seeks to contribute to the body of knowledge that links well-being and greater and more meaningful participation in community in laterlife with the use of digital technologies.

## LITERATURE REVIEW

### Imperatives and challenges of a digital technology-dense lifeworld

The needs of older adults to adapt to changes in order to actively participate in their everyday lives, invoke pressures as well as imperatives. Older adults experience one such an imperative in learning how to use technology in their daily lives (Russell, 2007). They have also been shown to be interested and willing to use new technologies (Czaja & Lee, 2008). In the context of their environment, older adults are faced with learning to use a range of

digital devices in order to realise the opportunities and enjoyment that a technology-dense society offers and further, to experience the sense of empowerment, control and choice, together with an improved sense of well-being, that comes with technology use (Center for Health Promotion, 2008). The subsequent sense of social inclusion, community participation and enablement produced is, however, balanced by the barriers that exist in learning to use and using digital technologies. These barriers, including a lack of familiarity and a lack of training with technology, are thought to create frustrations for the older population (Czaja & Lee). Such skills as dexterity with small digital devices, process skills in an unfamiliar technological environment, conceptual skills in using different platforms and understanding the jargon, all contribute to the level of complexity for older adults in learning to use technologies.

Russell's (2005, 2007, 2008) work confirmed these aspects of the lived experience of Australian older adult technology users. In a study of laterlife computer learners, she found that participants experienced a sense of agency in which learning to use a computer was seen as an exciting opportunity to enhance their lives, thus positioning the self to determine the future and to further an understanding of their lived experiences (Russell, 2005, p. 301; 2007, p. 378; 2008, p. 221). Further to this participants were able to meaningfully participate in their communities enhancing their sense of well-being and being valued as a vital part of the community. However, the need to learn to use digital devices was challenged by the unfamiliarity these older adults had with the technology. Technological advances and rapid obsolescence result in totally new ways of doing things in everyday living and this may present older adults with the challenge of facing ongoing learning that is significantly unfamiliar to them. Due to the complexity of the new technologies, older people may position themselves at a disadvantage by avoiding the use of technology particularly in relation to younger people whose uptake of new technology is more accelerated (European Commission, 2007).

In fact data indicate that older adults, compared with younger people, have more difficulty in learning to use and operate current technologies (Czaja et al., 2006). These learning difficulties have been summarised by Czaja and colleagues as "learning new skills, new ways of performing familiar skills, new procedural knowledge, and a new lexicon" (Czaja et al., p. 348).

Whether they regard technology positively or negatively, older adults accept and adopt technology (knowing there may be barriers to their learning) if it has a perceived benefit for them, and if it enables them to fulfill an aspiration (Czaja & Lee, 2007). Any investment of energy for an activity or innovation that does not yield a benefit is considered a waste, but when there is an outcome incentive to adopt the technology older adults are prepared to spend the time to learn and to overcome potentially significant difficulties (Melenhorst, Rogers & Bouwhuis, 2006). In a British study of mobile phone use in the over 75 age group, for example, it was found that confidence with technology was related to familiarity of use, that older people may use their mobile phones differently to younger people and that perceived need for the device was important (McCreadie, 2005).

Another study found that usefulness and reliability were more important factors [than a perceived need] in predicting the use of technology in older adults (Czaja et al., 2006). It is also thought that the level of the user's capability was a contributing factor in determining technology use (Selwyn et al., 2003). Research suggests that older people are not, in fact, 'technophobic' and are both willing and able to use technology (Czaja & Lee, 2007). Further research is required to investigate the current situation with more sophisticated digital technologies with a greater number of features and functions than in the past. It would be interesting to investigate the experience of older adults in learning to use and using more recent digital technologies. However, older adults may not spend the time or the money on digital products that they perceive to be of no use or relevance to them, as information and communication technologies "are not universally attractive to, or universally needed by, older adults" (Selwyn, 2004, p. 382). There may be more likelihood of older adults using only those technologies that enable them to undertake a familiar activity in a new [digital] medium (Seals et al., 2008).

The nature of older adult experience with technology, which includes the availability of support and the perceived usefulness of technology applications are important "determinants of attitudes, confidence and comfort using technology and ultimately technology adoption" (Czaja & Lee, 2007, p. 343).

## Access to digital technologies is just the beginning

There is a need for designers to take into account the needs, preferences and abilities of older adults in designing digital devices, as the features and functions of devices and applications are not designed with older users in mind and lack features essential for some older adults (Selwyn et al., 2003). The most immediate problems for the older adult population in using digital devices are in the physical design and the language used (Czaja et al., 2006). For instance, they may be more familiar with larger keys, different keypads and bigger operational devices. Older people can become frustrated and irritated with devices and technologies that are difficult to manipulate and see and can also be disadvantaged by the language used to explain technologies (The Senior Project, 2008). In addition, it has been suggested that older people feel particularly frustrated when it comes to the information given to them about technologies, as it may be in a form they cannot understand or is not clear in meaning to them (The Senior Project).

It is important that the experience of being older is considered an essential dimension of the adoption and use of technology devices and appliances. There is a real need for older people

to be supported in their adoption of the new technologies. In many cases, such as in the introduction of digital TV, technical and ongoing support is an essential part of the use of the new technology for older people. Older people tend to need more practice, more on-hand support in trouble-shooting and re-enforcement of procedural knowledge (Czaja et al., 2006; Russell, 2005; Seals et al., 2008). In general, older adults would need technical and professional assistance and those with impairments would need even greater professional assistance with the use of technologies designed to improve their quality of life and their ability to interact with their communities and environments (Mahmood et al., 2008).

There is also the question of the influences on older adults in learning to use digital devices. In a Californian study of 292 participants with an average age of 80 years Cody et al. (1999) found that those who were actively engaged in the challenge of learning new technologies were those with higher levels of social support, more frequent contact with others and with positive attitudes towards ageing. It would be interesting to investigate whether this is still the case in 2014. Having access to printers and scanners and entertainment technologies in the homes of their children and grandchildren increased older adults' familiarity with digital devices (Selwyn et al., 2003). These close family members also provided older adults with support and assistance in using digital devices and appliances (Selwyn, 2004; Selwyn et al.). Family and significant others influenced Australian laterlife computer users with encouragement and support, especially through the gift of a computer (Russell, 2005).

Given that decisions regarding health and safety in laterlife are often centred within the family, it would seem logical that adult children would be influential in the acceptance and adoption of technologies designed to improve or increase health and safety in the home: "As parents become elderly and frail, their children play an increasingly prominent role in advising and decision-making" (Coughlin et al., 2009, p. 2). The authors of this research make the point that adult children of the elderly are from a generation that has used technology to their advantage 'in the home, workplace and vehicle' and are more likely than their parents to appreciate the benefits of technology (Coughlin et al., p. 2). However, Coughlin et al. argue that "Both parents and adult children have a shared interest in independence and well-being" (p. 2). For older people this interest may be about empowerment, choice and control in their lives. For the younger generation it may be concern for the safety, security and quality of life for their elders.

Older adults often express anxiety about their ability to use [technology] systems and express less self-confidence in their ability to use them successfully (Czaja & Lee, 2007). There are two influences in this respect within the affective domain. One is associated with why older adults are using the technology (for example, because of ill-health, mobility issues, greater communication with friends and relatives, functional independence) (Russell, 2011, pp. 107-108) and the second is the anxiety they may experience from using technology, which is related to their notions of self-efficacy and their ability to use the technology competently (Czaja et al., 2006, p. 333).

It is thus important to understand the difficulties and barriers experienced by older adults so that their uses of technology can be successful and fulfilling (Czaja et al., 2006). Hence, we would argue for a qualitative investigation of the experiences of older adults in adopting and using digital devices that is grounded in a phenomenological interpretation. The study reported in this paper builds upon the existing body of literature, as outlined above, through exploration of the influences and purposes for the uptake of various digital devices, by a group of older Australians.

## RESEARCH DESIGN

The research question for the study was:

*What are the factors which influence the uptake of various digital devices in the daily lives and experiences of older Australian adults?*

The research examined some of the factors which influence uptake of various digital devices and explored participants' learning experiences in their adoption of the technologies. This paper focuses specifically on the digital tools that a group of older Australians employed for communication, entertainment and leisure activities to foster more meaningful participation in community. The paper also explores the influences and purposes of the digital devices used.

A snowball approach was used to locate participants whereby the researchers commenced with a person known to them, and who subsequently recommended a peer to be interviewed and so on, until the target number of participants had been reached.

Qualitative interviews were conducted in Sydney, Australia with 13 adults aged 70 to 83 years, with an average age of 74 years. This group included five females and eight males, with two couples (Anne/Danny and Henk/Sunny) (see Table 1 for details).

The interviews were semi-structured in design and took place in the participants' homes, with each digitally recorded interview session lasting 1-2 hours in duration. Conducting the interviews in the homes of the participants enabled a better understanding of their experiences by listening to first-hand accounts of how they engaged with technologies on a day-to-day basis (Hammersley & Atkinson, 1983). The audio recordings of the interviews were transcribed for analysis and interpretation.

Human research ethics clearance was granted by the University of Technology, Sydney and informed consent was obtained from each participant prior to engaging in the interviews. In

this paper, participants are referred to by a pseudonym to protect their identities (see Table 1).

Name	Age	Digital devices and software used
Anne	70	Digital camera, mp3 player, mobile phone (for texting, making and receiving calls), Bluetooth, computer, internet and email
Chris	72	Computer, internet and email
Colin	78	Digital camera, TV, DVD player, computer, internet and email
Cyd	74	Digital sewing machine, computer, internet and email
Danny	71	DVD, computer, internet and email
Dasha	75	DVD, computer, internet and email
Henk	81	DVD, car with mobile technology
Kevin	81	TV, DVD, weather station, mobile phone (for texting, making and receiving calls), computer, internet and email
Merv	72	Digital camera, mobile phone (for texting, making and receiving calls), DVD, pain monitor, computer, internet and email
Peter	70	Digital camera, Skype, computer, internet and email
Sunny	83	Digital camera, mobile phone for texting, making and receiving calls), (computer
Tess	70	Digital camera, mp3 player, mobile phone (for texting, making and receiving calls), computer, internet and email
Warren	73	Digital camera, DVD, computer, internet, online puzzles and email

**Table 1: Participant Details and their Technology Use**

## DATA ANALYSIS

Data analysis was influenced by the qualitative research perspective, based on the construction of interpretations (Denzin & Lincoln, 2000). These interpretations were focused on understanding how the "everyday, intersubjective world (the life world) is constituted" (Schwandt, 2000, p. 192) and contextualised by the participants' lived world (Kvale, 1996).

The researchers applied thematic analysis to the data, whereby themes emerged directly from the data (Willis, 2006). Themes are recurring messages that provide guides that can control and order research and writing (Eisner, 1998; van Manen, 1997). Further, themes can bring together disparate data so that meaning is articulated and made explicit. In the first instance themes were independently generated from the data from the perspective of each researcher. The researchers then came together and, through a process of critical collaborative reflection and reference to the literature, identified common themes that were capable of capturing the experiences of the participants. The design and formulation of the thematic framework critically involved both logical and intuitive thinking (Ritchie & Spencer, 2002). This exploration of emerging themes, which was informed by the literature and guided by the researchers' understanding, formed the basis for the "developmental process of inquiry and analysis" (Goodfellow, 1997, p. 72). Finally, the themes formed meaningful characteristics, as they were interrogated in terms of the purpose of the study and the research question (Kvale, 1996).

## FINDINGS AND DISCUSSION

### Influences and Purposes in Adopting and Using Digital Devices

#### *Family and generational*

A number of participants in the study were directly influenced in their uptake of digital devices by younger family members, such as adult offspring or grandchildren. Specific devices became the topic of conversation between the generations, with younger family members providing anecdotes of their own uses of the technology. The younger members thus demonstrated their familiarity with the use of the technology and the range of functions available. In some cases digital devices were then passed on by the younger member to the older person when a new device was purchased. Learning and technical support were also offered by the younger members and their arguments for the uptake of the devices by the older family members were convincing and often difficult to ignore. This suggests a shared concern of the generations for the safety and well-being of older adults. The influence of close family members on older adult technology adoption has also been suggested previously by Coughlin et al. (2009), Russell (2005), Selwyn (2004) and Selwyn et al. (2003). The older adults in the current study also appreciated the additional benefit of more frequent contact with their offspring and grandchildren that using their digital devices gave them.

Tess enjoyed the support and encouragement of her son (Jack) in adopting and using digital devices. Jack assisted Tess in setting up and using a range of digital devices, such as a computer, mobile phone and mp3 player. Tess was able to undertake a number of tasks on

the internet after being shown by Jack. She used the internet to buy and sell consumer goods, to book travel tickets and to send and receive email. She used the mobile phone for voice calls and text messaging and had an iPod for music and learning a language. It was interesting that Tess did not describe her knowledge of using the devices as 'learning'. Tess placed a lot of trust in Jack's advice and usually followed his guidance. When recently replacing a computer, Tess talked of Jack's influence in purchasing a new printer to go with the computer:

*He did give me his old printer but then he said, "Don't worry about putting the old printer on, just go and buy a new printer, it's probably got a USB thing and you can just plug it straight in yourself". So that's what I am going to do (Tess)*

In this study, the older adults did not necessarily need the device they eventually used but they could see a use for it, such as Peter setting up a webcam and installing Skype so that he and his wife could be a part of the grandchild experience. Peter was prepared to spend money and time installing the software and hardware and to overcome some subsequent technical difficulties. As suggested by Czaja & Lee (2007), Czaja et al. (2006), and Melenhorst et al. (2006) the benefits of the technology use ultimately outweighed the money spent, the time expended and the trouble experienced. Peter and his wife lived some distance from their grandchild and wanted to see her growing up and to share in her milestones. They wanted more than to be able to view digital photos of their granddaughter; a system their son had previously set up for them.

*We've just had a granddaughter, our first and she's seven months old. My wife likes to go down and see her often. We can see the baby here [on the digital image] but we wanted the two-way thing, without having to drive all the way to their place (Peter)*

With the support and care and concern shown by their son, Peter and his wife were able to experience confidence and comfort in using the interactive technology (Czaja & Lee, 2007).

### *Mobile phone use*

The mobile phone as a communication tool that could be used anywhere and at any time was widely reported. Participants said they used their mobile phone to contact younger members of their family at any time. These older adults believed that the younger ones would not retrieve their landline messages regularly, and were more likely to have their mobile phone with them at all times and would frequently check their mobile phone for messages:

*... you can't find them home if you want to talk on the phone ... you don't know what they're doing or where they're going ... but you get instant [or] within an hour contact [with the mobile and texting] (Sunny)*

With the use of a mobile phone, these older people also had the advantage of being contactable even when they were not at home. None of the participants used the mobile phone for access to the internet.

Kevin used his mobile phone mainly for text messaging and rarely for voice communication.

*...it's all text messages to my kids, very little for calls (Kevin)*

Kevin was the organiser for bowls for his local bowling club and found that he was restricted to the home because he was receiving telephone enquiries and bookings during days when he would rather be outdoors. Subsequently the club provided him with a mobile phone so that he could be independent and take calls away from home. Once he became familiar with the mobile phone he used it for text messaging.

Tess also used the phone for convenience and communication such as being able to meet the train her son was on when he visited her.

*If I have to pick him up from the railway station he'll ring me [from his mobile] when he leaves the train station in Sydney, tell me what train he's on and when it's going to be at the station so I can pick him up (Tess)*

Tess wondered "how people got by without them for that kind of thing" such as arranging to meet someone or picking someone up from a travel terminal. Tess also used the mobile phone when picking up family from the airport. She recalled the times when she would park the car at a take-away café near the airport and wait for their call. With the use of mobile phones Tess was able to remain in contact with her incoming visitors, so that when she arrived at the airport to pick them up, they were waiting for her and there was no need for parking fees. Tess used technology to adapt to the current and modern way of life so that her lifeworld encompassed meaningful participation in the life of others.

Tess also used the mobile phone while overseas with family members. Having a mobile phone gave her independence to "do her own thing". She was able to arrange to meet with other members of her family at a place and time that was suitable:

*We didn't always do things together but we used our mobile phones just as communication between the two phones. They'd ring and say they were half an hour away and then we would make a place to meet. That always worked out, particularly when we were in London (Tess)*

Merv mainly used his mobile phone to leave messages for his wife and live-in granddaughter regarding time of anticipated arrival at home. There was a mutual understanding between the three family members that they would use the mobile phone so that each person would know where the other two were.

The more frequent communication between the older adults in this study and their younger family members which occurred with mobile phone use highlights the need for communication with each other at all times, and not just when both are at home. It provides an example of the autonomy, functional independence and better quality of life that technology can afford older adults (Hernandez-Encuentra et al., 2009; Liu & Park, 2003; Russell, 2005; Slegers et al., 2007).

The participants in this study used technology for functional purposes as opposed to aesthetics or 'being modern'. One such functional purpose was for safety and security, especially when coming home alone at night, or in cases of mechanical difficulties:

*We use the mobile phone if we are out in the car and we want to contact someone that we are going to see or if we have a breakdown or problems (Sunny and Henk)*

Tess also used the mobile phone for safety purposes, such as when she was in the car or away from home. Sunny, Henk and Tess believed that the mobile phone would be handy to make a quick call to let someone know what had happened, as using pay phones such as in telephone boxes was considered impractical in the event of a car breakdown. Hence, these older adults perceived the usefulness and relevance of using digital devices (Czaja et al., 2006; McCreadie, 2005; Selwyn, 2004).

## Technical Support and Overcoming Barriers

Some older adults in the study did not attempt to solve technical problems when faced with difficulties, preferring instead to take the problem to a neighbour, family member or friend. After using trial and error they held out for the person they trusted and relied upon to fix their technical problems. For these older adults, neighbours and local tradespeople also provided a unique opportunity to establish and affirm a sense of community. This interaction and interdependence between the groups may, in turn, have helped foster a greater possibility of social cohesion.

Merv was very keen to learn how to use his new mobile phone for voice-to-text messaging. At the time of the interview he was not yet able to use this function. Merv was looking forward to being able to "talk to the phone and it will write it and then I can just send it off". Merv experienced great difficulty in creating text messages because of a literacy problem. It has been suggested that problems and disabilities of this nature may create greater obstacles for older people in learning to use digital devices (Czaja & Lee, 2008; Czaja et al., 2006; European Commission, 2007; Mahmood et al., 2008; Selwyn et al., 2003). Merv said: "my spelling is absolutely atrocious", however, he was able to use the predictive text function on his previous mobile phones and found that very helpful for common words:

*When you start to write something it gives you suggestions and you don't have to [spell] so I've found that a lot easier (Merv)*

A number of participants in the study alluded to making mistakes that resulted in a financial cost (such as high payment for mobile phone usage and being charged for going beyond their download limit on the internet) however they accepted that they had learned lessons the hard way. These mistakes did not interfere with their sense of self-efficacy, as they appeared to move on without suffering a negative impact. These older adults continued to use a trial and error strategy to progress in their learning and use of their digital devices. For example, once Colin came to the realisation that he would not damage his digital devices, he felt confident in exploring their various functions.

Older adult participants used constant practice and repeated routines to establish habits, so that they would be able to replicate the processes and procedures necessary to carry out the task at hand. Danny and Anne believed that need and frequency, that is, regular use, built confidence and skills. Anne was very proud of her achievements with her computer, digital camera, mp3 player and mobile phone. She set herself goals and was always striving to achieve a little more each time she completed a task.

The challenge of learning to operate and understand their devices was motivational for some of the participants in this study, who leapt at the opportunity to overcome obstacles.

*I don't like anything beating me. I like a challenge. If it's a bit hard, I just like to keep going until I get it right. I hate to think that it's beaten me (Cyd)*

*I like trying new things. I've always been interested in trying new things. I think it is important as you age to keep your mind active; to have interests and things like that. If we [older people] learn new things it builds your self-esteem (Chris)*

One common problem for the older adult participants in relation to their use of digital devices concerned decisions and management of telecommunications devices. In particular, participants told of frustrating and protracted discussions with telecommunication companies and Internet Service Providers (ISPs).

Tess was bothered, in particular, by the inability of telephone help systems to cater for a proper conversation:

*I just get aggro with BigPond®, [an Australian ISP] where it's basically just say yes and no. I don't know how the hell they're going to fix the problem. It's pointless speaking to those yes and no sort of operators. The yes or no bizzo drives me crazy. My son says you're better off just to push to speak to someone in charge (Tess)*

The Senior Project (2008) suggested that older people were particularly frustrated by information given to them about technologies. Their difficulty was mainly related to the jargon and the assumption that if a person requested a particular payment plan, they knew and understood all the terms and conditions and had read and understood the fine print. For an older person, listening to a telecommunications salesperson going through their spiel was likened to listening to a foreign language.

On two separate occasions Danny experienced technical difficulties when upgrading from one system and plan to another, as he was not aware of the assumed knowledge on the part of the ISP. Danny was ignorant of the effects of upgrading his system and the requisite additional software and/or hardware required, and this caused him much frustration. He subsequently employed a technician, at his own cost, to investigate the problems he was having.

Dasha also described two experiences related to technical problems:

*If I ring Microsoft and say that I am having such and such a problem and I don't do it very often because I know what the answer will be. The invariable question is, "What program are you using?" And I haven't got a clue. I just can't remember. And I don't do it often enough to write it down. When I ring my email server [ISP] for information, they'll say, "What's on your screen now?" and I'll say, "Nothing because I am using the only line that we have". They don't understand that. To do that properly you need two lines, for anybody to really get into it, but we can't afford two lines (Dasha)*

Sunny said that they had installed the internet on the landline but had it taken off after a couple of months because when she was on the internet, no-one could ring her and this became a problem. In fact she described the atmosphere at home as being "tense" while the internet was on. She did not consider it was important enough to have the internet on at home to go to the extra expense of installing broadband. Sunny now goes to the local library when she wants to use the internet. Sunny and Henk live in a large city with many opportunities for accessing public computers with internet facilities.

Participants in the current study experienced learning and technical difficulties in their quest to master digital devices. As has been stated by a number of authors such as Czaja et al. (2006), European Commission (2007), Russell (2005), Seals et al. (2008) and The Senior Project (2008), older adults experience greater difficulty than younger people in learning to use digital devices. In many instances, where the device was used to enhance a relationship with a younger family member, the older adults in this study looked to that family member to assist with using the functions of the device, as has also been suggested previously (Selwyn, 2004; Selwyn et al., 2003).

## Community as mediators

Sunny and Henk referred to the neighbourhood (people in their street and suburb) as being interested and forthcoming with technical assistance. They found that in most instances the close geographical community initiated contact with them with the specific purpose of supporting and assisting them in their use of digital devices. Mutuality existed within the neighbourhood by Sunny and Henk being able to provide support and assistance to their neighbours in other life areas.

As mentioned previously in this paper in the sections 'Influences and Purposes in Adopting and Using Digital Devices' and 'Technical Support and Overcoming Barriers' the participants in the current study were strongly influenced by the advice and guidance given by their adult children and grandchildren. In the case of Sunny and Henk their extended family of siblings, nieces and nephews were instrumental in assisting them to overcome barriers. As found by Gardner, Netherland and Kamber (2012), in the past Sunny had experienced the loss of identity in family gatherings as they discussed various technologies. Sunny found that with the encouragement and support of the family she was able to be included in conversations and no longer had a sense of exclusion. Sunny was able to use technology terminology that provided her with a legitimate voice in discussions. Sunny re-placed herself in a space where relationships and discourses allowed her to be included. Her sense of value and place within the extended family were reinstated and assisted her in a sense of pride and accomplishment. It could also be suggested that the technology-helpful members of the family experienced a sense of pride and place within the extended family by the very nature of giving. The advantage for all participants was a strengthening of the sense of belongingness and the recognition that "membership in a human family or community is an artefact, something that has to be made, not biologically given" (Bateson, 1994, p. 62).

In a study to investigate the value of online communities for Australian seniors Burmeister (2012) found that belonging to a community of peers was important to the participants. In the current study peers were represented as a community of learners for Cyd, Danny, Merv and Sunny. Cyd, Merv and Sunny belonged to a non-profit organisation designed to familiarise older adults with current technologies. Classes were facilitated by non-professional volunteers who had previously attended beginner classes and wanted to give back to the older adult technology learning community. There was a strong sense of belonging to a learning community that reaped benefits for tutors and learners alike.

Danny regularly met with a group of retired peers from the same profession. They met to socialise and to support and advise one another in their learning of specific technology devices. Other participants in the study (Anne, Chris, Colin, Danny, Kevin, Peter, Tess and Warren) belonged to a leisure group that met frequently for social and sporting activities, designed for older adults. They discussed digital devices when they met and found the group offered guidance and the sharing of experiences. All these examples of learning support communities enriched the experience for participants and were vital in maintaining a strong sense of mutuality (i.e. members of the community had a sense of equality in which they were equally able to contribute and to receive advice, support and encouragement). The sense of meaningful participation and their ability to feel socially connected to others in the community would be reinforced and strengthened as a result of being a member of a community.

The sense of community was grounded by the stable foundation of family, who were essential to the purchase and use of digital devices and to enrichment in the relationships with family. This aspect of the experience of using technologies was also found in other research studies involving older adults (Bunz, 2012; Chen, Wen & Xie, 2012; Feist, Parker & Hugo, 2012; Gardner, Netherland & Kamber, 2012; Linton, 2012; Neves & Amaro, 2012).

The participants in the study each created a unique community to mediate, support and encourage them in their use of digital devices according to their individual needs. This unique combination of supportive others may also be likened to what Burmeister, Foskey, Hazzlewood and Lewis (2012) referred to as "communities of individualized networks" (Community section, para. 1).

## SUMMARY

The findings indicate that there should be a discussion about whether older people believe they are capable of using today's digital devices and appliances, whether they are able to control them and whether they are able to manipulate small components. A proportion of older adults may have some degeneration of sight and/or hearing, loss of fine motor skills and/or cognitive changes that contribute to their lack of confidence in using digital devices. This is most obviously seen in their difficulty with operating compact modern digital devices (such as mobile phones and cameras with small keypads) and with their need to obtain guidance from persons who pace their instruction according to the needs of the older person.

The participants in the current study appeared to have positive attitudes to aging with an eye on the future, such as learning a language for future travel and practising words and music for choir performances. They acquired a sense of becoming by achieving personal goals, continuing to grow and develop, and to use digital technologies to their advantage. In adapting to change, operating and understanding basic and essential digital devices, they were able to continue to receive vital communication, take advantage of up-to-date entertainment and use technology for personal organisation and efficiency.

Becoming capable with digital technologies, for these older adults, was about being an independent and autonomous being within the context of an aging lifeworld and the converse, not becoming dependent. It was also about enjoyment of life and the ability to make decisions and to use digital devices to provide autonomy within their lifeworld; and therefore to control their environment and to make choices about their quality of life. For these older adults it was also about making informed decisions about their personal and living circumstances as they entered an age where dependency and loss of privacy and dignity could seem the only solution. They were curious to become informed about something, they had a sense of wonder that provided them with the opportunity to learn and grow in new directions. The participants appeared to gain an enhanced sense of empowerment and quality of life betterment as a result of learning to use and using digital technologies. They made decisions informed by modern ways of doing things.

The older adults in the study used technology to enhance relationships within the family and to feel a sense of pride (in grandchildren believing that their grandparents were 'with it'). So this enhancement and strengthening of relationships contributed to a sense of well-being, of being valued by loved ones and engaging in meaningful and active participation within their network of communities. All participants quoted their sons and daughters with great pride.

The experiences of the participants were not just one person's experience. They encompassed family, friends, peers, neighbours and the broader community. The experiences were a social phenomenon in which both the individual and the community benefited (Beatty & Wolf, 1996; Findsen, 2005; Jarvis, 1987; Mezirow, 1991; Tough, 1979). Participants described instances of mutual obligation, belongingness, sharing, and support. There appeared to be mutual confidence in the spontaneous willingness of others to provide support and assistance. The participants and the individual members of their



communities exchanged experiences and created many opportunities for empathy around the use of digital devices. As stated by Eliot:

*What life have you if you have not life together?  
There is no life that is not community.*

T. S. Eliot  
Choruses from 'the rock'

## CONCLUSION

Technology alters the way we relate to each other and the way we interact with our environment, and it has the potential to affect the well-being and quality of life of those in laterlife. The next decade is a critical time in ensuring that the older population is provided with opportunities and support to use technologies that will enable them to maintain their dignity and integrity. This is a pivotal period in our history for those aged over 70 years. This cohort (70 years+) may not have used technology in their working lives and as a community is potentially the most disadvantaged by the technology-dense world of the 21st century. There is the potential for these older adults to become increasingly strongly opposed to technology; where they will go to great lengths to avoid using technology or to be seen to be a Luddite. Although providers may 'sell' digital devices as 'making life easier', unless older adults are able to confidently use the functions of their devices, these devices are not necessarily 'making life easier'. In fact they may be making life harder for older adults. They may be convinced by the sales person of the benefits of the device they are buying, but when they get home and they cannot make any sense of the device, or the instructions or how to install it, the device sits idle.

Some older adults will require support for using basic domestic digital devices (for example, radio, television, home entertainment systems) and basic household appliances as well as health-related monitoring systems and home security systems. The inability to use such technological devices may not just be a day-to-day inconvenience but may also impact on quality of life and safety.

Given the importance of technology and the rapid speed at which new technological equipment comes on to the market, learning to use new devices will have important advantages for those in laterlife. Learning may contribute to improved cognitive functioning and also assist older people to feel more part of mainstream society, with active and meaningful engagement and participation in the community of choice.

Findings from this research showed that these older adult participants believed in the value of keeping up-to-date with technology. They believed that the outcomes from learning to use digital devices would lead to greater opportunity for active and meaningful involvement in their lifeworld. Without technological skills and knowledge they believed they would be ignored and relegated to a peripheral position as observers in their lifeworld. Their purposes and expectations in undertaking learning about technology were situated in the changing nature of the world and a desire to continue to live their lives meaningfully, as participants and not spectators.

It is in the general interest of governments, policy makers, service providers, aged-care practitioners, technology manufacturers and the community as a whole to acknowledge the road ahead for a technology-dense society. As a community we are faced with understanding the experience of people in laterlife and their needs in relation to the use of digital appliances. An approach to understanding this experience supports an interdisciplinary collaborative approach to aging well in the community. Initiatives and strategies in relation to encouraging older adults to take-up technology and confidently use household and leisure appliances and digital devices will benefit both the individual and the community.

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## REFERENCES

- Bateson, M. C. (1994). *Peripheral visions: Learning along the way*. New York:HarperCollins.
- Beatty, P. T., & Wolf, M. A. (1996). *Connecting with older adults: Educational responses and approaches*. Malabar, FL: Krieger Publishing.
- Bunz, U. (2012). Revisited: Communication Media Use in the Grandparent/Grandchild Relationship. *The Journal of Community Informatics*, 8(1). Retrieved from <http://ci-journal.net/index.php/ciej/article/view/755>
- Burmeister, O. (2012). What Seniors Value About Online Community. *The Journal of Community Informatics*, 8(1). Retrieved from <http://ci-journal.net/index.php/ciej/article/view/545>
- Burmeister, O., Foskey, R., Hazzlewood, J. & Lewis, R.V. (2012). Sustaining online communities involving seniors. *The Journal of Community Informatics*, 8(1). Retrieved

from <http://ci-journal.net/index.php/ciej/article/view/554>

Center for Health Promotion. (2008). *University of Toronto*. Retrieved from <http://www.utoronto.ca/qol/concepts.htm>

Chen, Y., Wen, J., & Xie, B. (2012). I communicate with my children in the game: Mediated intergenerational Family Relationships through a Social Networking Game. *The Journal of Community Informatics*, 8(1). Retrieved from <http://ci-journal.net/index.php/ciej/article/view/802>

Cody, M. J., Dunn, D., Hoppin, S. & Wendt, P. (1999). Silver Surfers: Training and Evaluating Internet Use Among Older Adult Learners. *Communication Education*, 48(4), 269-286.

Coughlin, J. F., Lau, J., D'Ambrosio, L. & Reimer, B. (2009). *Adult Children's Perception of Intelligent Home Systems in the Care of Elderly Parents*, Retrieved from [http://web.mit.edu/coughlin/Public/Publications/Coughlin,Lau,Dambrosio,Reimer\\_Jan\\_31\\_iCreate.pdf](http://web.mit.edu/coughlin/Public/Publications/Coughlin,Lau,Dambrosio,Reimer_Jan_31_iCreate.pdf)

Czaja, S. J., Charness, N., Fisk, A. D., Hertzog, C., Nair, S.N., Rogers, W. A. & Sharit, J. (2006). Factors Predicting the Use of Technology: Findings from the Center for Research and Education on Aging and Technology. *Psychology and Aging*, 21(2), 333-352.

Czaja, S. J. & Lee, C. C. (2007). The Impact of Aging on Access to Technology. *Universal Access in the Information Age*, 5(4), 341-349.

Czaja, S.J. & Lee, C.C. (2008) Information Technology and Older Adults. In J. Jacko & A. Sears (Eds.), *The Human-Computer Interaction Handbook* (2nd ed) pp. 777-792. New York : Lawrence Erlbaum and Associates.

Denzin, N. K. & Lincoln, Y. S., (2000). The Discipline and Practice of Qualitative Research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of Qualitative Research* (2nd ed) pp. 1-28. Thousand Oaks, CA: Sage.

Eisner, E. W. (1998). *The Enlightened Eye: Qualitative Inquiry and the Enhancement of Educational Practice*. Saddle River: Prentice Hall.

Eliot, T. S. (1969). *The complete poems and plays of TS Eliot*. London: Faber and Faber.

European Commission. (2007). *Ageing Well in the Information Society*. Retrieved from [http://ec.europa.eu/information\\_society/activities/einclusion/policy/ageing/launch/index\\_en.htm](http://ec.europa.eu/information_society/activities/einclusion/policy/ageing/launch/index_en.htm)

Feist, H. R., Parker, K. & Hugo, G. (2012). Older and Online: Enhancing social connections in Australian rural places. *The Journal of Community Informatics*, 8(1). Retrieved from <http://ci-journal.net/index.php/ciej/article/view/818>

Findsen, B. (2005). *Learning later*. Malabar, FL: Krieger.

Gardner, P., Netherland, J. & Kamber, T. (2012). Getting Turned On: Using ICT training to promote active ageing in New York City. *The Journal of Community Informatics*, 8(1). Retrieved from <http://ci-journal.net/index.php/ciej/article/view/809>

Goodfellow, J. (1997). Narrative Inquiry: Musings, Methodology and Merits. In J. Higgs (Ed.), *Qualitative Research: Discourse on Methodologies* pp. 61-74 Sydney: Hampden Press.

Gurstein, M. (2007). What is community informatics (and why does it matter)? Milan, Italy: Polimetrica.

Hammersley, M. & Atkinson. P. (1983) *Ethnography: Principles into Practice*. London: Tavistock.

Hernandez-Encuentra, E., Pousada, M. & Gomez-Zuniga, B. (2009). ICT and Older People: Beyond Usability. *Educational Gerontology*, 35(3), 226-245.

Jarvis, P. (1987). *Adult learning in the social context*. New York: Croom Helm.

Kvale, S. (1996). *Interviews: An Introduction to Qualitative Research Interviewing*. Thousand Oaks, CA: Sage.

Linton, N. J. (2012). Roadblocks and Resolutions in the Technological Journey. *The Journal of Community Informatics*, 8(1). Retrieved from <http://ci-journal.net/index.php/ciej/article/view/779>

Liu, L. L. & Park, D. C. (2003). Technology and the Promise of Independent Living for Adults: A Cognitive Perspective. In N. Charness & K. W. Schaie (Eds.), *Impact of Technology on Successful Aging*, pp. 262-289. New York: Springer.

Loeb, G. (2012). Technology and Older Persons Issue Overview. *The Journal of Community Informatics*, 8(1). Retrieved from <http://ci-journal.net/index.php/ciej/article/view/904>

Mahmood, A., Yamamoto, T., Lee, M. & Steggel, J. C. (2008) Perceptions and Use of Gerontechnology: Implications for Aging in Place. *Journal of Housing for the Elderly*, 22(1), 104-126.

Mauger, S. (2009). *Technological Change: Inquiry into the Future for Lifelong Learning. Thematic paper 2*. Leicester: National Institute of Adult Continuing Education.

McCreadie, C. (2005). Mobile Phones. *Working with Older People*, 9(4), 24-26.

Melenhorst, A-S., Rogers, W. A. & Bouwhuis, D. G. (2006). Older Adults' Motivated Choice for Technological Innovation: Evidence for Benefit-Driven Selectivity. *Psychology & Aging*, 21(1), 190-195.

- Mezirow, J. (1991). *Transformative dimensions of adult learning*. San Francisco: Jossey-Bass.
- Neves, B. B. & Amaro, F. (2012). Too old for technology? How the elderly of Lisbon use and perceive ICT. *The Journal of Community Informatics*, 8(1). Retrieved from <http://ci-journal.net/index.php/ciej/article/view/800>
- Ritchie, J. & Spencer, L. (2002). Qualitative Data Analysis for Applied Policy Research. In A. M. Huberman & M. B. Miles (Eds.), *The Qualitative Researcher's Companion*. Thousand Oaks, CA: Sage.
- Russell, H. (2005). The lived experience of laterlife computer learners. Retrieved from <http://epress.lib.uts.edu.au/dspace/handle/2100/304>
- Russell, H. (2007). Learning for being: an ontological and existential approach. *International Journal of Lifelong Education*, 26(4), 363-384
- Russell, H. (2008). Laterlife: A time to learn, *Educational Gerontology*, 34(3), 206-224
- Russell, H. (2011). Later life ICT learners ageing well. *International Journal of Ageing and Later Life*, 6(2), 103-127
- Schwandt, T. A. (2000). Three Epistemological Stances for Qualitative Inquiry: Interpretivism, Hermeneutics, and Social Constructionism. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of Qualitative Research* (2nd ed), pp. 189-213. Thousand Oaks, CA: Sage.
- Seals, C.D., Clanton, K., Agarwal, R., Doswell, F. & Thomas, C. M. (2008). Lifelong Learning: Becoming Computer Savvy at a Later Age. *Educational Gerontology*, 34(12) , 1055-1069.
- Selwyn, N. (2004). The Information Aged: A Qualitative Study of Older Adults' Use of Information and Communications Technology. *Journal of Aging Studies*, 18(4), 369-384.
- Selwyn, N., Gorard, S., Furlong, J. & Madden, L. (2003). Older Adults' Use of Information and Communication Technology in Everyday Life. *Ageing and Society*, 23( 5), 561-582.
- Slegers, K., van Boxtel, M. P. J. & Jolles, J. (2007). The Effects of Computer Training and Internet Usage on the Use of Everyday Technology by Older Adults: A Randomized Controlled Study. *Educational Gerontology*, 33(2), 91-110.
- The Senior Project, (2008). *Ethics, e-Inclusion and Ageing: Senior Discussion Paper 2008/02*, Paper presented at the European Ministerial e-Inclusion Conference, Vienna, November 2008. Retrieved from <http://www.seniorproject.eu>
- Tough, A. (1979). *The adult's learning projects (2nd ed.)*. Toronto: Ontario Institute for Studies in Adult Education.
- van Manen, M. (1997). *Researching Lived Experience: Human Science for an Action Sensitive Pedagogy* (2nd ed). Ontario: The Althouse Press.
- Willis, K. (2006). Analysing Qualitative Data. In M Walter (Ed.), *Social Research Methods: An Australian Perspective*, pp. 257-279. Melbourne: Oxford University Press.
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