

# **ICT Skills Acquisition by Older People: Motivations for learning and barriers to progression**

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## **Abstract**

This paper reports findings from one strand of an extensive research project investigating digital engagement of older people and the risks to sustained usage of information and communication technologies (ICTs). The factors that motivate older people to learn about ICTs, the barriers they face in the learning process and with on-going ICT use are examined. Research methods included focus groups (28 ICT learners aged 50+); questionnaires and interviews with seven 50+ learners; three interviews with ICT tutors; and observation sessions in three different ICT learning and support environments in England and Scotland. Findings show that while learning to use ICTs to ease the mechanics of daily life (e.g. on-line shopping) was a motivating factor for some, the more powerful drivers tended to be those applications seen as enriching quality of life e.g. using ICTs to keeping in contact with family and friends and using ICTs in pursuit of passions and interests. The key barriers relate to fear of using a computer; learning support; quality and provision of ICT training; cost of training and technology; memory problems, and technology barriers. Implications of these findings for service providers, ICT designers and policy makers are identified and discussed.

## **Key Words**

Digital: barriers: older adults: learning to use computers: ICT.

## **Introduction**

Since the 1990s, policy makers and the research community have been concerned that older people exhibit lower levels of engagement with the internet than later-born cohorts (Ofcom, 2011; Dutton, Helsper and Gerber, 2009). As on-line interaction has become the norm, non-participants risk incurring financial and social penalties. Households with no internet access are unable to take advantage of discounts commonly available for online transactions and so may pay more for utilities, financial services and consumer goods. In addition, as the online publication of information becomes ubiquitous among public and private organisations, those who remain 'off-line' may struggle to access information in conventional ways. More importantly, for well-being and quality of life, social interaction with family and friends may be compromised by an inability and/or reluctance to utilise digital media.

While non-participants of all ages risk 'missing out', older people may be particularly susceptible to disadvantage. Compared with younger cohorts, they are less likely to have access to a car and so may have more to gain from conducting domestic transactions online, particularly where their mobility is limited by health issues or caring responsibilities. In addition, older people are disproportionately likely to use a range of public services; consequently, they stand to benefit from being able to use digital channels to access information and communicate with agencies. Finally, the growth in social media applications such as Skype and Facebook can be harnessed by older adults to maintain contact with friends and family (particularly grandchildren). Despite these potential advantages, 76 per cent of people aged 75 and over had never used the internet; among those aged 65 to 74 the figure was 42 per cent. By contrast, among cohorts of adults under the age of 45, the figure was always less than five per cent (ONS, 2011a).

Evidence of a 'grey digital divide' (Morris, Goodman and Brading, 2007) has resulted in many government, voluntary sector and partnership initiatives to facilitate computer and internet use by older people. It has also been the focus of research into barriers to, and facilitators of, ICT skills acquisition among older people. This has given rise to a number of reports e.g. Ofcom and the Oxford Internet Survey (Dutton, Helsper and Gerber, 2009; Ofcom, 2009). Recognition of the prevailing barriers for beginners is a prerequisite for making changes to assist older adults in becoming digitally engaged. However, of at least equal importance is an appreciation of factors that undermine older people's capacity to sustain connection when their physical and social circumstances change and as technology advances. The barriers and potential solutions to sustained digital engagement, beyond initial introduction to internet use e.g. through taster sessions etc, have been relatively neglected until recently and are the focus of a major research project entitled Sustaining ICT Use to Promote Autonomy and Independence in Later life (Sus-IT). This is part of the New Dynamics of Ageing Programme, funded jointly by all five research councils in the UK (Olphert and Damodaran, 2010). The strand of the project reported here relates to the acquisition of ICT skills by older people, their motivations to be digitally connected, the learning process and the barriers they face in achieving and sustaining digital connection.

Earlier research into ICT engagement among older people has focused on the activities of email communication and on-line information searching (Ellis and Allaire, 1999; Vivoriand Halmlund-Rytkonen, 2005). However, in recent years, the emergence and uptake of novel digital media has changed the parameters of research in this area. For example, in 2011, 18 per cent of internet users aged 65 and over reported having posted messages on social networking, chat room or blog sites while 16 per cent said they had sold goods or services over the internet (ONS, 2011b). The Sus-IT project has sought to investigate the wide

diversity of digital engagement of older people and used the term ‘ICTs’ to encompass digital technologies such as computers (including tablets), mobile phones, mp3 players, book readers and cameras, as well as associated software.

By 2005, the majority of homes in the UK had access to digital television and radio and mobile phones (Ofcom, 2009a) which served to replace or augment their ‘analogue’ predecessors. Since then, there has been a proliferation of new digital products in the market place such as mp3 players, smartphones and book readers (e.g. Kindle). While these products similarly have earlier equivalents (such as audio cassette players and books) they are explicitly designed to interface with other platforms, particularly the internet. The need to acquire and maintain skills in multiple technologies may be unproblematic for confident ICT users but can prove daunting and frustrating for those with lower levels of media literacy.

In the UK, a multiplicity of ICT skills training is available. However, much of this is targeted at people who need to acquire ICT skills in order to find employment (e.g. Learndirect, Pitman Training) or is for people seeking IT professional qualifications. With the exception of organisations oriented explicitly towards older people, most ICT training for beginners caters for all age groups and this may be problematic for older learners. The most common providers of ICT learning support to the 50+ age cohort, through face-to-face provision (classes and/or drop-in centres) are libraries and local and community organisations (e.g. 50+ forums; University of the Third Age (U3A) and AGE UK. Other ICT learning/training providers offering face-to-face ICT learning opportunities (normally in mixed-ability classes through self-directed learning methods with support on-hand) include Further Education colleges and Government funded agencies (such as Learndirect and UK Online Centres). Some local authorities also fund community-learning classes for all ages (e.g. Liverpool and

Newcastle city councils). On-line resources for ICT learning and support are also freely available to help older adults acquire ICT skills e.g. on websites such as Digital Unite, BBC Webwise, Learnmyway, Firstclick and Alison. Resources and guides are provided on a range of topics including 'computer basics', 'internet basics' and 'shopping online' (BBC Webwise, 2012).

## **Literature Review**

Early research highlighted a disparity between explanations for the 'grey digital divide' and the broader 'social digital divide' (Millward, 2003). The social digital divide is viewed as deriving primarily from a lack of access to technology rather than from a lack of interest or motivation. In rural areas this reflected inadequate investment in infrastructure. In inner-city locations it correlated with indicators of socio-economic disadvantage at individual, household and community level. By contrast, in addition to access issues, the grey digital divide was characterised by cohort-specific beliefs, attitudes, values and inhibitions (Anderson, 2008). Where older adults express an interest in learning about computers, they frequently report lacking confidence in their ability to succeed (Purdie and Boulton-Lewis, 2003) especially if they have never been taught (Higgins and Izushi, 2002; Czaja, 1997). They are also more likely to experience anxiety in a learning environment, particularly with relation to using the internet (Marquie, Jourdan-Boddaert and Huet, 2002, Dickenson *et al.*, 2005; Pan and Marsh, 2010).

Later life is associated with sensory, physical and cognitive changes such as impaired sight and hearing and reduced mobility (Hawthorn, 2008). These may pose problems for individuals seeking to learn how to use ICTs (Dickenson *et al.*, 2005; Echt, 2002;

Williamson, Bow and Wale, 1997). Deterioration in visual function affects learners' capacity to see what is on the screen (Dickenson *et al.*, 2005; Schieber, 2003) while impaired hand dexterity has implications for mouse and keyboard control (Blake 1998; Virokannas *et al.*, 2000). In addition, research has highlighted the effects of cognitive impairment among some older learners (Purdie and Boulton-Lewis, 2003; Sayago and Blat, 2009). Problems are cited with;

- absorbing information;
- remembering multiple instructions at one time;
- remembering sequential procedures, such as starting the computer; and
- maintaining concentration for extended periods.

While ageing may be associated with impaired short term memory, and some aspects of long term memory, the impact can be reduced by the adoption of coping strategies (Willis *et al.*, 2006; Withnall *et al.*, 2004).

Studies have identified teaching styles that tend to undermine older adults' attempts to learn in formal settings. Some tutors fail to project their voice adequately (Dickenson *et al.*, 2005) while some proceed too quickly. The speed at which people learn and process information tends to decline with age (Salthouse, 1996); consequently, mixed age classes may fail to meet the needs of all. A fast pace of learning may leave some learners behind while a slow pace may cause more able learners to lose interest (Csikszentmihalyi, 1991). The use of jargon often confounds ICT novices (Dickenson *et al.*, 2005; Goodman, Syme and Eisma, 2003). Furthermore, as many computing terms have established meanings in common parlance (such as windows, file and menu) instructions may be misunderstood if taken literally. Software issues also compromise users' willingness to engage with computers and the internet without support (Fisk, 2009). Concern about spam, pop-ups, identity theft and pornographic material

are identified as specific deterrents for use by older people (Gatto and Tak, 2008; Pan and Marsh, 2010).

## **Research design**

### *Purpose*

The purpose of the empirical research reported in this paper was to investigate (i) the motivations of older adults' (age 50+) for acquiring ICT skills, (ii) their experiences of the learning process and (iii) identification of the barriers they face sustaining ICT usage beyond their initial learning/training.

### *Sample Selection*

The sample of four ICT learning and support providers involved in the study share the objective of providing support for ICT learning (see table 1). The University-based centre was included in the sample as an example of established good practice in sustained user-centred ICT learning support (Forbes *et al.*, 2009). Two others were examples of typical providers of ICT learning and support for older people in the UK. The fourth provider exemplifies informal support provided on an entirely voluntary basis and on a very small scale. This support arose as a response to a perceived need in the community which manifested itself when several 'would be learners' could not find appropriate ICT learning support opportunities in their local area.



| <b>TABLE 1: ICT Learning and Support Providers</b>                     |   |
|--|---|
| <b>Provider</b>  | <b>Details</b>  |
| <b>User Centre, University of Dundee</b><br><br><b>Provider A</b>      | <p>Nature of provision: introductory courses and drop-in sessions</p> <p>This User Centre offers four sessions a week, each of two hours duration. These run every weekday morning except Monday. The centre has developed its own sense of community. It provides older people with an environment to learn at their own pace, in their own style, in an informal setting and opportunity to participate in research. Peer and tutor support from research staff is available as appropriate. Learners pay no fees per se, but are asked to make contributions.</p>  |
| <b>National Charity</b><br><br><b>Provider B</b>                       | <p>Nature of provision: an eight week (two hours a week) introductory computer course in a formal classroom setting.</p> <p>The content of the course is structured with clear learning objectives and outcomes. The training is delivered by volunteers, many who are older adults themselves. Learners pay £40 for the eight week course.</p>   |
| <b>Long Eaton 50plus Older People's Forum</b><br><br><b>Provider C</b> | <p>Nature of provision: introductory and intermediate courses and drop-in sessions for members on a weekly basis.</p> <p>The content of the introductory courses (e.g. introduction to mouse and keyboard, email, file management) is semi-structured, while the content of the intermediary course is determined by learners themselves. Drop-in sessions are also available for ICT users at any level of proficiency to receive support, and assistance from tutors on any problems they maybe encountering outside of the classroom. Learners can learn on their own laptops at these sessions. The facilities are funded by the local council and by membership subscriptions.</p> |
| <b>Informal Voluntary Group</b><br><br><b>Provider D</b>               | <p>Nature of provision: introductory courses are offered on a weekly basis (two-hour session).</p> <p>The course is staffed by volunteer tutors, who also provide support in learners' homes. Learners pay £2 a week to attend a class and the fee covers the cost of printing hand-outs.</p>   |

### *Sample and Data Collection*

The research was conducted in 2010 and involved a total of 69 participants. Focus groups were conducted at the location of providers A and D with 10 and 18 older learners respectively. Three ICT learning and support tutors from provider B were interviewed and two stage data collection exercise with seven learners was conducted. The first stage was part

of a questionnaire survey on digital engagement followed by interviews six months later. Observations of 37 older adults in four different ICT learning and support environments in England and Scotland were also made. Table 2 provides further details of the groups of participants at the four ICT learning and support environments and the methods used. This research study was conducted in compliance with Nottingham Trent University's ethical guidelines. Audio recording and observations for data collection purposes were carried out with the permission of participants.

### *Methods*

Further details of methods used are detailed below.

(i) Interviews with ICT learning and support tutors (provider A)

In semi-structured interviews with two paid and one volunteer tutor, experiences of teaching computing to older people were explored, to gain understanding of their views on what works, what doesn't, and the reasons for their evaluation.

(ii) Interviews with learners (provider A)

Interviews were conducted to establish the motivations of learners for embarking on ICT learning and also to investigate their subsequent experiences, including the obstacles encountered (and ways of overcoming them) and sources of support.

(iii) Focus groups with learners

a) Provider D: the above aspects were also examined in the first of two focus group carried out with this this location. All 18 learners then took part in a second focus group six months

**TABLE 2: Sample (n= 69) and data collection sites (n=4)**

| <b>ICT learning &amp; support provider</b>                           |   | <b>Semi-structured interviews</b> |
|--|---|-----------------------------------|
| <b>National Charity<br/>Provider B</b>                               | <p>A total of 10 semi-structured interviews were carried out: two with professional tutors and one with a volunteer tutor and the remaining seven with ICT learners. Of the seven learners three were males and four were females, four were aged 50-64 and two were aged 65-79. All participants were moderate level users (i.e. were frequent users of the computer and the Internet).</p> <p>Recruitment: Participants were recruited from a database of participants who had completed the Sus-IT Digital Engagement survey questionnaire six to seven months earlier. A total of 10 participants were contacted by email and letter with details of the study and an invitation for interview.</p> |                                   |
| <b>Focus Groups</b>  |   |                                   |
| <b>User Centre,<br/>University of<br/>Dundee<br/>Provider B</b>      | <p>A two hour focus group was carried out with 10 participants, seven males and three females. Four were aged 50-64, five were aged of 65-80, and one was aged 80+.</p> <p>Recruitment: Participants were recruited through a “gatekeeper” at the University User Centre who facilitated access to participants.</p>  |                                   |
| <b>Informal<br/>Voluntary<br/>Group<br/>Provider D</b>               | <p>Two focus groups each of two hours duration were carried out with 18 older adults attending an introductory computer class. Four were aged of 50-64, 10 were aged 65-80, and four were aged 80+. Most were complete novices (13/18). Some had undertaken ICT training in the past but had described it as being unsuccessful and did not regard themselves as being confident and competent users of ICTs.</p> <p>Recruitment: Participants were recruited through a ‘gatekeeper’ who facilitated access to participants.</p>  |                                   |
| <b>Observations</b>  |   |                                   |
| <b>National Charity<br/>Provider B</b>                               | <p>Ten one-hour observation sessions of a introductory course were carried out. Typically groups averaged between seven –12 participants.</p>   |                                   |
| <b>Long Eaton<br/>50plus Older<br/>People’s Forum<br/>Provider C</b> | <p>Two one-hour drop-in sessions were observed. Six participants attended the first session and seven attended the second. All were moderate level users (i.e. were frequent users of the computer and the Internet).</p>   |                                   |

|   |  |
|---|--|
| <b>Informal<br/>Voluntary<br/>Group<br/><br/>Provider D</b> | Two one-hour sessions of a beginner's computer group were observed. 18 participants attended each of the sessions. |
|---|--|

later. This allowed an exploration into their experiences in trying to sustain use of ICTs independently following initial training. It included the identification of the issues which caused frustration and difficulties with the technology and of the coping strategies adapted.

b) Provider A: this two-hour focus group involving 10 learners discussed the issues that may be the trigger for some older people to give up using ICTs and explore potential solutions to these problems.

(iv) Observations (providers B, C, D)

Observations were made at the venues of providers B, C and D to document the issues that arose for older learners in the learning process. This offers insight into possible modes of self-help and mutual support among older learners.

### *Analysis*

A thematic approach to analysis was undertaken (Leininger, 1985). Raw data from the transcript of data collected in the interviews/focus groups were entered into three grids (Boyatzis, 1998), each relating to one of the objectives of the research: (i) the motivations of older adults' (age 50+) for acquiring ICT skills, (ii) their experiences of the learning process and (iii) identification of the barriers they face sustaining ICT usage beyond their initial learning/training and coping strategies used. The use of the grids allowed categorisation of the data and identification of the themes discussed in the findings section below.

NB. It is perhaps important to note that although the sample size for the empirical research reported here is small, the findings are supplemented by a review of the literature and are supported by the findings of the larger Sus-IT project as well as by other research and surveys (e.g. the Oxford Internet Institute Surveys and Ofcom reports – including the recent study commissioned by the Communications Consumer Panel (Communications Consumer Panel, 2012).

## **Findings**

Learning to use ICTs is described by respondents as non-intuitive and requiring effort, time and patience. As novices, users often felt that they were not in control and this feeling could be exacerbated by sudden, unexpected and unwanted ‘pop-ups’ and error messages which were described as ‘confusing’, ‘annoying’ and ‘distracting’. Several learners commented on their surprise and disappointment to find that learning to use ICTs was not a one-off exercise but an on-going process necessary to cope with the complexity and rapidly changing nature of technology, as typified by this comment:

*“I thought once you learn, you learn the whole package, but you don’t. I am still trying to understand the variety of products that the computer is capable of dealing with. I was just thinking you learn how to use a computer and that’s it. It isn’t”*  
(Sue, aged 67).

### *(i) Motivations for learning*

The motivating factors reported were diverse and consistent with findings in other studies (Dickenson *et al.*, 2005; Purdie and Boulton-Lewis, 2003; Sayago and Blat, 2009; Higgins

and Izushi, 2002; Czaja, 1997). Using ICTs to make the mechanics of daily life (such as online banking, shopping online, writing letters, and financial budgeting) easier was a motivator for some. While these were valued for saving time, effort and money, the more powerful drivers tended to be those which were seen as beneficial to health and quality of life. These included ‘stimulating the brain’, ‘feeling part of the 21<sup>st</sup> century’, keeping in contact with family and friends, using ICT to enable the pursuit of passions and interests such as digital photography, often requiring cross-platform activities (e.g. downloading from iTunes) (Smith, Damodaran and Sandhu, 2012). Varied motivations are reflected in the following quotes.

*“Well my granddaughter has just got a job working on a ship cruising the Caribbean and if I don’t hear from her for a few days I start worrying, because she has never left home. I send her an email and say answer me straight away and next day I have a reply. It’s fantastic”* (June aged 76).

*“I suppose of late, my favourite occupation has become that of producing my Family Tree....It has become the most compelling thing I’ve undertaken with IT technologies; finding sites of place names, their origins and looking for yet more leads to family”* (Mike aged 59).

*“Well, I was dragged kicking and screaming into the twenty-first century. I was very reluctant because I am petrified of new technology. But with a lot of persuasion, primarily from my GP who thought I would enjoy it, it would stimulate me, I eventually bought one”* (Mary aged 61).

(ii) *Barriers to learning and (iii) sustaining use of ICTs*

As many of the barriers identified relate both to initial learning and to sustaining use of ICTs, the data are presented together in this section.

*Fear of Using a Computer*

A significant and frequently-voiced concern was that mistakes made inadvertently could have serious consequences. Such concerns often centre on procedures that require sharing personal information, such as banking account details. Both novices and ICT users with moderate levels of proficiency were worried about scams and illegitimate websites, as illustrated by focus group participants from the university user centre.

*“You read about scams in the paper and it makes me think how can you recognise a scam website?”* (Mark aged 69).

*“If there are any attachments in it then I don’t open them and delete the email”*  
(Lynda aged 74).

Fear can also be caused by the terminology. The following quote illustrates the pitfalls for novices of interpreting computer jargon literally:

*“When I first started, a message used to come up, saying ‘you have just done an illegal entry and the computer needs to close down’. I shut the windows because I thought the police were coming”* (Molly aged 67).

Beginners and inexperienced ICT users reported lack of confidence in installing updating software for fear of doing something wrong. Understanding licensing agreements was

sometimes at the root of this problem, as many did not understand the need to click 'yes' to install the software.

### *Learning support*

Both learners and tutors reported that confidence levels of learners were associated with access to support. While confidence generally increased with practice, it could be shaken when learners encountered something new or unfamiliar. Without support, those with lower confidence levels tended to abandon the task. While attending regular classes gave access to support from tutors, building confidence, this was likely to cease when the course finished. Some drop-in centres provided 'trouble-shooting' assistance to learners faced with a problem and this was felt to be reassuring and a greatly valued service. Many participants identified family and friends as valuable sources of support, but this support was not always available in a timely or appropriate way. For example, some 'helpers' (especially grandchildren) tended to perform operating procedures too fast for the older learner to follow and consequently, the task was achieved but the older person had not learned how to do it for themselves which meant that capacity to deal with the same issue when it next occurred had not developed.

Problems accessing 'local' support often forced people to resort to either trial and error problem solving on their own or accessing telephone helplines or online support. With telephone helplines, some older users found that they were unable to get through while others complained of not being able to get the right kind of support. One expressed the dilemma as follows: 'if the camera won't connect to the computer, do you call the camera people or the computer people?'. Participants often found manuals incomprehensible while generic 'how to' books offered limited assistance in solving technical problems. In addition, both sources



could quickly become outdated as technology moved on. With regard to delivery of teaching, learners complained about excessive jargon, poorly written instructions and the lack of visual aids. Further, successful selection, purchase and adoption of new devices posed major challenges for older ICT users who lacked access to relevant support, expertise and above all impartial advice.

### *Quality and Provision of ICT Training*

Learners reported difficulties finding ICT training and support especially services tailored to the needs of older learners. With the exception of organisations oriented towards older people (such as Age UK, U3A etc.) most ICT training for beginners caters for all age groups and this may be problematic for older learners. Findings from a study reviewing ICT learning and support provision in seven cities in the UK found that availability, and quality provision varies greatly from venue to venue (Ramondt, Sandhu and Damodaran, 2013). The study reports that face-to-face support is primarily offered in libraries, community centres and local agencies and at all locations, there was little provision for older people to access troubleshooting assistance on an on-going basis.

Shortcomings in teaching styles in generic computer courses (i.e. mixed age and mixed ability groups) were reported by the four learners at the informal computer group run on a voluntary basis, who had previously attended a mixed age and ability course as exemplified in the following comment:

*“The problem was that that they (the tutors) gave me this book and they did not provide the support – kind of ‘don’t worry we will send someone around to help*

*you', of course nobody ever did. Eventually, I found it was not doing me any good because, apart from going too quickly, I found that I needed help, which was not readily available. Eventually, I packed it in" (Jane aged 67).*

Adding to the problems experienced by these four learners was the excessive use of jargon, without explanation, by the tutor which left them feeling lost and left behind. All four reported that this was a frustrating experience and all had given up half way through the course. They were pleased and relieved to have an opportunity to learn from volunteers with a more sympathetic and appropriate teaching approach.

In contrast to the examples of poor delivery of ICT training and support, pockets of good practice were also identified. Slow-paced and frequent repetition and reinforcement of learning points/instructions which characterised the teaching style of some tutors was highlighted by some participants as being helpful and important in simplifying the learning process, making it accessible for them. The use of simple language and less jargon was also seen as key to a successful learning experience as was allowing time for one-to-one support from tutors. This support was especially valued when participants were struggling to keep up with the rest of the class.

### *Cost of Training and Technology*

A number of issues relating to financial cost were also identified as barriers to learning to use ICTs. Some beginners courses were perceived as 'not value for money', especially where they included a self-taught component. For some older people on a low income, the cost of courses formed an insurmountable obstacle to the acquisition of ICT skills. One respondent spoke about the barriers she faced when trying to access a computer course at a local college.

*“... as a pensioner I do not have the money to pay for these courses, I am not entitled to a concession unless I am on some sort of benefit... there are no facilities available for me as a pensioner to learn this new skill unless I can pay for it”*

(Helen aged 59).

Some learners would have liked to repeat a beginners' course for the purposes of practice, familiarisation, consolidation of skills and competence to improve their confidence but felt the cost would be prohibitive. Similarly, the idea of paying for on-going training was seen as unrealistic. In relation to income levels, the cost of phone calls to premium rate technical support lines were seen as very high and some participants would not call these numbers for fear of incurring 'huge' bills. Where engagement with a helpline was found to be ultimately unhelpful, the cost of the call became a waste of money. Finally, updating technology was found to be costly.

### *Memory Problems*

Limitations of 'working memory' pose an obstacle for some participants. Those attending beginners' computer courses reported not being able to remember sequential processes correctly and described their difficulties in remembering the content taught in class as frustrating. Complaints such as "the memory isn't as sharp as it used to be" and "I struggle a lot to remember things" were common. Regular practice and well-written self-instructional materials (with visual images), short videos and screen capture tools were found by some participants to be helpful strategies to compensate for impaired memory.

### *Technology Barriers*

Some novice learners faced problems when they made the transition from using machines at the training premises to using their own equipment at home on account of differences in both hardware and software. Sometimes, training providers utilise old donated equipment and old versions of software on cost grounds and learners find themselves in unfamiliar territory when they buy their own computer with latest versions of software already concerned. Conversely, novices might learn using up-to-date technology and then go home to older machines that have been 'handed down' by family members. On one training course in the study participants were encouraged to bring their own laptops to the training sessions to resolve this issue. Related problems arose when more experienced users purchased new computers. Complaints included: 'the buttons are in different places' and 'I can't find things that were obvious before'. One participant reported that her new laptop came with a new operating system and she was no longer able to use applications she had used previously (e.g. desktop publishing, games or genealogy software). Many had to re-learn how to undertake specific tasks such as word processing because their previous package had become obsolete. This was found frustrating, demoralising and wasteful of time, effort and money.

Problems with using linked software compromised participants' ability to use a range of digital devices. For example, one participant purchased an mp3 player, but failed to navigate the iTunes software and so abandoned the device. Those who were learning to use digital cameras were confused by the need to install software onto their computers before they could transfer photos. In such cases, learning to operate the technological device with the software became an intrinsic barrier to using the technology. Some found the out-dated software they were accustomed to using was incompatible with new pieces of equipment. All participants reported that they valued timely support to solve these issues.

## **Discussion and Conclusions**

The research reported in this paper has shown that the ICT skills acquisition process, an essential enabler of engagement with the digital world, is highly challenging for many older non-ICT users. The evidence reveals the magnitude of the challenge of the learning journey faced by the non-user in becoming a novice ICT user and then an experienced way. Findings also emphasise the crucial role of face-to-face support throughout the early learning process and beyond. The data from the follow-up interviews with ICT novices six months after their learning process began suggests that although initial learning was a significant struggle, they found grappling with a variety of unfamiliar issues to sustain their newly-acquired and ‘fragile’ skills on an on-going basis was considerably more challenging – especially where support was no longer easily accessible. Some were not confident they would be able to sustain their usage or some did not think they would be able to continue without on-going support.

In relation to each of the three objectives of the research, namely to investigate (i) the motivators which prompted the non-users to seek ICT skills, (ii) the barriers they encountered early in the learning process and (iii) the barriers faced subsequently in sustaining ICT use after initial training had ended, including identification of the coping strategies which helped - the findings of this small study have important implications. They have relevance for many stakeholders including ICT designers, training and learning support providers, local government and policy-makers. These implications for policy and/or practice and consideration of how they might be addressed are discussed below.

The fears of novice ICT users expressed are entirely understandable and merit being addressed both with empathy and with proactive assistance and practical guidance. For example, concerns about spam, pop-ups, identity theft and pornographic material are

documented in the research literature as being specific deterrents to use of ICTs by older people. Provision of appropriate services in the community to install spam filters, virus checkers etc. at drop-in centres and other venues offering ICT learning and support would offer one practicable solution. Help of this kind is available in a few venues but is far from being a reliable and affordable service available to all older ICT users. Digital Unite is another source of help, offering systematic and comprehensive instruction on many common problems. On-line support materials can be accessed from the Digital Unite website without charge while face-to-face assistance can be delivered in the home on a fee-paying basis.

Many of the issues identified as barriers to acquisition of ICT skills by older people – such as lack of confidence in ICT use; experiencing anxiety in a learning situation; pace of delivery of instruction; unnecessary or unexplained jargon; maintaining concentration for extended periods; remembering what they have been told can all be addressed by long-established good practice. For example, simple measures such as taking frequent breaks and offering light refreshments can help to counter fatigue and loss of concentration. The impact of impaired short term memory (known to be associated with ageing) can be mitigated by provision of printed guidance documents and aide memoires. Such aids are generally well-received and found to be helpful by older people – but are not provided routinely at most learning venues. Some like to take their own notes and attach these to the appropriate devices to be available at point of need and could be encouraged to do this as a tried and tested coping strategy.

Existing policies and practices relating to cost and access to ICT learning and support provision appeared punitive and perverse to the older people in the study who were highly motivated to acquire ICT skills but have low incomes. The findings describe the frustrations, for example, of being required to pay again to repeat a training course in order to consolidate

learning. Similarly, the high cost of telephone help lines charged at premium rates to gain ‘trouble-shooting’ assistance as problems arise are seen as unrealistic – especially when the call fails to resolve the problem. Expecting older people to pay costs they consider to be beyond their means to acquire ICT skills and to sustain ICT usage appears counter to the drive for greater digital inclusion by the UK Government and other agencies.

Regarding the role of technology providers and developers, it is evident that they could play a far more extensive role than is currently the case to reduce the barriers and frustrations experienced by older ICT users. Appropriate changes in software, hardware and especially the quality of support to better match their characteristics (including impaired capabilities), requirements and preferences of older users would significantly enhance their quality of experience and satisfaction in using ICTs. Perhaps the growing recognition and allure of the significant ‘grey market’ will promote recognition that older people seek stability of the user interface and assistance in coping with uninvited and unwanted ‘upgrades’. Their verbatim comments make clear that such ‘upgrades’ are in reality often experienced as retrograde in the ‘de-skilling’ effect they have in making hard-won skills learned (often a great personal cost) redundant.

In conclusion, there are significant policy and practice issues raised by the research reported here. Known solutions to many of the barriers to skills acquisition identified in the study - especially regarding teaching practices used with older people are not being applied. Extensively it is evident that not all learning and support providers have factored the application into design of their services. There is a pressing need to promote the dissemination of established good practice in relation to the preferences and needs of older people in a learning environment and to promote awareness of the needs and characteristics

of older ICT learners widely. Thus the study findings can be used to inform understanding of the ICT learning support requirements of older people and to improve provision significantly.

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