Adults learning online: digital choice and/or digital exclusion?

Adults Learning Online: Digital Choice and/or Digital Exclusion?

Dr Rebecca Eynon (lead author), Oxford Internet Institute and Department of Education, University of Oxford and Dr Ellen Helsper, Lecturer in Media and Communications, Department of Media and Communications, London School of Economics and Political Science.

Brief Bio and Contact details

Dr Rebecca Eynon is a Research Fellow at the Oxford Internet Institute and a Lecturer in the Department of Education, University of Oxford, UK. Her research interests focus around the use of ICTs for learning and education; particularly in the contexts of higher education and adult learning.

Address: Oxford Internet Institute, University of Oxford, 1 St Giles, Oxford, OX1 3JS
Email: rebecca.eynon@oii.ox.ac.uk
Phone: +44(0)1865 287206
Fax: +44(0)1865287211

Ellen Helsper is a Lecturer in Media and Communications at the London School of Economics and Political Science. Previously she was a Survey Research Fellow at the Oxford Internet Institute (OII) responsible for the design, analysis and coordination of the Oxford Internet Surveys (OxIS) and World Internet Project (WIP) Surveys. Further projects she has been involved in are the EU funded 'Social Impacts of ICT', the 'Me, My Spouse and the Internet' and the 'Online Gambling' studies. Her research focuses on vulnerable groups and their use of technologies with a special interest in generational differences in digital literacy and engagement.

Address: Department of Media and Communications, London School of Economics and Political Science, London
Email: e.j.helsper@lse.ac.uk
Phone: +44(0)20 7955 6420
Fax: +44(0)20 7955 7248

Word count (excluding duplication of tables) 7813

Abstract

Using a nationally representative British survey this paper explores the extent to which adults are using the Internet for learning activities because they choose to (digital choice) or because of (involuntary) digital exclusion. Key findings suggest that reasons for (dis)engagement with the Internet or the uptake of different kinds of online learning opportunities are somewhat varied for different groups but that both digital choice and exclusion play a role. Thus it is important for policy initiatives to better understand these groups and treat them differently. Furthermore, the more informal the learning activity, the more factors that play a significant role in explaining uptake. Policies designed to support individuals' everyday interests as opposed to more formal kinds of learning are likely to be more effective in increasing people's productive engagement with online learning opportunities.

Keywords: adult learning, e-learning, informal learning, lifelong learning, Internet use, digital choice, digital exclusion

Introduction

The importance of lifelong learning for the economy, society and the individual is well recognised. Lifelong learning is believed to lead to a more competitive and adaptable workforce (e.g. DfEE, 1998) and can also result in other positive psychological, health and social capital outcomes (e.g. Feinstein et al., 2003; Hammond, 2004). However, in many countries participation rates in adult learning are relatively low and are unequal amongst different groups: those who are better educated and better off are far more likely to participate in and benefit from lifelong learning opportunities than those who left school with few or no qualifications and have lower incomes (OECD, 2003).

The use of the Internet and other new technologies has often been put forward as a potential solution to address this problem by providing relatively flexible and cost-effective access to learning opportunities. However, such initiatives have been criticised for being overly optimistic and technologically deterministic (Robins and Webster, 2002) and have often had limited practical success, due to a range of complex factors where social exclusion is key (Selwyn et al., 2001).

The UK context provides a good example of this phenomenon. Like many other countries, the UK has relatively low participation rates in adult and lifelong learning. While 39% of adults have undertaken some kind of learning activity in the past three years, only 18% are currently learning (Tuckett and Aldridge, 2009). Furthermore, non-participation in adult and lifelong learning is deeply entrenched with 'trajectories' based on class, gender, generation, ethnicity and geography and are established at an early age (Selwyn et al., 2006; Tuckett and Aldridge, 2009). Over the

past decade there has been a significant policy commitment to the potential of new technologies to support lifelong learning (e.g. DfEE, 1998; DIUS, 2009). However, in contrast to policy expectations, access to the Internet and other new technologies has not increased the number of adults engaging in significant learning opportunities (Barraket, 2004; Selwyn et al., 2006). Nor has it widened participation, as Gorard and Selwyn state, 'at best ICT is increasing levels of participation within the social groups that were learning anyway' (2005: p. 85).

So why is this case? The reasons are multifaceted and relate to issues of both involuntary exclusion and choice. For example, some individuals may simply not have access to a range of ICTs and have therefore never used them; others see technology as largely irrelevant to their daily lives (Gorard and Selwyn, 2005) which leads them to choose not to use them. On the other hand, individuals may lack the ability to use the Internet effectively (e.g. in using particular tools, locating information etc), or they may have low confidence and self-esteem as learners (e.g. due to negative past experiences of learning) (Kirby et al., 2002; LSC, 2006; Makai et al., 2001) which suggests a complex set of choice and exclusion reasons for disengagement.

It is important to continue to explore if and why adults are using the Internet to support lifelong learning; particularly given the lack of research in this area (Cook and Light, 2006) and the increasing domestication of the Internet. As Internet penetration in the home increases in the UK (Dutton, et al., 2009; Helsper and Galacz, 2009) there may be changes in patterns of participation in the uptake of online learning opportunities. Indeed, the increased availability of the Internet in the home may be particularly important for certain groups. For example, adults who wish to learn but do not want to engage in formal education or those who have mobility/health issues.

We are not suggesting that the Internet and other new technologies can simply overcome the complex array of individual and contextual barriers to learning - technology does not in itself make people more likely to participate (Gorard et al., 2002). Yet we argue it can facilitate existing predispositions to finding out new things even amongst those who do not wish to engage with traditional formal learning environments.

In this paper, using data from the 2007 Oxford Internet Surveys (OxIS) , we examine the uptake of online learning opportunities with a particular focus on the extent to which adults are using the Internet for learning activities because they choose to or because of (involuntary) digital exclusion. Our main question is: What constitutes choice in relation to online learning? How can we measure it and how can we disentangle it, if at all, from digital exclusion (or forced choice)? These are particularly challenging questions due to the difficulty of defining and understanding 'choice'. People who have Internet access in their home but do not use the Internet are arguably more likely to not use the Internet based on an informed 'choice'; that is, a decision not based on socio-economic disadvantage but on personal preferences and needs. For those who have no access and do not use the Internet this 'choice' could be tied up with socio–economic factors and / or life circumstances. Nevertheless, the uptake of traditional offline learning opportunities is often related to a complex mix of societal, household and individual characteristics and associated processes of socialisation which form people's choices (Lucey and Walkerdine, 2000; Lucey, et al., 2003). There is no reason to assume that the relationship between choices and exclusion as regards newer forms of online learning will be easier to disentangle.

As noted above, discussions around digital exclusion and choice are not only related to uptake of online learning opportunities, it relates to broader questions of digital exclusion and inclusion. In the literature, disengagement with new technologies is typically explained as the result of (involuntary) exclusion or as the result of choice. In simple, dichotomous terms, the first argues that socio-economic resources (income, education) limit people's possibilities to access technologies and their opportunities in relation to skills acquisition. This disengagement is involuntary and related to a lack of opportunities (Livingstone and Helsper, 2007). Proponents of the second explanation point towards findings which show that even in societies or households where access to ICTs is readily available people still disengage (Dutton et al., 2009). In societies where the diffusion of the Internet has reached a saturation point, some researchers suggest that issues of choice or lifestyle become more important than issues of exclusion (Mancenelli, 2007). Based on these principles personal choice can be defined as 'select[ing] among media choices based on how well each option helps them meet specific needs or goals*'* (Cho et al., 2003, p.48).

Choice is a difficult concept to separate from issues of digital and social inclusion, as 'choice' is clearly embedded within a social context which will shape these choices (Cody et al., 1999; Haddon, 2000; Helsper, in press; Loges and Jung, 2001). For example, gender studies have pointed out that 'choice' is often determined by societal pressures to behave in a certain way in relation to technologies and that the choice not to use a technology or to use it in a narrow way is thus an overt reflection of these forces (i.e. forced choice) (Rommes, 2002; Selwyn, 2007; Wajcman, 2004). Furthermore, studies with the elderly show that they often do not consider the Internet a technology that is appropriate or relevant for people of their age group (Dutton et al.,

2009; Selwyn, 2006). Lucey, Melody and Walkerdine (2003) have pointed to similar processes related to gender and class.

Research on digital exclusion and inclusion has shown that there are some people who are unexpectedly engaged in using the Internet (Helsper, 2008). That is, they use ICTs against the odds of someone with their background engaging with technologies in general. Thus, issues of digital choice are pertinent. This could also be the case for learning online and if so, determining who these people are, how they could be best supported, and if others could be similarly empowered is an important issue. The distinction between choice and digital exclusion and its relationship to the uptake of learning opportunities online has important policy implications since interventions designed to support uptake of online learning opportunities are necessarily different depending on which explanation is most relevant. While digital choice and digital exclusion are strongly related in practice, the debate around education and ICTs may benefit considerably from disentangling their individual contributions to engagement with different types of learning opportunity.

Thus, here we will explore the question of what constitutes choice in relation to online learning; and if and how we can measure it, understand it and disentangle it, from digital exclusion (or forced choice).

Methodology

The 2007 OxIS used a nationally representative sample of 2,350 people aged 14 and older in Britain (England, Scotland and Wales). Interviews were conducted face-to-face in people's

homes. A two-stage random sampling design was used. First, a random sample of 175 areas in Britain was selected, stratified by region. Then, within each selected area, a random sample of 10 addresses was selected from the UK Postal Address File. The data were weighted according to the UK Census based on gender, age, socio-economic grade, and region. The response rate using this sampling strategy was 77%.

Measures

We start our analysis by exploring the reasons why adults disengage from using the Internet amongst those who do not currently use the Internet. Participants were asked 'Do you, yourself, personally use the Internet at home, work, school, college or elsewhere or have you used the Internet anywhere in the past?' Response alternatives were: '1) yes, current user, 2) no, but used it in the past, 3) never used the Internet.' In this paper we use this question to distinguish between ex-users, those who have used the Internet before, and non-users, those who have never used the Internet. The second part of our analyses focuses on adult Internet users aged over 25 and the factors that explain their (dis)engagement from three types of online learning opportunities: informal learning, fact checking and formal learning activities.

For both parts of the analyses we use regression analysis to examine the independent effect of a number of different factors that are important in understanding digital exclusion and digital choice. These variables were selected based on previous work in this area related to adult learning and use of ICTs (e.g. Selwyn et al., 2006), work that focuses on secondary digital divides where issues of choice or lifestyle are seen as more important than issues of exclusion (e.g. Cody et al., 1999; Mancenelli, 2007) and consumer uptake studies and psychological choice

theories (e.g. Cho et al, 2003; Choudrie and Dwivedi, 2004). The measures used as indicators in this study were clearly limited to what was available in the survey, yet were sufficient to address the research questions.

Firstly, socio-economic status, level of education, home Internet access and Internet self - efficacy are included in these linear regressions to cover those factors associated with digital exclusion. Socio-economic status was created following the standard classification (A (highest) to E (lowest), *M*=3.51; *SD*=1.30) basing it on the occupation, education level and income level of the chief income earner. While there are many problems with SES as an indicator (Savage and Burrows, 2007), it was the best measure in OxIS of the socio-economic home environment which might shape engagement. Education (*M*=1.84; *SD*=.80) was created by classifying those with up to secondary school education as 'Basic education' (1), those with additional post-compulsory education as 'Further education' (2), and those with University education as 'Higher education' (3).The analyses included other socio-demographic factors (such as age and gender) to cover socio-cultural factors that can be related to socialisation factors that shape digital choice[1].

Home access was measured through the question 'Does this household have access to the Internet?' A dummy variable was created so that 1 signified 'Yes, current home access' and 0 signified 'No current home access'. (66% yes, c.i.= 65%-68%). Home access was chosen as an indicator of high quality access conducive to learning over access in more restricted public locations (see Livingstone and Helsper, 2007; Mumtaz, 2001). Internet self-efficacy was measured on a five point scale from Excellent (5) to Bad (1) (*M* = 3.72, *SD* = .84) through the

answer of the respondent to the question 'How would you rate your ability to use the Internet?' Internet self-efficacy was an operationalization of an exclusion factor since previous research has showed a close link between this variable and traditional literacy and level of education (Eastin, 2005). Although differences in self-efficacy could also be argued to be the result of socialization processes in relation to ICTs (Selwyn, 2007) this possibility is controlled for in the analysis.

In addition, attitudes towards ICTs and whether people have children (37%, c.i. = 35%-39%) were included as indicators related to personal choice as regards the use of ICTs. Attitudes towards ICTs was composed through averaging the agreement scores (from 1 'disagree strongly' to 5 'agree strongly') on ten related items (M=2.12, SD=.60), the construct had an acceptable level of internal consistency (Cronbach's alpha, α =.66). The ten items were: 'When new technologies or gadgets are invented, it is a good idea to try them', 'Technology is making things better for people like me', 'People should be able to express their opinion anonymously on the Internet', 'People who go on the Internet put their privacy at risk', 'The Internet makes life easier', 'The Internet is frustrating to work with', 'There is a too much immoral material on the Internet', 'The Internet is a fast and efficient means to gaining information', 'The Internet is a fast and efficient means to gaining information', and 'The use of the Internet can be addictive'.

Learning takes many forms varying in the extent to which it is formal or informal, intentional or unintentional, and the level of time and engagement with a topic. Here, our focus is on the uptake of relatively minor or everyday online activities that may lead to learning. OxIS asks a number of questions about the frequency with which people carry out different activities online (scale from 1 'never' to 6 'several times per day') and, based on an exploratory factor analysis using varimax

rotation, twelve general categories of Internet uses were constructed including: fact checking, training or formal learning, informal learning, travel, finance, shopping, entertainment, social networking, e-government and civic participation (see Helsper and Galacz, 2009). The analyses in this paper will focus on fact checking (M=2.49, SD=1.19, r^2=.68), formal learning (M=1.95, SD=.91, α=.72) and informal learning (M=2.44, SD=.97, α=.72) since, arguably these are the three types of engagement of the twelve types identified that are most closely related to learning. Fact checking was measured by taking the average of the two items, 'Finding or checking a fact' and 'Looking up a definition of a word'. Formal learning consisted of the average score across the following five items: 'Distance learning for an academic degree or job training', 'Finding out about opportunities for further study about topics',' Getting information for work related projects', 'School related projects or homework', and 'Looking for jobs, work'. The informal learning scale was the average of four items: 'Looking for news - local, national, international', 'Getting information about local events', 'Finding information about health or medical care', and 'Looking for sports information'.

Of course, survey data cannot tell us about the extent of the learning that takes place while doing these activities (if indeed learning takes place at all) but it enables us to explore the possible learning opportunities for which adults may be using the Internet and a way to understand why adults engage or disengage from these activities.

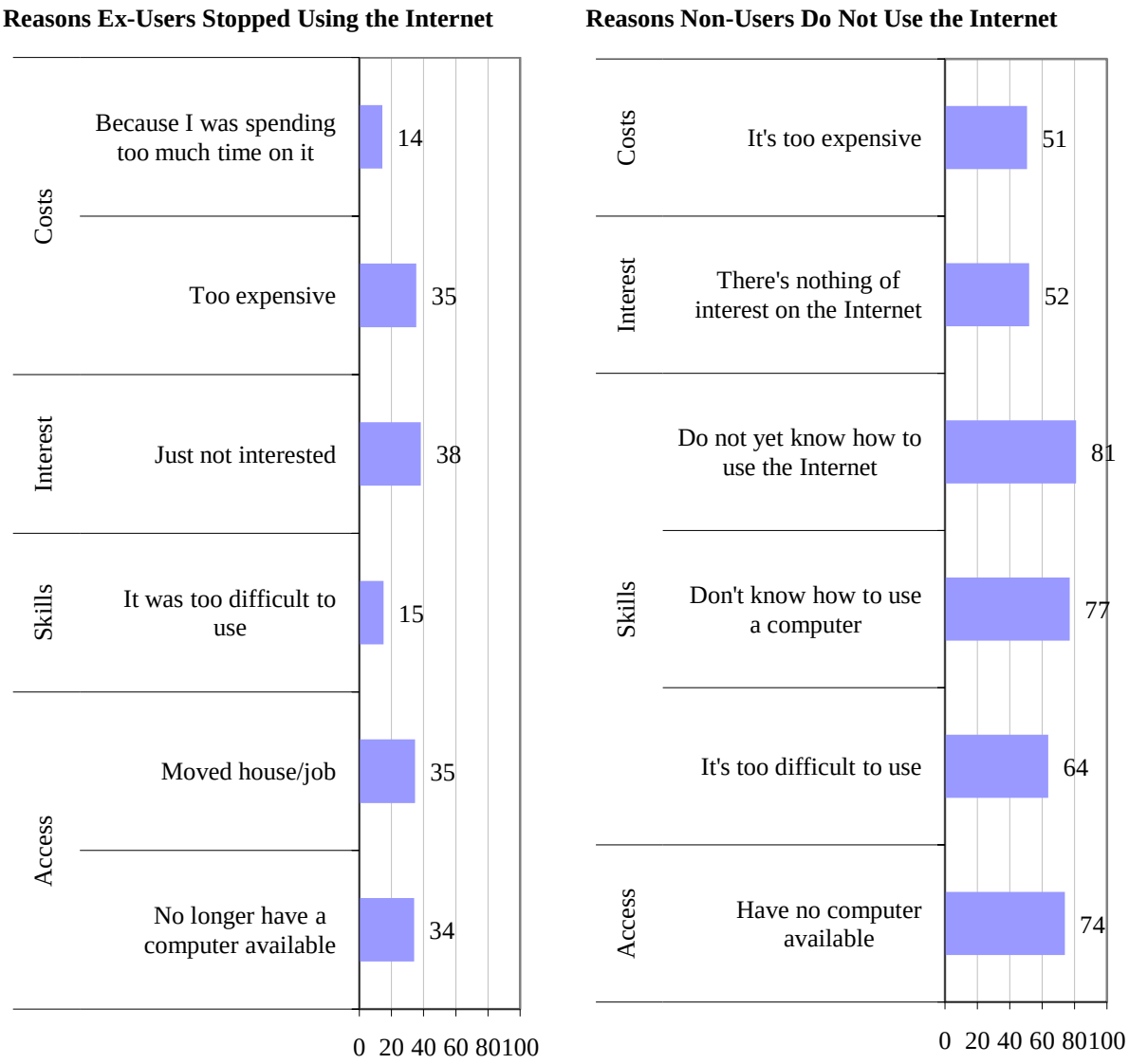
Findings

This section is divided into two main parts. In the first, we explore why adults (dis)engage with the Internet and in the second we examine why adult Internet users (dis)engage with online learning opportunities.

Why do adults disengage from using the Internet?

OxIS asks non-users and ex-users about their reasons for not using the Internet. The items relate to four key reasons: costs, interest in using the Internet, skills and access. The percentage of ex-users and non-users who agreed with each item is illustrated in Figure 1.

Figure 1: Reasons for disengaging from the Internet



Base. Ex- and Non-Users N=773

As can be seen in Figure 1, ex-users and non-users have different reasons for not using the Internet. Ex-users are most likely to point to a lack of interest and access. Non-users are most likely to point to a lack of skill and access. Thus, to some extent it appears that ex-users are making a choice to disengage with the Internet (i.e. they lack interest) but factors of digital exclusion (i.e. access and costs) remain, whereas for non-users digital exclusion factors seem more prominent.

To obtain a more detailed picture and disentangle independent effects of choice and exclusion, a logistic regression was conducted to understand how different factors are related to ex-users' and non-users' disengagement from the Internet (Table 1). Dichotomous variables were created from the items described in Figure 1, if the person marked at least one of the reasons within a class (i.e. access, skills, interest or cost) as a reason for why they did not use the Internet (non-users) or stopped using the Internet (ex-users) a score of '1' was assigned, if none of the reasons within a class was indicated as a reason they received a score of '0' for that class.

Table 1 Logistic regressions of reasons for disengagement

	Lack of ….									High		
	Access			Skills			Interest			Costs		
	B	*p.*	*β*	*B*	*p.*	*β*	*B*	*p.*	*β*	*B*	*p.*	*β*
User Type (Ex-user)	-1.00	**	0.37	-3.64	**	0.03	-1.09	**	0.33	-0.79	**	0.46
Age	-0.10	0.15	0.90	0.08	0.45	1.08	0.18	*	1.20	-0.23	**	0.79
Gender (Men)	0.23	0.23	1.25	-0.47	0.09	0.63	0.12	0.58	1.12	0.09	0.61	1.10
Social Grade (SES)	-0.16	*	0.85	-0.23	0.05	0.80	0.08	0.40	1.08	-0.07	0.39	0.93
No Children	0.63	*	1.87	0.39	0.31	1.48	0.21	0.46	1.23	0.15	0.58	1.16
Education Higher		0.09			**			0.37			0.16	
Basic education	-0.15	0.71	0.86	-0.13	0.83	0.88	0.13	0.77	1.14	0.77	0.06	2.16
Further education	-0.63	0.13	0.53	-1.05	0.08	0.35	-0.23	0.63	0.80	0.57	0.19	1.76
Attitudes towards ICTs	-0.13	0.43	0.87	-0.38	0.12	0.68	-1.32	**	0.27	-0.79	**	0.45
Constant	1.80	*	6.06	3.22	0.00	25.00	1.77	*	5.86	2.53	**	12.51

Base. Ex- and Non-Users N=773

As can be seen from Table 1 the reasons for disengagement are somewhat different for different groups. Non-users who used the Internet before (i.e. ex-users), those with lower SES and those with children are less likely to indicate that a lack of access is a reason for not using the Internet. Interestingly, ex-users, those with low educational levels (i.e. those with no higher education) are less likely to indicate that a lack of skills is a reason for not using the Internet. Those with more positive attitudes towards technology, ex-users and those who are younger are less likely to indicate that a lack of interest is a reason. Finally those with more positive attitudes, ex-users and older people are less likely to indicate that cost is a reason. The only factor that did not play a role in determining any reason for disengagement of the Internet was gender. This in contrast to

many studies that find that amongst users self-perceived skill levels and interest in ICTs differs between men and women (Selwyn, 2006; Selwyn, 2007).

Adult Internet users (dis)engagement from online learning opportunities

In this section we explore the factors related to disengagement from online learning opportunities by Internet users. Table 2 summarises the results of a linear regression of formal and informal online learning for adults aged 25 and over.

Table 2 Linear regressions of formal and informal online learning (adults older than 25)

	Formal learning			Fact checking			Informal learning		
	B	*Beta*	*P*	*B*	*Beta*	*p*	*B*	*Beta*	*P*
(Constant)	0.91		0.82	0.84		*	0.74		**
Home access	0.00	0.00	0.97	0.19	0.04	0.19	0.46	0.11	**
Age	-0.10	-0.15	**	-0.07	-0.08	**	-0.04	-0.06	*
Gender (female)	-0.03	-0.02	0.53	-0.06	-0.02	0.40	-0.37	-0.19	**
Social grade (SES)	-0.03	-0.04	0.23	-0.04	-0.05	0.17	-0.02	-0.03	0.41
Children under 10	-0.03	-0.02	0.39	-0.05	-0.03	0.28	-0.04	-0.03	0.29
Children over 10	0.10	0.07	**	0.04	0.02	0.43	0.10	0.07	*
Education	0.26	0.24	**	0.18	0.12	**	0.15	0.12	**
Self-efficacy	0.23	0.23	**	0.30	0.22	**	0.28	0.24	**
Attitudes towards ICTs	0.07	0.04	0.17	0.20	0.09	**	0.19	0.10	**

Base. Adult (older than 25yrs) Internet Users; N=1,281

Note. Non-linear relationships for age, social grade and education were tested but not found to be significant.

As can be seen in Table 2, the variables that relate to why adult Internet users engage or do not engage with online learning activities depend on which types of online learning are investigated.

Those Internet users who are more highly educated, with higher levels of Internet self-efficacy, have children over 10 and are younger are more likely to use the Internet for formal learning. Those Internet users who have higher levels of Internet self-efficacy, have more positive attitudes towards ICTs, are better educated, and are younger are more likely to use the Internet for fact checking. Internet users with home Internet access, men, have higher levels of confidence in their Internet skills, have more positive attitudes towards ICTs, have children over 10, are better educated, and younger Internet users are more likely to use the Internet for informal learning. Perceived ability to use the Internet, level of education, and those who are younger are significant factors across all three types of online learning opportunities. Having children over 10 is important for the uptake of formal and informal learning opportunities but not for fact checking. Home access is important for more informal types of learning.

Thus, from these analyses it seems that digital choice and exclusion are both important, particularly for more informal kinds of learning online. However, the approach above is problematic due to the difficulty of adequately measuring 'choice'. This is partly due to the complexity of the concept, but also the limited number of variables we have available to operationalise the construct (i.e. having children and positive attitudes towards technology). To try to address this problem we next examined Internet users who are unexpectedly included or unexpectedly excluded from online learning opportunities based on a composite measure of social exclusion.

The unexpectedly included and unexpectedly excluded

Based on education and SES we would expect certain individuals to be excluded from engaging with the Internet in terms of learning, that is we would expect those with low education and low SES to be excluded from use while those with high education and high SES are expected to be included. This classification in terms of expected inclusion and exclusion allows a comparison of those who do not 'comply with' these expectations to understand what makes them different. It is informative to describe the unexpectedly included and unexpectedly excluded in terms of their socialisation, choice and access characteristics to understand whether there are factors beyond economic exclusion that explain engagement with the Internet for learning. Since there were high numbers of Internet users who engaged with informal learning related activities at a basic level (i.e. carried out one online learning activity once every few months) we considered inclusion in relation to these activities to be determined by a participation that was at least weekly. Thus, if on average someone undertook formal learning activities at least weekly they were considered included in this particular area. In this instance, the analyses focus on the most extreme levels of social exclusion and not on those who are of average social exclusion levels (i.e. further education and SES level C1C2). The examination of digital engagement focuses on very frequent use of the Internet on purpose to understand what makes those who are most likely to be using the Internet to learn different from those who are not.

Table 3 Percentages of (un)expectedly included and excluded Internet users

		Socially Included[a]	Socially Excluded[b]
Formal learning**	Less than weekly	69%	97%
	At least weekly	31%	3%
Fact checking**	Less than weekly	38%	78%
	At least weekly	62%	22%
Informal learning**	Less than weekly	50%	77%
	At least weekly	50%	23%

Base: Adult Internet Users with high social inclusion (N=198) or low social inclusion levels (N=144).

** Differences between socially included and excluded significant at p<.01

a. SES level AB and High level of education (University)

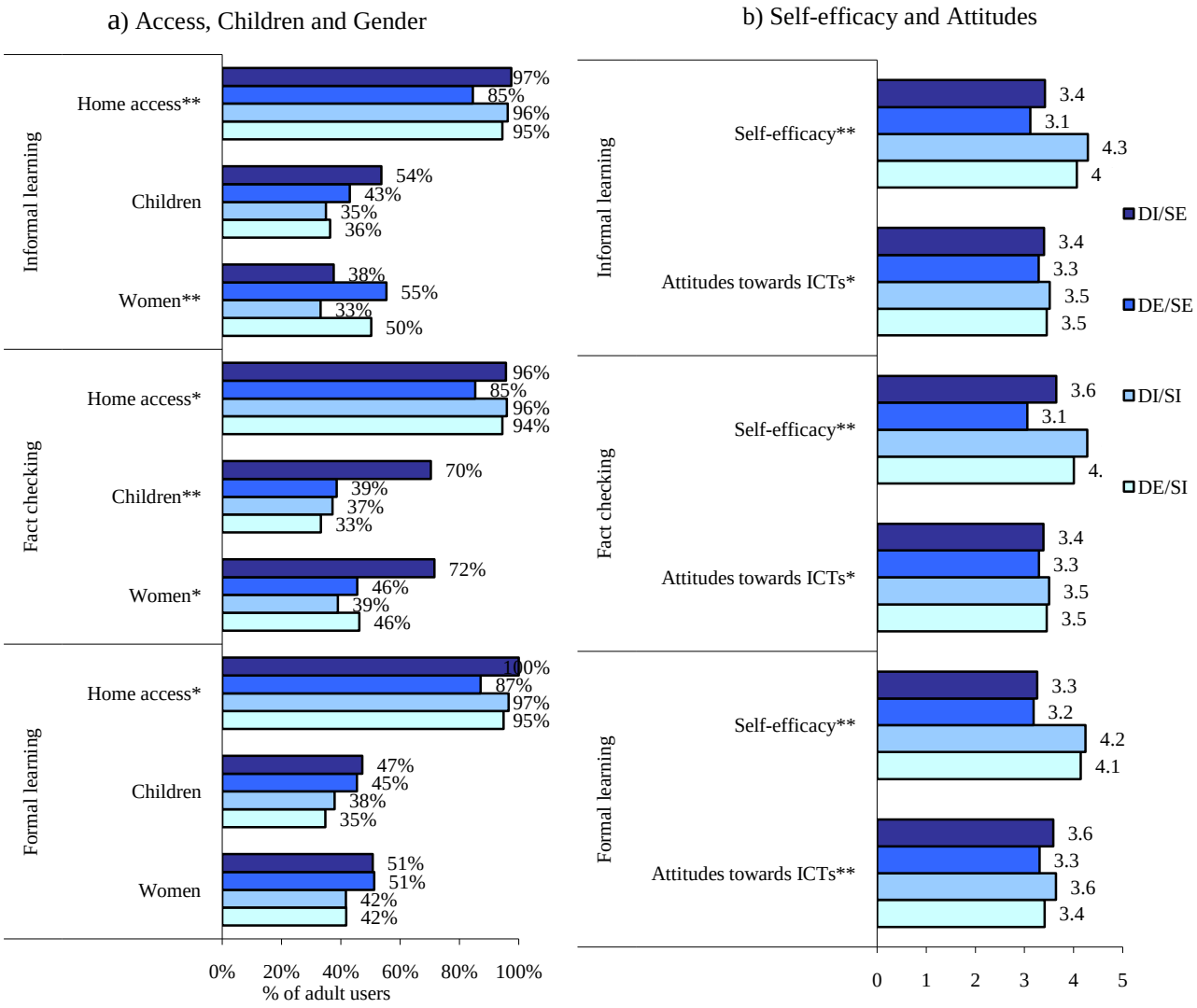
b. SES level DE and Basic level of education (Secondary school)

Table 3 shows that those who are socially excluded are significantly less likely to use the Internet at least weekly for all three learning purposes. These differences are larger for formal learning and fact checking than for informal learning. Informal learning is the area in which there are respectively the largest proportion of unexpectedly included, 23% of Internet users who are socially excluded carry out informal learning activities online at least weekly, and has the smallest proportion of unexpectedly excluded, 50% of those who are socially included participate in online informal learning on a weekly basis. For formal learning and fact checking the percentages of unexpectedly included are lower, 3% and 22% respectively, and the percentages of unexpectedly excluded are higher, 69% and 38% respectively.

Extending this analysis, it is valuable to explore how those who are unexpectedly included (i.e. socially excluded adult Internet users who take up online learning opportunities at least once a

week) are different or the same as the expectedly excluded (i.e. socially excluded adult Internet users who do not take up online learning opportunities at least once a week), the expectedly included (i.e. socially included adult Internet users who take up online learning opportunities at least once a week) and the unexpectedly excluded (socially included adult Internet users who do not take up online learning opportunities at least once a week).

Figure 2 Descriptive indicators of (un)expectedly included and excluded Internet users



Base: Adult Internet Users with high social inclusion (N=198) or low social inclusion levels (N=144).

** Differences significant at p<.01

* Differences significant at p<.05

Note:
DI/ SE = unexpectedly included (digitally included/ socially excluded)
DE/ SE = expectedly excluded (digitally excluded/ socially excluded)
DI/ SI = expectedly included (digitally included/ socially included)
DE/ SI = unexpectedly excluded (digitally excluded/ socially included)

Figure 2a shows that those who are unexpectedly included have higher levels of home access for all three types of online learning opportunities and are significantly more likely to be female and have children for fact checking than the other three groups. The differences between those who take up online learning opportunities and those that do not are especially large within the group of socially excluded adult Internet users. For example, within the groups of socially excluded adults those who are using the Internet at least weekly for informal learning, fact checking and formal learning (i.e. the unexpectedly included) are at least 10 percentage points more likely to have home access than those who use the Internet less than weekly for these activities (i.e. the expectedly excluded). For fact checking the differences in access, children, gender, self-efficacy and attitudes are often larger than for the other learning activities, for example, 70% of the unexpectedly included have children in comparison to only 39% of the expectedly excluded in the area of fact checking.

The importance of gender is different for different types of learning. In the area of informal learning the digitally excluded are less likely to be women no matter what their social inclusion level is. On the other hand, amongst the socially excluded those who engaged with fact checking are more likely to be women than those who did not engage in this activity, while amongst the socially included this relationship is the reverse; those who are disengaged from fact checking online are more likely to be women than those who are engaged with this activity. Within groups with similar levels of social exclusion there are no gender differences between those who are digitally included as regards formal learning and those who are excluded.

Interestingly, Figure 2b shows that those who are socially included are consistently more positive about ICTs and have higher levels of self-efficacy independent of if and how they use the Internet for learning. Nevertheless, the differences between those who take up online learning opportunities and those that did not within groups with similar levels of social inclusion are small in relation to self-efficacy and ICT related attitudes. While small these differences are significant, those who take up online learning opportunities did have significantly more positive attitudes and higher levels of self-efficacy than those with similar levels of social inclusion who do not take up those online learning opportunities.

Discussion

The analysis above has demonstrated the complexity of debates around digital exclusion and choice. Both choice and exclusion are important when exploring reasons why people (dis)engage with online learning opportunities. Yet, the significance of choice and exclusion varies for different groups of people and different types of learning.

When looking at the reasons non-users give for disengagement with the Internet (access, skills, lack of interest and cost) certain groups are more likely to give one or more of these reasons. For example, ex-users of the Internet, those with lower SES and those with children are less likely to indicate that a lack of access is a reason for not using the Internet. Interestingly, the types of reasons typically associated with involuntary exclusion are closely related to the attitudes that people have towards ICTs which in turn have been related to choice. This finding supports ideas of socialisation more than of agency since purely free choice or agency would mean people's individual attitudes and opinions would be independent from class and other social factors. In

other words, it corresponds to what Lucey et al (2003) describe as the social psychological processes behind exclusion, where the choices people (can) make depend on their socio-cultural and family context. However, attitudes and a lack of interest also had independent effects in explaining (dis)engagement with the Internet suggesting that individuals do have agency independent of broader socio-cultural factors that determine their use of the Internet. That is, people with negative opinions about ICTs are more likely to indicate they are not using the Internet due to costs or lack of interest independent of their socio-economic background.

In addition, non-users are in general more likely to indicate cost, skills, interest and access as reasons for not using the Internet than ex-users. This indicates that individual non-users do not have one specific reason for which they do not use the Internet, while individual ex-users are more likely to have one particular reason but that what this reason is varies considerably from one ex-user to the next. Indeed, these differences highlight the diversity amongst non-users and ex-users that has been highlighted in, for example, the Pew Internet Studies (Rainie et al., 2003).

From the analyses here, both social exclusion and choice play a part in understanding non-use of the Internet, but the significance of these factors may differ for different segments of the population. Thus, distinguishing different types of users and non-users and understanding how they are different is important (Selwyn, 2006; Rainie et al., 2003).

Similarly, digital exclusion and choice play complex roles in understanding (dis)engagement with all three types of online learning opportunity. The linear regressions conducted enabled us to unpack what is going on in relation to exclusion (SES, education, self-efficacy and home

access), socialisation (gender, age) and choice (attitudes towards ICTs and having children). When looking at the significant factors from the regression analyses, exclusion (education, self-efficacy), choice (having children) and socialisation (age) were all significant for formal learning. For fact checking, exclusion (education and self-efficacy); choice (more positive ICT attitudes) and socialisation (being younger) were all significant. For informal learning, exclusion (education, self-efficacy, and home access); choice (ICT attitudes and having children) and socialisation (gender and age) were significant. For uptake of more formal learning opportunities, the most important factors were those related to exclusion. For fact checking, the most important factors were aspects of exclusion and choice; and for informal learning the most important factors are aspects of exclusion, socialisation and choice. Thus it seems that choice and exclusion are both important, particularly for more informal kinds of learning online, while for formal types of learning traditional exclusion variables tend to dominate.

The OxIS items used to measure choice, socialisation and exclusion were limited. Therefore, the analyses can only begin to demonstrate the complex interplay between individuals and their work, home and social contexts. Nevertheless from the analyses it was possible to partly address some of these issues by examining Internet users who were unexpectedly included or unexpectedly excluded from online learning opportunities. When looking at Internet users who could be defined as socially included (that is, those who have SES level AB and university level education) and comparing them to Internet users who could be defined as socially excluded (that is, those who have SES level DE and basic levels of education) there were significant differences in uptake of online learning opportunities by these groups. Those Internet users who were socially excluded were significantly less likely to use the Internet at least weekly for all three

learning purposes, particularly for formal learning and fact checking. In the case of informal learning the picture was more positive as there was respectively the largest proportion of unexpectedly included. In addition, there was the narrowest gap between those who were unexpectedly included and those that were unexpectedly excluded. However, for fact checking, a very specific type of everyday learning, these differences were the largest.

While it is difficult to make a precise distinction between informal and formal learning (Sefton-Green, 2004; Stern and Sommerlad, 1999) and our measures of formal and informal learning were somewhat limited, this finding supports other work in this area that suggests that much of adult learning using ICTs tends to informal more than formal (Selwyn and Gorard, 2004) and that policies designed to support people's interests as opposed to trying to make people undertake more formal kinds of learning would be more effective (Lynch, 2008; Selwyn et al., 2006). Indeed, informal learning is a key consideration in these debates, as formal learning is only a small part of people's overall learning experiences (Coffield, 2000). The Internet may be one way that people can develop and learn more about their interests and, while the Internet should not be the only option available to people it could be a valuable opportunity for some that needs to be supported appropriately. Indeed, the potential of the Internet to be used in this way is recognised by UK policy makers (e.g. DIUS, 2008).

From the analysis it is clear that amongst those who are socially excluded those who engage with learning online have specific characteristics (having children, high levels of self-efficacy, and positive attitudes toward ICTs). These characteristics may have pushed this group of people to overcome the disadvantages that made others disengage and take up learning opportunities

online, particularly in the case of informal learning. Nevertheless, even though this group is using the Internet for learning they may still need more support. While those who are unexpectedly included had more positive attitudes towards ICTs and higher levels of self-efficacy than those defined as socially excluded who did not take up those online learning opportunities, they were still more negative about ICTs and had lower levels of self-efficacy than those who were socially included independent of how they used the Internet for learning. Thus, similar to our findings on users and non-users of the Internet it is important to understand the needs of different groups of individuals and support them differently when appropriate.

Conclusions

From the analysis above it is clear that (dis)engagement with the Internet and the uptake of online learning opportunities by adults is shaped by both digital exclusion and choice. While it is difficult, if not impossible, to disentangle exclusion and choice, the research has shown it is valuable to try to better understand these two concepts (and how they relate) to examine the reasons why people engage with the Internet, and, once online, if they engage with online learning opportunities.

The variables available for the analyses presented in this paper were limited, especially in relation to indicators of choice. More research is required to understand the complex interplay between individual characteristics and decision making and the home, work and social contexts within which they operate. In addition, more research is required to better understand what choice means in relation to Internet use and how Internet use is related to people's everyday lives and the learning they do off line. How and why people 'chose' to use the Internet for learning instead of or to complement other ways of learning remains unclear.

Notwithstanding these limitations, the distinction we were able to make between digital exclusion and choice furthers our understanding of what the difficulties might be in trying to support adults in taking up learning opportunities using the Internet. It is clear that different groups are likely to need different kinds and levels of support if they wish to use the Internet for learning. While it is difficult to unpack digital choice and exclusion, from this analysis we suggest that examining Internet users who are unexpectedly included or unexpectedly excluded from online learning opportunities seems a particularly valuable approach for further research.

Similar to other research, there seems to be greater uptake of informal kinds of online learning opportunities, and the more informal the nature of the online learning activity the more factors, beyond involuntary exclusion, that become important. Thus, it appears that supporting informal learning may well be the most effective course of action. Informal learning is an extremely important part of individuals learning experience and can have all kinds of social and, in some cases, economic benefits. Furthermore, increasing engagement in informal learning online could potentially awaken an interest in more formal, certified types of learning amongst those with educational disadvantages. However the relationships between formal and informal learning experiences remains an under-researched area and more work is required to understand how these processes work for a variety of different disadvantaged groups (Bell et al., 2009).

The analyses do show that supporting online learning opportunities is not straightforward. Providing access and creating awareness about the benefits of ICTs are likely to make a significant step towards engaging people in learning but this is not sufficient to deal with issues

embedded in educational and social inequality. Particularly for more formal learning, which is less popular, socialisation factors and entrenched social inequalities will need to be tackled before participation in these activities is likely to increase.

In summary, our analyses provide useful insights into the relationships between digital choice and digital exclusion for the uptake of online learning opportunities. Quantitative analyses such as that presented here need to be complemented by more qualitative work in this area that can give researchers and policy makers a more holistic understanding of the role technology plays in individuals' everyday lives in order to better support and inform lifelong learning initiatives that make use of the Internet.

Notes

1. There are factors related to social exclusion measured in OxIS, such as income, physical and mental health, and minority status (DiMaggio, et al., 2001; Selwyn and Facer, 2007), that were not included in the analysis presented here. The main reasons for not including these were high non-response rates (e.g. for income) and where the number of participants was too small to create enough variance with explanatory power (e.g. for ethnic minority). The factors that have been shown to have high explanatory value in other studies regarding digital disengagement, that is education, SES and age, were available through OxIS and have been used here.

References

Barraket, J. (2004) 'E-learning and access: Getting behind the hype', in M. Osbourne, J. Gallacher, and B. Crossan (eds.) *Researching widening access to lifelong learning: issues and approaches in international research*, pp. 91–102. London: RoutledgeFalmer.

Bell, P., Lewenstein, B., Shouse, A. and A. Michael (2009) *Learning Science in Informal Environments: People, Places, and Pursuits.* Committee on Learning Science in Informal Environments. National Research Council.

Cho, J., Gil de Zuniga, H., Rojas, H. and D.V Shah (2003) 'Beyond access: The digital divide and Internet uses and gratifications', *IT and Society*, *1*(4):46-72.

Choudrie, J. and Y.K. Dwivedi (2004) 'Towards a Conceptual Model of Broadband Diffusion', *Journal of Computing and Information Technology*, 12(4):323–338.

Cody, M. J., Dunn, D., Hoppin, S., and P. Wendt (1999) 'Silver surfers: Training and evaluating Internet use among older adult learners', *Communication Education*, *48*(4):269-286.

Coffield, F. (2000) *The Necessity of Informal Learning*. Bristol: Policy Press.

Cook, J and A. Light (2006) 'New Patterns of Power and Participation? Designing ICT for Informal and Community Learning', *E-Learning*, 3(1):51-61.

Department for Education and Employment (DfEE) (1998) *The Learning Age: A renaissance for a New Britain*. London: The Stationary Office.

Department for Innovation, Universities and Skills (DIUS) (2008) *Informal Adult Learning: Shaping the Way Ahead*. London: The Stationary Office.

Department for Innovation, Universities and Skills (DIUS) (2009) *The Learning Revolution*. London: The Stationary Office.

DiMaggio, P., Hargittai, E., Russell Neuman, W. and J. P. Robinson (2001) 'Social Implications of the Internet', *Annual Review of Sociology, 27*(1): 307-336.

Dutton, W. and E.J. Helsper (2007) *The 2007 OxIS Survey. The Internet in Britain*. Oxford: University of Oxford.

Dutton, W., Helsper, E.J. and M.M. Gerber (2009) *The 2009 OxIS Survey. The Internet in Britain*. Oxford: University of Oxford.

Eastin, M. S. (2005) 'Internet self-efficacy and the psychology of the digital divide', *Cyberpsychology and Behavior,* 8, 62-75.

Feinstein, L., Hammond, C., Woods, L., Preston, J. and J. Bynner (2003) *The Contribution of Adult Learning to Health and Social Capital. Wider Benefits of Learning Research Report No.8.* London: Centre for Research on the Wider Benefits of Learning.

Gorard, S., Selwyn, N., Madden, L. and J. Furlong (2002) 'Technology and lifelong learning: are we cutting IT?', paper presented to the All-Wales Education Research Conference, University of Wales Conference Centre, Gregynog, 3-5 July.

Gorard, S. and N. Selwyn (2005) 'Towards a le@rning society? The impact of technology on patterns of participation in lifelong learning', *British Journal of Sociology of Education,* 26(1): 71-89.

Haddon, L. (2000) 'Social exclusion and information and communication technologies: lessons from studies of single parents and the young elderly', *New Media and Society, 2*(4):387-406.

Hammond, C. (2004) 'Impacts of lifelong learning upon emotional resilience, psychological and mental health: fieldwork evidence', *Oxford Review of Education*, 30(4): 551 – 568.

Helsper, E.J. (in press) 'Gendered Internet use across generations and life stages', *Communication Research.*

Helsper, E.J. (2008) *Digital Inclusion: An Analysis of Social Disadvantage and the Information Society*. London: Communities and Local Government.

Helsper, E. J. and A. Galacz (2009) 'Understanding the links between social and digital inclusion in Europe', in G. Cardoso, A. Cheong and J. Cole (eds.), *The World Wide Internet: Changing Societies, Economies and Cultures*, pp. 146-178. Taipa: University of Macau Press.

Kirby, J., Knapper, C., Makai, S., Egnatoff, W. and E. Mell (2002) 'Computers and Students' Conceptions of Learning: The Transition from Post-Secondary Education to the Workplace', *Educational Technology and Society*, 5(2): 47-55.

Learning and Skills Council (2006) *National Learner Satisfaction Survey: Work Based Learning 2004 – 2005.* Coventry: Learning and Skills Council.

Livingstone, S. and E. Helsper (2007) 'Gradations in digital inclusion: children, young people and the digital divide', New *Media and Society*, *9*(4): 671-696.

Loges, W. E. and J.Y. Jung (2001) 'Exploring the digital divide - Internet connectedness and age', *Communication Research*, 28(4):536-562.

Lucey, H., Melody, J. and V. Walkerdine (2003) 'Uneasy Hybrids: psychosocial aspects of becoming educationally successful for working-class young women'. *Gender and Education, 15*(3): 285-299.

Lucey, H. and V. Walkerdine (2000) 'Boys Underachievement: Social Class and changing masculinities', In T. Cox (ed.), *Combating educational disadvantage: Meeting the needs of vulnerable children*, pp. 37-52. London: Falmer Press.

Lynch, H. (2008) 'Lifelong learning, policy and desire', *British Journal of Sociology of Education*, 29(6): 677 – 689.

Maki, S., Kirby, J., Knapper, C., van Melle, E. and W. Egnatoff (2001) 'Development of the lifelong learning scale', paper presented at the 62nd Annual Canadian Psychological Convention, Université Laval, Saint-Foy Quebec, June 21-23.

Mancenelli, E. (2007) *e-Inclusion in the Information Society*. Budapest: European Union.

OECD (2003) *Beyond Rhetoric: Adult Learning Policies and Practices*. Paris: OECD

Mumtaz, S. (2001) 'Children's enjoyment and perception of computer use in the home and the school', *Computers and Education,* 36(4): 347-362.

Rainie, L., Madden, M., Boyce, A., Lenhart, A., and K. Allen (2003) *The Ever-Shifting Internet Population: A new look at Internet access and the digital divide*. Washington: Pew Internet and American Life Project.

Robins, K. and F. Webster (2002) *The Virtual University? Knowledge Markets and Management.* Oxford: Oxford University Press.

Savage, M. and R. Burrows (2007) 'The coming crisis of empirical sociology', *Sociology,* 41(5): 885-899.

Sefton-Green, J. (2004) *Literature Review in Informal Learning with Technology Outside School.* Bristol: NESTA Futurelab.

Selwyn, N. (2006) 'Digital division or digital decision? A study of non-users and low-users of computers', *Poetics,* 34(4-5): 273-292.

Selwyn, N. (2007) 'Hi-tech = guy-tech? An exploration of undergraduate students' gendered perceptions of information and communication technologies', *Sex Roles, 56*(7-8): 525-536.

Selwyn, N. and K. Facer (2007) *Beyond the digital divide*. Bristol, UK: Futurelab.

Selwyn, N., Gorard, S. and S. Williams (2001) 'Digital Divide or Digital Opportunity? The Role of technology in overcoming social exclusion in U.S. Education', *Educational Policy, 15*(2): 258-277.

Selwyn, N. and S. Gorard (2004) 'Exploring the role of ICT in facilitating adult informal learning', *Education, Communication and Information* 4(2):293 - 310.

Selwyn, N., Gorard, S. and J. Furlong (2006) *Adult Learning in the Digital Age: Information Technology and the Learning Society*. London: Routledge.

Stern, E. and E. Sommerlad (1999) *Workplace Learning, Culture and Performance*. London: Institute of Personnel and Development.

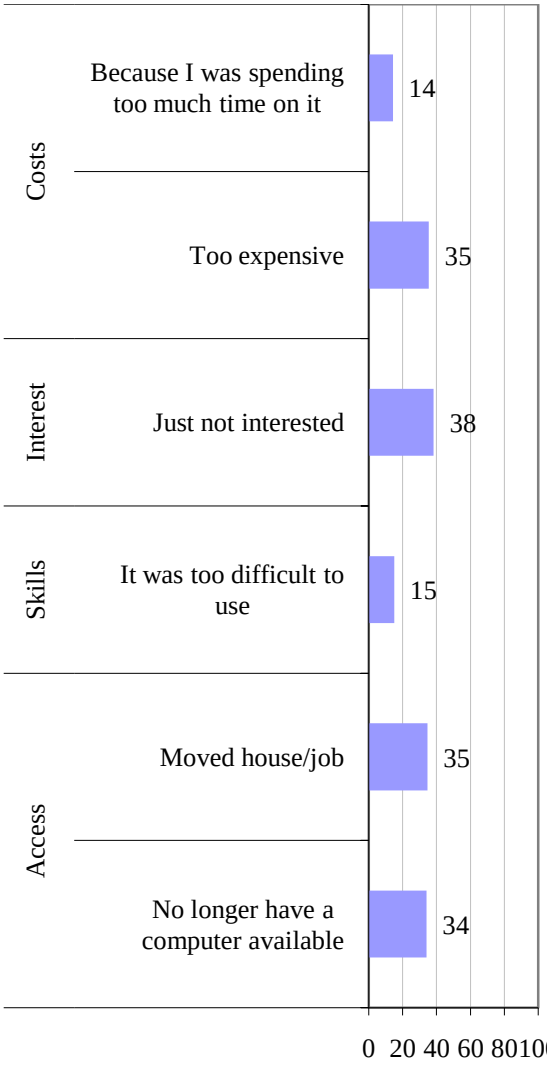
Tuckett, A. and F. Aldridge (2009) *The NIACE survey on Adult Participation in Learning 2009: Narrowing Participation*. Leicester: NIACE

Wajcman, J. (2004) *Techno feminism.* Cambridge: Polity Press.

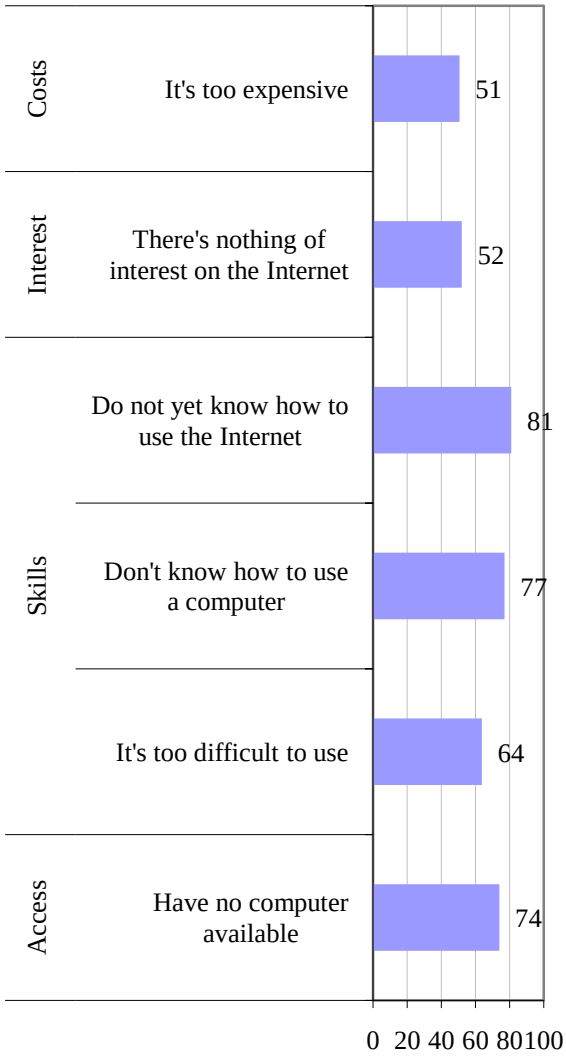
Tables and Figures

Figure 1: Reasons for disengaging from the Internet

Reasons Ex-Users Stopped Using the Internet



Reasons Non-Users Do Not Use the Internet



Base. Ex- and Non-Users N=773

Table 1 Logistic regressions of reasons for disengagement

	Lack of ….									High		
	Access			Skills			Interest			Costs		
	B	*p.*	*β*	*B*	*p.*	*β*	*B*	*p.*	*β*	*B*	*p.*	*β*
User Type (Ex-user)	-1.00	**	0.37	-3.64	**	0.03	-1.09	**	0.33	-0.79	**	0.46
Age	-0.10	0.15	0.90	0.08	0.45	1.08	0.18	*	1.20	-0.23	**	0.79
Gender (Men)	0.23	0.23	1.25	-0.47	0.09	0.63	0.12	0.58	1.12	0.09	0.61	1.10
Social Grade (SES)	-0.16	*	0.85	-0.23	0.05	0.80	0.08	0.40	1.08	-0.07	0.39	0.93
No Children	0.63	*	1.87	0.39	0.31	1.48	0.21	0.46	1.23	0.15	0.58	1.16
Education Higher		0.09			**			0.37			0.16	
Basic education	-0.15	0.71	0.86	-0.13	0.83	0.88	0.13	0.77	1.14	0.77	0.06	2.16
Further education	-0.63	0.13	0.53	-1.05	0.08	0.35	-0.23	0.63	0.80	0.57	0.19	1.76
Attitudes towards ICTs	-0.13	0.43	0.87	-0.38	0.12	0.68	-1.32	**	0.27	-0.79	**	0.45
Constant	1.80	*	6.06	3.22	0.00	25.00	1.77	*	5.86	2.53	**	12.51

Base. Ex- and Non-Users N=773
Note. Non-linear relationships for age, social grade and education were tested but not found to be significant.

Table 2 Linear regressions of formal and informal online learning (adults older than 25)

	Formal learning			Fact checking			Informal learning		
	B	*Beta*	*P*	*B*	*Beta*	*p*	*B*	*Beta*	*P*
(Constant)	0.91		0.82	0.84		*	0.74		**
Home access	0.00	0.00	0.97	0.19	0.04	0.19	0.46	0.11	**
Age	-0.10	-0.15	**	-0.07	-0.08	**	-0.04	-0.06	*
Gender (female)	-0.03	-0.02	0.53	-0.06	-0.02	0.40	-0.37	-0.19	**
Social grade (SES)	-0.03	-0.04	0.23	-0.04	-0.05	0.17	-0.02	-0.03	0.41
Children under 10	-0.03	-0.02	0.39	-0.05	-0.03	0.28	-0.04	-0.03	0.29
Children over 10	0.10	0.07	**	0.04	0.02	0.43	0.10	0.07	*
Education	0.26	0.24	**	0.18	0.12	**	0.15	0.12	**
Self-efficacy	0.23	0.23	**	0.30	0.22	**	0.28	0.24	**
Attitudes towards ICTs	0.07	0.04	0.17	0.20	0.09	**	0.19	0.10	**

Base. Adult (older than 25yrs) Internet Users; N=1,281

Table 3 Percentages of (un)expectedly included and excluded Internet users

		Socially Included[a]	Socially Excluded[b]
Formal learning**	Less than weekly	69%	97%
	At least weekly	31%	3%
Fact checking**	Less than weekly	38%	78%
	At least weekly	62%	22%
Informal learning**	Less than weekly	50%	77%
	At least weekly	50%	23%

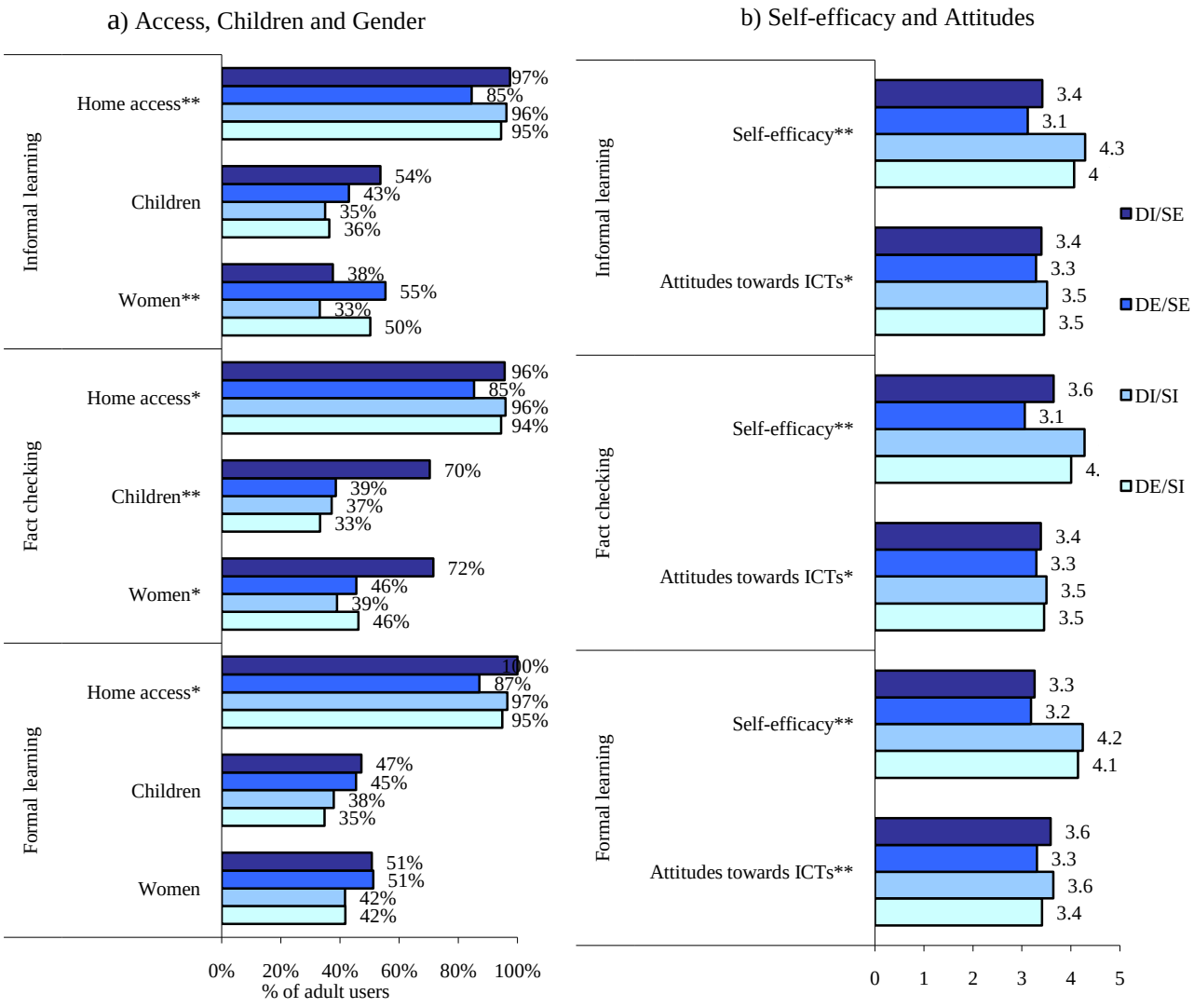
Base: Adult Internet Users with high social inclusion (N=198) or low social inclusion levels (N=144).

** Differences between socially included and excluded significant at p<.01

a. SES level AB and High level of education (University)

b. SES level DE and Basic level of education (Secondary school)

Figure 2 Descriptive indicators of (un)expectedly included and excluded Internet users



Base: Adult Internet Users with high social inclusion (N=198) or low social inclusion levels (N=144).

** Differences significant at p<.01

* Differences significant at p<.05

Note:
DI/ SE = unexpectedly included (digitally included/ socially excluded)
DE/ SE = expectedly excluded (digitally excluded/ socially excluded)
DI/ SI = expectedly included (digitally included/ socially included)
DE/ SI = unexpectedly excluded (digitally excluded/ socially included)