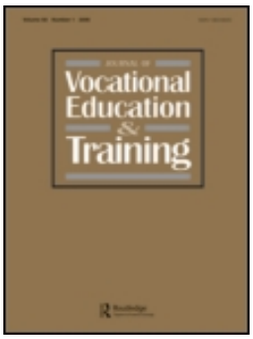

Routledge
Taylor & Francis Group

Journal of Vocational Education and Training

ISSN: 1363-6820 (Print) 1747-5090 (Online) Journal homepage: https://www.tandfonline.com/loi/rjve20

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To cite this article: Neil Selwyn, Stephen Gorard & John Furlong (2004) Adults' use of ICTs for learning: reducing or increasing educational inequalities?, Journal of Vocational Education and Training, 56:2, 269-290, DOI: 10.1080/13636820400200257

To link to this article: https://doi.org/10.1080/13636820400200257

Adults' Use of ICTs for Learning: reducing or increasing educational inequalities?

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ABSTRACT Within the hyperbole surrounding information and communications technologies (ICTs) and lifelong learning, our understanding of what learning activities ICTs are actually being used for throughout the adult population remains under-developed. Based on a household survey of 1001 adults in the west of England and South Wales, this article considers who amongst the adult population is using ICTs and what they are using them for. Moreover, the article also takes time to consider who is not using ICTs for learning given the widespread claims made about ICTs' potential for social inclusion. The survey data show that within adults' use of computers and the Internet, education and learning are minority activities, most commonly taking the form of informal learning at home. Moreover, any educative use of ICTs appears to be patterned by a number of social factors. In particular, logistic regression analysis shows that whether or not an individual uses ICTs for educative purposes can be predicted (with 82% accuracy) by the five variables of age, gender, educational background, occupational class and area of residence. The article concludes by discussing these findings in relation to the United Kingdom Government's present lifelong learning agenda.

Background

Technology-based 'e-learning' has risen to prominence in adult education over the last decade. Encouraged by the rapid growth of Internet use in other sectors of society, educationalists around the world have been quick to herald the potential of information and communications

technologies (ICTs) as a dynamic means of making post-compulsory education more effective and equitable. Thus, for many commentators, the ability to learn with technology is nothing less than 'a core skill in the twenty-first century' (Clarke, 2002, p. 12) and a central tenet of establishing countries such as the United Kingdom as 'learning societies'; characterised by full, rather than partial participation in education and learning amongst the adult population (see Coffield, 1997)

In particular, the perceived ability of ICT-based learning to 'free' post-compulsory education from the barriers that previously prevented people from participating has led to its positioning at the core of the current 'lifelong learning' ICT agenda in the United Kingdom. Barriers to formal learning, whether they are categorised as situational, institutional and dispositional (Harrison, 1993), are now seen as resolvable through the use of technology:

> E-learning is a relatively new tool with the potential to *radically improve participation* and achievement rates in education. Benefits include; the ability to customise learning to the needs of an individual and the flexibility to allow the individual to learn at their own pace, in their own time and from a physical location that suits them best. This could be in their local library, at their work or at home. Through e-learning we have the opportunity to provide *universal access* to high quality, relevant training and education. (Department for Education and Skills, 2002, p. 4, emphasis added)

This faith in technologies has been embodied in a series of ICT-based initiatives introduced since 1997 within the United Kingdom government's lifelong education drive. Initiatives such as the University for Industry (UfI), learndirect, UK Online, People's Network and National Grid for Learning have been established with the aim of offering all citizens the opportunity to access learning opportunities via ICT, as well as giving them the skills needed to do so. Coupled with Tony Blair's promise to provide 'universal' access to the Internet in the home, workplace and community settings, such as colleges and libraries by 2005, the landscape of adult education is seen to have been made more equitable and effective through this technological overhaul of the hitherto overlooked and unloved 'Cinderella' sector of United Kingdom education.

Yet, 7 years on from the first announcements of New Labour's technology assisted 'renaissance' of adult learning it is beginning to be acknowledged that ICT may *not* be having the wholly 'transformatory' impact on adult education that many of its proponents would have had us believe. For example, levels of participation in ICT-based education remain relatively modest (Sargant & Aldridge, 2002), and overall patterns vary between subject area and level of qualification (La Valle & Blake, 2001). Although initiatives such as learndirect have been successful in

raising awareness of adult education and training much of its delivery has been explicitly orientated towards work and business-orientated training. Our own empirical work has also consistently shown that although ICT-based learning is taking place, it is having little impact on overall patterns of (non)participation in education. Indeed, our analyses of large-scale United Kingdom-wide datasets suggest that non-participation in education remains a significant and deep-rooted trend in the United Kingdom with or without ICT-based initiatives. Our overall conclusion from these analyses has been that whether or not an individual participates in learning appears to be a lifelong pattern, already presaged at school leaving age, and intrinsically related to long-term social, economic and educational factors. Crucially, access to ICT does not, in itself, seen to make people anymore likely to participate in education and (re)engage with learning (see Selwyn & Gorard, 2002; Gorard, 2003; Gorard & Selwyn, 2003).

Research Questions

Whilst researchers are beginning to note the relative insignificance of ICT in general patterns of participation in lifelong learning, our understanding of what learning activities ICT is actually being used for throughout the adult population remains under-developed. In order to understand the current modest impact of ICT outlined above, we need to consider who amongst the adult population in the United Kingdom is using ICT and what learning they are using it for. Moreover, we need to consider who is not using ICT for learning. Given these empirical gaps, the present article will now consider to what extent ICT can be said to be contributing to the development of the United Kingdom as an inclusive 'learning society' by addressing the following research questions:

- Who has access to various technologies with a capability of delivering learning experiences?
- What do adults use ICTs for in their day-to-day lives?
- What is the level and nature of adults' use of ICTs for formal education?
- What is the level and nature of adults' use of ICTs for educative purposes in the workplace?
- What is the level and nature of adults' use of ICTs for educative purposes in the home and community?
- How are educative uses of ICT patterned according to individuals' demographic characteristics?

Research Design and Methods of Data Analysis

These questions are addressed by drawing upon household survey data that was collected in a multi-phase study of the patterns of ICT use by adults. A structured-interview instrument was administered by a university-based commercial research organisation during the summer and autumn of 2002 in four local authorities in the west of England and South Wales.[1] These regions are briefly characterised below (see Madden *et al*, 2002, for more complete descriptions):

- *Cardiff* – an urban area, typical in many ways of an administrative capital city with considerable polarisation in terms of education and income and some ethnic diversity.
- *Bath and North East Somerset* – a mixed urban/rural area, including the city of Bath and the surrounding rural north-east area of Somerset. Polarised in education and income, and with the added advantage of having been well resourced in terms of public ICT access.
- *Blaenau, Gwent* – Mining communities in the South Wales valleys with relatively impoverished levels of economic employment and education.
- *Forest of Dean* – a predominantly rural area, with high levels of poverty in some parts. The area has been used in previous studies as an English comparator for similar localities in South Wales.

The final sample comprised 1001 adults, and the primary response rate was 75%. Within the sample, 41% (n = 405) were male and 59% (n = 596 female), 92% (n = 917) were classified as 'white' and 8% (n = 84) classified as 'non-white'. The age range of adults spanned 21-96 years with a mean age of 51.6 years (standard deviation 18.2 years). According to the 2001 local census returns for these areas, the sample over-represents female respondents, but is otherwise a fair representation of the population of study. The structured interview instrument was 36 pages long, and consisted of items covering detailed demographic details relating to the respondent and family, compulsory and post-compulsory educational histories, employment life histories, and details of current and past ICT use at home, work and in community sites.

In this article, the results are largely presented in tabular form as frequencies or percentages. In addition, we collapsed all of the reported types of learning experience using computers (as described in Tables XI and XII) into a binary variable representing whether each individual had used a computer for 'educative purposes' or not. We then used this as the dependent variable in a logistic regression analysis (Menard 1995) using all of the personal characteristic variables in Tables XI and XII as predictor variables. Logistic regression relies on far fewer assumptions about the data than alternatives such as linear regression or discriminant analysis, and makes the use of categorical predictor variables considerably easier (Norusis, 1994). We created the model of computer

usage for learning (or not) in two stages, using backwards stepwise selection of the variables for each stage. In the first stage, we added the variables that could be known about the individual from birth (age, sex, ethnicity and so on). In the second stage, we added variables about their current life (household composition, health status and so on).

Results

Who Has Access to Various Technologies with a Capability of Delivering Learning Experiences?

An important step towards understanding patterns of use of ICT for learning is to first gain a picture of patterns of *access* to ICT, especially the gradations of access to different technologies (from actually owning a technology in the home through to shared access elsewhere). In line with other studies, our survey showed that the most accessible technologies to adults were mass market broadcast and communications technologies. The majority of adults in our survey had access at home to fixed/landline telephones (90%), terrestrial television (98%), video recorders/players (89%), CD players (78%), mobile phones (75%) and radios (95%). As can be seen in Table I, access to different types of computers was relatively lower, although 58% of the sample had home access to a computer of some sort. The level of access to the Internet was lower and predominantly through computers (n = 420, 42% of the survey sample), rather than the newer Internet-enabling technologies such as digital televisions (n = 20, 2%) and mobile phones (n = 20, 2%).

In terms of where adults were able to access computer-based technology, the most frequently cited location was at home or the home of a relative (Table II). The next most common locations were the home of friends, workplace followed by libraries. 34.3% (n = 343) of respondents reported having access to some form of public ICT site, with most of these respondents citing libraries (n = 278, 28%), commercial pay-per-use sites (n = 138, 14%) and local educational institutions (n = 97, 10%) as offering potential access to ICT if they needed it. Only 5% (n = 50) of respondents cited having access to ICT in community centre sites. In terms of facilitating access to ICT, public access sites were substantially less likely to be cited than the home or, indeed, the homes of friends and relations.

Information and communication technology	Own/access at home (%)	No home access, but access from family/ friends (%)	Access at work (%)	Access elsewhere (%)	No access (%)
Computers					
Laptop computer	9	2	4	2	83
Palmtop computer	4	1	1	1	93
Desktop computer <5 years old	39	9	6	2	44
Desktop computer 5+ years old	12	3	2	1	82
Computer printer	45	8	5	1	41
Computer scanner	29	7	6	2	56
Digital camera	15	5	3	1	76
Digital television	33	7	0	1	59
Video recorder/player	89	0	0	0	11

Note: Data are percentage of respondents (n = 1001). Categories of access are mutually exclusive. Summed data may not add up to 100% due to rounding up and rounding down of decimal places.

Table I. Adults' access to technologies.

Site of access	%
Your home	58
A relative's home	47
A friend's home	29
Your workplace/place of study	29
A library	28
A private 'pay-per-use' site (e.g. Internet café)	14
A local school/college/university (non-students)	10
A community centre/site	5
A museum/science centre	3

Note: Data are percentage of respondents (n = 1001).

Table II. Adults' perceived access to computers.

To develop a more detailed understanding of variations in access to computer-based technologies among adults, the models proposed by

Wilhelm (2000) and Murdock (2002) which seek to identify the degrees (or layers) of connectivity/marginality to ICTs have been adopted.

At the centre of this hierarchical model are '*core access*' individuals who have ready access to computers at home and enjoy access to advice and support that enables them to operate more effectively and to continually extend their range of uses (Murdock 2002). A second category is occupied by those individuals who have access at home, but are limited by ageing equipment and limited support (peripheral home access). Not in Murdock's original description, but arising from our data, are those individuals who lack access to computers in their home, but have access through family and friends, as well as terminals in public locations or at work alongside access to limited support (peripheral family access). Yet another group are those individuals whose only access is through shared terminals in public locations or at work, where their use is heavily constrained by the demands of other users and limited support (peripheral public access). The most peripheral are those individuals who have no ready access to computer or support at all (excluded).

Using the access and ICT support data from our survey, it is possible to assign (albeit crudely) our respondents to one of these five groups. Access to computers was calculated from the data summarised in Tables I and II, whilst access to computer support was calculated in terms of respondents' reported sources of support.[2] This analysis shows a more delineated picture of adults' ICT access than is suggested in the existing literature (Table III). Whereas 8% (n = 82) of our sample can be classed as being absolutely excluded from ICT access and 50% (n = 496) as having ready access to ICT in a home setting (albeit 210 or 21% with up-to-date resources and a range of support), 42.3% (n = 423) of adults are reliant on some form of outside-home peripheral access. As was suggested above, this peripheral access is supplied for most people by the extended family, rather than at public or community sites. In terms of differences between 'core' to 'excluded' categories of access, some variations are apparent according to respondents' age, illness/long-term disability, educational background and socio-economic status, although not in the case of gender.

Social or health characteristic	Hierarchical level or category of access				
	Core access (%)	Peripheral home access (%)	Peripheral family access (%)	Peripheral public access (%)	Excluded (%)
Gender					
Male	21	33	29	11	7
Female	21	26	31	13	9
Age group (years)					
21-40	26	35	26	9	4
41-60	31	35	22	9	3
61 or more	7	17	41	19	17
Marital status					
Single/ separated/ widowed	13	17	40	19	11
Married/ living with long tberm partner	26	35	25	9	6
Health status					
No long-term illness/ disability	23	31	27	11	7
Long-term illness/ disability	14	20	38	17	11
Education					
Continued after 16 years old	28	41	17	6	7
Completed education at or before 16 years of age	17	21	38	16	9
Socio Economic Status					
Service	29	47	11	7	6
Skilled Non Manual	28	32	21	13	6
Skilled Manual	22	43	24	7	5
Partly Skilled	16	20	40	13	11
Other	14	28	34	17	7
Total	21	29	30	12	8

Note: Data are percentage of respondents (n=1001). Summed data may not add up to 100 percent due to rounding.

Table III. Level of access to computers by social, health and education characteristics.

What Do Adults Use ICTs for in their Day-to-Day Lives?

As we have observed before, access to computers cannot be equated with use and 'use' cannot be necessarily equated with 'meaningful' use (see Selwyn, 2003). From this basis, we can now turn our attention towards how adults make their access to computers and, in particular, explore how computers are used for educative purposes. It is first worthwhile first providing a general context for patterns of educative use of computers by considering briefly the overall patterns of computer use

reported in the household survey. Our initial observation in this respect is that computer use is by no means a ubiquitous activity within the adult population. Although only 8% of the initial survey sample could be classed as being totally 'excluded' from ICT, 48% of the initial sample reported not having used a computer during the previous 12 months. Indeed, the use of computers remained a minority activity in the home when compared with the use of other ICTs such as television, video/DVD, radio, hi-fi and the mobile phone. Indeed, watching television and listening to the radio were the most popular technology uses among the sample; with 93% (n = 928) watching television frequently (i.e. 'very' or 'fairly often') and 81% (n = 807) listening frequently to the radio.

Within the 52% of the sample who had used a computer, word-processing was the most popular activity, followed by 'fiddling around on the computer', file and memory organisation, and learning from computer software (Table IV). In terms of use of the Internet, sending and receiving emails was the most prevalent Internet-based activity, alongside searching for information on goods and services. The relatively low levels of use of ICT for learning purposes needs to be seen within the fact that the majority of respondents displayed a limited 'repertoire' of uses of computers and the Internet. Of the 22 listed applications the mean number used on a 'frequent' (i.e. 'very' or 'fairly often') basis was 5.81 applications (SD = 4.12).

Activity or use	Very often	Fairly often	Rarely	Never
Writing and editing letters, reports and other documents	27	11	8	54
Send/read emails (via computer or digital TV)	26	7	5	62
Look for products and services/gathering product information online	14	15	7	65
Fiddling around on a computer/explore different bits of the computer to develop your own knowledge	14	14	8	66
Look for information related to work/business/study on the worldwide web	15	10	5	69
Organising the computer's files/memory	11	11	9	69
Learn something when using a computer program (e.g. from a CD ROM, encyclopaedia or database)	9	13	8	70
Buy goods and services on-line	4	9	9	78
Browse/surf the worldwide web for no specific purpose	4	7	10	79
Playing games	4	5	10	81
Creating and manipulating images (e.g.	5	6	7	81

photographs)				
Listening to music on a computer (CDs, MP3s)	3	7	7	82
Online banking/management of personal finances	7	5	4	84
Download software, music, films or images from the Internet	4	5	7	85
Programming the computer	3	4	6	87
Use Internet newsgroups, bulletin boards chat rooms or instant messages	2	4	4	91
Watching DVDs/videos on a computer	1	3	5	91
Making music with a computer	2	3	4	91
Participate in educational courses/lessons on the world wide web	2	4	4	91
Making/maintaining your own website product information	3	2	2	94
Making films or animations on a computer	2	2	3	94
Use adult entertainment on the worldwide web	0.2	1	3	96

Note: The reported data are percentage of respondents (n = 1001).

Table IV. Use of computers and the Internet in the last 12 months.

	Very often	Fairly often	Rarely	Never
Your home	25	12	7	56
A relative's home	1	3	10	86
A friend's home	1	2	7	90
Your workplace/place of study	25	5	2	68
A museum/science centre	0.2	0.1	3	97
A community centre/site	0.1	0.3	1	98
A private 'pay-per-use' site (e.g. Internet Café)	0.2	1	2	97
A local school/college/university (non-students)	1	1	3	95
A library	0.2	1	3	96

Note. Data are percentage of respondents (n = 1001).

Table V. Frequency of use of PCs/computers in different locations over the past 12 months.

Moving our attention from nature of use to location of use, only 11% (n = 108) of respondents from the initial sample of 1001 reported making use of computers in some form of public ICT site during the past 12 months – as opposed to 44% making use of ICT at home and 32% making use of ICT in the workplace (see Table V). Mirroring the patterns of perceived access presented earlier, the greatest number of these respondents

making use of ICT in public sites had done so in libraries and local educational institutions (4 and 5%, respectively). Only 2% of respondents were making use of ICT in community sites and 3% of respondents in commercial 'pay-per-use' sites. This patterning is not unique. If we compare these figures, for example, to those from La Valle & Blake (2001), we can see that 83% of those who had used a computer did so in their own home, 45% in their place of work, 5% in a library, and less than 1% in a community centre or job centre.

What is the Level and Nature of Adults' Use of ICTs in Formal Education?

Within these general patterns of use of ICT how then are ICTs being used for education and learning purposes? We can first examine the use of computers for formal education and learning. In this respect, 21% (n = 211) of our respondents reported having used ICT during post-compulsory educational episodes. As can be seen in Table VI, ICT was used more often as an adjunct to non-computer methods of teaching and learning.

	n	%
Found out about study using ICT	20	2
Assessment involved ICT	89	9
Used computers to research information	126	13
Used computers to complete assignments	145	14
Partially taught via ICT	84	8
Taught to use computers/software	103	10
Fully taught via ICT	28	3

Note: Data are percentage of respondents (n = 1001).

Table VI. Use of ICT in post-compulsory formal education.

Belying the rhetoric of 'virtual learning', very few respondents had been fully taught via ICT and fewer still had used ICT to find out about learning opportunities. More common was learners' use of ICT to research information and produce assignment materials for traditional face-to-face courses – alongside actually being taught to use ICT as part of a wider formal education programme. Indeed, reflecting the rapid growth of computer skills courses in the post-compulsory and adult education sectors, 11% (n = 106) of our respondents reported having taken elementary courses in ICT not leading to a recognised NVQ-level qualification.

What is the Level and Nature of Adults' Use of ICTs for Educative Purposes in the Workplace?

As we have seen, the workplace acts as key site for people's access and engagement with computers. Accordingly, 394 of our respondents reported having or having once had a job that involved using ICT in some form. Just under a third of these (117 or 11.7% of the overall sample) reported having been trained at work using ICT in some form. As can be seen in Table VII, this most frequently, but not exclusively involved being taught to use computers or specific software packages, with using ICT to research information and complete assignments also being relatively frequent use of ICT in work-based training. Again, being trained fully via ICT was cited only by a minority of respondents. These relatively low levels of formal use of ICT in work-based training can be explained by what we are subsequently discovering in the interview stages of the research project, where the reliance of informal learning is being highlighted by respondents; in particular, the process of learning to use a computer for a job via an 'informal apprenticeship' (or 'sitting-with-Nellie'). This will be more fully explored in future articles.

	n	%
Found out about study using ICT	16	2
Assessment involved ICT	54	5
Used computers to research information	58	6
Used computers to complete assignments	70	7
Partially taught via ICT	47	5
Learnt to use computers/software	73	7
Fully taught via ICT	20	2

Note: Data are percentage of respondents (n = 1001).

Table VII. Use of ICT for work-based training.

What is the Level and Nature of Adults' Use of ICTs for Educative Purposes in the Home and Community?

Alongside the workplace, the home is seen as a key social context for adults' access to and engagement with ICT. Commentators have, for example, eagerly talked about computers 'freeing' adult education from the confines of institutions, such as colleges and universities, and (re)establishing the home as 'the place where people do most of their learning' (Tiffin & Rajasingham, 1995, p. 52). In terms of using ICT for learning at home (and to a lesser extent in community sites), we can see that ICTs tended to be used, if at all, for informal, rather than formal learning. For example, only 6% of the overall sample (59 people) reported using the Internet more than 'rarely' for participating in educational courses/lessons on the world-wide web, whereas 30% reported 'learning

something' from a computer programme whilst using it (see Table VII). Similarly, informally seeking information relating to work, business or study via the Internet was a relatively frequently mentioned learning activity; as was learning about using the computer itself through 'fiddling around'.

	Very often	Fairly often	Rarely	Never
Participate in educational courses/lessons on the www	2	4	4	91
Learn something via CAL package, CD-ROM encyclopaedia, database	9	13	8	70
Look for information related to work/business/study	15	10	5	69
Fiddling around with computer	14	14	8	66

Note: Data are percentage of respondents (n = 1001).

Table VIII. Frequency of use of PCs/computers for educative purposes at home.

Continuing the theme of informal learning, 23% of the survey sample (n = 233) reported having a sustained hobby or leisure pursuit that had involved them having to learn something. These ranged from practical pursuits (including DIY and household maintenance) to art, music, sport and using computers as a pursuit in itself. As can be seen in Table IX, 85 respondents (just over a third of these learners) had used ICT in some way to support this 'informal' learning, mainly for researching information about the hobby/leisure activity.

	n	%
Used computers to research information	66	7
Learnt to use computers/software	26	3
Assessment involved ICT	17	2
Partially learnt via ICT	15	2
Found out about area of study using ICT	8	1
Fully learnt via ICT	3	0.3

Note: Data are percentage of respondents (n = 1001).

Table IX. Use of ICT for sustained informal learning at home.

Who is, and Who is Not, Using ICT for Educative Purposes?

Returning to our final question of how educative uses of ICT differ according to individuals' demographic characteristics we can see that all of these uses of computers for learning within our survey sample was stratified according to a variety of demographic variables.

	Taken formal course in ICT (elementary)	Used ICT in post-compulsory education episodes	Formally learnt/ trained to use ICT in work	Participate in educational courses/ lessons on the www	Sample size
Gender					
Male	9	19	12	7	405
Female	12	23	12	5	596
Age group (years)					
21-40	11	42	16	9	330
41-60	14	20	14	7	319
61 or more	7	3	5	1	352
Marital status					
Single / separated / widowed	9	17	7	4	355
Married / living with long term partner	12	24	15	7	625
Health status					
No long-term illness / disability	10	24	13	7	229
long-term illness / disability	12	12	7	4	761
Education					
Continued after 16 years	16	40	18	10	384
Completed education at or before 16 years of age	8	9	8	3	617
Socio-Economic Status					
Service	10	29	22	15	83
Skilled Non Manual	16	31	21	5	300
Skilled Manual	6	14	10	6	87
Partly Skilled	8	12	5	4	418
Other	12	27	5	9	113
Area of residence					
Bath/NE Somerset	12	23	8	7	253
Blaenau Gwent	10	13	11	4	248
Cardiff	7	24	14	10	251
Forest of Dean	14	23	14	3	249
Household Composition[3]					
Single Adult age 16-59	9	38	14	9	124
Small family	12	31	17	8	349
Large family	16	27	14	10	163
Large adult household	0	6	12	12	17
Adult aged 60 and over	6	2	1	1	192
2 adults, 1 or both aged 60 and over	9	5	7	1	156
Hierarchical level of access to ICT					
Core access	15	41	21	10	210
Peripheral home access	13	33	16	12	286
Peripheral family access	8	7	5	0	299
Peripheral public access	6	6	8	2	124
Excluded	6	6	1	0	82
Lifelong learning trajectory					
Non-participant	0	0	0	2	371
Transitional learner	0	28	1	11	175
Delayed learner	19	23	19	6	246
Lifelong learner	30	51	33	9	209
Total	11	21	12	6	1001

Note. Data are percentage of respondents in sample (n=1001).

Table X. Usage of computers for formal educative purposes by personal characteristics.

	Learn something via CAL package, CD-Rom encyclopaedia, database	Look for information related to work/ business/ study	Used ICT for sustained informal learning	Fiddling around with computer	Sample size
Gender					
Male	23	27	10	32	405
Female	21	24	7	24	596
Age group (years)					
21-40	32	39	8	40	330
41-60	25	32	14	32	319
61 or more	9	7	3	10	352
Marital status					
Single / separated / widowed	16	17	7	20	355
Married / living with long term partner	25	31	9	31	625
Health status					
No long-term illness / disability	24	29	9	29	229
long-term illness / disability	15	14	8	21	761
Education					
Continued after 16 years	32	42	13	38	384
Completed education at or before 16 years of age	15	15	6	20	617
Socio-Economic Status					
Service	36	48	15	36	83
Skilled Non Manual	25	37	11	33	300
Skilled Manual	28	35	13	40	87
Partly Skilled	16	13	6	17	418
Other	20	19	5	33	113
Area of residence					
Bath/NE Somerset	17	23	10	18	253
Blaenau Gwent	19	16	2	25	248
Cardiff	27	36	9	33	251
Forest of Dean	25	28	12	32	249
Household Composition[3]					
Single Adult age 16-59	32	35	14	40	124
Small family	27	35	12	33	349
Large family	31	37	10	41	163
Large adult household	12	6	0	24	17
Adult aged 60 and over	4	3	3	3	192
2 adults, 1 or both aged 60 and over	13	12	4	15	156
Hierarchical level of access to ICT					
Core access	43	51	19	52	210
Peripheral home access	37	43	13	47	286
Peripheral family access	3	4	2	5	299
Peripheral public access	7	11	3	8	124
Excluded	0	0	0	0	82
Lifelong learning trajectory					
Non-participant	7	7	4	9	371
Transitional learner	26	32	7	32	175
Delayed learner	27	28	9	37	246
Lifelong learner	37	51	17	44	209
Total	22	26	9	27	1001

Table XI. Usage of computers for informal educative purposes by personal characteristics.

As can be seen in Tables X and XI, prominent differences in use were apparent by socio-economic status, age group, marital status, area of residence and educational background. Less pronounced differences in use were also apparent by long-term illness/disability and household composition. In terms of gender, although differences were relatively slight, men were more likely to have used ICT for informal learning, whereas woman were more likely to have used ICT for formal learning. Similarly, we can see that the nature and level of use of computers for either formal or informal learning differed according to level of access to ICT – with a clear divide between those individuals with access at home and those relying on family or public access. Finally, if we examine respondents' histories of lifelong learning in terms of their 'trajectories' of lifelong education (see Gorard & Selwyn, 2003)[3] we can see that, in general, use of ICT for educative applications increases with levels of educational engagement (i.e. those individuals involved in higher levels of learning also tend to be more likely to use ICT for learning). There are, however, some interesting exceptions. For example, transitional learners (those who reported at least one episode of immediate post-compulsory education or training, but nothing subsequently) were more likely than any other group to have used the world-wide web to participate in formal online courses and/or lessons.

Overall, 51% of the sample reported using a computer for one or more of these 'educative purposes'. These included 15% of the non-participants in formal learning, 55% of the transitional learners, 64% of the delayed learners and 86% of the lifelong learners. Therefore, learning via a computer whether informally, or not is as stratified as learning in institutions or via any other medium. In previous publications we have shown that we are able to 'predict' the learning trajectory of an individual just from their background characteristics (e.g. Gorard & Rees, 2002). Can we predict learning experiences via a computer in the same way?

Table XII shows the classification table for the first stage of our logistic regression analysis. Using only those background variables that we could have known about each individual since birth, we can predict their later use of computers for learning with 69% accuracy (or put another way we can improve on the accuracy of a guess due only to chance by 31%). In producing this model, factors such as first language, family religion and ethnicity of each individual were found to be irrelevant if other factors were taken into account at the same time. The only background variables of substantive relevance were age (computer use for learning declined by around 0.94 for each year of age), and gender (men were nearly 1.4 times as likely to report using a computer for learning).

	Predicted IT learner	Predicte d not IT	Percentage correct
Observed IT learner	257	188	58
Observer not IT	86	362	81
			69%

Table XII. Usage of computers for educative purposes by personal characteristics.

Table XIII shows the classification table for the second stage of our logistic regression analysis. Using background variables known about each individual now, we can improve our prediction about the use of computers for learning to 82% accuracy (or put another way we can improve on a guess due only to chance by 60%). In producing this model, ill-health, marital status, number of children, household composition and geographical mobility of each individual were found to be irrelevant once other factors had been taken into account. The background variables of substantive relevance for this second stage of the model were:

- *Continuing with education or training at age 16* – those who did so were 2.6 times as likely to learn, whether informally or not, as adults aged 21 or more using a computer.
- *Occupational class* – those in the professional/service class were 2.4 times as likely as to learn via a computer than the unskilled or part-skilled.
- *Area of residence* – those living in the remote Forest of Dean were 1.4 times as likely to learn via computer as those in urban Cardiff, while those in Bath/NE Somerset (0.81) and Blaenau, Gwent (0.69) were less likely to learn via computer as those in Cardiff.

	Predicted IT learner	Predicted not IT	Percentage correct
Observed IT learner	337	108	76
Observer not IT	53	395	88
			82%

Table XIII. Usage of computers for educative purposes by personal characteristics.

Although having less of a bearing than occupational class and educational background the role of geographical location is especially interesting. As previous authors have shown, general consumption and take-up of

technologies is not uniform – there are local contingencies and specificities that work alongside global influences in local consumption processes of ICTs (i.e. Miller, 1994; Murdock et al, 1996). Similarly from our data, it appears that the take-up of technologies for learning and education differs significantly between localities, even when controlling for socio-economic status and other local characteristics. Of course, location may be acting as a proxy for other variables not included in our regression model, but this apparent impact of geographical location merits further exploration in subsequent studies.

Discussion

It seems that when computers are being used by adults, education and learning are minority activities. Moreover, any educative use appears to be patterned by a number of entrenched social factors. This continued stratification is important as it reiterates the point that access to ICT does not, in itself, make people anymore likely to participate in education and (re)engage with learning. We have shown how access to ICT continues to be largely patterned according to long-term pre-existing social, economic and educational factors. Thus, like educational qualifications, access to ICT is a proxy for the other, more complex, social and economic factors that pre-date it, rather than as a direct contributory factor in itself. Crucially, this stratification continues across the range of formal and informal learning activities, which adults are using computers for. We can therefore conclude that, at best, ICT increases educational activity amongst those who were already learners, rather than widening participation to those who had previously not taken part in formal or informal learning (referred to elsewhere as the 'usual suspects' phenomenon, where those who are current adult learners tend to be those who have taken part in adult learning before; Selwyn & Gorard, 2002).

Whilst learning and education are not common occurrences within general patterns of computer use any educative use, more often than not, appears to be 'indirect' and informal, rather than formally provided. Although there was little suggestion of ICT 'creating' new informal learners (i.e. it would seem that ICT is mainly helping those who would be informally learning anyway) this importance of informal learning in people's educative use of ICT cannot be under-estimated, nor should it be seen as a surprise. Indeed, we also know that informal learning represents the vast majority of learning that takes place across the workplace, community and home. Livingstone's (2000) survey of adults' learning patterns in Canada found that 95% of his sample of 1562 adults claimed to be involved in some form of significant informal learning – an average of 15 hours a week observed by the author as 'vastly more time than adults are spending in organised education courses' (Livingstone 2000, p.500). In

this respect one would expect computers to be appropriated by adults into pre-existing patterns of informal learning rather than prompting 'new' patterns of engagement for the first time with education. Given this it is curious that ICT-based informal learning is not a more prominent part of the high-profile nation-wide drive towards creating a 'learning society'. One of our first recommendations, on the basis of our present research, would be that the use of ICT for informal learning should not be overlooked in the currently rather rigid government approaches (such as the 'learndirect' and 'UK Online' initiatives in the United Kingdom) which tend to privilege more accountable, profitable formal provision of business and work-orientated skills and 'core' competencies.

Another noticeable feature of our survey data was the dominance of the home, and to a lesser extent the workplace, as the key site of most adult use of ICT for learning and education. As such the relative insignificance of public/community sites in people's use of computers merits attention given the heightened attention and resources currently being directed towards increasing levels of public ICT use by the government. As our data show, despite adults acknowledging that they could use this public provision if they wanted the vast majority of actual use takes place in the home and to a lesser extent the homes of family. The practical logic for governments attempting to increase use of ICT through existing public sites, such as colleges, libraries and museums is clear in terms of the financial cost of establishing new sites. Yet this strategy appears to be having a minimal impact on encouraging more adults to actually make use of computers, let alone make use of computers for education or learning purposes. There is a need, therefore, to rethink state efforts to facilitate use of ICT by adults and, in particular, to explore the possibilities of reappropriating community ICT provision into private, domestic settings, rather than municipal, public sites. In this way, different sites should be considered where people can access and make use of ICT. For example, systems of community resources could be developed, which can then be loaned into people's houses – thus augmenting adults' apparent willingness to use ICT in their own homes and the homes of their extended families.

A final conclusion is that we cannot and should not assume that providing access to ICT equates with people using ICT for educative purposes. The ICT-learning revolution will *not* be achieved merely by providing the required technological infrastructure. Indeed, to assume so is to ignore what we already know about (non)participation in education and training. Participation data from the last four decades have told us that large sections of the adult population have not and do not engage in post-compulsory education or training (see Sargant, 2000). Moreover, we know that the chief obstacles to participation reported by learners are not the physical barriers of time and place (15%), but rather lack of interest (78%) according to La Valle & Blake (2001). Thus, people's

decisions to learn are not simply a case of making learning opportunities more 'convenient' via ICTs. If people are not engaged in learning and education due to issues of motivation and/or disposition there is little reason to assume that ICTs will alter this. Whilst ICTs can overcome situational and institutional barriers it can do little to alter the social complexities of people's lives and the 'fit' of education in these lives. As Kennedy-Wallace (2002, p. 49) recently reminded us, 'whether learning online in the workplace, in college or at home, e-learning is still about learning and culture, not just technology and infrastructure'.

Given this picture of ICTs' modest impact on patterns of adult learning in the United Kingdom, our over-riding concern is that the considerable attention, which continues to be paid to ICT may be acting as a distraction or impediment to more prosaic (but arguably more effective) interventions aimed at altering patterns of poverty and social disadvantage, or encouraging, rather than destroying non-certificated learning opportunities. We would therefore caution all 'stakeholders' in adult learning to adopt more realistic expectations about what ICT can be expected to achieve if it is to fulfil its undoubted educational potential. As has been argued before, ICT should not be seen as a single variable in engineering interventions to the perceived 'crisis' of non-participation in adult education (Gorard & Selwyn, 2002). Nor should it detract from the non-technological necessities of developing more inclusive forms of educational provision, which should continue to be prioritised within the current 'learning society' agenda.

Acknowledgements

This article is based upon a project funded by the Economic and Social Research Council (R000239518). The authors would like to thank the individuals who took part in the household survey.

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Notes

[1] A systematic sample stratified by age and gender of 1001 adults aged 21 or more years living in three electoral wards in each of the four communities was selected. Reserve cases were pre-selected from adjacent postal addresses to cover non-response. The interviewer called on up to three different occasions at three different times of day, then moved on to a reserve case if a candidate refused to participate or he was unable to

make contact. The interviews were held in people's houses, or occaisionally by appointment elsewhere (e.g. place of work or relative's house).

[2] 'Ready access to a range of ICT support' was defined as being able to access two or more sources of support in answer to the question 'Who of the following, if any, could you go to for help/advice if you wanted to use a computer?' One cited source was classed as 'limited support'.

[3] The 'trajectories' of lifelong learning logistic regression analysis has used to 'explain' the various patterns of individual participation. The dependent variable, to be explained or predicted, is the lifelong form of participation. 'Non-participants' are those who reported no episodes of education or training since leaving school at the earliest opportunity (36% of the Adults Learning@Home survey sample). 'Transitional learners' reported at least one episode of immediate post-compulsory education or training and nothing subsequently (17%). 'Delayed learners' reported no episodes of immediate post-compulsory education or training but at least one subsequent episode as an adult (26%). 'Lifelong learners' reported at least immediate one episode of post-compulsory education or training and at least one other episode (21%).

[4] Households were categorised via categories of household used in the General Household Survey, i.e. 'adult age 16-59'; 'small family' (defined as one or two persons age 16 and over, or two persons aged under 16); 'large family' (defined as one or more persons aged 16 and over, and three or more persons aged under age 16, or three or more persons aged 16 or over, and two persons aged under 16); 'large adult household' (defined as three or more persons aged 16 or over, with or without one person under age 16); '2 adults, 1 or both aged 60 and over'; and '1 adult aged 60 and over'.

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