

Towards a le@rning society? The impact of technology on patterns of participation in lifelong learning

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This paper is based on 1001 home-based interviews with UK adults. It describes their varying patterns of participation in lifelong learning and their use of technology for learning and leisure. It finds that 37% of all adults report no further education of any kind after reaching compulsory school leaving age. This proportion declines with each age cohort, but is largely replaced by a pattern of lengthening initial education and still reporting no later education. These patterns of participation are predictable to a large extent from regression analysis using a life-order model of determining variables—all of which are set very early in life. This suggests that universal theories to describe participation, such as human capital theory, are incorrect in several respects. Where individuals create, for themselves and through their early experiences, a ‘learner identity’ inimicable to further study, then the prospect of learning can become a burden rather than an investment for them. This has implications for the now widespread and extensively funded notion of overcoming barriers to access via technology.

Introduction

The potential of information and communications technology (ICT) to ‘free’ adult education from the barriers that previously prevented people from participating has been prioritized at the core of the current ‘lifelong learning’ agenda in the United Kingdom and elsewhere to re-engineer countries into ‘learning societies’ (Coffield, 1999). Barriers to learning, whether they are categorized as cultural, structural and personal or situational, institutional and dispositional (Harrison, 1993; Maxted, 1999), are now seen as resolvable through the use of ICTs such as computers and the internet—themselves seen as providing learners with a hitherto unavailable flexibility and convenience when it comes to engaging with educational opportunities (see Selwyn *et al.*, 2001).

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Many politicians and educationalists have been particularly keen to adhere to the notion that technology is a ready means through which to free learning from those characteristics that have made it traditionally unattractive or inaccessible to large sections of the population (see Spender, 2002). To this end the present New Labour government in the United Kingdom has introduced a host of technology-based life-long learning initiatives under the aegis of 'learndirect' and 'UK Online'. This policy drive most prominently takes the form of a telephone-based learndirect helpline and website for directing individuals to approved and kite-marked learning opportunities as well as providing its own technology-mediated learning opportunities via a network of over 7000 ICT centres in community sites throughout the United Kingdom. The initiatives not only aim to widen participation and achieve a 'mass-market penetration of learning' (Limb, 2003), but also to reduce the current inequalities in participation among those groups traditionally under-represented in adult education; that is, women, the elderly, some ethnic minorities, those on low incomes, ex-offenders and people with learning difficulties (see Selwyn, 2002).

Through initiatives such as learndirect and UK Online, the UK government has firmly stated its faith in ICT to establish an inclusive learning society (although other commentators view the University for Industry, in particular, as an initiative whose effectiveness presupposes the acquisition of relevant skills; Winch & Clarke, 2003). Moreover, these initiatives coupled with the ever growing rates of domestic and work-based access to ICT are now prompting politicians and educationalists of all persuasions to make wide-ranging claims about the heady combination of adult education and ICT as at last overcoming existing social inequalities and leading to a 'renaissance' of lifelong learning in the UK (see Selwyn *et al.*, 2001). For some, therefore, the ability to learn with and through ICT has solved the lifelong learning conundrum in one fell swoop:

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)

Although offering great potential to adult education, there are some serious caveats that the present 'e-learning' agenda faces.¹ The substantial claims made on behalf of ICT-based adult learning are often speculative with very little, if any, sustained evidence of likely success in actually widening participation to those social groups previously excluded from learning. Indeed, if we disengage ourselves from hyperbole for a moment, it becomes apparent that there is little substantial evidence either to support or refute claims that ICT-based adult education will facilitate an inclusive 'learning society'. Studies of participation (and non-participation), such as the new one described in this paper, are therefore described by Sargant (2000) as being crucial to promote genuine inclusion. She points out that a number of large-scale studies such as those from Glass (1954) to Gorard *et al.* (1999a) have shown that the

determinants of participation, far from being easily fixable, are long term and rooted in family, locality and history. But, despite the millions of pounds currently being invested we know little of the extent to which access to home and community-based ICT is contributing to formal and informal learning among adults in the United Kingdom.

In particular, very few large-scale analyses have been carried out examining the success (or otherwise) of the recent ICT-based educational initiatives as well as the impact on adult learning of the domestic proliferation of ICTs into people's homes. Gibson (2002) points out that existing measures of participation tend to concentrate only on those 'high achieving' adult learners rather than the more mundane forms of non-credentialized activities that nevertheless are important learning episodes. Aside from educational issues, our empirical knowledge in terms of technology is equally as indistinct. For example, as Rideout (2000) observes, a major problem with much research on adults' use of technology is that it provides us only with simple measures of household access to technology—ignoring issues of public community access to ICT and lacking a community level of analysis upon which the government's agenda is fundamentally based. It is clear, therefore, that we need to develop a detailed evidence base of how ICT is impacting on patterns of participation in adult learning in its broadest sense—asking who is using ICT to engage in formal and informal learning as well as who is *not* using ICT to engage in learning.

Given these present empirical gaps, this paper will now consider the extent to which 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 (in full or in part).

- (1) Who among the UK adult population are participants in adult learning experiences, and how do they differ from those who are not participants?
- (2) What are the determinants of participation in adult learning?
- (3) What is technology, particularly ICT, used for and to what extent does this use of ICT involve learning?
- (4) Can access to ICT be said to 'create' adult learners and learning?

Research design and methods of data analysis

These questions are examined by drawing upon household survey data that were collected in a multi-phase study of the patterns of ICT use by adults in England and Wales. A structured-interview instrument was administered with the help of a university-based commercial research organization during the summer and autumn of 2002 in four local authorities in the west of England and South Wales.² These were selected as representative for population density, economic activity and levels of educational attainment in South West England and South Wales local authorities, and are briefly characterized as follows.

- *Blaenau Gwent*—Mining communities in the South Wales valleys with relatively impoverished levels of economic employment and education.

- *Cardiff*—An urban area, typical in many ways of an administrative capital city, with considerable polarization 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. Polarized in education and income, and with the added advantage of having been well resourced in terms of public ICT access.
- *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 age distribution was 352 respondents aged 61 years and older, 319 respondents aged 41–60 years, and 330 respondents aged 21–40 years. 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 52 years (standard deviation, 18 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 (see Madden *et al.* [2002] for further details of the sampling and survey administration procedure). The structured-interview instrument was 36 pages long and consisted of items covering 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.

The responses to these questions are described in terms of frequencies, cross-tabulations and, where appropriate, means and standard deviations. In addition, logistic regression analysis with forward stepwise entry of predictor variables was used to ‘predict’ or ‘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. ‘Episodes’ are self-reported, but cover all formal learning including health and safety training at work, adult evening classes, and ICT training courses. *Transitional learners* reported at least one episode of immediate post-compulsory education or training and nothing subsequently. *Delayed learners* reported no episodes of immediate post-compulsory education or training but at least one subsequent episode as an adult. *Lifelong learners* reported at least one episode of immediate post-compulsory education or training and at least one other episode. These patterns are also summarized in two binary variables: immediate and later participation. The independent variables, or potential determinants of participation, are entered in batches in the order that they occur in the individual’s life (this is instead of the more usual procedures of either entering all variables in one step, or stepwise in the order of the amount of variance they explain).

The variables entered at birth were age, sex, place of birth and family background. The variables entered in the second stage were the nature of schooling and first

occupation (note that qualifications were not used). The variables entered in the third phase were modal occupational class, employment status, areas of residence and own family. The variables entered in the fourth phase were the reported access to various technologies, including the Internet. At each stage we also examined the impact of some variables in interaction. In this way, the variables entered at each step can only be used to explain the variance left unexplained by previous steps, and are selected using the likelihood ratio statistic. Thanks to this method of analysis, which models the order of events in individuals' lives, the relevant variables become valuable clues to the socio-economic determinants of patterns of participation in adult learning. For convenience, any redundant information in the tables is minimized. Only variables selected as possibly relevant by the modelling process, and retained using the likelihood ratio statistic, are discussed. All models cited had a relatively clear division between the two groups in terms of a predicted probability scattergram (although there are always a minority of cases mis-classified with marginal probabilities), and the quality of the models in terms of goodness-of-fit to the data and log-likelihood were more than adequate for analysis to continue (for more on this, see Gorard *et al.*, 1999b).

Results

Who are the participants in adult learning experiences, and how do they differ from those who are not participants?

Of the 1001 adults, only 38% continued with any form of formal learning directly after reaching compulsory school-leaving age—'continuous learning'. Only 46% reported any formal learning other than directly after reaching compulsory school-leaving age—'later learning'. These were distributed into the four patterns or trajectories as follows (Table 1). The most common pattern was a report of no formal education or training since reaching compulsory school-leaving age. This is similar in scale to the figure reported by La Valle and Blake (2001), of 41% of respondents reporting no taught learning in the prior three years (and 24% no adult learning of any sort). Also similar to this study, and many others, is the finding that participation

Table 1. Frequency of four patterns of participation

	Frequency	Percentage	Mean age (years)	Age range (%)		
				21–40 years	41–60 years	61 years or older
Non-participants	371	37	58	26	27	54
Transitional learners	175	18	45	22	17	12
Delayed learners	246	25	52	23	29	25
Lifelong learners	209	21	44	28	27	9

is patterned by sex, age, ethnicity, disability, caring responsibilities, educational background, employment and local deprivation.

Table 1 shows considerable disparity in patterns of participation by age. This is particularly powerful, since it shows clearly how older groups are less likely to have been involved in *any* learning, despite the longer time they have had to do so. As can be seen in the final three columns showing changes over time in each age cohort, the percentage of non-participation has declined, and the recent growth has been in transitional learning.

Women were somewhat more likely than men to be non-participants (39:34), while men were correspondingly more likely to be delayed learners (27:23). Otherwise, there were no clear differences between male and females for any trajectory. Those from minority ethnic background were more likely to participate, both as transitional (35%) and lifelong learners (27%). These variables, and the others that follow in the remainder of this section, are therefore used as potential determinants of participation in the regression model described in the next section. Participants were also more likely to report being ‘British’ or other nationalities, and considerably less likely to report being ‘Welsh’, partly due to the deprived nature of Blaenau Gwent forming one of the two Welsh local authority sites for the study. Respondents from Catholic and minority religions (including Moslems and Hindus) were more likely to report some form of participation. Interestingly, a non-conformist background, that had been found to be positively related to participation in a prior study (see Gorard & Rees, 2002), was here very similar to Anglican and non-religious family backgrounds.

Table 2 contains one of a number of indicators that show how participation is strongly related to geographic mobility. In general, participation increased with the distance between current area of residence and area of birth. The most mobile were the least likely to be non-participants. There were also a clear relationship between participation and the characteristics of parents. In general, the patterns were the same for father and mother. These relationships are not new, and have been remarked on before by a variety of commentators (for example, Gorard *et al.*, 1999b; San-Segundo & Valiente, 2003). Post-compulsory (‘continuous’) participation for the respondent was also reflected in the elevated age of leaving education for the mothers and fathers of transitional and lifelong learners (Table 3).

Table 2. Area of birth by pattern of participation

Pattern of participation	Neighbourhood	District	Area	United Kingdom	Abroad
Non-participant	50	47	24	24	14
Transitional learner	17	12	19	21	24
Delayed learner	23	29	30	20	24
Lifelong learner	10	13	26	35	38

Note: The cells contain the percentage within each learning ‘trajectory’.

Table 3. Parents' education by pattern of participation

Pattern of participation	Age father left school	Age mother left school
Non-participant	14.2	14.3
Transitional learner	16.3	16.0
Delayed learner	14.5	14.6
Lifelong learner	16.4	16.1

Note: The cells contain the mean age (years) within each learning 'trajectory'.

Respondents from families with non-manual and service-class (professional/managerial) fathers were substantially more likely to continue to further education or training than from families where fathers are not working or are part-skilled/unskilled. Family background was one of the most important predictors of participation (see later). Participation for respondents increased with the distance between their current area of residence (the study site) and the area their parents were born, reinforcing the link between mobility and learning. Those who reported not attending school regularly were less likely to also report adult participation in learning of any sort. Indeed 60% of them reported no adult education or training at all (and this despite their average age of 52 years). It is notable that 22% of them *did* report a return to some formal learning at a later date, and it is important therefore that this 'delayed' route back into learning remains feasible in future funding and qualification regimes.

As might be expected, many more respondents with a private or selective education became lifelong learners (using the current definition) than those attending secondary modern or elementary schools. These patterns are clearly historically, geographically and socio-economically as much as educationally determined. For example, attending a private school could be a proxy variable for many of those already mentioned (such as having a father in a service-class occupation). Nevertheless, despite the importance of early family background, initial schooling is part of the pattern set for later life participation. Participation was weaker in Blaenau Gwent (with 53% non-participants), an area with considerable socio-economic disadvantage, and higher in Bath and North East Somerset (25% non-participants). As detailed earlier, these areas were selected as study sites due to their differing social and economic circumstances. Therefore, we assume that here again this variable is acting as a proxy for relative social disadvantage among the local population, as well as pointing to the nature and scale of local opportunities for adult learning.

As we have seen in our prior studies (for example, Gorard & Rees, 2002), the respondents' family set-up can be a key indicator of learning patterns, especially in interaction with respondents' sex (and occupational class). For men, living with a partner does not seem to be the barrier to participation that it can be for women; in fact, it is linked to enhanced participation. The same applies even more strongly to having children to look after. In particular, the relatively high proportion of delayed learners among those who have children (29%) suggests the womens' learning ambitions were initially frustrated by the need to care for the children. Our study also asked

Table 4. Report of informal study by pattern of participation

Pattern of participation	Informal	Not informal
Non-participant	25	41
Transitional learner	17	18
Delayed learner	28	23
Lifelong learner	31	18

Note: The cells contain the percentage within each pattern of participation.

a series of questions about informal, leisure and self-directed learning of a substantive nature (i.e. an interest that was sustained for at least one year). This is a tremendously difficult area to research accurately (see Gorard *et al.*, 1999c), but Table 4 summarizes a difference between those who did and did not report such an interest. Perhaps two points are worthy of special note. First, this kind of informal learning is patterned in a similar way to formal learning. Second, however, there is a substantial number of apparent ‘non-participants’ in formal learning who have reported sustained interest in personal learning.

What are the determinants of participation in adult learning?

Putting all of the aforementioned together in a multivariate analysis, we are able to ‘predict’ using logistic regression which of the four ‘trajectories’ is reported by each respondent with considerable accuracy using only what we know about their non-educational or initial education background (i.e. year of birth, sex, father’s occupation, type of school attended and regular/irregular attendee at school). For example, we can predict whether any individual reported extended initial education or training with 84% accuracy (i.e. our prediction would place the individual on the correct trajectory 84% of the time). By the time we predict their later episodes of participation, the overall accuracy is 77% (Table 5). In both cases, therefore, we improve the accuracy of our predictions by around 50% compared with chance. More significantly, by creating the model in a hierarchical way, we calculate it in terms of explanatory variables entered in batches representing periods in the individual’s life from birth to the present. In this way, each batch of variables can only improve the prediction based on

Table 5. Predictive power at each life stage

	Chance	Birth	Schooling	Adult	ICT access
Continuous	62	79 (0.45)	84 (0.58)	84	84
Later life	54	71 (0.36)	71	77 (0.49)	77

Note: Each cell contains the accuracy of predicting a phase of learning for each life stage. Data in parentheses are the amount of previously unexplained variance now explained. The use of information from adult lives cannot be said to ‘predict’ episodes of continuous initial education.

Table 6. Personal characteristics as determinants

	Continuous	Later life
<i>Year born</i>	<i>1.03</i>	
Ethnic group		
White British	0.57	2.24
White other	1.24	0.82
Other ethnicity	–	–
Male/born in ward	0.56	
Male/born in site	0.62	
Male/born in area	0.81	
Male/born in United Kingdom	1.66	
Male		1.95
Age 21–40 years		2.90
Age 41–60 years		2.81
Nationality		
Welsh		0.21
English		0.23
Scottish		0.20
Irish		0.20
British		0.51
Male age 21–40 years		0.45
Male age 41–60 years		0.49

Note: For clarity, real-number variables are in italics, meaning that the reported coefficients are multipliers for that variable. For example, someone born in 1975 is 1.03 times as likely, *ceteris paribus*, to continue in education or training after school as someone born in 1974. All other coefficients are for categorical variables, and represent a change in odds compared with a base category. For example, a male is, *ceteris paribus*, 1.95 times as likely as a woman to undertake an episode of education or training as an adult in later life.

the previous batch(es). This gives us a clue as to which variables are the determinants of learning episodes and which, like qualifications, are simply proxy summaries of others.

We can see from Table 5 that the vast majority of variation in patterns of participation that can be explained is explained by variables that we could have known when each person was born. Other than that, a key issue in explaining continuous post-compulsory learning is the experience of initial schooling, whereas a key issue in explaining later life learning is experience of work and family life as an adult. As noted in the previous section, even when the interaction with other variables is accounted for, younger respondents are more likely to continue with initial education and training of some sort, as are those from a minority ethnic background (Table 6). Those aged 21–60 years are nearly three times as likely to take part in later education or training as those aged 61 years or over, and so on.

Also, as noted earlier, the influence of parental background is key (Table 7). In particular, the age that parents finished initial education was a substantial determinant.

Table 7. Parental characteristics as determinants

	Continuous	Later life
<i>Age father left education</i>	<i>1.14</i>	
<i>Age mother left education</i>	<i>1.28</i>	
Father service class	3.82	2.87
Father non-manual	3.06	3.40
Father skilled manual	2.01	3.22
Father part-skilled	1.18	2.12
Mother service class		0.82
Mother non-manual		1.51
Mother skilled manual		0.14
Mother part-skilled		1.21
Father lives in ward		0.62
Father lives in site		1.07
Father lives in area		2.06
Father lives in United Kingdom		1.43
Mother born in ward	0.50	
Mother born in site	0.52	
Mother born in area	1.61	
Mother born in United Kingdom	1.25	

Note: For clarity, real-number variables are in italics, meaning that the reported coefficients are multipliers for that variable.

A respondent from a family with a service-class father is nearly four times as likely to continue with education, and nearly three times as likely to undertake formal learning in later life, as a respondent from a family with a non-working father. The picture for mothers is very different. Once other factors are taken into account, the occupation of mothers was unrelated to continuous learning. But a respondent with a non-working mother was nearly seven times as likely to report later life learning as one with a mother from a skilled manual occupation.

Table 8 presents the model coefficients for relevant variables relating to schooling, and then initial occupational class. Those respondents who did not attend school regularly were only one-quarter as likely to continue to education or training at school-leaving age as the others. Those attending private or grammar schools were considerably more likely to continue learning at school-leaving age than those attending elementary, and other, schools. While occupational class is strongly linked to both continuous and later learning, the patterns are different. Whereas service-class respondents are more likely to continue with full-time education, later learning is even more common for the non-manual and skilled manual occupational groups (in comparison with those without paid employment).

Table 9 presents the model coefficients for relevant variables relating to adult life and the present day. The key issues concerning continuous learning past age 16 years are family set-up, geographic mobility and their interaction. However, it must be

Table 8. End of compulsory schooling as determinants

	Continuous	Later life
Regular school attender	4.03	1.79
School attended at 16 years old		
Comprehensive	4.71	
Grammar	11.94	
Secondary-modern	2.99	
Private school	27.45	
First occupation		
Service class	13.00	1.89
Non-manual	2.65	3.37
Skilled	1.03	2.14
Part-skilled	0.80	1.47

remembered that these variables do not improve the quality of prediction of participation. The same issues are also relevant for later learning, and in addition sex, area of residence and informal learning are relevant. In our models we also added a final batch of variables relating to access to and use of computers and the Internet. However these make *no* difference to the accuracy of our predictions. Once all of the

Table 9. Adult life determinants

	Continuous	Later life
<i>Year of giving birth</i>	<i>0.98</i>	
<i>Number of children</i>	<i>0.73</i>	
Single/born in ward	1.19	
Single/born in site	0.15	
Single/born in area	0.94	
Single/born in United Kingdom	1.35	
Area of residence		
Forest of Dean		1.68
Bath and North East Somerset		1.08
Blaenau Gwent		2.15
Have children		0.23
<i>Age of giving birth</i>		<i>0.97</i>
Male by single		0.53
Have children age 21–40 years		6.00
Have children age 41–60 years		2.64
Informal learner		1.86

Note: For clarity, real-number variables are in italics, meaning that the reported coefficients are multipliers for that variable.

preceding variables are taken into account, the model explains both continuous and later learning as accurately as we are able. The implications of this finding for the strong simple relationship between access to computers and patterns of learning, and for attempts to widen participation via technology, are described in the succeeding sections.

What is technology, particularly ICT, used for and to what extent does this use of ICT involve learning?

Given this emerging picture of the relative insignificance of ICT in terms of general patterns of participation in lifelong learning we need now to consider *who* among the adult population is using ICT and *what* they are using it for. Moreover, we need to consider who is *not* using ICT. Here it is important to note first that having access to ICT is not, however, the same as using it. Although only 82 people or 8% of the sample were totally without potential access to computers in either domestic, work or community sites, 48% reported not having used a computer during the previous 12 months. The use of computers remained a minority activity 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% watching television frequently (i.e. 'very' or 'fairly often'), and 81% listening frequently to the radio.

As for computer use within the 526 respondents of the sample who had used a computer, word-processing was the most popular activity (88% of computer users), followed by 'fiddling around on the computer' (67%) and file and memory organization (31%). Levels of use of the Internet were slightly lower, and sending and receiving e-mails was the most prevalent Internet-based activity (71%), alongside searching for information on goods and services (67%) and seeking information relating to work, business or study (59%). Few used the Internet more than 'rarely' for learning (59 people). Indeed, the majority of respondents displayed a limited 'repertoire' of uses of computers and the Internet. The mean number of computer applications used by respondents on a 'frequent' (i.e. 'very' or 'fairly often') basis was 5 applications (standard deviation = 4).

Moving our attention from nature of use to location of use, only 11% 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. 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, with those from La Valle and 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. Thirty-three per cent of La

Table 10. Usage of computers by personal characteristics

	User (%)	Non-user (%)	Sample size (<i>n</i>)
Gender			
Male	55	45	405
Female	51	49	596
Age group			
21–40 years	72	28	330
41–60 years	66	34	319
61 years or older	22	78	352
Marital status			
Single/separated/widowed	36	64	355
Married/living with long-term partner	62	38	625
Health status			
No long-term illness/disability	58	42	761
Long-term illness/disability	35	65	229
Education			
Continued after 16 years old	76	24	384
Completed education at or before 16 years old	38	62	617
Socio-economic status			
Service	81	19	83
Skilled non-manual	67	33	300
Skilled manual	62	38	87
Partly skilled	35	65	418
Other	50	50	113
Total	52.5	47.5	1001

Velle and Blake's respondents had never used a computer or the Internet, and these differed from the rest by age, sex, class and education in a similar way to that described here.

It is also possible to gain a sense of who was making use of computers by comparing the characteristics of those who had made use of a computer during the past 12 months (users) and those who had not (non-users). As can be seen in Table 10, prominent differences in use were apparent by the five socio-economic status groups, the three age groups (21–40 years, 41–60 years and 61 years or more), by two marital status groups and two educational background groups. Less pronounced differences in use were also apparent by long-term illness/disability. The difference by gender, however, was not substantial. Thus, computer-using adults were more likely to be in the service or skilled socio-economic groups, married (or living with a long-term partner), aged 40 years or less, without any long-term illness or disability and to have continued with their education after 16 years of age.

Table 11. ICT use by pattern of participation

Pattern of participation	Used computer during lifetime	Not used computer during lifetime	Used computer last year	No computer last year	Used Internet last year	Not Internet last year
Non-participant	19	67	16	61	12	55
Transitional learner	20	13	22	13	24	13
Delayed learner	30	16	29	20	26	23
Lifelong learner	31	4	34	6	38	8

Note: The cells contain the percentage within each category of use/non-use of ICT.

Can access to ICT be said to ‘create’ adult learners and learning experiences?

Probably the most obvious observation about patterns of formal learning and use of ICT is that the two are strongly related. This is something that we have observed before (for example, Selwyn & Gorard, 2002; Gorard, 2003) and on which most commentators are agreed (for example, Sargant & Aldridge, 2002). The same relationship appears again in our new study (Table 11). All of our indicators of computer/Internet access and use show the same pattern—those who undertake formal learning are also those individuals who are more likely to use ICT.

However, we do not immediately draw the same conclusion as others have done. It is not necessarily the case that use of ICT leads to greater participation. The causal model could be the reverse of that, or both phenomena could have a common cause. In order to test this, we return to our logistic regression model set out in the second subsection of this results section. There we saw that the majority of the variance in patterns of participation that *can* be explained is explained by what we could have known about the respondents when they were born (year of birth, sex, father’s occupation, etc.). Our model improves through the addition of what we could have known about the respondents when they reached school-leaving age (type of school attended, for example). Our model for participation in later life also improves through the addition of information about the respondents as adults (occupation and number of children, for example). But adding all of the generic variables about experience of ICT, access to ICT and current use of ICT does not improve the model any further. While this model is not in any way a definitive test, it does suggest that ICT in itself is not a key determinant of adult participation in formal learning. We intend investigating this account further by means of our follow-up interviews and case studies, selected to represent the patterns described in this paper.

In summary the key determinants of extended initial education are age, sex, place of birth, parental occupation and education, family religion and school attended. The key determinants of later participation are, in addition, ethnicity/nationality, area of residence, occupation and age of having children. In addition, those reporting a sustained period of self-directed study or leisure learning were nearly twice as likely

to be lifelong learners *ceteris paribus*. This is, probably, the most important variable relating to informal learning in this study.

Discussion

The striking conclusion from these data is that the ‘e-learning society’ appears remarkably similar to its non-technological predecessor, and we are the more confident of our results because they replicate our previous analyses of two other large-scale datasets (Gorard & Rees, 2002; Gorard, 2003). We have seen (again) that over one-third of the adult population are not engaging in any learning at all and those individuals that are participating in adult education are heavily patterned by ‘pre-adult’ social factors such as socio-economic status, gender, year of birth and type of school attended. As we have already intimated, this confirms a long line of studies from the 1950s onwards that have provided compelling evidence that the determinants of participation (and non-participation) are long term and rooted in family, locality and history. Yet of particular interest from our most recent data is the ‘failure’ of ICT and technology-based adult education to make any noticeable difference to these deep-rooted patterns. This is not to deny that there are many exemplary examples of ICT-based learning currently taking place but, on the basis of all our data, there is no evidence of ICT having a widespread and sustained effect in terms of widening participation in adult education. At best ICT is *increasing* levels of participation within the social groups that were learning anyway (a trend we have referred to previously as attracting the ‘usual suspects’).

That ICT is making little discernible impact on patterns of educational participation is perhaps more understandable when we consider people’s access to and use of new technologies in everyday life. The rhetoric of the ubiquitous and universally demanded ‘information age’ was not apparent in our data, with people’s use of ICT limited in its frequency and scope as well as being heavily delineated by social factors such as age, socio-economic background and educational background. Although new technologies like the computer and the Internet—and, it follows, technology-based learning—have been made ‘universally’ accessible via community-based provision, the uptake of such opportunities in practice has been slight when seen from the perspective of the general adult population. This leaves us with two main areas of contention: how can we explain this apparent inertia in patterns of educational participation, and where does this leave the current adult education ‘e-learning’ agenda?

In terms of understanding why ICT has apparently failed to impact on adult education in the ways promised, it is useful to think beyond the hyperbole of ICT as a ‘technical fix’ for education (Robins & Webster, 1989) and instead consider the social, economic and political realities of ICT-based adult education provision in the United Kingdom. First, despite the rhetoric the primary emphasis of the current ICT-based education drive is based on human capital-based notions of economic competitiveness rather than egalitarian notions of social inclusion, with a fundamental emphasis on increasing levels of participation in education by economically active individuals. If we examine the rhetorical foundations of the UK government’s current drive it

soon becomes clear that ICT-based learning is seen primarily from the economic perspective of up/re-skilling the workforce (Selwyn *et al.*, 2001). As the director of ICT for the University for Industry recently remarked, 'we are there to make a difference to individuals to make them more employable' (Sutton, 2003). Any notion of widening participation to all social groups could therefore be more accurately seen as increasing participation among economically active groups.

The notion of ICT-enabled social inclusion is weakened by the underlying model of participation in education based on human capital theory. This model is taken from economics (for example, Becker, 1975) and assumes that learners act as rational egoists, making decisions based on market forces, specifically selecting educational episodes based on how they will improve their employability and earning potential, and weighing this against their costs. The notion of the 'knowledge society' tells us that investment in education will increase employability, and thus the outcome of this calculation should be an enthusiasm for participation (Fevre *et al.*, 1999). Participation data tells us that large sections of the workforce do not engage in post-compulsory education or training, and the human capital model allows only one explanation for this—that is, that barriers are standing in the way of learners taking the action they would select if they had a free choice; barriers that are overcome via ICT.

Yet this notion of the economically rational individual choosing to learn via ICT ignores the social complexities of people's lives and the 'fit' of technologies in these lives. It would seem that a highly salient reason behind the non-use of computers for learning is simply the (ir)relevance of both ICT and education to people's lives. Much academic and political interest in education and technology has been based on an implicit assumption that ICT use and learning are inherently useful and desirable activities throughout all sectors of society. Thus, for many authors, the logic behind state-subsidized public ICT provision is an imperative towards 'giving people the information tools they need to participate in the decision-making structures which affect their daily lives. It means helping people use these resources to deal with their everyday problems' (Doctor, 1994, p. 9). Yet the rhetoric of the 'information society' belies the fact that for many people 'dealing with everyday problems' does not involve personal use of ICT or learning new skills. There is maybe a need here to reconsider the 'relative advantage' (Rogers & Shoemaker, 1971) and 'situational relevance' (Wilson, 1973) of ICT-based education for the vast majority of adults who remain non ICT-based learners. As Balnaves and Caputi (1997, p. 92) reason, it follows that where the impact, meaning and consequences of ICT use are limited for individuals, then we cannot expect sustained levels of engagement: 'the concept of the information age, predicated upon technology and the media, deals with the transformation of society. However, without improvements in quality of life there would seem to be little point in adopting online multimedia services'.

This leaves us with the final policy-orientated question of how then can the education ICT policy agenda be more effectively reshaped. Whereas some more recent government and official policy reports acknowledge that technology is not a panacea for all the challenges facing post-compulsory education (for example, Learning and Skills Council, 2002), there remains a tendency for politicians, educationalists and

policy-makers to ascribe transformatory powers to technology. For example, as John Davies (former director of British Telecom and now member of the National Council for Education and Learning in Wales) argued at the launch of the Welsh 'E-learning strategy':

Over the new few years [ICT] will completely transform the way millions of Europeans gain their knowledge and skills ... If we get this right we will give, not just younger people, but the entire population an unprecedented opportunity to access the highest quality learning in creative ways which match their individual needs more precisely than ever before ... Everyone ... need [sic] to buy into a common vision. (Davies, 2003, p. 19)

Not only are such views incorrect, they are fundamentally damaging; increasing as they do expectations among educators and learners, and leading to the well-worn cycle of hype, hope, disappointment and eventual disenfranchisement when the 'effects' of ICT-based initiatives fail to materialize. 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 and Blake (2001). Thus we would argue for a wholesale readjustment of political and educational views of technology and adult education if the undoubted educational potential of ICT is to be best harnessed. It is time for educationalists to reassess their expectations of ICT and not get carried away with futuristic prophesying. Our primary concern here is that the overwhelming attention being 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 therefore need to be realistic about what ICT can and cannot be expected to achieve if we are to harness its educational potential. In particular, ICT should not be seen as a single variable in engineering interventions to the perceived 'crisis' of non-participation. Nor should it detract from the more prosaic 'offline' necessities of educational provision that should continue to be funded and prioritized.

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Notes

1. Although contested, it is generally accepted that 'e-learning' refers to:

learning with the help of information and communications technology tools. These tools may include the Internet, intranets, wireless networking, PC (personal computer) based technologies, handheld computers, interactive TV and also e-technology to support traditional delivery for example using electronic whiteboards and video conferencing. (Department for Education and Skills, 2002, p. 2)

2. A systematic sample stratified by age and gender of 1001 adults aged 21 years or older 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, and moved on to a reserve case either due to candidate refusal or inability to make contact. The interviews were held in people's houses, or infrequently by appointment elsewhere (e.g. place of work or relative's house).

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