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HOW (CAN) NONUSERS ENGAGE WITH TECHNOLOGY: Bringing in the Digitally Excluded

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Abstract

This paper describes findings from the Pencil Project,¹ which aims to explore the experiences of nonusers and minimal users of ICTs, how nonuse affects their inclusion or exclusion from society, and how they can learn to use ICTs to meet their personal goals. The paper considers the applicability of the technology adoption model (TAM) to understanding the experiences of this group of people. By looking at theories of social exclusion and the project research findings, the paper argues that TAM is limited in the range of social conditions it anticipates and, thus, presumes a facility in formulating aspirations for use that people excluded from the use of ICTs cannot have. We argue that we need to consider engagement with technology rather than just adoption. We consider the implications of these findings for designing a revised basic ICT curriculum and describe the piloting of a new curriculum. We argue that, as ICTs in general—and Internet use in particular—are experienced technologies, perceived usefulness and perceived ease of use need to be reformulated to recognize limitations on people's ability to construct plans for future action since an actor's world is disclosed through action not given in advance.

Keywords

Digital exclusion, digital divide, e-literacy, engagement with technology, model of adoption of technology in households (MATH), social exclusion, technology adoption model (TAM), basic ICT curriculum

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1 INTRODUCTION

It is commonly stated that ICT is transforming every aspect of society: the way people learn, work, conduct business, spend leisure time, and organize their social lives. Recent figures show that 58 percent of UK households own a PC² and 60 percent use the Internet (Dutton et al. 2005).³ Computer use and Internet access at home are supplemented by that at work or local e-gateway centers (such as libraries, Internet cafes, or local colleges). Yet, some people in the UK still do not own a computer nor do they (or can they) make use of one. Use is strongly linked to income: home access to the Internet ranges from 15 percent for the lowest income decile to 89 percent for the highest.⁴ This describes a domestic, as opposed to an international, digital divide.

We suggest that the commonly used term, digital divide (see for example, Hubregtse 2005; Korupp and Szydlak 2005), is less helpful than *digital exclusion* (Devins et al. 2002). Divide implies a technological determinism, with the divide arising from the nature of the technology. Digital exclusion denotes a stronger sense of social process and, through the wording, provides a helpful association with other forms of social exclusion. We aim to add to the small, but growing, body of literature that considers different facets of digital exclusion: the barriers to and motivation for use of ICTs; and the implications of nonuse (Haddon 2000; Kvasny 2005; Liff et al. 2002; Selwyn et al. 2005; Wyatt et al. 2002)

A more sophisticated understanding of people's use and nonuse of ICT is developing, moving from a dichotomy of information "haves" and "have-nots" toward an acknowledgment of the complex nature of the processes taking place, (Cornford and Klecun-Dabrowska 2003; Silverstone and Haddon 1997, 1998). Despite increasingly sophisticated accounts of digital exclusion recently reflected in UK policy, academic understanding of who is making little or no use of ICT, and why, remains weak (Selwyn 2003a). Furthermore, the ability to use ICT is increasingly seen as a prerequisite to participating (living and working) in an e-society but there is limited understanding of how e-illiteracy and ICT nonuse affect people in their daily lives or of people's aspirations for their use.

This paper has a number of related aims. First, it seeks to challenge the focus of technology adoption literature on business people and students, and to highlight the importance of focusing on other sectors of the population. Second, it aims to indicate the shortcomings of the technology adoption model (TAM) and the model of adoption of technology in households (MATH). Third, it reviews key literature on social exclusion in order to interlink technology adoption and social exclusion. Fourth, it contributes to the understanding of nonuse of ICTs, and in particular it aims to identify barriers to use and people's perceptions of technology and their information needs. It further considers their understanding of what new technology can offer them, as well as

²National Statistics "Consumer Durables," 2005 (<http://www.statistics.gov.uk/CCI/nugget.asp?ID=868&Pos=&ColRank=1&Rank=374>).

³Broadly in line with other economically developed countries, as shown by the country reports gathered by the World Internet Project (<http://www.worldinternetproject.net/>).

⁴National Statistics, "Households with Home Access to the Internet by Gross Income Decile Group," 2004 (<http://www.statistics.gov.uk/STATBASE/ssdataset.asp?vlnk=6937&More=Y>).

the activities from which new ICTs exclude them. Finally, it outlines a curriculum for a course that would respond to those needs.

To achieve these aims, the paper starts by considering the dominant model in the IS literature on how people become users: TAM (Davis 1989, Davis et al. 1989) and MATH, its extension to households (Brown and Venkatesh 2005). It discusses to what extent TAM and MATH are appropriate theoretical constructs for gaining an understanding of why people who are socially excluded make no, or little, use of ICT, and how they might become users—in TAM's terms, their adoption intentions.

Our critique of TAM and MATH is multilevel. First, we consider the appropriateness of the research methods applied. Second, we question the theoretical assumptions behind such models and highlight their limitations. Finally, we query whether the popularity of these models in IS literature narrows the scope of reported research. Are the utilization of information systems in the workplace and home users' ICT purchasing intentions the only questions worth asking? We present an alternative approach to understanding nonuse and use of technology that draws on work on social exclusion. In the third section we describe our study, which investigates the experiences of those excluded by technology and outline its action research component, in which we designed and ran an innovative "Living with Computers" course.

We then outline the research findings in which attitudes of non- and minimal users of computers, their perceptions of technologies, and the uses they might make of it are described, arguing the need to construct alternative models of how wider use can be supported. Our conclusion highlights how e-literacy should be addressed and argues for giving socially excluded people's relationship to technology a more prominent place in information system research, including the research on technology adoption.

2 THE TECHNOLOGY ADOPTION MODEL

In considering how nonusers might become ICT users we start by exploring to what extent TAM (Davis 1989; Davis et al. 1989) might assist us. The model draws, amongst other approaches, on the theory of reasoned action. In his much-cited paper Davis (1989) proposes that two constructs, perceived usefulness (PU) and perceived ease of use (PEOU), are the fundamental determinants of user acceptance, and can be used to predict adoption. Davis concludes that PU is the better predictor of acceptance, "ease of use may be an antecedent to *usefulness*, rather than a parallel, direct determinant of usage" (p. 334), but subsequent studies have tended to regard the two concepts as more equal.

These two notions, particularly when translated into "is this any use to me" and "can I make this work easily," are a commonsensical way of approaching the issue but the way they have been applied fails to take account of how potential users come to the technology. We have reviewed recent studies published in *MIS Quarterly* to discover over what domains and with what assumptions TAM has been applied. Our concerns fall into three areas: the narrow domains explored; the assumptions about agency and choice which are removed from social context; and the view of people as users rather than actors.

Table 1. Subjects of TAM Studies

Subjects of Study	Number of Studies	Percentage
Knowledge workers	23	52
Administrative/clerical staff	2	5
Graduate Business and MBA students	10	23
Undergraduate Students	8	18
Students (unclassified)	1	2

The studies overwhelmingly concentrate on two groups—business professionals and university students—both of which have successful educational backgrounds and familiarity with environments where ICTs are pervasive.

Gefen and Straub's (2000) review of TAM studies between 1989 and 2000 details 44 investigations (see Table 1). They cover a strikingly narrow segment of the total population. The reason for the focus disclosed by these figures might be that TAM concentrated on IS in business. However, this limitation is not acknowledged. For example Gefen et al. (2003, p. 53) state, "Numerous empirical tests have shown that TAM is a parsimonious and robust model of technology acceptance behaviors in a wide variety of IT across... levels of expertise." They cite Taylor and Todd (1995) in support of this claim. However, Taylor and Todd studied use of a computer resource center by business school students, a somewhat restricted notion of "levels of expertise."

When Gefen and Straub (1997, p. 389) wished to address one possible dimension of exclusion, gender, they studied "groups of knowledge workers using e-mail systems in the airline industry in North America, Asia, and Europe." Again they concentrated on people who were, essentially, insiders.

The bias in a major study of adoption of home computers (Venkatesh and Brown 2001) is less obvious. However, the study is not interested in distinguishing between different population groups. It only reports the mean values for variables such as income for the sample and the whole population (p. 81); and it does not report on the employment status or qualification levels of the respondents. Furthermore its sample is skewed toward the suburbs and away from likely areas of social deprivation and exclusion.

TAM draws upon the theory of planned behavior (Ajzen 1991)—a rationalistic causal model—as does MATH. Critiques of such models point out that individuals act arationally, their ability to analyze their world and define and enact rational intentionalities is far more limited than bounded rationality concepts (Simon 1982) suggest. Inrona (1997, Chapter 2) graphically describes Heidegger's notion of *thrownness*. We are always already within our world, constantly buffeted and disconcerted by events, never able to stand apart from the world and contemplate and plan. There is never the peace that Simon demands for making the best sense of the world we can, then planning accordingly within the bounds of our knowledge. We do not have stable intentions that we can project forward in time to know our PUs and our plans for our behavior. We are constantly engaged in bricolage (Ciborra 2002), forming and reforming our constructions in the flux of events. When we bring less experience to a situation, we are even less able to improvise a plan, to make sense of our situation (Weick 1993). The behavior of less experienced and skilled users of ICTs is consequently less amenable to analysis by TAM and MATH.

Lamb and Kling (2003) offer an important critique of these approaches in their explanation of engagement with technology: “the most common conception of the user in IS research is of an atomic individual with well-articulated preferences and the ability to exercise discretion in ICT choice and use, within certain cognitive limits” (p. 198). They argue for a view of individuals as social actors (networked beings) who have an engagement with technology, rather than simply as users: people who contribute to the construction and disposition of ICTs, not passive consumers, and who are co-constituted by the technologies with which they engage.

TAM, as a predictor of the behaviors of organizational members, is primarily concerned with whether staff will use the tools provided for them and aims to assist managers in deploying IT more effectively and extensively. MATH attempts to predict the likelihood of ICT purchase by individuals or households. Neither is concerned with the effects of ICTs on people—as workers, family members, or citizens—or their use of technologies, both see individuals as unchanged by the process of technology adoption. They see the learning of, say, Excel as the simple gaining of a skilled practice, excluding the existential dimension of becoming an Excel user. While we can predict, with lesser or greater accuracy, the use we may make of a new tool, there is a fundamental unknowableness about the change in our disposition toward, and engagement with, the world that possession of a new skill represents. PU is a moving target, changing as knowledge about, and facility with, the technology changes.

Furthermore, it is striking that none of the “sources for normative beliefs” presented by Brown and Venkatesh (2005) in MATH describe the influence of social status, social capital, ethnicity, or class except as they are seen as the influence of family and friends, nor are these seen as predictive factors for ICT use.

Some of the limitations of TAM can be explained through its intended focus on the business environment and, for MATH as well, on adoption of technology not its use, and people’s experiences with it. Nor do they claim to be interested in social or digital exclusion. However, the problems with these models are more fundamental and stem from their theoretical assumptions. Our contention is that, because these models are dominant in IS research, they privilege the worldviews of the included and further marginalize the already excluded. Further, the worldviews that underlie these methodologies make the powerless, *the other*, even less of account in their suburban world of business men, women, and students, at work, at play, at shopping. If the questions we want to ask are about the excluded’s engagement with, not acquisition of, technology and how the technology might mediate their engagement with the world, we need to go beyond TAM and MATH.

These are concerns we share with the critical research tradition in Information Systems which encourages us to identify the unconscious assumptions about the nature of organizations and society that lie behind such a narrowing of vision (Howcroft and Trauth 2005; Ngwenyama 1991).

3 SOCIAL EXCLUSION

We suggest that considering literature on social exclusion can deepen our understanding of why excluded people do not use ICT or make little use of it, and how

they might become users. This will help us understand digital exclusion as both a result of, and constitutive of, social exclusion.

Social exclusion is a contested concept in the social policy literature (Hills et al. 2002). Its origin was in France in the 1960s and arose out of a concern with *les exclus*, those on the margins of society, with little connection, or commitment, to general social norms (Burchardt et al. 2002). The concept arises from a concern that poverty, while remaining a central element in exclusion, is not a sufficient descriptor. People's life chances are not solely determined by their wealth but are constituted by a range of resources that they can, or cannot, deploy—their educational, cultural and social capital (Bourdieu 1986).

Gordon et al. (2000, p. 73) in their study of poverty in Britain describe social exclusion as,

A lack or denial of access to the kinds of social relations, social customs and activities in which the great majority of people in British society engage. In current usage, social exclusion is often regarded as a “process” rather than a “state” and this helps in being constructively precise in deciding its relationship to poverty.

Despite the attempt to provide a wider understanding through this term, Milbourne (2002, p. 328) argues

these interpretations rest heavily on individual or household isolation; and the remedies on re-inclusion and membership of mainstream social institutions. Little change is therefore implied to the social institutions themselves, nor do such interpretations recognize the need to address the accumulation of wealth elsewhere, nor other dominant and powerful institutions which promote inequality and potentially exclude and define those outside as disadvantaged, whether by race, class, gender, age or disability. Social exclusion then fails to address equality in the wider sense.

Veit-Wilson (1998, p. 45) draws a distinction between strong and weak concepts of social exclusion. Weak is linked to deficiency notions and places responsibility on the individual for failing to succeed, while strong identifies the issues as structural, with the powerful elements in society responsible for the excluding. Relating this to nonuse of ICTs, we may either view the problem as individuals failing to take up opportunities to learn and use, or as structural, about the type and availability of access to equipment and to relevant education and support.

Concepts of social exclusion are holistic. They aim to see exclusion as a complex system with multiple elements and systemic properties of feedback and homeostasis. They describe a process that persists over time. Remedial actions are inevitably partial and reductionist. They may involve detailed multiagency intervention at an individual level, which changes the state of an individual or family without disturbing the phenomenon at a community or social level (Maguire et al. 2003). Alternatively, interventions are singular changes for a community: improved childcare provision; a free Internet café; housing renovation; or increased CCTV surveillance. While these

interventions can, and do, ameliorate the living conditions of a few, or many, people, they cannot end social exclusion or even, it might be argued, lead to a significant diminution of exclusion. The structures of inequality are too mutually reinforcing and stable for that (Lupton 2003).

Social exclusion leads us away from a simplistic definition of poverty as the only and sufficient explanation of an individual's ability to participate in the social, cultural, and economic life of wider society. However, it should not be allowed to obscure the deep and continuing economic inequality that lies at its heart (Piachaud and Sutherland 2002).

Moreover, the reduction of exclusion experienced by those who can now participate more easily through e-channels, for example those whose mobility is restricted by disability or caring responsibilities, may be at the expense of further increasing exclusion of those furthest from participation. The e-walls of the city may now be extended, including and protecting greater numbers; but they are also higher and more difficult for those remaining outside to scale or enter.

4 SOCIAL EXCLUSION AND TECHNOLOGY NONUSE

This section briefly reviews the literature on nonuse of ICT. The focus is on work, considering reasons for nonuse rather than its consequences. Lack of access to suitable equipment was initially identified as the key reason for nonuse of ICT.⁵ However, physical access to technology alone is not enough to promote a digitally inclusive society (Selwyn 2003b). Evaluation of UK online centers stated that learners considered any new ICT skill to be of "limited use" unless supplemented by home access. They pointed to inconvenience, perceived cost, and low interest as the key barriers to uptake, once issues of access had been resolved (Hall Aitken Associates 2004; Wyatt et al. 2003). The Digital Inclusion Panel (2004) additionally identified as barriers to the development of e-skills: lack of confidence, inaccessible content, and lack of physical access and adaptive technologies. However, these were coupled with less tangible factors such as lack of knowledge, awareness, skills, and social support. Georgiou (2004) also reported that many learners had concerns about content, lacked confidence in the security of the Internet for financial transactions, and often felt that technology was too complex for them to fix if it went wrong.

Selwyn (2004) argues that many adults seem to be creating a use for technology rather than the technology filling deficits in their lives, making learner motivation problematic. Similarly, a survey of lifelong learning centers (Wyatt et al. 2003) indicated that over 70 percent of users attended the centers to learn to use a computer. The second most common reason given was to learn to send e-mails to friends and family.

Longitudinal studies have discovered that meeting people, learning new skills, improving skills and confidence, improving employment prospects, reentering learning, and developing skills to help others were also motivating factors (Hall Aitken Associates

⁵Tony Blair, "Prime Minister's Speech at the Knowledge 2000 Conference," March 7, 2000 (<http://www.number-10.gov.uk/output/page1521.asp>).

2004), together with accessing information and improving health (Bradbrook and Fisher 2004). E-mail, shopping, and learning for personal interests were additional reasons for interest in the Internet by nonusers in the survey reported by Russell and Stafford (2002).

Selwyn (2003a) criticizes existing accounts of nonuse of technology for tending to assume that ICT use is inherently desirable and nonuse is seen as “abnormal.” Nonuse is seen as arising from a deficit on the part of the nonuser: in cognition, personality, knowledge, resourcing, social situation, or personal ideology. Selwyn argues that to avoid such assumptions we should study the information needs of the individual rather than the perceived information needs of society. People can have legitimate and well thought-out reasons for not engaging with ICT; engagement depends upon individuals creating their own contextual framework and motivation for adoption, which is unlikely to occur without the encouragement of a compelling proposition. Woolgar (2002) suggests that the uptake and use of the technologies depend crucially on local social context.

In summary, our review reveals that the TAM and MATH models are unconcerned with socially excluded people’s experiences with technology. On the other hand, the mainstream literature on social exclusion does not adequately account for the influence of ICTs. There is, however, a small but increasing body of literature on the digital divide, social exclusion and technology, and on nonuse of technology (Kvasny and Keil 2006). This review sets the context for our empirical study of nonusers of ICTs and their understanding of the technologies and their aspirations for use.

5 THE PENCEIL STUDY

In this section we briefly discuss our study design. Our aims included addressing the following question: What inhibits people who experience social exclusion from becoming competent and confident users and how can this be addressed? As Chatman (1996, p. 205) observes, “The process of understanding begins with research that *looks* at their [outsiders] social environment and that *defines* information from *their* perspective.” Woolgar (2002, p. 7) also stresses the need to see how people interact with technologies: “We need to focus much more on bottom-up experiences, on the nitty-gritty of actually making the damn modem work.” Thus, our research includes both an investigative element and action-research.

The field work for the study was conducted on and around a social housing estate in Lambeth, south London. The estate is typical of many in London, being characterized by high, but not extreme, levels of social deprivation; low income and qualification levels; and an ethnically and linguistically diverse population (Cushman 2004). Interviewees were recruited from users of a number of local agencies including a local community center, students attending local basic education and basic IT courses, parents at the local primary school, members of the estate’s older people’s club, and residents of an adjacent bail hostel.⁶

⁶A hostel for people recently released from prison, run by the probation service.

Our interviews covered both total nonusers of ICTs and people who were occasional and highly unconfident users. The interview extracts that follow are drawn from the 47 interviews conducted to date.

In setting the ethical policy for this research, which concerns people with little power, we identified a responsibility not to limit ourselves to studying but also striving to ameliorate the lives of people whom we investigate. For this reason action-research is a major component of our study. Based on the information collected during the interviews and drawing on the literature from the fields of education, social and digital exclusion, and information systems, we designed and ran an introductory IT course called “Living with Computers.” Feedback from the participants and our experience of running the course is being used to revise the curriculum for future courses and to inform practice and policy in this area.

In designing the action-research element of our study, we sought not to set unrealistic goals. Reducing individual digital exclusion allows participants to achieve their life tasks more easily and maybe more cheaply, important for people on low incomes. Such interventions might, at the limit of their ambitions, allow excluded people to involve themselves, digitally and otherwise, in collective action aimed at changing the social conditions that define their life chances. Discovering better ways of teaching participants digital skills may also allow them to engage in the e-consumption of government services—to their benefit and to the benefit of service providers. This, however, is far from participating in an e-enabled democracy.

5.1 Motivations and Aspirations for Use

It was only among older interviewees that we met people with no contact with these technologies and no interest in using them. However it is important to acknowledge the warning by Selwyn et al. (2003) against identifying older people as a homogenous group. Through our field work we contacted a range of older people, from early 60s to 90s and from would-be enthusiasts to total “refusniks.”

Most of the sample under retirement age had some, although often very restricted, experience with ICTs and all those with no experience expressed a wish to use them. Parents of school age children gave several reasons for wanting to know about computers. These included, having once purchased a computer for their children to use, wanting to know what their children were doing. As one parent explained,

AA: *Sometimes they are on the computer, Internet, and you don't know what they are doing.* [Ghanaian female]

Others had acquired computers so that their children could use them for their homework and they wanted to be able to support them.

CM: *She [my daughter] has been quite bad at IT at school, and she's struggled with it quite a bit, because she's not been able to practice. So I'm hoping that now we've got this, and when we get it up and running she will be on it quite a bit....And I want to be able to help her.* [English female]

Interestingly, even those who did not use computers nor have plans to use them in the near future expressed a belief that computer skills are becoming a necessity, even if they could not articulate activities for which they could potentially use computers.

DA: *Well, it makes you feel like, you know, I don't know if I am using the right words, but as if you are in the Dark Ages.* [Ghanaian female]

Most respondents envisaged some activities they could potentially perform using a computer. Communicating via e-mail was most commonly mentioned. Many respondents were born outside the UK and had identified e-mail as a way of keeping in touch with family and friends abroad, while avoiding high telephone bills.

Int: *What sort of things do you use it for?*

VR: *Just check my mail, and I send mail.*

Int: *Who to?*

VR: *My people in Africa, in the US, my friends in Canada.* [Nigerian female]

AH: *Oh, my brother says why you not get the e-mail and the computer for?* [Somali female]

Searching for information was sometimes mentioned spontaneously and frequently provoked an interested or even enthusiastic response, when prompted, but it was also an area of anxiety.

Int: *Why haven't you tried to look at the Web?*

AA: *Maybe I am a little bit scared. Not to do the wrong thing and maybe to affect her [daughter's] work or whatever it is. Just to leave it alone. Until I have more confidence.*

Int: *Would you like to look at Ghanaian newspapers and things like that?*

AA: *Oh yes. Yes. I would like to. I have a friend, just across, and the children go there and they go on Ghanaian web, and football and all that in the news. And it would be great to see what is going on.* [Ghanaian female]

Some interviewees expressed a wider list of aims.

DA: *There are so many things you can do with them, like shopping, research, and other things.* [Ghanaian female]

Nevertheless, common to the total nonusers of ICTs and the occasional users were their limited aspirations for the use of ICTs. Many interviewees knew about e-mail and were using it or wanted to use it for communicating with distant family and friends; none mentioned instant messaging as a way of achieving the same goal. VoIP (voice-over-Internet protocol), which had much media coverage during the later interviews, was not even recognized as a possibility.

Most respondents were familiar with the idea of e-shopping (surprisingly frequently identified as eBay) whether they wished to engage in it or not but eGovernment services were almost totally unknown. Only one or two were aware it was possible to use the

Internet to contact local or central government. Even when the possibilities were described, few people responded enthusiastically—most wished to continue to use the phone or visit offices in person. They appeared to mistrust the responsiveness of these services and believed it necessary to apply verbal or emotional pressure to gain their desired response, believing Internet messages would be ignored. The benefits of not hanging on the phone or waiting in an office, although recognized, would not compensate for the perceived loss of efficacy.

- Int: *How about using it to sort out problems with the council and things like that?*
- DB: *Um, I never thought of that, actually. I just get the local Lambeth News, and they send the thing to you, so you read it and you know the only thing you have really dealings with the council is to pay them the council tax.* [African-Caribbean female]
- Int: *How about getting in touch with the council about home helps or social services or something like that?*
- GR: *Can you do it online then? Does it cost you as much or not?*
- Int: *You would rather use the telephone then to try to sort things out. Talk to people rather than send them messages.*
- GR: *Yeah, because they might not be there.* [English female]

The local council tries to promote the use of the Internet for contacting services, and its newsletter, referred to by interviewee DB, carries many articles about, and advertisements for, these channels but they appear to have little impact on nonusers. It is only engagement with the technology that transforms these from unknown possibilities into appreciated opportunities.

At the beginning of the “Living with Computers” course, participants were asked about their experience of computers and their aims. Respondents mostly expressed their aims either in generalized terms, “to learn how to use a PC”; as a wish to perform some activity (mainly sending e-mail); or identified specific skills, like using a mouse (see Wyatt et al. 2003). Only four participants out of 13 gave different answers: “help me at work and use computer for football program,” “advance in life and get a job in an office,” “advance my business,” and “help work on my finances.”

5.2 Barriers to Use

Our research indicates the nature of the complex relation that people have with ICT. For the majority of our interviewees, ICTs appeared to offer a challenge that other domestic electronics did not. Most respondents described frequent use of mobile phones and many had surmounted the complex interface to send text messages. Most used VCRs for playing tapes and often for immediate recording of programs; however, few were able to program a VCR for deferred recording. Most also, occasionally or regularly, used ATMs to withdraw cash.

Physical access to computers did not represent the greatest barrier to use. Many have computers in their homes and there are free-to-use public computers locally. The barriers are skills and confidence.

- Int: *So, how much have you used computers in the past?*
 AT: *Never.*
 Int: *Have you ever wanted to?*
 AT: *I get as far as PlayStation games and that's about it. So it's not really computers. I just find them hard to work, hard to understand. I've tried. I just can't do. [English male]*

Another recurring theme from the interviews was anxiety about the technology itself. A number expressed the fear “I might break it.” Some people did not use the computers they had at home because they feared destroying their children’s or partner’s work. This contrasts with the reaction of experienced users that the technology frustrates them because it breaks down on them. Respondents reported that they would ask a relative or a neighbor (or often their child) to fix a breakdown. There was little knowledge of commercial repairers or of manufacturer or supplier help lines. This indicated that social isolation was a factor enabling or preventing use of these technologies, distinct from social exclusion.

Many interviews revealed an amorphous fear that something might happen to their computer from out there—an ill-digested mixture of partly understood news items about viruses, phishing, and spam. Some perceived the Internet as a source of threat, particularly for children who might access inappropriate information or engage in chats with unsuitable people. E-shopping raised further anxieties.

- Int: *Why shop with the computer?*
 DA: *Oh, I think it is nice to go out and about shopping. But when you have got little ones sometimes it can be difficult. So to go online shopping ...*
 Int: *Right, you have credit cards and everything.*
 DA: *Yes, but I don't normally use them.*
 Int: *Would you be worried about security if you shopped online, do you think?*
 DA: *Yes, that's one thing.*
 Int: *What would you worry about?*
 DA: *About somebody getting to your details. [Ghanaian female]*

Use of the Internet for shopping requires possession of a credit or debit card and, further, a willingness to use it under unfamiliar conditions, against a background of media stories about Internet fraud and theft. The resulting issues of trust are important in understanding people’s willingness or reluctance to use the Internet for transactions. Dutton and Shepherd (2003) describe the Internet as an *experience technology* and that it is only through use that people develop trust.

6 DISCUSSION

ICT nonuse in the domestic environment is a little researched topic. Research has been concentrated on the user rather than the nonuser. The work reported here allows

us to start to understand the needs and demands of nonusers and to engage in strategies to address their needs.

Not surprisingly, our research supports claims in the literature that lack of confidence is an important barrier to computer use and that there is a link between personal circumstances (e.g., parenthood, age, income) and computer ownership (Digital Inclusion Panel 2004; Dutton and Shepherd 2003). For example, it appears that people with school-age children are more motivated to buy a computer. However, not all parents actually use the computer they have purchased.

As in previous research (Georgiou 2004), our respondents expressed concerns about the Internet content and we have found that wishing to be able to supervise children motivated learning. They also worried about security of financial transactions and thus generally were not enthusiastic about e-shopping. They had little understanding of how to manage computers and relied heavily on social networks for support.

Our findings demonstrate that our respondents only imagined narrow uses for computers, largely shaped by popular media. The interviewees did not consider using the Internet to contact local or central government (actively encouraged in the UK). They did not envisage engaging in civil activities on the Internet nor building or joining any virtual communities. This implies that the UK government's vision of e-citizens is over-optimistic and excludes many groups of people, even in its very minimal form: picturing people as consumers of governments' e-services rather than active participants in e-democracy. The way that consumer ICTs are presented in the media—as black boxes to achieve pre-described ends—makes this imagining of potential more difficult and sets a challenge for educators.

However, it is clear that our interviewees valued the communication aspect of these technologies and wished to engage in communicative actions, not data management. They were also aware that communication entails risk, and new and unknown (and to them unknowable) risks are generated when the communication is mediated by ICTs. This demands assistance in explanation, management, and reduction of technology-amplified risk. The needs and aspirations revealed by our interviewees mapped very poorly onto existing basic ICT curricula. There has been considerable investment in basic IT skills training in the UK and courses are available at the community center and the local further education college. Our findings, however, call into question the curriculum offered.

UK basic IT curricula have remained essentially unchanged since they were first developed in the 1980s. They concentrate on learning to use applications, primarily MS Office, although courses in computer graphics, DTP, sound editing, etc. are also available. The office productivity courses rest on an assumption that students' overwhelming aspiration is to learn computing to gain an office job. While IT competencies are increasingly essential for employment, this is not the only reason to learn. Many of our interviewees were interested in gaining employment skills, but others—and not only those above retirement age—centered their aims on using computers for personal purposes. The conventional, highly skills-based curricula, do not promote discussion to explore possible uses nor the ways these technologies can be enrolled in changing forms of domestic life. Kvasny (2005) suggests that community technology centers should not only teach basic computing skills but also ways of using the Internet for consumption, civic engagement, communication, and self expression. To challenge social exclusion,

an e-literacy curriculum must also respond to Livingstone's (2004, p. 5) demands to enable people "to access, analyze, evaluate and communicate messages in a variety of forms." The aspects of analyze and evaluate are frequently minimized or absent, and creation, which Livingstone sees as central, often marginalized.

Venkatesh and Brown (2001, p. 94) reported, "non-adopters were influenced strongly by the fear of obsolescence." Their emphasis on obsolescence as a barrier was not mirrored in our interviews and arguably represents the perception of people close to the technology and choosing not to purchase it, rather than the perceptions of people excluded by the technology.

Accordingly, the course syllabus⁷ designed in our research places emphasis on discussion of different ways and reasons for engaging with ICT, analyzing and evaluating varied sources of information and their content, as well as communication and content creation (e.g., through blogging). It brings the activities, such as sending e-mail, that people have identified during interviews and in course entry questionnaires to the start of the program rather than relegated to the end. In addressing the fears of our respondents, the syllabus also outlines the key aspects of managing computers at home. This includes buying and setting up a computer for use at home, connecting to the Internet, security issues (fire walls, viruses, backups, etc.), and ways of dealing with breakdown.

7 CONCLUSION

Our findings argue that we should consider an approach to e-literacy needs as a negotiated set of understandings and competencies related to individually conceived tasks rather than as an externally imposed program. These skills sit within an individual's interaction with, and appropriation of, technologies not in abstract form to be banked for future application.

Our research has identified educational routes toward digital inclusion. The curriculum weaknesses identified in this research do not stand alone. They reflect a view of computer users as adjuncts to a controlling machine, not as active citizens mapping their own routes through this complex and contested terrain. Our new curriculum places learner aspirations at the center and sees engagement decisions as a dialogic and not an individualized process.

In contrast, TAM and MATH reflect a view of technologies as ends in themselves, to be adopted; not as intermediate steps in achieving ends or completing tasks, or enabling people to make progress through their life-worlds. This worldview is reflected in curricula which set targets of learning word-processing or spreadsheets. In contrast, our research identified learning aims, such as e-mailing or web searching, which are less application centered. However, achieving such tasks still masks the life experiences they are meant to enhance: maintaining contact with distant family and friends or doing the weekly shopping.

⁷The outline for the course is available at <http://pencil.lse.ac.uk/documents/CoursePlan.pdf>. We gratefully acknowledge the support of Lambeth Adult Learning Service in funding the course.

We identified respondents' inability to imagine the variety of uses to which they might put ICTs, coupled with a lack of knowledge about possible technologies or services, as a barrier to engagement and use. This indicates a conceptual problem in applying TAM and MATH in this setting. They presuppose a set of dispositions toward technology that require sufficient familiarity to allow users (not actors) to discriminate between alternative technologies on the basis of their anticipated usefulness and ease of use. Both approaches posit rational users, knowledgeable about their situation and the options that confront them, and thus able to review options and reach an optimal solution. One aspect of exclusion, both digital and social, is lack of knowledge about options, for which a conventional remedy is the provision of advice and advocacy services. Such advice on ICT selection is rarely formally provided. Our data suggests that this unknowingness makes nonusers' formulation of plans difficult and the support available to nurture their introduction to the technology—such as through education and training or accessible and trusted technical support—is a more important determinant of adoption than PU and PEOU.

Our concern is that research based on TAM and similar models further marginalize the excluded, seeing them as unsuitable subjects for technology adoption research. We worry that such studies give an impression of a cohesive consumer society, in which all can and do take advantage of e-services. The socially excluded should not be absent from technology adoption studies and correspondingly the literature on social exclusion must study the use and nonuse of technology.

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