

What do we mean by the digital divide?

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Keri Facer is Head of Learning Research at NESTA Futurelab. Until 2002 she was a lecturer and researcher in education and new technologies at the Graduate School of Education, University of Bristol working with Rosamund Sutherland and others in the Centre for Learning, Knowing and Interactive Technologies (LKIT). Recent research projects have included the Pathfinder evaluation of the National Grid for Learning (BECTa/DfEE) and 'Screen Play: an exploratory study of young people's use of new technologies in the home' (ESRC). At the Graduate School of Education she was responsible for co-ordinating the research theme on 'learners out of school uses of computers' as part of the ESRC funded Teaching and Learning Programme project, 'InterActive Education', and for co-ordinating the new M.Sc in Education, Technology and Society. Keri's other research interests include the study of young people's use of new technologies in the home and the use of new technologies in teaching and creative practice.

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Exploring the roles of access, relevance and resource networks

Often with debates on the digital divide, we begin by assuming that we have a clear understanding of what it means to 'participate in the digital age' and immediately begin to develop strategies to overcome inequalities without ever asking questions such as: *What are the factors that contribute to being 'computer literate', to owning a computer, to finding a role for computers in day to day lives?* We start off by hunting for 'absences', for things that 'don't happen', and by trying to remedy these. This paper takes a slightly different tack by focusing on the question; *'What are some of the factors that may contribute to regular computer use?'* It then goes on to examine the ways in which these different factors may inter-relate to disadvantage or privilege different sectors of the population. The paper focuses upon computers because, at present, these constitute both a practical and symbolic gateway to the digital age, although, in the future, the same questions may need to be asked of a range of emerging technological environments. Moreover, the question is asked in relation to *regular* computer use, in order to counteract prevalent measuring systems that focus only on 'exposure' to computers – having *ever* used a computer is, evidently, a very different experience from making regular (weekly or more) use of a computer and suggests a very different engagement with the resources, practices and experiences that computers might offer.

This paper takes an interdisciplinary perspective, drawing on research from the fields of sociology, cultural studies, psychology and education. It argues that, if we are to understand the complex ways in which technology is appropriated (or not) within the lives and work of individuals in society, then we

need to engage *both* with the macro-level questions of social structures, such as the distribution of income, education, gender patterns, and also the micro-level questions of how individuals interact with and learn to use new technologies. Centrally, an engagement only with how 'individuals' learn to use computers, for example, can blind us to the wider social structures that pattern access and attitudes. Reciprocally, a concern only with these wider structures can lead to a failure to engage with the processes of learning – for the process of first interacting with, then developing expertise in using computers, is both a social act and a cognitive process.

Research Base

The paper draws on data gathered as part of an interdisciplinary programme of research into young people's computer use at home and at school carried out at the Graduate School of Education, University of Bristol. This programme includes the Screen Play Project (ESRC 1998 – 2000), which took as its focus young people and families' computer use in the home. It included a survey of 855 young people, interviews with 110 young people and intensive case studies of 16 families in their homes in South West England and South Wales over an 18 month period. The second project, still ongoing, is the *InterActive Education* project (ESRC 2000 – 2003), which has a research theme dedicated to young people's out of school uses of computers. The data reported in this paper refer to the 2001 survey of 1818 young people in 10 schools in Bristol and South Gloucestershire. The third project, which will be referred to only for the purposes of comparison or confirmation of data emerging from the other two projects, is the BECTa/DfES funded 'NGFL: Roll out evaluation of Pathfinder LEAs', which includes an annual survey of young people in schools around the UK. Results from this project in this paper refer to the 2000 survey of 2270 young people.¹

The focus for all these projects is, however, young people and, to some extent, families. Questions about the factors impeding or contributing to regular computer use amongst other age groups, amongst sectors of the population not living in family groups, or amongst individuals with specific educational needs are not addressed as a key focus here. Further research in these areas is evidently needed to clarify what additional or different factors may be significant for these groups.

Analysis of data from these projects indicates that the factors that contribute to young people and family use of computers are complex and various, with each individual's experience of accessing and using computers qualitatively different from the next. However, three key themes did emerge as important in shaping the extent to which individuals were likely to be active users of computers: 'access', 'relevance', and 'resource networks'. It is these factors, and the ways in which they may have differential significance for different socio-economic and socio-cultural groups, that will be discussed here. The paper also suggests that we need to be much clearer about what being an 'information have' (as opposed to 'have not') actually means. What is it that we feel people should be able to have access to, what services, what activities are facilitated by digital technologies and what, then, does it mean to be excluded from them?

Access

The identification of 'access' to a computer as a key factor in determining computer use is not, in itself, either contentious or surprising. For the purposes of this paper, however, we might want to ask what *sort* of access contributes to regular computer use? Looking at data from the Screen Play and NGfL Evaluation projects, the identification of access to a computer *in the home* seems to be particularly significant when considering factors that impact on levels of computer use. First, the bulk of frequent (weekly or more) computer use was carried out in domestic spaces, with nearly 80% of computer and Internet use reported to take place in private homes (either children's own homes, or those of friends or relatives). Secondly, children reporting home computer ownership were more likely to report a range of

strategies for coping with difficulties with the computer (NGfL survey 2000), to report finding computer use in school more helpful (NGfL survey), and to report higher levels of use of computers outside the home (Screen Play & NGfL Surveys).

	% of children reporting computer use at friends' house
Children with No Computer at Home	41%
Children with Computer at Home	63%

*Fig. 1. Childrens use of computers at home and friends' houses
Screen Play Survey, 1998. n = 712 (number of children reporting use of a computer outside school)*

In focus group interviews as part of the Screen Play project, children without a computer at home also argued that they felt less likely to be given the opportunity to use computers in school than children with computers at home:

Q Who gets to use the computers mostly in school here?

Girl 1 A boy in our class, he always gets told to set her up and close it down

Boy 1 I think he gets asked because I think there's only about 2 or 3 people who know how to set a computer up in the class. (Children, aged 10, City Centre Primary School)

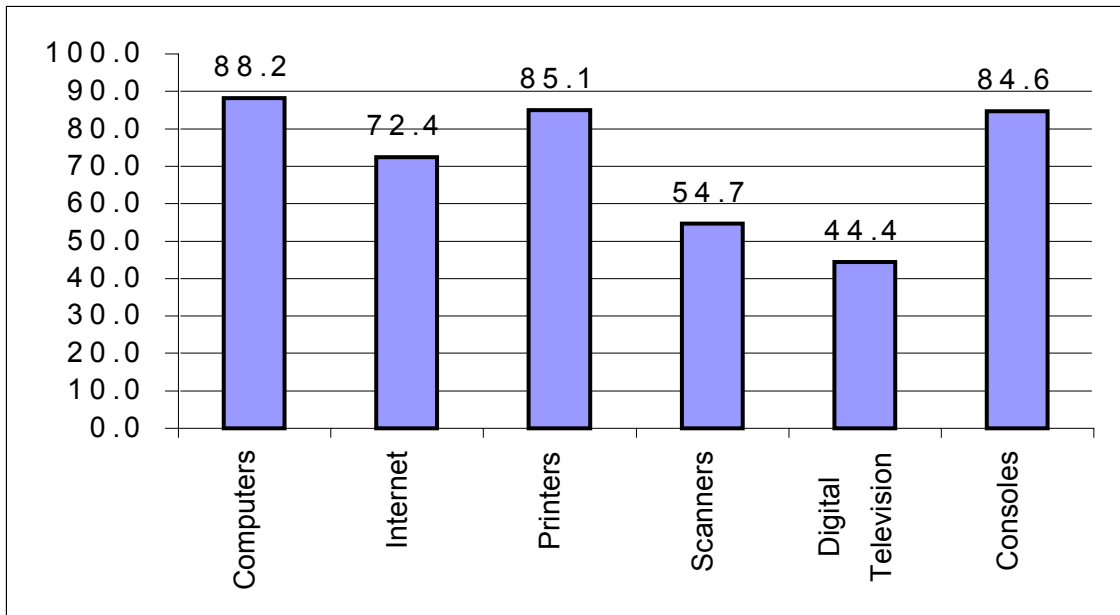
Q Who gets to use the computers most in school?

*Girl 1 People who have computers. They know everything
(Girl aged 10, Rural Market Town)*

Results from the NGfL Evaluation survey in 2000 also support these comments, suggesting, moreover, that this pattern of higher use of computers in school amongst those with a home computer than those without is stronger at secondary age. Other research suggesting that personal ownership of laptops impacts on the degree to which teachers use computers in their teaching would also suggest that the home ownership is an important factor in contributing to regular adult use.

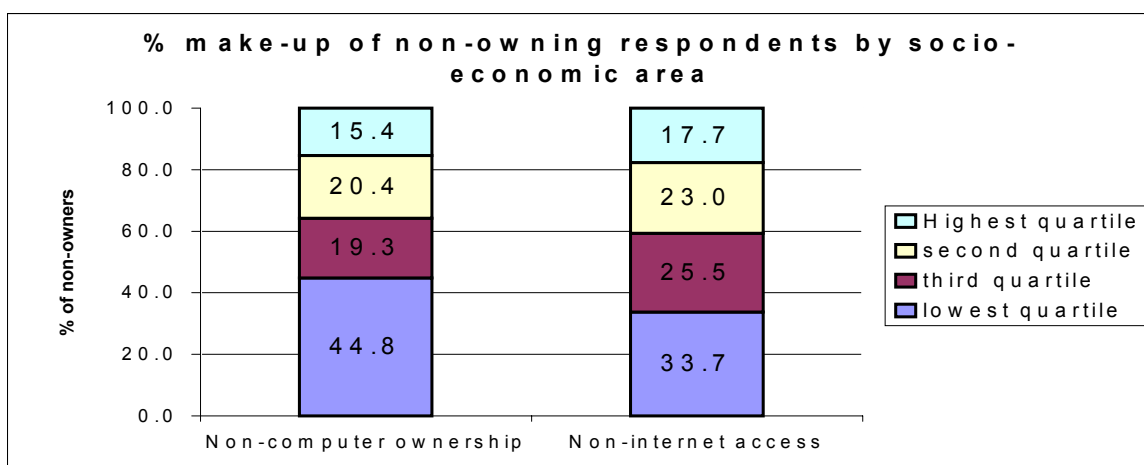
These figures would suggest, then, that home ownership of computers remains a key factor in supporting computer use. If we focus on this alone as a benchmark by which to evaluate equality of access, some would argue that it would be easy to hope that the problems of the 'digital divide' will naturally disappear, as home computer ownership is year on year becoming increasingly commonplace. Figures from the InterActive Project 2001 survey of 1818 young people, for example, show 88% of young people reporting home computer ownership, a figure which outstrips even games consoles (see Fig. 1).

*Fig 1. Reported Home ownership of technologies.
(InterActive Education Survey, 2001: n = 1818, ages 9 – 17, Bristol and South Gloucestershire)*



Is it then only a matter of time before all households see computer ownership as an inevitable part of daily life? Given the current cost of computers, the number of households in the UK living below the poverty line, the fact that purchasing a home computer may well be more expensive than purchasing 'essential' household appliances, such as a washing machines or fridge, and the observation that not even telephones or televisions are universally owned in this country, this assumption is in itself problematic.

Fig.2. Socio-economic make up of non-computer owning and non-Internet connected respondents. (InterActive Education Survey, 2001: n = 1438, ages 9 – 17, Bristol and South Gloucestershire)

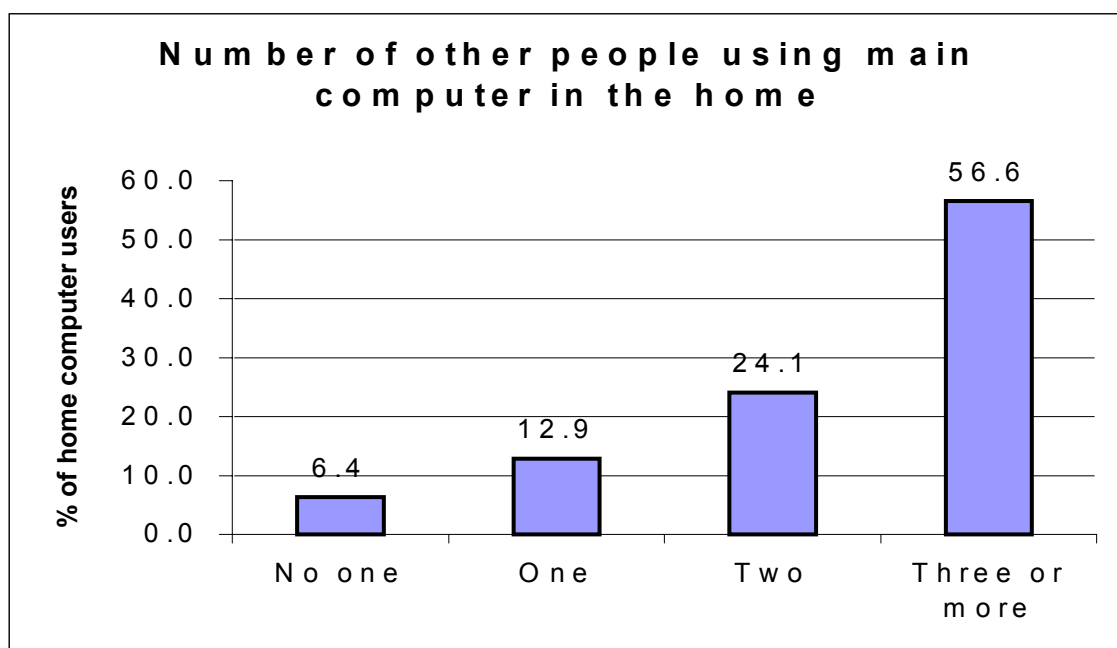


Looking at the socio-economic areas from which those who report not owning a computer in this survey are drawn (Fig. 2), the financial barrier to home computer ownership, it seems, remains real, as the

largest percentage of those without a computer at home come from areas with the lowest income and education levels. This explanation alone, however, does not account for all instances of non-computer ownership, as approximately 36% of those reporting no computer ownership in this sample are drawn from the two highest income and education areas.

Owning a home computer, however, should not be read as an automatic indicator that someone *is* a regular computer user. In the Screen Play case studies of computer owning families, for example, we found wide variations in levels of use in families with computers in the home. There was variation *between* families, with some families not turning it on from one month to the next, while other families made almost constant use of the computer and had to develop a set of rules to manage use. And there was variation *within* families between individuals who used the computer daily and their siblings, children or parents who never used it at all.

Fig 4: Numbers of other people using main computer in the home
(InterActive Education Survey, 2001: n = 1578 ages 9 – 17, Bristol and South Gloucestershire)



While it is inevitably not only issues of access to the home computer that influences levels of individual family members' use of the computer, it is notable, for example, that boys are more likely have a computer in their own bedroom than girls and to report having their own computer.

Fig 4: Computer ownership and location of computers in bedroom by gender
(InterActive Education Survey, 2001: n = 1818 ages 9 – 17, Bristol and South Gloucestershire)

	Boys	Girls
Report having their own computer	50%	37%

Report having a computer in their own bedroom	28%	18%
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To focus on home computer ownership alone as an indicator of access to a computer, then, is to miss the different ways in which access and use may be patterned along socio-economic and socio-cultural lines *within* as well as across households.

This concern about whether 'home computer ownership' can be used as, in itself, a reliable benchmark for access should also be reinforced for a second reason, namely that, unsurprisingly, not all computers are the same. From the Screen Play case studies, in fact, it started to become clear that to talk about 'computers' as an identifiable single artefact was effectively meaningless. On a basic level, some computers are, quite simply, older than others. Some households have access to a range of software, while others have only that which came with the computer. Some households have invested in peripherals such as printers, scanners, digital cameras, while others have nothing but the keyboard. Some households have Internet connections and broadband, others have no, or very slow, connection. While this may be patterned according to family income, with lower income households repeatedly reporting a concern over the cost of Internet connection, for example, as a disincentive from connection, these more complex questions about the types of technology available in the household are also likely to be patterned by the two factors, namely, 'relevance' and 'social networks', which this paper discusses later.

If we are concerned with equity, however, the type of computer equipment in the home and the peripherals and software available to support computer use at home are significant. In respect of children's use of computers for homework, for example, access to a printer remains a key issue as most schools and exam boards continue to accept work in hard copy form alone. In respect of the activities that a 'computer' offers, the question of whether it is networked, of whether it has sufficient memory etc, are all significant in shaping the extent to which the technology can be used for communication, for production of images or Web sites, and so on.

This question of what a technology offers is also significant in an emerging aspect of the 'access' debate, namely, the suggestion that with digital television and Internet connected console ownership rapidly increasing, the problems of unequal levels of participation in the 'digital age' will be reduced. We need to consider, however, what it is that these emerging technologies offer in terms of the range of possible uses. For example, are peripherals such as printers or scanners available that can work alongside the 'interactive' television set? Will audiences be able, as they currently are with PCs, to produce Web Sites, write letters or CVs, or carry out accounts management via digital television or networked consoles? The question, of what households who use digital television as a primary means of access are going to be able to do with these technologies, compared with those households with computer access, remains a subject for some concern.

If we want to consider the factors that impact on computer use amongst young people and families, then, it would be fair to say that home computer ownership was likely to be an important component of regular computer use. We would also want to add, however, that in and of itself, owning a computer in the home is not necessarily determinant of regular, or even any, computer use amongst different households or individuals within households. We need to move beyond the question of 'access' if we want to identify how computer use may be patterned amongst different socio-economic and socio-cultural groups.

Relevance

While the question of who owns or has access to computers has been fairly well rehearsed as a key aspect of the debate on the digital divide, the issue of the *relevance and role* of digital technologies in the lives of different sectors of society has been relatively under-considered in policy discourse. If we consider why people are encouraged to use computers, the dominant message is that we will need to use them to get jobs. An early debate on the Information Society in the House of Commons reflects this tendency:

“If a person today does not develop the skills to use the information technology that will pervade everyone’s life, they probably will not be able to get a job” (Jones, quoted in Hansard 1997)

To what extent, however, does this message actually play a role in encouraging computer use amongst families and young people?

If we focus, to begin with, on those households with a home computer in which parents were regularly reporting computer use, we could see that the main incentives to use the computer were rarely related to the specific objective of developing vocational skills of relevance to future career prospects. Rather, family members were provided with opportunities to use computers at work or saw computer use at home as a way of improving and easing existing work commitments (as with the teacher who found it easier to produce school worksheets using the computer). They wanted to take up educational opportunities that required computer use or which could be facilitated by using computers (as with the mother who needed to write essays for an Open University Course). They had an intrinsic interest in computer technology, sparked off by workplace or social experiences, or they saw computer use as an additional tool for their hobbies, as with the musician father who mixed music on his computer. Computer use for these adults served a range of important purposes that they were able to easily identify as part of their mix of work and leisure activities. Learning to use and utilising the computer was almost never an end ‘in itself’ or for future workplace opportunities.

In contrast, if we focus on the parents in the Screen Play study who never used a computer in the home, a pattern emerges of these individuals not having an opportunity to identify a ‘use’ for computers either in their personal or their working lives. These parents tended to work in manual jobs, or not to be employed in the paid workforce, had no experience of computer use outside the home, and had not identified any role for the computer in their domestic or leisure lives, arguing that they enjoyed activities that were incompatible with computers, such as sports. In these cases the parents were happy to observe but not participate in their children’s computer use:

I’ve never had an interest in them. I enjoy watching Karen. I will sit and watch, but it never interested me. (Mum, Factory worker)

Often they argued that learning to use a computer would take time or effort that they simply did not have opportunity to prioritise, given other commitments and responsibilities:

[the computer] looks quite simple actually. Looks quite simple. [my husband’s] a taxi driver, so he doesn’t have the time, and I don’t have the time (Mum, housewife)

In some ways [I would be interested in learning]. But having said that I never seem to find the time. As I say it certainly would be nice to do a bit with this one. But I’m absolutely lost with them, wouldn’t know where to start. (Dad, Herdsman).

The factor that provides an impetus to move from not having time to use the computer, to making time and effort to learn, seems to be driven not so much by the dominant message that computer use may be essential in the workplace, (especially for parents whose day to day experiences contradict this), but when a reason for using the computer and a means for learning how to use the computer is identified in the home:

*I couldn't understand a machine could do all these things and... and I was really negative, wasn't I, for years I think about computers. And Mike started bringing laptops and PCs and things home from work now and again and playing games with the kids and so on and I got interested in that **and I could see the value of that and doing things with the children** (Mum, teacher)*

If we look at young people who report being regular users of computers, we can also see this pattern of links between interest and use emerging, as computer use tended to map onto children's already existing interests. With those children interested in art, for example, using the computer for design and image making, or those children interested in writing, using the computer as a writing tool.

Attention to the question of the degree to which digital technologies are perceived to be of relevance to young people's daily lives and interests may also explain different patterns that have emerged in levels of technology use between girls and boys in the 2001 InterActive survey. Within this survey, for example, boys report higher levels of all activities on the computer than girls, with the exceptions of writing, sending emails and educational software use. In contrast, girls report higher levels of mobile phone ownership and use than boys, with particularly high levels of using the phone to talk to or text friends. The acceptance, or otherwise, of digital technologies into young people's daily lives then, may be shaped less by concerns for the future and more by traditional constructions of gendered identity within peer group cultures, in which enjoyment of competitive activity is constructed as an appropriate arena of activity for young men through computer games play, and where young women's social identities are supported through a ready acceptance of computers and mobile phones as communications devices.

As part of the Screen Play study, we also focused on children who reported little or no computer use outside school. When we discussed the reasons for this, in some cases lack of home ownership was a key issue, but in many others there was a consensus that computers did not 'fit into' their daily lives and priorities. Those children who identified themselves as 'outdoors' types, in particular, reported that computer use was particularly irrelevant to them:

Boy I don't like computers because I'm sort of not a person who stays in and watches TV that much. And I just think they're boring.

Q You like being outside do you? Is that your favourite?

Boy Yeah, cos I help at a farm... Sometimes they let me drive the tractors but only on the farm because I'm not old enough yet. And I help them get the cows in and I ride in the tractor as well.

(Boy, 10, rural market town, Somerset)

The culture of 'computer users' in school, the fear of being identified as a 'keener' or 'boffin' (terms still associated with computer use) was also significant in exploring why some children weren't using computers. To be a computer user, amongst particular groups of young people, was seen as not 'having a life':

Q So do you ever go on at lunch time onto the computers?

Boy No.
Q No, why not?
Boy Go for a fag. [Computers are] all right, but you've got to have a life apart from computers really
(Boy, 14, Rural Town Secondary)

Girl 1 No one will hang around with us if we go in the library[to use the computers].
Girl 3 You've got to go along with it to keep your friends, haven't you? Because if you didn't have no friends you'd be bored.
(14 year old girls, Ex-mining town secondary)

Unlike the dominant representation of all young people as 'computer mad', it is important to recognise that young people's interests may fall into a range of areas, within which the computer may be neither useful nor compatible. Importantly, certain young people, usually those without a computer in the home and within peer group cultures which do not value computer use, also voiced the opinions expressed by certain of the parents in the study, that computers were for 'other people':

I think it's hard for us. The younger generation now... to get into computers. But like when we have kids it'll be just like really natural won't it? It'll be natural for them because they've grown up with it, but we haven't grown up with it.
(Boys, 13 & 14, Rural Market Town)

To summarise, then, within this data, the motivation to use digital technologies is generally patterned along the lines of the perceived relevance of technology to individual's lives and existing interests. This pattern of relevance should also be seen to intersect with the question of access, as those without easy access to a computer are unlikely to be able to identify aspects of computer use that meet their present needs. Reciprocally, those already convinced that computer use is a low priority in their day to day lives are unlikely to make a decision to purchase a home computer or visit a public site to learn to use a computer.

C Well my dad was going to get one but we were going to have a study but then my mum and my dad had a divorce so he's pretty skint now... and my mum wouldn't use it and I wouldn't use it and my brother wouldn't use it.
Q So who do you live with?
C My mum
Q Your mum. And does mum use them at work?
C No not really... she works in Tesco's
(Boy, 14, Ex-mining town)

Well some people just don't want to have a computer. They think they can spend their money on better things. My mum probably wouldn't want a computer cos she'd never go on it.
(Girl, 10, City Centre Primary School)

The question of how individuals learn to perceive computers as having immediate relevance to their social, work or leisure lives, however, brings us to the role played by social networks at work, at school, in the family or in a local community in shaping computer use.

Social Networks

As mentioned above, computer use is not only something that takes place but something which is talked about, discussed and puzzled over within different social groups. Within the Screen Play research, these groups, or loose networks, seemed to play an important role in shaping the degree to which individuals learnt to use an unfamiliar technology, or expanded and developed their use and interest in computers. Amongst young people this seemed particularly important, as peer groups provided a key site for learning more about computers and supporting young people to become 'expert' computer users in their own homes:

Boy (14) I probably enjoy the most, the computer and stuff like that because, I probably enjoy the computer the most and I enjoy going over Jim's and talking about computers because almost every single time I go over there, he and myself will have something new to say about it and we'll try it out. Yeah. I had a problem once. I knew that one of my programmes called task bridge had the function to make a hyperlink with my scanner, but I couldn't get it to do this hyperlink. I phoned James up and he told me how to do it and it worked because then you know how to do it. I knew how to do it since then, and that's it

Q Okay. How come you know more about it?

Boy (12) Because me and my friend... well really my friend, he's a computer freak.

Q He's a computer freak? Okay.

Boy And I work with him and he tells me loads about his computer, and basically our computers are the same. So that's how I know quite a lot.

These individuals within the household were then able, in some cases, to act as important 'educators' for other family members (when parents and siblings would allow) by solving problems and suggesting solutions for computer difficulties. They played a particularly important role in families where parents had little or no computer expertise, by providing technical support that allowed the household computer to function and as a useful sounding board for other family members' early forays into computer use.

When looking at family computer use it becomes clear that access to these and other wider networks of support can, at times, make the difference between a family never using the expensive computer they have purchased, or becoming so confident in computer use that they end up upgrading and owning multiple machines.

On a basic but fundamentally important level, access to wider networks and resources provided an important safety blanket for certain families in terms of being able to maintain a functioning computer. During the 18 months of visiting these homes, for example, we saw monitors break down, software develop glitches, printers refusing to work, scanners that never worked, internet connections that failed, computers that simply wouldn't 'start'. Those families with access to workplace environments in which technological expertise was widely available, however, were able to make use of this informal information resource to support their own computer:

Mum I didn't even know it was broken. I brought it down into the study next door to fiddle with it because I didn't at that time know what was wrong with it. But when I set it all up and the screen came up, it's got to be rebooted, so ...

Q How are you going to do that then? How are you going to ..?

Mum I've phoned one of my friends that teaches in computing at the university. They're going to come and have a look at it for me.

(Mother, University Trade Union Rep)

We've always got people from Computer Flight coming down, checking that things are working, connecting it all up and loading different things on. So if ever I've got a problem at home any of these guys that come down, I pick their brains, cos they're so switched on, they know the ins and outs of computers ...
(Father, RAF Engineer)

In some cases parents' workplace networks were literally materially supportive. Several of the fathers in the study, for example, were seen as the 'providers' of computer supplies. Printer cartridges, paper and so forth, were brought home from the office. A computer in the home was also, on several occasions, first made available by bringing an outdated computer home from work for the family.

Families also drew upon knowledgeable friends or family members:

Us having trouble changing the cartridge. It took us a long time to work that out. We had to get Kim's fiancé in to help us sort out ... because the computer wasn't accepting the change of the cartridge from colour to black and white. And he's now set it up. I mean we wouldn't know how to ... he's written it down for us in case it happens again. We do have little crib sheets in certain places. (Mum)

A friend of mine, her husband is like a computer analyst and he knows what he's doing, so I asked him to do us a favour, 'here's the boxes, can you do it for me?' So he set you up with it, didn't he? (Mum)

In contrast, other families did not have access to this informal support either through the workplace or through family and neighbourhood connections. When difficulties emerged with the home computer in these households, and where parents and children had insufficient technical expertise themselves, serious difficulties sometimes emerged:

Q *Is your scanner fixed yet?*
Sister *No. whenever we try and fix the scanner it's just got a little icon at the bottom saying 'Scanner not found'. We've got a scanner disk. My brother's tried to do it a couple of times, but it just keeps on coming up 'Scanner not found'.*
Brother *I tried fixing it but I don't know how to do it. I read the manual like 100 times.*
Q *Have you got a helpdesk you can phone up?*
Brother *Yeah we phoned it up and they gave us basic instructions like what we first had and I tried them but they didn't work either.*
Q *Oh so what are you going to do?*
Brother *Really I'm not sure.*
Q *Has it ever worked?*
Sister *No.*
Q *When did you get it?*
Sister *We got it in ... March.*
Q *That's almost a year now*
Sister *Yeah.*

By the end of the research, a year later, the scanner was still not fixed and the parents had decided not to use the help desk anymore as it was costing them too much money.

In one household an early and unresolved problem with the printer led to the computer being seen as an expensive and fragile machine, which should be used only when really necessary. In this household

neither parent was confident with computers, and the children, both girls, belonged to peer groups in which other activities and interests were prioritised. The computer finally became seen as a machine on which a limited number of games could be played but on which no work could be saved and only the mother in the household was allowed on special occasions to print out documents.

I mean if I'm not in they will go in on the computer and start writing what I call love letters to the boyfriends and stuff. That does annoy me because the last time they did something with the printer and, well it wouldn't print, whether they overloaded it or not. They saved what they wrote. They wrote this rubbish and they saved it. No, I told them not to save it, because I tried getting a document off there, deleting a whole document off there, which I'd saved. Well, I think it's still on there, I'm not sure. I think.

Ultimately, the computer was relegated to life under the family's washing basket under the stairs.

The role played by access to wider resource networks was also in evidence in less dramatic ways. For example, parents discussed the content of games with other parents, in order to decide if they should let their children play them, or to suggest software that would be useful for each other. Some households had a stack of CD-Roms handed down to the family after children in another family had grown out of them. The lack of such networks was noticeable in other families where cost was a significant factor in deciding whether to purchase software. In certain cases the family had no one to turn to for advice on what to buy and consequently did not want to risk spending money on expensive software that might not be useful:

We did think getting some languages for Susanna for school, but we didn't know which one to get. We did ask your teacher to let us know didn't you, but she didn't, so we didn't end up getting anything.

The role of social networks, whether parental, through friendship and workplace, or children's peer group and school networks should not be understated in the role that it plays in encouraging or supporting computer use in the home. These networks can not only function as resources in terms of knowledge about computers, but may also function to generate an interest in computers and to share and deepen that interest over time. Moreover, these networks provide material resources to support computer use, from shared software, to low cost or free second hand computers from work, to printer cartridges. Family access to different forms of networks are on one level patterned according to parental occupation and local community. In respect of family uses of computers, however, children's networks and the local community may be important in rendering this patterning more complex, as a young person who is linked in with a community of keen computer users can come to act as the family expert and subsequently initiate or support the computer use of other members of the family.

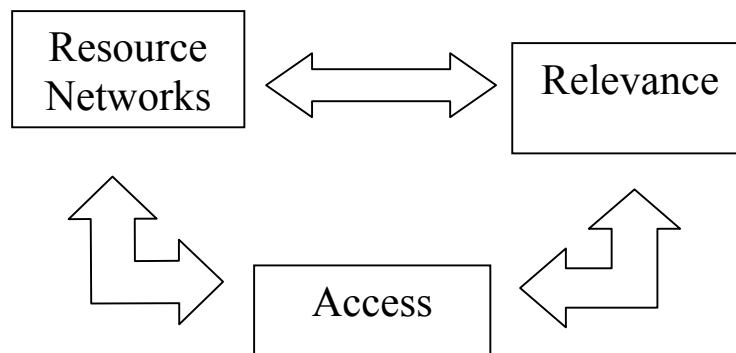
Redefining the digital divide

If we consider these different factors; – access, relevance and resource networks, – these should be viewed as central components in determining the extent to which families will not only be able to purchase but also to use and engage with computers. This means that the patterns of divides which emerge become more complex than if we focus solely on the issue of ownership.

Centrally, ownership of a home computer remains a key and important factor in contributing to individuals' relationship with digital technologies. It provides, in principle, an access point to computer use; it can act as a catalyst whereby knowledge and expertise are shared within families; it can act as a means whereby individuals can find a purpose and use for computers in their daily lives.

This, however, is a 'best case' scenario. From the data from the three projects, we can see that this is essentially a much more complex process. Ownership does not necessarily equate with use; an individuals' perceptions of the relevance of technology can lead to a lack of interest in learning to use or using the computer; and lack of support and technical resources can leave some machines unusable and others lacking in the software needed to make the most of the hardware.

The intersection between these different factors may mean that particular groups are particularly unlikely to be active and interested computer users. Such groups may be drawn disproportionately from those with financial difficulties in purchasing computers; those who participate in no workplace based computer use; those who have little social interaction in which computers are seen as a relevant subject of interest; those who have substantial, other priorities and activities in which computer use has no immediate and evident role to play. These different factors will, at different times, privilege men over women, the well off against the poor, the professional against the manual worker. These patterns, however, are not inevitable. It is only when all factors combine that one might begin predict where there is likely to be little or no computer use.



The digital divide, then, is not 'one' divide, but many, and goes far beyond the rhetoric of 'access' in its defining features. For different groups, therefore, there may need to be different strategic responses. Far from considering that the question of 'access' to computers is the only determinant for all socio-economic and socio-cultural groups, we may begin to suggest that other support strategies are required for those families with no resource networks, helpdesks and informal support. For young people with an interest primarily in outdoors activities, we might want to consider whether schools should focus more on the role of ICT within PE. For low income households we may want to support the sale and provision of low cost computers to the home. Above all, we will need to recognise that the decision to purchase and use a computer does not take place in a vacuum. It is shaped by a range of financial, personal and societal considerations, with families and young people having to evaluate whether the technology offers sufficient benefit to them when they might do something else with their time and money. The question of what technology really offers and the challenge of providing technology and services that really meet people's needs remain ongoing concerns.

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¹ *Screen Play: an exploratory study of children's techno-popular culture* (ESRC ref: [R000237298](#), 1998-2000) Directed by Rosamund Sutherland (University of Bristol), John Furlong (Cardiff University) Ruth Furlong (University of Wales College, Newport). Full summary of research can be found at <http://www.bris.ac.uk/Depts/Education/finalsummary.doc>
InterActive Education: teaching and learning in the digital age (ESRC 2000-2003) Directed by Rosamund Sutherland and Susan Robertson (University of Bristol). For further information contact Mary.Oconnell@bris.ac.uk, or telephone 0117 928 7105.
Pathfinder evaluation of the Roll-out of the National Grid for Learning (BECTa/DFES, 1999-2003) Directed by Rosamund Sutherland and Sally Barnes (University of Bristol). For further information contact Sally.Barnes@bris.ac.uk, or telephone 0117 928 7053