

Strand 4: Networked Learning in Community Development

Paper 4:

The Internet Express: A Case Study in On-Line Public Access and Training

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Summary

- In order to ensure that the opportunity for Networked Learning is exploited by all sectors of the community, access to, and training in, the use of computers and the basic software packages on which exploitation of the power of the Internet depends need to be widely available.

This paper discusses the issues which have arisen in one "public access to the Internet" programme, the Internet Express, based in public libraries in the Merseyside area of the UK. This programme focuses on providing free Internet access and training to residents of particularly socially deprived areas of Merseyside. The programme is part of a general attempt within the region to use telematics as a tool in the process of urban regeneration.

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Introduction

- The explosive growth of the Internet and the convergence of information and communications technology are opening up new educational opportunities. In particular, it is argued the new communications technologies permit greater access to education from within a community. No longer is it necessary for students to be in the same physical location as their tutors: teaching materials can be accessed, and dialogue with a tutor or peer initiated, from any location that has the requisite connectivity.

However, for such opportunity to be realised, several preconditions, both technical and social, have to be met. From the technical viewpoint, access to the enabling technology needs to be widely available to members of the general public, and the software to exploit the full functionality of the technology must be easy to use. From the social viewpoint, a certain degree of awareness and familiarity with computers needs to exist within the target population in order that the opportunity provided by the technology is realised. If such knowledge does not exist within the general population then both fear of computers and lack of skill in using them will inhibit the possibility of learning through their use. Currently, it is only school-aged children who have access to a learning environment that ensures basic training in the use of computers and the technologies on which networked learning depends. The adult population is not so fortunate. In order to ensure that the opportunity for Networked Learning is exploited by all sectors of the community, access to and training in the use of computers and the basic software packages on which exploitation of the power of the Internet depends needs to be widely available.

This paper reports one initiative, The Internet Express, aiming to ensure such widespread availability and training in the Merseyside area.

The Internet Express

- The Internet Express embodies the concept of a mobile Internet café. It consists of up to 20 PCs (the exact number is dependent on the space avail-

able in the library) that are moved at three-week intervals between libraries in the Merseyside region. When located in a given library, the PCs are used to give access and training in use of Internet-related technologies to members of the general public. During this time the Internet Express offers adults Internet Awareness Days (day long 'sampler sessions' on the Internet), along with a number of short (half-day or one-day) courses: World Wide Web, Electronic mail, Usenet news, Connecting to the Internet and Creating Documents for the World Wide Web. The Internet Express also offers drop-in Web surfing sessions, which are open to everyone, including children. Unemployed people can attend a six-day course, comprising all the short courses as well as a special course on CV construction for the World Wide Web and Employment Resources on the Internet. On-line information about the Internet Express is available [<http://www.connect.org.uk/iexpress/>].

All courses are free, and involve hand-on sessions, demonstrations and lecture-based overviews; all are accompanied by a user manual that course participants may keep. Courses are presented using overhead projectors (or, when available, data projectors connected to a computer) by staff from the Connect Centre [<http://www.connect.org.uk/>]. Connect staff are assisted in the delivery of the programme by demonstrators from the Work Experience Programme (Charlton, Little, and Woodward 1994) also run by Connect. Most staff have a predominantly Computer Science background. Males and females are equally represented on the staff at Connect.

The timetabling and length of courses on the Internet Express are determined by a library's opening hours. Generally full-day courses last from 10 a.m. to 4 p.m. with a break for lunch. Half-day courses are 10 a.m. to 1 p.m. or 2 p.m. to 5 p.m. weekdays. Internet Awareness days and surfing sessions are also offered on Saturdays.

Training sessions are also adapted to the particular physical conditions that apply at each library. Some libraries have additional rooms available in which events like the Internet Express can be hosted; others create space within the body of the library itself: open areas in the Centre of the library have been used. The latter are very effective in making library users aware of the programme. Library staff

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accept bookings for short courses by telephone or in person. The Net Surfing sessions are run on a first come, first served basis with no prior booking required (though priority is given to adults).

Funding of the programme

The Internet Express is run in partnership with the Leisure and Recreation Services of all the councils on Merseyside, Telewest, Hewlett Packard and IBM. The Leisure and Recreation Services provides access to the libraries in the region and ensures the co-operation of library staff in the programme. Telewest provides the necessary ISDN lines to the libraries and does not charge for use of these lines during the training sessions (after the departure of the Internet Express each library has to pay for continued use of the installed ISDN line). Hewlett Packard and IBM provide the necessary computer equipment. IBM have also agreed to donate a PC to those libraries involved in the programme which are located in particularly economically deprived areas of Merseyside. These libraries form part of Internet Express 1. This programme began in September 1996 and targets 11 of the most underprivileged areas of Merseyside. Internet Express 2 began later, February 1997, and targets areas of business concentration in Merseyside such as Allerton and Childwall.

Marketing of the Internet Express is largely done through the libraries themselves as the librarians have the best contact with local organisations. Connect occasionally engages in mailshots to local businesses and contact local media in order to promote awareness of the programme. Once the Internet Express is established within a library, knowledge of its existence rapidly spreads by word of mouth. There are some people who follow the Internet Express from library to library, in fact.

Administration of the Programme

Within Connect, one person has been appointed as administrator of the programme. She co-ordinates all external and internal liaison among staff. Her main external contact is the Head of Information Technology for libraries in each region who are extremely supportive of the programme. The administrator's main internal contacts at Connect

are the head of the Technical Support Team and the heads of the Short Course Programme and Work Experience Team. Within Connect, an intranet is used to disseminate all information about the Internet Express. Discussion of administration issues takes place internally by e-mail or through group meetings, and externally by telephone or meetings. The administrator regularly visits each library involved in the programme. Good working relations and effective communication with the librarians involved in the programme are obviously essential to its success. Everyone needs to feel ownership of the project.

At the start of the programme, when hitches were more common, technical advice was available to libraries both within and outside normal working hours. Such extensive support is generally recognised as important in community projects of this type, particularly in the early stages (McClure, 1994).

Technical set-up

Provision of a service to the library is based on the client-server principle. A 200 MHz Pentium Pro PC with 64 MB running Windows NT acts as the server or gateway computer to Connect's own server in the Department of Computer Science. The server PC uses Netscape Proxy Server for NT 1.0. This is a caching proxy server for HTTP and also for FTP downloads through Netscape. By caching all the WWW accesses the apparent speed of connection to the user can be greatly increased and the load on the Connect server reduced.

The PCs used by the public run Windows 95 with standard PC Internet software: Netscape Navigator, Internet Explorer, WS_FTP (FTP client), Free Agent (Newsreader) and Eudora Light (e-mail client).

The floppy disk drive on all public access PCs is disabled to prevent any problems with either the uploading to the hard disk drive or the downloading from the WWW of undesirable material. No printing facility is available.

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Issues arising

- The following observations are based on both qualitative and quantitative sources of information. The former reflects demonstrator and presenter reports and observations from teaching sessions communicated by e-mail or at group discussion sessions. The latter is based on a preliminary analysis of the questionnaires distributed to participants in the programme at the Net Surfing Sessions and at the end of the Short Courses. An attempt to use an on-line questionnaire was abandoned due to the poor quality of responses obtained.

We have grouped the issues arising from administration of this programme into three sections: -

- Section 1: Characteristics of the population attending the Internet Express
- Section 2: Learning issues arising during the instructional programme
- Section 3: Controlling user behaviour

Section 1:

Characteristics of the population attending the Internet Express

Public motivation and interest in Internet

- Public interest in this programme of activities, particularly in the Net Surfing sessions and Internet Awareness Days, has been high. In almost all of the libraries, the number of people visiting the library during the Internet Express period has been observed to increase. In an initial survey of participants at Net Surfing Sessions on the Internet Express, 84% of the respondents indicated that they would visit a library more frequently if it had permanent Internet access. Over 50% indicated that they would consider travelling to other libraries in order to continue to have access to the Internet (Charlton et al. 1998) and many do. Several local Internet Service Providers have informally reported a surge in applications for connection to the Internet following the presence of the Internet Express in an area.

Librarians themselves have frequently commented on the positive effect Internet access has on a library's image. In some areas, young people who had not previously set foot in a library were attracted in by the availability of Internet connectivity. Such effects have been noted in other studies (McClure et al. 1994). Interest in the Internet has also been reflected in library users' book borrowing habits. In a focal group session with librarians in February 1997, 63% of the librarians participating in the programme reported an increased demand for books on the Internet and computing while the Internet Express was based at the library. Some libraries have set up special exhibitions of books on the Internet to accompany the Internet Express programme.

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Public reaction to the departure of the Internet Express from a library has been one of considerable disappointment. There is thus a clear motivation present within all sectors of the general public to learn more about the Internet and to exploit its immense resources. The key question is how to harness that motivation for educational gain. While disenchanted youth might be attracted into the library by the presence of the Internet, the purposes for which they use the Internet may have no educational value.

Indeed, analysis of the questionnaires completed by users during Net Surfing session indicates use of the WWW by men and women alike to service an extremely diverse range of interests. To the extent that users' interests can be categorised, their primary interest was in searching for material about a hobby. The nature of that hobby varies with age and socio-economic status as might be expected, with pop culture being a favourite with young people, genealogy a favourite with old.

Socio-demographic factors

Many people have claimed that the new information and communications technologies (ICT) will overcome traditional barriers to education. However, surveys of Internet usage [http://wwwcc.gatech.edu/gvu/user_surveys/] indicate a continued dominance by men. This may simply reflect the fact that, before the explosion of interest in the Internet, it was men who owned PCs, and thus had the necessary knowledge to immediately take advantage of the new technology when it emerged. However, studies in the USA (Kraut et al. 1996) indicate that even when access barriers are removed social demographic factors, gender and generation, continue to be the prime determiners of use. This was also true of our experience with the Internet Express.

Young men are the most frequent attendees at the Net Surfing Sessions in all the libraries. Of 572 Net Surfing questionnaires returned in one survey from 7 libraries across the region, 71% of the respon-

dents were male, 29% female. In each and every library the number of males attending the surfing sessions was at least double the number of females. The majority of the participants, regardless of gender, were under 20 years of age and often had additional access to a computer.

However, a wider age range of attendees is noted in the Short Courses and the Internet Skills Training for Unemployed People programmes. Indeed the retired population is rapidly becoming the dominant group that attends the Short Course programme, particularly in the more affluent areas of Merseyside. They are keen to learn about the technology in order to help their grandchildren's education or to further develop a hobby. Some, such as teachers who have opted for early retirement scheme, are interested in the small business opportunities that use of the technology presents.

In the Short Courses and Internet Skills Training Programmes, the number of male participants continues to outweigh that of females though the extent to which this is true varies with the socio-economic status of the area in which the library is located.

One cannot unequivocally interpret the lower proportion of women participating in the programme as reflecting a difference in interest in the technology between the sexes. The timing of our training sessions is determined by the library opening hours and we have no funding provision to accommodate women with child-care responsibilities. These physical constraints obviously have an impact on who can attend the programme. We have recently provided evening access to the Connect Centre to alleviate this access problem.

We ourselves have not engaged in any systematic study of any gender differences in use of the technology. Anecdotal reports from demonstrators and presenters tend to confirm the popularly reported finding that women in general appear more interested in the use of the technology for communication¹. Women tend to favour the short courses - Using the World Wide Web, Internet Awareness

1. Over time, studies in America (Carroll and Rosson 1996; Kraut 1996; Kraut et al. 1996) indicate that both sexes primarily use the Internet for communications (e-mail) as opposed to information delivery or electronic commerce, as provided through the World Wide Web.

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Days or e-mail - which deal with communication and use over those such as Creating Documents for the World Wide Web which have a greater technical content. Women rarely ask questions about technical matters (for example, about the nuts and bolts of a PC or the Internet), nor do they try to show off how much they know about such things. Their questions are about how to use the Internet and its capabilities. In the Net Surfing Sessions, young women on their own have been observed to show greater interest in Web pages containing 'chat rooms' than their male counterparts. Such anecdotal observations concur with more systematic research findings of gender differences in attitude to technology (Grundy 1997).

Location and attendance profile

Attendees at both the Surfing Sessions and the Short Courses tend to be drawn from the population of library users. In one survey of Surfing Session attendance, 90% were library members, with 77% visiting the library at least once per month; the majority of these people (96%) felt that the library was the most appropriate location through which to provide Internet access. If libraries are to be the focus of Internet access in a Learning Society, as is suggested in the Government proposal for a National Grid for Learning, consideration needs to be given as to how to attract the non-regular library user into the library, otherwise marginalised groups who do not use such facilities will remain marginalised.

Skill implications for librarians

The enthusiasm with which members of the public are embracing the Internet has considerable implications for library staff. The Internet Express has made considerable demands on library staff's time: 77% of library staff report an increased workload during the time the Internet Express is in the library. That this increase has not been resented is a testament to the librarians' professional dedication but the resourcing implications of providing Internet access within an already stretched service should not be ignored.

Librarians themselves have positively embraced the programme. When asked for one word or phrase which described their library's involvement in the Internet Express, all the librarians responded positively with the following terms: 'Challenging', 'Increased usage', 'Exciting', 'New Opportunities', 'Chaos and Excitement', 'Interesting'.

Many library staff have attended the same training courses as offered to members of the general public. 84% of the librarians felt that this training has adequately met their personal needs as a librarian though 55% were enthusiastic for further specialist training. This is increasingly being provided within the UK by the British Library Earl Project [<http://www.earl.org.uk>].

Section 2: Learning issues arising during the instructional programme

Pre-requisite skills

- Before the resources of the Internet can be exploited, people have to have a basic understanding of a computer, in particular the inputting of instruction to the computer through a mouse or keyboard. When setting up the programme, we anticipated that there would be considerable variation in attendees' facility with computers; however, we believed that we could embed basic computer instruction within our Internet Awareness Day. We believed that the simple point and click graphical interface of the World Wide Web so simple that a person could pick up the mechanics of using a mouse while learning to explore this application.

This strategy proved to be inadequate for several reasons. Firstly, while business people who attend courses at Connect invariably attend an Internet Awareness Day before participating in any other short course this is not true at the libraries. We therefore observed that, in order to ensure that people understood the basics of operating the computer, we had to preface every instructional session with a brief introduction on how to use the mouse

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and the basic principles of the Windows environment. Secondly, many of the participants in the courses at the library are elderly and thus experience problems not noted in younger populations in interacting with computers. Instruction in the mechanics of adjusting the font size of a screen display, and in alternatives to the double click action required to open an application, is necessary if the computer is to be used effectively by this population. Finally, while interest in the Internet has motivated many people to use a computer, many continue to experience a fear of the technology and worry that they will make a fool of themselves during a course. Removal of this fear requires help and encouragement from another person, the instructor. This we try to do through personal, one to one interaction during practical sessions. We also have responded to this problem by creating an additional Introduction to Computers module which members of the public can attend at the Connect Centre: this course covers the key skills required as pre-requisites for use of Internet applications. These are defined as: being able to open and close a Windows application; being able to resize a window on the screen; being able to move a window on the screen; being able to use the keyboard to enter text; being able to use a pull-down menu; being able to delete text; understanding shortcut keys; using cut and paste to move text from one place to another.

The fear factor

It is often the case that a class, particularly on an Internet Awareness Day, is nervous and silent at the beginning of the course, but by the end is full of questions, not simply about the Internet but also about most every aspect of computing, from which PC to buy to whether they need to worry about the millennium bug. This may be attributed to the instructors having gained their confidence. As indicated above, a lot of the participants on the courses, particularly the older ones, are intimidated by computers. Where practical, Connect's policy is to adopt a hands-off approach to demonstrating: telling the student what to do where necessary, but avoiding taking the keyboard or mouse from the student. This gives the student the confidence that they are in control of the machine. Another tenet is that it is the computer that is wrong, not the student; if the computer does not do what the

student expects, it is pointed out that this is most likely a flaw in the design of the computer program. Tutors are also reassuring in that they make it clear that they themselves do not know everything, that it is not necessary to know everything, only to know enough to do what you need to do. For these reasons, we are unconvinced that Computer Based Training is a good way to train people in the basics of computing. People, particularly older people need the reassurance of a human presence to which to turn in moments of crisis, when the computer is not behaving as expected. No computer manual, or online training material, can equate to another human being telling a neophyte that they have not broken the computer. There is no reassurance a computer can give to compare with another, real human voice.

Instructional content of courses:

Instructing in principles but demonstrating through a particular application

The basic aim of our courses is to instruct people in the principles that underlie the use of the key Internet Services: the World Wide Web, Electronic Mail, File Transfer Protocol etc. With the explosion of interest in the Internet, many different applications and versions of applications exist for accessing these services. In order to be able to demonstrate the key concepts being spoken about on our courses, we have to instruct the user in the use of a particular application on a particular operating system for accessing that service. For this experience to be meaningful, thereby promoting effective learning, these exercises have to be rooted in real tasks and activities.

The problem we have encountered is that learning about the service then becomes embedded in the specifics of using that particular application to access the service. At worst this can result in the user being unable to generalise the knowledge they acquire on the course, and unable to use the service in their home or any other situation in which a different operating system or a different application for accessing the service is presented.

Various solutions to this problem have been discussed:-

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- Demonstrating or showing screen dumps of several applications for accessing a service and emphasising the commonality in function.

This strategy has been tested informally. Presenters will, for example, occasionally show interested members of the public a browser-based interface to mail services.

The danger with this strategy is that of information overload. People who are new to computers tend to struggle to learn one way of doing things. In reality, the disadvantages of demonstrating only one application, might be outweighed by the advantages to be gained by instilling in the person a feeling of competence and therefore a belief in their ability to learn more (i.e. deal with other packages) on their own.

- Complement our current courses by follow-up courses which illustrate different interfaces to a service.

This is a similar strategy to that above except that exposure to the alternatives only occurs after the person has had the opportunity to consolidate their initial learning. It also acknowledges that different phases in learning about something require different levels of support.

Instructional content of the courses:

Relation of the use of a tool to an understanding of how it operates

There is a tension, which any instructor will recognise, between knowing that retention is helped by a user feeling that an activity furthers their own goals directly, and wanting to teach material that the user may not know they need.

The individuals who come on our courses are impatient to use the Internet; their primary motivation is to engage with the tools: to use a WWW browser to explore the World Wide Web, to send an e-mail message to friends in California or relatives in Australia. They are generally not interested

in the technical details of how this is possible, yet some level of understanding of these details is important, particularly for error recovery.

Knowing that there is a difference between the system used for sending mail (SMTP server) and that for reading mail (POP or similar server) can help explain why an e-mail client is not behaving as expected. This can then lead to appropriate corrective action (change SMTP server address) when mail can be received but not sent. In the context of the WWW, effective page design depends on a realisation that the exact appearance of an HTML page varies according to the browser being used to display the page. Effective searching for information on the WWW relies on some understanding of how information on the WWW is indexed and how search terms are combined by the search engines. If no attempt is made by the user to constrain a query, a high number of irrelevant returns occurs. Yet people are very reluctant to take time to constrain their search through reading on-line help instructions. It is also our experience that they are intolerant of abstract instruction in use of the search tools. This intolerance may however reflect their stage in learning about the Internet. With greater experience, the need for such knowledge might become more apparent.

Utilisation of Information Resources on the Internet

Most users of a public library system identify books of interest by author or by browsing in a particular section of the library having been directed there by a librarian. Finding relevant information in the large unstructured space of the Internet presents a new challenge. As mentioned above, members of the public are reluctant to take time to learn how to search effectively on the Internet through studying online instructions. People prefer to ask another human (a demonstrator, course presenter or a colleague) for help. Thus, while the majority of the respondents to the questionnaires we distribute during the Net Surfing sessions indicate that they found retrieving information of interest on the Internet easy or relatively easy, this largely reflects the fact that skilled help from demonstrators is available during these sessions.

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For the resources of the World Wide Web to be used effectively in self directed learning, attention needs to be paid to the design of systems so that people can find what they want, or at least find somebody who can help them find what they want. Some systems currently exist. Newsgroups can serve this purpose to some extent and agents, such as Alexa, can be useful. More sophisticated tools that would allow librarians or subject experts to collaborate with a user (regardless whether the user was at home or in the library) as the latter searches for information on the Internet are also required.

The Design of Manuals

Within the literature on human-computer interaction, considerable debate surrounds the principles which ought to govern the design of instructional manuals (Carroll 1984). The ultimate aim of manuals for computer programs and other devices is to support action, yet we know little about what people need to know in order to effectively support action. Studies of experts using computer programs indicate that they recall very little about the interface of the program they use. Rather they recognise what they need to do next when in that particular environment. The interface itself cues their course of action (Mayes et al. 1988). When faced with a new interface to a program, experts also perform well. They rapidly learn to navigate the new interface but they appear to do this by *applying meta-knowledge about where to get the knowledge* rather than applying specific items of knowledge. They know how to scan menus; they know the type of command that ought to be available if a certain form of action sequence is to be realised. This type of meta-knowledge is rarely addressed in instructional manuals for programs yet there are sound arguments that it should be.

The design of the manuals that accompany our courses did not reflect on such issues. Our current manuals are an uneasy compromise between serving a tutorial function and acting as a reference manual. However, in feedback given at the end of each course, our manuals are generally given high marks, which may reflect more upon the quality of the teaching that accompanies them than the intrinsic quality of the manuals.

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Section 3: Controlling User Behaviour

Security and user models of the Internet

- Within the area of human-computer interaction, there has been a considerable body of research concerned with the type of 'model' that the user constructs of the system s/he is interacting with (Gentner and Stevens 1983). The details of that research need not concern us here. The important point of the research is a simple one, that the experience of using the computer conditions a user's understanding of how it operates. Thus if one alters the 'normal' interface to a system, there is the danger that the model the user creates of the computer in that context will not generalise to the normal context, or at worst interfere with learning to use the system in that context.

This is an important issue in the context of the Internet Express. On the Internet Express people are being trained in using the Internet on personal computers. Personal computers were designed for individual use and customisation. To protect the security of our systems, we need to prevent open user access to the hard disk of the PC. The set of applications available to the user is thus restricted to those necessary for a particular course. These are made available as icons on the desktop. Any attempt to navigate the internal directory structure of the hard disk is set to fail. Similarly, access to dedicated client software such as mail clients, news-group clients, ftp clients is not available during surfing sessions.

This security policy has had several negative effects. It makes the demonstration of some aspects of software, such as sending an attachment through e-mail, difficult. Most critically, it confuses users coming to grips with the concept of folders and directory structures in a PC environment. They cannot understand why some applications and some folders are available in the context of one course but not in the context of another. In the surfing sessions, the restriction of access to the WWW browser had the unanticipated effect of reinforcing the common misconception that the Internet is the World Wide Web.

Abuse of the technology

Contrary to what the popular press would have us believe the majority of the members of the public are NOT interested in using the Internet to access pornography. Occasional problems were experienced. These were dealt with by the placement of warnings on all machines that people found accessing pornography would be immediately expelled from the library. Consideration was given to installing filtering software on the PCs but this option was rejected in favour of Connect personnel monitoring users' actions. Filtering software is dangerous in that it either works on keywords (thus denying access to innocuous words in the wrong context: anecdotal evidence suggests that a document mentioning Scunthorpe was blocked, as was an astronomy site referring to 'the naked eye' or relies on a list of blocked WWW sites (these lists are not made publicly available, and commonly include information relating to abortion and homosexuality).

The educational value of electronic conferencing and chat rooms has frequently been emphasised. These are seen as critical in the creation of virtual communities whose learning activities are focused on a common interest. Chat rooms or computer conferencing provide people with a sense of companionship when engaged in self directed learning. However, not all chat rooms are educational. Many exist in which the dialogue tends to become focused on sex related topics. People can also become so engrossed in a chat room session that they ignore time and hog the computer, preventing any other user from having access. For these two reasons access to chat rooms is now banned. Each computer carries a note to this effect. Anyone found using a chat room is asked to leave the net surfing session.

The Future

The existence of the Internet Express has raised the awareness, not only of members of the general public, but of policy makers, as to the potential value of the Internet to the community. Consequently several permanent library-based access points to the Internet are being established through a new "Connect to Libraries" programme. These access points will be sited in central libraries

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within the Merseyside region, the first in Liverpool Central Library in March 1998. It is envisaged that these will offer basic computer training as well as access to the Internet.

The Internet Express has also trained Connect staff. We now have a very portable system that can go anywhere. This allows us to respond rapidly and effectively to any community request for Internet access and training. We have run an Internet Express at Ness Gardens, Wirral during their annual festival. We have run an Internet Express in a major shopping area, Clayton Square [<http://clayton.merseyworld.com/>], in central Liverpool, for the duration of the UK Science, Engineering & Technology week, March 1997 [<http://www.merseyworld.com/set97/>], and will do so again in March 1998.

Much of the success of the Internet Express programme is however attributable to the fact that access to the Internet and training in its use is free. Use of the technology has been observed to drop dramatically when charges have been imposed. Liverpool Central Library experienced a 60% drop in use of Internet facilities when charging came into effect. They have now reverted to free access. The decline in use was even more dramatic at Birkenhead Library when charges were introduced: 90%. The issue of the funding of access to the Internet is a critical one. Without some form of public funding, lifelong learning through networked technology will be restricted to the already privileged sectors of our society and marginalised communities will be further marginalised.

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