THE USE OF PERSONAL COMPUTERS WITH 
ADULTS WHO HAVE DEVELOPMENTAL DISABILITY: 
OUTCOMES OF AN ORGANISATION-WIDE INITIATIVE

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Introduction

In this article, we describe outcomes of an organisation-wide initiative to help adults with mild to moderate developmental disability to use modern, multimedia personal computers for leisure and personal fulfilment. The participants of the study were service-users of one British charitable organisation (HFT - The Home Farm Trust Ltd), which has made a significant commitment to introducing modern computers with internet access to their day- and residential- services over the past seven years. The authors have personally been involved in this project, and it represents the culmination of nearly three decades of work by the first author aimed at understanding how computers and related information and communications instructional technology can best be used to support people with intellectual disabilities.

Keele University’s “Computer Applications to Special Education” (C.A.S.E.) unit, was established to support the increasing number of services for adults in the 1980s and 1990s who wished to use computers. Whilst there were many training courses and support services for schools, the UK Government set up no parallel services for adults with special needs. The C.A.S.E unit aimed to help by carrying out research and development, consultancy, and staff training courses. Many organisations accessed this service, seeking details of software that was available, specific skills and technology for working with adults, and general advice on how best to integrate computers with other aspects of the social-education curriculum. To support them, the unit carried out action-research, developed new input devices, authored and published new software, and invented models for guiding services in their use of their computers. Hegarty (1991) and Hegarty and Whittaker (1993) give accounts of this work.

Issues that have concerned staff who are interested in using computers

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with their service-users are ones of “age appropriateness” and “curriculum appropriateness”. Many computer applications/software programmes that are potentially usable by adults with developmental disability can seem to be unsuitable, either because they are too childish in their content, or because they do not encourage the kind of skills and knowledge that the services wish their service users to acquire. The ideal software would not be too difficult to use, would have non-childish (i.e. more “adult”) content, and would help service-users develop their personal independence and quality of life. Such “appropriate” software has been rare.

A related concern, for service providers, has been to ensure that the considerable investment in hardware, software, space and staff resources is justified by how computers are used. Computers that are lying idle are of no use, whilst inappropriate use is both undesirable and an ineffective use of resources.

These concerns about the appropriate and effective use of computer applications in services for adults became central to the work of the C.A.S.E. unit at Keele. New software was written to try to meet the perceived needs of staff (e.g. Hegarty and Collins, 1987; Oseland et al., 1990) and research building on the literature on educational innovation was carried out in order to develop models to help managers audit and develop the effective use of computers in their service (Seale, 1988, 1993, 1998; Hegarty, 2004).

Appropriate use became an issue not only for writing new software but, more broadly, for how adults use computers. Now, very few people without developmental disabilities use a computer to go through teaching programmes, or to play games (applications that were frequently the only ones offered to adults with intellectual disabilities). Rather, they use them for work and leisure in ways that allow us to achieve personally-desired ends – for example, writing and editing documents, emailing, accessing websites, editing and storing digital photos, playing games, or recording and listening to music. These are, then, “ordinary life” activities. If one embraces “ordinary life” principles for adults with developmental disabilities, then it follows that these same activities should be offered to them, with appropriate support. Another perspective on “adult” use of computers would be to ask how inclusive computer applications are. The UK Government White Paper, Valuing People (Department of Health, 2001) stresses the principle of inclusion for people with learning disabilities: “Inclusion means enabling people with learning disabilities to do …ordinary things, make use of mainstream facilities and be included in the community” (p.24). This could also apply to the use of computer applications.

Many organisations have wanted to introduce computer-based activities to service users. Our research and experience showed that there was a massive range in how computers were used. At one end would be organisations, such as day-services (or parts of one, such as a computer class), where frequent use was made, where many service-users were involved, and where impressive work was being done. At the other end were services that had the infrastructure of hardware, software, and trained staff but were making little use of them. The reasons for these differences appeared clear: in the former cases management had committed resources in a number of specific ways towards achieving these ends; in the latter, they had not. Sometimes this had been done with little consideration for resources, staff training, or the need for managerial
support. Where the organisation had paid attention to the various likely constraints and made effort to overcome them, Information Communications Technology (ICT) use had been more successful. Effective use, it seemed, was an organisational task, a responsibility that needed to be assumed at all levels of an organisation. Jane Seale’s work (1993) was indeed directed at defining and auditing computer use in order to allow managers to make it more effective.

Our knowledge of appropriate and effective use was harnessed in consultancy support to a number of organisations. During the late 1990s, one organisation, HFT (The Home Farm Trust Ltd.), wished to embark on a major review and development of its use of computers with service-users. Aspinall and Hegarty (2001) describe the early stages of this project, which HFT termed the “ICT for Service-users” Project, to distinguish this use of computers from administrative ones. The present article describes the outcomes of this project, which received significant charitable funding, in terms of the use of ICT that could be seen throughout the organisation some three years after its inception. The paper has two broad aims:

1. To document examples of computer use by adults with developmental disabilities (with the help of support staff) in a UK organisation for adults with developmental disabilities. These examples illustrate how computers can typically be used by adults with developmental disabilities, and informs discussion of what is appropriate use.

2. To identify what staff members perceive to be organisational/managerial constraints around the implementation of ICT. This would address issues concerned with the organisational culture of facilitating effective computer use.

**Method**

**Setting**

HFT is a United Kingdom charity that provides residential and day services for approximately 750 adults who have learning disabilities. These are grouped in “Services” in different parts of England. These Services differ in size and composition, but typically comprise a day-service, and residential accommodation in staffed houses or flats. In common with national trends in services for people with learning disabilities, the detailed organisation of these services has been constantly evolving but their overall objective is “to meet the hopes and needs of people with learning disabilities…..we offer a range of services including; supported living, registered residential care, day services, specialist services, supported employment, carer support service, transition workshops, advocacy, short breaks (respite care), Information Communications Technology (ICT) training and research” according to the HFT website (www.hft.org.uk).

Personal computers have been used as part of the activities on offer for service-users within HFT Services for many years. Until the Project described here, their use had received no central funding or co-ordination. However, in January 1998, HFT received a grant to establish an “ICT for Service-users Project”. This National Lotteries Charities Board (NLCB) grant enabled the installation of two computers (with appropriate access devices and software, and Internet access) in each of the day services, to fund the post of...
a project co-ordinator, to provide staff training (through training courses, and individual advice) and staff support (by telephone advice, and site visits). The detailed history of this is described in Aspinall and Hegarty (2001). The project was monitored by questionnaires to HFT Services receiving the computers and by an independent evaluation carried out by John Harris, director of the British Institute of Learning Disabilities (Harris, 2000). The project was deemed to be very successful and this led to a second application (in 1999) to the NLCB for funding to install computers in all 85 residential houses. Indeed, a measure of the success of this first project was that the NLCB did fund this second, much bigger project - something that is rarely done.

The present article arose from HFT’s wish to have a second, external evaluation of the ICT for Service-users Project, which might corroborate and update the findings of the Harris (2000) report, three years after the first NLCB grant and mid-way through the implementation of the second grant. Senior HFT management gave permission for the research to take place and service managers were briefed accordingly and their co-operation sought. Visits by the first author were then scheduled, with the aim of spending about one day at every Service. The intention, at each Service, was to talk with the manager, team leaders for day and residential services, and those support workers and service-users who had interests or involvement with ICT. On some of these visits, the second author was also present. Prior to each visit, a letter was sent to remind service-users and staff of the imminent visit. The detailed organisation of the visits was the responsibility of staff at a Service, and so the pattern of each visit was different. The purpose of the visit was explained to participants in terms of wishing to find out how the computers were being used, and what the constraints were on such use.

13 out of 14 HFT Services in operation in 2001 were visited. At each Service, a visit was made to each computer installation (whether in the day service / resource centre room, or in a residential house). In all the Services visited it was possible to talk to the service manager (or representative), to one or more of the ICT co-ordinators appointed at each Service, to support workers, to see where the computers had been installed, and to meet service-users. In many cases sessions in which the computer was being used by service-users with staff support were observed.

Service-users

HFT’s Services described in this article support adults with mild to moderate intellectual disabilities, some of whom have additional sensory or physical impairments. One (a day service) supported adults with severe to profound disabilities, but computers were not used in this Service and it was not included in the study.

Computers and software

The software used was provided to Services “bundled” with the computers supplied by Research Machines plc. These included standard Microsoft products (such as: Word, Publisher, PowerPoint, Internet Explorer, Outlook Express) and a range of other educational software and games. All Services also received Widgit Software’s Writing with Symbols and Granada Learning/ SEMERC’s Out and About products. Website addresses for these products are given at the end of this article. A brief explanation of specialist software is
also given the first time it is mentioned. References to Microsoft products are assumed to be self-explanatory.

**Study design**

The study was conceptualised in the tradition of service-evaluation research (also called, “program evaluation” in the USA). UK research in this tradition can be traced back to the work of Tizard and associates (e.g. Tizard, 1964) which may attempt to be formative (providing feedback to service providers), or summative (giving scores to a service against criteria, as in the Program Analysis of Service Systems model described by Wolfensberger and Glenn, 1973). Considerable thought was given in planning this study to whether or not it was possible to evaluate specific outcomes for service-users that could be attributed to computer use, in the manner of a controlled clinical trial. This was deemed a difficult and possibly fruitless task. Descriptive data on ICT use in HFT had already been collected by questionnaire (Harris, 2000, see above); a more detailed, qualitative study with visits to as many locations as possible where ICT had been installed was felt to be an important extension. The study would provide a detailed picture of the way in which the extensive commitment made by all levels of the organisation to the project had resulted in outcomes for service users. We would aim to find out, in relatively informal site visits, what was being done and what staff members felt.

This type of approach has been described elsewhere as “qualitative program evaluation” (e.g. Greene, 1998) and championed by authors such as Patton (1990). Greene suggests that this approach typically (a) uses case studies; (b) emphasises context but not generalisability to understand meaning; (c) acknowledges the influence of the researcher’s self in the enquiry process; and (d) seeks to augment practical understanding. More broadly, the study lies in the social-scientific tradition of ethnography – emphasising participant observation, the description of social phenomena rather than hypothesis-testing, using largely unstructured, not pre-coded, data, investigating a small number of cases, and analysing data by verbal description and explanation rather than quantification and statistical analysis (Atkinson and Hammersley, 1998).

**Data collection and analysis**

Notes were kept during interviews and permission was sought to take photographs. The notes were transcribed after each visit and minimally edited to produce a prose snapshot of the computer use and constraints. Photographs helped to remind the authors of key features, and illustrated physical features such as where in a house the computer had been located, and how work produced with the computer was displayed or used (for example, symbol-based timetables and rotas). The draft, internal report of the visits was circulated to senior managers of HFT familiar with the services visited, with the request to check inaccuracies of content or interpretation; none was identified.

**Results**

**The data set**

The internal, technical report of the study written for HFT (Hegarty, 2002) was based on the minimally-edited verbatim notes taken at each computer installation visited, as described above. This corpus of data amounted to 2600 lines of text (23,000
words) which gave a detailed picture
of the pattern of use, and the perceived
constraints on use, for each individual
HFT Service. Since it is not possible in the
present article to give such detail, the main
findings of the report will be presented
here with representative examples.

The results will be described in two
sections:

1. Examples of computer use by adults
   with developmental disabilities (with
   the help of support staff) in HFT.
2. Staff members’ perceptions of the or-
   ganisational/managerial constraints
   around the implementation of ICT.

1. Examples of computer use in HFT
   Services

   The first main aim of the study was to
   look at examples of how ICT was being
   used - for, clearly, if the computers were
   sitting idle, then no benefits were going
to come of them. The amount of use, in
fact, varied from virtually none, in one
day-service with major staffing difficulties,
to centres where computers were used
frequently and widely, by many clients.

   A summary snapshot of the value of
   ICT and the wide applications it can have,
came from one newly-established house
(Panel 1). It shows ICT being used for a
wide range of uses.

Panel 1 Computer use in a house
A new house in the community had 8
residents of whom 7 used the computer.
It was situated in a very pleasant “study
room”, which was good because the
computer did not have to share part of a
lounge or dining area. A support worker
said, “I use the computer a lot. It’s fantastic!
It is used an awful lot.” She listed the main
uses of the computer at that, recently-
opened, house:

   · *Writing with Symbols* [software that
   produces symbol equivalents of words
   and phrases published by Widgit
   Software] is really useful, especially as
   it speaks – this is good for someone like
   H. who cannot read.
   · J. plays a lot of games.
   · R. had to fill out a form, and he liked
doiing that because the computer spoke
to him.
   · Some families have got email addresses
   and are sent messages and photos.
   · R. - it has really motivated him to learn
to read and he has started a literacy
course at college.
   · We had fun at Christmas with Christmas
   Cards and Gift Tags in Microsoft
   Publisher.
   · J. is very expert in games, also *Out and
   About* [social skills software published
   by Granada Learning designed as age-
   appropriate software for adults and
   young people with learning disabilities-
   see software reference 3].
   · We downloaded lots of carols at
   Christmas from the Internet.

   This illustration shows the computer
in use by the majority of residents of
the house, with the support of staff. It is
used for a range of purposes, namely:
multimedia document production and
editing (including text, symbols and
pictures), email, Internet access, use of
specialised social skills software, education
and entertainment, and hobbies. This
example was typical of how ICT was
being used in HFT generally. We now
look at further examples of each of these
categories of use.
Multimedia document production and editing

Writing with Symbols (WWS) software was supplied to all HFT Services and staff training was given in its use. It was used for a variety of applications (sometimes in conjunction with other software such as MS Word and MS Publisher) to increase service-users’ access to printed materials and encourage opportunities for choice. Many examples of this were found including diaries, timetables, menus, staffing rotas, translations of letters, a prospectus for a house to help an anxious newcomer, and, in one HFT Service, employment was found for service-users making Symbol dictionary cards.

Some criticisms were voiced of WWS that, used indiscriminately, documents were confusing or ambiguous to read, and that service-users had to be taught the symbols. Some support staff therefore favoured using a digital camera (all Services had been supplied with one), for taking pictures that would be more meaningful to service-users. The availability of these cameras, in fact, had a major impact on materials produced and was a very positive aspect of this project.

In some locations, service-users, it was said, could read quite well and there was no need for symbolising written documents.

MS PowerPoint presentation software was found useful to produce multimedia presentations which combined text and pictures, with examples from three HFT Services of introductory presentations about life in a house, or of holiday memories.

MS Publisher and MS Word were used to make greetings cards, posters, newsletters and Identification cards.

The following extracts (Panel 2) from the dataset illustrate these uses across several Services. The location of each use is shown – for example, “Service 2” – to give the reader an impression of the geographical dispersion of the use of ICT, and that it was not limited to one or two specialist centres within the organisation. The reader is reminded that these are illustrative examples from the dataset—many more could be given.

Panel 2: Examples of ICT being used for multimedia document production and editing

Service (S) 2: Letter writing
Clients are very keen to use the computers – Friday nights and weekends, mainly. They are used for letter writing. People are used to seeing them in day centres and so now they can use them here too. Now they’re not special we just use them for various things. Writing with Symbols (WWS) is used a lot with timetables. With speech output, it gives more involvement and control. All staff have some knowledge of how to use the software. Letter writing can be done together, which looks good and which they, the service-users, have ownership of.

S3: An information brochure with text and pictures
This Service had produced an “Interview Information brochure” for prospective staff; successive drafts of this had been kept (at the behest of the ICT Co-ordinator, who thought the project worthwhile and that a full record should be kept of its progress) including photos, text, paste-up and a final version. In fact, it made a case for having a new printer. (The co-ordinator later backed this up – “In the bungalow, the brochure came about because the Interview Skills Group (group for service-users) wanted to show prospective staff what life there was like from the user’s point of view.”)
S4: Diaries, calendars and menus
WWS is used for diaries, calendars, letters of thanks. “Environments” (a feature of the WWS software) are used by a colleague to support basic literacy. We make calendars, diaries, menus – for example, we do a menu, write it up, laminate it and then follow the menu to see if it works.

S8: Digital images using scanner and digital camera
We scan colour pictures in for displays. WWS is used for menus – although really photographs are better and we use the digital camera for this. When the colleges break up in the summer we do special projects – for example to record a barbeque building project using the digital camera. We put photos of residents into care plans. A support worker showed PowerPoint pictures he had done at home (where there is more time) of pictures taken in Lanzarote on a service-user holiday.

S10: Scanned-in photographs
There is a file of examples. Identification cards with the service-user’s picture are produced. Photos of K. were produced for a review meeting – she has idiosyncratic sign-language signs, so staff would know what her signs meant. These were produced in good quality, A4 size format.

S10: Timetables and letters
One tutor has been doing a pictorial timetable for J. Before we had the computer and WWS we were writing timetables out, even though none of the service-users could read, but now we use WWS. One resident wrote to his keyworker about his holidays. The ICT-Co-ordinator at the Service wrote a letter back in WWS. The Chief Executive of HFT wrote a letter to all service-users to say he was leaving and this was converted it to WWS.

S13: Lifebooks
The Service has started doing Lifebooks (using Microsoft Publisher and CreataCard [software to produce personalised greetings cards, published by Broderbund]. The house opened six years ago and Lifebooks were started to help with reminiscing (since service-users used to live at the main house). The layout is more colourful and more uniform than photocopying and they can make it more personal. Scanned-in pictures, clip art, and pictures taken with the digital camera are popular.

The digital camera is so helpful that the Service is going to buy another camera and some residents will buy their own. Some examples of what was said about them:

- You can email a photo.
- Symbols are not always necessary – you can use the digital camera.
- We have every individual’s photograph, group photographs, and photo albums.
- Even simple things like washing baskets used to have service-users’ own names but now have photographs (only one-quarter of our clients can recognise their own name but all can recognise their own photograph). It used to be a problem because people would rummage in every basket in order to recognise their own clothes, so it has made a big difference.
- We are preparing people to move into other houses and a lot of use is made of pictures for this.

Email and the Internet

Since email is predominately text-based, it poses access difficulties for many people with learning disabilities. Staff support overcomes this problem, however. Many Services cited examples of service-users
sending emails, often with photographs attached, to relatives and friends. Email was particularly used in houses (as distinct from day services), where there was more time for staff to give individual support, and more opportunity for one-to-one work (particularly at evenings and weekends).

Accessing websites on the Internet was a boon for a variety of reasons, including finding out about holiday destinations, looking at timetables, and pursuing interests. In one house, staff members had found it valuable to access medical information. A staff member in another house saw great potential for having web cameras to allow service-users to contact friends and relatives, but this use had not developed at the time of the survey.

Panel 3 gives representative examples of email and Internet use.

Panel 3: Examples of the use of email and the Internet.

Email use

S3 D. uses email a lot for letters to home (with one-to-one support, but we are trying to get him more independent). It is a good means of communication for him.

S4 We email to another HFT Service because of a family connection. We also hope to set up a link with a Russian centre via her daughter. We contact people at different HFT Services, where one service-user used to live and he has a pen pal – they have similar interests in 60s music. He lives at [the community house] and is helped by the staff there, especially C. his key worker who looks up stuff on the Internet for him.

S8
1. Y. emails with support from a Support Worker. She had to learn to use it to email her own children!
2. N. is really excited because it comes back so quickly.
3. R. uses computer to write to people such as Tony Blair and the Queen Mother. He used to have lessons with [the project leader].

Internet use

S3 The staff want to access information on medical syndromes so they are going to have Internet access for the staff computer. Two staff members are doing this in the bungalow. This use will increase. One service-user was ill and you really feel you want to click on to something for support. Our ICT co-ordinator got specific information for a resident’s medical condition. The credibility of the computer has therefore increased – there was initially a bit of a resistance until they realised that you can get significant information that will help your job.

S4 3 clients use the Internet for MP3 downloading and travel maps, and timetables for holiday destinations. One person is very focussed on bus timetables. We have assembled a CD-ROM of his own specialist music for one client. M. has Asperger’s and has her own computer. She is going to a web design course at University with her Support Worker.

S5
· One particular use for the Internet was to access sites about trains for P.
· The Internet would be good for S. – he loves sport and has mentioned this as a possible use. Also it would be helpful for choosing holiday destinations.
· The Internet is excellent when it is up and running. 3 service-users can use it virtually unaided.
Midi files on the Internet are popular. R. especially likes Napster.

S8 It’s starting to come in, but probably no users go on it by themselves. With staff support, residents have accessed it, e.g.:
1. Football site was accessed to encourage person to come to Day Service
2. Planned holiday on Internet for a service-user in (community house) because he is really interested in railways and wanted to go to railway museums.
3. Use Internet to log on to Dr Who, Casualty and Napster.
4. We have downloaded people’s favourite tunes and had musical evenings.
5. Bonzo.com – for A. – has a purple monkey which greets her when she logs on and also prompts her if she has not done anything for a while.

S9 This Service has been a member of a project called “Digital Reflections”. This is a community website which was developed on-site; service-users developed web pages, and these were included in a website by a College Media Studies course.
A staff member commented, “We were very pleased because our residents were included on an equal basis as one other community group. We have the possibility of posting further materials on this public site.”

S13 This HFT Service would like to create a website, on which they could post their Newsletter, and the results of local history and other special-interest projects of service-users.

Panel 4 gives a selection of comment.

Panel 4: Examples of the use of the Out and About software package

S3 J. is very expert in games, and also uses Out and About very often. (Later in the visit J. wants to know how to get into the software to find his own records – these show that he has worked on the software for days at a time!)

S4 For some clients it is not seen as suitable: Out and About is not used because our clients do this (in real life) anyway, day to day – and it is too basic for them.

S5

Out and About is the only specialist software we have used – residents don’t
particularly want to use other software (e.g. Maths) because they don’t think it is age appropriate.

· 5 residents use Out and About regularly.

S6
We have used it but now tenants have exhausted it.

S8
· We like Out and About a lot. The Clothes section (activity based on appropriate choice of clothes to wear for specific occasions) is popular, as is Supermarket (activity requiring the viewer to spot inappropriate social behaviour in video clips made with actors in a supermarket). But it requires a lot of concentration so we do not use it for long. It needs a lot of one-to-one support.

· In the evenings, about 3 evenings per week, R. and N. write letters and we have a group session with Out and About.

S9
· P came in to use Out and About. A staff member said “We can’t keep him out of here”.

· We got the computer before Christmas. We have a log of use – 16 sessions were logged. Activities logged were: cards, calendar, Out and About, printing lots of photos, email, looking up band names on the Internet.

· Care plan – one client said that she would like to use Out and About in her home not just in day services.

S13
· Out and About and MSPublisher are very popular.

· Out and About is used a lot (the most) – 6 regular users who would choose it themselves as their first choice - and then other favourites such as Darby the Dragon (animated, interactive storybook software). T’s motor control has improved whilst using it.

· Out and About was a good introduction – could have done with 4 copies – a group could play it over and over…but other people are using mainstream software – e.g. Adobe – for a quiz.

· Out and About is well used – it is almost the only software that is not childish, and it also deals with issues that others don’t and which our service-users don’t have skills for.

Edutainment software, including interactive CD-ROMs

Much commercial software is available in this category. There is a wide choice in computer stores, at reasonable prices (examples given in the text above include Bailey’s Book House and Darby the Dragon (Smart Kids Software). Many titles were supplied with the RM Window Box package (the computers chosen for the project from the company, Research Machines plc, were packaged with a wide range of software), and HFT Services had the opportunity to choose additional titles as part of this package. Panel 5 gives examples of such software in use:

Panel 5: Edutainment software in use in HFT Services

S1 Most frequently used software packages are: RM Colour Magic (paint and draw software), Out and About, Darby the Dragon (multimedia interactive story CD-ROM), RM Picture Box (jigsaw puzzle software), CreateaCard (Broderbund), MS Word.

S3
· This computer group was a regular
one run during day services. It used the computer room which had 4 computers. There were 4 service-users in the room, one was an elderly person writing stories, with support of an adult literacy tutor. Two were doing digital photo work and one was quietly using a multimedia CD-ROM on his own. Another person was playing Dorling-Kindersley *Photo Safari* (an interactive CD ROM).

Elsewhere in this Service, *Colour Magic* was used to encourage mouse skills, together with Interactive CD-ROMs, and art packages.

S5
· Collages, photos of service-users are popular.
· M. likes Paint and Music
· C. likes to paint with the touch screen (touch-sensitive computer screens were issued as standard to all services).

S8
· Used a lot of music CDs in groups, also a First Aid CD-ROM – they are nice and slow so you can chat about what is going on and get people to work out the answers.
· P. will just come in and use it on his own. He used a *Dungeons and Dragons* CD-ROM (adventure game software) and our aim is to get him to come in more.
· A. likes a “Peter and the Wolf CD” (especially compiled for her by the project leader).

S9
K. was an expert web surfer. He later came in to use the Dorling-Kindersley *Encyclopedia of Nature*.

S10
· C. likes games especially *Henry’s Party* [simple games software]. He plays with it a lot. He worked steadily through the game whilst we were there, doing a lot of the activities and responding to different features of it.
· A computer log was kept for 2 months (13/11/00 – 30/12/00). It had 15 entries completed by four of the Support Workers. Most of the sessions recorded were in the evening, with some in the afternoon. Programmes used were: *My World 3*, *RM Colour Magic*, *MS Word*, *Media Player*, *Henry’s Party*, *Bailey’s Book House*, Digital camera download.

S11
L. likes *Number Pix for Windows* (simple maths software packaged with RM computers). The support worker had trained her and others to use this program by putting cards on the table first. V. liked *Amazing Body* (interactive human biology software published by Dorling Kindersley). She had sent a Valentine card to her boyfriend, writes regular email letter home and chooses pictures (with support).

2. Staff members’ perceptions of constraints on ICT use

The second aim of this study was to look at what constraints there were to using ICT with service-users. Staff members were asked what they thought were the main constraints, and the authors were alert to other constraints during each visit.

Two main constraints were mentioned over and over again. These were: resources of staff time or space, and training. Detailed examples and elaboration of these are given in Panel 6. There were infrequent mentions of common constraints such as insufficient or inappropriate software, access devices, computers, or support, and it is presumed that this was because
considerable attention had been given to providing these by HFT in the course of the Project.

However, it is important to offset the comments in Panel 6 with the observation that, in many HFT Services, where interviewees mentioned problems, there was innovative and valuable work being done. The existence of the constraints was, therefore, not necessarily detrimental to effective ICT use.

Panel 6: Reported constraints on effective software use

S1
For this HFT Service, staffing was the main obstacle to using the computers more. One aspect of this was a comment (mentioned in other HFT Services as well) that the ICT Co-ordinator had other duties to perform besides those to do with the computer, which limited the amount of time available to dedicate to ICT development. Another staffing issue was that service-users really required a one-to-one staff to client ratio for computer use and the Service did not always have the staff for that. Staff numbers were also variable from one session to another, and the degree of staff skill was also important. This HFT Service also would have liked another computer – on a trolley so that it could be used in different rooms.

S2
The Senior Support Worker, who did not have her own PC and had not used the Internet, found that time and the opportunity to get on the computer (administration and housekeeping also had to be done) were the main constraints. She also felt that the touch-sensitive screen was a problem for accessing some Windows applications. Nevertheless, she said that “Everything I’ve wanted to do can be done.” Lack of suitable space had prevented more use of the computer in day services, but this was being overcome. There was a general problem of staff confidence in staff not only using computers themselves but having confidence to use it with service-users.

S3
Although suitable staff skills were a problem, staff had sought training from a local college, and National Lottery Charity Board money had helped to provide training via the ICT Project. But staff skills were still a constraint: “Time, of course, with the requirement for everyday care skills – to bring more people up to a higher level has raised their aspirations.” The ICT co-ordinator felt that the courses that had been provided centrally for all Services by HFT were good but that local courses were also necessary.

In the day-service group, the tutor felt it would be nice to know what was happening in other HFT Services, to have time to look at other programmes, and felt there was a challenge in how to find the time and space for training. An issue, she felt, was justifying the need for training in that they had to fight for training time. Service-users themselves were demanding more computer time (and many needed 1-1 support on the computer) which exacerbated the problem.

Time, again, was cited: “One of the biggest things we need is time – we don’t have the time really. For example, games – we have not had the time to get into that yet.” Self-confidence was also mentioned – “I’m never happy with what I produce.”
The value of training was mentioned and led to an interest in doing other things. “I was initially terrified but now it’s addictive. I know a lot more after an individual training session than I did. I enjoy it and [my two colleagues] are dab hands.”

S5

The interview with the service manager gave a good insight into some of the organisational constraints on computer use, from the perspective of a Manager. Some of the constraints for him were: only having 2 computers, staff shortages with a lot of agency staff being needed, staff absence through maternity leave, and the fact that computer use is added to other duties. There were other issues or problems as well, including: the budget for phone bills for the Internet, role of the computer in supported living houses, and the need for upgrading computers in two years time.

S7

In this HFT Service, which comprised only a day-service, the Manager felt ICT was not being used as much as he would have liked. High staff turnover and other pressures meant that staff who were interested in ICT were not able to spend as much time on ICT as they would have liked. Other constraints included: higher-dependency clients, the fact that the client group was not consistently there, and a recent major reorganisation which meant that ICT was the “last thing on people’s minds”. His final comment was insightful and balanced, “I suppose we are trying to get to grips with a fairly expensive resource which is not being used properly … but we are using it!”

S8

Here, a key constraint was the shortage of persons skilled and confident in ICT use, together with staff time. Particular successes of ICT use for some service-users had been achieved, it was felt, because of “enhanced hours” being available. Related to this, it was felt that a change in “service ideology” (a shift from parenting to person-centred planning) meant that little could be achieved without one-to-one staff support. This is echoed by the day service ICT Co-ordinator’s list of constraints which included, time and staff for one-to-one, interests of individual clients, and staff attitudes. An interesting insight into the last of these was the comment, “I think now that staff are seeing them as things to enhance other activities not as things in themselves”.

The theme of staff shortages was echoed again in the Team Leader interview, together with time which led to a shortage of confidence and skills. Computer inaccessibility was a physical constraint.

S13

For the Manager in this HFT Service with a long history of computer use and many interesting applications, staff shortages and staff training were the main human constraints, whilst a shortage of phone lines and suitable space to put computers were physical ones. For the ICT Co-ordinator, time was the main constraint: “Time – lots of possibilities but no time. Time and training needed to implement and to make the technology relevant.” He explained this in more detail, giving examples of how other software might be used with clients, for example in helping clients to complete complaints forms. In the houses, computers were being used and few constraints were mentioned.
Discussion

The study described here was an opportunity to assess the effectiveness of a major initiative by a charitable organisation for people with developmental disabilities to effect the organisation-wide implementation of effective and appropriate ICT use by its service-users, who were adults with developmental disability. These terms were discussed earlier in the paper, and we would emphasise that they were essential criteria in the design of the HFT project.

Organisation-wide implementation: A few sites were making extensive use of computers, having used the opportunities afforded by the project to the full. On the other hand, some Services, despite extensive resource investment, staff training, management leadership, and ongoing support, were making little or no use of computers. This range of computer use across the organisation confirms previous experience and research, as discussed earlier. The constraints identified show some of the challenges faced by services (principally resources of time and money, and staff support and training). Despite the considerable investment of HFT in resources for this project, there appears to be a need for even greater investment to make full of use of such technology in some cases.

Appropriate and effective use: Despite constraints, many Services were making use of computers for those service-users who wished to do so. The illustrations given in this article show the diversity and richness of this use, and we believe that these are computer applications that are indeed “adult”, ordinary-life ones. Rarely did staff make the complaint that one has heard so frequently over the years, that the available software and applications for computers are not “age-appropriate”. Adults were using computer applications, with support, that will be familiar to readers. Whether software was being used “effectively” is a value judgement that readers will make for themselves, but we believe that many examples of use given here, typical of many others observed on visits, demonstrate valuable enhancements to individuals’ quality of life.

A limitation of this study is that it describes ICT use by adults in only one organisation. Further, the kinds of use noted are a direct product of the decisions made in purchasing equipment (computers and access devices, such as touchscreen monitors), software packages and providing staff training. Further research on other organisations, where different priorities were placed on using ICT, would be of value.

A follow-up study of the same organisation is described by Parsons et al., (2004, 2006). Their study built on the conceptual approach described here. They, too, looked at how ICT was being used in HFT’s Services, and they also considered organisational factors, aiming to discover “what processes, systems and structures [would] support further development in the use of ICT” (2004, p. 17). Their findings show that ICT use was still highly variable across Services: “...in terms of objective criteria, all Services had started at similar positions. Despite this, ICT had developed very differently across sites resulting in frequent and creative use at some sites and an almost complete absence of use at others.” (2004, p.39). They attribute this to staff management culture and practice. They note the crucial importance of support, confirming Seale (1998). They also confirm the importance of a dedicated, interested and committed staff member in promoting computer use.

Whilst further resources are always needed, the present study shows
that widespread implementation of computer-based activities can be achieved organisation-wide, given the organisational will to make this happen and by identifying appropriate resources. Examples have been shown in the dataset, and, as noted earlier, many more could have been given that are testament to the organisation-wide penetration of the project. Central to this observation, however, is an understanding of constraints. We have seen here the importance of the provision of staff training and support, particularly aimed at the role of support staff. Examples given in this paper show the crucial role of staff, from managers to hourly-paid temporary staff, in facilitating the use of services by service-users. In the case of computers as a particular kind of resource, all staff must themselves have the necessary skills and confidence if they are to impart those to service users, and work schedules must create that most precious of commodities, time. The present research not only affirms the central role of those who support individuals in their daily use of facilities (such as ICT), but it extends the concept to stress the importance of the total organisation’s support through its managerial climate and in its specific policies for (for example) staff recruitment, initial training, professional updating, resourcing, purchasing, timetabling and even the design of space.

Kennewell et al., (2000) discuss similar issues in the context of the UK school system (which has had enormous amounts of investment in ICT). Their interest is in promoting what they term, “ICT-capable” schools. For them, the institution (their equivalent to the use of the word “organisation” in this article) that is the term “ICT-capable” reflects something that is more than the sum of the capabilities of individuals. It is a characteristic of the school as a whole that even implies that schools are corporate entities that can think and act rationally. On page 3 of their book, they list key themes that are important in defining this “capability”. They include such things as having high expectations of pupils in their use of ICT, supporting teachers, having a shared vision, leadership from management, and a cycle of ICT development. These organisational characteristics have echoes in the present study and support the view we have taken that it is the organisation as a whole that needs to be the focus, if individual service users and staff are to have the maximum opportunities for valued participation in everyday life activities.

Future research in ICT use in this area may need to look less at the “sharp” end of how the person with developmental disability and his or her supporters use ICT, and more at the training, assumptions and managerial practices of individuals progressively higher in the organisation. Such research would complement the present study by giving a clearer picture of how an organisation for people with developmental disabilities “uses ICT”, in contrast just to users with developmental disability. This, in the longer term, will contribute to a “whole organisation” approach to consultancy (Gray, 1988), training and service development which has proved valuable in related fields, such as education (see Kennewell et al., 2000 for analysis of whole-school ICT capability).

Nevertheless, it must not be forgotten that the reality for many people with learning disabilities is a dependence on day-to-day carers and support-workers for encouraging and facilitating their access to interesting and purposive activities than enhance life quality. Organisations must support these care staff with resources, leadership and skills training. Specific further research could usefully be carried out in ways to do this, perhaps extending
studies such as Johnson and Hegarty (2003) who developed and trialled a simple method to help further education teachers to use websites in literacy classes as ways to increase the motivation of adults with developmental disabilities.

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