



The use, role and application of advanced technology in the lives of disabled people in the U.K.

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The problem:

- Disabled people are under-using assistive technological devices 'prescribed'
- Designers and engineers are driven by different motives to disabled people – excitement at the possibilities clouds pragmatic judgement
- The situation was therefore – disabled people want better functioning devices, designers/engineers need to listen more and include user feedback

The project

- 45 in-depth interviews with disabled people across Scotland and England (UK)
- 7 User Clubs (drop in sessions)
- 4 Focus Groups
- 1 Innovation Day for disabled people, designers, engineers, architects, NGOs, private and public service providers

Orientation

- Social model of disability (Oliver 1990)
- What frustrations and joys did disabled people experience in using both specialised and mainstream market devices – what did they want for the future?
- How does advanced/assistive technology assist or hinder disabled people in independent living?

Findings

- Users were out of step with the market, requesting 'innovations' that had been already invented
- AAC (alternative and augmentative communication) devices – users wanted the means to program these – only professionals were able to do this

The Users' wish list: 1

- Face-controlled electric wheelchair;
- A solar-powered battery for a 'talker' (communication device) as the batteries are constantly wearing down;
- Several devices for gardening including one that would enable a person with use of one hand to sweep up leaves and a wheelchair user to trim a hedge, as well as a robotic lawn mower.
- A multiple-use device that could enable a wheelchair user to turn small knobs, for example heating controls or light switches via a long pole mounting.

The Users' Wish List: 2

- A voice activated fully automatic car -the current models all require some degree of hand control.
- For Deaf and hearing impaired users,
 - a 'missed calls register' on a pager system similar to that on existing mobile phones,
 - a cheap and useable videophone so that Deaf people can sign to each other;
 - a device that translates the spoken word into text instantly on a mobile phone without going through the medium of a Palantypist or human operator (as in the Type Talk system)
 - all TV programmes to have subtitles

Case study future possibilities?

- **Infra-red switch technology, Bluetooth and wireless systems,**
 - significant and desired advantages over wired systems and which have revolutionised device control in the home. On return from hospital one user had everything 'hard-wired' around the house. The development of infra-red switching had enabled the user to effectively abandon wires all over the home. The same user was also excited by Bluetooth technology possibilities and had recently got a voice-activated contacts book in a mobile phone.
- **Voice recognition software**
 - Users were excited at the possibilities for communication purposes using computers, however, several reported that the software made copious errors and the process could be laborious, particularly in training the device.

Barriers and Facilitators to Learning to use Technologies

	Barriers to learning	Facilitators to learning
Training	Poor/ rushed training from: <ul style="list-style-type: none"> • Provider • family • technician No training/support Excessive cost of training	Good training from: <ul style="list-style-type: none"> • provider • employer • social worker • electrician • technician • on-line peers • friends • helpline • helpers at respite care centre • charity • Speech therapist
Instructions/ manuals	Difficult to understand manual Specific problems with: <ul style="list-style-type: none"> • reading instructions • concentration • commands Prefer human instruction	Easy to understand manual On-line instructions Demonstration: <ul style="list-style-type: none"> • human • Program talk-through
Family	Depending upon/ taking advantage of family help to learn	Family help with learning valued

Pragmatic, Manipulation and Psychological Issues in learning to use technologies

	Barriers to learning	Facilitators to learning
Pragmatic Issues	Time, Patience, Cost Connecting older and new devices Learning to use the functions on new items Lack of on-going support Non-compatibility of software Knowledge/capacities assumptions by designers Remembering Functions: including: <ul style="list-style-type: none"> • of environmental control device • phone memory • commands for computer • whereabouts of phone buttons Terminology difficult to follow	Symbols instead of words Self teaching: through: <ul style="list-style-type: none"> • Trial and error • On-line/Video learning • Perseverance over years Aim for independence Enjoyment
Manipulation issues	Electronic reader controls Scooter controls Size of buttons on remote controls Navigation through menus on mobile phones	Storage capacity of new technology in comparison to old Flexible and transferable functions between devices
Psychological Issues	Fearing own inadequacy in capacity to understand how to use technology Fear of damaging device Negative attitude to technology Emotional dislike of technology Embarrassment at 'computer ignorance' Frustration: including: <ul style="list-style-type: none"> • 'Hard work' (environmental control unit) • Complexity of functions 	Enhanced self-esteem from mastering computer functions Enhanced confidence from proficiency Transferable confidence Learn only necessary techniques

A user solution

Well I have a voice activated software in the office and at home and....the package comes with a headset which is plugged into the back of your computer, its got a wee microphone that comes with [it]...but somebody like me who can't use their hands, once that headset's on ...- well especially at home, when I'm on my own, if its on, I can't do anything. If the doorbell rings or the phone rings I can knock it off and go and answer the phone but that's, of course that's it, can't go back on it again...So ...I thought if I could have something I could drive up to rather than have it attached to my head ...there was an organisationAnyway they had a local rep that came along and looked at my problem and he went away and he came back a week later and he'd ... built a booth that sits on the top of my computer ...and he'd taken the mike off the headset, and it was made from a bit of fishing rod that he'd painted black...So I just drive up to it...

Flexibilities of devices

- Deaf user in the shower, has a pager for front door bell. The device has no 'missed calls' register – so the user has no idea that the visitor is still outside. However, 'missed call register' is a standard function on mobile phones –why not on these pagers?

Voice recognition example

[to computer:] wake up... start Microsoft Word...
<Respondent>'s address...
[computer prints entire address]... select all...
right align that... left click... *[computer replaces
address with 'Backlight']...* scratch that... mouse
left click... *[no response]...* mouse left click...
[no response]... go to sleep... *[computer inserts
the word 'Consciously']* scratch that... go to
sleep.

The User Innovation Day

- <http://www.dundee.ac.uk/eswce/research/projects/school-project/UserDayO/questionnaire.php>

User Innovation Day issues

- Size of new technological devices (University)
- Disabled people excluded from mobiles by credit system (NGO)
- BSL users excluded as mobile instructions are in written English and must register using speech (Charity)
- Affordability and dexterity of mobiles are major issues. High street chains can sell unusable products to disabled people legally (Charity)

User Innovation Day Issues 2

- DDA 2005 makes discrimination in services against disabled people illegal but does not cover products or design – this is a loophole (NGO)
- Ricability and the Disability Rights Commission campaigned for 'universal design' to be included in the DDA but they were unsuccessful (NGO)

User Innovation Day issues 3

- Water, gas and electricity are classed as utilities. The UK Government makes special provision to ensure disabled people's full access to these services. Phones are classed as a luxury item – yet disabled people critically rely on them to summon assistance. Should landline phones be classed as a utility? (BT – service provider)
- Many disabled people cannot use public phone boxes as they are not fully accessible. Mobile phones are not a luxury item but a necessity for disabled people (User)

Summary

- Size
- Choice
- Flexibility
- Aesthetics
- Law
- Access



Thanks....

- For listening

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