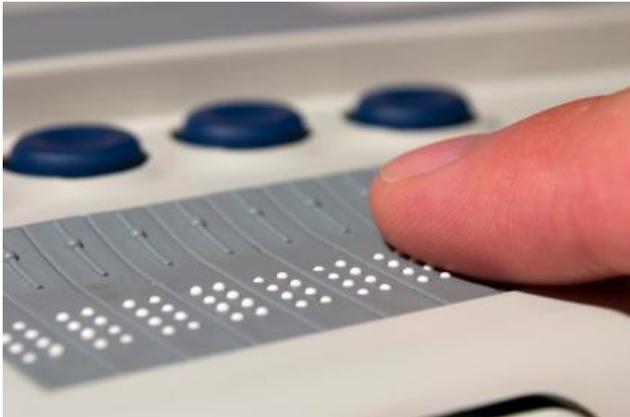




ICT for Disabled People



Information and Communication Technologies (ICT) underpin many aspects of modern living, so for the 10 million disabled people in the UK access to ICT is an important factor in their quality of life. This POSTnote summarises the issues that disabled people face in using ICT and looks at progress towards achieving equivalent access to services for disabled and non-disabled users.

Background

ICT can enhance the quality of life for disabled people. Someone with severe motor impairments, for example, can use eye-tracking equipment to stay in touch with friends via social networks. However, the rapid rate of technological change can leave disabled users at a further disadvantage. Blind people, for example, find some touch screen devices unusable.

Legislation recognises that disabled people have a right to accessible services, including those provided by ICT (Box 1). However, in practice there are large disparities in the take-up of ICT for users with and without disabilities. There is a broad consensus that disabled users do not enjoy an equivalent level of service. Over 80% of the population as a whole access the internet regularly but this figure drops to 55% for those with disabilities. In the vast majority of cases technological solutions exist to allow users to get online, so the disparity is not directly caused by any impairment. Instead it is due to existing barriers to take-up such as the cost of equipment, social exclusion and a lack of sufficient training which are often exacerbated by disability.

Age and disability are strongly correlated, so as the population ages, debate on disabled people's use of ICT will

Overview

- In the UK, almost half of disabled people do not access the internet regularly.
- Reasons that disabled people are not online include social exclusion, accessibility issues, costs, motivation and lack of support.
- When disabled people are not in education or employment there is a gap in funding for ICT equipment.
- Many websites and devices are inaccessible to many disabled users.
- Despite a legal duty on service providers to make reasonable adjustments for disabled people, no cases involving ICT have yet been brought to court.
- Mobile technologies, and in particular the rise of 'apps', are reducing the costs of many assistive technologies.
- Voice recognition software is increasingly providing benefits for many disabled users.

increasingly come into the spotlight. Many of today's adults are reliant on the internet and mobile technologies, and they expect this to continue to be the case as they age.

There is a general lack of statistics detailing how, or to what extent, disabled people really use ICT. This is, in part, due to the range of disabilities, as the requirements of someone with dyslexia are very different to those of someone with a speech impediment. It is unclear how reliable or useful existing statistics are; data analysis is difficult given that disabled people as a portion of the population cut across all other societal divisions. Individuals may also not perceive themselves as disabled, or may be unwilling to disclose the fact.

It is not possible for this briefing to cover every combination of disabilities and ICT systems. Instead, it looks at common issues for disabled people, although the extent to which they are affected varies from case to case.

Digital Inclusion

ICT often needs adapting to be accessible for disabled people. A deaf person, for example, might require a text or video relay service to make a phone call. Other ways in which ICT is modified are discussed on the next page.

Assistive Technologies

Many disabled people use assistive technologies to help them access computers or other devices. These might be physical pieces of equipment or software programs (Box 2). Many assistive technologies do not relate directly to ICT. Some, for example, might allow quadriplegic people to direct their wheelchair with head movements. They all, however, enable disabled people to do something which would otherwise be difficult or impossible.

Box 1. Policy Context

In June 2009 the UK ratified the UN Convention on the Rights of Persons with Disabilities. This aims to promote, protect and ensure disabled people's full and equal enjoyment of all human rights. It specifically mentions ICT accessibility and availability as playing a part in this. The EU also issued the Citizen's Rights Directive in November 2009 which states that equivalence in disabled users' access to services should be guaranteed to the level available to other end-users.

At the national level there are two relevant acts – the Equality Act 2010 and the Communications Act 2003. The former ensures that disabled people are not unreasonably discriminated against in accessing services or information while the latter gives Ofcom the power to regulate communication service providers in their provision for disabled customers. Ofcom have ensured, for example, that emergency services must be accessible by SMS message. Accessibility issues were also raised in a 2011 Ofcom consultation on text relay services.

Under the Equality Act many commercial websites are breaking the law by not making reasonable adjustments to be accessible. The Equality and Human Rights Commission are currently drafting Codes of Practice for the Equality Act. At present Codes of Practice pertaining to the Disability Discrimination Act 1995, which the Equality Act has superseded, are still in force. There is also a British Standard (BS8878) for managing the design process of accessible websites.

In government, the Office for Disability Issues – part of the Department for Work and Pensions (DWP) – leads work on disability equality. It will be launching a new disability strategy later this year.

Inclusive Design

Most assistive technologies are not developed as mainstream products (Box 2). Instead they sit alongside everyday products to make them accessible to disabled users. A different approach would be to design products that are accessible to the largest possible number of people, for example Apple's devices (Box 3).

It is widely recognised that considering the needs of disabled users at the concept stage ultimately benefits all users. A classic example is the automatic door, which was originally designed for wheelchair users. There is also a growing body of evidence that inclusively designed products have strong business cases¹.

Web design

The way in which websites are designed can have a huge impact on many disabled users, in particular people with dyslexia or sight problems. The World Wide Web Consortium (W3C) has drawn up a set of best practice rules known as the Web Content Accessibility Guidelines

(WCAG). Websites can be rated against these at various levels – no mark, A, AA and AAA with the latter being the most accessible.

Any public sector website must conform to at least AA standard under e-government guidelines². If it does not, it risks being withdrawn from service. Despite this, a recent survey³ of 350 central government websites showed that none were AA compliant on every page. 16 websites did not even reach the A standard. These problems will largely be addressed after the introduction of a single government domain, due in late 2012, which will provide an accessible and consistent format for any government website with a gov.uk address.

Compliance in the private sector is also low - less than 5% of all websites meet the A standard, despite the risk of possible legal action. Nevertheless, there is a strong business case for an accessible website⁴ with studies noting increases in the number of users, user satisfaction and revenue after the inclusion of accessibility features.

Although the WCAG standards are not explicitly mentioned by the Equality Act, the act does require service providers to make reasonable adjustments for information to be accessible. However, no precedent has been set showing exactly what constitutes a reasonable adjustment.

Box 2. Common Assistive Technologies

The following are the most commonly used assistive technologies that work with ICT systems:

- Screen readers for blind people – JAWS is one of the most widely used products. They allow blind or partially sighted people to navigate websites or computer operating systems. The home version of JAWS costs £600.
- Augmentative and Alternative Communication (AAC) devices – enable people with severe physical or speech difficulties to communicate with others in conversation or input text to a computer. Can be used with eye tracking equipment in the most severe cases and costs range from £3,000 to £10,000.
- Switching devices – specially adapted hardware which can be used to control a computer when paired with appropriate software and may replace the keyboard and mouse. These vary from simple mechanical buttons to more advanced setups such as blink sensors.
- Literacy support software – can read out or otherwise manipulate the appearance of text on a screen. It is used by dyslexics to aid reading and costs for packages vary from free to £200.
- Voice recognition software - Dragon Naturally Speaking is the dominant product and the simplest version costs £65 for a home user. It was originally conceived of as a productivity package but now used by many disabled people.

Where do the difficulties lie?

There are many difficulties facing disabled users which fall into two broad categories:

- Barriers to entry: Issues preventing initial take-up.
- Barriers to equivalence: Problems in achieving equivalent access to services.

Barriers to Entry

- **Social exclusion:** disabled people are more likely to be less well socially connected than others. Given that most new skills are learnt through friends or work colleagues, disabled people are typically less exposed to ICT, particularly those in older generations.
- **Nowhere to learn:** teaching facilities might be hard to access. Teaching styles may also not accommodate specific needs.
- **Financial barriers:** assistive technology can be extremely expensive. Box 2 gives the costs typically associated with them. Around half of disabled people are out of work meaning that ICT spending is not given high priority. A new, low-range laptop computer, for example, costs around £150.
- **Motivation:** people may not understand the benefits of learning to use technology. Advantages, such as access to cheaper products and services online, may not be considered. Fear can also be a factor as people worry about losing files or breaking equipment.

Box 3. Case Study: Inclusive Design at Apple

Many of Apple's products have accessibility options built in as standard. These include VoiceOver, a screen reader which can be controlled by gestures if required, and screen magnification for people with visual impairments. There is also a simplified user interface available for people with cognitive disabilities and keyboard control options for people that find it difficult to control a mouse. Siri, the voice recognition software available with the latest iPhone, has been well received. Although developed as a mainstream feature, the ability to vocally ask the phone to perform a task has made many of the functionalities of the device more accessible to many disabled people.

There is also a psychological benefit to using a desirable device. Disabled people might feel self-conscious about using a piece of assistive technology that marks them out as different – inclusive design prevents this from happening⁵.

Barriers to Equivalence

- **Support mechanisms:** once initially learned, people need further guidance and aid when things go wrong. It is much harder to deal with a frozen program when a screen reader is your only way of navigating it, for example.
- **Designers and programmers are often unaware of accessibility practices:** or they are seen as limiting creative options. Accessibility is not often taught as a standard part of a computer science degree. BCS – The Chartered Institute for IT does not require that an accessibility module be completed as part of their professional qualification. However, a standalone course on web accessibility does exist.
- **Awareness of technological solutions that might exist:** this might be the awareness of disabled people themselves, their employers or health care professionals.
- **Interoperability of systems:** many ICT systems do not work with assistive technologies, preventing disabled users from accessing services or functionalities.
- **Awareness of funding sources for equipment:** both of disabled people and their employers.
- **Compliance with standards:** compliance ensures that assistive technologies can work with mainstream devices.

- **Web authoring tools:** used by non-experts to publish information on websites. These tools often produce highly inaccessible pages.
- **Cloud computing services:** these are not always accessible or compatible with assistive technologies.

Achieving Equivalence

This section looks at the legal, financial, social and technological drivers that could enable equivalent access in the next decade. Technological developments will play a role in closing the gap between the experience of disabled and non-disabled users in the longer term, particularly when developments in implants and human-machine interfacing become commercially viable.

Legal Measures

Procurement

In contrast to the US, the UK has no law enforcing the procurement of accessible goods in the public sector. The European Commission is currently drafting a set of guidelines (Mandate 376) relating to the procurement of accessible goods by public bodies. The aim is to align US and European accessibility standards which would prevent market fragmentation and keep prices as low as possible for consumers.

Lack of Case Law

To date, no case law exists for charges brought under the Equality Act, or its predecessor the Disability Discrimination Act, which challenge the accessibility of commercial websites. Any claims that have been brought have been settled out of court under non-disclosure agreements. As a result, it is unclear both to individuals and service providers exactly what constitutes a reasonable adjustment. A precedent may soon be set, however, as in January the Royal National Institute for Blind People started proceedings against Bmibaby Ltd., claiming that their website was too inaccessible for blind people to benefit from online deals.

Financial Aid

Given the high cost of assistive technologies, many people rely on financial aid to provide the equipment they need. In schools this is usually catered for by local authorities. In higher education a disabled person is entitled to the Disabled Student's Allowance. This money is usually spent under the guidance of a college or university's disability officer who can provide recommendations and support.

An individual in employment may apply for support from the Access to Work programme (administered by DWP). After an assessment, equipment may be provided to help someone do their job more effectively. There are several issues with the scheme:

- lack of awareness of it, both on the part of the employees and employers. Only 36,000⁶ disabled people in work were helped by the scheme last year;
- support is not portable. Equipment provided under one employer cannot be transferred to another;
- volunteer placements are not covered.

The high cost of assistive technologies is related to the small market for them. Following European Mandate 376, it is hoped that governments will use their spending power to encourage industry to develop accessibility features which will then “trickle down” into everyday technology. However, some argue that one possible side effect of putting accessibility features into mainstream products might be an increase in the prices of very specialist devices as their market share might decrease.

The Funding Gap

Between education (Box 4) and employment there is, at present, a gap in funding that can be spent on ICT systems. Although money from the mobility part of the Disability Living Allowance – a benefit given to help with the extra costs associated with having a disability (soon to become the Personal Independence Payment) – could be spent on communications equipment, there is no explicit budget for ICT. If someone were to use the money on high speed broadband, for example, they might have less to spend on other mobility requirements, such as transport. Given that 90% of jobs are advertised online only, a lack of means to access the internet can cause major problems and leave disabled people locked out of the labour market. The employment rate is just under 50% for disabled people but over 75% for non-disabled people.

Box 4. Dyslexia in Education

The most common disability in schools is dyslexia, which affects almost 1 in 10 people in some form. ICT solutions such as word prediction or text highlighting have been shown to help children and teenagers with their reading and writing, although they are not always used effectively.⁷ There are two main issues:

- Recognition of dyslexia as a special need;
- Schools are dependent on individual teachers knowing how to use the available technology. There is no central training provided in its application.

Training and Support

There are around 3 million disabled people in employment. It is well recognised by the Employers’ Forum on Disability that accessibility must become part and parcel of business practices (Box 5). The key to achieving this is the engagement of executives with the issues.

Many assistive technologies require users to have specific skills and knowledge. Someone using voice-to-text software must, for example, learn the command phrases to complete tasks such as selecting text or opening programs.

Support comes in many forms, for example telephone help lines, often run by charities such as AbilityNet, or training centres. UK Online is an umbrella organisation which oversees a network of 3800 of the latter. Its central team is funded by the Department for Business, Innovation and Skills (BIS), but the individual venues are funded in a variety of ways, from volunteer centres to local authorities. The quality of support, however, varies across regions. There are several groups which champion the use and development of accessible systems such as the One Voice for Accessible

ICT Coalition. Others provide forums for people to discuss practicalities and difficulties such as the BBC’s Ouch! Blog and the government’s e-Accessibility Forum.

Box 5. How do employers use accessible ICT?

Nearly 80% of disabled people became disabled after the age of 16, many during their working life. Employers are obliged under the Equality Act to make a “reasonable adjustment” to accommodate their requirements. The proportion of the workforce with a disability has been steadily rising, suggesting that technology has had some effect in enabling disabled people. Two examples are given below.

HM Revenue & Customs

HMRC employs 66,000 people, of whom around 15% are disabled. Of these, 1,300 have particular ICT needs. Within this group there are around 600 who require specialist software – these are the Dragon and JAWS users (Box 2). As well as buying these products, there is an ongoing support cost involved in making them work with HMRC’s legacy systems. For JAWS this works out at £3,000 per user, and for Dragon the figure is £600. These costs can, in many cases, be comfortably recouped in gained productivity, especially for JAWS users. As well as supplying the equipment, training in its use is also seen as important, in both formal and informal settings.

Lloyds Banking Group

Lloyds have 100,000 employees. 3,000 are recorded as disabled, but 6,000 have been helped through the LBG Workplace Adjustment Scheme. The majority (around 80%) of the adjustments are ergonomic changes. Around 75% of participants say that they are more productive as a result, which is seen as justifying the average adjustment cost of £1,300. The scheme’s success is attributed to high level executive engagement with the initiative. Development of a centralised scheme removed the burden of making changes from line managers, who may not be aware of best practices. When the cost of adjustment is contrasted with the cost of hiring and training a new clerical grade member of staff, put at £7,750, there is also a strong business case for the scheme.

Technological Trends

ICT has significant potential to “level the playing field” between disabled and non-disabled people. The following are trends which are leading towards greater accessibility:

- Mainstream products, particularly smart phones and tablets, now run assistive applications.⁵ Although ‘apps’ are challenging to design accessibly, they have started to drive down the cost of technology. An AAC app (Box 2), for example, costs £130 instead of thousands of pounds as a standalone unit.
- Open source assistive products (which are free to use) are gaining in popularity, although they are often less easy to use than their proprietary counterparts.
- Voice recognition will play an increasingly important role in how disabled users interact with devices as it becomes increasingly sophisticated (Box 3).

Endnotes

- 1 www.inclusivedesigntoolkit.com
- 2 COI, Oct. 2009, Delivering inclusive websites
- 3 Sitemorse, Dec 2011, Central Government Survey Q4
- 4 One Voice for Accessible ICT, Accessible ICTs: Benefits to Business
- 5 One Voice for Accessible ICT, 2012, Moving Together: Mobile Apps
- 6 Access to Work: Official Statistics, Jan 2012, DWP
- 7 DCSF, 2009, Identifying and Teaching Children and Young People with Dyslexia and Literacy Difficulties