Literature Review
for
Online Today
RNIB Digital Programme

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COACHING

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Literature review for Online Today - RNIB

1. Introduction

Developments in digital technology are welcomed by many as providing opportunities for transformational change in what we do and how we do it. However, the speed of these changes can be disruptive to some who may not be equipped with the necessary skills or understanding to embrace them. It's important that everyone across society is able to understand both benefits and risks of being online and is supported to make the most of the available opportunities.

Digital participation is vital for government in building a strong economy, based on the creation and use of digital technology and in maximising efficiency in delivering public services. For businesses, digital knowledge can reduce costs and they can also benefit from new commercial opportunities. For individuals, there are financial savings to be made through internet use, as well increased access to information, support, learning and employment opportunities. In addition, people can immerse themselves in wider cultural and social opportunities to broaden their horizons.

Yet for some people with disabilities, the picture is different. They are not always aware of what resources are available to them and suitable training can be difficult to find. It can be harder or more expensive for them to access the internet or benefit from being online and in some cases, they are excluded entirely.

This report is a review of the literature to introduce the evaluation of **Online Today**, RNIB's three year programme to provide practical and personalised support to those with visual impairment or sensory loss in accessing digital technology.

It aims to give an overview of the UK Government's policy on digital technology in the last five years and considers who can be excluded from digital access. It then explores the opportunities for people with sight or other sensory loss to access digital technology and examines the key barriers they face, before summarising the main themes in the conclusion.

2. What is the UK government's view on digital technology?

In the UK's **Government Digital Strategy**[1] produced in 2013, it was recognised that the government had been slow to realise the benefits of digital technology and the Strategy followed on from the formation of the Government Digital Service (GDS) in 2011[2] to transform how digital services were provided by government, and to encourage more people to use them. The development of a single website for information on government services - Gov.uk - would help that process, making the public's access to these services simpler and more convenient.

They stated '*We will not leave anyone behind*' whilst moving to a 'digital by default' approach, with government departments aiming to identify and address the needs of people unable to use digital services. They also indicated that they would collaborate in partnership with private, public and third sector organisations to tackle barriers to internet use, such as lack of motivation, trust, opportunity or skills.

One of the Strategy's actions was to utilise a cross-government and multi-sectoral approach to assisted digital, allowing people who had rarely or never used the internet to be able to access services in different ways, for example via the charity Go ON UK[a], backed by the private and third sectors to address the barriers to online access.

The only reference to 'disability' is that the Strategy identified 28% of disabled people accessing the internet rarely or not at all. It said the Government would provide appropriate support and help more people to use online services via their digital inclusion and assisted digital programmes.

An **Information Economy Strategy**[3] was also produced in 2013, recognising its vital role in all aspects of life and work, including the UK's competiveness in a global economy. The focus of the strategy was on promoting the UK as the best choice for new technology businesses, leading to the provision of highly skilled jobs and great value to the UK economy. It also highlighted the importance of connections between academia, industry and the Government, as well as effective education to produce both innovators and confident users of technology.

Technological advances have led to many social outcomes, affecting the design of cities and transport as well as healthcare, education, entertainment and communications, and greatly impacting on how individuals live their life. The strategy aimed to put in place planning and action to address skill shortages, support business development in both creating and using digital technology, and to ensure effective cyber security. Appropriate education was also recognised as important to support people in the increased use of technology to access key Government and local services.

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[a] *Go ON UK merged with doteveryone.org.uk in April 2016*

In the strategy's fifth section '**Actions: Ensuring Citizens benefit from the Digital Age**', it was recognised that digital technology had the potential to transform people's lives for the better, offering ways to address challenges such as caring for an ageing population. Yet research by the BBC Media Literacy study[4] showed that 16 million people over 15 in the UK lacked the basic skills to be able to benefit from digital tools, resulting in exclusion from opportunities to apply for jobs or do shopping online, as well as experiencing other social disadvantages. The role of Go ON UK and other organisations was highlighted to address this, although no mention was made of groups with particular needs or disabilities.

This was followed by a **Digital Inclusion Strategy**[5] (DIS) in 2014, acknowledging the 25 year anniversary of the world wide web by Tim Berners-Lee. It remarked on the rapid expansion in the internet and its impact on peoples' lives, affecting many aspects of both work and home life. The internet has led to the formation of new industries and changed how many jobs are done. It has transformed how people shop, expanded opportunities for social interaction and has provided people with increased access to information, support and services, in diverse areas including healthcare, communications, retail and education.

The DI Strategy 2014 again quoted the BBC research study[4] which indicated 21% of people in Britain are without affordable access to the web or lack the skills needed to use the internet effectively. This research was broken down by age, region and socio-economic profile, but no mention was made of disability.

The need for partnership working between different organisations and the public, private and third sectors was again promoted to address this issue, collaborating to reduce digital exclusion. It estimated that around 10% of the adult population may never be able to use the web effectively due to disabilities or lack of literacy skills, so a policy paper on **Assisted Digital**[6] was produced, also in 2013, outlining plans by Government and other sources to support people not able to use digital services. The intention was to enable these users to interact with the services based on their needs, whether face-to-face or via a remote intermediary.

As more government services and transactions are becoming web-based, continuing their 'digital by default' policy, there was some recognition in the DI Strategy 2014 that central government and the public sector have a responsibility to provide support and help to the approximately 20% of the population not able to access these services, whether by increasing people's skills, providing telephone guidance or face-to-face support.

The section on digital exclusion '**People who are digitally excluded**' compared figures from the BBC Media Literacy study[4] to the GDS Digital Landscape Research[7] published in 2012, involving interviews with 1,298 adults, nationally representative, which indicated that 18% rarely or never use the internet. In its analysis of percentages of people online in each demographic, it

reported that 72% of people with a disability were online, but no more detail was offered about the remaining 28% or their disability.

In 2017, the Government produced their **UK Digital Strategy**[8] with a foreword by the Secretary of State for Culture, Media and Sport – Rt Hon Karen Bradley MP. She stated that '*Every individual and every business should have the skills and confidence to seize the opportunities of digital technology and have easy access to high-quality internet wherever they live, work, travel or learn.'* She went on to say that *'This Digital Strategy... will close the digital divide - to ensure that everyone is able to access and use the digital services that could help them manage their lives, progress at work, improve their health and wellbeing, and connect to friends and family.'*

The second of seven strands in the strategy is entitled ***'Digital skills and inclusion - giving everyone access to the digital skills they need'.*** Adults without core digital skills would be able to access necessary training without cost, as with numeracy and literacy skills training, to enable them to adapt to the new digital economy.

It mentions a new **Digital Skills Partnership**[9], involving cross-sector collaboration to help people move into digital job vacancies, and identifies the need for collaborations with public, private and third sector organisations to identify and address root causes of digital exclusion, allowing people access to relevant training and support.

Initiatives run since the previous digital strategy are described, including the **Widening Digital Participation** programme[10], which reached over 220,000 digitally excluded people between 2013 and 2016 to improve their access to health-related online data. **Future Digital Inclusion**[11] was started by Good Things Foundation[b] in 2014 and is the largest digital inclusion programme in the UK, aiming to help 1 million people improve their lives through digital over 5 years. In addition, the **Digital Training and Support Framework**[12] was produced in 2015 to allow government to procure the assisted digital support and training required.

The use of libraries were promoted as key providers of digital access and training for people in their communities, as well as working with national providers like the Good Things Foundation[13]. Collaboration between government, the private and third sectors has been promoted by the formation of the Council for Digital Inclusion, whose first meeting in 2016 was chaired by the Minister of State for Digital and Culture, the Rt Hon Matt Hancock MP[14].

Projects to promote digital inclusion through the NHS would help the people who are most excluded acquire the skills and confidence to use web-based tools for health management, such as people with disabilities.

[b] *previously known as the Tinder Foundation until November 2016*

The Government produced its white paper in 2017 **Improving lives: the future of work, health and disability**[15], a joint publication from the Department of Health and the Department of Work and Pensions. Following a 3 month consultation period on its green paper, the paper sets out a strategy to address the employment opportunities of those with disabilities or a long-term health condition over the next 10 years, with a target of increasing the number in work from 3.5 million to 4.5 million by 2027.

The white paper observes that innovations in digital technology, including accessible software and app development, enable employers to offer increased flexibility and adaptations, providing more opportunities for people with a disability or health condition to obtain and remain in work. The government also aims to set up initiatives and carry out research with partner organisations to identify what would motivate employers to employ more people with disabilities or health conditions, and to provide them with the support and confidence to do so.

Devolved Nations

The **UK Digital Strategy** also recognises that the digital transformation covers the whole of the UK, including the devolved nations. Individual countries have produced their own digital strategies - Northern Ireland[16], Scotland[17] and Wales[18] and particular areas are known for their particular strengths, including a technological hotspot for technological innovation in South Wales[19,20] and Belfast leading the way in cyber security[21]. In Scotland, the Carnegie Trust produced a report - **Digital Participation and Social Justice in Scotland**[22] - to address the digital divide, connected to its Understanding Digital Inclusion project[23].

3. Who is most digitally excluded?

Figures provided by the ONS[24] highlighted that almost 1 in 10 adults have never used the internet, half of which were 75 years or older. Almost a million adults (0.9 million) had used the internet over 3 months ago, and over half of these were disabled. Further analysis of disabled adults further emphasised the age gap – 97.1% of disabled adults aged between 16 and 24 were recent users of the internet. A 5% increase in internet use by disabled adults was seen from 2016 to 9 million in 2017.

The UK Government's **Digital Inclusion Strategy**[5] identified key groups of vulnerable and disadvantaged people in society who are most likely to be affected by digital inclusion:

- those in social housing[25]
- those on lower wages, or unemployed[26]
- those with disabilities[27]
- older people[4]

People with sight loss and other sensory needs are likely to be included in at least the last three categories, and therefore are more likely to require appropriate and targeted support to enable them to develop their digital and literacy skills.

Those who find it difficult to keep up with the advancing digital age can disadvantaged in accessing Government services or finding a job, which can further reinforce their feelings of separation. Other developments can also can impact on those who are on low incomes or not connected, such as the transition of some cities towards a cashless society[28].

The findings on the most digitally excluded were reinforced by the report published by the Good Things Foundation in 2017, **The Real Digital Divide?**[29] which includes an analysis of Ofcom data. It suggested that:

> '*...the most pronounced indicators of non- and limited [internet] use include age, disability, social class, income and the age at which people leave education*'.
>
> The key indicators it found were: '*being disabled or having poor health; being in social class DE; leaving education at aged 16 or under*'.

4. What is available for people with sight and sensory loss?

There is real potential for developments in technology to create a big difference those with visual or sensory impairment and there are a range of examples where technology can be beneficial to those with particular needs. As stated by Robin Christopherson MBE from AbilityNet, '*It's hard to imagine an area where technology can't improve the life choices and quality of life of people with disabilities*'[30].

Individual tools

A smart phone can now take the place of many specialist talking devices previously required (such as a GPS or barcode scanner) and are considerably cheaper and lighter. Although not always suitable for older people with a visual impairment, the simpler interface of phones has had a significant impact on empowering people with sensory loss[30].

A variety of other gadgets are available for use round the house to control the home environment and help with cooking or time-keeping and Telehealth systems can be useful to monitor the healthcare needs of those so that their health condition can be managed at home[31].

In addition, it is often possible to adjust technology to meet a person's personal requirements and this can play a major role in increasing their ability or motivation to use it. Being able to change the font, colour or other aspects of the user interface is important to ensure the person using the technology gains the most benefit from the experience. Another important variable is voice control, particularly relevant for those with visual impairment[32,33].

To help with mobility, Microsoft's Soundscape app is freely available and guides those with visual impairments to move to their destination with audio beacons at familiar landmarks. They can create a mental picture of their environment, which can reduce anxiety and foster a sense of independence[34]. There are also several ways in which virtual reality can benefit those with sensory impairments such as rehabilitation after a stroke, alleviating some eye conditions and helping people with low vision move in unfamiliar spaces[35].

Significant opportunities offered by artificial intelligence to address complex problems, together with accompanying risks and challenges, have been recently reviewed in a report by the House of Lords – **AI in the UK: ready, willing and able?**[36]. Potential benefits include new methods of delivering healthcare and more support for patients to manage their own health, as well as AI products such as Microsoft's Seeing AI app[37] (using machine learning to describe nearby objects or people using a smart phone's camera) and Project Torino[38] (a computing system to help blind primary school children learn the basic principles of coding). Challenges include the need to ensure effective data safeguarding, together with the importance of '*adult retraining, reskilling and lifelong learning*', in particular prioritising the requirements of certain groups including those with disabilities.

Support to get online

- The Widening Digital Participating programme was run by Government and the Tinder Foundation (now Good Things Foundation) from 2013-16 to target those most affected by digital exclusion and poor health. Following its evaluation[10], the second phase began in 2017 and will run until 2020, developing interventions and models that support the furthest first in 20 Pathfinder areas.
- The Online Centres Network (formerly UK online Centres) organised by Good Things Foundation, consists of over 5000 organisations who are based in local communities venues or offer outreach sessions to give people the skills and confidence to use digital technology. This can reduce social isolation and give them access to key services and other benefits from internet use.
- The Good Things Foundation also run a Disability Specialist Network of 115 online centres. It makes the point that people with a disability are over half of the offline population, and often have the most to gain from web access. It provides various guides, marketing and training resources for organisations offering support to those with a disability, and produced a handbook - **Doing Digital Inclusion**[39] in 2016.
- Microsoft are working on several initiatives to improve the digital experience of people with disabilities, including a built in screen reader and an increased range of voice commands[40].

Smart technology and Smart Cities

There are increasing examples of integrated or 'smart' systems used for access to information and delivery of public services[31] as listed below. These can be of great benefit to people with disabilities, as long as sufficient training and support is available.

- Healthcare: assisted living, health monitoring and digital records
- Smart energy grids: demand management, renewable energy integration
- Transport: traffic and congestion management, road user charging, emergency response, public information systems, smart parking
- Water management: consumption monitoring, wastewater treatment, environmental safety systems, and flood management
- Waste management: waste collection modelling

Technological changes involved in creating Smart Cities have expanded rapidly with significant opportunities for government, businesses and the public. Innovative use of technology can offer effective ways to tackle the complex problems which cities face including healthcare, transport, employment, sanitation and accessing public services[41].

There is great potential for these technological advances can be of great benefit to people with disabilities and the elderly, but there is also a risk that the rapid growth of such technology widens the gap for some. Not all Smart City developments have been designed to be accessible and able to support those with particular needs, and this can emphasise existing inequalities in health, education and employment and increase people's sense of exclusion and isolation.

According to G3ict and World Enabled, there is a '*compelling human rights and business case for infusing accessibility into global Smart Cities programs*'[38]. Companies which provide products or services that ensure inclusion are catering for a wider customer base, giving them a competitive advantage with an ageing population and increased incidence of disability.

People with disabilities and older people can benefit greatly by the application of new technology, and the UN Convention on the Rights of Persons with Disabilities, now 10 years old, promotes the importance of access to technology, and '*requires countries 'to ensure that persons with disabilities can access their environment, transportation, public facilities and services, and ICTs*'[42]. G3ict and World Enabled are working globally with industry, governments and other partners to develop and promote good practice in ICT accessibility.

The Smart Cities Council[43], formed as a network of companies, universities, laboratories and standards bodies, acts as a 'trusted, neutral, advisor' in the development of smart cities. Their report, **Making smart cities more accessible for people with disabilities and the aging**[44] discusses fears that increasing use and reliance of technology in cities will amplify inequalities for those with a health condition or disability. It mentions the **Defining Accessible Smart Cities Initiative** which will promote the role of accessible technology in planning, designing and function of smart cities, to benefit older citizens or those with a disability[38].

Opportunities for business

With the development of 'internet of things'[45], various home systems such as heating or kitchen appliances are connected and can be adjusted remotely. This can be done using a smart phone with its accessible interface, making the technological benefits available to all, and particularly attractive to those with sensory loss. New commercial openings exist for firms involved with technology, healthcare, life science industry and other related areas.

This was reiterated at a conference to look at the business of health (**Health is Wealth**)[46] which promoted clear communication with SMEs to emphasise the importance of accessible technology, offering opportunities for growth to meet the challenges.

Professor Hassell, previously the head of accessibility and usability at the BBC, now runs a consultancy to encourage businesses to change their thinking about making their digital products accessible. Instead of a potentially expensive extra, promoting products which offer a personalised experience is likely to attract customers from across society. In addition, the

considerable spending power of the 'purple pound', said to be £249 billion in the UK economy alone[47] and the likelihood of increased brand loyalty also adds a commercial benefit to companies working in this field[48].

- AbilityNet runs the Tech4Good Awards[49], supported by BT which raises awareness of innovative ways to use new technology to solve problems and promote new developments.
- A Liverpool technology company, Red Ninja, involve users in the design of their products and they created an app for older people to engage in online shopping[50], which reduced the impact of health or mobility issues and increased their social connection. Their focus is on identifying real-life problems and designing the solution to address it.
- Oblige Global, a new company based in the North West have just finished developing an artificial intelligence (AI) platform that acts as a virtual assistant for a person with sensory loss or other disabilities in different settings[51]. This enables the person to overcome practical barriers that they regularly face, offering them a greater sense of independence.

Opportunities for employment

Technology developers are also recognising the value of people with a disability as specialist users to play a significant role in developing and testing products to measure how user-friendly and accessible they are. In this way, the relationship between business and accessibility is moving from an extra to a core part of their product development[45].

People with sight or sensory loss can also use their own practical experiences in the design and production of new technological products to meet specific, practical needs.

5. What are the key barriers that can prevent digital access?

The reasons why some people are excluded from digital access can be complex and intertwined, with four key barriers as identified by research as outlined in the UK Digital Strategy[8]:

- **Access:** the ability to connect to the internet and go online
- **Skills:** the ability to use the internet and online services or find suitable training
- **Confidence:** a fear of crime, lack of trust or not knowing where to start online
- **Motivation:** understanding why internet use is relevant and its benefits

Access

People affected by lack of access include those unable to afford a computer, internet access or specialist equipment due to financial constraints. The Labour Force Survey in 2017 highlighted that people with a disability are more than twice as likely to be unemployed as non-disabled people[52], and according to work done by Scope, they are likely to have an average of £550 of extra costs a month[53]. Yet inability to access online services, or services which are not yet fully accessible can prevent them from benefiting from potential cost savings.

Physical access can also create a barrier - some people may have mobility difficulties or lack suitable transport. Some digital technology in common use can be inaccessible to some users, such as a touch screen at a GP practice for someone with a visual impairment and the trend towards miniaturisation of technological devices may reduce their usability for some.

In addition, some people who do have the skills and confidence to use technology can become excluded due to an acquired or progressive disability[54].

Skills

Some people lack basic digital skills and struggle to find training which is at the right level and depth for them, and meets their specific requirements and lifestyle. Training availability may vary in different areas of the UK, reflected in geographical variation in levels of digital engagement[55].

There is also a lack of research on the experiences and perceptions of older people with visual impairment towards digital technology[56]. In additions, some older people with sight loss believe that the internet is not available to them, as they are unaware of assistive technologies which may help.

Confidence

Some people are low in confidence when they have to learn something new and some may be wary of making a mistake or feel embarrassed by their lack of knowledge. Concerns are also fuelled by a fear of online fraud and security issues.

Many older people have never used the internet and can experience fear and anxiety when trying to use a computer, which requires a sensitive approach, relevant to the person's learning style. Older people who have visual impairments have additional challenges and are much less likely to use the internet[57].

Motivation

Some of those who are not online feel reluctant or sceptical towards the internet, and if they are unaware of the potential benefits, they may be unprepared to put in the time to learn the skills required. This reluctance could be further reinforced by a disability such as impaired vision, hearing or cognitive thinking.

These factors can contribute to a vicious circle, affecting those who cannot get online so that they miss out on sources of information and social or work opportunities, which can emphasise further their exclusion from society.

Political commitment

Progress in overcoming barriers to digital access requires commitment and practical action from government, business and society, to match individual effort. However, a United Nations Committee on the rights of people with disabilities concluded in November 2016 that the UK Government had violated the UN Convention on the Rights of Persons with Disabilities (UNCRPD), under the articles on '*independent living*', '*work and employment*' and '*social protection*'[58]. The UK has been a signatory to the UN Convention on the Rights of People with Disabilities (CRPD)[39] since 2007, and it includes articles on the right to live independently, to work and to enjoy social protection without discrimination on the basis of disability.

The UK government responded to say the full report was being considered in the context of cross-government work on disability issues, and they expressed disappointment that the UN report failed to recognise progress made in the UK in empowering disabled people and the government's commitment to ensuring their rights are protected [59].

A year later, the committee stated that it was not satisfied by the response of the UK Government and said that it should co-operate with disabled people's organisations to implement the recommendations made in the original UN report. It should also produce an annual progress report to demonstrate how it is doing so, before the committee reconsiders how the implementation of the convention in 2023[60,61].

6. Conclusions

Advances in digital technology have revolutionised many aspects of the way we live, and the pace of change is likely to increase. Healthcare, communication, transport, and retail are just some of the areas which have been impacted and it has been a challenge for many of us to keep up to date.

For those with a visual or sensory impairment, these new technological changes can provide welcome opportunities, offering significant improvements to their quality of life and enabling them to lead a much more independent life[62].

However, although many embrace the range of opportunities provided, for others they represent barriers which have the potential to increase their sense of separation from society. Personalised and targeted support is required to meet individual needs and address their fears and concerns. Collaborative action is needed, with government, business, education, healthcare and the third sector working together to share resources, knowledge and problem-solving abilities.

The UK government in its strategies on digital development, has recognised the link between digital inclusion and appropriate education, delivered in a personalised, targeted way. It needs to follow up the initiatives, supporting the most suitable providers through appropriate funding, resources and effective evaluation, and involving people with a lived experience of disability in both strategy development and delivery.

'***Leave no one behind***' is the core theme of the UN's 2030 Sustainable Development Agenda, which was adopted by the UK Government in 2015. Together with the other member states, the UK has agreed to implement the 17 goals and integrate them into national policies and budgets. Five of the goals mention disability directly, with reference to education, work, reducing inequalities and developing sustainable cities and communities[63].

This provides us with a unique opportunity, with the backing of a '*global political commitment*'[64], to create an inclusive society where everyone can participate, contribute fully and enjoy the benefits. The market leaders in technology are now recognising the importance and value of inclusive design and there are increasing opportunities for people with visual impairments or sensory loss to be part of the development process, rather than passive benefactors.

We have the opportunity to harness the power of this technology to make transformational changes, and it's vital that we work together to ensure that we support everyone at their own pace to benefit from the digital revolution. This is important as a human rights issue, and is reinforced as a pragmatic concern, as people are living longer and many acquire a disability later in life[65].

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