



Report

Digital Inclusion: Bridging Divides

Farah Elahi



Patron

Her Majesty The Queen

Board of Trustees

Chairman

The Rt Hon the Baroness Prashar of Runnymede CBE

Vice-Chair

Baroness Pitkeathley of Caversham OBE

Honorary Treasurer

Simon Pearce

Trustees

Charles Anson CVO DL

Sir Malcolm Evans KCMG OBE (until January 2020)

Jane Furniss CBE

Alan Gemmell OBE (from October 2019)

Paul Hampden Smith

John Lotherington

Baroness McGregor-Smith CBE (until March 2020)

JP Rangaswami (from January 2020)

Chief Executive

Canon Dr Edmund Newell

Visiting Fellows

Baroness Chakrabarti CBE

Sir Stuart Etherington

Lord Anderson of Ipswich KBE QC

Professor Tariq Modood MBE

Dame Sara Thornton DBE QPM

The Most Rev and Rt Hon the Lord Williams of Oystermouth

Digital Inclusion: Bridging Divides

Author

Farah Elahi

Research Associate (freelance), Cumberland Lodge

Research Programme Manager, Camden
and Islington NHS Foundation Trust

Doctoral Researcher in Health Sciences, University of Warwick

Editors

Dr Jan-Jonathan Bock

Programme Director, Cumberland Lodge

Helen Taylor

Head of Communications, Cumberland Lodge

Foreword



This Cumberland Lodge Report presents key findings and recommendations from our work on digital inclusion in 2019–20, as part of our ‘Inclusion & Opportunity’ series. *Digital Inclusion: Bridging Divides* draws on the collective experience of frontline community workers, policymakers and senior civil servants, academics and researchers from a wide range of fields, private-sector representatives, and students and young people from across the UK.

When we launched this project in autumn 2019, we set out to explore innovative ways of promoting high-quality digital education and participation, and addressing persistent digital divides, to support greater inclusion and opportunity for everyone in the UK. We commissioned a freelance Research Associate, Farah Elahi, to support us. Farah wrote an interdisciplinary briefing document to support conversations at the two-day, cross-sector conference we convened in November 2019. This briefing document was published before the known outbreak of COVID-19 in the UK. It has since been updated, and now forms Part I of this report, offering useful background to the ideas and recommendations that follow in Part II.

Part II of *Digital Inclusion: Bridging Divides* summarises the key themes of discussion from our conference, as well as insights from a follow-up consultation that we hosted virtually in March 2020, with a smaller group of experts and conference representatives, shortly after the UK’s COVID-19 lockdown was announced. We hope that this report offers a useful snapshot and a timely review of digital inclusion in the UK today, to guide and inform positive changes to policy and practice in the wake of the COVID-19 pandemic.

A handwritten signature in black ink that reads 'Edmund Newell'.

Canon Dr Edmund Newell
Chief Executive
Cumberland Lodge

About the author



This report is written by Farah Elahi, who was commissioned by Cumberland Lodge to support its work on ‘Digital Inclusion: Bridging Divides’, as a freelance Research Associate.

Farah is currently a Research Programme Manager at Camden and Islington NHS Foundation Trust. She is working on a National Institute for Health Research programme called ‘Personalised treatment packages for adults with learning disabilities who display aggression in community settings’ (PerTA-LD).

Farah is also a part-time final-year doctoral researcher in health sciences at the University of Warwick. Her research, which is funded by the Economic and Social Research Council (ESRC), looks at whether virtual reality treatments can be used to improve social cognition deficits in people with first-episode psychosis.

Farah’s background is in psychology. She has a BSc (Hons) in Philosophy and Psychology, an MSc in Psychological Research Methods, a PGCert in Social Science Research, and a Postgraduate Award in Teaching and Learning in Higher Education.

Drawing on this background, Farah has worked as a researcher for organisations including the NHS and the Anna Freud National Centre for Children and Families. She has five publications, and her research has been presented at 19 national and international conferences, to date. She also works as a Lecturer at both Birkbeck, University of London and at the University of Warwick. She is an active member of the academic community and has been elected into representative positions. She is an Associate Fellow of the Higher Education Academy and a Member of the British Psychological Society.

Contents

Executive summary	I
--------------------------	----------

Part I: A review

1. Identifying the divide	8
Conceptualising digital inclusion	9
What is the 'digital divide'?	9
Digital exclusion in the UK	11
Geographical distribution across the UK	12
Impacts of digital inclusion	14
2. Socio-economic limits	16
Education	16
Employment	19
Gender and the 'digital divide'	21
Black, Asian and minority ethnic communities and the 'digital divide'	22
3. Serving citizens online	24
e-Government in the UK	24
The challenges of e-government	26
Implications for citizenship and political participation	27
4. Inhabiting digital territories differently	29
Helping disabled people	29
Supporting older people	32
Understanding digital childhoods	34
5. Digital social innovation	37
Overcoming the 'digital divide'	37
Future considerations	38

Part II: Key findings and recommendations for change

6. Introduction to Part II	44
<hr/>	
7. Identifying digital exclusions	46
Positive interventions	47
Recommendations	48
<hr/>	
8. ‘Digital natives’ and the digital divide	50
‘Generation Z’	50
Recommendations	51
<hr/>	
9. e-Voting in a digital society	53
Recommendations	53
<hr/>	
10. Culture and the digital divide	56
Recommendation	57
<hr/>	
11. Digital social innovation	58
Recommendation	59
<hr/>	
12. Future implications	60
Recommendations	61
<hr/>	
Contributors	68
<hr/>	
Notes	71

Executive summary

A global society which is shaped by digital technology entails new forms of inequality: digital inclusion and exclusion. This idea of a 'digital divide' captures a situation in which only some people have the relevant skills to use digital technologies and access their infrastructure, whilst others remain excluded. The COVID-19 pandemic has deepened this divide and exacerbated the resulting inequalities. Policymakers, the private sector, educational institutions and others need to respond to these challenges robustly, and in collaboration.

This document contains two parts: Part 1 reviews recent research and literature on digital inclusion and the digital divide in the UK; and Part 2 summarises the key themes and recommendations that emerged from a multi-sector expert conference at Cumberland Lodge in November 2019. The ideas generated by these diverse stakeholders were further refined at a smaller, subsequent consultation, convened virtually, during the COVID-19 lockdown, in March 2020.

Background

The United Kingdom (UK) has one of the largest internet economies in the developed world, contributing to over 8% of GDP. Since the mid-1990s, the importance of digital inclusion has been highlighted by the UK Government, and policies have been implemented with a view to expanding access to digital technology, infrastructure and skills, to allow more people to harness the opportunities they bring.

Nevertheless, in 2018, 5.3 million people in the UK remained digitally excluded. Furthermore, according to *The Lloyds Bank UK Consumer Digital Index 2020*, 21% of the UK population (11.7 million people) did not have the 'essential' digital skills outlined in the Government's Essential Digital Skills Framework.¹

According to the *UK Digital Strategy (2017)*, the main barriers to digital inclusion are a lack of access to digital technology, and a

lack of skills, confidence or motivation to use the technology. These barriers are influenced by a range of socio-economic, geographic and educational factors. However, significant opportunities to increase access to digital technology and improve digital literacy also exist.²

This report provides an overview of the UK's approach to digital inclusion, to date, and highlights some of the many challenges, as well as opportunities for building on this work. It demonstrates how efforts to tackle digital exclusion should be conceptualised around issues of digital access, motivation, knowledge and skills.

Recommendations

Part II of this report outlines a series of cross-sector recommendations for promoting and enhancing digital inclusion, across society:

1. **Develop a society-wide commitment to a future digital society and further digital innovation**

A detailed and thorough policy approach, underpinned by significant investment, will help to address significant gaps in digital skills attainment and provision.

2. **Adopt a 'co-design' process to integrating technologies into everyday routines, taking into consideration user differences**

The 'co-design' approach means involving people with different kinds of lived experience at every stage of the development of new digital solutions. This multi-perspective process helps to reveal otherwise unforeseen consequences, and to ensure that factors such as age, culture, gender, ethnicity and socio-economic background are considered during the design phase, to boost accessibility and future take-up.

3. **Help to reduce digital inequalities by investing in greater digital literacy**

It is vital that the development of soft skills - such as social communication and digital literacy - is properly addressed in any approach to tackling digital inequalities. A lack of such skills can have a significant detrimental effect on economic, cultural, social and personal wellbeing.

4. Focus digital innovation policy on ‘micro-actions’ that are tailored to specific circumstances, rather than pursuing a ‘one-size-fits-all’ approach

Digital innovation policies should be directed towards the needs and circumstances of specific, digitally excluded communities, to encourage a sense of ownership within affected groups and to render them more effective.

5. Facilitate a ‘digital resilience’ shift, in education and other provisions, so that parents and teachers are better equipped to support resilience-building amongst young people

‘Digital resilience’ can be defined as digital competency combined with the social and emotional literacy required to manage online risks. Children and young people should be supported in learning how to manage and curate their ‘digital self’, securely and effectively, to support resilience-building and prepare them for the future.

6. Investigate opportunities for online voting and harnessing digital technologies to increase political participation

As society becomes increasingly digitalised, there is increasing scope to use digital technology to encourage greater political participation and enhance accessibility, by investigating systems such as online voting.

7. Incorporate verification methods and safeguards into online voting, to enhance security and safety, and to help allay concerns about data protection, fraud and anonymity, whilst maintaining accessibility

The implementation of online voting systems would need to be supported by a range of robust verification methods, including user registration, usernames and passwords, mobile pin codes or the GOV.UK Verify identity assurance system, to help address security concerns amongst potential users.

8. Make arts and culture sector websites and online content more accessible, to help reduce inequalities in access

The arts and culture sector can do more to tackle digital inequalities; for example, by undertaking 'action research', which involves working with representatives from digitally excluded groups, alongside policymakers and practitioners, to enhance digital content and improve accessibility.

9. Focus more attention on improving data transparency, to address concerns about digital rights and privacy

Many people are concerned that companies and organisations will use their data however they want, and this can lead to reluctance to engage with digital services. There is a need for the Government to respond to these privacy concerns by supporting improvements in data transparency, so that people understand how, and for what purpose, their data are collected, and how their digital rights are being protected.

10. Preserve physical access to information, services and resources, whilst continuing to develop accessible digital technologies

Developing appropriate (accessible) technology is important in helping to reduce digital inequalities, but it is only one part of the solution. Whilst continuing to digitalise systems and services, there is still a need for alternative options to be maintained (i.e. face-to-face options or paper-based methods).

11. Create appropriate frameworks for responsible digital governance and e-citizenship

An important aspect of bridging the 'digital divide' is having suitable frameworks in place to support transparency and a

shared understanding about digital governance and e-citizenship, between organisations and consumers.

12. Implement both 'top-down' and 'bottom-up', formal and informal interventions, to support greater digital literacy and responsible citizenship

Organisations and local authorities need to target communities that need particular support with development digital skills. Educators should be empowered to teach digital skills and encourage students to explore the opportunities and challenges involved in technological innovation, and think about how they might help shape trajectories of change themselves. The development of digital skills is a lifelong process and should not be limited to formal education settings.

13. Carry out further cross-sector research into the complexities and intersectionality of digital exclusion and inclusion, to help inform effective responses

Definitions of digital inclusion and exclusion need to be clear, concise and consistent, in order to allow for the collation of meaningful comparative data – and to support the design of effective interventions. More data are required, on the realities of digital exclusion and inclusion - including contextual sociological and cultural factors - if we are to tackle digital inequalities effectively in the UK today.

I. A review





Identifying the divide

We live in a world in which production, acquisition and knowledge probably influence lives as much as politics, culture and the economy, and in which global information networks form the foundations of infrastructure. As a result, governments and other institutions pursue visions of society in which people have wide-ranging access to, and the necessary skills to utilise, relevant digital technologies.³ The United Kingdom (UK) has one of the largest internet economies in the developed world, contributing over 8% to Gross Domestic Product (GDP), and the highest percentage of individual internet consumption of any G7 member country.⁴

It is widely recognised that online access offers significant advantages: enhanced educational attainment; better use of public services; cheaper products; greater convenience; improved job prospects; easier access to knowledge, information and advice; as well as enhanced civil and democratic participation.⁵ Indeed, in a 2016 review carried out by the Skills Funding Agency, it was predicted that, within 20 years, 90% of all jobs in the UK would involve some degree of digital skills.⁶

The dynamics of social inclusion versus social exclusion relate to the relative position of an individual or group of people within society.⁷ For example, 'social exclusion' has been described as: 'the inability of our society to keep all groups and people within reach of what we expect as a society'.⁸ With this in mind, we can define 'digital inclusion' (or 'e-inclusion') as having the access, motivation and skills to navigate confidently online and access opportunities on the internet.⁹

According to the European Commission documents published in 1999, the objective of 'e-inclusion' is ultimately to bring every citizen, company and school in Europe online,¹⁰ and since the mid-1990s, successive UK governments have developed policies, and provided digital inclusion initiatives, with the aim of ensuring that this happens.¹¹

Conceptualising digital inclusion

Digital inclusion can be defined and measured in various ways. According to Ellen Helsper (2008), it should be conceptualised in terms of digital access, motivation, knowledge and skills;¹² whereas, Bradbrook and Fisher (2004) approach it from the perspective of: content, connectivity (access), confidence (self-efficacy), capability (skill) and continuity.¹³ In this case, the concept of 'continuity' refers to the implementation and ongoing uptake of technology in daily life, which is often neglected in definitions of digital inclusion. For example, some people may use the internet at one point in their lives but then stop, for reasons such as a change in location, living arrangements or socio-economic status, or leaving formal education. This can lead to a situation of digital exclusion.¹⁴

The UK's Department for Education has developed an 'Essential Digital Skills Framework', to measure degrees of digital inclusion and support adults in improving their essential digital skills.¹⁵ This framework includes 'Digital Foundation Skills' that people are deemed to need, in order to 'be safe, legal and confident online' and ready to progress to acquiring the 'essential digital skills for life and work'. Digital Foundation Skills are broken down into four categories: communicating, handling information and content, transacting, and problem solving. They include the ability to turn on a digital device, connect safely and securely to the Wi-Fi, and browse the internet.¹⁶

What is the 'digital divide'?

The 'digital divide' emerged as an umbrella term in the 1990s and is normally understood in reference to usage of and access to digital technologies.¹⁷ According to the Organisation for Economic Co-operation and Development (OECD), the 'digital divide' refers to: 'the gap between individuals, households, businesses and geographic areas of different socio-economical levels with regard both to their opportunities to access information and communication technologies and to their use of internet for a wide variety of activities'.¹⁸ It is recognised as a

worldwide phenomenon, and, as an aspect of inequality.¹⁹ The importance of internet access is reflected in the 17 Sustainable Development Goals (SDGs), agreed by all United Nations (UN) member states in 2015.²⁰

There are significant inequalities amongst groups, individuals and countries, with regard to digital accessibility.²¹ This, in turn, gives rise to inequalities of access to knowledge, goods, services and opportunities.²² Lack of internet access can entail such significant disadvantages for groups and individuals that improving digital infrastructure and access have become pressing public policy issues worldwide.²³

The digital divide can be broken down into sub-categories:

- **‘First-level digital divide’** – whether people have access to a computer or the internet.^{24 25 26 27}
- **‘Second-level digital divide’** – the various reasons why people access and use digital technologies differently,²⁸ including socio-economic, demographic, physical, cultural and psychological factors.^{29 30}

There is also an ‘emerging digital differentiation approach’, which specifically conceptualises the digital divide as both dynamic and recurrent: just as one gap closes, another one might open. For example, a reduction in digital access gaps might be accompanied by an increase in digital skills gaps, and hence the digital divide persists. In light of this, the focus of research into the digital divide has shifted towards the characteristics of different people in their approaches to internet use and adoption.^{31 32 33}

Misapprehensions

In seeking to address the challenges of digital inclusion, it should be borne in mind that there are a number of pitfalls to avoid in using the term ‘digital divide’.^{34 35}

Common assumptions and misapprehensions include:

- *The digital divide is a division between two clearly distinguishable groups that are separated by a large gap.* In fact, we observe an increasingly complex differentiation between various social,

economic and cultural groups, in relation to use of, and access to, digital technologies.

- *The digital divide cannot be closed.* In fact, there is scope for governments, policymakers and corporations to reduce and prevent inequalities from becoming unbreakable structural divides.
- *The digital divide is about absolute inequalities.* In reality, most inequalities in relation to digital technology access are relative; some people and/or groups possess more hardware, software and digital skills than others.
- *The digital divide is static.* However, digital access is actually continuously moving; whilst some inequalities grow, others diminish. Therefore, it is inaccurate to assume that the digital divide is a phenomenon that cannot be altered.

Digital exclusion in the UK

The concept of digital exclusion is multi-faceted, but at its simplest it can be defined as having no access to the internet. Since 2011, the number of adults in the UK who have either never used the internet or have not used the internet in the last three months, has been declining. In 2018, there were 5.3 million adults in the UK (or 10% of the adult population) in this category.³⁶

The Lloyds Bank *UK Consumer Digital Index 2020* uses the transactional and behavioural data of 1 million consumers, to give a view of current digital capacity in the UK. It reveals that 16% of the UK's population are unable to complete Digital Foundation Skills activities, as outlined by the Government (see page 9); 16% need support to use the internet and digital devices; and 12% cannot open up an app. Meanwhile, 9% (4.7 million people) of those aged 15 and over are unable to complete *any* of the Digital Foundation Skills tasks. Furthermore, 21% of the population (11.7 million people) do not have the 'essential digital skills' for life, as outlined in the Government's Essential Digital Skills Framework.³⁷

Barriers to access

The *UK Digital Strategy* policy paper (2017) identifies four key barriers that contribute to digital exclusion, and highlights the fact that multiple barriers may affect people at any one time. These barriers are:

- **Lack of access** – inability to go online and connect to the internet
- **Lack of skills** – inability to use online services and the internet
- **Lack of confidence** – lack of trust, fear of cyber crime, and being unclear about how to navigate through online spaces
- **Lack of motivation** – lack of understanding or awareness of why the internet is relevant.³⁸

A research report produced by HM Revenue & Customs in 2015 revealed that, of those who are deemed to be digitally excluded, access issues were the most common barrier (affecting 80% of this group). Motivational barriers were also a significant issue, affecting approximately half of the digitally excluded population.³⁹

Alongside motivational factors, The Lloyds Bank *UK Consumer Digital Index 2020* identified security concerns as a further barrier to going online. Of those surveyed, 25% stated that they wanted greater control over their data. Cost was also identified as a potential barrier, with 53% of the offline population unable to afford a monthly broadband bill.⁴⁰

Research conducted by Ofcom found that the proportion of people who accept the ways in which advertisers use personal data to personalise content was just 36%. Similar results may also be reflected in digitally excluded groups, who lack access to online-data regulation information.⁴¹

Geographical distribution across the UK

The UK's internet use is strongly stratified geographically,⁴² with regional differences as well as a well-documented urban–rural divide. For example, London and the South-East have the

highest percentage (86%) of digital engagement of all the UK regions.⁴³ According to the Lloyds Bank *UK Consumer Digital Index 2020*, Wales, Scotland and the North-East of England have the highest proportion of those who are digitally disengaged.⁴⁴

Meanwhile, the Oxford Internet Survey (OxIS) in 2019 found that people living in cities are more likely to be 'next-generation users' (79%), compared to those living in rural households (56%).⁴⁵ 'Next-generation users' are people who have multiple devices for accessing the internet – some of which are mobile. This allows them to benefit from greater access at any time, from any place. Although people living in urban areas are more likely to be connected to the internet than those based in rural areas,⁴⁶ the picture is more complex, because the urban–rural divide is complicated by demographic factors such as age, education and occupation.

...people living in cities are more likely to be 'next-generation users' (79%), compared to those living in rural households (56%).

Studies have shown that, when such demographic factors are controlled, there are, in fact, *no* significant distinctions between urban and rural areas, when it comes to internet use.^{47 48} In other words, whilst there are different patterns of internet access between rural and urban areas, the rural–urban distinction does not account solely for the divide.⁴⁹ This is because variations in internet use are not only the result of available technology; they are also influenced by demographic and personal factors.

This is a key point, because it means that even if digital infrastructure were to be significantly improved in rural areas, internet use might remain low in comparison to urban areas.⁵⁰ Nevertheless, there is a strong argument for researchers and policymakers to focus their attention and resources on regions and communities that are most in need of support and investment, in order to increase their opportunities for digital access.^{51 52}

Impacts of digital inclusion

According to the Department for Communities and Local Government (DCLG) in the UK, 'digital equality matters because it can help mitigate some of the deep social inequalities derived from low incomes, poor health, limited skills or disabilities'.⁵³

The UN's Sustainable Development Goals (SDGs) include a commitment to 'Leave No One Behind', and they advocate a focus on the most marginalised populations. The 2016 *World Development Report* on 'Digital Dividends' explores ways of utilising digital technology to empower citizens, reduce poverty and increase income levels around the world. It suggests that this can be achieved in three key ways, through:

- **Inclusion** – overcoming physical barriers and accessing remote communities
- **Efficiency** – automating processes to help reduce the cost of transactions and services
- **Innovation** – developing digital platforms rapidly, at minimal cost.⁵⁴

A 2015 study on 'Tangible Outcomes of Internet Use' led to the development of a 'Digital Outcomes' model, which illustrates the economic, personal, cultural and social benefits of internet use.⁵⁵ These four areas are broken down into a range of beneficial outcomes:

1. Economic benefits of internet use – income, employment, education and property
2. Personal benefits of internet use – health, self-actualisation and leisure
3. Cultural benefits of internet use – belonging and identity
4. Social benefits of internet use – informal social bonds, formal/civic ties, political networks and participation.

In order to help bring about these beneficial outcomes, the World Bank recommends that countries:

- Bring in regulations to monitor competition
- Hold institutions accountable
- Develop digitally skilled populations.⁵⁶

2

Socio-economic limits

Improving access to digital technologies can have a positive impact on social mobility.⁵⁷ Research has shown that people who are digitally excluded are more likely to be in disadvantaged positions, such as being unemployed or in poverty, where their socio-demographic status limits the opportunities they have to develop digital skills and access digital technologies.⁵⁸ For example, the fact that Wales, Scotland and the North-East of England have the highest proportion of people who are digitally disengaged might be connected to these areas also being home to relatively large numbers of those who are neither in education nor in employment.⁵⁹

The concept of ‘social exclusion’ has influenced digital inclusion policies for many years. It focuses on multi-dimensional processes that have marginalised groups and communities from the general population.⁶⁰ These might be based on factors such as economic status, employment, education and social networks.⁶¹

This chapter discusses the digital divide in relation to four socio-demographic factors: education; employment; gender; and Black, Asian and Minority Ethnic (Black, Asian and minority ethnic) backgrounds.

Education

There is an assumption that children and young people are automatically equipped with the skills of ‘digital natives’, with access to sophisticated information and the ability to harness digital technologies. As a result, they are presumed to have a particular learning style and preference, with regard to utilising digital technologies in education.⁶²

However, research has indicated that a significant proportion of young people do *not* have high levels of digital access or skills. Digital technology plays a varied role in young people’s education and home lives, and students are not unanimously in agreement

on the question of whether digital technologies should be given greater emphasis in education.⁶³ Furthermore, students' daily technological practices are not always applicable to educational settings, so education is still vital for developing digital skills that will support learning.⁶⁴

School education and the 'digital divide'

Businesses and policymakers have been keen to encourage the use of digital technologies to enhance the educational performance of students for many years.⁶⁵ A review commissioned by Nesta, in 2012, revealed significant evidence that technology can be used effectively to support learning in the classroom.⁶⁶ Previous research had found that access to technology, at home and in schools and colleges, was crucial for facilitating learning,⁶⁷ and that different levels of access could lead to, or exacerbate, classroom inequality.⁶⁸ Studies have also demonstrated a correlation between Information and Communications Technology (ICT) opportunities and greater digital knowledge and literacy.⁶⁹

Previous research had found that access to technology, at home and in schools and colleges, was crucial for facilitating learning, and that different levels of access could lead to, or exacerbate, classroom inequality.

A lack of internet access at home can impact on children's ability to participate in school effectively, with some being more able to draw on a wide range of resources and information for their homework. Studies have shown that using digital technology for homework can be beneficial, leading to enhanced parental engagement,⁷⁰ as well as more time spent on the tasks and an increased likelihood of completion.⁷¹

There is evidence to suggest that the proportion of young people without home access to the internet and digital technologies has been declining. By 2007, only 3% of children and adolescents aged 9–17 years were considered to be digital 'non-users',⁷² and

according to Ofcom's 2019 report, *Children and Parents: Media use and attitudes*, half of 10-year-olds now own a smartphone.⁷³

Despite increasing access to smartphones and the internet, there are still variations in usage.^{74 75} A 2007 study found that non-users were more likely to come from lower socio-economic backgrounds. However, young people from lower socio-economic backgrounds who did have internet access at home used the internet just as much as their counterparts in higher socio-economic categories.^{76 77} The observed digital divide in education may be related more to the ways in which ICT and technologies are used in school and at home, than to access itself.⁷⁸

There are mixed results when it comes to analysing the effects of internet usage at home on academic achievement. On the one hand, research published by Fuchs and Woessmann in 2004 found that, when controlled for other variables, students with internet access at home performed significantly better in maths and reading, compared to students without internet access at home.⁷⁹ These findings are supported by further research conducted in 2010 and 2016.^{80 81} On the other hand, a large randomised, controlled trial conducted by Fairlie and Robinson (2011) found that free provision of computers did *not* impact on school children's educational achievement.⁸² This inconsistency indicates that more data are needed in this area, with a specific focus on the quality of ICT use.⁸³

Children's use of digital technologies outside of education is discussed below, on pages 34–36.

Higher education and the 'digital divide'

There are still significant inequalities in access to higher education in the UK, leading to patterns of exclusion that can be exacerbated by:⁸⁴

- **Geographic location** – particularly where students live in rural areas
- **Social and cultural norms**

- **Individual or household income** – where the relative cost of accessing university education is high, particularly for certain groups
- **Physical circumstances** – where people lack access to efficient spaces in which to learn
- **The ‘digital divide’** – where people are less likely to be able to afford the technologies required for education.

There is a strong argument for universities to engage with digital technologies, as part of helping to ensure greater access to higher education for students from non-traditional university backgrounds and/or particularly vulnerable parts of society. The use of digital technologies in e-learning or blended learning programmes can support the development of open learning and widening participation initiatives, as well as increased interactions between students and teachers.⁸⁵ This is particularly the case during a COVID-19 world.

However, the accessibility and acceptability of this type of teaching is not universal, and there is a risk that it can further marginalise digitally excluded groups.⁸⁶ Ideas for addressing this include:⁸⁷

- Ensuring that relevant technologies are available to digitally excluded students
- Supporting students with gaining the relevant digital skills and knowledge to participate in e-learning effectively
- Implementing an effective pedagogy of e-learning.

Employment

Digital technology has transformed employment and work processes, empowering employers and employees to support greater inclusion. However, around 17.3 million people in the UK still lack the digital skills necessary for their jobs; and an estimated 54% of jobs in the UK will require digital re-skilling by 2022.⁸⁸ Previous research has consistently indicated concerns

about what the digitalisation of employment entails. These concerns involve issues of worker discretion, re-skilling, transparency and surveillance.⁸⁹

Before the COVID-19 pandemic so dramatically amplified the role and importance of digital technology, there was already an understanding, in most industries, that workers increasingly required ‘digital citizenship skills’ to keep pace with digitalisation, albeit to varying degrees.⁹⁰ An analysis of digital skills in the UK, published in 2017, found that approximately 16.5 million people in the UK required these skills, in order to be ‘digital makers’ or ‘digital workers’.⁹¹

Yet, despite rapid digitalisation, the Lloyds Bank *UK Consumer Digital Index 2020* found that just over half of UK employees (52%) still lack the digital skills that their work requires, and hence they are working in environments for which they are inadequately equipped. Only 29% (15.7 million) have ‘essential digital skills’, compared to just 14% of those who are unemployed (7.6 million), and only 23% of the working population have obtained digital skills training from their employer.⁹² Whether the COVID-19 pandemic is affecting the digital skills gap within the workplace is something that should be monitored.

...the Lloyds Bank *UK Consumer Digital Index 2020* found that just over half of UK employees (52%) still lack the digital skills that their work requires [...] Only 29% (15.7 million) have ‘essential digital skills’, compared to just 14% of those who are unemployed (7.6 million), and only 23% of the working population have obtained digital skills training from their employer.

According to research carried out by ECORYS UK, digital skill gaps occur in a range of business sectors, where new technologies or structures requiring IT-specific skills have been introduced.⁹³ A 2013 survey by the UK Commission for Employment and Skills (UKCES) shows that the number of institutions providing training in new technologies had risen since 2011.⁹⁴ However, many small and medium-sized

enterprises lack the finances or capacity to utilise and provide training for their employees in regard to these technologies.

In 2018, Cebr estimated that there were 42,000 basic-skills shortage vacancies in the UK. Improving basic digital skills can lead to increased productivity, and people who learn basic digital skills can expect an increase in average hourly earnings of 2.8%.⁹⁵ It is likely that, as the UK population becomes more digitally educated, there will be an increase in the number of people seeking to fill basic-skills vacancies.⁹⁶ By 2028, training in basic digital skills could lead to an increase in net earnings of £343 million, across the UK economy.⁹⁷

The acquisition of basic digital skills can also help people with finding suitable employment: searching for jobs online can lead to significant benefits, allowing candidates to explore diverse opportunities more efficiently.⁹⁸ In a 2017 Office for National Statistics survey, 22% of adults stated that they had recently used the internet to search for a job or submit a job application – an 8% increase from 2007.⁹⁹ However, the same Cebr study revealed that around 111,000 unemployed people are still digitally excluded, lacking basic and necessary digital skills.¹⁰⁰

Gender and the 'digital divide'

Some of the digital divides that have been concerning policymakers since the early 1990s are shrinking significantly in Western Europe, North America, Australia, New Zealand and Japan – particularly in terms of gender.^{101 102} Gender variations in the use of new technologies are now small. However, according to the Lloyds Bank *UK Consumer Digital Index 2020*, women are still less likely than men to develop the seven digital foundation skills. These differences are particularly influenced by age: men and women aged 64 and below achieve parity in their foundation skills.¹⁰³

On an international scale, women are less likely to have access to educational and career opportunities, and two-thirds of the world's population who are digitally excluded are women.¹⁰⁴

According to a 2019 review of global digital inequalities, the role of gender in digital access and use is inconsistent. Whilst the majority of studies around the world found no gender differences when it came to digital access and use,¹⁰⁵ some authors suggest that women are more likely to use computers, access the internet and use social networking websites than men,^{106 107 108} whilst others argue the opposite.^{109 110 111 112}

These inconsistent results may be due to the 'intersectionality' of the gender digital divide. Intersectionality refers to the idea that social categories such as race, gender and socio-economic background are almost always influenced by one another.¹¹³ The experience of a disabled rural woman, for instance, is likely to be different to that of a woman in an urban setting without a disability.¹¹⁴ Research has begun to acknowledge that multiple overlapping disadvantages can exacerbate an existing gender digital divide.^{115 116}

What is clear is that, whilst the gender digital divide is diminishing in some parts of the world, including in the UK, it still exists elsewhere. This could be due to a variety of factors, including the type of available digital technologies, confidence, skills and frequency of use. Further research is required, in order to improve our understanding of the multiple dimensions of the gender digital divide and any cultural differences that exist.¹¹⁷

Black, Asian and minority ethnic communities and the 'digital divide'

Amongst other socio-demographic indicators, race and ethnicity play a role in influencing digital inclusion, but their significance is disputed.^{118 119 120} Some researchers argue that the digital divide is influenced more strongly by other socio-demographic factors,^{121 122} whilst some studies have shown that race can influence the likelihood of having access to Wi-Fi.^{123 124}

According to 2019 data from the ONS, disparities in internet use amongst different ethnic groups has narrowed over the past decade, and in particular for Bangladeshi groups. In 2018,

the percentage of non-users in this community was 8%, down from 31.4% in 2011. However, these analyses do not take into consideration other socio-demographic factors.¹²⁵ A 2011 Joseph Rowntree Foundation report reviewed links between poverty and ethnicity. One of the gaps it highlighted was a lack of information about how ethnicity and other factors influence access to digital technologies and interest in using them.¹²⁶

A 2003 report on the use of digital technologies within the UK's Black, Asian and minority ethnic communities found that, when controlling for variables such as income and household type, being of black ethnic origin was a significant predictor for the lack of computer ownership. This report concluded that, whilst people across all ethnic groups understood the importance of developing their digital skills, computer literacy and language barriers were key issues.¹²⁷

Research into digital inclusion and individual digital technology usage within ethnic minority communities remains limited,^{128 129} and there is a need for more longitudinal research into digital access and skills.^{131 132} Furthermore, contemporary research into the digital divide within ethnic minority communities often fails to acknowledge social injustices and historical context of inequalities, and the roles these plays in digital participation today.¹³³

There is also a need for more educational and motivational strategies to help improve people's familiarity and confidence with the internet, in different communities.¹³⁴ Indeed, according to the 2019 Department for Digital, Culture, Media and Sport (DCMS) report, *Culture is Digital*, 'simply making digital content available does not mean that audiences will automatically engage'.¹³⁵

3

Serving citizens online

According to the OECD, 'e-government' is defined as the use of ICT to achieve better government.¹³⁶ It is promoted as an opportunity to transform government and to empower citizens in a democracy.¹³⁷ The focus of this definition is on the motivations for implementing e-government. E-government can be used as a mechanism to alter the structures, culture and processes of governments, in order to render them more user-orientated, transparent and efficient.¹³⁸

The term 'e-governance' refers to the use of digital technology to adopt a more active role in state or corporate decision-making. The motivation is to increase inclusion and participation in decision-making, service-design and service-delivery, as well as policy. The objective is to increase transparency, by allowing all citizens to access government, corporate and development agency data.¹³⁹

e-Government in the UK

According to the UN *E-Government Survey* (2018), European countries are leading the way in terms of e-government, with the UK close to the top of the global rankings.¹⁴⁰ This survey measured three different qualities of e-government development: the availability of online content and services, the adequacy of infrastructure, and the ability of human resources to use and promote ICT.

In the UK, the Government has stated that its focus, in terms of government digitisation, is on improving the relationship between the citizen and the state, by transforming services.¹⁴¹ The Government published its 'Digital by Default' strategy in 2012, with the aim of transferring a number of public services and transactions to online platforms, in order to save costs. These savings were to come from improvements in service quality and a reduction in the amount of time people spent interacting

with public authorities face-to-face. It was estimated that between £1.7 billion and £1.8 billion could be saved annually.¹⁴²

The Government Digital Service (GDS) forms one section of the UK's digital governance structure. Another section is the Government's website GOV.UK, which was launched in 2012. All 25 ministerial and non-ministerial departments, alongside 46 public sector organisations, can now be accessed via this site.^{143 144 145} Progress against the 'Digital by Default' strategy was reported quarterly under the Coalition Government, until 2015, and in March of that year it was reported that the GOV.UK website was averaging 12 million unique visitors per week, and therefore ranked as the 25th most used website in the UK.¹⁴⁶

Significant progress in government digitisation has been made since 2012. According to the ONS (2017), adults aged 35-44 years experienced the highest levels of interaction with public services and authorities online. By contrast, those aged 16-24 or over 65 were much less likely to interact with government websites.¹⁴⁷

The Government published its 'Government Transformation Strategy' in 2017, setting out three new goals, which were to:¹⁴⁸

- Transform government services and make government itself a digital organisation
- Transform the relationship between citizens and the state – putting more power in the hands of citizens and being more responsive to their needs
- Create a responsive state that can change at pace and at scale.

One example of the strategy's implementation has been the launch of digital services that are easier and clearer to use. These include the new system for electoral registration, although that still requires 'Level 6' skills on the Government's digital inclusion scale, a nine-point scale that was developed to help measure and respond to significant variations in digital capability.¹⁴⁹

The challenges of e-government

Despite its advantages, there remain challenges in implementing e-government services. Since 2010, some 97% of public services have been made available online in the UK, but so far this has not resulted in greater use of e-government resources or programmes.^{150 151}

According to recent research, various factors influence citizens' engagement with e-government, including lack of digital access, lack of skills, lack of interest, and cost,^{152 153 154 155} although these are not necessarily exclusive to e-government services.¹⁵⁶ Participation in e-governance is also closely associated with employment, university education and broadband access, amongst other factors.¹⁵⁷

The term 'e-commerce' refers to any form of economic activity that occurs online or via digital technologies. The 2018 *E-Government Fact Sheet* revealed that about 75% of the UK population participates in some form of e-commerce at least once every three months. Of those who do, approximately 49% use it for e-government services.¹⁵⁸ A separate study, published in 2019, suggested that 60% of the population uses e-commerce, but only 40% of those people use it for e-government services.¹⁵⁹ This gap between use of e-commerce and participation in e-government services could be explained by a general preference for citizens to have face-to-face government contact when completing government transactions - perhaps because they feel there is sometimes missing information on e-government platforms.

The 'Digital by Default' approach is when face-to-face, paper and telephone interactions are replaced by the use of websites or applications (apps).¹⁶⁰ This can risk exacerbating the digital divide,¹⁶¹ thanks to the association between social exclusion and digital exclusion. For example, as a result of services moving online, benefit claimants are becoming increasingly dependent on organisations such as Citizens Advice to complete online claims for Universal Credit on their behalf. The 'Digital by Default'

approach has failed to recognise issues of usability across a diverse population.¹⁶²

It is possible that already marginalised citizens are more likely to be digitally excluded – and hence less likely to use these online services. They are less likely to be aware of the services in the first place, less likely to utilise them efficiently, and less likely to feel confident about accessing them via digital technologies.¹⁶³ Additionally, those who are digitally excluded are the least likely to have their opinions heard and represented.

Implications for citizenship and political participation

According to 2019 research, 76% of e-government non-users are unaware of the services they could be accessing online. This could highlight an ongoing challenge in developing citizens' awareness of, and trust in, e-government.¹⁶⁴ There is a need to focus on ensuring that e-government systems are as easy to use as possible, with the option of providing 'assisted digital' support to digitally-disadvantaged populations. There is also an argument for increasing support for third-sector organisations to provide digital skills training and digital access.¹⁶⁵

These issues have been acknowledged by the House of Commons Select Committee on Science and Technology, which has recommended that government ensures that provision of public locations with digital access are maintained, in order to improve social inclusion. This Committee also recommended that those who are digitally excluded should have alternative methods of accessing relevant services.¹⁶⁶

The importance of digital inclusion has been recognised by the establishment of a Cabinet Minister for Digital Inclusion post and the appointment of a Champion for Digital Inclusion, in 2008 and 2009 respectively. In 2014, the 25th anniversary year of the World Wide Web, the UK Government created a UK Digital Inclusion Charter, together with signatories from public, private and voluntary organisations, to help get more people

and organisations online. It launched with a commitment to: 'work together in new ways, to create practical actions that can be delivered at scale'.¹⁶⁷ This bolstered the remit of the Digital Inclusion Team, which had been established a year earlier, to provide: 'advice and support on how digital inclusion can be embedded in relevant policy areas and ensuring that online government services are designed with digitally excluded users in mind'.¹⁶⁸ In 2014, the UK government also launched a performance-tracking dashboard, to help service managers track their progress and monitor usage from both digital and non-digital instruments.¹⁶⁹

The impact of the electronic services in e-government has not yet been systematically evaluated, and further research is required, to explore what it is that prevents citizens from using e-government services, and which factors particularly influence digital inclusion in the areas of citizenship and political participation.¹⁷⁰

4

Inhabiting digital territories differently

The digital divide is viewed as a continuum of access, in which factors such as skills, access, support and attitudes can explain how people utilise technologies.¹⁷¹ Reducing the digital divide is a challenging task, since the goal is constantly shifting. Groups are not homogeneous and, according to Bakardjieva (2005), digital technologies are used and re-appropriated in methods to match the daily experiences and lived realities of specific groups.¹⁷²

Further research needs to be undertaken in order to understand how various groups (e.g. disabled people; Black, Asian and minority ethnic communities; and older people) approach digital technologies. Gaining a more thorough understanding of these issues will lead to the development of more appropriate and innovative solutions.

Helping disabled people

According to data from the World Health Organization, published in 2011, approximately 15% of the global population live with some form of disability,¹⁷³ many in societies that do not always guarantee equal access to education, employment and healthcare.¹⁷⁴ This can increase the risk of social exclusion, and this risk is often exacerbated by the fact that disabled people are more likely to live in low-income households.¹⁷⁵

Research into how disabled people interact with the internet has produced complex results. On the one hand, use of digital technologies can allow people to reduce any stigma associated with their condition and help them to connect more with others, by interacting as part of an online community. At the same time, however, disabled people can face additional barriers to access.¹⁷⁶ The 'European E-User' study revealed a significantly lower use of the internet amongst disabled people, compared to those without disabilities.¹⁷⁷

Technologies available to disabled people are often outdated or second-hand, and there is a lack of information and support to help people navigate them. For example, there is limited information about how people with acquired brain injuries can use social media to enhance their digital communication.¹⁷⁸ New technologies are often ineffective or too expensive, particularly for people from lower socio-economic backgrounds.¹⁷⁹ Barriers to access can include complexities in usage,¹⁸⁰ as well as issues with user interface ¹⁸¹ and design.¹⁸² Assistive technologies often go unused because there is inadequate training or lack of knowledge of how to use them.¹⁸³ This can, in turn, lead to further socio-economic disadvantages.

Disabled people often require a greater level of support and training in order to use digital technologies efficiently.¹⁸⁴ This need has been highlighted in research conducted by The Royal National Institute of Blind People (RNIB), into digital exclusion amongst people who are either partially-sighted or blind. The RNIB's 2012 recommendations for positive change included more targeted efforts to provide digital skills training to affected people.¹⁸⁵

There is a growing interest in whether or not digital technologies can be used to remove barriers for disabled people. Research has focused on the correlation between digital engagement and social inclusion.^{186 187 188} It reveals that disabled people are disproportionately affected by the digital divide.^{189 190} It has also shown that inequalities in access to technology and digital skills can exacerbate other inequalities, such as those resulting from disability.¹⁹¹

Some researchers have questioned whether increased digital participation will lead to a reduction in offline socialisation.¹⁹² The majority of research adopts a digital exclusion rather than a digital-inclusion approach, meaning that there has been a greater focus on the restrictions imposed on disabled people, rather than on understanding how the digital agency of disabled people might be harnessed to improve their digital inclusion.¹⁹³

Research has shown that, even when access to technology is available, people may still disengage from it for a myriad of reasons – from the aesthetics and interface of digital technologies, which may not have been designed with disabled users in mind, to a simple lack of interest in using digital technologies.¹⁹⁴

According to a 2018 review of how digital technology might enhance the social inclusion of disabled people,¹⁹⁵ there is a lack of understanding around the differences between assistive technologies, web-based technologies and ‘tele-rehabilitation’. Technological solutions are often introduced generically, without consideration as to their appropriateness or how lives might be improved under specific circumstances (e.g. how a certain form of technology could help someone with a visual impairment to access the labour market more effectively). Future research and development should focus on increased compatibility and access to technology, through co-design that focuses on users’ needs.¹⁹⁶

...there is a lack of understanding around the differences between assistive technologies, web-based technologies and ‘tele-rehabilitation’.

There is also a lack of research into 'intra-disability' and 'inter-disability' diversity, particularly within the digital realm, and its impacts on social inclusion. Intra-disability approaches explore the roles that individuality and selectivity play in people’s decisions to utilise digital technologies, and the subsequent impacts on social inclusion.¹⁹⁷ However, research into inter-disability variations in the use of digital technology have usually taken a medical approach,¹⁹⁸¹⁹⁹ neglecting other, non-medical factors.

Supporting older people

According to the ONS in 2020, earlier this year, people aged over 75 years make up more than half of all adult non-users of the internet.²⁰⁰ Research published in 2016 found that only half of men and 14% of women, aged 80 and over in England, used the internet.²⁰¹ Although internet usage amongst older people is rising, it is doing so at a slower rate than for younger people.²⁰² This is known as the 'grey digital divide'.²⁰³

The 'grey digital divide'

In addressing the 'grey digital divide' to help improve access and inclusion, it is important to recognise that older adults are a heterogeneous group of people, whose employment experiences, knowledge and motivations vary greatly.^{204 205 206}

There are also multiple examples of factors affecting the 'grey digital divide', including:

- **Health** – Digital exclusion amongst older people can result from various health-related factors, including: declining motor skills, deteriorating visual sensitivity and impaired cognitive function.²⁰⁷
²⁰⁸ Physical limitations, such as poor health, are also likely to make it harder for older people to utilise digital technologies effectively.²⁰⁹
- **Expectations** – Other reasons for lower internet use by older people include: the belief that knowledge of the digital world is not as relevant to their lives;²¹⁰ a lack of motivation; and limited internet knowledge and skills.²¹¹ Research has also shown that there is a positive association between self-efficacy and greater internet use.^{212 213}
- **Socio-economic factors** – There is an association between low income and limited internet use, amongst people aged 55 years and older.²¹⁴ Research has found that the highest rates of pensioner poverty correlate with people using the internet the least. One reason for this could be that some older people struggle to purchase digital technologies.

Benefits of engagement

There are many benefits of digital technology usage for older populations:

- **Reducing isolation and loneliness** – Research has revealed a strong correlation between internet use and reduced loneliness and isolation, particularly for those at risk of poor mental wellbeing.²¹⁵
- **Encouraging greater social inclusion** – Research indicates that older adults who use the internet more frequently report greater feelings of social inclusion.^{216 217} This may be because they are using their time to interact with others and build relationships,²¹⁸ and that can also be beneficial from the perspective of reducing the rate of cognitive decline.²¹⁹
- **Empowerment** – Studies have shown that internet use and digital technology can foster feelings of empowerment, and can help to compensate for potential lifestyle changes or loss of mobility in older age.²²⁰

Overcoming barriers

Different patterns of engagement and use of digital technologies amongst older people have also been explored by researchers.²²¹ One clear finding is that some older adults struggle to adopt digital norms and adapt to the expectations associated with new kinds of social interaction that are moderated by digital technologies. This can result in barriers to integrating effectively within a digital world.²²²

There is scope for more research to assess why certain groups of older adults do not engage as much, or at all, with digital technologies, and to explore the interconnections between factors such as technological interests, loneliness, wellbeing and perceptions of digital inclusion.²²³

One response to a lack of engagement might be in providing more opportunities for digital technology training.²²⁴ Various contemporary policies focus on reducing isolation through digital technologies amongst the elderly, in particular.²²⁵ There

is scope for a greater policy focus on the barriers to use amongst older people, and for a greater acknowledgement of fears and concerns that are particular to older generations, including concerns about personal-data privacy.²²⁶

Understanding digital childhoods

To date, most of the research into the digital divide has focused on adult populations. In comparison, there is limited research into understanding and addressing inequalities affecting children and young people.²²⁷ This may be because children and young people are generally considered to be the ‘digital generation’. Despite this, children are still affected by different forms of inequality that intersect with access to, and use of, digital technology, and this is an area that needs further study.²²⁸

According to UK data published in 2020, 59% of 7-16 year olds use the internet to watch videos; 40% use it for social networking; and as children get older, their usage of, and access to, the internet increases.²²⁹ The *EU Kids Online Survey 2020*, which was carried out in 19 EU countries, reported similar findings: 15-16 year olds spend twice as much time online than 9-11 year olds. However, fewer than half of the 9-16 year-olds surveyed had access to the internet. Furthermore, there had been a considerable change in internet and smartphone use, since a similar survey was completed in 2010.²³⁰

Research indicates that children and young people’s digital access, and patterns of use, are influenced by socio-economic status and family background.^{231 232} For example, a 2009 study found that adolescents from relatively privileged socio-economic backgrounds were more likely to use the internet to gain information and extend their social networks.²³³ Digital preferences within families have also been shown to influence the digital behaviour of children.²³⁴

Risks and challenges for young people

Despite the opportunities that digital access can bring, there are also various risks associated with use of digital technologies by young people.²³⁵ For example, according to UNICEF's *The State of the World's Children 2017* report, digital access has led to an increase in the scale of child sexual exploitation and abuse. Access to unprotected social media profiles and forums means that child sex-offenders have greater access, via encrypted platforms, to pursue victims.²³⁶

Children are also at risk from 'cyber-bullying'. Although there is no legal definition of cyber-bullying, the term is understood to refer to an intentional and repeated form of harm inflicted on one or more persons, through digital technologies such as computers, mobile phones and other electronic devices.²³⁷ According to the National Society for the Prevention of Cruelty to Children (NSPCC, 2016), the percentage of children who had received counselling for cyber-bullying rose by 88% from 2011 to 2016.²³⁸ In 2016, the NSPCC provided 4,541 counselling sessions for children who were experiencing cyber-bullying in the UK.

Further research is needed, in order to analyse the consequences of the content that children can access online. Children and young people need to be educated and informed about how to stay safe online, and about how to respond to experiences of cyber-bullying and seek appropriate support.²³⁹ More generally, policymakers and researchers need to acknowledge that whatever happens *online* is closely connected to children and young people's daily lives *offline*.²⁴⁰

Children and young people need to be educated and informed about how to stay safe online, and about how to respond to experiences of cyber-bullying and seek appropriate support.

Young people do not necessarily develop digital skills through informal experience; instead, appropriate support is required to bridge digital divides and support the development of

digital literacy, even amongst the younger and supposedly 'digitally-native' populations.^{241 242} How this can be achieved successfully, in particular whilst taking into account the diversity of children and young people, is a key challenge.²⁴³

5

Digital social innovation

Overcoming the 'digital divide'

The digital revolution has brought about technological developments that have led to improved access to skills and technologies for many people. Benefits of this include enhanced and often cost-free access to vast amounts of knowledge and information. Furthermore, technology has played a vital role in improving employment prospects, education, health and even quality of life.²⁴⁴

However, despite these advancements, the term 'digital divide' captures a range of significant inequalities with respect to who can access knowledge and information, and thus benefit from digitisation.^{245 246 247} Traditionally, research focused on access to digital technologies by exploring inequalities according to factors such as income, education, usage, geographic location, age, gender and ethnicity. Research is now becoming more intersectional: that is, it looks increasingly at the connections between different social attributes. However, there is still a lack of analysis around how combining these dimensions could lead to policies and interventions that improve digital access.²⁴⁸

In addition to the digital barriers associated with self-efficacy and personal beliefs, many people are hindered in their ability to purchase, and/or partake in, digital technologies by economic disadvantage. In order to combat such exclusion, accessible, low-cost digital technologies need to be made available within the public domain. At the same time, people need to be given opportunities, by the state and by civil society, to develop their knowledge, skills and understanding as to how best to utilise these technologies.²⁴⁹

The digital divide is a complex issue and it requires cross-disciplinary expertise and multiple solutions.^{250 251} Whilst theories can partially explain the digital divide,²⁵² they cannot necessarily engage with the nuances of the digital inequalities experienced throughout people's life-courses. Intersectionality means that

people' lives and circumstances cannot be defined by any single factor. For example, there is a need for greater understanding of why disabled people are more likely to be digitally excluded, and solutions need to address the needs and circumstances of people – as well as the larger digital divide.²⁵³

Individualised accessibility and usability options can also influence the uptake and use of digital technologies in unexpected ways. For example, a young person might not want to use a specialist product that is marketed specifically for their age-group.²⁵⁴ Approaches for improving digital inclusion amongst children and young people need to acknowledge that understanding of – and use of – digital technologies varies between age-groups. A key focus should be on enhancing active participation in digital society, and that can, in turn, have positive consequences for wellbeing and social participation.²⁵⁵

Future considerations

In order to conduct rigorous research in any context, thorough and transparent research methodologies are vital. However, the existing literature on the 'digital divide' rarely discusses in detail the research methodologies that it draws upon.²⁵⁶ There are also ethical issues to consider. Political and civic agendas guide research questions, data collection and analysis, and although scientific analyses might identify what appear to be 'objective' approaches, they are still limited.²⁵⁷

The nuanced nature of the digital divide – influenced by so many different factors, such as socio-demographic status, ethnicity, culture, age and gender – means it is a challenging field for analysis, and the static nature of available data-sets means they can never fully address the dynamic nature of the issues involved.²⁵⁸ It is important that researchers consider structural inequalities when assessing digital technologies.²⁵⁹

There are strong ethical concerns about the 'digital gap' in relation to particular groups, and these require greater consideration. Longitudinal analyses might be more useful

than 'snapshot' studies, because they take into account the associations between different factors over time. For example, they could highlight how age, socio-demographic status and ethnicity influence digital technology access, and trends in digital divides over time. By paying greater attention to moral factors and ethical implications in future research, results should become more reliable.²⁶⁰

In a 2018 report published by the Institute of Development Studies, the authors suggest that we could address varying digital attitudes and skills in society, improve digital skills and access to training, and close the digital gap, by:²⁶¹

- Developing a better understanding of digital skills, literacies, practices and the experiences, across various groups
- Exploring how aspects of the digital divide intersect with socio-demographic variables, in particular for minority groups (e.g. people of Black, Asian and minority ethnic origin, disabled people, or people who lack digital literacy)
- Developing diagnostic mechanisms, to analyse digital access barriers and opportunities, and create initiatives that target individual groups.

Research indicates that policymakers should invest more in areas with high levels of socio-economic deprivation, to help people access or purchase digital technologies more efficiently, and gain access to public institutions for training and support with using those technologies.^{262 263} Some of the efforts that have already been made to achieve this are discussed below.

Developing 'smart cities' and 'digital nations'

In London, the Greater London Authority (GLA) is striving to nurture the 'smartest' city in the world. 'Smart technologies' refers to artificial intelligence or devices such as smart TVs or smartphones that are often app-driven and connect to other devices or networks wirelessly, for example via Wi-Fi or Bluetooth. They use technology and data in ways that give people significant opportunities for connectivity and an

improved quality of life. Amongst other strategies and targets in the GLA's 2018 *Smarter London Together* is an ambition to 'enhance public Wi-Fi in the streets and public buildings, to assist those who live, work and visit London'.²⁶⁴ It is important that smart cities are viewed as a means to an end, as opposed to an end in themselves, to make cities more sustainable and cleaner and thereby benefit the population as a whole.²⁶⁵

The Department for Digital, Culture, Media & Sport (DCMS) has invested £200 million in testbeds and trials across the UK, to analyse the methods by which 5G can enhance business productivity and growth.²⁶⁶ 5G is the latest generation of wireless mobile network, which is not only faster than previous generations but also offers far greater connectivity between machines, objects and devices.

However, countries are now moving on from the idea of developing smart cities, to the concept of 'digital nations'. In this model, urban and rural citizens, businesses and governments live in a digital society that provides and generates socio-economic and political value for all. It is a more inclusive vision than the idea of smart cities. However, it is important that policymakers consider the wide range of societal needs, and the nuances of the digital divide when developing proposals at the national level.²⁶⁷

In a smart cities model, the urban transformation occurs on a localised level; but in a digital nation, intelligence and information are shared across regional boundaries to help improve citizens' quality of life.

In a smart cities model, the urban transformation occurs on a localised level; but in a digital nation, intelligence and information are shared across regional boundaries to help improve citizens' quality of life. The idea is that the digital nation consists of a network of smart cities that have addressed residents' digital, social, personal, economic and professional needs, with significant impacts on outlying areas. However, digital nations

are still in their early stages, so the broader existing literature on smart cities still offers benefits for developing best practice.²⁶⁸

Protecting privacy and preventing fraud

Despite the growth of technological innovation in recent years, proving our identity in order to access online services can still be a time-consuming and challenging process. Whilst conducting transactions, we constantly need to prove our identity in order to prevent potential fraud. Meanwhile, there are legitimate concerns that the organisations that have access to our data are not always who they claim to be. Thus, work needs to be done in order to build greater trust between consumers and organisations, whilst maintaining privacy.²⁶⁹

To help address this issue, the UK Government has created a 'GOV. UK Verify' platform. This is an online, secure and trusted system, designed to protect privacy and to prevent identity fraud. As a result, face-to-face identity checks, physical signatures on legal documents, and the requirement to send documents via post, have been either replaced or significantly reduced. This platform works with different organisations to help prove users' identities, and currently has more than 3 million users.²⁷⁰

Improving sustainability

The UK Government has also committed to reducing emissions to 'net zero' by 2050,²⁷¹ and has published a Sustainable Technology Strategy 2020 as part of this effort.²⁷² It is important that developers of digital services think about how they can contribute to emission reductions. For example, Government Digital Services alone produce approximately 4,000 tonnes of carbon dioxide annually. In the light of this, there is a growing focus on cross-government collaboration to help reduce the amount of electricity required to run these services, and to collect more efficient data, in order to become more sustainable.²⁷³

2.

Key themes and recommendations



- * more indep't sessions
- * deeper definitions
- * preference for 8 sessions 4+5
- * need a deeper understanding
- * all are useful points - better definition
- ↳ list of choice
- * remediation of pressure - how the digital team impacts working + p

6

Introduction to Part II

Digital inclusion, and initiatives for reducing digital inequalities, have been the subject of ongoing research, intervention and policy work. In a COVID-19 world, in which the internet is an essential resource for employment and social relationships, the need to address digital inequalities has become even more pressing. The current crisis illustrates the critical importance of ensuring that people have access to digital technologies and the internet at home: it has highlighted the fact that community resilience to the disruptive effects of a pandemic can be enhanced through technological innovation.²⁷⁴

The UK Government is working towards increasing access to digital technology in the short term, and the UK's major mobile and internet service providers have agreed to implement a series of measures to protect customers as a result of COVID-19.²⁷⁵ For example, all providers removed data allowance caps on fixed broadband services during the UK's lockdown.

Part II of this report builds on the interdisciplinary, pre-pandemic literature review outlined in Part I, bringing fresh, cross-sector perspectives and best-practice examples to the discussion. It presents key themes and ideas from the conversations held at the Cumberland Lodge conference on 'Digital Inclusion: Bridging Divides' in November 2019, and from the subsequent consultation convened virtually by Cumberland Lodge in March 2019, at the outset of the UK's COVID-19 lockdown.

These conversations focused on three key issues facing researchers, practitioners and policymakers in relation to digital inclusion in the UK today:

- I. What does the term 'digital skills' really mean? This concept is contextual and subjective, and it may be perceived differently by different groups. Binary distinctions, such as digital 'exclusion' versus digital 'inclusion', are too simplistic and can result in important details being overlooked. Are there other, more nuanced, definitions?

2. What is required for building 'digital resilience'?
3. How might the concept of 'digital resilience' intersect with improvements in digital inclusion?

7

Identifying digital exclusions

According to the Lloyds Bank 2019 *UK Consumer Digital Index*,²⁷⁶ some 4.1 million people in the UK have never used the internet (out of a population of around 67 million). Furthermore, 7.4 million people in the UK are considered 'limited users': they have access to a smartphone and may use social media, but they do not have the digital skills to complete online forms. Since 'digital literacy' requires confidence and motivation, these users are vulnerable to digital exclusion.

Research into public digital attitudes and understanding in the UK has revealed a gap between perceived personal benefits and the wider societal impact of technology. The think tank Doteveryone has identified six unintended consequences of the growth of digital technology:^{277 278}

- **Imbalance in the benefits of technology:** The impacts of growth are felt unevenly. There is a lack of understanding amongst many citizens about how technology works and how it can benefit them, and a lack of representation amongst those developing the technologies.
- **Unforeseen uses:** An example of this is when political and civic movements are adopted on an international scale.
- **Erosion of trust:** There are often barriers to adopting technology in educational and employment environments.
- **Impact on the environment:** Utilising technologies requires high energy consumption.
- **Changes in norms and behaviours:** These can include lack of focus; changing relationships, including the development of more online relationships; and communication via emojis.
- **Displacement and societal shifts:** The automation of jobs previously carried out by people is one example.

Examinations of digital inclusion and exclusion illustrate how digital skills, access to digital technologies, social inequalities

and poverty intersect, which is why solutions need to be both top-down and bottom-up. Society needs to be mindful of the wider societal consequences and ramifications of technological change – and how these impact on different communities.

The pace and scale of digital-technology expansion can increase socio-economic inequalities. In response, the ‘Digital Social Inclusion Model’ highlights the need for people to have the relevant skills as well as equal opportunities to utilise digital technologies.²⁷⁹ Digital platforms require a blended approach: they need to be consistent and accessible, whilst fitting a community’s specific characteristics and requirements.

Positive interventions

A wide range of organisations are involved in reducing inequalities in access to digital technology – thereby reducing digital inequalities. The Good Things Foundation, for example, is a digital inclusion charity that works with organisations to promote fundamental digital changes in communities around the world. Its programmes include:

- **NHS Widening Digital Participation:** drawing on community networks to support people in accessing National Health Service (NHS) digital health services and information. Over the first six years of the programme (2013-19), some 550,000 people were supported.
- **Be Connected:** an Australian programme, delivered in partnership with the government, seeking to tackle digital exclusion amongst people aged 50 or older, by connecting community organisations through grants, online training and resources, and networking events.
- **AbilityNet:** aiming to support everyone to achieve work goals through technology, in education or at home, by providing specialist advice services. This includes work with blue-chip companies, such as Barclays, to design and manage more accessible websites.²⁸⁰

Recommendations

1. **Develop a society-wide commitment to a future digital society and further digital innovation**

It is challenging to predict which digital skills will be required in the future. Emerging technologies such as artificial intelligence (AI) and virtual reality will influence the job market and careers. According to BAE Systems, 47% of those aged 16–24 believe that their future role does not yet exist. However, only 18% believe themselves to be equipped with the necessary skills that these careers might require.²⁸¹

A detailed and thorough policy approach, underpinned by significant investment, could help to address gaps in digital skills attainment and provision. This should begin with an adequate school education – particularly crucial in a post COVID-19 world – in which online teaching and virtual learning play significant roles, and teachers are trained accordingly.²⁸² The development of digital literacy from an early age will be increasingly important.

Employers should utilise employees' digital skills via efficient and effective work interventions and practices.²⁸³ The European Commission (EC), for example, has proposed a Digital Europe Programme to address the digital skills gap, which might inform UK policy, post-Brexit.²⁸⁴ In the UK, the All-Party Parliamentary Group (APPG) on Digital Skills has also launched a call for evidence on the impact that COVID-19 is having on society.²⁸⁵

2. **Adopt a 'co-design' process to integrating technologies into everyday routines, taking into consideration user differences**

A co-design process highlights previously unknowable consequences of digital technologies, involving people with different forms of lived experience in all co-design phases. By considering wide-ranging factors – such as age, culture, gender, ethnicity and socio-economic background – effective multi-perspective approaches can be developed.

One example of good practice is ‘mHabitat’, an organisation which supports co-design and person-centred digital innovation in health and social care through collaboration between service users, organisations and practitioners.²⁸⁶ Another is the development of the UK’s ‘Diversability Card’, which entitles cardholders to certain discounts, whilst improving disability awareness amongst businesses and industries.²⁸⁷

3. Help to reduce digital inequalities by investing in greater digital literacy

Policy, research and interventions into digital inequality should use a broad definition of digital literacy, which includes skills, knowledge, access and ICT use.

Interventions and policies traditionally focus on the technical aspects of digital citizenship. It is vital, however, that soft skills – such as social communication – should be addressed as well, since inequalities in digital literacy can have a detrimental impact on economic, cultural, social and personal wellbeing.²⁸⁸

In 2015, Ellen Helsper suggested that interventions should focus on addressing social, rather than digital, exclusions, in order to achieve desired outcomes. She recommended four key steps for reducing digital inequalities:²⁸⁹

1. Identify the main challenges that specific groups and communities face in relation to personal wellbeing, economic, cultural, civic and social outcomes.
2. Identify the extent to which digital exclusion in such groups is associated with motivation, skills and access to digital technology, and examine the impact these may have on desired outcomes.
3. Find and connect with the most appropriate organisations and locations for helping these digitally excluded groups
4. Evaluate whether digital engagement initiatives that target these groups specifically succeed in improving people's economic, social, civic, cultural and personal wellbeing.

8

‘Digital natives’ and the digital divide

Existing challenges and inequalities in disadvantaged communities can persist, even when new digital technologies are introduced. Unless these inequalities are considered alongside the introduction of innovative digital technology, whenever organisations such as the NHS utilise digital apps to engage with target audiences, they risk further disadvantaging groups that are already struggling.²⁹⁰

The term ‘digital inclusion’ is not static, but evolving and contextual; discussions around digital inclusion need to consider digital access in relation to affordability, availability, ability and equality.

‘Generation Z’

‘Generation Z’ refers to those born between the mid-1990s and the early 2010s, whose upbringing has been marked by the availability of advanced digital technology.²⁹¹ Within this generation, children aged 8–15 years are spending twice as much time online compared to children of the same age a decade ago.²⁹² Members of Generation Z are frequent users of the internet and are wedded to online communication: more than 90% would be upset if they had to give up the internet as a punishment.²⁹³

There is an assumption that all young people are inevitably ‘digital natives’, but (as discussed in Part I, on pages 16–18) this oversimplifies the digital-inclusion debate, because intersectionality regarding factors such as poverty and exclusion must be considered. Digital exclusion still affects young people and it can exacerbate social inequalities they already face. Young people’s use of digital technology must, therefore, be assessed in relation to other factors.

Policymakers and practitioners need to understand how technologies influence young people's social relationships and growth (rather than simply quantifying daily digital consumption), and analyse the skills that young people across backgrounds and circumstances need in order to thrive in a digital environment.

Recommendations

4. **Focus digital innovation policy on 'micro-actions' that are tailored to specific circumstances, rather than pursuing a 'one-size-fits-all' approach**

In the UK's 2019 General Election, 47% of 18–24 year-olds voted, compared to a national average of 61%.²⁹⁴ Since younger people are, traditionally, less likely to vote than older citizens, digital technologies might be employed to engage them in political participation. The digital media environment could be harnessed to socialise young people into different forms of voter behaviour – including participation in elections, when used strategically and in a targeted fashion.²⁹⁵

Digital spaces for people from more deprived socio-economic backgrounds also ought to be designed carefully to remain accessible, with fit-for-purpose technology that permits people and groups to develop a sense of ownership.

5. **Facilitate a 'digital resilience' shift, in education and other provisions, so that parents and teachers are better equipped to support resilience-building amongst young people**

Young people, especially, need to know how to manage and curate their 'digital self' securely and effectively. Digital resilience can be defined as digital competency, combined with the social and emotional literacy required to manage online risks.²⁹⁶

Management of risk depends on factors including:

- Recognition of the risk
- The severity and impact of the risk

- The risk mitigation techniques chosen
- The implementation of the risk mitigation.

Although the ICT curriculum is compulsory in the UK, children from lower socio-economic backgrounds, in particular, can struggle to develop the independent digital skills required to achieve literacy. According to Bright Little Labs, digital technology needs to be more accessible, in order for children to be invested in it.²⁹⁷

Encouragement from education, positive role-models and resources are important, as better online representation of young people – their lives and aspirations – can encourage them to develop their digital skills.

9

e-Voting in a digital society

e-Voting needs effective implementation. Although many countries, including the UK, have yet to implement a robust online voting system, Estonia is setting the standard for e-government and digital society. Despite being a small nation of just over 1 million people, it has achieved a reputation as a global leader in digital-technology development and application. The Estonian 'i-Voting' system has been in use since 2005, with citizens casting their votes via smartphone or PC. Although Estonia experienced a nationwide cyber-attack in 2007, the government and the community took effective steps to secure the systems. Since then, digital security has remained a top priority.²⁹⁸

Recommendations

6. Investigate opportunities for online voting and harnessing digital technologies to increase political participation

There is scope to increase political participation in UK elections through innovative voting methods, such as an online ballot. Marginalised communities are often less likely to become involved in political participation. People who are disabled or unable to leave home may find voting by proxy useful. Since digital technology can encourage people to become more politically active,^{299 300} online voting could support this trend, whilst enhancing accessibility. Social media platforms also provide new avenues for political engagement.³⁰¹

According to the ONS, approximately 6% of respondents aged 18 years old and over identified themselves as non-internet users,³⁰² so there is still a need to expand digital literacy and digital-technology use. Other countries have been evolving their e-government systems. For example, in Italy, e-procurement has reduced government costs by \$3 billion, leading to both higher-quality and more cost-effective government services.³⁰³

The Estonian example, mentioned above, could serve as a role model. The necessary infrastructure and investment must be guaranteed for successful implementation. However, it is important to understand key distinctions between the UK and Estonia: whilst the UK has a population of 66 million, Estonia has a population of just over 1 million, and technology has become an important dimension of nation-building following independence from the Soviet Union.³⁰⁴

7. Incorporate verification methods and safeguards into online voting, to enhance security and safety, and to help allay concerns about data protection, fraud and anonymity, whilst maintaining accessibility

One crucial area of concern around online voting, however, regards security and safety. In the UK, voter verification is not currently required at polling stations and there is limited evidence of electoral fraud.³⁰⁵ However, the Government is currently considering plans to implement voter identity checks at them.³⁰⁶ Ideas for addressing security concerns around online voting could include verification methods such as usernames and passwords, mobile pin codes or the GOV.UK Verify identity assurance system.

Online voting systems need to be robust, secure and closely monitored, in order to ensure data confidentiality, and potential safeguards could include:

- **A ‘repeat voting’ system** – where only the last vote will count, to prevent people casting more than one vote
- **Blockchains** – where records are stored in a secure, transparent and decentralised way
- **Public bulletin boards** – an online public area to help ensure that the correct amount of votes are received.³⁰⁷

In seeking to develop a ‘digital society’, transparency around data storage and access are paramount, and data minimisation and centralisation are key to this. The Pirate Party in the UK has

developed a framework around Digital Rights, to help protect citizens' digital rights.³⁰⁸

One of the benefits of the current voting system is anonymity. With online voting, this would be harder to achieve, and so safety and privacy concerns must be considered, in order to achieve widespread acceptance.

Despite online safety concerns, most people already have some kind of digital identity and presence. Management of this needs to be made more sophisticated and robust, and people need to know how their digital data will be used. For example, the UK Government's 2019 *Online Harms White Paper*, outlines plans for a new system of accountability for technology companies.³⁰⁹ This report discussed the importance of 'Responsible and Ethical Technology,' which led to the development of a Centre for Data Ethics and Innovation within the Department for Digital, Culture, Media & Sport, to create a 'governance regime for data-driven technologies.'³¹⁰

It is vital that verification methods and safeguards do not become another barrier to digital inclusion. People should be supported in gaining a better understanding of why they are in place and how they work, and this should start in the education system.

10

Culture and the digital divide

The digital divide has an impact on how people interact societally, including their cultural participation, which was described by Tony Bennett, in 2001, as:³¹¹

The ways in which ethnically-marked differences in cultural tastes, values and behaviours inform not just artistic and media preferences but are embedded in the daily rhythms of different ways of life; and of the ways in which these connect with other relevant social characteristics – those of class and gender, for example.

Cultural participation varies according to different demographic factors. The digitisation of content can support more inclusive access to cultural resources – for example through virtual museums. London’s Tate Modern developed the ‘Tate Digital Strategy 2013–2015: Digital as a Dimension of Everything’. This suggested greater utilisation of digital channels and platforms, to provide rich content and enhanced accessibility for new and existing visitors.³¹²

Museums have usually relied on a ‘top-down’ approach to digitising content, with the aim of enhancing access, first and foremost.³¹³ However, this can ignore, or bypass, existing community relationships and might risk higher levels of digital exclusion.³¹⁴ Whilst museums and heritage institutions often invite members of the public to participate in the establishment of a new digital collection, this can be limited to passive responses, rather than involving a deeper dialogue that would permit people to define and present their heritage and culture in accordance with their own values.³¹⁵

Recommendation

8. **Make arts and cultural sector websites and online content more accessible, to help reduce inequalities in access**

As explored in Part I of this report (see page 23), the Department for Digital, Culture, Media & Sport has stated that: ‘simply making digital content available does not mean that audiences will automatically engage’.³¹⁶ The arts and culture sector can do more to tackle digital inequalities - for example, by undertaking ‘action research’, which involves working with representatives from digitally excluded groups, alongside policymakers and practitioners, to enhance digital content and improve accessibility. Collaborating with schools could also result in more young people having access to digital cultural resources as part of their formal education.



Digital social innovation

According to a 2019 United Nations report, the concept of the ‘digital welfare state’ is gaining ground in many countries. This involves ensuring that citizens can benefit from digital technologies, experience a more efficient society and improved wellbeing. However, there is a risk that digital data and technologies might be used to generate profit for corporations, and that technology companies effectively operating in a ‘human rights free-zone’ might lead to the development of a ‘digital welfare dystopia’.³¹⁷

Governments face various challenges in realising a safe and effective ‘digital welfare state’. For example, the use of digital technologies and Artificial Intelligence (AI) can, and should, be developed, to reduce wellbeing disparities amongst those who already suffer from deprivation. This is because it can be used to provide knowledge, support, healthcare, education and interventions to people via their computers and mobile phones. However, access to digital technologies will not automatically reach the most deprived communities and reduce inequality. There are two crucial considerations here:³¹⁸

- The assumption of an automatic ‘bridging of the digital divide’ should be critiqued, since the gap between the digitally included and the digitally excluded is actually widening.
- Organisations should focus on how digital technologies can be used to support the poorest and the most marginalised.

Responsible technological innovation and implementation (including the development of AI) require trust and predictability amongst users, and rely on appropriate political, legal and ethical frameworks. This will be best achieved if industry, communities and research work together to develop unified common standards.³¹⁹

Recommendation

9. Governments should target data transparency, as digital rights and privacy matter

According to a recent report published by Doteveryone (2020), despite concerns, 47% of people sign up to digital services. This is because some citizens believe that companies will use their data in whatever way they want. Citizens should be able to understand how, and for what purpose, data are collected.³²⁰

Furthermore, they should be able to view and correct any identifiable data that are collected.³²¹ In 2018, for example, the European Union adopted the 'General Data Protection Regulation' (GDPR), which guarantees that people have the right to regain control of their data, receive information on any data that are held on them, and demand that such information be removed from online platforms.³²²

GDPR is a model for data privacy and transparency, since it places citizens and their control over data at the centre of legislation. Nevertheless, challenges remain. In 2019, 57% of UK businesses had failed to implement precautions to protect data in line with GDPR regulations. One way in which this could be managed would be to devise 'electronic document management' software to assist with GDPR compliance.³²³

Once the Brexit transition period ends on 31 December 2020, EU GDPR will no longer apply to the UK. However, the UK Government has issued the 'Data Protection, Privacy and Electronic Communications (Amendments etc.) (EU Exit) Regulations 2019', to merge the requirements of the EU GDPR with the Data Protection Act 2018 and form a data protection regime that will be implemented in the UK, post-Brexit.³²⁴

12

Future implications

The digital inclusion/exclusion narrative presents a pressing challenge. The various socio-economic factors that affect digital exclusion need to be better understood. It cannot be assumed that the expansion of digital society is an inevitable trajectory and ambition for all; some people *choose* to remain digitally excluded.³²⁵ In some cases, this decision is informed by a community's cultural values or practices.

Digital-inclusion initiatives must be sensitive, strategic and outcome-focused: people and communities need to be shown what they can achieve by being online; but policymakers, businesses and third-sector groups also need to understand people's specific requirements and aspirations. For many, the risks associated with digitalisation remain a key concern. Offline alternatives will still be needed, if we are to allow people to retain a sense of autonomy over their lifestyle and choices. For example, employers should offer both online and offline options for job applications.

In a 2014 article on inequalities in digital literacy, Ellen Helsper identified six key considerations for digital inclusion policies, which are quoted below:³²⁶

1. 'Identify what the main social challenges and the desired outcomes are in terms of social inclusion and equality.
2. 'Identify which socio-demographic and socio-cultural groups are marginalised in terms of economic, social, civic, cultural and personal well-being outcomes.
3. 'Identify to what extent these groups' digital exclusion in terms of access, skills, motivation and content/engagement inhibits reaching the desired outcomes.
4. 'Identify the best organisations and locations to reach and help those most in need.
5. 'Provide resources to organisations and people in these locations to lift the barriers to digital inclusion, as identified under step 3 for the specific challenges faced by these groups.

6. 'Evaluate the implementation and success of these initiatives, by noting whether the groups improved their economic, social, civic, cultural and personal wellbeing as a result of their increased digital engagement.'

As reported by the Culture, Media and Sport Commons Select Committee, in July 2020, in its *Impact of COVID-19 on DCMS Sectors: First Report*, 25 million customers with pay-as-you-go mobile contracts are vulnerable to digital and data poverty, due to the high costs of data and a lack of places from which to access free WiFi during lockdown.³²⁷

Additionally, the All-Party Parliamentary Group on Digital Skills published a report, in June 2020, on *The Impact of COVID-19 and Lessons Learned for Improving Digital Skills in the Future*. It proposes a series of recommendations to Government, in light of the COVID-19 pandemic, including: investing in initiatives that seek to widen access to digital devices and connectivity; creating lifelong learning hubs in partnership with local and central government, Local Enterprise Partnerships (LEPs), employers, educators, charities and communities; and making a greater commitment to developing infrastructure to support digital inclusion.³²⁸

Recommendations

10. **Preserve physical access to information, services and resources, whilst continuing to develop accessible digital technologies**

Although it is important that systems and services (e.g. e-government services) are further digitalised, there is still a need for alternative options to be maintained alongside digital opportunities. Developing appropriate (accessible) technology is important for helping to reduce digital inequalities, but it is only one part of the solution.

Owing to the nature of technological change, the divide is not static but is constantly shifting, and new analyses and interventions need to be developed in response. For example, as

5G networks are introduced, public libraries with PC terminals available for general use are closing, and people without access to a smartphone might experience reduced opportunities for digital participation.

There remains a need to provide – and subsidise – physical access to information and resources for marginalised groups, such as people living in poverty, disabled people and unemployed people.³²⁹ In light of lessons from the COVID-19 pandemic, the Welsh Government has committed to providing £3 million to support ‘digitally excluded’ learners.³³⁰

II. Create appropriate frameworks for responsible digital governance and e-citizenship

Digital skills need to be nurtured and developed to promote greater inclusion, but the rate of change is so fast that future skills requirements are uncertain. This presents a conundrum. It is not enough to expect people to adapt to technological transformation; there is a need for channels that permit groups and people to be proactive in designing the trajectory of that change. Consultations, or other ways of involving users, are desirable; they offer a sense of autonomy and elicit ethical questions around digital technology. Creativity and innovation will be required alongside digitalisation.

When used strategically, social networking platforms can enhance users’ digital skills,³³¹ but it is important to understand the technology and its limitations for promoting social inclusion and cohesion. On the one hand, social networks can contribute to greater wellbeing through higher levels of connectedness and co-operation, whilst on the other, they can contribute to social problems relating to overexposure, phishing or cyber-bullying.³³²

333 334

Responsible digital governance goes beyond the introduction of digital services. The implementation of e-government services and digital democracy requires a profound change in the relationship between the state, public institutions and citizens. Future research is required, in order to explore

how e-governance can enhance direct democratic decision-making, whilst being mindful of the new challenges that digital government brings, and public concerns around privacy and security.³³⁵

One way of increasing public trust and public understanding around data handling might be to introduce a ‘digital passport’, as a contract between citizens, state institutions and private bodies. This idea builds on an existing individual ‘digital skills passport’, which illustrates the ICT skills and development of each individual. Through high levels of transparency and accountability, trust between citizens and the state can be maintained.³³⁶

A robust digital society requires the protection of citizens’ basic rights, based on a social contract of trust and co-operation. Citizens should also have the power to obtain copies of personal data held on them, in a standardised format.

In response to the COVID-19 pandemic, the United Nations Department of Economic and Social Affairs has devised a ‘Digital Government Policy Response to COVID-19’ that provides useful guidelines, and these are listed below:³³⁷

In the short term:

- Use digital platforms to provide timely and accurate information to the public
- Encourage two-way communication and e-participation
- Protect people’s digital privacy and consider the consequences of digital technologies.

In the mid-term:

- Develop multi-stakeholder partnerships between local, regional and national levels.

In the long term:

- Invest in innovative technologies (i.e. AI, drones, blockchain), which can lead to increased digital resilience in public services
- Review the data protection and privacy legislation alongside lessons learned.

12. Implement both 'top-down' and 'bottom-up', formal and informal interventions, to support greater digital literacy and responsible citizenship

Organisations and local authorities need to target communities that need particular support with development digital skills. Educators should be empowered to teach digital skills and encourage students to explore the advantages of technological innovation – and how they can shape trajectories of change themselves. Children and teenagers should be equipped with an understanding of technology that permits them to critically assess digital transformations and the impact of growing online communities on society, more broadly.

Digital education – learning about digital technologies, how to utilise these efficiently and developing digital skills – needs to be positioned as a core aspect of the curriculum. To reduce tensions between social contexts at home and in school, families will also need support, in order to provide a constructive learning environment that extends beyond the classroom. This is more vital than ever during the COVID-19 pandemic, where children are having to continue with their education at home. Not only do children have to have access to the relevant digital technology, but teachers need to be supported, in order to be able to provide adequate online learning. According to the Sutton Trust, 69% of private school teachers are prepared for delivering online teaching, compared to 40% of teachers in the state sector.³³⁸

Providing people with tailored support to develop their digital skills and digital literacy is key to leading positive change. Public libraries are well placed to be transformed into key institutions for providing access, resources and training. However, there are limits on computer time in public libraries, and this may need to be rectified – particularly in light of COVID-19.³³⁹

The Government should further support non-profit organisations that provide training opportunities for excluded or marginalised groups.³⁴⁰ This should be informed by research that involves working closely with the community, in order to build a more nuanced understanding of digital inequalities. Developing

digital skills is a lifelong process and not limited to formal education.

Online communities can also play a part in fostering informal connected learning. According to a 2013 publication on *Connected Learning: An agenda for research design*, ‘connected learning’ refers to: ‘learning that is socially embedded, interest-driven, and orientated toward educational, economic, or political opportunity’.³⁴¹

‘Digital champions’ are those, from various backgrounds and communities – often volunteers – who help others to understand and develop their skills in using digital technologies and the internet.³⁴² They play a critical role in developing peer support and helping people to understand the benefits of technological change. Digital champions help people and communities to improve their confidence and overcome perceived barriers to use and participation. Ideas for ensuring that digital champions can be successfully embedded in communities and organisations include:³⁴³

- Harnessing organisational and structural communication channels within organisations, to highlight the importance of essential digital skills for staff and clients
- Developing strong relationships with organisations that are committed to addressing digital inclusion needs
- Introducing integrated assessments of digital needs, to inform personalised digital support for a particular client, team or individual.
- Training digital champion volunteers, with funding support at a national level.³⁴⁴

13. Carry out further cross-sector research into the complexities and intersectionality of digital exclusion and inclusion, to help inform effective responses

In order to resolve digital inequalities, more data are required on the realities of digital exclusion and inclusion, including contextual sociological and cultural factors. The Lloyd's Bank

annual *UK Consumer Digital Index Survey* provides important insights, but collects very little data on ethno-religious, cultural and socio-economic variables.

Definitions of digital inclusion and exclusion also need to be clear, concise and consistent, both in order to provide meaningful comparative data and to design effective interventions. It is important to reflect consistently on what works and what does not. This will make it easier for innovators, businesses, policymakers and the public to work towards shared goals.

Collaborative projects that involve academia, government, the third sector and private businesses are likely to be the most successful in achieving greater digital inclusion. Initiatives such as Future.Now involve a coalition of companies and organisations, which work with government to enhance digital skills. This focus on implementing a cultural and behavioural shift is the most likely to lead to long-term positive changes.³⁴⁵

Contributors

The following is a list of the people who have contributed to the development of this report, by participating in the conference and consultation discussions convened by Cumberland Lodge in the months leading up to publication.

We are extremely grateful to everyone who offered their time, experience and expertise to this project. We sought, throughout, to involve representatives from a broad range of ages, backgrounds and perspectives, to enrich our findings and recommendations.

Nour Al Kafri

University of Portsmouth
(Cumberland Lodge Scholar)

Amel Attatfa

Abertay University

Dr Josie Barnard

De Montfort University

Kristina Barrick

Scope

Katja Bego

Nesta

Dr Liam Berriman

University of Sussex

Alex Blower

University of Wolverhampton
(Cumberland Lodge Scholar)

Charles Boutaud

The Bureau of Investigative
Journalism

Robin Christopherson MBE

AbilityNet

Denise Cranston

Business in the Community
Northern Ireland

Tahirih Danesh

The Foreign Policy Centre

Sophie Deen

Bright Little Labs

Laura Degiovanni

TiiQu

Rich Denyer-Bewick

Citizens Online

Dr Becky Faith

Institute of Development
Studies, University of Sussex

Adrian Farrel

Pirate Party UK

Kate Gallant

One Digital

Bob Gann

NHS Digital

Avi Gillis

Department for Digital,
Culture, Media & Sport

Dr Lilia Giugni

GenPol Gender & Policy Insights

Anna Grant

Carnegie UK

Donatas Gričius

UpSkill Digital

Dr Leslie Griffiths

UK Parliament

Hilary Hanberry

Business in the Community

Amy Hearn

100% Digital Leeds

Professor Ellen Helsper

London School of Economics
and Political Science (LSE)

Lizzie Hodgson

ThinkNation

Toni Ives

Barclays

Maneesh Juneja

MJ Analytics Ltd

Dr Elaine Kasket

Nautilus Psychology Ltd

Rachel Katz

The University of Manchester

Michael Klontzas

Goldsmiths, University of London

Julian Lee

Everyone Can

Tim Leech

WaveLength

Dr Bex Lewis

Manchester Metropolitan
University

Jennifer Llewellyn

Good Things Foundation

Matthew Lloyd

Digital Communities Wales

Angelika Love

University of Oxford
(Cumberland Lodge Scholar)

Méabh McCaffrey-Lau

Ulster University

Helen Milner

Good Things Foundation

Professor Stephen Molyneux

Tablet Academy International SL

Nicole Nisbett

University of Leeds

Isabel Oakley Chapman

Triple D Media

Alexandra Olaseinde

Age UK

Patricia O'Lynn

Queen's University Belfast
(Cumberland Lodge Scholar)

Sarah Parkes

Age UK

Kapila Perera

Doteveryone

Martyn Perks

Digital business consultant,
writer and speaker

Oliver Quinlan

Raspberry Pi Foundation

Holly Rafique

Triple D Media

Fahmida Rahman

WebRoots Democracy

Tyson Rallens

University of Oxford
(Cumberland Lodge Scholar)

Brandon Relph

Studio BE

Nuriyar Safarov

University of Helsinki

Nina Schuller

Southampton University

Rebecca Sentence

Pirate Party UK

Richard Skellett

Digital Anthropology

Professor Gillian Symon

Royal Holloway, University
of London (RHUL)

Dr Sakari Taipale

University of Jyväskylä, Finland

Inna Thalmann

University of Oxford
(Cumberland Lodge Scholar)

Lucinda Tuttiett

South West Grid for Learning
(Barefoot Computing)

Anri van der Spuy

London School of Economics
and Political Science (LSE)

Niamh Webster

Scottish Government

Dr Paul Whittington

Bournemouth University

Dr Mart Willekens

Ghent University

Pauline Wiltshire BEM

Retired (Barclays Bank)

Gori Yahaya

UpSkill Digital

Notes

1. Lloyds Bank (2020) UK Consumer Digital Index 2020. https://www.lloydsbank.com/assets/media/pdfs/banking_with_us/whats-happening/lb-consumer-digital-index-2020-report.pdf [Accessed 13 May 2020].
2. Department for Digital, Culture, Media & Sport (2017) UK Digital Strategy. <https://www.gov.uk/government/publications/uk-digital-strategy> [Accessed 20 September 2019].
3. Servon, L J (2002) *Bridging the Digital Divide: Technology, Community and Public Policy*. Oxford: Blackwell Publishing Ltd.
4. House of Commons (2016) *The Digital Economy: Second Report of Session 2016-17*. Business, Innovation and Skills Committee. <https://publications.parliament.uk/pa/cm201617/cmselect/cmbis/87/87.pdf> [Accessed 6 November 2019].
5. PricewaterhouseCoopers LLP (2009) *Champion for Digital Inclusion: The economic case for digital inclusion*. http://parliamentandinternet.org.uk/wp-content/uploads/Final_report.pdf [Accessed 7 November 2019].
6. Skills Funding Agency (2016) Review of Publicly Funded Digital Skills Qualifications. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/499031/Review_of_Publicly_Funded_Digital_Skills_Qualifications_2016_FINAL.pdf [Accessed 10 September 2019].
7. Mancinelli, E (2008) E-Inclusion in the Information Society. In: Pintér, R. (ed.) *Information Society: From Theory to Political Practice: Course book*. Budapest: Gondolt-Új Mandátum, 171-182.
8. Power, A & Wilson, W J (2000) *Social Exclusion and the Future Cities*. London: London School of Economics: p.1.
9. Department for Digital, Culture, Media & Sport (2017) UK Digital Strategy. <https://www.gov.uk/government/publications/uk-digital-strategy> [Accessed 20 September 2019].
10. Wright, D & Wadhwa, K (2010) Mainstreaming the e-excluded in Europe: Strategies, good practices and some ethical issues. *Ethics and Information Technology*, 12(2), 139-156.

11. Cabinet Office (2012) Government Digital Strategy. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/296336/Government_Digital_Strategy_-_November_2012.pdf [Accessed 10 September 2019].
12. Helsper, E (2008) *Digital Inclusion: An analysis of social disadvantage and the information society*. London: Department for Communities and Local Government.
13. Bradbrook, G & Fisher, J (2004) *Digital Equality: Reviewing digital inclusion activity and mapping the way forwards*. London: CitizensOnline.
14. Anderson, S (2005) The Value of Mixed-Method Longitudinal Panel Studies in ICT Research: Transitions in and out of 'ICT poverty' as a case in point. *Information, Communication & Society*, 8(3): 343-367.
15. Lloyds Bank (2020) *UK Consumer Digital Index 2020*. https://www.lloydsbank.com/assets/media/pdfs/banking_with_us/whats-happening/lb-consumer-digital-index-2020-report.pdf [Accessed 13 May 2020].
16. GOV.UK (2018) Essential Digital Skills: Framework. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/738922/Essential_digital_skills_framework.pdf [Accessed 29 September 2019].
17. Cammaerts, B & Van Audenhove, L (2003) Dominant digital divide discourses. In Cammaerts, B, Van Audenhove, L, Nulens, G & Pauwels, C (Eds) *Beyond the Digital Divide: Reducing Exclusion, Fostering Inclusion*. Brussels: VUBPress: 7-14.
18. OECD (2001) Understanding the Digital Divide. *OECD Digital Economy Papers*, 201(5): 5.
19. Wei, L & Hindman, D B (2011) Does the Digital Divide Matter More? Comparing the effects of new media and old media use on the education-based knowledge gap. *Mass Communication and Society*, 14(2): 216-235.
20. Office for National Statistics (2019) Exploring the UK's digital divide. <https://www.ons.gov.uk/peoplepopulationandcommunity/householdcharacteristics/homeinternetandsocialmediausage/articles/exploringtheuksdigitaldivide/2019-03-04> [Accessed 18 September 2019].

21. Çılan, C A, Bolat, B A & Coşkun, E (2009) Analyzing Digital Divide within and between member and candidate countries of European Union. *Government Quarterly*, 26: 98-107.
22. Office for National Statistics (2019) Exploring the UK's Digital Divide. <https://www.ons.gov.uk/peoplepopulationandcommunity/householdcharacteristics/homeinternetandsocialmediausage/articles/exploringtheuksdigitaldivide/2019-03-04> [Accessed 18 September 2019].
23. White, D (2013) *Tackling Digital Exclusion in Glasgow*. Carnegie UK Trust.
24. Katz, J & Aspden, P (1997) Motives, hurdles, and dropouts. *Communications of the ACM*, 40: 97–102.
25. Hoffman, D L & Novak, T P (1998) Bridging the Racial Divide on the Internet. *Science*, 280: 390–391.
26. van Dijk, J (2006). Digital Divide Research, Achievements and Shortcomings. *Poetics*, 34: 221–235.
27. van Deursen, A J A M & van Dijk, J (2019) The First-level Digital Divide Shifts from Inequalities in Physical Access to Inequalities in Material Access. *New Media & Society*, 21(2): 354-375.
28. Hargittai, E (2001). Second-Level Digital Divide: Mapping Differences in People's Online Skills. *First Monday*, 7(4).
29. Blank, G & Dutton, W (2012) Age and Trust in the Internet: The centrality of experience and attitudes towards technology. *Social Science Computer Review*, 30: 135-151.
30. Min, S-J (2010) From the Digital Divide to the Democratic Divide: Internet skills, political interest, and the second-level digital divide in political internet use. *Journal of Information Technology & Politics*, 1: 22-35.
31. van Dijk, J (2002) A Framework for Digital Divide Research. *The Electronic Journal of Communication*, 12(1).
32. van Dijk, J & Hacker, K (2003) The Digital Divide as a Complex and Dynamic Phenomenon. *The Information Society*, 19(4): 315-326.
33. Peter, J & Valkenburg, P J (2006) Adolescents' Internet Use: Testing the “disappearing digital divide” versus the “emerging digital differentiation” approach. *Poetics*, 34: 293-305.

34. van Dijk, J (2002) A Framework for Digital Divide Research. *The Electronic Journal of Communication*, 12(1).
35. van Dijk, J & Hacker, K (2003) The Digital Divide as a Complex and Dynamic Phenomenon. *The Information Society*, 19(4): 315-326.
36. Lloyds Bank (2020) *UK Consumer Digital Index 2020*. https://www.lloydsbank.com/assets/media/pdfs/banking_with_us/whats-happening/lb-consumer-digital-index-2020-report.pdf [Accessed 13 May 2020].
37. Lloyds Bank (2020) *UK Consumer Digital Index 2020*. https://www.lloydsbank.com/assets/media/pdfs/banking_with_us/whats-happening/lb-consumer-digital-index-2020-report.pdf [Accessed 13 May 2020].
38. Department for Digital, Culture, Media & Sport (2017) *UK Digital Strategy*. <https://www.gov.uk/government/publications/uk-digital-strategy> [Accessed 20 September 2019].
39. Altmann, L (2015) *Digital Exclusion & Assisted Digital Research*. HM Revenue & Customs (HMRC).
40. Lloyds Bank (2020) *UK Consumer Digital Index 2020*. https://www.lloydsbank.com/assets/media/pdfs/banking_with_us/whats-happening/lb-consumer-digital-index-2020-report.pdf [Accessed 13 May 2020].
41. Ofcom (2019) *Adtech Market Research Report*. https://www.ofcom.org.uk/data/assets/pdf_file/0023/141683/ico-adtech-research.pdf [Accessed 20 September 2019].
42. Blank, G, Graham, M & Calvino, C (2018) Local Geographies and Digital Inequality. *Social Science Computer Review*, 36(1): 82-102.
43. Dean, D, DiGrande, S, Field, D, Lundmark, V, O'Day, J, Pineda, J & Zwillenberg, P (2012) *The Connected World: The internet economy in the G-20*. Boston, MA.
44. Lloyds Bank (2020) *UK Consumer Digital Index 2020*. https://www.lloydsbank.com/assets/media/pdfs/banking_with_us/whats-happening/lb-consumer-digital-index-2020-report.pdf [Accessed 13 May 2020].

45. Blank, G, Dutton, W & Lefkowitz, J (2020) *OxIS 2019: Digital Divides in Britain are Narrowing but Deepening*. Oxford Internet Institute, University of Oxford. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3522083 [Accessed 12 June 2020].
46. Crang, M, Crosbie, T & Graham, S (2006) Variable Geometrics of Connection: Urban digital divides and the uses of information technology. *Urban Studies*, 43: 2551-2570.
47. Blank, G, Graham, M & Calvino, C (2018) Local Geographies and Digital Inequality. *Social Science Computer Review*, 36(1): 82-102.
48. Mills, B F & Whitacre, B E (2003) Understanding the Nonmetropolitan-Metropolitan Digital Divide. *Growth and Change*, 34: 219-243.
49. Townsend, L, Sathlaseelan, A, Fairhurst, F & Wallace, C (2013). Enhanced broadband access as a solution to the social and economic problems of the rural digital divide. *Local Economy*, 28, 580–595.
50. Blank, G, Graham, M & Calvino, C (2018) Local Geographies and Digital Inequality. *Social Science Computer Review*, 36(1): 82-102.
51. Graham, M & Dutton, W H (eds) (2014) *Society and the Internet: How networks of information and communication are changing our lives*. Oxford: Oxford University Press.
52. Blank, G, Graham, M & Calvino, C (2018) Local Geographies and Digital Inequality. *Social Science Computer Review*, 36(1): 82-102.
53. Department for Communities and Local Government (2008) *Understanding Digital Exclusion: Research report*. Wetherby: DCLG. p.5.
54. World Bank (2016) *World Development Report 2016: Digital dividends*. Washington, DC: World Bank.
55. Helsper, E J, van Deursen, A J A M & Eynon, R (2015) *Tangible Outcomes of Internet Use: From Digital Skills to Tangible Outcomes*. Project report. http://eprints.lse.ac.uk/61807/1/_lse.ac.uk_storage_LIBRARY_Secondary_libfile_shared_repository_Content_Helsper,_E_Helsper_Tangible_outcomes_2015.pdf [Accessed 7 November 2019].
56. World Bank (2016) *World Development Report 2016: Digital dividends*. Washington, DC: World Bank.

57. Clayton, J & Macdonald, S J (2013) The Limits of Technology. Information, *Communication & Society*, 16(6): 945-966.
58. Clayton, J & Macdonald, S J (2013) The Limits of Technology. Information, *Communication & Society*, 16(6): 945-966.
59. Lloyds Bank (2020) *UK Consumer Digital Index 2020*. https://www.lloydsbank.com/assets/media/pdfs/banking_with_us/whats-happening/lb-consumer-digital-index-2020-report.pdf [Accessed 13 May 2020].
60. Phipps, L (2000) New Communications Technology: A conduit for social exclusion. *Information Communication and Society*, 3(1): 39-68.
61. Lessof, C & Jowell, R (2000) *Measuring Social Exclusion*. London: Centre for Research into Elections and Social Trends.
62. Bennett, S, Maton, K & Kervin, L (2008) The 'Digital Natives' Debate: A critical review of the evidence. *British Journal of Educational Technology*, 39(5): 775-786.
63. Lohnes, S & Kinzer, C (2007) Questioning Assumptions About Students' Expectations for Technology in College Classrooms. *Innovate*, 3(5).
64. Bennett, S, Maton, K & Kervin, L (2008) The 'Digital Natives' Debate: A critical review of the evidence. *British Journal of Educational Technology*, 39(5): 775-786.
65. Elwick, A, Liabo, K, Nutt, J & Simon, A (2013) *Beyond the Digital Divide: Young people and ICT*. Education Development Trust.
66. Luckin, R, Bligh, B, Manches, A, Ainsworth, S, Crook, C & Noss, R (2012) *Decoding Learning: The proof, promise and potential of digital education*. London: Nesta.
67. Eynon, R (2009) Mapping the Digital Divide in Britain: Implications for learning and education'. *Learning, Media and Technology*, 34: 277-290.
68. Elwick, A, Liabo, K, Nutt, J & Simon, A (2013) *Beyond the Digital Divide: Young people and ICT*. Education Development Trust.
69. Livingstone, S & Helsper, E (2007) Gradations in Digital Inclusion: Children, young people and the digital divide. *New Media & Society*, 9: 671-696.

70. Lewin, C & Luckin, R (2010) Technology to Support Parental Engagement in Elementary Education: Lessons learned from the UK. *Computers and Education*, 54 (3): 749-758.
71. Jewitt, C & Parashar, U (2011) Technology and Learning at Home: Findings from the evaluation of the home access programme pilot. *Journal of Computer Assisted Learning*, 27 (4): 303-313.
72. Livingstone, S & Helsper, E (2007) Gradations in Digital Inclusion: Children, young people and the digital divide. *New Media & Society*, 9: 671-696.
73. Ofcom (2020) *Children and Parents: Media use and attitudes*. https://www.ofcom.org.uk/data/assets/pdf_file/0023/190616/children-media-use-attitudes-2019-report.pdf [Accessed 10 June 2020].
74. Elwick, A, Liabo, K, Nutt, J, and Simon, A (2013) *Beyond the Digital Divide: Young people and ICT*. Education Development Trust.
75. Elwick, A, Liabo, K, Nutt, J & Simon, A (2013) *Beyond the Digital Divide: Young people and ICT*. Education Development Trust.
76. Livingstone, S & Helsper, E (2007) Gradations in Digital Inclusion: Children, young people and the digital divide. *New Media & Society*, 9: 671-696.
77. Eynon, R (2009) Mapping the Digital Divide in Britain: Implications for learning and education'. *Learning, Media and Technology*, 34: 277-290.
78. Elwick, A, Liabo, K, Nutt, J & Simon, A (2013) *Beyond the Digital Divide: Young people and ICT*. Education Development Trust.
79. Fuchs, T & Woessmann, L (2004) Computers and Student Learning: Bivariate and multivariate evidence on the availability and use of computers at home and at school. *CESifo Working Paper Series* 1321.
80. Vigdor, J L & Ladd, H F (2010) *Scaling the Digital Divide: Home computer technology and student achievement*. Cambridge MA: National Bureau of Economic Research.
81. Judge, S, Puckett, K & Bell, S M (2006) Closing the Digital Divide: Update from the early childhood longitudinal study. *Journal of Educational Research*, 100: 52-60.

82. Fairlie, R & Robinson, J (2011) The Effects of Home Computers on Educational Outcomes: Evidence from a field experiment with schoolchildren. *NET Institute Working Paper*, 11-14.
83. Elwick, A, Liabo, K, Nutt, J & Simon, A (2013) *Beyond the Digital Divide: Young people and ICT*. Education Development Trust.
84. Lane, A B (2008) Am I Good Enough? The mediated use of open educational resources to empower learners in excluded communities. *Proceedings of 5th Pan-Commonwealth Forum on Open and Distance Learning*. The Open University.
85. Lane, A (2009) The Impact of Openness of Bridging Educational Digital Divides. *International Review of Research in Open and Distance Learning*, 10(5).
86. Kirkwood, A (2006) Going Outside the Box: Skills development, cultural change and the use of on-line resources. *Computers & Education*, 47: 316-331.
87. Sims, J, Vidgen, R & Powell, P (2008) E-Learning and the Digital Divide: Perpetuating cultural and socio-economic elitism in higher education. *Communications of the Association for Information Systems*, 22(23).
88. Lindgren, I, Madsen, C Ø, Hoffman, S & Melin, U (2020) Close Encounters of the Digital Kind: A research agenda for the digitalization of public services. *Government Information Quarterly*, 36(3): 427-436.
89. CBI (2019) *Delivering Skills for the New Economy*. https://www.cbi.org.uk/media/2836/final_digital-skills_june.pdf [Accessed 6 January 2020].
90. Crossley, J (2015) *Developing Digital Skills: Citizenship and literacies in the public service workplace*. European Commission. <https://epale.ec.europa.eu/en/blog/developing-digital-skills-citizenship-and-literacies-public-service-workplace> [Accessed 8 June 2020].
91. House of Lords (2017) *Digital Skills in the United Kingdom*. https://www.legco.gov.hk/general/english/library/stay_informed_overseas_policy_updates/digital_skills_in_the_uk.pdf [Accessed 26 September 2019].

92. Lloyds Bank (2020) *UK Consumer Digital Index 2020*. https://www.lloydsbank.com/assets/media/pdfs/banking_with_us/whats-happening/lb-consumer-digital-index-2020-report.pdf [Accessed 13 May 2020].
93. ECORYS UK (2016) *Digital Skills for the UK Economy*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/492889/DCMSDigitalSkillsReportJan2016.pdf [Accessed 20 September 2019].
94. UKCES (2013) *Technology and Skills in the Construction Industry*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/305024/Technology_and_skills_in_the_construction_industry_evidence_report_74.pdf [Accessed on 26 September 2019].
95. Dolton, P & Pelkonen, P (2007) *The Impact of Computer Use, Computer Skills and Computer Use Intensity: Evidence from WERS 2004*. http://eprints.lse.ac.uk/19389/1/The_Impact_of_Computer_Use,_Computer_Skills_and_Computer_Use_Intensity_Evidence_from_WERS_2004..pdf [Accessed 26 September 2019].
96. Cebr (2018) *The Economic Impact of Digital Inclusion in the UK: A report for Good Things Foundation*. https://www.goodthingsfoundation.org/sites/default/files/research-publications/the_economic_impact_of_digital_inclusion_in_the_uk_final_submission_stc_0.pdf [Accessed 7 November 2019].
97. Cebr (2018) *The Economic Impact of Digital Inclusion in the UK: A report for Good Things Foundation*. https://www.goodthingsfoundation.org/sites/default/files/research-publications/the_economic_impact_of_digital_inclusion_in_the_uk_final_submission_stc_0.pdf [Accessed 7 November 2019].
98. Cebr (2018) *The Economic Impact of Digital Inclusion in the UK: A report for Good Things Foundation*. https://www.goodthingsfoundation.org/sites/default/files/research-publications/the_economic_impact_of_digital_inclusion_in_the_uk_final_submission_stc_0.pdf [Accessed 7 November 2019].

99. Office for National Statistics (2017) *Internet Access – Household and People, Great Britain*. <https://www.ons.gov.uk/peoplepopulationandcommunity/householdcharacteristics/homeinternetandsocialmediausage/bulletins/internetaccesshouseholdsandpeople/2017> [Accessed 27 September 2019].
100. Cebr (2018) *The Economic Impact of Digital Inclusion in the UK: A report for Good Things Foundation*. https://www.goodthingsfoundation.org/sites/default/files/research-publications/the-economic-impact-of-digital-inclusion-in-the-uk-final-submission_stc_0.pdf [Accessed 7 November 2019].
101. Warf, B (2019) Teaching Digital Divides. *Journal of Geography*, 118(2): 77-87.
102. Liff, S & Shepherd, A (2004) An Evolving Gender Digital Divide? Oxford Internet Institute, *Internet Issue Brief No. 2*.
103. Lloyds Bank (2020) *UK Consumer Digital Index 2020*. https://www.lloydsbank.com/assets/media/pdfs/banking_with_us/whats-happening/lb-consumer-digital-index-2020-report.pdf [Accessed 13 May 2020].
104. Joiner, R, Stewart, C & Beaney, C (2015) Gender Digital Divide: Does it exist and what are the explanations? In: Rosen L, Cheever, N & Carrier, M (eds) *The Wiley Handbook of Psychology, Technology and Society*. New York: Wiley: 74–88.
105. Fang, M L, Canham, S L, Battersby, L, Sixsmith, J, Wada, M & Sixsmith, A (2019) Exploring Privilege in the Digital Divide: Implications for theory, policy and practice. *The Gerontologist*, 59(1): e1-e15.
106. Ihm, J & Hsieh, Y P (2015) The Implications of Information and Communication Technology Use for the Social Well-being of Older Adults. *Information, Communication & Society*, 18(10): 1123-1138.
107. van Deursen, A J A M & van Dijk, J (2014) The Digital Divide Shifts to Differences in Usage. *New Media & Society*, 16(3): 507-526.

108. Haight, M, Quan-Haase, A & Corbett, B A (2014) Revisiting the Digital Divide in Canada: The impact of demographic factors on access to the internet, level of online activity, and social networking site usage. *Information, Communication & Society*, 17(4): 503-519.
109. Yu, R P, Ellison, N B, McCammon, R J & Langa, K M (2016) Mapping the Two Levels of Digital Divide: Internet access and social network site adoption among older adults in the USA. *Information, Communication & Society*, 19(1): 1445-1464.
110. Gan, X, Wang, K K H, Liu, L, Tuan, P P C, Chen, H G H & Chen, G (2016) Overcoming the Digital Divide: Computer access and use among the differently-abled elderly in Mainland China. *Gerontology*, 14(4): 204-209.
111. Casado-Munoz, R, Lezcano, F & Rodriguez-Condo, M J (2015) Active Ageing and Access to Technology: An evolving empirical study. *Comunicar*, 23(45): 37-46.
112. Lissitsa, S & Chachashvili-Boloton, S (2015) Does the Wind of Change Blow in Late Adulthood? Adoption of ICT by senior citizens during the past decade. *Poetics*, 52: 44-63.
113. McMaster, N C & Cook, R (2019) The Contribution of Intersectionality to Quantitative Research into Educational Inequalities. *Review of Education*, 7(2): 271-292.
114. Hernandez, K & Roberts, T (2018) *Leaving No One Behind in a Digital World*. K4D Emerging Issues. Brighton, UK: Institute of Development Studies.
115. Burns, D, Howard, J, Lopez-Franco, E, Shahrokh, T & Wheeler, J (2013) *Work With Us: How people and organisations can catalyse sustainable change*. Brighton, UK: Institute of Development Studies.
116. Herbert, S (2017) *Digital Development and the Digital Gender Gap: Knowledge, evidence and learning for development*. K4D Helpdesk Report: Knowledge, evidence and learning for development. <https://assets.publishing.service.gov.uk/media/5a5f228f40f0b652634c6f4a/249-Digital-development-and-the-digital-gender-gap.pdf> [Accessed 7 November 2019].
117. Warf, B (2019) Teaching Digital Divides. *Journal of Geography*, 118(2): 77-87.

118. Brock, A, Kvasny, L & Hales, K (2010) Cultural Appropriation of Technical Capital. *Information, Communications & Society*, 13(7): 1040-1059.
119. Baker, W E & Coleman, K M (2004) Racial Segregation and the Digital Divide in the Detroit Metropolitan Region. In Castells, M (ed). *The Network Society: A cross-cultural perspective*. Cheltenham: Edward Elgar: 249-268.
120. Eamon, M (2004) Digital Divide in Computer Use and Access Among Poor and Non-poor Youth. *Journal of Sociology and Social Welfare*, 31: 91-112.
121. Sankin, A (2014) The Digital Divide isn't Racial - It's economic. https://www.salon.com/2014/01/08/the_digital_divide_isnt_racial_its_economic/ [Accessed 23 October 2019].
122. Baker, W E & Coleman, K M (2004) Racial Segregation and the Digital Divide in the Detroit Metropolitan Region. In: Castells, M (ed). *The Network Society: A cross-cultural perspective*. Cheltenham: Edward Elgar: 249-268.
123. Abreu, R (2015) Race and Ethnicity in the Digital Divide. *The Wiley Blackwell Encyclopedia of Race, Ethnicity and Nationalism*. New York: Wiley.
124. Driskell, L & Wang, F (2009) Mapping Digital Divide in Neighborhoods: Wi-Fi access in Baton Rouge, Louisiana. *Annals of GIS*, 15(1): 35-46.
125. Office for National Statistics (2019) Exploring the UK's Digital Divide. <https://www.ons.gov.uk/peoplepopulationandcommunity/householdcharacteristics/homeinternetandsocialmediausage/articles/exploringtheuksdigitaldivide/2019-03-04> [Accessed 18 September 2019].
126. Joseph Rowntree Foundation (2011) *Poverty and Ethnicity: A review of the evidence*. <https://www.jrf.org.uk/report/poverty-and-ethnicity-review-evidence> [Accessed 20 September 2020].
127. Owen, D, Green, A E, McLeod, M, Law, I, Challis, T & Wilkinson, D (2003) *The Use of and Attitudes Towards Information and Communication Technologies (ICT) by People from Black and Minority Ethnic Groups Living in Deprived Areas*. Nottingham: Department for Education and Skills.

128. Bartikowski, B, Laroche, M, Jamal, A & Yang, Z (2018) The Type-of-Internet-Access Digital Divide and the Well-being of Ethnic Minority and Majority Consumers: A multi-country investigation. *Journal of Business Research*, 82: 373-380.
129. Ros, A, Gonzales, E, Marin, A & Sow, P (2007) Migration and Information Flow: A new lens for the study of contemporary international migration. *Internet Interdisciplinary Institute IN3 Working Paper Series*.
130. Lengsfeld, J H B (2011) An Econometric Analysis of the Socio-demographic Topology of the Digital Divide in Europe. *The Information Society*, 27(3): 141-157.
131. Yoon, H, Jang, Y, Vaughan, P W & Garcia, M. (2020) Older Adults' Internet Use for Health Information: Digital divide by race/ethnicity and socioeconomic status. *Journal of Applied Gerontology*, 39(1): 105-110.
132. Borkert, M, Cingolani, P & Premazzi, V (2009) *The State of the Art of Research in the EU on the Uptake and Use of ICT by Immigrants and Ethnic Minorities*. Seville: Joint Research Centre, Institute for Prospective Technological Studies, European Commission.
133. Carpio, G G (2018) Racial Projections: Cyberspace, public space, and the digital divide. *Information, Communication & Society*, 21(2): 174-190.
134. Yoon, H, Jang, Y, Vaughan, P W & Garcia, M. (2020) Older Adults' Internet Use for Health Information: Digital divide by race/ethnicity and socioeconomic status. *Journal of Applied Gerontology*, 39(1): 105-110.
135. Department for Digital, Culture, Media & Sport (2019) *Culture is Digital*. Policy Paper. 4.3: Reaching new audiences. <https://www.gov.uk/government/publications/culture-is-digital/culture-is-digital> [Accessed 20 September 2019].
136. OECD (2008) *Implementing E-Government in OECD Countries: Experiences and Challenges*. Background Paper. <http://www.oecd.org/mena/governance/36853121.pdf> [Accessed 20 September 2019].

137. Pimenidis, E, Iliadis, L S & Georgiadis, C K (2011) Can E-Government Systems Bridge the Digital Divide? *5th European Conference on Information Management and Evaluation (ECIME 2011)*. Como, Italy: Reading Academic Publishing Limited. 403-410.
138. OECD (2008) *Implementing E-Government in OECD Countries: Experiences and Challenges*. Background Paper. <http://www.oecd.org/mena/governance/36853121.pdf> [Accessed 20 September 2019].
139. Hernandez, K & Roberts, T (2018) *Leaving No One Behind in a Digital World*. K4D Emerging Issues. Brighton, UK: Institute of Development Studies.
140. United Nations (2018) United Nations E-Government Survey 2018. [https://publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/2018-Survey/EGovernment Survey 2018_FINAL_for_web.pdf](https://publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/2018-Survey/EGovernment%20Survey%202018_FINAL_for_web.pdf) [Accessed 27 September 2019].
141. House of Commons (2019) *Digital Government*. Eighteenth Report of Session 2017-19. <https://publications.parliament.uk/pa/cm201719/cmselect/cmsctech/1455/1455.pdf> [Accessed September 27 2019]
142. Government Digital Service (2012) Government Digital Strategy. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/296336/Government Digital Stratetegy - November 2012.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/296336/Government_Digital_Strategy_-_November_2012.pdf) [Accessed 27 September 2019].
143. GOV.UK (2019) GOV.UK Verify. <https://www.verify.service.gov.uk> [Accessed 24 October 2019].
144. GOV.UK (2019) Departments, Agencies and Public Bodies. <https://www.gov.uk/government/organisations> [Accessed 27 September 2019].
145. GOV.UK (2019) PM Theresa May: We will end UK contribution to climate change by 2050. <https://www.gov.uk/government/news/pm-theresa-may-we-will-end-uk-contribution-to-climate-change-by-2050> [Accessed 20 October 2019].

146. Government Digital Service (2015) *Government Digital Strategy: Quarterly progress, March 2015*. <https://www.gov.uk/government/publications/government-digital-strategy-quarterly-progress-report-march-2015/government-digital-strategy-quarterly-progress-report-march-2015> [Accessed 23 October 2019].
147. Office for National Statistics (2017) *Internet Access – Household and People, Great Britain: 2017*. <https://www.ons.gov.uk/peoplepopulationandcommunity/householdcharacteristics/homeinternetandsocialmediausage/bulletins/internetaccesshouseholdsandpeople/2017> [Accessed 27 September 2019].
148. Cabinet Office (2017) *Government Transformation Strategy*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/590199/Government_Transformation_Strategy.pdf [Accessed 27 September 2019]. 6-7; 21
149. Cabinet Office & Government Digital Service (2014) *Exemplar Services and Identity Assurance: How complex they are*. <https://www.gov.uk/government/publications/government-digital-inclusion-strategy/exemplar-services-and-identity-assurance-how-complex-they-are#electoral-registration> [Accessed 27 September 2019].
150. Waller, P & Weerakkody, V (2016) *Digital Government: Overcoming the systemic failure of transformation – Digital transformation through policy design with ICT-enhanced instruments*. SSRN Electronic Journal. London: Brunel University Press.
151. Seybert, H (2011) *Internet Use in Households and by People in 2011*. Eurostat Statistics in Focus, 66.
152. El-Haddadeh, R, Weerakkody, V, Osmani, M, Thakker, D & Kapoor, K (2019) *Examining Citizens' Perceived Value of Internet of Things Technologies in Facilitating Public Sector Services Engagement*. *Government Information Quarterly*, 36: 310-320.
153. Cruz-Jesus, F, Oliveira, T & Bacao, F (2017) *Assessing the pattern between economic and digital development of countries*. *Information Systems Frontiers*, 19(4): 835-854.

154. Carter, L, Weerakkody, V, Phillips, B & Dwivedi, Y.D (2016) Citizen Adoption of E-Government Services: Exploring citizen perceptions of online services in the US and UK. *Information Systems Management*, 33(2): 124-140.
155. Mahmood, M, Weerakkody, V & Chen, W (2019) The Role of Information and Communications Technology in the Transformation of Government and Citizen Trust. *International Review of Administrative Sciences*, 2019: 1-20
156. Becker, J, Niehaves, B & Bergener, P (2008) Digital Divide in E-Government: The E-Inclusion Gap Model in electronic government. *The 7th International Conference on Electronic Government*, 2008.
157. World Bank (2016) *World Development Report 2016: Digital dividends*. Washington, DC: World Bank.
158. European Commission (2018) *E-Government in United Kingdom*. E-Government Fact Sheet. https://joinup.ec.europa.eu/sites/default/files/inline-files/eGovernment_in_United_Kingdom_2018_0.pdf [Accessed 23 September 2019].
159. Al-Muwil, A, Weerakkody, V, El-haddadeh, R & Dwivedi, Y (2019) Balancing Digital-By-Default with Inclusion: A study of the factors influencing e-inclusion in the UK. *Information Systems Frontiers*, 21: 635-659.
160. Yates, S J, Kirby, J & Lockley, E (2015) 'Digital-by-Default': Reinforcing exclusion through technology. *In Defence of Welfare*, 2: 158-161.
161. World Bank (2016) *World Development Report 2016: Digital dividends*. Washington, DC: World Bank.
162. Yates, S J, Kirby, J & Lockley, E (2015) 'Digital-by-Default': Reinforcing exclusion through technology. *In Defence of Welfare*, 2, 158-161.
163. Hernandez, K & Roberts, T (2018) *Leaving No One Behind in a Digital World*. K4D Emerging Issues. Brighton, UK: Institute of Development Studies.

164. Al-Muwil, A, Weerakkody, V, El-haddadeh, R & Dwivdei, Y (2019) Balancing Digital-By-Default with Inclusion: A study of the factors influencing e-inclusion in the UK. *Information Systems Frontiers*, 21: 635-659.
165. Yates, S J, Kirby, J & Lockley, E (2015) 'Digital-by-Default': Reinforcing exclusion through technology. *In Defence of Welfare*, 2, 158-161.
166. Department for Digital, Culture, Media & Sport (2015) The New Cross Government Digital Inclusion Champion [Blog] <https://digitalinclusion.blog.gov.uk/2015/03/25/the-new-cross-government-digital-inclusion-champion/> [Accessed 28 September 2019].
167. Cabinet Office and Government Digital Service (2014) UK Digital Inclusion Charter. <https://www.gov.uk/government/publications/government-digital-inclusion-strategy/uk-digital-inclusion-charter> [Accessed 28 September 2019].
168. Department for Digital, Culture, Media & Sport (2015) The New Cross Government Digital Inclusion Champion [Blog] <https://digitalinclusion.blog.gov.uk/2015/03/25/the-new-cross-government-digital-inclusion-champion/> [Accessed 28 September 2019].
169. United Nations (2018) United Nations E-Government Survey 2018. [https://publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/2018-Survey/EGovernment Survey 2018 FINAL for web.pdf](https://publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/2018-Survey/EGovernment%20Survey%202018_FINAL_for%20web.pdf) [Accessed 27 September 2019].
170. Al-Muwil, A, Weerakkody, V, El-haddadeh, R & Dwivdei, Y (2019) Balancing Digital-By-Default with Inclusion: A study of the factors influencing e-inclusion in the UK. *Information Systems Frontiers*, 21: 635-659.
171. van Dijk, J (2005) *The Deepening Divide: Inequality in the information society*. London: Sage.
172. Bakardjieva, M (2005) *Internet Society: The Internet in everyday life*. Sage: London.

173. World Health Organization (2011) *World Report on Disability*. https://apps.who.int/iris/bitstream/handle/10665/70670/WHO-NMH_VIP_11.01_eng.pdf?sequence=1 [Accessed 11 April 2020].
174. World Health Organization (2018) 10 Facts on Disability. <https://www.who.int/news-room/facts-in-pictures/detail/disabilities> [Accessed 20 September 2019].
175. Department for Work and Pensions (2014) Disability Facts and Figures. <https://www.gov.uk/government/statistics/disability-facts-and-figures> [Accessed 20 September 2019].
176. Dobransky, K & Hargittai, E (2006) The Disability Divide in Internet Access and Use. *Information, Communication & Society*, 9(3): 313-334.
177. Vicente, M R & Lopez, A J (2010) A Multidimensional Analysis of the Disability Digital Divide. *The Information Society*, 26(1): 48-64.
178. Brunner, M, Hemsley, B, Palmer, S, Dann, S & Togherd, L (2015) Review of the Literature on the Use of Social Media by People with Traumatic Brain Injury (TBI). *Disability and Rehabilitation*, 37(1): 559-588.
179. Goggin, G & Newell, C (2003) *Digital Disability. The social construction of disability in new media*. Oxford: Rowman & Littlefield Publishers.
180. Palmer, S B, Wehmeyer, M L, Davies, DK & Stock, S E (2012) Family Members' Reports of the Technology Use of Family Members with Intellectual and Developmental Disabilities. *Journal of Intellectual Disability Research*, 56(4): 402-414.
181. Bradbrook, G & Fisher, J (2004) *Digital Equality: Reviewing digital inclusion activity and mapping the way forwards*. London: CitizensOnline.
182. Dobransky, K & Hargittai, E (2016) Unrealized Potential: Exploring the digital disability Divide. *Poetics*, 58: 18-28.
183. Harris, J (2010) The Use, Role and Application of Advanced Technology in the Lives of Disabled People in the UK. *Disability & Society*, 25(4): 427-439.
184. Clayton, J & Macdonald, S J (2013) The Limits of Technology. *Information, Communication & Society*, 16(6): 945-966.

185. Royal National Institute of Blind People (2012) *Tackling Digital Exclusion*. https://www.rnib.org.uk/sites/default/files/digital_exclusion_report_accessible.pdf [Accessed 30 September 2019].
186. Hynan, A, Murray, J & Goldbart, J (2014) Happy and Excited: Perceptions of using digital technology and social media by young people who use augmentative and alternative communication. *Child Language Teaching and Therapy*, 30(2): 175-186.
187. Dobransky, K & Hargittai, E (2016) Unrealized Potential: Exploring the digital disability Divide. *Poetics*, 58: 18-28.
188. Scholz, F, Yalcin, B & Priestley, M (2017) Internet Access for Disabled People: Understanding socio-relational factors in Europe. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 11(1).
189. Harris, J (2010) The Use, Role and Application of Advanced Technology in the Lives of Disabled People in the UK. *Disability & Society*, 25(4): 427-439.
190. Watling, S (2011) Digital Exclusion: Coming out from behind closed doors. *Disability & Society*, 26(4): 491-495.
191. Clayton, J & Macdonald, S J (2013) The limits of technology. *Information, Communication & Society*, 16(6): 945-966.
192. Chadwick, D D & Fullwood, C (2018) An Online Life Like any Other: Identity, self-determination, and social networking among adults with intellectual disabilities. *Cyberpsychology, Behavior & Social Networking*, 21(1): 56-64.
193. Bannon, S, McGlynn, T, McKenzie, K & Quayle, E (2015) The Positive Role of Internet Use for Young People with Additional Support Needs: Identity and connectedness. *Computers in Human Behavior*, 53: 504-514.
194. Dutton, W, Helsper, E J & Gerber, M M (2009) *The 2009 OxiS Survey: The Internet in Britain*. Oxford: OUP.
195. Manzoor, M & Vimarlund, V (2018) Digital Technologies for Social Inclusion of People with Disabilities. *Health and Technology*, 8: 377-390.
196. Tsatsou, P (2020) Is Digital Inclusion Fighting Disability Stigma? Opportunities, barriers, and recommendations. *Disability & Society*, 1-27.

197. Tsatsou, P (2019) Digital Inclusion of People with Disabilities: A qualitative study of intra-disability diversity in the digital realm. *Behaviour & Information Technology*: 1-16.
198. Henshaw, H, Clarke, D P, Kang, S & Ferguson, M A (2012) Computer Skills and Internet Use in Adults Aged 50-74 Years: Influence of hearing difficulties. *Journal of Medical Research*, 14(4): 3.
199. Duplaga, M. (2017) Digital Divide Among People with Disabilities: Analysis of data from a nationwide study for determinants of internet use and activities performed online. *PLoS ONE*, 16: 1-19.
200. Office for National Statistics (2020) Frequency of Internet Use, Population Counts, by Age Group, Great Britain, 2019. <https://www.ons.gov.uk/peoplepopulationandcommunity/householdcharacteristics/homeinternetandsocialmediausage/s/11389frequencyofinternetusepopulationcountsbyagegroupgreatbritain2019> [Accessed 10 June 2020].
201. Matthews, K & Nazroo, J (2016) *Understanding Digital Engagement in Later Life*. University of Manchester. <https://www.gov.uk/government/publications/understanding-digital-engagement-in-later-life> [Accessed 25 September 2019].
202. Wei, L (2012) Number Matters: The multimodality of internet use as an indicator of the digital inequalities. *Journal of Computermediated Communication*, 17(3): 303-318.
203. Morris, A (2007) E-literacy and the Grey Digital Divide: A review with recommendations. *Journal of Information Literacy*, 2(3).
204. Lee, C & Coughlin, J F (2014) PERSPECTIVE - Older Adults' Adoption of Technology: An integrated approach to identifying determinants and barriers. *Journal of Product Innovation Management*, 32(5).
205. Carvalho, D, Bessa, M, Oliveira, L, Guedes, C, Peres, E & Magalhaes, L (2012) New Interaction Paradigms to Fight the Digital Divide: A pilot case study regarding multi-touch technology. *Procedia Computer Science*, 14: 128-137.
206. Elliot, A, Mooney, C, Douthit, K & Lynch, M (2014) Predictors of Older Adults' Technology Use and its Relationship to Depressive Symptoms and Well-being. *Journals of Gerontology: Psychological*

- Sciences and Social Sciences*, 69B(5): 667-677.
207. Freese, J, Rivas, S & Hargittai, E (2006) Cognitive ability and Internet use among older adults. *Poetics*, 34(4): 236-249.
 208. Sayago, S, Sloan, D & Blat, J (2011) Everyday Use of Computermediated Communication Tools and its Evolution over Time: An ethnographical study with older people. *Interacting with Computers*, 23(5): 543-554.
 209. Charness, N & Boot, W (2009) Aging and Information Technology Use: Potential and barriers. *Current Directions in Psychological Science*, 18(5): 253-258.
 210. Selwyn, N, Gorard, S, Furlong, J & Madden, L (2003) Older Adults' Use of Information and Communications Technology in Everyday Life. *Ageing & Society*, 23(5): 561-582.
 211. Chang, J, McAllister, C & McCaslin, R (2015) Correlates of, and Barriers to, Internet Use Among Older Adults. *Journal of Gerontological Social Work*, 58(1): 66-85.
 212. Salanova, M, Grau, R.M, Cifre, E & Llorens, S (2000) Computer Training, Frequency of Usage and Burnout: The moderating role of computer self-efficacy. *Computers in Human Behavior*, 16(6): 575-590.
 213. Lam J C Y & Lee, M K O (2006) Digital Inclusiveness-longitudinal Study of Internet Adoption by Older Adults. *Journal of Management Information Systems*, 22: 177-206.
 214. Green, M & Rossal, P (2013) *Digital Inclusion Evidence Review*. Age UK Digital Inclusion Evidence Report.
 215. Yu, R, Ellison, N, McCammon, R & Langa, K (2015) Mapping the Two Levels of Digital Divide: Internet access and social network site adoption among older adults in the USA. *Information, Communication & Society*, 19(10): 1-20.
 216. Shima, S, Mathews, R M, Hughes, I & Campbell, A J (2008) Internet Use and Loneliness in Older Adults. *Cyberpsychology & Behavior*, 11(2): 208-211.
 217. McMellon, C A & Schiffman, L G (2002) Cybersenior Empowerment: How some older people are taking control of their lives. *Journal of Applied Gerontology*, 21: 157-175.

218. Pettigrew, S & Roberts, M (2008) Addressing Loneliness in Later Life. *Aging & Mental Health*, 12: 302-309.
219. Tun, P.A & Lachman, M E (2010) The Association Between Computer Use and Cognition Across Childhood: Use it so you won't lose it? *Psychology and Ageing*, 25: 560-568.
220. McMellon, C A & Schiffman, L G (2002) Cybersenior Empowerment: How some older people are taking control of their lives. *Journal of Applied Gerontology*, 21: 157-175.
221. Gatto S L & Tak, S H (2008) Computer, Internet, and E-mail use Among Older Adults: Benefit and barriers. *Educational Gerontology*, 34: 800-811.
222. Vroman, K G, Arthanat, S & Lysack, C (2015) Who Over 65 is Online? Older adults' dispositions toward information communication technology. *Computers in Human Behavior*, 43: 156-166.
223. Alpass, F M & Neville, S (2003) Loneliness, Health and Depression in Older Males. *Ageing & Mental Health*, 7(3): 212-216.
224. Cattan, M, White, M, Bond, J & Learmouth, A (2005) Preventing Social Isolation and Loneliness Among Older People: A systematic review of health promotion interventions. *Ageing & Society*, 25: 41-67.
225. Lawlor, E (2014) *Valuing Digital Inclusion: Calculating the social value to people of going online*. BT Get IT Together Project.
226. Hill, R, Betts, L R & Gardner, S E (2015) Older Adults' Experiences and Perceptions of Digital Technology: (Dis)empowerment, wellbeing, and inclusion. *Computers in Human Behavior*, 48: 415-423.
227. Bolt, D & Crawford, R (2000) *Digital Divide: Computers and Our Children's Future*. New York: TV Books.
228. Livingstone, S & Bovill, M (2001) *Families and the Internet: An observational study of children and young people's internet use*. London: London School of Economics.
229. UK Parliament POST (2020) *Online Safety Education*. <https://post.parliament.uk/research-briefings/post-pn-0608/> [Accessed 10 June 2020].
230. Smahel, D, Machackova, H, Mascheroni, G, Dedkova, L, Staksrud,

- E, Ólafsson, K, Livingstone, S & Hasebrink, U (2020) *EU Kids Online 2020: Survey results from 19 countries*. <http://www.lse.ac.uk/media-and-communications/assets/documents/research/eu-kids-online/reports/EU-Kids-Online-2020-10Feb2020.pdf> [Accessed 11 June 2020].
231. Notten, N, Peter, J, Kraaykamp, G & Valkenburg, P M (2009) Research Note: Digital Divide Across Borders – A cross-national study of adolescents’ use of digital technologies. *European Sociological Review*, 25(5): 551-560.
232. Sayer, L C, Bianchi, S M & Robinson, J P (2004) Are Parents Investing Less in Children? Trends in mothers’ and fathers’ time with children. *American Journal of Sociology*, 110: 1-43.
233. Notten, N, Peter, J, Kraaykamp, G & Valkenburg, P M (2009) Research Note: Digital Divide Across Borders – A Cross-National Study of Adolescents’ Use of Digital Technologies. *European Sociological Review*, 25(5): 551-560.
234. DiMaggio, P, Hargittai, E, Celeste, C & Shafer, S (2004) Digital Inequality: From unequal access to differentiated use. In Neckerman, K (ed.) *Social Inequality*. New York: Russell Sage Foundation: 355-400.
235. The Lancet Child & Adolescent Health (2018) *Growing up in a Digital World: Benefits and risks*. [https://www.thelancet.com/journals/lanchi/article/PIIS2352-4642\(18\)30002-6/fulltext](https://www.thelancet.com/journals/lanchi/article/PIIS2352-4642(18)30002-6/fulltext) [Accessed 7 November 2019]
236. UNICEF (2017) *The State of the World’s Children 2017: Children in a digital world*. https://www.unicef.org/publications/index_101992.html [Accessed 20 September 2019].
237. Youngminds (2018) *Safety Net: Cyberbullying’s impact on young people’s mental health*. Inquiry Report. https://www.childrenssociety.org.uk/sites/default/files/social-media-cyberbullying-inquiry-full-report_0.pdf [Accessed 15 September 2019].
238. NSPCC (2016) *What Children are Telling us about Bullying*. <https://learning.nspcc.org.uk/media/1204/what-children-are-telling-us-about-bullying-childline-bullying-report-2015-16.pdf> [Accessed 10 September 2019].

239. Youngminds (2018) *Safety Net: Cyberbullying's impact on young people's mental health*. Inquiry Report. https://www.childrenssociety.org.uk/sites/default/files/social-media-cyberbullying-inquiry-full-report_0.pdf [Accessed 15 September 2019].
240. Livingstone, S & Third, W (2017) Children and Young People's Rights in the Digital Age: An emerging agenda. *New Media & Society*, 19(5): 657-670.
241. Eynon, R & Geniets, A (2016) The Digital Skills Paradox: How do digitally excluded youth develop skills to use the internet? *Learning, Media and Technology*, 41(3): 463-479.
242. Facer, K & Furlong, R (2001) Beyond the Myth of the 'Cyberkid': Young people at the margins of the information revolution. *Journal of Youth Studies*, 4(4): 451-469.
243. Livingstone, S & Bober, M (2005) *Inequalities and the Digital Divide in Children and Young People's Internet Use; Findings from the UK Children Go Online project*. <https://www.york.ac.uk/res/e-society/projects/1/UKCGOdigitaldivide.pdf> [Accessed 29 September 2019].
244. Fang, M L, Canham, S L, Battersby, L, Sixsmith, J, Wada, M & Sixsmith, A (2019) Exploring Privilege in the Digital Divide: Implications for theory, policy and practice. *The Gerontologist*, 59(1): e1-e15.
245. Casado-Munoz, R, Lezcano, F & Rodriguez-Condo, M J (2015) Active ageing and access to technology: An evolving empirical study. *Comunicar*, 23(45): 37-46.
246. Graham, R (2010) Group Differences in Attitudes Towards Technology among Americans. *New Media & Society*, 12(6): 985-1003.
247. Atkinson, J, Black, R and Curtis, A (2008) Exploring the Digital Divide in an Australian Regional City: A case study of Albury. *Australian Geographer*, 39(4): 479-493.
248. Fang, M L, Canham, S L, Battersby, L, Sixsmith, J, Wada, M & Sixsmith, A (2019) Exploring privilege in the Digital Divide: Implications for theory, policy and practice. *The Gerontologist*, 59(1): e1-e15.

249. Fang, M L, Canham, S L, Battersby, L, Sixsmith, J, Wada, M & Sixsmith, A (2019) Exploring privilege in the Digital Divide: Implications for Theory, Policy and Practice. *The Gerontologist*, 59(1): e1-e15.
250. Boger, J, Jackson, P, Mulvenna, M, Sixsmith, J, Sixsmith, A, Mihailidis, A, Martin, S (2016) Principles for fostering the transdisciplinary development of assistive technologies. *Disability and Rehabilitation: Assistive Technology*, 12(5): 480-490.
251. Riva, G, Graffigna, G, Baitieri, M, Amato, A, Bonanomi, M G, Valentini, P & Castelli, G (2014) Active and Healthy Ageing as a Wicked Problem: The contribution of a multidisciplinary research university. *Studies in Health Technology and Informatics*, 203: 10-19.
252. van Dijk, J A (2012) The Evolution of the Digital Divide: The digital divide turns to inequality of skills and usage. *Digital Enlightenment Yearbook*, 57-75.
253. Hankivsky, O (2014) Intersectionality 101. *Journal of Computer Assisted Learning*, 64(1): 238.
254. Fang, M L, Canham, S L, Battersby, L, Sixsmith, J, Wada, M & Sixsmith, A (2019) Exploring privilege in the Digital Divide: Implications for theory, policy and practice. *The Gerontologist*, 59(1): e1-e15.
255. Chopik, W J (2016) The Benefits of Social Technology Use Among Older Adults are Mediated by Reduced Loneliness. *Cyberpsychology, Behavior and Social Networking*, 19(9): 551-556.
256. Vehovar V, Sicherl, P, Husing, T & Dolnicar, V (2006) Methodological Challenges of Digital Divide Measurements. *The Information Society*, 22: 279-290.
257. Hacker K L & Mason, S M (2003) Ethical Gaps in Studies of the Digital Divide. *Ethics and Information Technology*, 5: 99-115.
258. van Dijk, J & Hacker, K (2003) The Digital Divide as a Complex and Dynamic Phenomenon. *The Information Society*, 19(4): 315-326.
259. Hacker K L & Mason, S M (2003) Ethical Gaps in Studies of the Digital Divide. *Ethics and Information Technology*, 5: 99-115.
260. Hacker K L & Mason, S M (2003) Ethical Gaps in Studies of the Digital Divide. *Ethics and Information Technology*, 5: 99-115.

261. Hernandez, K & Roberts, T (2018) *Leaving No One Behind in a Digital World*. K4D Emerging Issues Report. Brighton, UK: Institute of Development Studies.
262. Fang, M L, Canham, S L, Battersby, L, Sixsmith, J, Wada, M & Sixsmith, A (2019) Exploring privilege in the Digital Divide: Implications for Theory, Policy and Practice. *The Gerontologist*, 59(1): e1-e15.
263. Larsson, E, Larsson-Lund, M & Nilsson, I (2013) Internet-Based Activities (IBAs): Seniors' experiences of the conditions required for the performance of and the influence of these conditions on their own participation in society. *Educational Gerontology*, 39(3): 155-167.
264. Greater London Authority (2018) *Smarter London Together*. https://www.london.gov.uk/sites/default/files/smarter_london_together_v1.66_-_published.pdf [Accessed 30 September 2019]. p.5.
265. Janssen, M, Matheus, R & Zuiderwijk, A (2015) Big and Open Linked Data (BOLD) to Create Smart Cities and Citizens: Insights from smart energy and mobility cases. In Tambouris, E, Janssen, M, Scholl, H J, Wimmer, M A, Tarabanis, K, Gasco, M, Klievink, B, Lindgren, I & Parycek, P (eds) *Electronic Government- 14th IFIP WG 8.5 International Conference, EGOV 2015 - Proceedings. Lecture Notes in Computer Science 9248*. Heidelberg: Springer. 79-90.
266. Department for Digital, Culture, Media & Sport (2020) New £65 Million Package for 5G Trials. <https://www.gov.uk/government/news/new-65-million-package-for-5g-trials> [Accessed 10 June 2020].
267. Kar, A K, Ilavarasan, V, Gupta, M P, Janssen, M & Kothari, R (2019) Moving beyond Smart Cities: Digital nations for social innovation & sustainability. *Information Systems Frontiers*, 21: 495-501.
268. Kar, A K, Ilavarasan, V, Gupta, M P, Janssen, M & Kothari, R (2019) Moving beyond Smart Cities: Digital nations for social innovation & sustainability. *Information Systems Frontiers*, 21: 495-501.
269. Department for Digital, Culture, Media & Sport (2019) Digital Identity: Call for Evidence. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/818801/Digital_Identity_-_Call_for_Evidence.pdf [Accessed 23 October 2019].

270. GOV.UK (2019) GOV.UK Verify. <https://www.verify.service.gov.uk/> [Accessed 24 October 2019].
271. GOV.UK (2019) PM Theresa May: We will end UK contribution to climate change by 2050. <https://www.gov.uk/government/news/pm-theresa-may-we-will-end-uk-contribution-to-climate-change-by-2050> [Accessed 20 October 2019].
272. Department for Environment, Food & Rural Affairs (2018) *Greening Government: Sustainable technology strategy 2020*. <https://www.gov.uk/government/publications/greening-government-sustainable-technology-strategy-2020> [Accessed 20 October 2019]
273. Government Digital Service (2019) Measuring the Climate Impact of our Digital Services at GDS. [Blog] <https://gds.blog.gov.uk/2019/10/03/measuring-the-climate-impact-of-our-digital-services-at-gds/> [Accessed 20 October 2019].
274. Peacock, A (2020) Bridging the Digital Divide in COVID-19. <https://www.thinkglobalhealth.org/article/bridging-digital-divide-covid-19> [Accessed 10 April 2020].
275. Department for Digital, Culture, Media & Sport and The Rt Hon Oliver Dowden CBE MP (2020) Government agrees measures with telecoms companies to support vulnerable consumers through COVID-19. <https://www.gov.uk/government/news/government-agrees-measures-with-telecoms-companies-to-support-vulnerable-consumers-through-covid-19> [Accessed 10 June 2020].
276. Lloyds Bank (2019) *UK Consumer Digital Index 2019*. https://www.lloydsbank.com/assets/media/pdfs/banking_with_us/whats-happening/LB-Consumer-Digital-Index-2019-Report.pdf [Accessed 5 January 2020].
277. Doteveryone (2019) *2018/19 Annual Review*. https://www.doteveryone.org.uk/wp-content/uploads/2019/12/DE_Annual-Report-Soft-Copy_Final-I-min.pdf [Accessed 2 January 2020].
278. Doteveryone (2019) *Unintended Consequences - Prompts*. <https://doteveryone.org.uk/wp-content/uploads/2019/04/Unintended-Consequences-Prompts-PDF.pdf> [Accessed 23 May 2020].

279. Mervyn, K, Simon, A & Allen, D K (2014) Digital Inclusion and Social Inclusion: A tale of two cities. *Information, Communication & Society*, 17(9): 1086-1104.
280. AbilityNet (2020) AbilityNet. <https://abilitynet.org.uk> [Accessed 14 March 2020].
281. BAE Systems (2019) Futurists Predict Top Careers by 2040. <https://www.baesystems.com/en-uk/article/ai-vr-and-robotics-our-futurists-predict-top-careers-by-the-year-2040> [Accessed 12 April 2020].
282. Kormos, E M (2018) The Unseen Digital Divide: Urban, suburban, and rural teacher use and perceptions of web-based classroom technologies. *Interdisciplinary Journal of Practice, Theory, and Applied Research*, 35(1): 19-31.
283. Government Office for Science (2017) *Evidence from the Lifetime Learning in the Digital Age Summit*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/627690/Skills_and_lifelong_learning_-_learning_in_the_digital_age_-_CLEAN.pdf [Accessed 14 March 2020].
284. European Commission (2018) Connecting Europe Facility, Digital Europe and Space Programmes. Legal texts and factsheets. https://ec.europa.eu/commission/publications/connecting-europe-facility-digital-europe-and-space-programmes_en [Accessed 14 March 2020].
285. All-Party Parliamentary Group on Digital Skills (2020) Call for Evidence. <https://connectpa.co.uk/digital-skills-appg/> [Accessed 15 June 2020].
286. mHabitat (2020) Co-design & Development. <https://wearemhabitat.com/services/co-design-and-development> [Accessed 12 April 2020].
287. Diversability Card (2020) Diversability Card. <https://www.diversabilitycard.co.uk> [Accessed 7 January 2020].
288. Helsper, E J (2015) *Inequalities in Digital Literacy: Definitions, measurements, explanations and policy implications*. ICT Household Survey Articles, 175-186.
289. Helsper, E J, Van Deursen, A J A M & Eynon, R (2015) *Tangible*

- Outcomes of Internet Use*. London: LSE.
290. Deloitte (2019) *Closing the Digital Gap: Shaping the future of UK healthcare*. <https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/life-sciences-health-care/deloitte-uk-life-sciences-health-care-closing-the-digital-gap.pdf> [Accessed 22 December 2019].
291. Turner, A (2015) Generation Z: Technology and Social Interest. *The Journal of Individual Psychology*, 71(2): 103-113.
292. Ofcom (2015) *Children and Parents: Media use and attitudes report 2015*. <https://www.ofcom.org.uk/research-and-data/media-literacy-research/children-parents-nov-15> [Accessed 5 January 2020].
293. Palley, W (2012) *Gen Z: Digital in their DNA*. New York: Thompson.
294. Ipsos MORI (2019) How Britain Voted in the 2019 Election. <https://www.ipsos.com/ipsos-mori/en-uk/how-britain-voted-2019-election> [Accessed 7 January 2020].
295. Ohme, J (2019) When Digital Natives Enter the Electorate: Political social media use among first-time voters and its effects on campaign participation. *Journal of Information Technology & Politics*, 16(2): 119-136.
296. YoungMinds (2016) *Resilience for the Digital World*. https://youngminds.org.uk/media/1490/resilience_for_the_digital_world.pdf [Accessed 14 March 2020].
297. Bright Little Labs (2019) Our Mission. <https://brightlittlelabs.org/#contact-tag> [Accessed 22 December 2019]
298. Scottish Government (2018) *Distributed Ledger Technologies in Public Services*. <https://www.gov.scot/publications/distributed-ledger-technologies-public-services/pages/14/> [Accessed 3 January 2020].
299. Valenzuela, S (2013) Unpacking the Use of Social Media for Protest Behavior: The roles of information, opinion expression, and activism. *American Behavioral Scientist*, 57(7): 920-942.
300. Sandoval-Almazan, R & Gil-Garcia, J R (2014) Towards Cyberactivism 2.0? Understanding the use of social media and other information technologies for political activism and social movements. *Government Information Quarterly*, 31(3): 365-378.

301. Keating, A & Melis, G (2017) Social Media and Youth Political Engagement: Preaching to the converted or providing a new voice for youth? *The British Journal of Politics and International Relations*, 19(4): 877-894.
302. Office for National Statistics (2020) Frequency of Internet Use, Population Counts by Age Group, Great Britain 2019. <https://www.ons.gov.uk/peoplepopulationandcommunity/householdcharacteristics/homeinternetandsocialmediausage/adhoc/s/11389frequencyofinternetusepopulationcountsbyagegroupgreatbritain2019> [Accessed 24 July 2020].
303. OECD (2012) *OECD Internet Economy Outlook 2012*. Paris: OECD Publishing.
304. Herlihy, P (2013) 'Government as a data model': What I learned in Estonia. [Blog] Government Digital Service and Cabinet Office. <https://gds.blog.gov.uk/2013/10/31/government-as-a-data-model-what-i-learned-in-estonia/> [Accessed 4 April 2020].
305. Electoral Commission (2019) 2017 *Electoral Fraud Data*. <https://www.electoralcommission.org.uk/who-we-are-and-what-we-do/our-views-and-research/our-research/electoral-fraud-data/2017-electoral-fraud-data> [Accessed 4 January 2020].
306. House of Lords (2020) An Electoral System Fit for Today? More to be done. *Select Committee on the Electoral Registration and Administration Act 2013: Report of Session 2019-21*. <https://publications.parliament.uk/pa/ld5801/ldselect/ldelecereg/83/83.pdf> [Accessed 31 July 2020].
307. WebRoots Democracy (2016) Secure Voting. <https://webrootsdemocracy.org/secure-voting/> [Accessed 3 January 2020].
308. Pirate Party UK (2019) Pirate Party UK. <https://www.pirateparty.org.uk> [Accessed 3 January 2020].
309. HM Government (2019) *Online Harms White Paper*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/793360/Online_Harms_White_Paper.pdf [Accessed 5 January 2020].

310. Centre for Data Ethics and Innovation (2020) About Us. <https://www.gov.uk/government/organisations/centre-for-data-ethics-and-innovation/about> [Accessed 11 June 2020].
311. Bennett, T (2001) Cultural Policy and Cultural Diversity. In: Bennett, T (ed.) *Cultural Policy and Cultural Diversity: Mapping the policy domain*. Belgium: Council of Europe Publishing. 55-63. Quote, p.60.
312. Stack, J (2013) *Tate Digital Strategy 2013-15: Digital as a Dimension of Everything*. <https://www.tate.org.uk/research/publications/tate-papers/19/tate-digital-strategy-2013-15-digital-as-a-dimension-of-everything> [Accessed 5 January 2020].
313. Taylor, J & Gibson, L K (2017) Digitisation, Digital Interaction and Social Media: Embedded barriers to democratic heritage. *International Journal of Heritage Studies*, 23(5): 408-420.
314. Waterton, E (2005) Whose Sense of Place? Reconciling archaeological perspectives with community values: cultural landscapes in England. *International Journal of Heritage Studies*, 11(4): 309-325.
315. Taylor, J & Gibson, L K (2017) Digitisation, Digital Interaction and Social Media: Embedded barriers to democratic heritage. *International Journal of Heritage Studies*, 23(5): 408-420.
316. Department for Digital, Culture, Media and Sports (DCMS) (2018) *Culture Is Digital*. London: Department for Digital, Culture, Media and Sports. 21.
317. United Nations (2019) World Stumbling Zombie-like into a Digital Welfare Dystopia, warns UN Human Rights Expert. <https://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=25156&LangID=E> [Accessed 5 January 2020].
318. OECD (2019) Can Digital Technologies Really be Used to Reduce Inequalities? <https://oecd-development-matters.org/2019/02/28/can-digital-technologies-really-be-used-to-reduce-inequalities/> [Accessed 2 January 2020].
319. Accenture (2020) Responsible AI and Robotics: An ethical framework. <https://www.accenture.com/gb-en/company-responsible-ai-robotics> [Accessed 2 January 2020].

320. Doteveryone (2020) *People, Power and Technology: The 2020 digital attitudes report*. https://www.doteveryone.org.uk/wp-content/uploads/2020/05/PPT-2020_Soft-Copy.pdf [Accessed 23 May 2020].
321. Geiger, H L (2011) A Standard for Digital Signage Privacy. In: Müller, J, Alt, F & Michelis, D (eds) *Pervasive Advertising*. London: Springer-Verlag, 103-118.
322. Goldstein, K, Tov, O S & Prazeres, D (2018) *The Right to Privacy in the Digital Age*. <https://www.ohchr.org/Documents/Issues/DigitalAge/ReportPrivacyinDigitalAge/PiratePartiesInternational.pdf> [Accessed 3 January 2020].
323. Invu (2019) *Risky Business: Analysing the state of UK business processes*. <https://www.invu.net/app/uploads/2019/11/Research-Report-2019-Risky-Business-analysing-the-state-of-UK-business-process.pdf> [Accessed 12 April 2020].
324. Legislation.gov.uk (2019) The Data Protection, Privacy and Electronic Communications (Amendments etc) (EU Exit) Regulations 2019. <https://www.legislation.gov.uk/ukxi/2019/419/introduction/made> [Accessed 16 June 2020].
325. Eynon, R & Helsper, E (2010) Adults Learning Online: Digital choice and/or digital exclusion? *New Media & Society*, 13(4): 534-551.
326. Helsper, E (2014) Harnessing ICT for Social Action – A digital volunteering programme. *European Commission*, 1-30: 24-26.
327. Digital, Culture, Media and Sport Committee (2020) *Impact of COVID-19 on DCMS Sectors: First Report*. Third Report of Session 2019-21. <https://committees.parliament.uk/publications/2022/documents/19516/default/> [Accessed 31st July 2020]
328. All-Party Parliamentary Group on Digital Skills (2020) *The Impact of COVID-19 and Lessons Learned for Improving Digital Skills and the Future*. <https://connectpa.co.uk/wp-content/uploads/2020/07/Digital-Skills-APPG-report-2020.pdf> [Accessed 31st July 2020].
329. van Jijk, J (2020) *The Digital Divide*. Cambridge: Polity Press.

330. Welsh Government (2020) Extra £3 Million to Support 'Digitally Excluded' Learners in Wales. <https://gov.wales/extra-3-million-pounds-support-digitally-excluded-learners-wales> [Accessed 8 June 2020].
331. de Mesa, J C & Jacinton, L G (2020) Facebook Groups as Social Intervention Tools for Improving Digital Skills. *Social Work Education*, 39(1): 71-84.
332. Hurt, N E, Moss, G S, Bradley, C I, Larson, L R, Lovelace, M & Prevost, L B (2012) The 'Facebook' Effect: College students' perception of online discussions in the age of social networking. *International Journal for the Scholarship of Teaching and Learning*, 6(2): 2.
333. Meishar-Tal, H, Kurtz, G & Pieterse, E (2012) Facebook Groups as LMS: A case study. *The International Review of Research in Open and Distributed Learning*, 13(4): 33-48.
334. Barczyk, C C & Duncan, D G (2013) Facebook in Higher Education Courses: An analysis of students' attitudes, community of practice, and classroom community. *International Business and Management*, 6(1): 1-11.
335. Erkut, B (2020) From Digital Government to Digital Governance: Are we there yet? *Sustainability*, 12 (860): 1-13.
336. Digital Skills Foundation (2020) Thriving in a Digital World. <https://digitalskillsfoundation.org/index.php> [Accessed 14 March 2020].
337. United Nations Department of Economic and Social Affairs (2020) *COVID-19: Embracing digital government during the pandemic and beyond*. UN/DESA Policy Brief, 61. <https://www.un.org/development/desa/dpad/publication/un-desa-policy-brief-61-covid-19-embracing-digital-government-during-the-pandemic-and-beyond/> [Accessed 20 April 2020].
338. Montacute, R (2020) *Social Mobility and Covid-19: Implications of the Covid-19 crisis for educational inequality*. The Sutton Trust. <https://www.suttontrust.com/wp-content/uploads/2020/04/COVID-19-and-Social-Mobility-1.pdf> [Accessed 15 June 2020].

339. ATD Fourth World UK (2020) Digital Exclusion: Feeling anxious, under pressure, and bored. [Blog] <https://atd-uk.org/2020/05/18/digital-exclusion-feeling-anxious-under-pressure-and-bored/> [Accessed 10 June 2020].
340. Yoon, H, Jang, Y, Vaughan, P W & Garcia, M (2020) Older Adults' Internet Use for Health Information: Digital divide by race/ethnicity and socio-economic status. *Southern Gerontological Society*, 39(1): 105-110.
341. Ito, M, Gutierrez, K, Livingstone, S, Penuel, B, Rhodes, J, Salen, K, Schor, J, Sefton-Green, J & Watkins, S G (2013) *Connected Learning: An agenda for research design*. Irvine: Digital Media and Learning Research Hub. Quote, p.4.
342. Digital Champions Network (2020) Who are Digital Champions? <https://www.digitalchampionsnetwork.com/content/learn-share-change-lives> [Accessed 8 January 2020].
343. Dunn, S & Gallant, K (2019) *One Digital 2017-2020: Embedding digital inclusion through digital champion approaches – Lessons learned*. Sara Dunn Associates. <https://storage.googleapis.com/onedigitaluk/2019/11/4f9fec7-one-digital-case-studies-embedding-digital-inclusion-through-digital-champion-approaches.pdf> [Accessed 2 January 2020].
344. Citizens Online (2019) Digital Champions. <https://www.citizenonline.org.uk/digital-champions/> [Accessed 28 December 2019].
345. Future.now (2020) The UK Faces a Digital Skills Crisis. <https://futuredotnow.uk/about-us/> [Accessed 4 April 2020].

Cumberland Lodge empowers people to tackle the causes and effects of social division.

Since 1947, we have been breaking down silo thinking and building interdisciplinary, cross-sector networks that make a difference. We are an incubator of fresh ideas that promotes progress towards more peaceful, open and inclusive societies.

We actively involve young people in all aspects of our work, and our educational programmes nurture their potential as future leaders and change-makers.

Our stunning facilities are available to hire for residential or non-residential conferences, meetings and special events. Every booking helps to support our charitable work.

Cumberland Lodge
The Great Park
Windsor
Berkshire SL4 2HP
cumberlandlodge.ac.uk
enquiries@cumberlandlodge.ac.uk
01784 432316
    @cumberlandlodge

Cumberland Lodge is a company limited by guarantee.
Company number 5383055
Registered charity number 1108677
© Cumberland Lodge 2020 All rights reserved