



Digital Skills in the United Kingdom

Summary

This Lords Library Briefing has been prepared in advance of the debate scheduled to take place in the House of Lords on 7 September 2017 on the following motion:

Baroness Lane-Fox of Soho to move that this House takes note of the case for improved digital understanding at all levels of United Kingdom society.

Digital technology has transformed UK and global society, both in the workplace and at home. Given the continuing advances in digital technology, the importance of digital skills to both the economy and the ability of people to function in an increasingly digital world have been emphasised. In 2017, Lloyds Bank reported that 11.5 million people in the UK lacked basic digital skills, and the Office for National Statistics estimated 9 percent of people had never used the internet. Research has indicated that age, disability, social class, income and the age at which people leave education are indicators of internet use. In 2016, the House of Commons Science and Technology Committee suggested that the UK was facing a “digital skills crisis”, citing a 2013 study showing that the UK needed “745,000 additional workers with digital skills to meet rising demand from employers over the period 2013–2017”. The digital skills gap was “costing the UK economy an estimated £63 billion a year in lost GDP”.

In recent years, a number of measures have been introduced to improve digital skills in the UK. In September 2014, a new computing programme of study for the national curriculum was introduced. In March 2017, the Government published its *UK Digital Strategy 2017*, which suggested that 90 percent of all jobs within the next 20 years “will require some element of digital skills”. The Strategy included measures to reduce digital exclusion and improve core digital skills. It also proposed taking forward the recommendations of the Shadbolt Review to “ensure computer science students have the real-world, up to date skills needed in the digital economy”. However, Baroness Lane-Fox of Soho has suggested that the UK should celebrate not just digital skills but “digital understanding” which she defines as the “ability to both use technology and to comprehend, in real terms, the impact that it has on our lives”.

This Lords Library Briefing provides an overview of what is meant by ‘digital skills’ and surveys recent literature on access to, and use of, the internet across society. It then considers digital skills in relation to the economy and sets out key proposals contained in the Government’s *UK Digital Strategy 2017*. It concludes with an exploration of the term ‘digital understanding’ and highlights recent Ofcom findings on adults’ media use and attitudes.

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I. Digital Skills

Digital technology has transformed society, both in the workplace and at home. In 2015, the House of Lords Digital Skills Committee observed that:

The twenty-first century has already witnessed remarkable technological breakthroughs and has been considered to be a revolutionary period of history—a ‘second machine age’. This revolution has been driven by the development of digital technology and is taking place on a global scale—affecting everyone—at a pace that is historically unprecedented.¹

The Committee’s report, *Make or Break: The UK’s Digital Future*, noted that “[e]veryday activities—such as shopping, using a telephone and banking—increasingly require interaction with technology”.² The Committee argued that digital skills were “now necessary life skills” and that individuals and business would need those skills to protect themselves online as well.³ The House of Commons Science and Technology Committee, in its 2016 report *Digital Skills Crisis*, found that there was no “single definition” of digital skills but suggested that they include:

[A] general ability to use existing computers and digital devices to access digital services, “digital authoring skills” such as coding and software engineering, and the ability to critically evaluate media and to make informed choices about content and information—“to navigate knowingly through the negative and positive elements of online activity and make informed choices about the content and services they use”.⁴

The Digital Skills Taskforce—which was commissioned by the then Labour Party Leader, Ed Miliband, and chaired by Maggie Philbin, a former Tomorrow’s World presenter—argued in its interim report that:

Increasingly we all need basic digital skills to participate in everyday life as a digital citizen, whether it is to communicate, find information or purchase goods/services. These levels of basic digital skills have become an almost universal prerequisite to employment: almost everyone needs to be able to use the internet, process simple word documents and find information online. Lack of such skills can lead to exclusion from society as well as the job market.⁵

¹ House of Lords Digital Skills Committee, [Make or Break: The UK’s Digital Future](#), 17 February 2015, HL Paper 111 of session 2014–15, p 17.

² *ibid*, p 6.

³ *ibid*.

⁴ House of Commons Science and Technology Committee, [Digital Skills Crisis](#), 13 June 2016, HC 270 of session 2016–17, p 7.

⁵ Digital Skills Taskforce, [Digital Skills for Tomorrow’s World: Interim Report](#), July 2014, pp 5–6.

In addition to the category of ‘digital citizen’, the Taskforce set out two other categories of digital skill level: ‘digital worker’ and ‘digital maker’. These categories reflected higher levels of digital skills that exist in the UK’s labour market and society.⁶ More information on these can be found in section 2.2 of this briefing.

1.1 Basic Digital Skills

In 2015, Go ON UK created the Basic Digital Skills Framework.⁷ This set out five main areas of digital capability and what the categories mean for both individuals and organisations, and in terms of online safety.⁸ The five areas constituting basic digital skills are:

- **Managing information:**
Find, manage and store digital information and content.
- **Communicating:**
Communicate, interact, collaborate, share and connect with others.
- **Transacting:**
Purchase and sell goods and services; organise your finances; register for and use digital government services.
- **Problem Solving:**
Increase independence and confidence by solving problems and finding solutions using digital tools.
- **Creating:**
Create basic digital content in order to engage with digital communities and organisations.

The full framework can be viewed in Appendix I of this briefing.⁹

As part of its *Basic Digital Skills* survey (based on 4,000 face-to-face interviews conducted in November 2016) Lloyds Bank found that 11.5 million people in the UK (21 percent) do not have basic digital skills.¹⁰ This was a reduction of 1.1 million people since the last survey in 2015. The survey found that 6 percent of people had four of the five skills, while 9 percent reported that they had none. Lloyds Bank observed that:

Nearly all adults have managing information, communication and transacting skills. The skills acquired by the fewest people are

⁶ Digital Skills Taskforce, *Digital Skills for Tomorrow’s World: Interim Report*, July 2014, pp 5.

⁷ Go ON UK is now trading as Doteveryone. It was founded in 2015 by Baroness Lane-Fox of Soho (Doteveryone, ‘[About Us](#)’, accessed 8 August 2017).

⁸ Tech Partnership, ‘[Basic Digital Skills Framework](#)’, accessed 2 August 2017.

⁹ *ibid.*

¹⁰ Lloyds Bank, *Basic Digital Skills*, 5 May 2017, p 4. Ipsos MORI was commissioned by Doteveryone and Lloyds Bank to conduct the research.

‘Creating’ (86 percent) and ‘Problem Solving’ (82 percent).¹¹

In terms of demographics, the report found that in 2017 age “continues to be a determining factor” in the possession of digital skills, noting that 29 percent of people aged 65 and over had no basic digital skills (down from 32 percent in 2015).¹² In comparison, 97 percent of 15 to 24 year olds had basic digital skills.¹³ However, the report observed that “despite having the lowest level of basic digital skills, the 65 plus age group has seen improvements in nearly all areas”.¹⁴ The problem solving category—which encompasses the ability to verify information found online and solve a problem with a device or digital service using online help—saw the largest improvement among over 65s with a 10 percent increase since 2015.¹⁵ The report also highlighted that the gender gap in basic digital skills had widened since 2015. In 2017, 84 percent of men and 75 percent of women had basic digital skills compared with 80 percent of men in 2015 and 74 percent of women.¹⁶

1.2 Internet Use: Demographics

In May 2017, the Office for National Statistics (ONS) released *Internet Users in the UK*, a statistical bulletin about “how internet use is correlated to various socio-demographic characteristics, such as age, sex, disability and geographical location”.¹⁷ It found that in the first quarter of 2017 (January to March):

89 percent of adults in the UK had recently used the internet (in the last three months), up from 88 percent in 2016; while 9 percent had never used the internet, down from 10 percent in 2016.¹⁸

In June 2017, the Good Things Foundation, published an analysis of Ofcom data from its *Adults’ Media Use and Attitudes: Report 2016*. It suggested that the “most pronounced indicators of non and limited [internet] use include age, disability, social class, income and the age at which people leave education”. The key indicators it found were: “being disabled or having poor health; being in social class DE; leaving education at aged 16 or under”.¹⁹

¹¹ Lloyds Bank, [Basic Digital Skills](#), 5 May 2017, p 4.

¹² *ibid*, p 6.

¹³ *ibid*.

¹⁴ *ibid*, p 7.

¹⁵ *ibid*.

¹⁶ *ibid*, p 8.

¹⁷ Office for National Statistics, [‘Internet Users in the UK: 2017’](#), 19 May 2017.

¹⁸ *ibid*.

¹⁹ Good Things Foundation and Professor Simeon Yates, [The Real Digital Divide?](#), June 2017, pp 4 and 13. The Good Things Foundation (formerly known as the Tinder Foundation) is a “charity that supports digital and socially excluded people to improve their lives through digital” (Good Things Foundation, [‘About Good Things Foundation’](#), accessed 3 August 2017).

Age

According to the ONS, there are a number of differences in internet use by age. It noted that “all adults aged 16 to 34 years were recent internet users (99 percent), in contrast with 41 percent of adults aged 75 years and over”.²⁰ In 2017, one in ten adults (4.8 million) had never used the internet. Of these, 2.6 million were aged 75 years and over.²¹

In 2011, 52 percent of 65 to 74 years olds had used the internet recently, increasing to almost 78 percent in 2017.²² In addition, the ONS found that “recent internet use by retired adults has increased by almost 22 percentage points since 2011 to 61 percent in 2017”.²³

Table 1: Recent Internet Use by Age Group, 2017

Age	Recent (%)	Lapsed or Never (%)
16–44	98.9	0.9
45–54	96.2	3.6
55–64	90.0	9.8
65–74	77.5	22.4
75 and over	40.5	59.2
All	88.9	10.9

(Source: Office for National Statistics, ‘[Internet Users in the UK: 2017](#)’, 19 May 2017)

Ofcom’s *Adults’ Media Use and Attitudes: Report 2017* observed that newer users of the internet—defined as “those who first went online less than five years ago”—tended to be “older, less confident and use the internet less than established users, but were more likely to use only a smartphone to go online”.²⁴ Noting that 9 percent of all internet users were new users, Ofcom reported that 21 percent of newer users were aged 75 and over.²⁵ However, those aged 65 and over were also likely to be ‘narrow users’ of the internet. Ofcom defines narrow users of the internet as “those who carry out between one and four of the 15 types of online use that we ask internet users about”.²⁶ This includes tasks such as sending and receiving emails, accessing news, using social media and accessing government services.²⁷ Ofcom reported that 44 percent of 65 to 74 year olds and 51 percent of over-75s are narrow users.

²⁰ Office for National Statistics, ‘[Internet Users in the UK: 2017](#)’, 19 May 2017.

²¹ *ibid.*

²² *ibid.*

²³ *ibid.*

²⁴ Ofcom, *Adults’ Media Use and Attitudes: Report 2017*, June 2017, p 10.

²⁵ *ibid.*

²⁶ *ibid.*, p 11.

²⁷ *ibid.*, p 39.

Younger People

Although commentators often refer to a divide in digital skills between younger and older people, a recent study questioned the idea that young people (those under the age of 35) are so-called ‘digital natives’.²⁸ Paul A Kirschner, a Professor of Educational Psychology at the Open University of the Netherlands, and Pedro De Bruyckere, an educational scientist at Artevelde University College Ghent, Belgium, argued that there was no such thing as a digital native. They argued that:

Many teachers, educational administrators, and politicians/policy makers believe in the existence of yeti-like creatures populating present day schools namely digital natives and human multitaskers.²⁹

The authors wrote that there was “no credible evidence supporting their existence” and suggested that this idea had been propagated by “educational gurus” and the media.³⁰ The term ‘digital natives’ refers to people born after 1984 that have been immersed in digital technology all their lives. The authors observed that digital natives are “assumed to have sophisticated technical digital skills and learning preferences for which traditional education is unprepared and unfit”.³¹ The authors observed that a growing number of studies indicated that:

[U]niversity students, all born after the magical year 1984, do not have deep knowledge of technology, and what knowledge they do have is often limited to the possibilities and use of basic office suite skills, emailing, text messaging, Facebook, and surfing the Internet.³²

The Nominet Trust—a social tech funder—observed that an estimated 300,000 young people (aged 15 to 24) do not have basic digital skills.³³ They argued that there were a number of barriers preventing disadvantaged young people from developing digital skills:

A key finding was that those least likely to have digital skills are also most likely to be facing multiple forms of disadvantage and are among the hardest-to-reach in our society.³⁴

²⁸ *Times* (£), ‘[Millennials No Better with Technology](#)’, 1 August 2017.

²⁹ Paul A Kirschner and Pedro De Bruyckere, ‘[The Myths of the Digital Native and the Multitasker](#)’, *Teaching and Teacher Education*, October 2017, vol 67, p 135.

³⁰ *ibid*, p 136.

³¹ *ibid*.

³² *ibid*.

³³ Nominet Trust, [Digital Reach: Digital Skills for the Hardest-to-Reach Young People](#), 6 July 2017, p 2.

³⁴ *ibid*.

The Nominet Trust added that poor literacy and numeracy prevented young people from using digital technology and living in a low income household could prevent access to broadband. In addition, it argued that “young people living in households with intergenerational unemployment can lack motivation to develop digital skills through formal training programmes”.³⁵

Gender

The ONS found that men were more likely to use the internet than women. It reported that 90 percent of men had recently used the internet compared with 88 percent of women. The ONS observed that:

The difference in recent internet use between men and women was larger in the oldest age groups. Recent internet use by men aged 65 to 74 years was 79 percent and by men aged 75 years and over was 47 percent. This compares with recent internet use by women in these age groups at 76 percent and 35 percent respectively.³⁶

However, “recent internet use among women aged 75 and over had almost trebled from 2011”.³⁷ The ONS noted that while the gap between the number of men and women who had recently used the internet had been closing since 2011, there was “still a higher proportion of women who have never used the internet at 10.5 percent compared with men at 7.8 percent”.³⁸

Table 2: Recent Internet Use in 2011 and 2017 by Age Group and Sex in UK

Age	Men (%)		Women (%)	
	2011	2017	2011	2017
16 to 44	95.6	98.8	95.3	98.9
45 to 54	86.6	96.0	86.2	96.3
55 to 64	76.2	89.9	73.3	90.2
65 to 74	57.4	79.1	47.1	76.0
75+	29.3	47.2	13.1	35.4

(Source: Office for National Statistics, [‘Internet Users in the UK: 2017’](#), 19 May 2017)

³⁵ Nominet Trust, [Digital Reach: Digital Skills for the Hardest-to-Reach Young People](#), 6 July 2017, p 3.

³⁶ Office for National Statistics, [‘Internet Users in the UK: 2017’](#), 19 May 2017.

³⁷ *ibid.*

³⁸ *ibid.*

In contrast, Lloyds Bank’s research suggested that the gender gap in basic digital skills had widened since 2015. In 2017, 84 percent of men and 75 percent of women had basic digital skills compared with 80 percent of men in 2015 and 74 percent of women.³⁹

Disabled People

According to the ONS, 97.1 percent of disabled adults aged 16 to 24 years were recent internet users. For disabled adults 75 years and over, this figure was “34 percent [...] compared with 50 percent who were not disabled”. The ONS observed that since 2016, the “number of disabled adults who had used the internet in the last three months increased by 5 percent to 9 million in 2017”.⁴⁰ The Good Things Foundation noted that 2015 Ofcom data showed that 47.7 percent of non-users of the internet had a disability or long standing health issue, “an estimated population of 3.7 million people in the UK”.⁴¹ It added that “when segmenting this data based on social class, we can see that social class and disability compound one another. 55.1 percent of non-users are both disabled and in social class DE—an estimated 2 million people”.

Drawing on evidence from the 2015 Lloyd’s Bank survey, the House of Commons Science and Technology Committee found that of the 12.6 million people that were categorised as lacking basic digital skills in 2015, 49 percent were disabled.⁴²

Social Class

Using 2015 Ofcom data and the National Readership Survey’s social grade classification system, the Good Things Foundation’s analysis suggested that 49.5 percent of non-users of the internet were in the DE category.⁴³ In comparison, 9.3 percent of non-users were in the AB category (higher and intermediate managerial, administrative and professional).⁴⁴ It defined non-users as people that either “do not have access to the internet at home or elsewhere; or do not currently use the internet even if they have access”.⁴⁵

³⁹ Lloyds Bank, [Basic Digital Skills](#), 5 May 2017, p 8.

⁴⁰ Office for National Statistics, [‘Internet Users in the UK: 2017’](#), 19 May 2017.

⁴¹ Good Things Foundation and Professor Simeon Yates, [The Real Digital Divide?](#), June 2017, p 4.

⁴² House of Commons Science and Technology Committee, [Digital Skills Crisis](#), 13 June 2016, p 31. The survey cited is: Lloyds Banking Group et al, [Basic Digital Skills UK Report 2015](#), October 2015.

⁴³ D is “semi-skilled and unskilled manual workers” and E refers to “state pensioners, casual and lowest grade workers, unemployed with state benefits only” (National Readership Survey, [‘Social Grade’](#), accessed 9 August 2017).

⁴⁴ Good Things Foundation and Professor Simeon Yates, [The Real Digital Divide?](#), June 2017, p 9.

⁴⁵ *ibid*, p 5.

Ofcom's *Adults' Media Use and Attitudes: Report 2017* found that "compared to the average (86 percent), adults in AB households (93 percent) and C1 households (93 percent) are more likely to say they go online, while those in DE households are less likely (73 percent)".⁴⁶ Its findings suggested that a quarter of adults in DE households (27 percent) were non-users and that internet users in C2 or DE households were "also more likely than average to be narrow users (32 percent for C2s and 40 percent for DEs)".

Lloyds Bank observed that in 2017 there continued to be a strong correlation between basic digital skills and social grade. It noted that "ABC1s remain significantly more likely to have all five skills, in comparison to C2DEs (88 percent versus 69 percent)".⁴⁷

Regional

ONS's 2017 data showed that "London remained the region with the highest proportion of recent internet users in 2017 (93 percent) compared with other regions of the UK".⁴⁸ Other findings showed:

- Northern Ireland had the largest increase in recent use since 2011, a rise of 15 percentage points, although this region still had the lowest proportion of recent internet users (84 percent).
- In both Scotland and Wales, 87 percent of adults were recent users.
- In 2017, the region with the highest proportion of adults who had last used the internet more than three months ago, or who had never used it, was Northern Ireland (16 percent).⁴⁹

Analysis by the Good Things Foundation suggested that in 2015 the West Midlands and Yorkshire and Humber regions "stand out as those with proportionally high levels of limited and non-users. When focusing on limited users only, we see that the East Midlands stands out with 17.5 percent and that a significant population exists in the South East region in real terms (14.1 percent)".⁵⁰ Among its recommendations for further research was "drilling down into the regional data to understanding more localised 'non-user hotspots'".⁵¹

In terms of basic digital skills more broadly, Lloyds Bank's 2017 report suggested that Yorkshire and Humberside and the South East had reported

⁴⁶ Ofcom, [Adults' Media Use and Attitudes: Report 2017](#), June 2017, p 10. C1 is "supervisory, clerical and junior managerial, administrative and professional" and C2 is "skilled manual workers" (National Readership Survey, '[Social Grade](#)', accessed 9 August 2017).

⁴⁷ Lloyds Bank, [Basic Digital Skills](#), 5 May 2017, p 9.

⁴⁸ Office for National Statistics, '[Internet Users in the UK: 2017](#)', 19 May 2017.

⁴⁹ *ibid.*

⁵⁰ Good Things Foundation and Professor Simeon Yates, [The Real Digital Divide?](#), June 2017, p 21.

⁵¹ *ibid.*, p 22.

86 percent have the required skills and that “significant improvement” was reported in the West Midlands and Northern Ireland (both reporting a 13 percent increase).⁵² It noted that despite “a significant improvement since 2015, Wales remains the region with the lowest skills level overall at 71 percent”.

Ethnicity

In its analysis of data in Ofcom’s *Adult’s Media Use and Attitudes: Report 2016* data, the Good Things Foundation observed that there were not “any statistically significant differences between any of the groups, primarily because the sample sizes were too low to draw any conclusions.”⁵³ It recommended further research into internet use and “trends within different ethnic groups and any language barriers that may exist”.⁵⁴

1.3 Broadband Access

Ofcom’s 2017 report *Access and Inclusion: Outcomes for Consumers in Vulnerable Circumstances* found that 81 percent of households in 2016 had access to the internet via fixed broadband.⁵⁵ Of these, 72 percent of 65 to 74 year olds had access to fixed broadband compared with only 42 percent of 75 year olds and over.⁵⁶ In its report, Ofcom stated that “those 65 and over have significantly lower levels of take-up of broadband and mobile services”.⁵⁷

In terms of disability, Ofcom found that 79 percent of disabled people had internet access (based on access anywhere) compared with 94 percent of non-disabled people.⁵⁸ While internet access had increased among disabled people, “disabled consumers are much more likely than the population as a whole to face exclusion issues as a result of not being online”.⁵⁹ For socio-economic groups, Ofcom found that only 65 percent of the DE group had access to fixed broadband in comparison to 92 percent of the AB group.⁶⁰

Superfast broadband services (defined as download speeds of 30 megabits per second and higher) are now available for 89 percent of premises in the UK, although only 31 percent of premises have taken up superfast

⁵² Lloyds Bank, [Basic Digital Skills](#), 5 May 2017, p 13.

⁵³ Good Things Foundation and Professor Simeon Yates, [The Real Digital Divide?](#), June 2017, p 15.

⁵⁴ *ibid*, p 22.

⁵⁵ Ofcom, [Access and Inclusion: Outcomes for Consumers in Vulnerable Circumstances](#), 15 March 2017, p 16.

⁵⁶ *ibid*, p 4.

⁵⁷ *ibid*, pp 16–17.

⁵⁸ *ibid*, p 5.

⁵⁹ *ibid*, p 10.

⁶⁰ *ibid*, p 18.

broadband services.⁶¹ In contrast, 5 percent of premises are unable to receive download speeds of at least 10 megabits per second.⁶² Ofcom reported in 2016 that superfast coverage had improved in rural areas and reached 59 percent (2.3 million) of rural homes and businesses. In 2015, superfast coverage in rural areas was 44 percent.⁶³ In spite of this advance, Ofcom observed:

[...] many homes and small businesses still are unable to receive broadband speeds that are adequate to reliably perform a range of common online activities. Almost a quarter of a million UK premises, around 1 percent of the total, cannot get a download speed of more than 2Mbit/s and over 600,000 premises cannot get 5Mbit/s.

[...] the problem is particularly bad in rural areas. One of the main reasons for poor broadband speeds in rural areas is the length of the connection to the property. Rural properties are often further from the exchange or street cabinet than in urban areas and, for copper-based telephony networks, the longer the connection, the slower the speeds are likely to be due to attenuation of the broadband signal.⁶⁴

2. Digital Sector in the UK

The digital sector encompasses a wide range of industries, from computer programming to telecommunications, and definitions of the sector can vary.⁶⁵ The Department for Digital, Culture, Media and Sport (DCMS) uses the definition of 'digital sector' developed by the Organisation for Economic Cooperation and Development (OECD), which follows the UN Standard Industrial Classifications (SICs).⁶⁶ Under this definition, the digital sector comprises the following:

- Manufacturing of electronics and computers.
- Wholesale of computers and electronics.
- Publishing (excluding translation and interpretation activities).
- Software publishing.
- Film, TV, video, radio and music.
- Telecommunications.
- Computer programming, consultancy and related activities.
- Information service activities.

⁶¹ Ofcom, [Connected Nation 2016](#), 16 December 2016, p 1.

⁶² *ibid*, p 1.

⁶³ *ibid*, p 4.

⁶⁴ *ibid*, pp 18–19.

⁶⁵ See for example: TechUK, [The UK Digital Sectors After Brexit](#), 24 January 2017.

⁶⁶ Department for Digital, Culture, Media and Sport, [Economic Estimates of DCMS Sectors: Methodology](#), 4 August 2016, p 6.

- Repair of computers and communication activities.⁶⁷

2.1 Contribution to the Economy

The digital sector makes a significant contribution to the UK economy. For example, TechCityUK's *Tech Nation 2017* report claimed that the UK was the "digital capital of Europe" and Europe's "digital tech skills hub".⁶⁸ The House of Lords Digital Skills Committee suggested that it was increasingly difficult to distinguish between the 'digital economy' and the rest of the UK economy:

The whole economy has become digitised. It would be a mistake to take the 'digital sector' as our sole focus of interest. As digital is pervasive across most aspects of our lives, so the 'digital economy' is becoming synonymous with the national economy.⁶⁹

In 2015, the gross value added (GVA)⁷⁰ of the digital sector was an estimated £118.4 billion, which accounted for 7.1 percent of the UK's total GVA.⁷¹ The digital sector accounts for around half of the DCMS sectors, which include the creative industries, cultural sector, digital sector, gambling, sport, telecoms and tourism. The total estimated GVA of the DCMS sectors was £221 billion in 2015 (13.3 percent of the UK GVA).⁷²

The digital sector is also a significant exporter and importer of services. Between 2010 and 2015, the digital sector's exports increased from £23 billion to £32.1 billion. In 2015, this accounted for 13.4 percent of the UK's total exports of services.⁷³ The majority of the digital sector's exports went to Europe, and were worth an estimated £18.3 billion in 2015 (the second most valuable destination was America at £8.6 billion).⁷⁴ Digital sector exports to the EU were worth £14.5 billion in 2015 and accounted for 45 percent of the sector's total exports that year.⁷⁵ In terms of imports, the digital sector imported the most services out of all the DCMS sectors. In 2015, digital sector imports were worth £12.5 billion, with the majority

⁶⁷ Department for Digital, Culture, Media and Sport, [Economic Estimates of DCMS Sectors: Methodology](#), 4 August 2016, pp 13–14.

⁶⁸ TechCityUK, [Tech Nation 2017](#), March 2017, p 12.

⁶⁹ House of Lords Digital Skills Committee, [Make or Break: The UK's Digital Future](#), 17 February 2015, HL Paper 111 of session 2014–15, p 6.

⁷⁰ GVA is a measure of the contribution to the economy of each individual producer, industry or sector in the UK and is used to estimate gross domestic product (GDP). GVA estimates are in current prices and have not been adjusted for inflation.

⁷¹ Department for Digital, Culture, Media and Sport, [DCMS Sectors Economic Estimates](#), August 2016, p 7, table 3.1.

⁷² *ibid.*

⁷³ Department for Digital, Culture, Media and Sport, [DCMS Sectors Economic Estimates 2017: Employment and Trade](#), 26 July 2017, p 13, table 4.1.

⁷⁴ *ibid.*, p 15, table 4.2.

⁷⁵ *ibid.*, p 16, table 4.3.

(£11 billion) coming from Europe.⁷⁶ Imports of digital sector services from the EU accounted for 46.1 percent of the sector's total imports in 2015.⁷⁷

There were just under 1.5 million jobs in the digital sector in 2016, accounting for 4.5 percent of UK jobs in 2016.⁷⁸ Since 2011, the number of jobs in the digital sector increased from an estimated 1.3 million to 1.5 million in 2016.⁷⁹ In terms of nationality, 86.7 percent of people employed in the digital sector were from the UK and 13.4 percent from the EU, in 2016.⁸⁰

TechCityUK's *Tech Nation 2017* report found that in 2016, "UK digital tech investment reached £6.8 billion" which was 50 percent higher than any other European country.⁸¹ In comparison, £2.4 billion was invested in France in 2016, and £1.4 billion in Germany.⁸² The report also noted that the turnover of digital tech industries had increased by 22 percent in five years, reaching £170 billion in 2015.⁸³ TechCityUK reported that 68 percent of "total UK digital tech investment in 2016 was in regional clusters beyond London".⁸⁴ In terms of productivity, digital tech workers helped to boost UK productivity and were two times more productive than a non-digital worker.⁸⁵

2.2 Digital Skills and the Economy

In 2014, the UK Forum for Computing Education (UKForCE)—a committee hosted by the Royal Academy of Engineering—published estimates of the level of digital skills required across the whole of the UK economy. It used the Digital Skills Taskforce's framework for digital skills, with the addition of a 'digital muggle' category:

- **Digital Muggle:**
No digital skills required—digital technology may as well be magic.
- **Digital Citizen:**
The same work skills as are required to be a full digital citizen. This is the ability to use digital technology purposefully and confidently to communicate, find information and purchase goods/services.

⁷⁶ Department for Digital, Culture, Media and Sport, [DCMS Sectors Economic Estimates 2017: Employment and Trade](#), 26 July 2017, p 19, table 4.6.

⁷⁷ *ibid*, p 20, table 4.7.

⁷⁸ *ibid*, p 7, table 3.1.

⁷⁹ *ibid*.

⁸⁰ *ibid*, p 11, table 3.3.

⁸¹ Tech City UK, [Tech Nation 2017](#), March 2017, p 12.

⁸² *ibid*, p 11.

⁸³ *ibid*, p 13.

⁸⁴ *ibid*.

⁸⁵ *ibid*.

- **Digital Worker:**
Substantially more digital skills than those required for full digital citizenship but less than those of a Digital Maker. This includes, at the higher end, the ability to evaluate, configure, and use complex digital systems. Elementary programming skills such as scripting are often required for these tasks.
- **Digital Maker:**
Skills to actually build digital technology (typically software development). The Digital Maker category is interpreted quite broadly to include, at the low end, for example, workers who regularly create complex Excel macros or data files for controlling 3D printers.⁸⁶

UKForCE analysed the 361 Standard Occupation Codes which covered all those employed in the UK in 2013 (just under 30 million) and estimated the number of jobs requiring different levels of digital skills. The results are shown in table 3:

Table 3: UKForCE Analysis of the Digital Skill Level of Jobs in 2013

Digital Skill Level	Number of Jobs (millions)
Digital Muggle	2.2
Digital Citizen	10.8
Digital Worker	13.6
Digital Maker	2.9

Based on this analysis, it argued that the UK workforce would need improved digital skills in the future:

- Almost everyone in the workforce will soon need the skills of digital citizenship to do their job, notwithstanding their need for those skills in order to engage more broadly with society and government.
- Well over half the workforce (Digital Workers + Digital Makers) need digital skills significantly beyond those required for digital citizenship.⁸⁷

In its June 2016 report, *Digital Skills Crisis*, the House of Commons Science and Technology Committee argued that the UK was currently facing a “digital skills crisis”.⁸⁸ In particular, the report observed, there were skills

⁸⁶ UK Forum for Computing Education, ‘[UKForCE Submission to Maggie Philbin’s Digital Task Force](#)’, 11 July 2014; and Digital Skills Taskforce, *Digital Skills for Tomorrow’s World: Interim Report*, July 2014, pp 5–6.

⁸⁷ UK Forum for Computing Education, ‘[UKForCE Submission to Maggie Philbin’s Digital Task Force](#)’, 11 July 2014.

⁸⁸ *ibid*, p 3.

shortages in specialised areas of the digital economy:

There is a pressing need for high level specialist skills in data science, cyber-security and data security as a result of high growth rates associated with key emerging technologies in which UK has particular strengths:

- Internet of Things (expected to reach \$7.3 trillion by 2017).
- Wearable technologies (expected to reach \$70 billion by 2024).
- Big Data and Data Analytics (expected to reach \$32.4 billion by 2017).
- 5G and associated wireless technologies (expecting a 40-fold increase by 2018).
- Robotics (expecting to reach \$29 billion by 2018).
- Autonomous vehicles (expecting to reach \$28 billion by 2020).
- Advanced manufacturing, building automation (expected to reach \$49.5 billion by 2018).⁸⁹

The Science and Technology Committee also argued that there were worrying digital skills gaps in industry.⁹⁰ It observed (based on 2013 research by the mobile phone company O2) that the UK needed “745,000 additional workers with digital skills to meet rising demand from employers over the period 2013–2017”.⁹¹ The Government’s *UK Digital Strategy 2017*, published in March 2017, suggested that 90 percent of all jobs within the next 20 years “will require some element of digital skills”.⁹²

The House of Commons Science and Technology Committee observed that the “digital skills gap” was “costing the UK economy an estimated £63 billion a year in lost GDP”.⁹³ It added that:

Although comparative nations are facing similar challenges, only urgent action from industry, schools and universities and from the Government can prevent this skills crisis from damaging our productivity and economic competitiveness.⁹⁴

A British Chambers of Commerce (BCC) survey of over 1,400 businesses, published in April 2017, also highlighted the digital skills gap in the UK, and

⁸⁹ House of Commons Science and Technology Committee, [Digital Skills Crisis](#), 13 June 2016. HC 270 of session 2016–17, p 13.

⁹⁰ *ibid*, p 14.

⁹¹ *ibid*.

⁹² Department for Digital, Culture, Media and Sport, [UK Digital Strategy 2017](#), 1 March 2017.

⁹³ House of Commons Science and Technology Committee, [Digital Skills Crisis](#), 13 June 2016. HC 270 of session 2016–17, p 14.

⁹⁴ *ibid*.

suggested that this was “hampering business productivity and growth”.⁹⁵ The survey found that “84 percent of firms say digital and IT skills are more important to their business than two years ago, with half (51 percent) saying these skills are significantly more important”.⁹⁶ Moreover, the survey found that “more than three-in-four businesses are facing a shortage of digital skills in their workforce, with 52 percent reporting a slight shortage, 21 percent a significant one and 3 percent a critical shortage”.⁹⁷ In their response to the survey, businesses set out the digital skills that were most important to them:

- Basic computer skills.
- Communicating and connecting through digital channels.
- Management of digital information.⁹⁸

The BCC also found that the skills shortages were affecting business in terms of increasing the workload on existing staff and observed that rectifying the shortages was difficult because of a lack of time for staff training.⁹⁹

TechUK—which represents over 950 technology companies—has argued that leaving the European Union, combined with changes to the rules on skilled migration from outside the European Economic Area (EEA) and existing domestic skills shortages were a “talent triple hit”.¹⁰⁰ TechUK has contended that:

Whilst Brexit potentially disrupts access to skills by disrupting a vital talent pipeline from the EU, it is just one part of a talent triple hit facing UK tech. Recent and incoming changes on skilled migration from outside the EEA, alongside long-standing and growing shortages in domestic digital skills, present tech companies with an ever tightening squeeze on accessing the talent they need to grow.¹⁰¹

In April 2017, the Government introduced a new immigration skills charge which requires an employer to pay an annual £1,000 for workers from outside the EEA. This charge applies to the two main categories of tier-2 visas (general and intra-company transfer).¹⁰² In an analysis of tier 2 visa applications by major industry group, TechUK and Frontier Economics observed that 42 percent of tier 2 visa applications in 2015 were for the

⁹⁵ British Chambers of Commerce, [‘Shortage of Digital Skills Hampering Business Productivity and Growth’](#), 7 April 2017.

⁹⁶ *ibid.*

⁹⁷ *ibid.*

⁹⁸ *ibid.*

⁹⁹ *ibid.*

¹⁰⁰ TechUK, [‘Global Tech Talent Powering Global Britain: Navigating Post-Brexit Migration Options’](#), March 2017, p 4.

¹⁰¹ *ibid.*

¹⁰² *Guardian*, [‘Immigration Skills Charge Could Hit Health Funding for Years’](#), 6 April 2017.

information and communication sector, 19 percent for professional, scientific and technical activities, 12 percent for financial and insurance activities and 26 percent for other sectors.¹⁰³

3. UK Digital Strategy 2017

According to the Government, an estimated “1.2 million new technical and digitally skilled people are needed by 2022 to satisfy future skills needs”.¹⁰⁴ As a consequence of this demand, the Government has put forward proposals to improve the UK’s digital skills.

On 1 March 2017, the Department for Digital, Culture, Media and Sport published the *UK Digital Strategy 2017*.¹⁰⁵ The Strategy argued that “for the UK to be a world-leading digital economy that works for everyone, it is crucial that everyone has the digital skills they need to fully participate in society”.¹⁰⁶ The Government added that:

[...] as the digital economy grows, there will be even greater demand for people with specialist digital skills. At present, the UK has a supply of specialist skills that scores well above the EU average, but to keep ahead we will have to keep improving. As we leave the European Union, it will be even more important to ensure that we continue to develop our home-grown talent, up-skill our workforce and develop the specialist digital skills needed to maintain our world leading digital sector.¹⁰⁷

The Government set out the importance of improving the UK’s digital skills and reducing digital exclusion:

We must also enable people in every part of society—irrespective of age, gender, physical ability, ethnicity, health conditions, or socio-economic status—to access the opportunities of the internet. If we don’t do this, our citizens, businesses and public services cannot take full advantage of the transformational benefits of the digital revolution. And if we manage it, it will benefit society too. Our approach to delivering these objectives focuses on three strands:

- Ensuring that we continue to tackle the root causes of digital exclusion and that everyone can increase their digital capability to make the most of the digital world.

¹⁰³ TechUK and Frontier Economics, [The UK Digital Sectors After Brexit](#), 24 January 2017, p 33.

¹⁰⁴ Department for Digital, Culture, Media and Sport, [UK Digital Strategy 2017](#), 1 March 2017.

¹⁰⁵ *ibid.*

¹⁰⁶ *ibid.*

¹⁰⁷ *ibid.*

- Developing the full range of digital skills that individuals and companies across the country need in an increasingly digital economy, and supporting people to up-skill and re-skill throughout their working lives.
- Strong collaboration between the public, private and third sector to tackle the digital skills gap in a co-ordinated and coherent way, so the sum is greater than the parts and everyone everywhere has better access to the training they want.¹⁰⁸

As part of the *Digital Strategy*, the Government also announced that Professor Dame Wendy Hall, the Regius Professor of Computer Science at the University of Southampton, and Jerome Pesenti, Chief Executive of BenevolentTech, would conduct a review of how the artificial intelligence industry can continue to thrive and grow in the UK.¹⁰⁹ The Government also pledged £17 million to the Engineering and Physical Science Research Council (EPSRC) to support the development of new Robotics and Artificial Intelligence (RAI) technologies in universities across the UK”.¹¹⁰

Reducing Digital Exclusion

On 13 April 2014, the Coalition Government published its digital inclusion strategy.¹¹¹ This defined digital inclusion as:

[M]aking sure that people have the capability to use the internet to do things that benefit them day to day—whether they be individuals, small and medium sized enterprises (SME) or voluntary community and social enterprise (VCSE) organisations.¹¹²

The then Government said that digital inclusion concerned the following:

- **Digital skills:**
Being able to use computers and the internet. This is important, but a lack of digital skills is not necessarily the only, or the biggest, barrier people face.
- **Connectivity and access to the internet:**
People need the right infrastructure but that is only the start.

¹⁰⁸ Department for Digital, Culture, Media and Sport, [UK Digital Strategy 2017](#), 1 March 2017.

¹⁰⁹ *ibid.*

¹¹⁰ Department for Digital, Culture, Media and Sport, [‘£17 Million Boost for the UK’s Booming Artificial Intelligence Sector’](#), 26 February 2017.

¹¹¹ Cabinet Office, [‘Government Digital Inclusion Strategy’](#), 13 April 2014.

¹¹² *ibid.*

- **Accessibility:**
Services should be designed to meet all users' needs, including those dependent on assistive technology to access digital services. Accessibility is a barrier for many people, but digital inclusion is broader.¹¹³

In its 2017 strategy, the Government, in terms of addressing digital exclusion, stated that it would ensure that:

[A]dults in England who lack core digital skills will not have to pay to access the basic digital skills training they need, mirroring the approach taken for adult literacy and numeracy training.¹¹⁴

The Government stated that it would create a new 'Digital Skills Partnership' which would see the Government working with businesses, charities and voluntary organisations to address the digital skills gap:

The Partnership will play a crucial role in helping people access digitally-focused jobs at a local level, bringing together technology companies, local businesses, local government and other organisations to identify digital job vacancies and take action to help people move into these jobs.¹¹⁵

In addition, the Government proposed developing the role of libraries so that they provide digital access, training and support for local communities. The newly created Council for Digital Inclusion would also help "to increase collaboration and deliver initiatives to help more citizens to confidently go online and take advantage of the internet".¹¹⁶

In 2015, the Government announced plans to introduce a broadband Universal Service Obligation (USO) which would "give people the legal right to request a connection to broadband with speeds 10 Mbps, no matter where they live".¹¹⁷ The Digital Economy Act 2017 introduced the USO and on 30 July 2017, the Government announced a consultation on the "specific design of the USO which would be set in secondary legislation".¹¹⁸ The Government reiterated its commitment to improving the roll-out of superfast broadband and 4G internet by 2020 stating that "[w]e are determined that no part of the country or group in society should be

¹¹³ Cabinet Office, '[Government Digital Inclusion Strategy](#)', 13 April 2014.

¹¹⁴ Department for Digital, Culture, Media and Sport, '[UK Digital Strategy 2017](#)', 1 March 2017.

¹¹⁵ *ibid.*

¹¹⁶ Department for Digital, Culture, Media and Sport, '[UK Digital Strategy 2017](#)', 1 March 2017.

¹¹⁷ Department for Digital, Culture, Media and Sport, '[Government Plans to Make Sure No-One is Left Behind on Broadband Access](#)', 7 November 2015.

¹¹⁸ Department for Digital, Culture, Media and Sport, '[Broadband Universal Service Obligation: Consultation and Design](#)', 30 July 2017.

without adequate connectivity”.¹¹⁹ The *Digital Strategy* also set out the Government’s ambition for future connectivity:

[...] we are ambitious for the opportunities afforded by the next stage of broadband and mobile rollout, so we will invest over £1 billion to accelerate the development and uptake of next generation digital infrastructure—including full fibre and 5G.¹²⁰

Digital Education

In 2014, the Coalition Government introduced a new computing programme of study in the national curriculum in England (Key Stages 1 to 4).¹²¹ According to the Government, the aims of this program are to ensure that all pupils:

- Can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation.
- Can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems.
- Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems.
- Are responsible, competent, confident and creative users of information and communication technology.¹²²

In 2016, the House of Commons Science and Technology Committee described the new computing curriculum as “world leading and, properly taught, has the capacity to transform the digital skills potential of the next generation”.¹²³ However, noting that ICT teachers were expected to teach the new curriculum, the Committee argued that “too many do not have the qualifications or the confidence to teach computer science”.¹²⁴ The Committee recommended that the Government set a target for recruiting computer science teachers like it had for recruiting maths and physics teachers.¹²⁵ It also suggested that there should be increased investment in teacher training.¹²⁶

¹¹⁹ Department for Digital, Culture, Media and Sport, [UK Digital Strategy 2017](#), 1 March 2017.

¹²⁰ *ibid.*

¹²¹ Department for Education, ‘[Year of Code and £500,000 Fund to Inspire Future Tech Experts Launched](#)’, 4 February 2014.

¹²² Department for Education, ‘[National Curriculum in England: Computing Programmes of Study](#)’, 11 September 2013.

¹²³ House of Commons Science and Technology Committee, [Digital Skills Crisis](#), 13 June 2016, HC 270 of session 2016–17, p 4.

¹²⁴ *ibid.*, p 28.

¹²⁵ *ibid.*, p 25.

¹²⁶ *ibid.*

In its *UK Digital Strategy 2017*, the Government stated that it had provided funding for the Computing at School Network of Teaching Excellence in Computer Science. This is a network of over 350 Master Teachers who provide “continuing professional development to teachers needing to further develop their computing expertise”.¹²⁷ The Government also provided “bursaries of up to £25,000, and, in partnership with the British Computing Society, scholarships worth £27,500 for those training to be a teacher in 2017/18.”¹²⁸

The Strategy noted a number of other initiatives outside of the formal curriculum. For instance, it highlighted that the Raspberry Pi Foundation provides low-cost, high performance computers to encourage young people to take up computer programming and provides outreach and education for to help them learn.¹²⁹ The Raspberry Pi computer was launched in 2012, has sold 14 million units, and is used widely in classrooms.¹³⁰ In March 2016, the BBC launched its micro:bit computer, delivering one free to every year 7 student in England and Wales, year 8 students in Northern Ireland and S1 students in Scotland. The BBC explained the purpose behind the micro:bit:

The BBC micro:bit, launched as part of the BBC Make it Digital initiative, is a pocket-sized codeable computer that allows young people to get creative with technology, whatever their level of experience, and aims to help develop a new generation of digital pioneers.¹³¹

Improving Digital Skills for Employment

The Government’s *UK Digital Strategy 2017* set out a number of ways to improve the UK’s digital skills. These included changes to the technical education system and new apprenticeships:

Our reform of the technical education system will see the creation of a specialist digital route, with employers setting standards and specifying the knowledge, skills and behaviours that individuals will need. We have already seen employers collaborating with government in the development of digital apprenticeship standards, with 13 standards having already been approved for delivery and more still in development.

¹²⁷ Department for Digital, Culture, Media and Sport, [UK Digital Strategy 2017](#), 1 March 2017.

¹²⁸ *ibid.*

¹²⁹ Raspberry Pi Foundation, ‘[About Us](#)’, accessed 4 August 2017.

¹³⁰ BBC News, ‘[Raspberry Pi Scores UK's Top Engineering Award](#)’, 30 June 2017.

¹³¹ BBC Media Centre, ‘[BBC micro:bit Launches to a Generation of UK Students](#)’, 22 March 2016.

We have also introduced new innovative digital degree apprenticeships. These include a degree which is an integral part of the apprenticeship and are designed by groups of employers to make sure apprentices achieve full occupational competence. They will provide the much needed skills that industry needs. The Degree Apprentices earn a wage while doing a job in their chosen profession.¹³²

In September 2016, Ada, the National College for Digital Skills, opened. The Government invested £13 million in the College and the Greater London Authority invested £18 million. The College is set to train 5,000 students over the next five years. The Government also announced that it would spend £20 million to launch an institute to improve the quality of digital skills provision.¹³³

Further, the Government stated that it would take forward the key recommendations from the Shadbolt Review of computer science degree accreditation and graduate employability, which began in February 2015.¹³⁴ The Review, published in May 2016, found that unemployment among computer sciences graduates was 11.7 percent six months after graduation.¹³⁵ It noted that “computer sciences includes the largest family of disciplines within STEM, with almost 2,000 courses available from 95 out of 130 HEIs in England”.¹³⁶ In terms of gender, the Review noted that “there are significantly fewer women studying Computer Sciences (13 percent compared to 32 percent in STEM generally)”.¹³⁷ The Review made a number of recommendations. These included extending and promoting work experience through formal sandwich year placements.

Noting that technology was changing fast, it recommended that:

Computer Sciences course provision should recognise the fast pace of change in technology and seek to equip students with the ability to learn and upskill both throughout their programme, but also during their professional careers.¹³⁸

However, it suggested that higher education providers should still ensure that:

[D]egree programmes continue to provide students with the core

¹³² Department for Digital, Culture, Media and Sport, [UK Digital Strategy 2017](#), 1 March 2017.

¹³³ *ibid.*

¹³⁴ Department for Business, Innovation and Skills, ‘[Graduate Employment and Accreditation in STEM: Independent Reviews](#)’, 26 February 2015.

¹³⁵ Department for Business, Innovation and Skills, [Shadbolt Review of Computer Sciences Degree Accreditation and Graduate Employability](#), 16 May 2016, p 3.

¹³⁶ *ibid.*

¹³⁷ *ibid.*, p 4.

¹³⁸ *ibid.*, p 8.

foundational knowledge and principles of computer science. This core should reference the Association of Computing Machinery (ACM) curricula documents for the required body of knowledge.¹³⁹

The Review also made a number of recommendations related to improving graduates softer and work readiness skills, with the Tech Partnership, the British Computer Society (BCS) and Institution for Engineering and Technology (IET) accrediting modules that provide students with these skills.¹⁴⁰ It also proposed developing a clearer view and understanding of the skills needed by start-up technology companies and SMEs.¹⁴¹ In terms of the academic accreditation of degree courses, the Review recommended that the:

BCS, IET and Tech Partnership should ensure that existing systems of degree course accreditation are flexible, agile, and enable HE providers to respond to changing demand and emerging technological trends and developments. Accreditation of courses should be focused on outputs. Accrediting bodies should work to increase awareness and value of accreditation so that it is valued by HE providers, students and employers, and consider how their role can provide a forum for engagement between HE and employers.¹⁴²

The Government acknowledged that it was not the only provider of digital skills and argued that employers and companies had a role in improving digital skills. The *Digital Skills Strategy* highlighted the work of Lloyds Bank, which committed to creating 20,000 digital champions by 2017 to help “people and organisations use the internet to improve digital skills and financial capability”.¹⁴³ Likewise, Barclay’s had pledged to teach basic coding to 45,000 children and help people with general digital skills and cyber awareness.¹⁴⁴

4. Digital Understanding

A number of observers across the business community in particular welcomed the Government’s *UK Digital Strategy 2017*. For example, Lucy Dimes, the Chief Executive of Fujitsu UK and Ireland, stated that it was “an exciting and welcome prospect at a time when UK businesses are facing a significant threat from digital disruption”.¹⁴⁵ Dr Jeremy Silver, the Chief

¹³⁹ Department for Business, Innovation and Skills, [Shadbolt Review of Computer Sciences Degree Accreditation and Graduate Employability](#), 16 May 2016, p 8.

¹⁴⁰ *ibid*, pp 9–10.

¹⁴¹ *ibid*.

¹⁴² *ibid*, p 10.

¹⁴³ Lloyds Banking Group, [‘Lloyds Banking Group Commits to 20,000 Digital Champions by 2017’](#), 2 April 2015.

¹⁴⁴ Department for Digital, Culture, Media and Sport, [UK Digital Strategy 2017](#), 1 March 2017.

¹⁴⁵ Silicon, [‘UK Digital Strategy: Tech Sector Reacts to Government’s Plans to Target AI and Stem Digital Skills Gap’](#), 1 March 2017.

Executive of Digital Catapult, also welcomed the digital strategy saying it “symbolises a tipping point for the UK economy; it is a great statement of digital opportunity for all”.¹⁴⁶

However, Rachel Coldicutt, the Chief Executive of Doteveryone—a think-tank campaigning for a fairer internet—argued that the Strategy did not “reflect the fact that technology is now a part of everyday life for most people in Britain”.¹⁴⁷ As a consequence, “[a] digital strategy for 2017 should be about deepening the whole country’s digital understanding and capability—transformation for all, not just a few”.¹⁴⁸ She suggested this would include efforts to improve the UK’s understanding of how technology impacts on people’s lives in terms of privacy safety and rights.

Baroness Lane-Fox of Soho (Crossbench), the founder and chair of Doteveryone, has argued that the UK’s responses need to go further:

We need to go beyond basic skills to raise the first generation of native digital understanders—people who, unlike most of the rest of us, know where and how their technology is made. Imagine a Britain where tech no longer scares or dazzles us, where it is as useful but unremarkable as a wristwatch. In such a society, we would be less likely to fall prey to scams, make bad policy choices, or be taken in by gadgets that serve no purpose and solve no problem.¹⁴⁹

She observed that we live in “an age of marvellous technology but also of staggering incomprehension”, and noted that while we rely on technology for almost everything, “we have no idea how it might work or how to hold it to account”.¹⁵⁰ As a consequence, Baroness Lane-Fox suggested that the UK celebrate not just digital skills but “digital understanding” which she defined as the “ability to both use technology and to comprehend, in real terms, the impact that it has on our lives”.¹⁵¹

Doteveryone elaborates further on the concept of ‘digital understanding’. Its website states:

[D]igital skills are important. But skills are not enough. Skills don’t equip people to adapt to change or to be questioning and critical about the internet. That requires digital understanding—knowledge of how the internet works, an awareness of its power structures, and an

¹⁴⁶ Silicon, ‘[UK Digital Strategy: Tech Sector Reacts to Government’s Plans to Target AI and Stem Digital Skills Gap](#)’, 1 March 2017.

¹⁴⁷ Doteveryone, ‘[A Digital Strategy for Everyone](#)’, 1 March 2017.

¹⁴⁸ *ibid.*

¹⁴⁹ Martha Lane Fox, ‘[Technology is a Marvel—Now Let’s Make It Moral](#)’, *Guardian*, 10 April 2017.

¹⁵⁰ *ibid.*

¹⁵¹ *ibid.*

ability to question its impact on our choices, rights and lives.¹⁵²

The organisation has also announced that it is developing a definition of what digital understanding “means in practice” and planning a “first-ever national survey of digital attitudes and understanding”.¹⁵³

4.1 Ofcom Research

Ofcom publishes annual research as part of its media literacy duties. The latest report, *Adults’ Media Use and Attitudes: Report 2017*, is based on research conducted in autumn 2016. The report “looks at media use, attitudes and understanding, and how these change over time, with a particular focus on those groups that tend not to participate digitally”.¹⁵⁴

The following reproduces the key findings, as summarised in Ofcom’s report, with regard to adults’ “critical understanding” of the internet:

- Although the majority of internet users describe themselves as being confident online, around a quarter don’t make reliable checks before entering financial details.
- The majority of social media users say they consider potential data or privacy implications before posting content.
- More than four in five internet users are confident they can identify advertising online, but fewer are aware of personalised advertising.
- Half of search engine users recognise adverts on Google but 28 percent of adults who use video-sharing sites don’t realise that vloggers might be paid to endorse products.
- Most internet users make some checks to judge the accuracy of factual information online, but this is a challenge for some.
- One in five adults say that if results are listed by the search engine, the websites will be accurate/unbiased.
- Three in ten users often share links to articles on Twitter or Facebook without fully reading the content first.
- Social media users are more likely than in 2015 to strongly disagree that they tend to trust the content on social media sites or apps.¹⁵⁵

¹⁵² Doteveryone, ‘[Moving Beyond Digital Skills to Digital Understanding](#)’, Medium, 28 July 2017.

¹⁵³ *ibid.*

¹⁵⁴ Ofcom, *Adults’ Media Use and Attitudes: Report 2017*, June 2017.

¹⁵⁵ *ibid.*, pp 8–10.

Appendix I: Basic Digital Skills Framework

Skills	Managing Information	Communication	Transacting	Problem-Solving	Creating
Description	Find, manage and store digital information and content	Communicate, interact, collaborate, share and connect with others	Purchase and sell goods and services; organise your finances; register for and use digital government services	Increase independence and confidence by solving problems and finding solutions using digital tools	Create basic digital content in order to engage with digital communities and organisations
Safety	Identify and assess accurate sources of information; use security tools when browsing the web; regularly update and run virus checking software; manage parental controls	Understand how to manage your identities, protect yourself from scams; use the right security settings (including parental controls); protect your customer data	Use secure websites for financial transactions; protect your personal data; respect the privacy of others/third parties	Use accurate sources of support; avoid malicious websites, scams and popup windows	Be aware of copyright law; protect your personal data; respect the privacy of others
Actions for Individuals	<ul style="list-style-type: none"> • Use a search engine to find the information you need • Search for deals on comparison websites • Bookmark useful websites and services • Store data on a device or in the cloud 	<ul style="list-style-type: none"> • Keep in touch using email, instant messaging, video calls and social media • Post on forums to connect with communities • Communicate with organisations about their products and services 	<ul style="list-style-type: none"> • Understand and use marketplaces to buy and sell • Order your shopping • Book your travel • Manage your bank account • Set up and manage a Universal Credit account 	<ul style="list-style-type: none"> • Teach yourself simple tasks using tutorials • Use feedback from other internet users to solve common problems • Access support services 	<ul style="list-style-type: none"> • Create a social media post • Create a text document such as a CV • Create and share a photo album • Create and share feedback about products and services
Actions for Organisations	<ul style="list-style-type: none"> • Store digital information on suppliers and customers • Search for new suppliers to find the best deals • Understand who uses your website • Discover potential growth opportunities for your business 	<ul style="list-style-type: none"> • Maintain customer and client relationships • Use social media to promote your business and connect with new customers • Improve your customer service by providing accessible product information and answers to frequently asked questions 	<ul style="list-style-type: none"> • Maximise your selling potential through a website • Save time by applying for government business permits and licences • Receive payments or donations • Protect yourself from fraud or scams 	<ul style="list-style-type: none"> • Save on business travel and be more efficient by using video conferencing • Use business support websites and basic how to guides • Quickly understand which products and services work based on online feedback • Interpret simple analytics to improve website performance • Get solutions to problems from safe, accurate sources 	<ul style="list-style-type: none"> • Create an informational or e-commerce website • Create content (pictures, logos, text) to promote your organisation and reach customers • Use social media and create communities to engage with customers • Create resources to improve employee skill levels

(Source: Tech Partnership, '[Basic Digital Skills Framework](#)', accessed 2 August 2017)