

Desktop review:

Examining the extent to which employers and organisations are meeting the challenge of improving the digital literacy of their workforce



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Foreword

Health Education England (HEE) is the national body formed in 2012 to undertake leadership and co-ordination of education and training within both the health and public health workforce. This includes workforce development, planning and evolution in line with key changes, including the impact of technological advances.

We are responsible for delivering a better health and social care workforce for England. It is the organisation responsible for the education, training and personal development of every member of staff and for recruiting for values.

Our Technology Enhanced Learning (TEL) Programme was established in 2013 with the vision that healthcare in the UK be underpinned by world-class education and training that is enhanced through innovation and the use of existing and emergent technologies and techniques. The Programme has a wide remit and has a number of ongoing projects, one of which is the Digital Literacy Project.

The Digital Literacy Project concerns itself with the ability of all within healthcare to become, and to remain, digitally literate. This is so that all are able to learn, work and develop effectively in a digital workplace and society. The project aims to promote the adoption of clear education, training and development strategies that will enable this and which will also promote and support the adoption and spread of new technologies and techniques.

This paper is one of three undertaken by the Digital Literacy Project as part of its scoping and review work of the current landscape, in terms of digital literacy in the UK.

Executive Summary

Introduction

Digital literacy levels across the UK population, whilst being addressed through various national policy initiatives, are of national concern with evidence of an emerging digital divide. This, unsurprisingly, translates into the overall state of digital literacy levels in the UK general and health and social care workforces.

The culture across the health and social care sector has been criticised for not providing the necessary conditions for developing the digital literacy of the workforce. This has implications for care delivery in terms of supporting service users to develop digital health literacy and implementing digital solutions that support the provision of high quality, safe care.

The National Information Board (NIB) is committed to improving the digital capabilities of the NHS workforce. Responsibility for leading this has been delegated to Health Education England (HEE). The HEE Technology Enhanced Learning (TEL) Programme's Digital Literacy Project aims to develop recommendations for improving digital literacy for trainees and the workforce across the health and social care landscape; hence this desktop review, that aims to investigate to what extent and in what ways employers/organisations are meeting the challenge of improving the digital literacy of their workforce by answering the following questions:

- a) What are the strategies/policies/activities being used in different workplace settings across different sectors?***
- b) What evidence is there of success in the strategies being employed?***

To shape the review, the definition of digital literacy adopted by HEE was used;

Definition: Digital literacies are the capabilities which fit someone for living, learning, working, participating and thriving in a digital society.

Digital literacy domains: Becoming a digitally-literate person involves developing those function skills, plus attitudes, values and behaviours that can be categorised under the following elements or domains:

- Digital identity, wellbeing, safety and security
- Communication, collaboration and participation
- Teaching, learning and personal/professional development
- Technical proficiency
- Information, data and media literacies

- Creation, innovation and scholarship.

Being digitally literate across a range of domains to proficient levels helps us more easily acquire other skills and competencies in life (Kennedy & Scott, 2016).

Key findings

1. There are multiple frameworks across different sectors that attempt to articulate the skills and competencies needed for digital literacy. However, there is a lack of differentiation across roles and commensurate digital literacy skills, knowledge and competencies.
2. Globally, 51% of business leaders are reported to have a strategy for managing digital skills development, although in the UK, retail and banking sectors are responding rapidly to 'digital disruption'. Companies are also contributing to developing the digital skills of 'customers/citizens' through corporate social responsibility (CSR) programmes.
3. Digitisation and upskilling of the small and medium-sized enterprise (SME), social enterprise and charitable sectors has been slower.
4. In the health and social care sector, there have been a number of initiatives to support digital literacy. However, whilst there are policy initiatives and recognition at national level of the real need to develop digital literacy in the health and social care workforce, there is a lack of nationwide or wide-scale approaches/initiatives being implemented.
5. Drawing on five case studies of organisations which appear to be successfully developing a digitally-literate workforce, the following approaches have been identified as significant factors contributing to this success:
 - a) **Leadership:** there needs to be proper buy-in at all levels of leadership and management with clear articulation of the importance of digital literacy, encouragement to develop/improve digital literacy and the appropriate access and learning opportunities provided.
 - b) **Strategy:** organisations need, at the macro level, to demonstrate clear strategic intent with regard to improving the digital literacy of their workforce.
 - c) **Organisational culture:** this needs to be open and trusting with an ethos of information sharing. Decentralised control over digital working needs to become business as usual.
 - d) **Digital ecosystem:** a systemic approach should be adopted that sees multiple partnerships involved. Using local data to shape strategies and

initiatives, the digital ecosystem should take a holistic approach towards communities, rather than simply focussing on individuals.

- e) **Talent management:** organisations need to be recruiting for digital skills, recognising skills within and identifying skills gaps. Organisations should also identify existing, transferable skills that can be transitioned into a digital work context.
 - f) **Informal learning:** organisations need to learn from how digital literacy skills and behaviours are acquired informally and utilise these existing and transferable skills, as well as employ similar methodologies in encouraging learning at, and for, work.
 - g) **Developing digital skills digitally:** there is a wide range of online/digital resources and tools for learning that should be curated and made easily available to the workforce.
 - h) **Reward learning:** learning can and should be rewarded to aid motivation, e.g. open badges, certification and increased autonomy in using digital technology.
 - i) **Partnership in learning:** increasingly, there is recognition that the acquisition and development of appropriate skills is a partnership, although it should be emphasised that employers should certainly not abdicate responsibility for training but should provide, resource and signpost good quality training and learning.
6. It should be noted that, whilst the above have been offered as successful approaches to the development of good digital literacy skills and competence, wide-scale evaluation of such methods has not been undertaken.
7. The most significant success factor identified across all sectors is that of the **Digital Champion** role.
8. Three types of Digital Champion have been suggested:
- *Formal* — those given this role formally
 - *Informal* — those who, often with a passion for all things digital, self-appoint to this role
 - *Spontaneous* — those who share their digital knowledge informally, unthinkingly and unconsciously.

Ideally, in a Digital Champion model, there should be a mix of all three types with the largest group being those spontaneous Digital Champions and the smallest being those formally appointed. All Digital Champions need ongoing access to training, development and support.

Conclusion

Whilst there has been little evaluation to date of the most successful approaches to developing and maintaining appropriate levels of digital literacy within workforces, this review has highlighted some of those that have proved valuable and successful, particularly the role of Digital Champion. Strong leadership is required to create the strategic intent with regard to digital literacy and a workforce, and organisations should aim to contribute to a wider digital ecosystem.

It is essential that developing digital literacy within the health and social care workforce is not seen as a one-off initiative, but rather an ongoing process and should be integrated into everyday life and working. Nonetheless, digital capabilities and competencies need to be acknowledged and embedded within the curricula of healthcare professionals to ensure they enter the workforce with both the necessary skills and attitudes/behaviours. Non-professional health and social care workers need to be recruited for digital literacy and/or inducted, orientated and developed going forward in digital literacy competencies.

Health and social care organisations should audit existing digital capabilities in the workforce and Digital Champions should be supported fully to work with colleagues and service users/patients.

Whilst digital disruption is being embraced in other sectors, the NHS can appear to be resisting this through a narrower focus on existing NHS workflows, rather than exploring the creative applications and approaches to the delivery of high quality, safe care that digital offers. This could have serious consequences at both a societal and individual level, in terms of health and the failure of the sector to contribute fully and beneficially to a digital ecosystem that equips people to 'thrive in a digital society' (Kennedy & Scott, 2016).

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1. Background

1.1 Digital literacy in the wider population

The need to develop digital literacy and capabilities across the UK population has been part of successive government policies, for example, the 2010 National Plan for Digital Participation (Department for Business Innovation & Skills (BIS), 2010) and more latterly the Government Digital Inclusion Strategy (Cabinet Office, 2014), that set a target for a 100% digitally-skilled nation. Good Things Foundation (formerly Tinder Foundation) has estimated that it will cost £875 million to ensure this target is met (McDonald, 2014). In 2015, a House of Lords report expressed concern that this target was at risk owing to the lack of universal access to digital broadband and a continued lack of basic digital skills in the wider population. With increasing digitisation of government services, evident in Digital by Default (Scott, 2014) and in retail and banking, there is concern that a 'digital underclass' is emerging within socially disadvantaged and vulnerable groups (Helsper & Reisdorf, 2016). Moreover, there seems to be '... a race for access ... rather than ... engagement' (Helsper, 2011:p6). Hilson (2013) identifies that in the USA, primary access to the internet, particularly amongst young people, is via a smartphone. He contends that this prevents the acquisition of IT skills, and that being digitally savvy does not equate to being digitally literate.

The extent of basic digital literacy skills in relation to developing the skills of the health and social care workforce is important. Whilst work is ongoing in the education sector to develop digital literacy so that young people will enter the workforce with the basic skills to fit them 'for living, learning, working, participating and thriving in a digital society' (Kennedy & Scott, 2016), there remains a lack of basic digital literacy skills within the existing workforce and in patients and clients. Thus organisations, the workforce and patients/clients are unable to fully benefit from the opportunities afforded by digitisation, such as access to mobile health, welfare support, etc.

1.2 Digital literacy in the UK general workforce

There is a mixed picture of the extent of digital literacy skills in the workforce. Fujitsu (2015) reported that there was reason to be positive about the growth and uptake of 'digital services' in the UK, with banking and the retail sectors leading the way. Fujitsu surveyed 1,400 employees and found high levels of satisfaction with working digitally, although lack of training was cited as an issue. In contrast, however, along with the House of Lords, other sources highlight a continuing lack of digital literacy skills and capabilities across the UK workforce that is predicted to have a significant impact on the UK economy (Koss et al., 2012; Ecorys UK, 2016). The main skills

gaps identified in the recent Digital skills for the UK economy report (Ecorys UK, 2016), prepared for BIS and the Department of Culture Media & Sport, are mainly sector-specific skills and those skills required in digital industries (Tech City UK, 2016). Ecorys UK also highlights the ‘... latent skills gap ...’ (p47) in the existing workforce which may be a reflection of the situation in the wider population. Younger entrants to the workforce, whilst being ‘device savvy’, are not fully digitally literate and are therefore unaware of how devices can be used in the workplace (BCS, The Chartered Institute for IT, 2014).

Concerns are expressed about the role of employers in taking responsibility for upskilling their existing workforce. Only 51% of business leaders worldwide have a strategy for managing digital skills development, and BCS (2014) argues that employers are acting as ‘victims’ of the skills deficit, rather than taking concerted action to address the situation and seemingly abdicating responsibility for skills development to education providers. There is evidence that individuals in the workforce are making the first move, with employees taking the initiative to develop skills themselves (Fujitsu, 2015; Brecher et al., 2016; Tech City UK, 2016). However, there is widespread agreement that employers should lead the way in developing their workforces (UK Digital Skills Taskforce, 2014; BCS, 2014; McDonald, 2016; Copeland, 2016; Ecorys UK, 2016).

1.3 Digital literacy in the NHS and social care workforces

At the National Information Board (NIB) 2015 Leadership Summit, one of the four key recommendations set out by Baroness Lane Fox to promote digital inclusion across the NHS included the need to build ‘... the basic digital skills of the NHS workforce to ensure that everyone has the digital skills needed to support people’s health’ (Lane Fox, 2015).

In her recommendations to the Secretary of State for Health, Lane Fox highlighted that professional development would be a key priority:

‘I recommend that a digital skills assessment, training, support and mentorship programme is developed and rolled out locally, regionally and nationally that builds the digital maturity of the health care workforce, including digital leadership. This cannot be a one off initiative but an ongoing process that keeps people’s skills and confidence at pace with technological developments for the benefit of all citizens.’ (Lane Fox, 2015)

The Department of Health’s (DH) refreshed mandate (2015) for Health Education England (HEE) already highlighted the need for a ‘... more technologically literate’ workforce with the underlying assumption that the workforce needs to be digitally literate. However, whilst there is widespread agreement on this need, there still

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seems to be a lack of progress and a deficit of digital literacy across the health and social care workforce (Skills for Care, 2014; Ecorys UK, 2016).

The DH's own Digital strategy update report (2014) identifies that:

'The internet is now so ubiquitous that in a modern workforce everyone needs digital skills and the confidence to use them, appropriate to their role.' (DH, 2014:para. 4.2)

The DH aims to be a key leader of the response to this challenge through enabling a digitally-literate culture across the health and social care workforce. However, it has been criticised for being more focussed on the need for the Department itself to be 'digitally effective' in terms of information channels (Skills for Care, 2014).

Good Things Foundation, in partnership with NHS England (NHSE), identified that one of the potential barriers to the implementation and sustainability of the Widening Digital Participation programme was that 'Levels of digital literacy within frontline healthcare professionals and more widely in the social care sector are not uniform' (Good Things Foundation & NHSE, 2015:p28). The report also identified a need for the NHS to value digital health literacy.

This cultural issue was also identified in the Digital skills for the UK economy report (Ecorys UK, 2016) that expressed concerns on the NHS culture in relation to digital health, noting that '... the healthcare culture does not really support the ... up-skilling of current professionals' (p40). Deloitte (2015) reported that, whilst the health sector was good at innovating in terms of telehealth and mobile health, there was a cultural reluctance in the NHS to engage with 'digital'. The report also highlighted a lack of skills in health analytics, crucial to manage 'big data'. In the UK, retail, industry and commercial health service intelligence solution providers, such as DrFoster.com, have harnessed the power of big data.

Unfortunately in this respect, the NHS has been recognised as being behind the curve by NIB (2014). Instead, the focus has been on the regulation of quality standards and for healthcare information to drive improvement rather than fundamental innovation. The NHS is making headway, though, in terms of digital infrastructure. The recent release of the digital maturity index self-assessment results (Hoeksma, 2016) highlights a 'mixed picture', but the assessment does not overtly include any assessment of the digital literacy skills of the workforce.

In 2014, NIB published a '... framework for action' (p4) that aims to take forward the various DH digital policies and support the intention of the NHS Five Year Forward View (NHS, 2014) to '... exploit the information revolution' (p31). The Building a Digital Ready Workforce (BDRW) Roadmap of the NIB framework includes the

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commitment to improve the digital capabilities of the NHS workforce (NIB, 2015). The responsibility for leading this has been delegated to HEE.

The HEE Technology Enhanced Learning (TEL) Programme is looking at how digital literacy can be developed in the workforce; however, it has identified that across the NHS there is a focus on process rather than creativity and there is a lack of emphasis on digital literacy in job descriptions. Moreover, professional bodies make minimal reference to digital literacy in their codes of practice (Kennedy & Scott, 2016). The underlying causes and issues behind the extent to which digital literacy is seen as a challenge for trainers, learners and employees in the health and social care workplace have been explored more fully by de Normanville & Scott (2016).

2. Methodology

2.1 Aim of review

TrueBlueSky Social Enterprise Ltd (TBSSE) was commissioned by Health Education England (HEE) to undertake a desktop review that explored the themes and trends to examine the extent to which employers and organisations are meeting the challenge of improving the digital literacy of their workforce. This review is the third in a series of three reports, the first looking at digital literacy definitions (Kennedy & Scott, 2016) and the second a literature review on the extent to which digital literacy is seen as a challenge for trainers, learners and employees in the workplace (de Normanville & Scott, 2016).

The main purpose of this review is to answer the following question:

To what extent, and in what ways, are employers/organisations meeting the challenge of improving the digital literacy of their workforce?

The subsidiary questions were:

- What are the strategies/policies/activities being used in different workplace settings across different sectors?
- What evidence is there of success in the strategies being employed?

2.2 Search strategy

The search for relevant information and potential case studies was conducted across a wide range of databases (including grey literature databases) and search engines, such as Google and Google Scholar. Terms such as 'digital literacy' were combined with 'workforce', 'strategy' and 'policy'. The scope was primarily limited to UK strategic and policy documents, website information and journalism/proprietary research, as well as academic journals/papers/publications published from January 2012 to April 2016. The outputs from the earlier literature review were also reviewed and potential papers/articles identified through snowballing forward from reference lists. A brief review of international sources was conducted to identify any significant contributions that would enable comparisons to be made. The study considered both the healthcare sector and industry/private sector, but excluded education as the Technology Enhanced Learning (TEL) Programme team is accessing other work in this area.

The information/case studies identified were not subjected to synthesis or a quality appraisal, as a desktop review is intended more as a scoping review, rather than a systematic review.

3. Key findings

Data used for this review was extracted using a thematic analysis approach. Each theme was broken down into relevant elements to allow a clearer picture of the issues identified (see Table 1).

Table 1 — Themes and elements

Theme	Elements
Digital literacy frameworks	Multiple frameworks available Lack of differentiation in frameworks across wider digital literacy skills/competences/roles Skills.
Approaches to improving digital literacy in the private/third sector (Case studies: Barclays and Argos)	Digitisation across the retail and banking sectors Corporate Social Responsibility (CSR) programmes contributing to widening digital participation Short-term campaigns, e.g., working smarter using technology Slow uptake of digitisation/digital upskilling amongst SME, social enterprise and charitable sectors.
Approaches to improving digital literacy in the health and social care sector (Case study: US Veterans Health Administration)	Emerging roles Coding Workforce strategy Widening participation in health.
What works? (Case study: US Army)	Leadership Strategy Organisational culture Digital ecosystem Talent management Informal learning Develop digital skills digitally Reward learning Partnership in learning Evaluate.
Digital Champions	Digital Champions in the community Digital Champions in the workplace

Theme	Elements
(Case study: Department of Health (DH))	Types of Digital Champions Person specification for Digital Champions Skills for Digital Champions Developing Digital Champions.

3.1 Digital literacy frameworks

The report from Ecorys UK (2016) on behalf of the Department of Business Innovation & Skills and the Department of Culture, Media & Sport, identified there to be a multiplicity of frameworks for digital literacy/capabilities/competences. In addition to those identified in the Ecorys UK report, this review found the following frameworks:

BBC Media Literacy Strategy (2013) — identifies three areas: 'Get Connected', 'Get Smart' and 'Get Creative' that are aligned to the Go ON UK Basic Digital Skills Framework (2015).

The Skills Framework for the Information Age (SFIA) (2015) — this extensive framework is aimed primarily at ICT jobs and roles. It consists of seven levels of responsibility from 'Follow' through to 'Set strategy, inspire and mobilise' and identifies 97 skills across six categories: Strategy and Architecture; Change and Transformation; Development and Implementation; Delivery and Operation; Skills and Quality; Relationships and Engagement.

Skills for Care (2014) — identifies three broad skills groupings: Basic – 'generic digital skills', Intermediate – 'digital champion skills' and Specialist – 'understanding specific care and support focused digital technologies'.

The Skills Funding Agency (SFA) (2016) — highlights four categories: Basic – Entry level/level 1, basic fundamental skills; General – Level 2 builds on level 1 skills; Advanced and specialist – Level 2 and above, technical skills for digital job roles; Academic – Level 2 and above, academic qualifications through higher education. It acknowledges that these were out of date being based on National Occupational Standards from five years ago.

UK Government digital inclusion scale — whilst not strictly competency frameworks, the nine-level scale allows individuals to measure where they are in terms of digital engagement. Point 7 is classified as the individual having basic internet skills (Cabinet Office, 2014).

A major criticism by Ecorys UK (2016) of all the frameworks and definitions of digital literacy that it examined was that:

'... no clear distinctions are made between the skills needed by different user groups. Other definitions are either too broad; not all citizens, learners or users will be interested in developing the competences described in some of these frameworks, or narrow; and focus on one user group'. (p23)

It could be argued that this criticism also applies to the current digital literacy definition being developed by the Technology Enhanced Learning (TEL) Programme; however, to counter this, TEL is continuing work on an aligned framework that recognises the diversity of need, requirement, timescales and specifics of different learners/employees and employers.

This lack of differentiation could unintentionally be fostering a skills gap. Bassett et al. (2013) note that current approaches focus either on basic skills, including safety and risk and 'use-as-consumption', or high-end creative/technical skills, such as app development, etc. Ecorys UK (2016) suggests the adoption of three broad categories for skills that identify digital skill needs for three key groups across the wider population and workforce:

'Skills required by all citizens to become computer literate;

Skills required for the general workforce in order to use digital applications;

Digital skills necessary for ICT professionals linked to the development of new products and services.' (p24)

These definitions have been used by Ecorys UK to map current and anticipated digital skills requirements (Ecorys UK, 2016:p46) that could provide a reference for the development of a digital literacy competency framework for the health and social care workforce. Work in this area has started with the National Information Board (NIB) (2015) beginning to address:

'... requirements and assumptions for associated competency frameworks; practical registration and regulation mechanisms; the link to CPD; and ongoing maintenance'. (p8)

3.2 Approaches to improving digital literacy in the private sector and the third sector

Digitisation of the retail and banking sector is fast moving, with these sectors seemingly embracing the challenge presented by 'digital disruption' to innovate services using digital technology. The banking sector particularly is rapidly digitising services so that online banking, contactless payments and, more recently, mobile payment apps such as Apple Pay are now becoming the norm. Banking organisations have had to respond to the challenge of both equipping their workforces to exploit and work with the new technologies and support their customers to engage with the technology (BBA with Accenture, 2015). As well as actively developing the digital literacy skills of their workforce, banks such as Barclays and Halifax are now including supporting customers and citizens to develop digital literacy skills as part of their CSR approaches (Barclays, 2016; Halifax, 2016).

Case study 1: Barclays

In 2012, Barclays bank set out to develop 'the most digitally savvy workforce in UK retail'. Working with City & Guilds Kineo, it developed 'The Digital Driving Licence', a C&G-accredited course for its staff. By March 2015, 100,000 Barclays employees had undertaken the programme.

One of the original online modules developed for staff was the 'Digital Eagles' training programme. As well as supporting colleagues to develop digital skills, the Digital Eagles are now available in branches across the UK to support customers, not just in accessing online banking, but also learning basic digital skills. Digital Eagles also go out into the wider community, such as public libraries, to support digital access and skills acquisition.

The Digital Driving Licence, now known as 'Digital Wings' has now been made available free of charge to the general public. The programme consists of 29 modules covering a wide range of digital skills and capabilities (see Appendix 1 for full list). For each module that is completed, participants are awarded a Mozilla Open Badge. Barclays has recently launched an online 'Coding Playground' aimed at introducing children to basic coding skills.

Sources: Sinclair (2015); Barclays (2016)

In the retail sector, companies have to respond to the rise in online shopping, whilst also making their physical stores digitally relevant. The Digital High Street Advisory Board (2015) has identified that to remain vibrant, stakeholders in UK high streets need to contribute to the widening digital access and engagement agenda, as well as supporting digitisation across small and medium-sized enterprises (SMEs) and the wider community. Larger retailers such as Argos (see Case study 2) and Marks and Spencer also have to face the same challenge and have ensured leadership

commitment to the creation of a digital culture through board-level hands-on digital training (Deloitte, 2014).

Case study 2: Argos

Argos is aiming to be a digital retail leader. 120 stores have been converted to digital stores with tablet browsing and automated payment. Argos has set up an internal virtual learning environment (VLE), 'OPENdoor', which enables staff to undertake a range of bite-sized developmental activities. The VLE includes a section called 'Be Curious' that links to an extensive range of online books, videos and other learning content to support self-directed personal and professional development. An in-store digital learning programme, 'STEPS', is available to support staff to develop basic digital skills. In partnership with Microsoft, a 'Safer Families' digital security workshop has been run for staff. In 2015 a week-long 'I Love Digital' campaign was run for 420 head office staff. Argos also uses Digital Champions to help support staff and customers. The sessions from this were filmed and made available for all staff via OPENdoor.

Argos is a Board partner of Go ON UK and is contributing to developing the digital skills of its customers through its CSR programme. Since 2014, 120 stores have run basic internet workshops, reaching 8,000 customers. The workshops are priced at £20 per participant, but they are trained on an Android tablet which they keep and are offered 12 months' free home broadband with TalkTalk.

Sources: Argos (2015); Home Retail Group (2016)

Other private sector examples of developing digital literacy skills in the workforce include:

Lundbeck Pharmaceuticals: launched a productivity hack programme called 'Get 15' that used a mix of digitally-supported collaborative working applications such as SharePoint, an online 'Smarter Working Campus' and hands-on training to improve efficiency and effectiveness. The approach is goal-focussed rather than training-focussed to use specific digital applications (ClearBox Consulting, 2014).

Ford Motors: also used a goal-focussed approach to developing its 'digital worker' programme. Collaborative software such as Yammer was introduced, as were mobility solutions such as Bring Your Own Device (BYOD). A 'How I work' programme is being run using scenarios for workers to identify which digital application to use to increase productivity and efficiency. The Ford IT department is evolving from being a 'tool provider' to that of a collaborative partner and innovator (Hiner, 2012).

However, whilst some larger companies would appear to be investing in digitisation and the accompanying digital skills development of their workforce, the same cannot

be said of SME and third sector organisations. In 2015, Lloyds Bank (2015a) identified that a significant proportion of SMEs, particularly charities, did not have basic digital skills and 75% were not investing in improving digital skills. This could have implications for the health and social care sector which may interact with SMEs and charities who are service providers.

A number of initiatives have been developed by private sector and third sector organisations to support SMEs, ranging from free training tools, such as a digital skills education toolkit developed by NCVO Knowhow Nonprofit (no date) to online courses such as the 'Big Digital Skills Hub' offered by Virgin Media, which consists of tutorials and modules for businesses to develop digital marketing and trading skills. Microsoft 30 Digital Champions (Real Business, 2016) is a website where 30 businesses across the UK are profiled as 'Digital Champions'. Go ON UK is also signposting Digital Champion support and training and in October 2016 the School for Social Entrepreneurs offered a four-day 'Digital Leaders' course, priced at £600. This was aimed at CEOs of social enterprises.

A final major contributor to the development of workforce digital literacy skills that crosses both private and public sectors is the Trade Unions Congress (TUC), which offers 'Unionlearn' in partnership with Go ON UK. TUC is involved in local Go ON UK initiatives and supports the training of Digital Champions across affiliated trade unions and in local communities. Unionlearn has signed up to the Digital Inclusion Charter and is working with a number of unions to support digital skills training amongst its members (Unionlearn, 2013).

3.3 Approaches to improving digital literacy in the health and social care workforce

In 2014, Skills for Care produced the Digital working, learning and information sharing workforce development strategy, for adult social care. This was developed from a rapid review of digital capabilities that highlighted the shortfall of basic digital skills (Dunn & Braddell, 2014). The workforce strategy highlighted four principles, including:

'Digital learning is recognised as a crucial part of workforce development, and part of a blended approach to learning and development including the achievement of standards and qualifications.' (p6)

There is little detail in the strategy on how this will actually be managed, aside from a commitment to produce guidance for commissioning workforce development. A further aspect of the strategy considered the role of the social care workforce in enabling clients to access digital health support.

In this respect, Good Things Foundation has been working in partnership with NHS England (NHSE) on a three-year programme to widen digital health participation (Good Things Foundation, 2015). An evaluation of the first two years of the programme outlines a range of models of engagement but, as already noted, the lack of digital skills in the healthcare workforce is a barrier (Good Things Foundation & NHSE, 2015).

Other digital literacy initiatives include NHSE Code4Health. The BMJ (Hoeksma, 2013) reported that the plan was for 50,000 clinicians to be trained in open source coding, although it appears that the programme was scaled back in late 2013 but re-launched in 2015 with an emphasis on bridging the gap between clinicians and IT departments (Sachdeva, 2015). Courses are now being run across the country looking at app design with 12 months' follow-up support. In addition, Code4Health sponsors challenges at events, such as NHS Hack Days, that encourage disruptive thinking and rapid prototyping of digital innovations.

Working in partnership with all NHS organisations in Leeds, Leeds City Council commissioned the development of a digital practitioner programme (Edgar, Grace & Dale, 2016). A model for developing the digital capability of the workforce has been proposed that included recommendations to address infrastructure, organisational support issues and approaches to training. The model proposes a 'Learning hub' that includes a number of modules for health and social care practitioners on social media use, video conferencing, digital tools, finding and evaluating information, information governance and online safety. In addition, the report suggests the development of a curated library of resources and information for practitioners and citizens.

NIB (2015) is looking to '... increase the professionalism and regulation of the informatics community ...' (p8) and has recognised the need for a whole new career framework in medical informatics although, as previously mentioned, there is a scarcity of health analytics skills in the workforce. Whilst this is regarded as a specialist area, NIB also acknowledges the need for the NHS workforce to be able to engage with data to support evidence-based clinical decision making (NIB, 2014).

Masys (2002) envisioned a number of innovative roles including an 'Informationist' who sources and supplies information on behalf of clinicians, and 'Personal health advocates and advisers' who enable patients to navigate healthcare systems, information and services effectively. Finally, there would be emerging roles for 'Telemedicine practitioners' with enhanced media presentation skills to make the best use of virtual contact time between patients and remote experts. Of all these possibilities some have emerged, for example, the Care Navigation/Telehealth Care Services at South West Yorkshire Partnership NHS Foundation Trust, which

employs a team of nurses who work remotely to support patients with long-term conditions (Monitor, 2015).

Despite policy initiatives and an acceptance of the need to develop the digital literacy skills of the health and social care workforce, there seems to be a lack of wide-scale approaches being implemented (aside from the work of the TEL Programme). Thus the US Veterans Health Administration (VHA) is offered as a case study for comparison (see Case study 3). It could be argued that the VHA's learning and capacity to tackle the connectivity and digital literacy inequalities at a micro- and macro-level represent the same kind of connectivity and scaling issues within the UK health and social care sector.

Case study 3: US Veterans Health Administration (VHA)

The VHA employs a workforce of 250,000, serving 8.76 million veterans a year (US Department of Veterans Affairs, 2015). The VHA is taking an ambitious approach to scaling up digital literacy across this large population and has developed a Veterans Affairs Corporate University portal (VALU) that includes a Talent Management System (TMS). Here, employees have access to thousands of electronic books and journals. They can search numerous databases or catalogues of software training manuals, ranging from basic word processing platforms to web design. There is a '24/7' home page free Skype helpline and helpdesk email address for TMS navigation support. VHA also has an extensive channel of videos on YouTube for VHA patients and their programme clinicians to view and where they can learn how to use and trial numerous applications for their health benefit. VHA refers to the application of digital technology to the whole of the Veterans' Health Programme (VHA) as an 'ecosystem'.

Source: Booz Allen (2015)

3.4 What works?

A number of deficits in current approaches have already been identified, but, as can be seen from the private sector, there are some key lessons to be learnt from what can work:

Leadership: '... encouragement and permission from the top of the organisation that digital tools are important and that appropriate access and learning opportunities are provided' (Briggs, 2014a). Management buy-in is also essential (Carnegie UK Trust, 2014; Bynghall, 2015). Managers need to role model digital literacy and support experimentation by staff to adapt to a digitised workplace (Bynghall, 2015; Wilson & Wagg, 2016).

Strategy: at the macro level, organisations need a clear strategic intent (Barclays — 'the most digitally savvy workforce in UK retail'; Argos — 'digital retail leader'). There

is strategic intent across the health and social care workforce, but as yet this is not translating into widespread action.

Organisational culture: organisations that are successfully making the transition to digital seem to be those that are open and trusting with an ethos of information sharing (Deloitte, 2014). The transition to such a culture will need to be managed as part of the overall strategy, but the approach should aim to decentralise control over digital working so it becomes business as usual (Deloitte, 2014; Bynghall, 2015).

Developing a digital ecosystem: Bradbrook & Power (2014) argue that a systemic approach is needed to develop digital skills in the wider community; it can be argued this is just as needed for the diverse and large health and social care workforce. They talk of a 'digital ecosystem' that consists of:

'Local, multiple-partners strategies that join up key local service providers and tap into the resources that they individually control and potentially draws down national or EU funding

Using local evidence of needs and benefits to shape strategies makes clear business cases for investing in digital inclusion locally.

Delivery that takes a holistic approach and has the potential to influence the beliefs and behaviours of whole communities, not just the individuals that engage directly with the programmes'. (p12)

It has been acknowledged that the NHS:

'... is not a tech company. If the power of digital is to be realised in health and well-being, new alliances will need to be formed between NHS organisations, medical technology companies and cloud platforms'. (Slack, 2016)

Local health economies could take the lead on setting up such ecosystems to develop both the digital literacy of the workforce and contribute to the digital literacy of the client/patient population.

Talent management: organisations should be recruiting for skills (BCS, The Chartered Institute for IT, 2014; The Information Economy Council, 2014; Tech City UK, 2016) but there is lack of clarity around what constitutes 'basic skills', despite the increasingly widespread adoption of the Go ON UK basic digital skills framework. Moreover, there is evidence that organisations are not checking for these (Scottish Government, 2014; McDonald, 2016), and as such, assessment is challenging (Ecorys UK, 2016). Organisations should also be working to identify assets already within the organisation, what the skills gaps are and how these deficits can be filled, either through recruitment or preferably by developing existing staff, perhaps

acknowledging transferable skills that can be transitioned into a digital context (Copeland, 2016). Job descriptions and role specifications also need to reflect the digital strategy of the organisation. At a time when digital literacy skills are scarce, organisations need to consider their retention strategy to ensure staff are not trained and then poached (Deloitte, 2014).

Informal learning: the examples of Lundbeck Pharmaceuticals (ClearBox Consulting, 2014) and Ford (Hiner, 2012) above suggest that informal goal-focussed training using real scenarios is an effective approach to developing digital literacy skills. The case studies from the US Army (see Case study 4), and to an extent the VHA, identify the need to capitalise on pre-existing digital capability in the workforce and imitate the learning approaches to digital literacy that have evolved organically, as opposed to a structured 'training programme'. There is a sense that there is less distinction between work and play in terms of how digital skills are learnt and used to support work activities. This idea is expanded in the preliminary literature review (de Normanville & Scott, 2016), which showed that employers needed to embrace and harness the valuable resource of their employees' prior and ongoing digital learning activities. This would enrich digital skills applicable in the workplace, for instance, skills in the use of social media and YouTube or the ability to create media for peer learning communities or work-based assignments. Bite-sized delivery, rather than full courses, also evaluates well in the literature reviewed (Ridgeway, 2015).

Developing digital skills digitally: the establishment of a curated self-service e-learning platform, such as the proposed TEL Hub, allows the workforce to access learning resources as part of professional and personal development. This can also be used to support more formal activities (Bynghall, 2015).

There is also a range of online courses developed by private sector organisations, including Google, Virgin Media and Barclays that are free to access, as well as a range of Massive Open Online Courses (MOOCs) developed by Higher Education Institutions such as The Open University (see Appendix 2).

Reward learning: Bynghall (2015) recommends that skills and learning should be recognised. Certification and open badges allow individuals to demonstrate their growing skills base, but Bynghall suggests thinking about other extrinsic rewards, such as increased autonomy in digitally-related work areas.

Partnership in learning: whilst there is much written about the role of the employer, there is also emphasis on employees taking personal responsibility for developing their digital skills. In the digital industries sector, employees are identifying and exploiting self-development opportunities in the absence of skills training from employers (Tech City UK, 2016). Evidence from the banking and retail sectors suggests that employers have a clear expectation that their employees will engage

with the resources and learning opportunities provided. Thus a culture of partnership in learning is engendered, whereby employees take personal responsibility in the workforce for managing their digital personal development. But this is not to say that the organisation should abdicate responsibility in this area; formal and informal training opportunities need to be provided, signposted and resourced.

Evaluate: whilst these have all been identified as approaches that work, it is worth noting that wide-scale evaluation of impact has yet to be conducted (Ecorys UK, 2016); however, at a local level, measurable outcomes, such as increased collaboration between individuals and different parts of the organisation, increased use of digital tools and less frequent calls for IT help, can be recorded (Deloitte, 2014). In addition, the 'digital passport', trialled at the DH (Briggs, 2014b), could be adapted to benchmark the effectiveness of a digital literacy development strategy.

Many of these trends and approaches are captured in the following case study looking at the US Army, described as 'one of the most complex information environments on earth' (Mobley, 2011:p11).

Case study 4: US Army

The US Army is increasingly using cutting-edge technological solutions to gather intelligence data, but recognises that soldiers need to have the capacity and the capability to use that data for accurate decision making. It has found that prescriptive individual progression through a series of hierarchical competencies does not work well. Instead, assignment-linked purpose-driven development of digital literacy is more likely to take place as a peer collaborative learning experience.

A key factor in the approach is the acknowledgement of new recruits' existing digital skills on entry and the Army's expectation that long-serving and senior personnel demonstrate that they are meeting the basic requirements, as well as the certificated learning commensurate with their rank/level. The Army is working to identify how to capitalise on opportunities for informal learning and where and how formal education is required. By moving to this learner-led environment, personnel are supported to integrate use of the technology with critical thinking and judgment skills to enable effective decision making. However, the Army is transparent about the fact it relies heavily upon an expectation of its workforce embracing and taking responsibility for 'lifelong learning', assuming voluntary self-development on the individual's own time.

Source: Mobley (2011)

3.5 Digital Champions

Across all the literature and information assessed in this review, the Digital Champion role was consistently identified as a successful approach to supporting digital literacy skills development in communities and the workplace.

Digital Champions are a mainstay of the work being undertaken for digital inclusion and the acquisition of basic skills in the community. A number of charitable organisations are working in this area, including Digital Unite (2016) and Good Things Foundation. The approach is currently being evaluated by One Digital, using 'Big Lottery funding to test and learn Digital Champion models as a flexible, scalable and effective digital inclusion solution' (One Digital, 2016).

Private sector organisations have expanded their internal Digital Champions' roles to work with customers and clients, for example, Lloyds Bank has announced it will train one in four of its staff to be Digital Champions (Lloyds Bank, 2015b). This can result in reciprocal benefits to developing the workforce, such as skills development around mentoring others; further embedding the organisation's digital ethos; assisting individuals to cope with their own transition to digital ways of working and retain engagement (Lowe & McLean, 2015).

The Digital Champion model has been used successfully in companies such as Barclays and Argos, noted above, and in the DH (see Case study 5). Deloitte (2014) suggests that a Champion model works best in an organisation with an existing and embedded digital strategy and culture of knowledge sharing, openness and trust. Digital Champions are essentially an approach to developing digital literacy that is decentralised (Bynghall, 2015).

Case study 5: Department of Health (DH)

The DH's vision is that, ultimately, digital solutions will become routine, and 'our staff will stop noticing they are doing digital work at all'. It has created a network of 70 Digital Champions from teams around the DH who work in non-digital roles. The Champions have responsibility for helping to scale-up digital capability in their department.

An online Champions' community has been developed using the social media platform Yammer, which has been involved in beta testing digital products and services, including the DH's 'digital passport' that allows staff to assess where they are on the Government Digital Strategy's scale of inclusion. It has also undergone bespoke training on digital skills, including coding, web content development, etc., and been part of the DH's Digital Thought Leader Seminars.

Sources: DH (2014); Briggs (2014a); Cearn's (2015a/b)

Solomon (2012) for Age Action Alliance Digital Inclusion Group suggests there are three types of Digital Champion (DC):

- **Formal** — a person who is formally given the role or the title of DC (or something similar) in the organisation or environment in which they live or work.
- **Informal** — informal DCs are more often than not self-appointed. They have a passion for digital technology ... Informal DCs may never recognise themselves by that moniker. And because they don't always self-identify as DCs, they are also often lone agents — by which we mean they don't belong to any network (on- or offline) of likeminded others.
- **Spontaneous** — spontaneous DCs are people who share their knowledge of digital in an informal, everyday way with friends, family and colleagues unthinkingly and unconsciously ... Spontaneous DCs will also constantly glean information themselves to top up their digital skills and experience.' (pp6–7)

Solomon recommends that, within a Digital Champion model, there should be a mix of all three types, with spontaneous Digital Champions forming the larger group and formal being the smallest.

The definitions offered by Age Action Alliance suggest that a Digital Champion requires a number of personal attributes, as well as skills development. Common features of a good Digital Champion are that they are inspiring and supportive (Go ON UK, no date; Good Things Foundation, no date). They also need to have basic skills, promote confidence about digital, be patient and good at explaining, be good communicators and be prepared to work collaboratively (Go ON UK, no date). Shea

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& Belden (2016) identified a range of personality characteristics demonstrated by health information technology champions working in healthcare organisations. These included: persuasiveness; persistence; innovativeness; charisma; assertiveness; enthusiasm, and risk tolerance (p4). Briggs (2014a) suggests they need to have 'the digital mindset of curiosity, creativity and cooperation'.

Whichever type of Digital Champion, they require access to training, development and ongoing support. Appendix 3 lists some of the Digital Champion courses available.

4. Conclusion

‘Digital is everywhere, with digital skills now seen as vital life skills. It’s obvious, however, that we’re not learning the right skills to meet our future needs.’ (Morgan, 2015)

To realise any of the potential that digital technology and its applications offer healthcare delivery, the approach to developing the digital literacy skills of the health and social care workforce must be rethought. NHS organisations require strong leadership to develop decentralised cultures where digital is seen as business as usual. The culture will also need to support employees at every level to take responsibility for their own learning and ‘being a luddite’ will no longer be a badge of honour (Mehmet, 2013).

Formal and informal goal-focussed digital learning opportunities need to be created and delivered, not just as a ‘curriculum’ but rather, integrated into everyday working. This, though, relies on digital literacy competencies being increasingly and overtly acknowledged as core competencies within the curricula, and indicative content of health professional training, development and re-validation. The induction, orientation and updating of non-professional healthcare workers should also incorporate digital literacy competencies. NHS organisations should also identify their existing assets in terms of formal, informal and spontaneous Digital Champions and support them to work with colleagues and service users.

The NHS needs to position itself within the local digital ecosystem and contribute to supporting and developing the digital literacy skills of the citizens it serves. It needs to ensure that digital literacy becomes embedded and health and social care communities are networked throughout their diverse work systems, contexts and processes.

Digital disruption is being embraced across retail, banking and digital sectors. However, despite a number of policy commitments and initiatives, it would seem that the NHS is almost resisting digital disruption by focussing more on maintaining existing NHS workflows, rather than embracing creative applications or the potential liberation that mobile technologies can bring to practice. This could have serious consequences at both a societal and individual level in terms of health and the failure of the sector to contribute to a digital ecosystem that will equip people to ‘thrive in a digital society’ (Kennedy & Scott, 2016).

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Appendix 1: List of Barclays Digital Wings modules

- An introduction to gaming in association with Microsoft
- Analytics in association with IBM
- Avoiding online scams in association with Get Safe Online
- Beginner's guide to the Internet
- Bitcoin and Blockchain in association with Freeformers
- Building an app in association with Apps for Good
- Coding in association with CoderDojo
- Coding for parents in association with Code Kingdoms
- Cognitive computing in association with IBM
- CRM and cloud computing in association with Salesforce
- Cyber security in association with Symantec
- Digital business big data
- Digital global trends in association with Accenture
- Digital identity
- Getting started with social media in association with Freeformers
- Google foundations
- Hardware and mobile devices
- Internationalising your website in association with UKTI
- Introducing e-commerce
- Keeping children safe online in association with Digital Awareness UK
- Keeping in touch with Skype
- Online safety, security and fraud
- Payments in the digital age in association with Barclaycard
- Secure mobility in association with Good Technology
- Social media for business
- Software and operating systems
- The digital world in association with Microsoft
- The Internet of Things in association with IBM
- Your digital footprint in association with Digital Awareness UK

See [Barclays Digital Wings website](#)

Appendix 2: List of free-to-access online courses for developing digital literacy

Provider	Name	Brief description (from websites)	URL
Microsoft	Microsoft Digital Literacy	<i>'The goal of Digital Literacy is to teach and assess the basic concepts and skills needed to use a computer.'</i>	https://www.microsoft.com/en-gb/digitalliteracy/default.aspx
Virgin Media Business	The Big Digital Skills Hub	<i>'Whether you're a business or an individual, you can learn how to make the most of digital right here. Our five modules of digital knowhow will get you up to speed in no time.'</i>	http://www.learndigitalskills.co.uk/
NCVO Knowhow Nonprofit	Building a digital workforce toolkit	<i>'Building a digital workforce is a four part toolkit of templates, resources, tips and examples — and a series of bespoke workshops, training and support — to help you plan, design and deliver a comprehensive digital skills development programme for your organisation.'</i>	https://knowhownonprofit.org/tools-resources/building-a-digital-workforce/the-toolkit
Good Things Foundation/ UK Online Centres	Learn My Way	<i>'Learn My Way is a website of free online courses for beginners, helping you develop digital skills to make the most of the online world.'</i>	http://www.learnmyway.com/
Digital Unite	Computer basics	<i>'Starting to use a computer can feel like a visit to a foreign country – things look familiar but you can't speak the language. Getting to grips with computers is much easier than learning a new language. Our guides will set you on</i>	https://www.digitalunite.com/guides/computer-basics

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Provider	Name	Brief description (from websites)	URL
		<i>the right path.'</i>	
Google	The Digital Garage	<i>'Free tutorials from Google on everything from your website to online marketing and beyond. Choose the topics you want to learn, or complete the whole online course for a certification from Google and IAB Europe.'</i>	https://digitalgarage.withgoogle.com/
ALISON	Various	<i>'ALISON's suite of Digital Literacy and IT Skills courses includes basics, such [as] touch typing and Microsoft Office training; necessities, such as social and digital media training; and more advanced courses, such as website and app development, programming and Cloud computing. These free Digital Literacy and IT skills courses range from foundation-level certificate courses for complete beginners to a fully comprehensive certification programme.'</i>	https://alison.com/subjects/1/Digital-Literacy-IT-Skills
Future Learn	Various	<i>'Choose from hundreds of free online courses: from Language & Culture to Business & Management; Science & Technology to Health & Psychology.'</i>	https://www.futurelearn.com/

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Provider	Name	Brief description (from websites)	URL
Learn Direct	Digital Skills qualification	<i>'Suitable for beginners of all ages, this in depth course will show you how to start a computer and introduce you to the internet. It'll teach you how to upload and share photos, use an MP3 player with your computer, download and edit clips, and use social networking sites such as Facebook and Twitter.'</i>	http://www.learndirect.com/maths-english-it/it/digital-skills-qualification
The Open University	Open Learn	<i>'Over 800 courses to choose from; many now including badges to earn and share to demonstrate what you've achieved.'</i>	http://www.open.edu/openlearn/
Barclays/C&G	Digital Wings	<i>'Think you know Bitcoin from your Blockchain? Whatever your digital ability, take it to the next level with Barclays Digital Wings. Tools and tutorials to help boost your digital knowledge.'</i>	https://digital.wings.uk.barclays/

Appendix 3: Training and development for Digital Champions

Provider	Name	Brief description (from websites)	URL
Digital Unite	Quick Start course — Helping Beginners Get (and Stay) Online	<i>'In seven engaging learning sections the course covers how to create the right learning environment for beginners, what hardware, software and websites to use and how to create and maintain learner interest.'</i>	https://www.digitalunite.com/quick-start-course-helping-beginners-get-and-stay-online
	One Digital	<i>'One Digital is a unique collaboration between diverse and distinct organisations to achieve one common goal – delivering sustainable digital skills to people right across society. Its vision is to create a truly sustainable and scalable digital skills solution through standardised, impactful Digital Champion training and support.'</i>	https://www.digitalchampionsnetwork.com/one-digital-programme
	The Digital Champion ITQ	<i>'The Digital Champion ITQ is an innovative 17-week e-learning course. Each topic has interesting and practical tasks to learn, all designed to interest and motivate the people you'll be training. You'll receive feedback and support from your personal tutor and interact with other learners throughout the course.'</i>	https://urtuulr.com/wp-content/uploads/2015/10/Digital-Unite-Digital-Champion-Course-Brouchure.pdf
Good Things Foundation/ UK Online Centres	Becoming a Digital Champion	<i>'Find out more about being a Digital Champion through this short, easy-to-use online course that will introduce you to the</i>	https://www.learnmyway.com/courses/how-to-be-a-digital-champion/

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Provider	Name	Brief description (from websites)	URL
		<i>skills and qualities you need to start becoming a Digital Champion and top tips to help you support others to use the internet.'</i>	