Future Proof:
Skills for Work

Broadening digital skills for
the future of work

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Introduction

We are living in an increasingly digital society and face a 'tsunami of technological change, driven by a digital revolution that affects nearly all areas of our lives' (House of Lords, 2015: 17), with the workplace being a key facet of everyday life that is being profoundly transformed.

This transformation is commonly referred to in terms of the 'digitisation' or 'automation' of work (Good Things Foundation, 2019a: 5). In the UK, some of the fastest shrinking occupations due to automation include retail cashiers (25%), telephone salespersons (45%) and central government administrative officers (35%) (Dellot, 2018: 6). Furthermore, ONS analysis suggests that 7.4% of current jobs in England are at 'high risk' from digitisation and automation in the coming years (Office for National Statistics, 2018). Digital has not just replaced human labour but has also changed the kinds of jobs we do and how we do them. For instance, digitisation is creating new high-tech occupations, as shown by the 60% increase in programmer and software developer occupations in the UK (Dellot, 2018: 6) and the prediction that 65% of current primary school children will work in jobs that do not exist yet (House of Commons, 2017: 7). Furthermore, many day-to-day work tasks are increasingly carried out using digital technologies, with 54% of current UK workers using the internet for their job (Lloyds Bank, 2019: 10).

Against this backdrop of the leading role digital technologies now play in the modern workplace, it becomes apparent that digital skills are vital in various occupations both now and in the future (Skills Funding Agency, 2016: 13). The possession of digital skills is increasingly seen on par with literacy and numeracy skills for full participation in modern society (Ferrari, 2013: 7) and as technologies continue to evolve, workforces must regularly update their digital skills accordingly (Good Things Foundation, 2019b: 3). As Chace notes; "coming generations may need to re-train every decade, then every five years, then perhaps every year. We are going to have to get much better at re-training and re-skilling, and continuous education will have to become a real thing" (2018: 11) .

Currently in the UK, adaptation to digitisation is not universal. Whilst earlier digital divide debates predominantly focussed on issues of differential access, recent concerns have been on the growing issue of a digital skills gap, where the demands for digital skills is greater than its supply (van Dijk & van Deursen, 2014: 1). The UK therefore, faces a major challenge, as "being able to use digital technology [in the digital age] is quickly becoming an essential skill and those that are not equipped are becoming increasingly marginalised in society and in employment" (Good Things Foundation, 2018: 10). The digital skills gap has become a key concern and major area of focus for academics, researchers and governments alike. For these stakeholders and many others, digital skills frameworks have been designed and deployed in order to understand the scale of the gap and to be used as tools to identify how it can be closed. Essentially, "without benchmarks, without effective tools for measuring digital inclusion against them and without a means to measure the impact of existing initiatives, it is difficult to design and implement effective programs to improve digital ability into the future" (Dezuanni et al. 2018: 2).

Working at the intersection of digital and social inclusion, we at Good Things Foundation want to better understand this aforementioned digital skills gap. We do this by working with our local and community partners, the Online Centres, and through external partnerships, to deliver projects that attempt to address this. Endeavouring to better understand the digital skills gap, last year saw us conduct a review of relevant literature relating to digital skills framework to allow understanding about their design, focus and what they may overlook. Furthermore, we extended our scope by examining associated grey and academic literature.

Broadening our digital skills horizon

Our examination of digital skills frameworks, reports and associated grey literature included the Bund Fluency scale, Digital Skill to Tangible Outcomes project, Internet Skills Scale, Digital Competency Framework 1 & 2, Basic Digital Skills Framework, Department for Education Essential Digital Skills Framework, Lloyds Bank Digital Consumer Index, Scottish Council for Voluntary Organisation Essential Digital Skills Framework, Ofcom's Media Use and Attitudes Report.

Through exploring the design and employment of these outputs, key themes emerged in relation to what is measured and the methodological approaches taken. Regarding the former, frameworks tended to use similar, often overlapping, skill categories and items of measurement. For example, notions of information and communication skills featured in almost all frameworks, but often came under different terms. Considering the workplace context in which we were keen to understand the digital skills gap, the Essential Digital Skills framework was rare in outlining the digital skills necessary for work, as opposed to simply day-to-day life. Whilst, earlier research (i.e. Bunz, 2004) appears more heavily focussed on the technical elements of digital technologies, more recent research appears to recognise the multidimensional nature of contemporary digital technologies and associated skills.

Regarding the methodological approaches taken, all frameworks – with the exception of Digital Skills to Tangible Outcomes project which advocated observable performance tests – rely on self-assessment grids (e.g. DigComp 1.0 and 2.0) or self-report questionnaire formats. The former utilised an interesting measurement approach, namely an ability level scale for user's to place themselves in relation to each competency descriptor (i.e. Foundation, Intermediate, Advanced, Highly Specialised). Through this approach, it allowed for a more nuanced understanding of someone's digital skills, for example, they may be more advanced in certain aspects of digital literacy than others are.

For the latter, most utilise Likert-style response scales (e.g. Bunz, 2004; van Deursen, Helsper & Eynon, 2014, 2015); dichotomous scales, such as 'I can'/'I can't' and 'yes'/'no' (e.g. Lloyds Bank, 2016; Lloyds Bank, 2019); or categorical scales (e.g. SCVO, 2018).

Equally important, a number of drawbacks to current approaches to measuring digital skills also emerge from examination of existing frameworks, reports and literature. One prominent issue is the overwhelming focus on online digital skills (e.g. Bunz, 2004; van Dijk & van Deursen, 2014; van Deursen, Helsper & Eynon, 2014; Ofcom, 2019) and consequently little consideration for offline digital skills, such as word processors, spreadsheets or specialist software. Furthermore, with many of the texts examined, there was an explicit focus on specific skills using specific platforms or tools such as Youtube or Microsoft Office etc. Whilst these skills are undoubtedly important at the moment, it ultimately limited the time to which these frameworks may be relevant, whilst also meaning that comparison between projects over time is made more difficult.

Through this examination of digital skills frameworks and associated literature, we identified six major areas of digital skills that appear essential in the employability of people within the modern workplace; **Technical (online and offline), Communication, Information, Creative, Transaction and Safety.**

For many digital skills measurement frameworks, they can be overly rigid. As our examination underlies, these frameworks can suffer from a short lifespan and limited transferability of findings due to a focus on measuring specific digital skills at a particular point in time. Furthermore frameworks often measure skills using dichotomous categories, such as yes/no, thereby masking the messy and dynamic realities around learning digital skills. A binary approach for digital skills frameworks masks other factors such as individuals forgetting how to use the skills learnt, becoming unable to deal with problems or changing personal circumstances. Perhaps most significantly, however, no frameworks we examined incorporated measures of behavioural or attitudinal change towards digital skill development, but merely one's digital skill ability at a given time. The closest attempt is the SCVO's (2018) inclusion of a response category which measures respondents' motivation towards learning a skill ("I want to learn how to do this"). To better understand and address the digital skills gap therefore, and to look beyond just digital skills, it became apparent that we needed to engage with theories associated with behavioural and attitudinal change.

Behavioural and attitudinal theories of change

Initially, we were keen to explore how behaviour change can be sustained but examination demonstrated that this was something still lacking within current understanding.

Recent research efforts however, across fields such as early years education, public health and sustainability policy, have begun to identify specific themes that may influence the maintaining of behaviour change. For the Bristol Behaviour Change for Healthier Lifestyles Programme (2017), motivation was noted as being critical in sustaining behaviour change. Motivation has also been identified by Lai et al. (2010) and Ruger et al. (2008) as key for the sustaining of changed non-smoking behaviours. Kwasnicka et al. (2016) provides, what appears to be, one of the first attempts towards synthesising components of sustained behaviour change and drawing from a meta-analysis of over one hundred behavioural theories, they identify five key themes: maintenance motives, self-regulation, habits, resources, and environmental and social regulation. Despite identifying these themes, however, there is a continued need for review through joint collaborations between theory and practice (Kwasnicka et al. 2016).

The second part of our literature review then sought to offer early examinations of the broader gap around behaviour and attitudinal change by exploring related theories and models which offered preliminary insights. Theories examined include attribution theory, the health belief model, rational choice theory, self-determination theory, social cognitive theory, social practice theory, the Stern ABC mode, theory of planned behaviour, transtheoretical model of health behaviour change, DEFRA's 4 E's, Nudge theory, consistency theory and social judgement theory. By examining these theories, we identified eight behavioural and attitudinal components that appear critical in gaining on sustaining digital skills, these being; **habit, resilience, grit, self-efficacy, relatedness, motivation, goal setting and trust.**

Goal setting and motivation were framed as the extent to which learners had specific aims for participating in the project, and how determined they were to achieve these. For Ricard and Pelletier (2016), these were both identified as

playing a key role in high school attendance and a strong indicator of drop out rates. Self-efficacy is someone's level of belief that they were able to carry out certain actions and for Hatlevik et al., (2018) and their work on ICT literacy, this was also noted as crucial for developing students computer skills.

Focussing on the wider social aspects identified as influencing behaviour, relatedness is strength of someone's desire to form connections with others, and trust the extent to which learners placed faith in technologies, people and institutions. Relatedness is often identified as having strong correlations with improved health outcomes (Choi et al., 2018). Within an early education context, trust is also noted as a core component determining the success of children, teachers and schools alike (Avis 2003; Rotenberg 2010). Grit and resilience refers to the ability of someone to face ongoing challenges over a long period of time and the likelihood of them dealing with sudden and unexpected challenges. Grit is noted as important in educational attainment and can reflect academic ability (Light and Nencka 2019). As the NHS (2018) report on child care identifies, an individual's resilience plays an important role in supporting their journey and can reflect someone's ability to overlook negative experiences and instead, focus on the positive. The final component, habit, refers to the likelihood and reality of someone carrying out and repeating specific actions, often highlighted as key within education practice (Kiblasan 2017).

The eight components attempt to aggregate the broad range of theoretical work around behaviour and attitudinal change, early indications around sustaining change and approaches towards modelling this. In identifying these eight components, we acknowledge that whilst these may not comprise a complete list and are dependent on the reviewer's approach to analysing theory, they do provide an initial platform for testing of the links between digital skills and behavioural and attitudinal factors.

Accenture and the Future Proof: Skills for Work project

With awareness of the increasingly digital nature of the workplace and the cost on the UK of a growing digital skills gap, Good Things Foundation and Accenture partnered together to deliver the Future Proof: Skills for Work project that sought to engage and support individuals with limited digital skills so they may prosper in the 21st century workplace.

Drawing from our earlier literature review, we wanted the Future Proof: Skills for Work project to act as a leading piece of work that would enact our insights and recommendations about rethinking how we measure digital skills as well as testing our hypothesised eight behavioural components.

Working with our Online Centre Network, the project aimed to engage and support 1400 people to re-skill and be ready for future jobs. The project was targeted towards those active in the labour market, who had no, low or limited digital skills, aiming to support them in building their confidence and capabilities for a digitally mediated jobs market of the present and in the future. Working with 13 centres across the UK, we co-developed a research approach that sought to test the impact of these eight behavioural components on the gaining and sustaining of digital skills as well as to help us broaden our understanding of these skills, moving away from the traditional yes/no binaries used in many of the popular digital skills frameworks.

To understand the impact of the Future Proof: Skills for Work project, it was necessary to collect data from learners prior to taking part and once they had finished. By carrying out a baseline and impact survey, we were able to develop insights about a learner's level of digital skills, why they wanted to take part in the project, what they wanted to gain and their behaviour and attitude towards learning. In addition to the quantitative data gained through conducting surveys and compiling the findings into a data dashboard, we are presently carrying out interviews with learners and centres to examine the journeys that have led people to take part, how they felt about the project, what centres wanted to gain by partaking and how it aligned with their wider work.

Whilst we are still at an early stage in project delivery a number interesting findings have emerged from the project. Firstly, for multiple learners across demographic profiles (age, education, employment status etc.), they identified that keeping up with changes in technology was a key motivation for taking part. The broad background for learners was also surprising, demonstrating that the need or desire to improve digital skills is something that cuts across social and economic strata. Follow up interviews will seek to unpick why or with what respects people are wanting to keep up with technological changes.

When asked what they wanted to gain from computers and the internet, over three quarters of respondents noted that they were wanting to make the most of digital devices and the internet. As with the previous finding, this aspect was something that cut across demographic profiles. For job seekers looking to enter into work, an important target audience for the project, all noted that learning how to use a mouse and keyboard was essential. This would appear to suggest therefore, that any digital skill project will need to navigate across a broad spectrum of learner's digital abilities.

For learners, eighty-five percent noted that the project had improved their career management, with a further seventy-one percent noting an improved mindset and sixty-four percent stating they had improved their overall digital skills. In addition, and importantly in the context of the project, forty-two percent of respondents noted that taking part in the project increased their career resilience.

The findings demonstrated that behavioural and attitudinal factors play a key role in someone's ability to gain or sustain digital skills. Furthermore, by taking part in the project, people's ability to overcome hurdles or their confidence to learn new skills increased. The findings also point towards the need to extend longitudinal scales of research so that impacts can be better understood. For example, to measure how many learners had 'found a job' since taking part in the project would be difficult due to many people moving in and out of contact with centres and any job gaining may come later, but as a result of the skills they had learnt. Furthermore, with an increasingly broad spectrum of what may constitute employment, e.g flexible hours, job sharing, zero hour contracts, self employed etc. the idea of 'finding a job' must be rooted within this reality.

Future Work: Workplace Digital Skills

With awareness of the increasingly digital nature of the workplace and the cost on the UK of a growing digital skills gap, Good Things Foundation and Accenture partnered together to deliver the Future Proof: Skills for Work project that sought to engage and support individuals with limited digital skills so they may prosper in the 21st century workplace.

By delivering projects such as Accenture's Future Proof: Skills for Work and through external partnerships such as with Nesta, the lack of understanding about how and why people gain and sustain digital skills in the workplace has become increasingly apparent. Building on our aforementioned findings and insights, Good Things Foundation now look to employ what we have learnt and are committed to undertaking this approach to research across our work. In addition to the Future Proof: Skill for Work project, this new research approach is already embedded across many of our other programmes including with J.P Morgan on the 'Power Up' project and with

Google.org on 'Make it Click'. Another project that will utilise the insights derived from our literature review and our new approach to research is the forthcoming Future Work: Workplace Digital Skills. This programme will examine how behavioural and attitudinal factors impact people's learning journeys with a focus on the learning of digital skills for the workplace. By conducting this research through this new approach, it will improve what we are able to offer our Online Centre Network and the way in which we do this, whilst also furthering global understanding around digital skills in the workplace.

Next Steps for Thinking Beyond Digital Skills: Questions, Collaborations and Partnerships

The coming year is an exciting period for us at Good Things Foundation, especially within our research and evaluation efforts. By continuing our work with external partners and by incorporating our new approach to looking beyond digital skills, we will continue to advance our collective understanding about the messy realities of digital and social inclusion.

Having taken a first step in rethinking our understanding of digital skills, we invite others to share reciprocal learning around related questions around this space. Just some of the questions we are presently interested in answering include;

- How can we reorientate our focus on learning digital skills so it begins to look at how these can be 'sustained' in the long term, as opposed to being just 'evident' in the present?

- How can employers and employees best identify pinch points in people's learning journeys when at work? And how can we

confidently know where digital skills training is required?

- At what point in people's learning journey can trade unions offer the best support?

Furthermore, we would relish the opportunity to work with individuals and organisations to test the aforementioned behavioural and attitudinal component we propose as critical in the learning of digital skills.

For more information
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for Work project, contact
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