Digital learning

Education and skills in the digital age

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This report was produced following a consultation at St George's House, as part of a programme of events in the Corsham Institute 2017 Thought Leadership Programme.

This report should be read in conjunction with the 'Building our Connected Society' summary report and the perspective papers from the series (which are available at www.randeurope.org/connectedsociety and https://corshaminstitute.org/research). The consultations in the 2017 programme were:

Digital learning: Digital technology's role in enabling skills development for a connected world – March 2017
Open science: the citizen's role and contribution to research – April 2017
Currency: Redefining the way we transact in a digital world – May 2017
Civic engagement: How can digital technology encourage greater engagement in civil society? – June 2017

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Foreword

The pervasiveness and ubiquity of all things digital has accelerated over the past 20 years and continues to grow exponentially. Digital technology is becoming increasingly intertwined with everyday life: from schooling and education, to political engagement and even financial and health management. Developments in digital technology, and the speed at which they emerge, drive innovation and new applications that touch our lives in different and often profound ways. While there are numerous opportunities and aspirations associated with digitalisation, there is also a crucial need to understand and mitigate the challenges it presents to society.

In partnership, Corsham Institute and RAND Europe design and deliver an annual programme of Thought Leadership at St George's House. From its inception in 2016, the aim of the programme has been to explore the opportunities and challenges that digital technologies are creating within different aspects of society.[1]

The Education and Skills Consultation on 6 and 7 March 2017 was the first of the four consultations that took place as part of the 2017 Thought Leadership Programme. Other events in the series focused on:

- Open science

- Currency and the future of transacting

- Civic engagement

'Building our Connected Society', a summary of the key findings identified across the four events in the 2017 Thought Leadership Programme, is published alongside this report.

Background

The digital world is increasingly penetrating the education and skills domain, with technology gradually being used to deliver education, knowledge and skills in new and innovative ways. This penetration is coupled with future changes to the mode and pattern of work, which are themselves affected by the current climate of economic uncertainty, as well as by political shifts. Given the increased use of fast-changing digital technologies in the workplace, new skills needs have emerged. The use of these technologies has contributed to transforming learning and skills development into a lifelong process. Indeed, people now have to continue to develop and refresh their skills and knowledge in order to keep abreast with the constant innovations and new developments in the digital world. It is estimated that technology skills have to be updated every three years in order to have continued relevance. This applies to the workforce in general, where emphasis is placed not so much on knowing the information, but, rather, on how to find it, and the ability to assess its quality and reliability. Digital technologies have permeated more than just the workplace, however, and possessing digital skills is often necessary for day-to-day activities, such as booking a doctor's appointment or personal banking. For some members of society, such as 'digital natives', using technology is natural, but this is not necessarily the case for all. How do we ensure that every citizen develops the necessary skills to remain active and included in an increasingly digital society?

With these considerations in mind, the overarching question of the consultation was:

How can digital best support everyone in society to develop the skills needed to attain maximum benefit from the use of technology throughout their life?

This consultation considered how digital technology can best support individuals to develop the skills they need to attain maximum benefit in work and social situations. At the same time, it also considered how different stakeholders can help to create stronger societal norms when using digital technology and to ensure appropriate behaviour online.

The consultation was held at St George's House. Our discussions were held under 'The St George's House Protocol' and 'The Chatham House Rule'.[2] Participants at the event included senior figures from academia, industry, government and third-sector organisations (for a full list, see page 21).

Ahead of the consultation, a short thought-piece was developed for the participants in order to provide background information on some of the issues as well as set the scene for the discussions.[3]

To support this consultation, we conducted youth focus groups prior to the event, collecting views ranging from Year 6 to A-level students (ages 10 to 18). The focus group findings informed our discussions and ensured that the youth perspective was included in our considerations.

The following report gives an overview of the discussions among the participants over the two-day consultation. It aims to capture preliminary ideas as to how digital learning should be handled, as well as recommendations for further research, on the understanding that not everybody involved in the consultation will necessarily have endorsed all of the proposals and viewpoints reported.

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2   See: https://www.chathamhouse.org/about/chatham-house-rule

3   Devaux, Axelle, Julie Belanger, Sarah Grand-Clement & Catriona Manville. *Education: Digital Technology's Role in Enabling Skills Development for a Connected World.* Santa Monica, CA: RAND Corporation, 2017. https://www.rand.org/pubs/perspectives/PE238.html

1. Necessary skills: Now and in the future

To create a shared understanding of the topic and the different perspectives in the room, we first discussed which skills are needed for participation in society – both in employment and in social situations.

Some participants felt very strongly that the skills shortage is already occurring and that therefore we should focus on skills currently needed, rather than forecasting the needs of the future. Others pointed out that, in general, there is no clear understanding of the skills currently used in the workplace. Companies do not know, or cannot articulate, what skills their workforce has or what skills the company needs to prioritise, and this affects recruitment. Reasons suggested during the discussion include the lack of systematic data collection and analysis by employers on existing skills, especially those skills demonstrated by the most successful employees. While this lack of data was felt particularly at the employer level,

discussions showed that this issue permeates the system as a whole.

Skills needed

The discussion highlighted that two different types of skills are required: digital skills and digital navigation skills. Digital skills are technical skills required to use digital technologies, whereas digital navigation skills are a wider set of skills needed to succeed in the digital world. These include finding information, prioritising information and assessing the quality and reliability of information. These digital navigation skills are not fundamentally different from the non-digital skills that were necessary in the past and that are still required today, although they have to be 'translated' for use in a digital context. These digital navigation skills were also referred to as 'eternal skills'.

First, the group discussed **skills required for using digital technologies**. Participants agreed that there is a lack of technical knowledge on programming, coding and analysis.

Second, the group discussed a number of skills which are not new, but which need to be taught. We categorised these **digital navigation skills** as **part of 'eternal skills'**. These less technical or less tangible skills include understanding how to ensure one's well-being in the digital world and how to develop a **new mindset for a digital world**, through such skills as:

* Knowledge management (e.g. validation of information, quality assurance of information).

* Change management.

* Agile management (e.g. responsiveness, iterative process).

* Self-learning and lifelong learning.

* Discerning the limits and barriers of technology (e.g. knowing when technology is helpful and when it is not).

The group also discussed the idea that **'basic skills'**, such as communication and writing, are being forgotten in this digital age, as forms of communication are becoming condensed (e.g. Tweeting, blog posts, icons and emojis). Such skills are nonetheless important and should not be ignored. They include skills in:

* Communication (both written and spoken, e.g. public speaking)

* Literacy (e.g. media literacy, digital literacy, reading)

* Typing

* Critical thinking and judgement

* Problem solving

* Teamwork

* Personal resilience

* Reflection

Another kind of **eternal skills known as 'soft skills'**, were also considered as important. These include being able to adapt to multi-cultural settings. Some participants emphasised that a narrow focus on technical expertise is not sufficient to make a well-rounded employee. The group agreed that key skills are moving away from a performance that can be measured and improved, towards more intangible aspects. They felt that this was in contrast to the current education systems, which are still working on performance-based quantitative measures and do not, in their opinion, take into account how necessary soft skills are to people's ability to function in employment and in society at large.

2. Educators and learners: Changing roles and responsibilities in the digital context

Who is the educator?

In the digital age, the position of the educator[4] is more fluid and less clear cut: who is educating whom? Participants discussed how being an educator is no longer limited to the traditional role of the teacher. Views were held that in the digital context, the emphasis is placed on what is being received, rather than on what is being delivered, and the group advocated replacing the term education with the term learning, as the latter places a more active role on the learner, rather than on the educator.

In the realm of **formal education**, participants focused on the importance of making the distinction between using technology to learn, rather than teaching how to use technologies. Individuals noted that learning could be achieved in different ways, and they argued that, while technology can effectively support teaching and learning, it cannot replace the teacher.[5]

The group highlighted that in this new context, the educator's role is to guide the learner and to point out where the learner can access and evaluate information, rather than to be the source of the knowledge. They discussed moving away from the idea that learning is a one-way process. They used the analogy of the educator as sports coach: motivating, encouraging teamwork, and working to improve the students in an all-round way. They mentioned importance of the term coaching, as opposed to the term teaching, to emphasise this holistic approach, which includes ensuring the wellness of the learners, developing a team spirit, providing support and mentoring, asking for questions rather than asking for answers, and guiding the learner into future learning avenues.

This discussion echoed the views of the youth focus groups that took place before the consultation. This was particularly the case regarding the students' ease with digital technology and the role reversal with their teachers, which is explored below.

Role reversal in the digital age

Young people, being digital natives, can become their own educators. In the youth focus group discussions, young people acknowledged that they were often more familiar with technology than their parents or grandparents, teaching them how to use iPads, PowerPoint, messaging, Word, Publisher or even sending texts or taking pictures. This reversal of roles also seems common in classrooms. Young people understand that teachers do not have the same aptitude and level of digital skills as they themselves do. Teachers who are not skilled technology users will often ask one of their students to help them with PowerPoint, interactive whiteboards or using digital projectors. However, for the youth in our focus groups, this did not diminish the role of the teachers. They see their teachers as guides or mentors pointing them in the right direction. In some cases, however, young people saw a risk that, with increased use of digital technology, the relationship with their teacher would become less close.

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4   The term educator in this context is used to refer to anyone performing an educating role. The term teacher refers to anyone performing that role in a formal education setting. This usage reflects that of the participants.

5   OECD (Organisation for Economic Co-operation and Development). 2015. *Students, Computers and Learning: Making the Connection*. Programme for International Student Assessment report. Paris: OECD Publishing. doi:10.1787/9789264239555-en

At the same time, some participants contended that technology was not disruptive enough: technology in classrooms is still not used symbiotically in the teaching environment, and more still needs to be done to achieve symbiosis. It was suggested in discussions that a wider change is required in the formal and higher education systems to respond to the increased use of digital technology in education.

It was also noted that **parents (or carers)** now have additional responsibilities due to the increased use of digital applications for schoolwork. Provided that parents and carers are involved in the learning process, the use of education technologies provides them with indirect learning opportunities. Learning goes beyond the classroom in novel and potentially challenging ways in terms of managing the access to sensitive information or potentially harmful content. The group also raised the concern that if parents and carers don't have the required digital skills, it can be hard for them to be as involved in their child's learning as they might have been previously, when there was less use of digital technology, and that this can result in yet further social exclusion in today's society. With a lot of everyday activities now moving online, such as booking doctor's appointments, completing application forms or doing one's online banking, there can be a risk that individuals not familiar or comfortable with digital technologies are excluded from participating in society.

In the **workplace**, the consensus was that learning happens in high-performance businesses, which seek to keep up to date with rapidly changing technology through training. Most of the learning is done informally, through osmosis or by experience. One expert in the room reported on an estimate that only about 10 per cent of learning represents formal learning in the workplace, compared with 70 per cent self- or on-the-job learning and 20 per cent peer-to-peer learning.[6]

How do we prepare our educators?

It is clear that digital technologies are disrupting the role of the educator: are we doing enough to prepare the educators? What more can we do?' To answer these questions, we discussed the ways in which technology is disrupting the educator's role, and how to best prepare and support educators. There was general agreement that educators need to be familiar and comfortable with using new learning tools and technologies in their teaching in order to effectively make use of them. While many participants saw the educator's role as motivating, inspiring and essential to building trust, they pointed out that the role is disrupted because technology changes the following:

- How to access information
- How to navigate information
- How to access pedagogy in different settings

The discussions looked at how the increased use of technology in education could augment the risk of educators playing a more administrative role in the future, as students are able to retrieve knowledge themselves. However, some argued that educators should be using digital technology as a 'weapon of mass stimulation'. Knowledge can be shared in advance with the class, so that educators can maximise the contact time they have with their students and focus on mentoring and coaching them.

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6   Training Industry. 2017. 'The 70:20:10 Model for Learning and Development.' Training Industry. As of 14 July 2017: https://www.trainingindustry.com/wiki/entries/the-702010-model-for-learning-and-development.aspx

It was felt that educators are not keeping up with the fast-paced changes in technology and are not 'riding the wave that is disrupting education'. This is particularly seen to be the case for teachers who have been in the profession longer, with the group highlighting the following barriers to change:

- **Lack of skills development**: Technology skills are not part of teachers' continuing professional development (CPD), and training to upskill educators is not always mandatory. Teachers are not systematically well prepared to deal with the increased use of technologies.

- **Systemic institutional barriers**: Some institutions remain closed to digital learning, as do accreditation bodies with education accessed through digital technologies.

- **Silos between groups**: Not enough is being done by education technology providers to explore the pedagogy behind the use of the technology. In turn, the use of technology in education is not fed back to the educators.

A number of people felt that it is more appropriate to reverse the question: 'What are we doing around technology to prepare educators? Is enough being done to develop technology in such a way that it can be used in an educational context?' It was suggested that, in order to respond to this issue, the following should occur:

- CPD in the area of digital technology should be improved. This CPD should demonstrate the value of using technology and how it can help educators teach. This CPD has to extend beyond simply providing certification; it should create a sense of value for the teacher.

- Education should be measured in terms of skills development, rather than in terms of content and learning outcomes.

- Educational technology companies should provide more evidence of the technology's usefulness and better communicate the technology's value and importance.

3. Motivations and challenges around digital education

There are different motivations and challenges for the various types of stakeholders involved in digital education. Looking at four different stakeholder groups, the participants discussed the perspective of each group in the context of digital education.

Learning and education providers

Motivations: Technology makes education more **efficient, scalable and accessible**. Learning and training providers could reach more isolated learners and tailor the experience to the needs of the individual.

Some participants also mentioned that technology could drive collaboration networks between providers, improving value for money, as well as innovating to meet specific demand. Another motivating aspect is **political will and leadership involvement** which help drive change.

Challenges: The lack of a **political system and political will** is likely to affect funding and to increase the costs of learning and that of education providers, according to participants. It was also highlighted that more could be done to improve teachers' CPD. Additional challenges discussed were identification of market need and how learning providers could determine the level of demand.

On the flipside, some felt that there could be a high demand, but a **lack of supply** on the training provider side, with no learning or education provider able to provide the education that is required.

Another challenge mentioned is the vested interest in keeping the status quo, particularly on the part of higher education institutions that have not yet embraced the opportunities offered by digital education.

Businesses and employers

Motivations: A growing number of businesses and employers have better 'ethical awareness'; they are working to **reduce the skills gap** and developing employees' skills, which could 'directly improve their bottom line', drive down costs and help businesses and employers maintain a competitive advantage. Some industries, such as engineering, where a skilled but ageing workforce is leaving without their knowledge being captured or retained for younger employees, are particularly affected, and employers are keen on reducing this growing skills gap. Education technologies can support and help to overcome (if not replace) this loss of knowledge and experience. Businesses are also keen to incorporate innovation, which can be driven by digital education and can help to increase engagement with the market and customers locally, regionally and globally.

Challenges: A key challenge that was raised is that businesses and employers will push for change in digital education only if it does lower costs or increase revenues. This includes any decision related to investing in either upskilling employees, infrastructure, or the content of digital education. Government is also considered part of the challenge, as it lacks understanding of the business models used by businesses.

Another challenge that was mentioned related to the current lack of information on skills: businesses and employers do not have enough information about the skills gap to address it. Some participants said, however, that in the future, it will become easier to map the skills that already exist and the skills that are being developed, in order to see where the gaps are. Additionally, there was general agreement on the lack of clarity about which actor should take the **first step**, which results in no one making the first move to change the status quo.

Government

Motivations: Digital education provides government with the **opportunity to increase outreach** to more isolated groups of people, to ensure equal access and quality of education, and, overall, to reduce the digital knowledge gap. Discussions also mentioned how government is keen on **innovating** and engaging in a new space, but that this is still in conflict with existing traditions. The argument that digital education has the potential to **reduce costs** by growing businesses and increasing tax revenues was also brought up; however, achieving cost reductions would necessitate investment into setting up an appropriate digital education platform. Engagement in digital education could give government access to more data, such as the skills and educational attainment of learners, with the possibility of turning this data into feedback and insights for future education.

However, many participants pointed out that the infrastructure that would be required to allow for this type of data usage does not currently exist.

Challenges: The group was critical about the current role of government in facilitating digital education. Discussions revolved around the difficulty of bridging the digital divide due to a **lack of awareness** from policymakers about what is happening in the digital world, and the high speed of development of digital education, both of which impact the development of a **holistic strategy**, as it takes time to implement and evaluate strategies. Participants called for a better balance to be found between what needs to be done quickly and what needs more time to be developed correctly.

The example of Raspberry Pi below illustrates the difficulties of securing buy-in and funding, particularly on behalf of government.

The 'success story' of Raspberry Pi

The Raspberry Pi Foundation creates low-cost, high-performance computers in order to promote computer programming skills and digital making across the population.[7] The computers have been enjoying immense success to date: 10 million Raspberry Pis have been sold as of the end of 2016.[8] The Foundation has revolutionised coding and programming for young people by making this technology affordable and accessible. The Raspberry Pi Foundation is widely regarded as a success in bringing the coding world closer to youth and in encouraging them towards careers in coding. Despite this current success, however, the company's beginning was rocky: it applied for a government loan guarantee, but was rejected on the basis that there was no perceived market for the product.[9] Participants noted that this story shows a failure on the part of government in terms of their digital agenda, and they underlined the challenge regarding political will.

7   Walton, Mark. 2016. 'Raspberry Pi Sells Over 10 Million Computers.' Ars Technica UK, September 8. As of 14 July 2017:
    https://arstechnica.co.uk/gadgets/2016/09/raspberry-pi-sales-10-million/

8   Walton 2016

9   Dunn, Will. 2016. 'Exclusive: The Raspberry Pi Was Turned Down for Funding by the UK Government.' Stuff, February 29.
    As of 14 July 2017: http://www.stuff.tv/news/exclusive-raspberry-pi-was-turned-down-funding-uk-government

Individual learners

Motivations: A key motivator for this group is how formal education can be made more interactive, inclusive and 'safe' for different types of learners. Technology can be used to aid learning, with participants saying that it could be a way for learners to discover material they wouldn't necessarily have otherwise. This sentiment was also echoed in the youth focus groups, where young people stated that the use of technology helped them practice and revise. Discussions also drew upon high quality digital learning as becoming an expectation, because it is relevant to what learners use every day. The digital quality of learning technologies should be used as a basis for schools or institutions to improve their standards.

Challenges: Factors relating to skills level, buy-in and exclusion were raised. Not everyone in society has digital skills, the motivation to develop these skills, or an understanding of what they might gain from digital education. Young people can also be put off by the low-level technologies used in schools, compared with the high-quality digital content that they are used to outside school. More needs to be done to provide evidence regarding digital education and its benefits. A final challenge pointed out by participants relates to the affordability of technologies, where exclusion can occur based on access to technologies.

4. Digital education as a tool for inclusion

While digital education can be a tool for inclusion, there are a number of barriers to inclusion which go beyond the use of, and access to, technology. Some participants felt that a **lack of digital skills** prevents citizens from accessing digital education. Others pointed out that highly-literate people are more skilled with, and confident using, technology, compared with illiterate or people with limited literacy.[10] The same people who are excluded from education therefore have a higher chance of also being excluded from digital education. At the same time, the lack of clarity around the value of digital tools results in a **lack of motivation** on the part of the individuals in considering or accessing digital education.

In adults, the impetus to engage in training and learning is often a desire to change something – for example, to upskill or to enable a change of job. The group was clear that there is a need to challenge the assumption that adults are not interested in education, and many felt that while some adults are interested in education and technology, they are rarely fully integrated in the digital education market.

Discussions around the ownership of the technology considered whether there is an unconscious bias on the part of the designers who develop digital technologies, and whether such technologies were fit for purpose for all learners. Most participants argued that it is not constructive to create the same educational structure for all, because that leaves out the learner-centric approach. Not having the appropriate **user-centric design** to increase accessibility may hamper inclusive participation in digital education. An example was provided of study findings showing that involvement of the end user in tailoring Massive Open Online Courses (MOOCs) led to increased participation rates.[11]

Other barriers to inclusion raised by the group include the lack of necessary **infrastructure, institutional barriers to access,** where digital education accreditation does not bear the same weight as 'non-digital' accreditation; and the **cost** of digital education, which can price out individuals who cannot afford the technologies or the related education. Others felt that cost considerations from a government perspective should be approached differently. They argued that, rather than having the department or ministry responsible for education bear the majority of the costs for education, the costs should be shared across government and ministries to better reflect the realities of the need for digital learning throughout a person's life and to better reflect the associated benefits to the individual in relation to improved health, finances and social inclusivity.

Other participants also felt that barriers to inclusion go beyond the digital sphere and that they also exist in the wider ecosystem. Digital exclusion is reinforced by other types of disadvantages related to parental or family support, mentoring, being part of a community, as well as social and economic status. Tackling exclusion requires a holistic approach, or strategy, covering all aspects of this ecosystem.

10 OECD. 2013. *Skilled for Life? Key Findings from the Survey of Adult Skills.* Paris: OECD. As of 14 July 2017: http://www.oecd.org/skills/piaac/SkillsOutlook_2013_ebook.pdf

11 Colucci, E., H. Smidt, A. Devaux, C. Vrasidas, M. Safarjalani & J. Castaño Muñoz. 2017. *Free Digital Learning Opportunities for Migrants and Refugees: An Analysis of current Initiatives and Recommendations for Their Further Use.* Joint Research Centre for Policy report. Luxembourg: Publications Office of the European Union. doi:10.2760/684414

**Kiron: Provision of an education platform for refugees**

Kiron Open Higher Education (Kiron) is an example of an organisation which promotes inclusivity through digital education.[12] Kiron is a non-profit EdTech organization that uses digital innovation and strategic collaborations with universities and online education providers to bridge the gap between refugees and higher education.. Kiron's programme consists of tailor-made curricula, a digital collaborative platform and an extensive range of supportive services that enable refugees to begin their studies online while they work towards fulfilling formal requirements to apply to a university. All curricula offered on the platform Kiron Campus meet the standards of the European Higher Education Area, and the supportive services provide students with a more personalised study experience and foster greater interaction. Kiron also facilitate online language learning for students studying in its focus countries, France and Germany, as students need a high level of proficiency in these languages to transfer to university. Kiron negotiates learning agreements for the recognition of prior learning with partner universities, who can then award up to 60 credits for completed Kiron modules according to the standards of the European Credit Transfer and Accumulation System (ECTS). Kiron has 28 partner universities in Germany as well as 19 internationally. Once admission requirements are met, Kiron assists students in applying to a university. If accepted, students may apply for university recognition of up to 60 ECTS of completed Kiron coursework, and continue studying offline towards an accredited degree.

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12   See: https://kiron.ngo/

5. Ways forward: Sustainable models for education in a digital world

Based on these barriers to inclusion, the group formed the basis of a framework on the use of digital technologies in the wider context of education and employment. Participants agreed that it was important to define goals from the outset. They stated that this framework would change the status quo. A draft concept of this framework was drawn out, and it is shown in Figure 1 below. The framework should be read top to bottom, as this explains the dependencies which exist in terms of developing the framework (relating to monetary input, infrastructure and content), as well as the requirements for this framework to be successful. As shown on the left-hand side of the figure, access, data and return on investment (ROI) are the overarching outcomes that come out at the different stages of the process.

Figure 1. Preliminary framework for inclusive education in the digital world
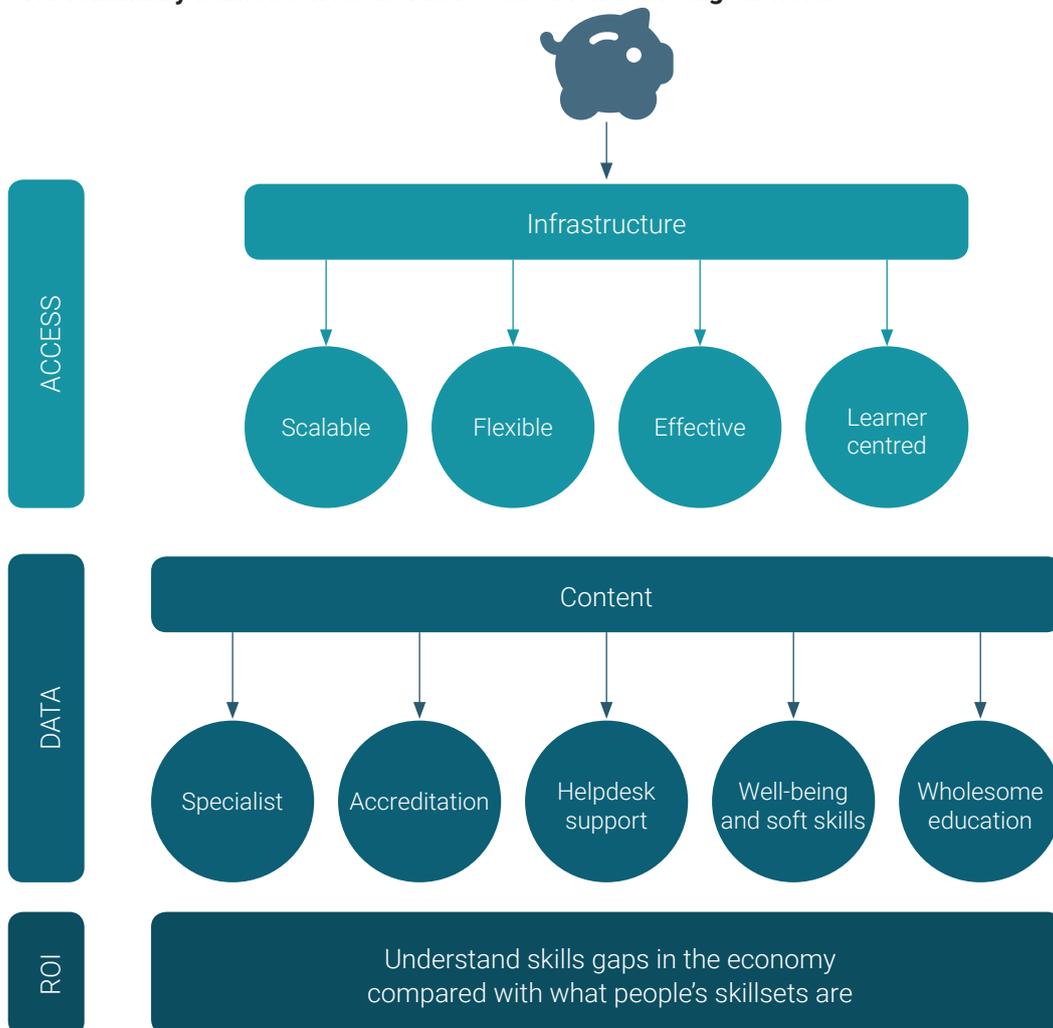
Several components of the framework were highlighted as being particularly important to the future of digital learning:

- **Cost**: There should be a push to drive down the cost of digital content.

- **Accreditation:** The validity of digital education certifications to the relevant academic institutions should be enhanced in order to increase trust around online learning.

- **Access**: Social inclusion is the priority. However, before pushing for change in this direction, stakeholders need to determine why and to what end this specific driver is important to them, and the ethics around inclusion.

- **Skills gap:** The focus here should be on setting up the necessary infrastructure to be able to map the skills gap and predict what skills are needed.

The group also discussed the importance of certain stakeholder groups within this framework:

- **The learner:** Inclusive digital education means having a learner-centred approach. This approach should not be homogeneous, and it must answer the needs of the students, with assistance provided for people lacking digital skills. The mind-set of the learner should be one of continuous learning.

- **Government:** Government needs to shoulder responsibility to ensure there is a minimum standard, but at the same time it should have only a minimal role in the area of policy and regulation.

- **Industry:** There needs to be a critical mass of change from designers and manufacturers of digital educational resources, with more focus on providing evidence to both learners and education providers of the benefits of digital education.

Going forward, these initial ideas could be further developed to explore the gaps and relationships, and to explore what data could be generated from such a framework.

With regards to digital education, some participants compared the current education system to a burning platform, which has created the need for immediate action. As described above, they identified different roles for different stakeholders in order to create sustainable education in the digital age, and discussions centred on what each actor needs to do differently for the framework sketched out in Figure 1 to become reality.

Participants discussed the importance not only of obtaining data regarding the skills gap to inform the future of education and employment, but also of safeguarding these data.

Discussions also highlighted the need for a greater narrative to be shared across the different stakeholders so that the benefits can be articulated and realised and a maximum uptake can be delivered. The required connections are illustrated in Figure 2 below.

Figure 2. Stakeholder connections required for the uptake of sustainable education models
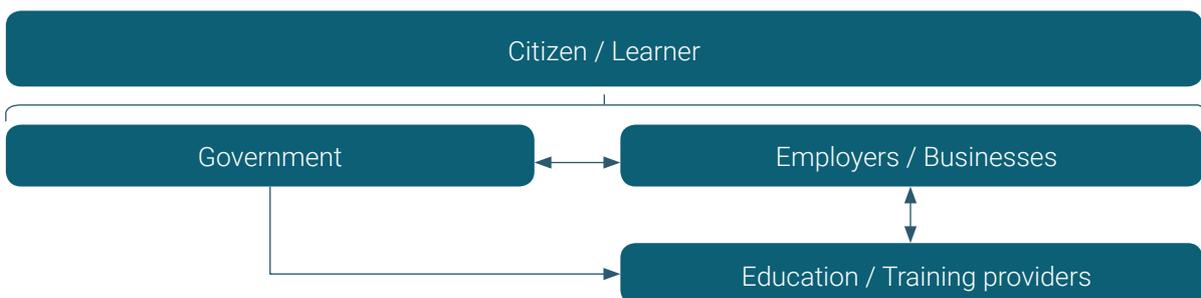
Role of government

Based on previous experience, there was general consensus that more could be achieved if employers worked alongside government rather than leaving the responsibility for learning and skills development to government alone. For example, in order to define the types of skills that are needed in the workplace, it would be more effective if such analysis were to be undertaken jointly and not in isolation.

Participants felt that, in order to cultivate a skillset for the labour market, the current emphasis on rigour and knowledge in the education system and schooling needs to be replaced with a focus on creating a fertile ground for innovation and growth.

Reshaping the education system

Participants felt that the UK has one of the most 'inflexible formal education systems in the Western world', where digital education is often inserted in standard curricula rather than embedded within them. This was contrasted to the new Finnish approach to the curriculum, which is more skills- and competency-based than subject-based, and which includes digital skills. The overhaul of Finland's education has taken a very different direction, away from the kind of system that is still current in the UK. In Finland, teachers receive extensive training, and the teaching profession has an elevated status, to the extent that teachers are considered experts and professionals. There is also less oversight and more teacher autonomy. The general feeling was that such a change is more difficult to achieve in the UK due to political and re-election timescales. For example, Finland works on a longer time horizon, renewing the national core curriculum every ten years, compared with the UK system, where changes are politically driven.[13] Participants called for an extensive public education campaign to show businesses, parents and other voters what the necessary life skills look like and that change to the education system is necessary.

Role of employers and businesses

It was recognised that employers and businesses need to be more involved and proactive in engaging with learning and education providers, and that they need to have a better understanding of the challenges and possibilities for digital education in schools. A study commissioned by Nesta, published in 2012, detailed examples of innovation in schools, which included partnership with businesses.[14]

Overall, participants felt that there also need to be more synergies between government and business, in terms of understanding job market trends, the transformation of the education system, and the responsibility that both stakeholders have in terms of less skilled and adaptive citizens.

13   National Union of Teachers (NUT). 2014. *Lessons from Finland…and How We Might Apply Them in Britain: The Report of the NUT Executive Delegation to Finland*, 17–20 March. As of 14 July 2017:
        https://www.teachers.org.uk/sites/default/files2014/lessons-from-finland.pdf

14   Luckin, Rosemary, Brett Bligh, Andrew Manches, Shaaron Ainsworth, Charles Crook & Richard Noss. 2012. *Decoding Learning: The Proof, Promise and Potential of Digital Education*. London: Nesta. As of 14 July 2017:
        http://www.nesta.org.uk/sites/default/files/decoding_learning_report.pdf

Employers need to clearly identify and articulate the skills that are needed, and at the same time it should be their responsibility to improve the skills of their employees. However, there is a need to consider incentive strategies, which might support employers in seeing students more as future direct employees, and therefore encourage long-term commitments in terms of supporting learning through digital technology.

Work placements: The case of Italy

In July 2015, the Italian government added 200 hours of work-based learning per year to the curriculum in technical and vocational schools, as part of their reform of the national education and training system. The education reform has placed particular emphasis on digital skills, and increased the schoolwork programme to 400 hours for students in technical and vocational schools.[15] A limitation however was that there was not enough planning or consultation with employers to ensure that these additional hours would be feasible within the organisations, demonstrating the need for government to articulate the benefits of these initiatives to employers and to encourage them to participating in them.

Role of education and training providers

Building on the previous recommendation, there is a need for a better relationship to be built between education and training providers, on the one hand, and employers, on the other, whereby educators are made aware of the constraints and challenges faced by employers and businesses, and vice versa. Some participants suggested improving communication and having multiple feedback loops between the two groups of stakeholder, in order for the growth of a dynamic ecosystem to occur.

There were also calls for more clarity around the meaning of the term digital learning and the need to embed technology to allow education providers to use it to its full capacity. Some participants felt that there is a need for new types of educational structures, and that more should be done in the area of teacher training, particularly with regards to the use of digital technologies in the classroom. The majority of our discussions revolved around the idea that educators and training providers should teach not only content, but also the eternal, or soft, skills discussed in Section 1.

Role of individual learners

The discussion around the role of the individuals suggested a need to go beyond education and talk about learning in a broader sense, to include all citizens at different stages throughout their lives.

Although citizens are increasingly taking ownership of their learning and there is more and more peer-to-peer learning, it was felt that not enough is being done yet to include the learner in the narrative and to articulate the benefits.

Learners have unmet needs, and participants called for more discussion around a new

15   Cedefop (Centre Européen pour le Développement de la Formation Professionnelle/European Centre for the Development of Vocational Training). 2016. 'Italy – Education Reform.' [press release] Cedefop, February 22. As of 14 July 2017: http://www.cedefop.europa.eu/en/news-and-press/news/italy-education-reform

social contract within the digital society, as well as a shifting of barriers. Learners are also consumers, and they have the possibility of creating momentum around the type of education and learning that they will require in the future. In terms of formal education, some mentioned how parents have an important role to play in this process; they can be a large part of the momentum, or, on the contrary, a barrier if they do not understand why education needs to change in the current digital context.

6. Conclusion

Overall, the discussion touched upon several aspects of education in the digital age: the required skills now and in the future; improvement of formal education mechanisms for school education and lifelong learning; and the wider role for individuals in society, alongside government, businesses and education providers.

There are two main sets of skills: digital and technology skills and the so-called softer skills, which are increasingly needed in order to participate in our digitally connected society. There is a need for a more compelling narrative to express to all stakeholders (i.e. government, businesses, educators and wider society) the complex and continuous nature of the education landscape. Articulating the benefits of engagement with these skills should help achieve buy-in and bring better outcomes, for example, in terms of health, inclusion and the economy.

Regarding the roles different actors have to play in the field of education provision in this digital age, there is individual responsibility to continuously upskill and renew one's knowledge, as well as a wider responsibility across government and businesses in terms of making learning and the education system accessible, efficient and relevant. There is a need for digital skills to be better integrated in formal education and lifelong learning opportunities, in order to provide citizens with the tools they need to succeed in everyday life as well as in potential future careers. Currently the emphasis is on technical digital skills, whereas the softer skills, such as digital navigation, are not as highly recognised, despite being just as important.

Our discussions concluded that, because younger generations are in the main more digitally literate than their teachers and because more and more information is now available online, the role of teachers is changing towards being more of a guide or mentor, enabling a more personal learning experience, as opposed to being a source of knowledge. Going forward, as these changes become more prevalent, there will remain challenges that still need to be addressed, include accreditation and monitoring.

This consultation also identified that government and businesses have an important role to play in encouraging greater use of the digital technology in learning. It is important to recognise that the future should not be driven by technology. Rather than being an end in itself, the use of technology should be a tool to improve learning and outcomes for individuals by making learning more adaptive and flexible. Specifically, our discussions concluded that there is a lack of knowledge and data on which skills do exist and don't exist – let alone on the skills that might be needed in the future. Further research is required to identify the skills needed today, and to predict where skills gaps and shortages may develop.

In order to affect change in the era of digital education, government, businesses and industry need to work together to ensure that digital education, in the greater sense, facilitates accessibility and wider societal inclusion, so that every individual learner, of whatever age and background, has access to the opportunity for digital learning and the benefits which digital technology can offer in this sector.

List of participants

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Caroline Wright	Director General, British Educational Suppliers Association
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Organisations

Corsham Institute

Corsham Institute (Ci) is a not-for-profit organisation that is working for a fair, inclusive, prosperous and creative society based on trust and security.

Our focus is on education and research, going beyond traditional ideas of knowledge to promote lifelong learning in the digital age. We aim to empower citizens to develop the critical thinking and creative problem-solving skills they need to make the most of the opportunities that our increasingly networked, connected and data-rich society provides.

The Thought Leadership Programme provides an opportunity to explore the potential and impact of digital technology within society today, focusing on shaping a future where citizens are empowered with the knowledge and skills they require to live their lives socially, economically and even politically.

Our wider programme of work encompasses Research, Learning and Enterprise, placing the citizen in control of the creation, acquisition and exploitation of their knowledge.

RAND Europe

RAND Europe is a not-for-profit organisation whose mission is to help improve policy and decision making through research and analysis. As part of the RAND Corporation, we were founded in 1992 in Europe to provide quality research and rigorous, fact-based analysis to serve policy needs in EU institutions, governments, charities, foundations, universities and the private sector, where impartial research is required.

Our work lies on the spectrum between that of universities and consultancies, combining academic rigour with a professional, impact-oriented approach. In other words, we operate as a research-focused business, using a professional services model, within the context of a public good mission.

We combine deep subject knowledge across many policy areas – including health, science, innovation, defence and security, transport, infrastructure, criminal justice, education, employment and social policy – with proven methodological expertise in evaluation, impact measurement and choice modelling. Our clients include European governments and institutions, charities, foundations, universities and private sector firms.

St George's House, Windsor Castle

St George's House was founded in 1966 by HRH The Duke of Edinburgh and the then Dean of Windsor, Robin Woods as a place where people of influence and responsibility can gather to grapple with significant issues facing contemporary society.

The House offers a safe physical and intellectual space set in the narrative of history but focused firmly on the future. You will find here an environment receptive to new ideas, conducive to taking intellectual risks and to thinking through challenging topics in imaginative ways. The House is a sanctuary, removed from the pressures of everyday life, where the topic to hand takes precedence. It is this focus that encourages creative thinking, informed debate and sustained engagement. The emphasis throughout our carefully crafted Consultations is on dialogue and discussion. Participants are in a place where a real contribution to society can be made, where personal enrichment and social progress are mutually compatible, a place where Wisdom is nurtured.

In order to offer a safe and secure intellectual space our Consultations are run on the understanding that all debate and conversation takes place under the House Protocol.

Acknowledgements