

Digital learning's role in enabling inclusive skills development for a connected world

Axelle Devaux¹, Sarah Grand-Clement², Catriona Manville³, Julie Belanger⁴

¹ RAND Europe, Brussels, Belgium
adevaux@rand.org

² RAND Europe, Cambridge, United Kingdom
sgrandcl@rand.org

³ RAND Europe, Cambridge, United Kingdom
manville@rand.org

⁴ RAND Europe, Cambridge, United Kingdom
belanger@rand.org

Abstract. This paper presents the findings of a consultation of 25 digital learning experts on how digital learning can best support everyone in society to develop the skills needed to attain maximum benefit from the use of technology throughout their life. The consultation focused on five aspects of the digital learning provision: what should digital learning aim for (which skills should it contribute to deliver), the shifting role of the educator and the learning in a digital learning environment, what motivates the learning to choose digital learning, inclusive aspects of digital learning, and finally sustainability of the digital learning business models. Findings from this consultation will be presented in a report to be published early May 2017.

Keywords: digital learning, skills, inclusion, educator, participation, motivation

1 Introduction

The use of the digital is becoming pervasive and ubiquitous in every aspect of our life: from our schooling and education, to how we engage with politics, and even how we manage our finances – it is everywhere. Not only has its influence accelerated over the last 20 years, but all things digital continue to grow exponentially. Developments in digital technology, and the speed at which they come, drive innovation and new applications that touch our lives in different and often profound ways. While there are numerous opportunities associated with being digital, we also need to understand and mitigate the challenges it presents to society.

RAND Europe is working in partnership with the Corsham Institute to design and deliver the 2017 Thought Leadership Programme which provides an opportunity for strategic discussion on the opportunities and challenges that digital technologies are creating within society today, with particular focus on shaping a future where individ-

uals can realise their potential in a highly connected world. The programme opened with a Consultation on ‘Digital learning’s role in enabling inclusive skills development for a connected world’, which took place on 6–7 March. This paper summarises a number of the findings and recommendations from the Consultation and which will be presented in a report to be published early May 2017.

2 Problem description / challenges

More and more day-to-day routine activities can be done with the support of digital technologies, including tablets, mobile phones, laptops and computers to access the Internet at home, and it is increasingly difficult to live in contemporary society without using these technologies. It follows, therefore, that those not able to access to these technologies are at risk of being excluded from society (Rust 2014). This access to technologies not only implies having access to infrastructure and hardware, but also having the right skills to exploit the benefits and avoid the pitfalls of this new way of living.

The increasing use of technology and the growth in connectivity is also disrupting the labour market of today and will continue to do so in the future – a phenomenon labelled the ‘digitalisation of work’. Gartner predicts one in three jobs will be converted to software, robots and smart machines by 2025. This change, combined with the use of technology in our personal lives, requires the upskilling of the current workforce and wider population to adapt to an increasingly digital world and to reduce the risk of this change creating a new stratum of social exclusion.

Looking to the future, some estimate that as many as 65 per cent of children in primary school will have jobs which do not exist today (Carroll 2007, 2016; Fey 2012). Therefore, being familiar with information communications technology (ICT) and possessing the skills to use this digital technology are crucial. Employers have noted a disconnect between what young people are being taught in schools and the ICT skills actually required in the workplace: Approximately 72 per cent of large companies and 49 per cent of small to medium-sized enterprises (SMEs) are currently experiencing technical skills gaps in their workforce (Ecorys UK 2016).

However, while digital skills will increasingly be needed for the jobs of the future, the growing availability of ICT and technology in the workplace also means that employers seek a workforce with additional aptitudes. These include sense making, novel and adaptive thinking, new media literacy, computational thinking, cognitive load management, problem solving, critical thinking, teamwork and collaboration, communication, creativity, and innovation (Davies et al. 2011; Herk 2015; Wojcicki & Izumi 2015). Moreover, succeeding in the digital world also requires a wider set of ‘digital navigation skills’, which include finding information, prioritising information requirements, and assessing the quality and reliability of information. These skills will be increasingly important in the labour market of the future and, more generally, for inclusion and participation in society. It is crucial to ensure equal opportunities for all to acquire these skills, without which those who do not have either the relevant skills or access to technology are at risk of being excluded from society (social exclusion).

Education has a crucial role to play in achieving digital, social and labour market inclusion. However, is education preparing today's young people for tomorrow's jobs using yesterday's tools? How can we make sure that we give today's children the tools they need to adapt to tomorrow's world? How can we make sure that education and technologies work in partnership, where education supports both the acquisition of the skills required to use technologies and technologies that support the teaching and learning process?

The research question guiding the consultation, this paper and the consultation report is: 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 overall question is supported by specific questions, including: What are skills required to be successful in a more connected society?; How do technologies disrupt the respective role of actors in the delivery of education?; How can digital delivery channels help ensure equality of access and inclusivity to skills and education?; Do we need a new, more sustainable, model for delivery of education and skills which is better suited to a more connected world? These questions are explored in the remainder of this paper.

3 Considerations for policy development

3.1 What are the skills for the future?

To think about how digital learning can support the acquisition of skills that will be needed in a future, highly connected world, identification of skills required is needed. As traditional models of interaction are disrupted both at work and in our personal lives, we need to explore the core skill sets that will be required of citizens in the future if they are to maximise the opportunities created by digital technology. We know that employers are already seeking individuals with different skill sets and aptitudes to manage the increasing digitalisation of work, and without digital navigation skills citizens are at risk of social exclusion as we become more dependent on digital models of transaction. Following this, it is important to explore whether digital learning, and in particular MOOCs, is an appropriate way for learners to acquire these skills.

Findings from the Consultation include that two sets of skills need to be considered: those needed to access the digital world (these include IT skills) and those needed to live in society (e.g. communication skills, resilience). While the earlier evolve with technologies and become obsolete, the later are eternal. Rather than the skills themselves, what has changed in the last decades (and is likely to change in the future) is how to acquire and use these skills in a digitalising world. Our understanding of future skills needs is very limited and while forecasts are useful, it may be unrealistic and dangerous to try and plan for something we do not know and do not understand fully. Rather, skills production systems (education and training providers, learners, governments and employers) need to remain agile. A better understanding of how skills mismatch in both labour and society at large have worked in the past is the first

step to understanding how to better respond to tomorrow's needs. Only then will digital learning be thought through and designed in a way that allows acquisition of the skills we all need to navigate the digital society.

3.2 How is the role of the educator shifting?

The use of digital technologies in education does not necessarily translate into better learning. Recent evidence suggest that, in fact, there is no positive association between the extent to which learners use computers at school and their performance in mathematics, print literacy, or even digital literacy (OECD 2015). Although digital technologies have the potential to improve teaching and learning in a number of ways, they cannot achieve this improvement alone. For example, RAND Europe is currently evaluating an intervention for primary school teachers that uses a digital app to provide immediate and delayed feedback to pupils on mathematics tasks (RAND n.d). The app is the digital technology tool – or conduit – by which teachers can provide feedback. But this tool will only be effective if the feedback provided by teachers is of high quality. The use of the app alone will not be sufficient to improve learning.

With this in mind, a vital question is how digital technology is redefining the traditional role of the educator, and how the educator of the future can be best supported to embrace digital technology as part of their teaching practice. We must be careful not to assume that a teacher who is trained to use new technologies has also reflected on how this changes and enhances their ability to teach. Digital technology offers huge possibilities but we need to consider how the basic principles of teaching remain intact as the role of the educator evolves and embraces this opportunity. In addition, due to the availability of information through technology, it is feasible to see the role of the educator as changing, from that of knowledge provider to that of coach (Wojcicki et al. 2015).

Findings from the Consultation include that digital provision of learning content is not enough on its own. It needs to be supported by an ecosystem including mentoring, support functions, a community, direct contact and appreciation. It is with this in mind that the role of the educator needs to be re-thought. Far from becoming robots, the educator of the future should concentrate on coaching and mentoring learners rather than providing the information, which will be available for all online. This model has already entered the MOOC world, with mere information accessible for free, while the coaching and mentoring services are pay-for. This implies that educators need to be prepared for this new role and responsibilities towards the learner. The shifting role of the educator also has implications on the role of the learner, who has to take ownership of their learning and be an active self-guide rather than been guided by their instructors. This is likely to be increasingly the case of the future, especially as digital learning offers opportunities for more tailored and learner-centred learning.

3.3 What motivates participation in digital learning?

Looking at the drivers to participation in digital learning, a key question is what motivates learners to embrace digital learning. Beyond the point of view of the learners, and depending on their aspirations, it is also important to explore what value is placed on learning outcomes from digital education both within the education sector, by employers and by those who design and implement policies and programmes supporting skills acquisition.

Recognition of learning outcomes for the purpose of further studies or employment is an obvious motivation for learners to participate in digital learning. In the context of less formal digital education (e.g. MOOCs), recognition issues include the value of learning outcomes acquired through these forms of learning on an individual's studies or career prospects. Recent research shows that this is of concern to those who take MOOCs, as well as to employers and education institutions who are digital learning providers (Cedefop 2016; Witthaus et al. 2015). In some instances, these providers have proposed solutions, such as the introduction of learning 'badges', which are gaining value beyond the digital learning world and could inspire recognition in non-digital, non-formal and informal learning contexts.

The Consultation also shed the light on additional motivations for learners at different stages of life to embrace digital learning, which include flexibility, curiosity, (desperate) need for change, fun, etc. Accessibility solutions offered by digital learning were also mentioned among the drivers to participation in digital learning – these are explored in further details in the section below about inclusion.

Policy-makers need to be aware of these motivations and about the opportunities digital learning represents for learners, employers and education and training provider so as to develop appropriate supporting policies.

3.4 Digital learning as a tool for inclusions?

Digital learning is often described as an attractive way to reach more people in a faster and more inclusive manner. Digital learning can help bring education to those who cannot physically access it (e.g. learners in hospitals, prisons, remote areas) or who need flexibility in their attendance (e.g. those who study outside work hours). The current refugee and Ebola crises provide examples of the ways in which digital methods are a major delivery channel and can facilitate inclusion for large groups (Gill 2016). In these cases, education technologies are seen as a means (sometimes the only one) to allow vulnerable learners' participation in education. However, recent research on the massive open online courses (MOOCs) phenomenon in the USA and in Europe (e.g. Castaño-Muñoz et al. 2016) shows that the primary beneficiaries of MOOCs are those who already have a higher education qualification, a finding which raises questions about the likely inclusivity of digital education.

This belies an important issue of how to make sure that disadvantaged learners do not miss out on the benefits and opportunities created by digital education. For instance infrastructure and affordability remain barriers to access. Additional barriers linked to accessibility of learning content to disadvantage learners also need to be

taken into consideration. Notwithstanding the wide range of contexts, we need to ensure that individuals who are at risk of being excluded from our connected society, are able to access the opportunities and benefits created by digital education.

As part of the Consultation we tried to identify building blocks of a successful inclusive digital education strategy. These include offering opportunities for learning provision tailored to the needs of the disadvantaged group in question (no one-size-fits-all approach) – this implies listen to the needs of the disadvantaged groups, understand them and involve them in the design of digital learning solutions. Given the diversity of learners and learning needs within a specific disadvantaged group, digital learning needs to provide or tailored learning in line with the needs of each individual learner. In this area, digital learning offers opportunities that traditional learning would not have the capacity to offer.

3.5 Sustainable models for education in a digital world?

Digital learning is a cost-effective way to reach a wider market of learners (in quantity and diversity) but is known to have high set up and maintenance costs. Traditional education business models are not appropriate to digital learning, and we need to consider how the education sector can respond to ensure sustainability as digital technology continues to disrupt traditional funding models, and how this can be supported by employers, government and learners themselves.

Findings from the Consultation include that while the main actors of digital learning (identified as learners, education and training providers and educators, government and businesses) have common needs and goals, they do not understand each other's point of view and often work in isolation. Structured dialogue would facilitate this understanding and working together to achieve common goals such as bridging the skills gap and a more inclusive digital society. The Consultation also showed that while there are many examples of successful inclusive digital learning practices, evidence of effectiveness is scarce and good practices are not scaled up to reach more people or more groups of disadvantaged learners, and enable them to appreciate the benefits in participating. Measuring effect and effectively disseminate good practices is vital in this area but still the exception rather than the rule.

4 Recommendations

Those who develop and support digital learning policies and programmes should:

- Ensure effective and structured dialogue among stakeholders – involving learners, education and training providers, instructors, government and employers. This implies better understanding each other's needs and defining joint priorities for the short term and long term policy development in relation to digital learning.
- Keep the learning at the centre of the digital learning developments, taking into account the needs of vulnerable learners and remaining flexible to address

the learning needs of each individual learner – this way only digital learning will be inclusive.

- Rethink the role of each actor in the provision of digital learning, each actor taking responsibility in their new role. This may include taking ownership of their learning (learners), becoming a coach rather than an instructor (educator), involving learners in the design of learning offer (education and training providers), reflect on and identifying their skills needs and the best way to attract, maintain and keep these skills (employers) and incentivising investment and development of digital learning offer (government).
- Those who design and support digital learning (governments and education and training providers) should define clear objectives and use evidence and good practice to improve and further develop digital learning strategies. Producing a narrative explaining the opportunities and evidencing the benefits of digital learning will encourage citizens of all ages and stages of life to become learners.
- Further research is required in areas such as how to effectively measure acquisition of skills for the future through digital learning, how to use (big) data to better understand the dynamics of digital learning, the role of the regulator to monitor digital learning policies, better understand the (learning needs of the educators, help employers better identify the skills they need.

References

1. Caroll, J. (2007): Ready, Set, Done. How to Innovate When Faster Is the New Fast. Oblio Press.
2. Caroll, J. (2016): 'The Future of Education: "Why Are You Here?"' 25 October. As of 22 February 2017: <https://www.jimcarroll.com/category/trends/education-trends/> .
3. Castaño-Muñoz, J., Punie, Y., Inamorato dos Santos, A. (2016): MOOCs in Europe: Evidence from pilot surveys with universities and MOOC learners, As of 22 February 2017: https://ec.europa.eu/jrc/sites/jrcsh/files/JRC%20brief%20MOOCs_JRC101956.pdf.
4. Cedefop (European Centre for the Development of Vocational Training) (2016): Validation and Open Educational Resources (OER): Thematic Report for the 2016 Update of the European Inventory on Validation. Luxembourg: Publications Office of the European Union. As of 22 February 2017: <http://www.cedefop.europa.eu/en/publications-and-resources/publications/4149>.
5. Davies, A., Fidler, D., & Gorbis, M. (2011): Future Work Skills 2020. Palo Alto: Institute, for the Future for the University of Phoenix Research Institute. As of 22 February 2017: http://www.iftf.org/uploads/media/SR-1382A_UPRI_future_work_skills_sm.pdf.
6. Ecorys UK. (2016): Digital Skills for the UK Economy. Birmingham: Ecorys UK. As of 22 February 2017: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/492889/DC_MSDigitalSkillsReportJan2016.pdf.
7. Fey, T. (2012): 'When Ivory Towers Fall: The Emerging Education Marketplace'. TEDxReset talk. 18 December. As of 22 February 2017: https://www.youtube.com/watch?v=_2Ud9rO68PM.

8. Herk, M. (2015): 'Which Skills Are Most Important on the Job and Which Skills Are in Short Supply?' 22 September. Committee for Economic Development. As of 22 February 2017: <https://www.ced.org/blog/entry/which-skills-are-most-important-on-the-job-and-which-skills-are-in-short-su>.
9. RAND. n.d. 'Evaluating Digital Feedback in Primary Maths.' As of 22 February 2017: <http://www.rand.org/randeurope/research/projects/evaluating-digital-feedback-in-primary-maths.html>.
10. Rust, E. (2014): 'When the UK Goes "Digital by Default", Who Will Be Left Behind?' Guardian, 23 June. As of 22 February 2017: <https://www.theguardian.com/technology/2014/jun/23/when-the-uk-goes-digital-by-default-who-will-be-left-behind>.
11. Witthaus, G, Inamorato dos Santos, A., Childs, M., Tannhäuser, A.-C., Conole, G., Nkuyubwatsi, Punie, Y. (2015): Validation of Non-formal MOOC-based Learning: An Analysis of Assessment and Recognition Practices in Europe (OpenCred). As of 22 February 2017: <http://publications.jrc.ec.europa.eu/repository/bitstream/JRC96968/lfn27660enn.pdf>.
12. Wojcicki, E., & Izumi, L. (2015): Moonshots in Education: Launching Blended Learning in the Classroom. San Francisco: Pacific Research Institute.