

# 7

## Technology and the Individualisation of Education

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### Introduction

As previous chapters have discussed, digital technology is associated with making education more individually driven and ‘learner centred’. Certainly, the educational potential of digital technology is often seen to be limited by the depersonalised nature of institutionalised education provision. As Marshall McLuhan contended fifty years ago, the potential for individuals to use technology to learn for themselves might far exceed what is possible within the institutional confines of a school:

The electronic environment makes an information level outside the schoolroom that is far higher than the information level inside the

schoolroom. In the nineteenth century the knowledge inside the schoolroom was higher than knowledge outside the schoolroom. Today it is reversed. The child knows that in going to school he is in a sense interrupting his education. (McLuhan 1967, cited in Cremin 1990)

Contemporary commentators continue to believe that learning takes place most successfully when individuals are able to use technology to participate on a flexible and autonomous basis. In this spirit, digital technologies continue to be developed in ways intended to support 'individualised' and 'personalised' forms of education. Many observers now see digital technologies as leading to a distinct era of flexible education participation based around individuals' specific needs and interests. As Yong Zhao and colleagues reason:

Technology has made it both a necessity and a possibility to realize some of the long-standing proposals for child-centered education and learning by doing. Personalized education that grants students autonomy and respects their uniqueness has become a necessity for cultivating the abilities required for living in a society when machines are rapidly taking jobs away from humans. Technology has made it possible to enable personalized learning and to have students take more control of their own learning. (Zhao et al. 2015, n.p.)

This chapter examines such thinking (and its application), as well as the implications that individualised use of technology has for established notions of education that are built around collective aims and concerns. Before considering some key debates around digital technology and individualisation, it is important to acknowledge their historical provenance. For example, much of what is currently being argued with regard to technology corresponds closely with John Dewey's work in developing ideas of 'progressive education' over a hundred years previously. Pre-empting the arguments of many present-day educational technologists, Dewey advocated an individually centred approach 'where students learned by experimentation, using their imaginations to develop individualized solutions to problems and learning in a social environment' (Ferster 2014, p. 53). Around the same time as Dewey's writing, the Montessori Method also promoted the benefits of learning through self-directed activity and personal initiative. Support for individualised forms of education provision continued throughout the first half of the twentieth century in the guise of 'programmed instruction' and 'mastery learning' (Benjamin Bloom's philosophy of self-paced learning where individuals do not progress to subsequent parts of an education programme until they have thoroughly understood previous instruction).

Such principles maintained their popularity during the 1950s and 1960s through Fred Keller's 'Personalized System of Instruction'. As Grant and Spencer (2003, n.p.) describe, this advocated allowing 'students to adapt their course work to other activities in their lives, rather than the reverse ... students take an active role in managing their own learning and scheduling their own assignments, providing them with the opportunity to function as independent learners'. As such examples suggest, recent claims for the individualisation of education engagement through digital technologies are by no means unprecedented.

It is also important to recognise the support that persists outside of educational technology circles for individual autonomy and self-management of learning. For example, 'differentiated learning' and 'self-regulated learning' have become popular pedagogic approaches in schools that are tasked with accommodating the diverse needs and capabilities of students (Tomlinson 2014; Prain et al. 2013). Similarly, adult and community educators often acknowledge the importance of 'learning journeys', 'learning careers' and 'learning pathways', thereby highlighting the highly personal ways in which individuals engage with the educational opportunities in their lives. Such descriptions reflect a growing interest among educators to look beyond 'one-size-fits-all' approaches associated with mass education provision. Now, it is received wisdom in most areas of education that access needs to be provided to educational opportunities that are tailored around personal needs and preferences. Crucially, as the remainder of this chapter will discuss, digital technologies are seen as a ready means of achieving such aims.

## Different forms of technology and individualised education

This chapter will first consider briefly the different ways in which technology is used to support individualisation across education contexts and modes of engagement.

### i) Individualised classroom learning

While individualisation is often presented as an alternative to schools, colleges and universities, there has been considerable interest in developing

digital technologies that support individualised learning within institutional settings. In particular, a range of classroom technologies have been designed and developed over the last forty years with a deliberate ‘learner-centred’ and ‘learner-driven’ ethos. In essence, the notion of a student being allowed to use and control a digital device within a classroom context implies a commitment to increased individualised control over what takes place. This can be seen in many of the technologies covered in previous chapters – from the Logo programming language to the development of educational games and simulations.

Such principles are certainly apparent in recent technology designs that aim to support the ‘personalisation’ of students’ engagement with education. As Gamrat et al. (2014) describe, efforts to support personalisation of learning through technology tend to focus either on issues of decision making or on those of customisation of content. In the first sense, various technologies have been developed to offer students more choice in deciding how and what they learn in the classroom. As a result, there is growing interest in students being able to use technology to construct ‘tailored learning journeys’ and educational activities that are ‘just enough, just-in-time, just-for-me’ (Peters 2007). This is a key element, for example, of Sugata Mitra’s work around ‘self-organized learning environments’, where students are encouraged to use information and communication technologies to support open-ended enquiry-based learning (Mitra 2012).

Whereas these technologies are built around the idea that students are best placed to make decisions about subject matter, learning goals and modes of delivery, other recent developments have explored the possibility that these decisions might be best made by the technology itself. For example, analytic platforms and applications have been developed to adapt different individuals’ engagement with learning content according to their specific needs, capabilities and past performance. This includes ‘adaptive learning systems’ that draw upon the artificial intelligence and machine learning principles outlined in Chapter 3. By monitoring a student’s online interactions with online education content, data is generated and processed that allows the system to best select subsequent activities that either build upon successful learning or address any shortfalls. In this way, the technology identifies and facilitates individually tailored ‘adaptive learning paths’ for each student. This represents an application of ‘learning analytics’ where digital data collection and processing is used for ‘predicting student learning success and providing proactive feedback’ (Gašević, Dawson and Siemens 2015, p. 65). The basic premise of such systems and applications is

that all students will eventually achieve similar educational outcomes. Yet, unlike traditional classroom environments, the content and activities that each student will have engaged in in reaching this endpoint will differ considerably.

## ii) Individualised online learning

While these previous examples are predominantly school-focused, enthusiasms for technology-based individualised learning also abound in post-compulsory education. In particular, online courses and other forms of e-learning are seen to enhance the capacity of individuals to take responsibility for curating and managing their own educational engagement. In this sense, digital technology enables individuals to play active roles in determining the nature, place, pace and timing of their learning.

Mike Keppell (2014) describes such forms of technology-based personalisation as allowing individuals to ‘take charge’ of their learning. Keppell argues that post-compulsory education is most meaningful and engaging for adults when it offers ‘seamless learning’ opportunities that satisfy each individual’s personal ‘desire paths’. He also points to the need to use digital technologies to support ‘life-long learning’ and ‘life-wide learning’. As outlined in Chapter 1, life-long learning relates to the different forms and modes of learning that individuals find themselves engaging in during different stages of their life (ranging from workplace training requirements through to hobby-related learning). Second, life-wide learning relates to how an individual’s interests and requirements will be situated across a number of contexts at any time, such as employment, formal education, community and family. Digital technologies are a ready means of providing access to education that is appropriate for individuals’ specific life-stages, life-styles and life-circumstances.

These principles have begun to be adopted throughout post-compulsory education. For example, some universities now release the complete content of courses online from the first day of the semester. This is seen to offer students increased choice over how they consume and engage with teaching and learning opportunities. This has prompted talk of ‘binge learning’ along similar lines to the continuous viewing of entire on-demand television series or DVD box sets (Deakin 2015). The logic here is that while some individuals might opt to ‘binge’ immediately on the complete content of a course, some might prefer to adhere to a weekly schedule, while others

might postpone engaging until near the deadline. Crucially, the position of having access to all content at all times places decisions of scheduling, timing and mode of engagement under the control of each individual student rather than the institution. Alongside advantages of convenience and choice, such techniques are also seen to make learning more personally engaging and challenging. Sebastian Thrun (one of the founders of the Udacity online education provider) reasons that individually directed online learning 'exposes the students' by putting them in a controlling role, akin to playing a video game. As Thrun concludes, 'We take the focus away from the professor and put the focus back on the student' (cited in Bromwich 2014, n.p.).

Similar principles informed the design of the 'Massive Open Online Courses' (MOOCs) that emerged during the first half of the 2010s. In essence, MOOCs were (and continue to be) university-affiliated courses offered to masses of online learners for little or no cost. While many MOOCs followed a set schedule of topics, participants were often free to engage with content and materials (usually video lectures, online quizzes and discussion forums) as they pleased. As such, the experience of taking a MOOC was expected to differ considerably from individual to individual. Studies of MOOC student behaviours have found some individuals to engage in sporadic and superficial ways, while others chose to self-organise additional face-to-face and online learning activities to supplement the official content (Knox 2014).

The idea of individually directed consumption is also an established feature of distance education. Indeed, distance education has a long and rich history of using technology to support different forms of 'lone' study. This ranges from the growth of print-based 'correspondence' courses at the beginning of the twentieth century to later forms of 'multimedia' teaching through audio and video tapes as well as broadcast television programmes (Nipper 1989). Current forms of distance education tend to involve blends of digital and analog methods. While 'old technologies' of paper-based printed materials retain a central role in the delivery of many courses (Guri-Rosenblit 2005), distance education provision also makes varied use of social media, content management systems, digital video and computer-mediated communication. Now it is expected that an individual distance learner is positioned at the centre of a network of online and offline educational opportunities that he or she can engage with as and when he or she chooses.

### iii) Online aggregation and curation of learning

While online courses and adaptive learning systems involve the overseeing presence of a formal provider (e.g. a school, university or company), other forms of online education are more devolved and disaggregated. All the examples outlined so far in this chapter relate to how technology can support the interactions of many individuals with the same education provider. In contrast are efforts to use technology to support the same individual's interactions with many education providers. In other words, technology is used to 'aggregate' disparate instances of education achievement over time. A key concept here is the ability of individuals to use technology as a means of 'curating' their learning – that is, researching and selecting new educational opportunities that build upon their previous engagement. In all these ways, then, the individual is given responsibility for what Terras and Ramsey term as 'sense making, way finding, and managing uncertainty' (2015).

One instance of this self-management approach is 'digital badges'. The aim of digital badges is to bring an element of visibility and standardisation to online education experiences. Following the logic of 'badging' in Boy Scout troops, these are digital rewards awarded by specific websites or groups to signify specific online learning achievements – such as completing a course, reaching a certain level of experience or gaining specific skills. As such, a digital badge is 'a symbol of personal achievement that's acknowledged by others' (Watters 2011, n.p.). This external validation is seen to give badges transferable value, with each badge capable of containing metadata describing the nature and quality of the learning. In this way, a collection of digital badges can detail learning-specific information to third parties (such as prospective employers) in ways that conventional qualifications might not (Gamrat et al. 2014). A distinctive feature of digital badges is that they are free to be issued by any organisation, group or individual:

The idea that badges are 'open' is the fundamental principle on which the system is built. The infrastructure is open (anyone can become an issuer) and the technology is open (open source). Users control their own data and the system permits individuals to create their own badges which an issuer can endorse. (Glover and Malone 2015, p. 4)

Digital badges are part of a wider trend of using technology to establish alternate credentialling of informal education through the awarding of 'micro-credentials' and 'nano-degrees' that offer recognition and credit for

diverse and otherwise undocumented online learning activities. Relating back to some of the visions of technology-driven education change outlined in Chapter 2, such uses of technology are seen as ‘disrupt[ing] higher education’s traditional, formal educational processes for financial and educational accountability’ (Lemoine and Richardson 2015, p. 36). Indeed, digital badges have begun to be used by some notable online education providers. For example, Khan Academy uses a system of digital badges to recognise successful completion of its content, alongside some MOOC platforms and even a few traditional education providers (such as University of California Davis).

Another interesting example of technology-based aggregation of informal learning is the idea of ‘personalised learning environments’ (PLEs). This describes the diversity of tools, resources and people that every individual draws upon when learning online. Indeed, most people utilise assorted ways of obtaining information, interacting with others, creating their own content and publishing their work. One might interact primarily on Twitter, publish short videos on YouTube, write a blog or organise links on a particular social bookmarking site, while also regularly using a number of other niche tools and services. The idea of a PLE is as a means of allowing individuals to bring together and organise the various online tools, services and resources that they use in the course of their learning.

Often taking the form of a web space or ‘node’ where online learning activities and materials can be aggregated, PLEs allow individuals to develop and reflect on their learning and connect with other like-minded individuals. In this sense, PLEs were conceived as a means of helping individuals develop a better overview of their online learning, and to take responsibility for organising educational activities in more connected and collaborative ways. In other words, PLEs place each individual learner in the ‘orchestrator’ and ‘designer’ roles that were outlined towards the end of Chapter 6. As Rahimi, van den Berg and Veen (2014, p. 790) reason, PLEs ‘put the students in a higher level of learning, socializing and decision making in the educational process by acknowledging and corroborating their role as active learners, contributors and designers.’ Crucially, then, a defining characteristic of technologies such as PLEs and digital badges is that they are not institutionally bound or institutionally controlled. As Stephen Downes describes the philosophy of the personalised learning environment:

It becomes, not an institutional or corporate application, but a personal learning center, where content is reused and remixed according to the



student's own needs and interests. It becomes, indeed, not a single application, but a collection of interoperating applications – an environment rather than a system. (cited in Coyne et al. 2008, p. 248)

Such principles are also evident in the use of digital technology to engage in completely 'DIY' forms of education. In this sense, the internet is seen to provide a means of freely accessing high-quality educational opportunities beyond formal educational institutions, systems and structures. For example, platforms such as TED, iTunesU and YouTube.Edu are all heralded as supporting rich and varied opportunities for self-directed and interest-led learning. Elsewhere, online forums from Twitter to Reddit are seen to offer opportunities for informal exchange of expertise, knowledge and folk-wisdom between communities of like-minded individuals. Specialised online resources and platforms are recognised as increasingly appropriate sources of skills and knowledge development, particularly in areas such as computer programming, software development, design and digital arts. The continued growth of such resources has prompted calls for individuals to now look beyond the time and expense of traditional collegiate pathways and, instead, 'hack your education' – that is, to collate and curate learning experiences and education engagement from a variety of freely available online (and offline) sources. As Dale Stephens (2013, p. 9) from the 'UnCollege' organisation argues, 'If you want to learn the skills required to navigate the world – the hustle, networking and creativity – you're going to have to hack your own education.'

## The wider provenance of technology-led individualisation of education

While clearly challenging traditional models of education provision, such forms of individualised learning are attracting increasing interest and support. Many of the online modes of education just outlined have been heralded as instances of the 'disruptive innovation' discussed in Chapter 2. This has led to impassioned talk of the impending democratisation of education, with flexible forms of online education set to 'upend a cornerstone of the American meritocracy, fundamentally altering the way our society creates knowledge and economic opportunity' (Carey 2015, n.p.). It is argued, for

example, that dominant cultural expectations of ‘the student’ are moving steadily away from receiving collective instruction in a passive manner towards being able to individually (re)construct the place, pace, timing and nature of any engagement with learning. As such, digital technologies are frequently described as reconfiguring contemporary forms of education as

performative event[s] in the hands of the student, thereby repositioning the student in relation to institutional networks. To this extent, the [individual] student is anything but marginal; as both the operator that enacts the class and the target that receives course content, the student occupies a metaphorical and experiential center for the performance of the course. (Nunes 2006, p. 131)

Such claims might seem a little far-fetched when contrasted with the day-to-day realities of school and university systems that continue to define most people’s educational experiences. Yet, these ideas and expectations are now given increasing credence, especially outside of the education establishment. In particular, many commentators see the technology-led individualisation of education as reflecting general trends in the way digital technologies are being used throughout society. As such, it is presumed by employers, industrialists, policymakers and the general public that such (re)arrangements of education are necessary in light of the technology-driven change elsewhere in society. In other words, the forms of digital education described so far in this chapter could be seen as instances of the broader logics of digital technology and digital society coming to bear on education.

Indeed, there are many precedents for the individualisation of education through digital technologies. For example, the idea that digital devices and applications should be based around the needs and interests of the individual user has long been at the heart of technology design. From the development of the early ‘personal computer’ to the ‘personal digital assistant’, the design of digital technologies has long emphasised producing artefacts that fit flexibly around the lives and requirements of individual users. As Alan Kay (one of the originators of the personal computer) put it, much of the formative technology development of the 1970s was focused on the development of ‘personal dynamic computing’ through machines ‘designed in a way that *any* owner could mold and channel its power to his own needs’ (Kay and Goldberg 1977, p. 31).

These principles are certainly evident in the ongoing development of the internet. From the establishment of ARPANET in 1969, the internet was

envisaged along permissive and 'free' lines. Early incarnations of the internet allowed individual users to send content anywhere across its networks, while also providing a freedom of association based on mutual respect and collective endeavour. Integral to the later design and development of the worldwide web were principles of decentralisation, openness and a belief in 'let[ting] users choose' (Berners-Lee 2014, n.p.). While ambitious and idealistic, such principles persist in the design of recent social media applications. One of the main attractions of social media is the widely held belief that such applications and platforms are somehow able to 'liberate' the individual user from organisational structure and hierarchy, boosting individual freedoms and reducing centralised controls over what can (and what cannot) be done.

Many of the education technologies detailed in this chapter also reflect recent trends throughout society towards harnessing data generation and processing of digital data for individual benefit. For example, it is expected that expanded access to digital data will allow individuals to operate more efficiently, effectively and equitably. This has led to claims that increased data access can democratise decision-making processes, make institutions more 'transparent' and render elites more 'accountable' for their actions. Specific benefits are seen to stem from the connections that individuals are able to make between previously disparate and disconnected sources of information. Many of these perceived advantages reflect an underlying belief that digital data renders social processes and social relations more knowable and, it follows, more controllable. These ideas are manifest, for example, in the growing popularity of the 'quantified self' movement, based around the development of digital technologies for individual self-tracking and recording personal data to inform future behaviours in areas such as health, fitness, sleep and nutrition. In this way, the idea of using personal data as a means of individual self-improvement has become commonplace and widely welcomed, that is, using 'data as a way to help inform our own life choices through providing us with a means of collecting information about ourselves over time, and sharing and comparing this data with others if we wish to do so' (Eynon 2015, p. 407).

The forms of digital education detailed in this chapter also chime with the changing perceptions of technology-based socialisation, participation and interaction. PLEs, MOOCs and digital badges all reflect the 'networked' nature of digital technologies that many commentators now see shaping the way people conduct themselves online. For example, Barry Wellman and colleagues have spent the past fifteen years or so researching the notion of

'networked individualism' as an explanation for such shifts in thinking and behaviour. With digital technologies, Wellman argues, individuals are less likely to remain 'embedded' in face-to-face groups that are small, tightly connected and relatively unchanging (such as families, households, work teams or classes). Instead, individuals are more likely to interact, communicate and work with loosely bounded, broader networks of digitally connected individuals. As Rainie and Wellman put it, 'In the world of networked individuals, it is the person who is the focus: more than the family, the work unit, the neighborhood, and the social group' (2012, n.p.). Crucially, these arrangements are described as an 'operating system' where 'the individual is at the autonomous center just as she is reaching out from her computer' (Rainie and Wellman 2012, n.p.).

Finally, it is also important to acknowledge how moves towards individualised education also reflect wider shifts in popular and political assumptions of the heightened primacy of the individual. Specifically, the past forty years have seen increased support in most countries for individually directed rather than institutionally dictated forms of social organisation. Such shifts in thinking have occurred across the political spectrum. For example, ideals of self-sufficiency and the ability of individuals to make and provide for themselves have been central to environmental and social sustainability movements. Conversely, the idea of individuals being able to choose for themselves within a free market context is a central tenet of neoliberalism, seen by many as the dominant ideology throughout much of the world. In this sense, individuals are expected to act 'entrepreneurially', unconstrained by state intervention or interference from monopoly interests. Despite ideological differences, many of the leading political, cultural and social movements of recent times have privileged the individual as the main component of how society should be arranged:

Since the early 1970s [a] spotlight has been shined on individuals. ... Our society today is founded on a new form of production that originates from individuals, from their own expression, from their own presentation, from their own performance and self promotion. A production through affect, and behavior, and comportment. We are all makers of our own presence in the world. (Galloway 2015, n.p.)

These values and ideas are particularly evident in the activities of 'Silicon Valley' technology companies such as Google, Facebook, Microsoft, Apple and others. The culture of these companies' activities is clearly influenced by the so-called hacker ethic, which privileges creativity and ingenuity of sole

programmers acting in opposition to authoritarian institutions. In addition, the approach of many US technology companies is bolstered by an implicit sense of ‘American individualism’ – that is, ‘the belief that “the good society” is one in which individuals are left free to pursue their private satisfactions independently of others, a pattern of thinking that emphasizes individual achievement and self-fulfillment’ (Andre and Velasquez 1992, n.p.). All told, the development of many of the digital technologies outlined in this book has understandably been driven by a belief in the values of personal freedoms and individualisation of action.

## The limitations of individualised learning

Against these broader issues and agendas, the increased individualisation of education through digital technologies is perhaps to be expected. After all, these are trends to be found across many different parts of society. However, this is not to say that these assumptions about the individually centred reorganisation of education are above being challenged or criticised. In fact, it could be argued that the increased individualisation of education is one of the most significant – and problematic – changes in the whole field of education and technology. Certainly the logics of what has been described so far in this chapter imply a substantial reorientation of how education is arranged and provided. Therefore, these new forms of educational technology demand our attention and scrutiny. While ‘adaptive learning systems’ and ‘hack your education’ might make intuitive sense, there are certainly a number of reasons to be cautious, if not hostile, towards such ideas.

### i) Recognising the institutional agendas of ‘individualisation’

First, it could be argued that much of what is described as ‘individualised’ and ‘personalised’ is not concerned with refocusing education provision around the different needs of individual learners *per se*. Indeed, some critics dismiss the idea of technology-driven personalisation, flexibility and

individualisation as little more than a ‘window dressing’ for the interests of larger institutions and organisations (Nicoll 2006). As Stephanie Schulte observes, interest in digital personalisation often stems from institutions seeking to increase engagement with their services and products, rather than necessarily ensuring the development of genuinely diverse and bespoke individual practices:

The presumption of increased agency with personalization often neglects the ways in which personalized practices and ideologies are nonetheless vulnerable to institutional uses (i.e. governmental and corporate). These institutions, in turn, promote an ideology of personalization entirely compatible with the economic and cultural values of late-capitalism. (2016, n.p.)

In these terms, a number of powerful arguments have been advanced against the increased expectations of ‘flexible’ educational engagement. Rather than working in the interests of individual students *per se*, many attempts to use technology to support flexible education, it is argued, are driven primarily by concerns of efficiency and/or profit. As Harrison et al. (2003, p. 94) conclude:

Here flexibility stands for more ‘business-like’ ways of working, including rationalization of provision, enhanced institutional responsiveness to the market and short term contracts of employment ... to provide more flexible forms of learning to service the requirements of the economy.

This is certainly reflected in the (lack of) diversity of educational opportunities that tend to be provided through digital technologies. In many cases, digital provision has resulted in offering ‘more of the same’ types of education, rather than necessarily supporting a genuine diversity of varied opportunities. The provision of more esoteric (but less popular and profitable) forms of education remains rare, even in light of the opportunities available through user-generated, grass-roots informal learning. The internet may be supporting a greater volume of educational opportunities, but these are often homogenous and interchangeable with each other. As Rudy Hirschheim (2005, p. 101) describes it, digital technologies could be said to be leading simply to ‘a more standardized, minimalist product targeted for a mass market, [that] will further “box in” and “dumb down” education’.

Similarly, many of the personalised systems and applications described earlier in the chapter are perhaps characterised most accurately as supporting processes of mass customisation. These are technologies focused on varying individuals’ engagement with what is essentially the same service or product, with the aim of achieving the same (or similar) outcomes. Whereas the idea

of individualisation implies a notion of unlimited free choice, customisation suggests that users can choose from a large (but still finite) number of options. Thus, any ‘individualisation’ or ‘personalisation’ involves fitting individuals around preconfigured outcomes and expectations rather than offering genuinely bespoke education. In other words, an individual ‘participant’ is not actively self-determining but conforming to the requirements and expectations of a mass system. It could be argued that many of the forms of personalised and adaptive education outlined in this chapter are based around ‘ideal’ types of learner and ‘optimum’ forms of learning, ‘which may not adequately account for, or properly reflect, [each] individual’s strengths’ (Eynon 2015, p. 408).

## ii) Recognising the difficulties of self-directed online learning

While rarely acknowledged in talk of ‘self-organised learning’ and ‘personalised environments’, the process of individuals taking control of their own online learning requires specific aptitudes and abilities that differ from participating in traditional forms of education. Of course, online learning involves a familiar set of skills that could be termed as ‘digital literacy’, such as the ability to ‘evaluate’ information and then synthesise and integrate it into one’s thinking (Pangrazio 2016). In addition, there is, however, what Terras and Ramsey describe as ‘participatory literacy’, that is, ‘the collaborative and production-based skills that are required across a range of digital media that draws upon key abilities such as creativity, reasoning, focus, critical thinking and analysis’ (2015, p. 476).

The ability of individuals to sustain engagement with self-directed online education over time is another key factor. This is clearly dependent upon an individual’s level of ability and interest in the learning content, alongside the quality and quantity of support that is available. In terms of ability, Terras and Ramsey highlight the importance of ‘metacognition’ – in other words, the ability to reflect on how one thinks and learns. In this sense, another key element of self-directed individualised education is an individual’s capacity for self-regulation:

The burden of regulating learning is carried by the student rather than the teacher. Learners must take increased responsibility for engagement, study, learning and reflection and, as outlined previously, must possess the necessary skills to do so. (Terras and Ramsey 2015, p. 478)

Another crucial factor in this respect is an individual's awareness of time. This includes awareness of the a-synchronous nature of online learning, how the meaning of online content can change over time, and the need to self-monitor and plan for the future. Terras and Ramsey, therefore, point to the importance of individuals being able to deal with the 'distributed nature' of online learning over time.

These observations draw attention to the risk that some individuals may not possess the skills and aptitudes required to engage successfully with these forms of technology-based education. As Mike Keppell puts it, 'We can't assume learners have the knowledge, skills and attitudes to be able to identify and effectively utilize appropriate learning spaces' (2014, p. 4). Conversely, assumptions of the benefits of individually driven learning are also compromised by the fact that online education providers often pay little attention to issues of online pedagogy and the specific psychological demands of online learning. As Terras and Ramsey argue, online courses could be accused of facilitating learning more by accident than by design – what they describe as 'a black box approach to e-learning' (2015, p. 481).

### iii) Recognising the social and emotional limitations of online education

Another set of caveats relates back to the question of 'what is being lost' with new forms of technology-based education. In this sense, it is worth considering what 'human' aspects of education are being marginalised in moves towards individually driven and individualised learning. One possible limitation is the diminished social and emotional benefits that can derive from learning with other people in the same space, place and time – what is sometimes referred to as 'co-presence'. For example, it was noted in Chapters 1 and 4 that much 'informal' learning in the workplace continues to occur through a process of 'learning on the job'. This is sometimes referred to as 'sitting with Nellie' – that is, learning from sitting next to more experienced colleagues while they do their job. The continued prevalence of this type of learning points to some of the limitations of online education.

In theory, the internet offers access to a vast collection of videos of people demonstrating their expertise to others on topics ranging from plumbing a sink to changing a carburettor. Now, any individual can learn how to plumb a bathroom or strip a car engine by watching online videos of expert demonstrations, and perhaps then discussing what he or she has seen with



other viewers. Yet, despite the conveniences of ‘hacking’ one’s learning in this manner, many people still prefer to develop such skills in the physical company of (more expert) others. In part, this relates to the benefits discussed towards the end of Chapter 6 of learning in the presence of an expert. Such benefits range from personalised feedback and ‘nudges’, through to the reassurance that a more capable other can step in if something goes wrong. These are all qualities that are not easily transferred over into online contexts.

Another key issue to consider is the possible moral diminishment of education as a social, supportive and shared endeavour. It could be argued that the ideal of the completely autonomous and wholly self-sufficient individual ignores the realities of social life and social practice. As Marc Augé reasons, whatever any individual does ‘always has a social dimension: it depends on others. ... It is sometimes said that an individual ‘constructs’ his future, but others participate in that enterprise which is primarily a manifestation of social life’ (2014, p. 2). This raises considerations of how education might perhaps be most successful when it takes place as a shared, collective, mutual and reciprocal endeavour. It could be argued that education is *not* a wholly individualistic pursuit, based on competition and rivalry and what is best for oneself. Instead, there is something to be said for learning in ways that are *not* the most comfortable, familiar and convenient for oneself. Perhaps there is something to be said for learning with other people who might *not* be to one’s choosing or tastes. Learning is not something that is easy and/or solely about oneself. In this sense, as Augé concludes, ‘An absolutely solitary individual is unimaginable’ (2014, p. 2).

## iv) Recognising the inequalities of individualised learning

Alongside these concerns are key questions of the fairness and equity of arranging education along individualised lines. Despite prevailing claims of democratisation and empowerment, it seems that many forms of technology-based education are not of equal benefit to all people. For example, the optimistic claims surrounding the rise of MOOCs at the beginning of the 2010s contrasted with the rather uneven outcomes that tended to result. Generally, these courses are found to be of most benefit to well-resourced individuals who already have successfully engaged in higher education, and are therefore well equipped to progress through university-level learning

(Hansen and Reich 2015). As Hood, Littlejohn and Milligan (2015, p. 83) suggest, graduate participants are best able to ‘self-regulate’ the required ‘self-directed, non-linear nature of learning engagement in MOOCs, which requires individuals to determine and structure their learning largely independently’.

The patterns of participation often associated with such forms of digital education suggest a tendency for digital education to replicate what is sometimes referred to as the ‘Matthew Effect’ – that is, doing most for those who are already educationally engaged and advantaged. In other words, while digital technologies might increase opportunities for individuals who are well resourced, motivated and already educated, such benefits tend to be experienced unevenly across the general population. This, in part, highlights the different understandings and expectations that underpin claims of ‘flexibility’, ‘democracy’ and ‘empowerment’ in many discussions of education and technology. As Larry Cuban observes:

Keep in mind that using the word ‘democracy’ can mean different things to different people: an individualistic-driven version, a communitarian one and a deliberative form. Such definitions matter and need to be made explicit. (2015, p. 432)

Broadly speaking, claims surrounding the capacity of digital technology to make education fairer for individuals relate to two differing understandings of ‘fairness’. On one hand, technology can be celebrated as a ready means of addressing inequalities of *educational opportunity*. Put simply, the idea of ‘equality of opportunity’ refers to the choices and chances that individuals have in life. This approach to equality is based on the belief that every individual should have an equal chance to access resources and opportunities. In this sense, digital technology is seen as an ideal means of providing individuals with the freedom to choose from a diversity of educational opportunities. This emphasis on choice and diversity is linked to the notion of ‘meritocracy’. In a meritocratic society, all individuals should have an equal right to compete against one another to succeed, regardless of prior circumstance and background – as Sheldon Richmond (1974) put it, to have an ‘equal chance to become unequal’.

A more radical approach is the use of digital technology to address inequalities of *educational outcome*. The idea of ‘equality of outcome’ refers to the conditions and circumstances that individuals face, with it being seen as fundamentally unfair that large differences in circumstances exist between individuals or groups in a society. This approach to equality is

linked to what is often referred to as ‘social justice’ – that is, the concept of creating a society with greater degrees of egalitarianism in terms of what people actually have. In this sense, digital technology can be seen as a ready means of supporting progressive interventions that attempt to redistribute resources, power and prestige, and thereby seek to achieve equality of opportunity *and* equality of outcome. This use of technology attempts to move beyond the meritocratic idea of allowing people an equal chance to compete with one another. Instead, technology is used as a part of interventions to force changes that are often talked of in terms of ‘affirmative action’ or ‘positive discrimination’. Clearly, these latter values are not reflected in many of the forms of education described in this chapter. At best, most of these forms of digital education are concerned with providing an equality of opportunity coupled with the expectation that individuals will be able to decide and act for themselves.

## Conclusions

All the examples in this chapter contrast the potential for individualised and personalised uses of technology in education with a number of practical limitations and deep-rooted social problems. One of the key questions underpinning all these forms of technology is whether they can support individuals in developing and sustaining *new* patterns of engagement with education. Indeed, this is an issue that has recurred throughout this book, challenging expectations that digital technology can universally improve educational experiences. For instance, claims are often made that the ability to engage flexibly with online education (rather than within the confines of ‘bricks and mortar’ educational institutions) will encourage individuals who had ceased to participate to re-engage on their own terms. These are similar to claims of digital technology being able to widen and enhance public engagement in other areas such as politics and health services. Yet, in most cases it seems that technology-based services and interventions benefit some individuals more than others. Despite substantial efforts to ‘empower’ all individuals, it appears that there are still some who are ‘superserved’ and others who are ‘underserved’ by digital technology.

Many of the examples of digital education featured in this chapter suggest that technologies often fit around (and are shaped by) the existing patterns

of people's lives. In this way, whether or not someone engages with an online course or TED talk is likely to reinforce – rather than disrupt – what he or she has done previously in his or her life. This suggests that new forms of digital technology are likely to do little to alter pre-existing educational behaviours and dispositions. From this perspective, it is perhaps understandable that access to digital technology often 'fails' to make individuals any more likely to participate in education and (re)engage with learning (White and Selwyn 2012). It could be concluded that digital technologies, at best, increase educational activity among individuals who were already educationally active. However, digital technology is far less likely to widen participation among individuals who had previously not taken part in formal or informal learning.

Relating back to discussions from previous chapters, it would seem that the purported benefits of technology-supported individualisation of education relate to wider issues of values and ideology. The forms of individualised and personalised education outlined in this chapter all reflect wider ideological beliefs regarding what education is for, and how education should be arranged. The desirability of 'adaptive learning' or 'hacking your own education' depends very much upon how we see matters of 'fairness', equality and justice, as well as how we perceive the notion of 'individual'. On one hand, there is much to be said for helping those who are most willing and/or able to learn in ways that better fit their needs, circumstances and interests. On the other hand, it can be argued strongly that education is a part of society that needs to benefit the diverse interests of millions of not just unique 'singular' individuals, but also the 'universal' or 'generic' individual (Augé 2014). In other words, more attention needs to be given to developing the 'best' educational uses of technology in terms of the greater good (instead of simply the personal gain of some individuals).

This is a provocative conclusion to reach, and certainly goes against the spirit of contemporary technology design as well as the increasing individualisation of society in general. Yet, if we genuinely want to develop forms of education and technology that are of benefit to all, then we need to think beyond current forms of technology that are likely to most benefit those individuals who already do well in terms of engaging in education and/or using digital technology. Of course, it would be naïve to imagine that fully equitable forms of educational participation can be engineered for all, yet it should be possible to strive for similar possibilities to exist for the large majority of people. As Marc Augé concludes, 'The object of democracy is not to ensure happiness for all, but to create the conditions for it as a possibility

for each individual by eliminating the most obvious sources of unhappiness' (2014, p. 2). At present, it might be reasonable to conclude that individualised and personalised forms of technology-based education fall short of such ambitions.

### Further questions to consider

- How genuinely individualised and personalised can education applications, systems and software be? To what extent are 'individualised' forms of digital education inevitably built around 'ideal types' of learners and learning?
- What are the advantages – and disadvantages – of placing responsibility for education on individuals rather than institutions? Who else might be expected to take responsibility for the success of technology-based education – particularly in terms of those individuals who are less able to take advantage of online opportunities?
- Should we simply accept that some individuals will do better than others when left to organise and direct their own education engagement? Can 'DIY' principles ever work in education or are they simply too idealistic?

Please go to <http://www.bloomsbury.com/cw/education-and-technology-second-edition/> to download and listen to discussion around these further questions.

## Further reading

There are many good books on the topic of digital technology and the individualisation of society. One of the best examples is the following:

Rainie, H. and Wellman, B. (2012). *Networked: The New Social Operating System*. Cambridge, MA, MIT Press.

There are also many books on the topic of education, individualisation and personalisation. One such introduction is the following:

Zmuda, A., Ullman, D. and Curtis, G. (2015). *Learning Personalized: The Evolution of the Contemporary Classroom*. New York, Josey Bass.

This book – by the singularly named Professor Kinshuk from Athabasca University – offers a learning design perspective on the form and theory of adaptive and personalised education systems:

Kinshuk (2016). *Designing Adaptive and Personalized Learning Environments*. New York, Routledge.

This edited collection offers a broad overview of digital badges:

Muilenburg, L. and Berge, Z. (eds) (2016). *Digital Badges in Education*. New York, Routledge.