

DEMOS

THE LEARNING CURVE

ANNEX 2: EVIDENCE REVIEW

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EVIDENCE REVIEW: WHAT DO WE ALREADY KNOW ABOUT ONLINE LEARNING?

This annex sets out the findings of a comprehensive review of the relevant literature pertaining to two main research questions across three sections:

- What is learning and online learning?
- What do we already know about the impact of online learning in changing people's lives, society and the economy?

What is learning and online learning?

Learning is generally defined in a very broad sense: a semi-permanent change in behaviour as a result of experience.¹ This can encompass a breadth of everyday experiences that impact how we behave. There is a consensus in the literature that learning is best defined by examining outcomes instead of processes, as a focus on processes may overlook what we subconsciously learn.² Indeed, learning can happen when we engage reactively as well as proactively with things in our lives and may therefore be best understood as something that cannot

necessarily be traced to specific actions or moments.³ For example, the Organisation for Economic Co-operation and Development (OECD) defines learning as:

*"any change in behaviour, information, knowledge, understanding, attitudes, skills, or capabilities which can be retained and cannot be ascribed to physical growth or to the development of inherited behaviour patterns."*⁴

Importantly, these definitions of learning do not distinguish between lifelong learning and learning; adult learning is not necessarily different to childhood learning.⁵

Rogers outlined three distinct places where we are likely to learn throughout our lives: in social contexts (e.g. the roles and relationships we have with loved ones as guardians or children); occupational contexts (e.g. what we do in our-to-day lives, from caring for people at home to working); and ourselves (e.g. the ageing process or new hobbies we pick up

1 De Houwer, J., Barnes-Holmes, D., & Moors, A. (2013). What is learning? On the nature and merits of a functional definition of learning. *Psychonomic bulletin & review*, 20(4), 631-642. (Chapter 1); Rogers, A. (2003). What is the difference?: a new critique of adult learning and teaching. Leicester: NIACE.

2 De Houwer, J., Barnes-Holmes, D., & Moors, A. (2013). What is learning? On the nature and merits of a functional definition of learning. *Psychonomic bulletin & review*, 20(4), 631-642.

3 "It is a mixture of both proactive and responsive engagement with our lifeworld, 'the process whereby knowledge is created through the transformation of experience'" in De Houwer, J., Barnes-Holmes, D., & Moors, A. (2013). What is learning? On the nature and merits of a functional definition of learning. *Psychonomic bulletin & review*, 20(4), 631-642.

4 OECD. (2003) Glossary of statistical terms. online at <https://stats.oecd.org/glossary/detail.asp?ID=741> (accessed 13/02/2020).

5 Rogers, A. (2003). What is the difference?: a new critique of adult learning and teaching. Leicester: NIACE.

out of interest).⁶ This broad spectrum of learning highlights the varied nature of learning activities and experiences.

DIFFERENT TYPES OF LEARNING

With learning encompassing such a lot of our lives, academics and policymakers alike have tried to break it down into different types.

The literature often distinguishes between formal and informal learning. Informal learning describes the unstructured learning that happens unprompted in daily life⁷, whilst formal learning refers to organised, structured, intentional and objective-led learning.⁸

To better understand this distinction it is useful to consider real-life examples. Attending a series of night classes to improve your French language skills is an example of formal learning; the learning that occurs as a result of taking an alternative route to work is informal learning.

'Non-formal' learning lies between these two categories, describing all types of learning in between informal and formal learning. It is likely to be an organised but relatively unstructured form of learning, such as visiting a museum or reading a novel.⁹

In practice, there are lots of different types of learning lie in between formal and informal learning. As a result, the Open University argues we should think of a learning spectrum instead of distinct categories of learning.¹⁰ Others also argue that, in practice, the three types of learning tend to be found together; formal learning tends to be supported by informal education that happens at home or in a local community, for example.¹¹

There are other ways to define and distinguish between different types of learning. The OECD defines different types of learning pedagogically: the theory and practice behind learning (see box below). These three types of learning cover a spectrum of self-taught informal learning to formal education contexts. The OECD argues that all three types of learning are crucial to achieving 'adaptive expertise', defined as "the ability to apply meaningfully-learned knowledge and skills flexibly and creatively in different situations".¹²

PEDAGOGICAL TYPES OF LEARNING

Guided Learning: Teachers take the main relevant decisions about the goals of learning, learning strategies and how to measure outcomes, while taking care of feedback, judgements and rewards.

Action Learning: Learners play a much more active role in determining the objectives of the learning than in guided learning, and there is a strong element of learners self-organisation and self-planning.

Experiential Learning: Learning without predetermined objectives and without direction from instructors. Learning is determined by context, learners' motivations and others that they come into contact with. This type of learning is best understood as a by-product of the activities in which people are involved.

6 Ibid.

7 Holland, A. A. (2019). Effective principles of informal online learning design: A theory-building metasynthesis of qualitative research. *Computers & Education*, 128, 214-226.

8 OECD (2019). Recognition of Non-formal and Informal Learning - Home. online at <http://www.oecd.org/education/skills-beyond-school/recognitionofnon-formalandinformallearning-home.htm> (accessed 13/02/2020).

9 Ibid.

10 Open Learn (2020). The informal-formal spectrum, The Open University. Online at <https://www.open.edu/openlearn/ocw/mod/oucontent/view.php?id=20920§ion=1.3> (accessed 13/02/2020).

11 Infed (2019) Non-formal learning: mapping the conceptual terrain. a consultation report. Online at <http://infed.org/mobi/non-formal-learning-mapping-the-conceptual-terrain-a-consultation-report/> (accessed 13/02/2020).

12 Dumont, H., Istance, D., & Benavides, F. (2010). *The nature of learning: Using research to inspire practice*. Paris: Educational Research and Innovation. p. 6.

WHAT IS ONLINE LEARNING?

According to Singh and Thurman, the term 'online learning' has existed since 1995, when the first Learning Management System (LMS) was developed, now known as Blackboard.^{13 14} However, others have traced the term to the 1980s.¹⁵

Definitions of online learning tend to relate to the technology of the learning, rather than specific pedagogical characteristics of online learning.¹⁶ For example, Jisc, a provider of digital education services, defines online learning as "any course, programme or training with online elements."¹⁷

An academic review in 2019 of different definitions of online learning found none of them related to the learning itself or what being online meant for learners.¹⁸ However, the authors found that there were clear themes such as physical distance and the capacity to be interactive that were present across definitions of online learning.¹⁹

The terms 'online learning' and 'e-learning' are often used interchangeably in the literature²⁰, although a key difference is that e-learning includes the use of "CD-ROM, [...] audio- and videotape, satellite broadcast and interactive TV" and other technologies that are not internet-enabled or online.²¹

Most differences in definitions of online learning are due to defining the technology or the extent to which a course is online. Whilst some definitions argue online learning should be delivered through web-based mediums alone²², others argue it should be considered online learning where the

internet plays "an important role" in the learning experience.²³ Jisc argue anyone can be an online learner and that most "online experiences are a continuation of their offline learning".²⁴

Drawing on these definitions, for this report we define online learning as any learning that satisfies the following two conditions:

1. An activity that is reliant on the internet, either in a transactional (e.g. downloading a PDF) or participatory fashion (e.g. an interactive class).
2. An activity that improves skills for wellbeing, personal, educational or economic purposes.

Condition (1) reflects the general consensus in the literature, as outlined above, that online learning is best defined in relation to its use of technology. In this instance, the relevant technology is the internet. Condition (2) reflects the consensus in the literature, as outlined above, that learning is best understood in a broad sense and in terms of outcomes - e.g. the impact of the activity - as opposed to the processes or intentions (page 3). As a result, our definition of online learning will encompass formal, informal and non-formal online learning.

13 A piece of software application used to help with the administration documentation, tracking, reporting, and delivery of educational courses, training programs, or learning and development programs.

14 Vandana Singh & Alexander Thurman (2019) How Many Ways Can We Define Online Learning? A Systematic Literature Review of Definitions of Online Learning (1988-2018), American Journal of Distance Education, 33:4, 289-306, Blackboard online at, <https://www.blackboard.com/> (accessed 02/01/2020).

15 Moore, J. L., Dickson-Deane, C., & Galyen, K. (2011). e-Learning, online learning, and distance learning environments: Are they the same?. *The Internet and Higher Education*, 14(2), 129-135. p. 130.

16 Vandana Singh & Alexander Thurman (2019) How Many Ways Can We Define Online Learning? A Systematic Literature Review of Definitions of Online Learning (1988-2018), American Journal of Distance Education, 33:4, 289-306, p. 295.

17 Lou McGill, Helen Beetham and Tim Gray (2016). What makes a successful online learner?. Jisc. Online at [http://repository.jisc.ac.uk/6498/1/What_makes_a_successful_online_learner_\(July_2016\).pdf#shorten](http://repository.jisc.ac.uk/6498/1/What_makes_a_successful_online_learner_(July_2016).pdf#shorten) (accessed 02/02/2020).

18 Vandana Singh & Alexander Thurman (2019) How Many Ways Can We Define Online Learning? A Systematic Literature Review of Definitions of Online Learning (1988-2018), American Journal of Distance Education, 33:4, 289-306, p. 299.

19 Vandana Singh & Alexander Thurman (2019) How Many Ways Can We Define Online Learning? A Systematic Literature Review of Definitions of Online Learning (1988-2018), American Journal of Distance Education, 33:4, 289-306.

20 Moore, J. L., Dickson-Deane, C., & Galyen, K. (2011). e-Learning, online learning, and distance learning environments: Are they the same?. *The Internet and Higher Education*, 14(2), 129-135, p.129-130; Vandana Singh & Alexander Thurman (2019) How Many Ways Can We Define Online Learning? A Systematic Literature Review of Definitions of Online Learning (1988-2018), American Journal of Distance Education, 33:4, 289-306.

21 Moore, J. L., Dickson-Deane, C., & Galyen, K. (2011). e-Learning, online learning, and distance learning environments: Are they the same?. *The Internet and Higher Education*, 14(2), 129-135, p. 130.

22 Vandana Singh & Alexander Thurman (2019) How Many Ways Can We Define Online Learning? A Systematic Literature Review of Definitions of Online Learning (1988-2018), American Journal of Distance Education, 33:4, 289-306, p. 295.

23 Ibid., p. 298.

24 Sarah Knight (2016) Understanding the who, what and how of online learning. Jisc. Online at <https://www.jisc.ac.uk/blog/understanding-the-who-what-and-how-of-online-learning-14-sep-2016> (accessed 13/02/2020).

What do we already know about the impact of online learning in changing people's lives, society and the economy?

We now set out the findings of a review of the relevant literature relating to two primary research questions:

- How is online learning changing the nature of education and learning?
- What impact is this having on people's lives, society and the economy?

PARTICIPATORY LEARNING

It is widely argued that the internet itself could help develop a more participatory civic culture. Henry Jenkins of the University of Southern California argues that internet users are increasingly engaged in a "participatory culture...a culture with relatively low barriers to artistic expression and civic engagement".²⁵ He describes how there is often strong support online for "creating and sharing one's creations" and that this sharing is often done under a schema of "informal mentorship whereby what is known by the most experienced is passed along to novices".²⁶

There is also agreement in the literature that online learning may engender the rise of a more participatory culture of education. US-based researcher John Seely Brown describes how digital technologies "enabled the creation of contexts that foster social interaction and meaningful participation".²⁷ He cites platforms such as Google Hangouts, which "allow one to form study groups and collaborate virtually" and can "amplify learning".²⁸ He also describes how participants in open-source communities have to participate in a useful manner, for example, by writing code that is readable, meaning participants have to make

"useful criticisms".²⁹ As a result, he argues that open-source learning communities "revolutionises learning by amplifying participants' ability to learn co-constructively".³⁰

Others have described how this online participatory learning culture represents a rejection of traditional learning approaches. Sociologist Neil Selwyn argues that online learning has seen the emergence of a culture "based around bottom-up principles of collective exploration, play, and innovation rather than top-down individualized instruction".³¹ Similarly, academics Kellner and Kim emphasise how this new participatory learning culture is likely to be more decentralized, "with multiple voices and an expanded flow of information".³² Instead of a traditional 'one-way' communication approach to teaching, online learning can support "'many-to-many' communication".³³

FLEXIBILITY, CONTROL AND CHOICE

The internet has a significant effect on cultures and experiences of learning. Many argue that the rise of online learning is leading to a new flexible approach to learning where individuals have greater control and choice over how they learn.

As Neil Morris of the University of Leeds describes, "...it's about the flexibility of learning, which means being able to alter the place and the mode of learning".³⁴ He argues that this means learners are now given greater choice about "how to integrate their education with other aspects of their lives".³⁵

Neil Selwyn similarly describes how online learning is associated with greater "social autonomy and control", with individuals offered greater choice "over the nature and form of what they learn, as well as where, when, and how they learn it".³⁶ These changes mean that online education can now be "a wholly controllable aspect of one's personal life", meaning that learning be juggled more easily

25 Jenkins, H., Purushotma, R., Clinton, K., Weigel, M., & Robinson, A. (2006). *Confronting the Challenges of Participatory Culture: Media Education for the 21st Century*. Cambridge, MA.

26 Ibid.

27 John Seely Brown (2012), *Learning in and for the 21st Century*, CJ Koh Professional Lecture Series No.4. Available at: <http://www.johnseelybrown.com/CJKoh.pdf> (accessed 13 February 2020).

28 Ibid.

29 Ibid.

30 Ibid.

31 Neil Selwyn (2014), *The Internet and Education, Change: 16 Key Essays on How the Internet is Changing Our Lives*. Available at: <https://www.bbvaopenmind.com/en/articles/the-internet-and-education/> (accessed 13 February 2020).

32 Douglas Kellner & Gooyong Kim (2010), *YouTube, Critical Pedagogy, and Media Activism*, *The Review of Education, Pedagogy, and Cultural Studies*, 32:1, 3-36.

33 Ibid.

34 Amber Thomas and Neil Morris (2017), *Is digital technology changing learning and teaching?* Jisc. Available at: <https://www.jisc.ac.uk/news/is-digital-technology-changing-learning-and-teaching-15-mar-2017-inform> (accessed 17 February 2020).

35 Ibid.

36 Neil Selwyn (2014), *The Internet and Education, Change: 16 Key Essays on How the Internet is Changing Our Lives*. Available at: <https://www.bbvaopenmind.com/en/articles/the-internet-and-education/> (accessed 13 February 2020).

alongside the daily routine.³⁷

SELF-ORGANISATION

Others have also argued that the internet provides the opportunity for self-organised education, providing new avenues for new pedagogical forms of learning. Social media, in particular, has been highlighted as able to provide learners with the opportunity to self-organise; “to seek and share questions, understandings, and resources outside of the formal virtual or campus classroom”.³⁸ The author goes on to note that this offers significant opportunities for collaborative informal and lifelong learning, perhaps because those that are most in need of lifelong learning are not well-suited by traditional educational institutions.³⁹

Some have taken these ideas in a more radical direction, calling for the internet and online learning to be used to support “educational deinstitutionalization”.⁴⁰ As Neil Selwyn describes, such logic has support with groups outside the traditional education establishment and is seen as a tool “capable of usurping the need for educational institutions altogether”.⁴¹ However, it is fair to say that such a future remains some way off and whether it would be desirable is worth considering.

THE DEMOCRATISATION OF EDUCATION?

It is often argued that the internet is an inherently ‘democratising’ force, largely because it provides a space for services or information for free, or at low cost, to people that would not usually have been able to access them.

Terry Anderson describes how the internet offers the potential for “powerful, yet low-cost, communications”, with important implications for accessibility: “communication has also ceased to be

expensive, geographically restricted, or privileged”.⁴² As a result, information and communication is made available to certain groups to whom it wouldn’t have been previously readily available, such as individuals with disabilities or those on low incomes.⁴³

These qualities have led some to argue that online learning can similarly democratise access to education. As the Khan Academy’s website describes, online learning provides a platform “where anyone can learn anything”.⁴⁴ This nods to the supposedly radically emancipatory nature of online learning, free from the shackles that restrict access to offline education. The internet is therefore portrayed as allowing education to take place on an any time, any place, any pace basis.⁴⁵

In 2013, commentator Thomas Friedman made a highly enthusiastic assessment of the potential of online higher education and Massive Open Online Courses (MOOCs), arguing that by providing people affordable education who otherwise wouldn’t be able to access it, we can help people find work or improve in their current job.⁴⁶ As a result, he concludes that “nothing has more potential to lift people out of poverty”.⁴⁷ This is often because online delivery makes learning accessible to those that would previously have found it extremely difficult to enter formal education.⁴⁸ For example, Thomas Friedman highlights the example of an autistic boy that struggles in classroom environments but, who through the website Coursera, was able to excel in an online poetry course.⁴⁹

There may also be parts of the world in which accessing offline quality education is extremely difficult, perhaps in developing countries. The internet potentially addresses this too, offering “learners increased freedom from the physical limitations of the real world”.⁵⁰

37 Ibid.

38 Terry Anderson (2016), *Theories for Learning with Emerging Technologies*, in *Emergence and Innovation in Digital Learning: Foundations and Applications*.

39 Ibid.

40 Neil Selwyn (2014), *The Internet and Education, Change: 16 Key Essays on How the Internet is Changing Our Lives*. Available at: <https://www.bbvaopenmind.com/en/articles/the-internet-and-education/> (accessed 13 February 2020).

41 Ibid.

42 Terry Anderson (2016), *Theories for Learning with Emerging Technologies*, in *Emergence and Innovation in Digital Learning: Foundations and Applications*.

43 Ibid.

44 <https://www.khanacademy.org/about>

45 Neil Selwyn (2014), *The Internet and Education, Change: 16 Key Essays on How the Internet is Changing Our Lives*. Available at: <https://www.bbvaopenmind.com/en/articles/the-internet-and-education/> (accessed 13 February 2020).

46 Thomas Friedman (2017), *Revolution Hits the Universities*. *New York Times*. Available at: <https://www.nytimes.com/2013/01/27/opinion/sunday/friedman-revolution-hits-the-universities.html> (accessed 17 February 2020).

47 Ibid.

48 Amber Thomas and Neil Morris (2017), *Is digital technology changing learning and teaching?* *Jisc*. Available at: <https://www.jisc.ac.uk/news/is-digital-technology-changing-learning-and-teaching-15-mar-2017-inform> (accessed 17 February 2020).

49 Thomas Friedman (2017), *Revolution Hits the Universities*. *New York Times*. Available at: <https://www.nytimes.com/2013/01/27/opinion/sunday/friedman-revolution-hits-the-universities.html> (accessed 17 February 2020).

50 Neil Selwyn (2014), *The Internet and Education, Change: 16 Key Essays on How the Internet is Changing Our Lives*. Available at: <https://www.bbvaopenmind.com/en/articles/the-internet-and-education/> (accessed 13 February 2020).

Cost is likely to be a barrier to people across the world, regardless of their location. Therefore, because so many online courses are free, we would think that this should expand access to education. Furthermore, there is some evidence that online delivery as part of traditional higher education degrees are reducing the cost of higher education, which we can expect would over time increase access.

In an analysis of higher education in the United States, Deming et al find some evidence that colleges are charging lower prices for online coursework, suggesting that online learning might be able to “bend the cost curve” in higher education.⁵¹ This has led some to “extend these freedoms into a transcendence of social and material disadvantage”, leading to the internet being seen as an “inherently democratizing medium” when it comes to education; “a radically democratic zone of infinite connectivity”.⁵²

Economists have also posited theoretical arguments in support of the democratising potential of online learning. Acemoglu et al note that there today exists “significant inequality in the distribution of educational resources both within countries and especially between countries”.⁵³ They argue that the ability to create ‘non-rivalrous’ education goods on the internet, goods for which the supply is unaffected by an individual or group’s use of that good, will lead to a number of important consequences, including the compression of “human capital inequality across islands”, leading to what they call “a democratization of education”.⁵⁴ This is largely a result of what the authors call a “technological windfall”: students across the world now have access to the best (“superstar”) global teachers and are no longer reliant on local provision.⁵⁵

However, some have argued that there still exist significant barriers to access online learning. Whilst the barriers to accessing online learning might be considered fairly low - access to a computer, smartphone or tablet, a decent internet connection

and minimal digital literacy⁵⁶ - for many these still represent a very significant barrier.

Alcorn et al highlight how insufficient access to computing technology and a good internet connection are significant barriers to accessing MOOCs in places such as rural India.⁵⁷ What’s more, along with having the necessary skills and equipment, self-directed learning requires a vital, often overlooked resource: free time to undertake studying. Alcorn et argue that this is particularly likely to affect women, which could help explain why just 20% of MOOC students in India are female, a significantly worse score for gender equality than India’s traditional higher education sector.⁵⁸

Other marginalised groups may also face specific barriers when accessing online learning. Seale et al’s study of disabled UK university students finds many of them lack the right kind of ‘digital capital’ to succeed at university.⁵⁹ This is because the resources available to them at these institutions are often suitable or appropriate, and they are often not able to draw on all the resources that are available to them.⁶⁰

Above we have considered the theoretical arguments in favour of why online learning democratise access to education and considered some of the potential barriers to this vision being achieved. We now turn to reviewing the evidence that evaluates the extent to which specific online learning tools and programmes have increased access to education.

It is worth noting that the vast majority of the evidence here is both US-based and relates to MOOCs, therefore we cannot know for certain whether these results will hold for different types of online learning. However, this does not detract from their usefulness: MOOCs share many similar qualities with other types of online learning, therefore we can expect some of the findings to be relevant in different domains.

51 Deming, David J., Claudia Goldin, Lawrence F. Katz, and Noam Yuchtman (2015), Can Online Learning Bend the Higher Education Cost Curve? American Economic Review, 105 (5): 496-501.

52 Douglas Murphy (2012), The Architecture of Failure.

53 Daron Acemoglu, David Laibson, John A List (2014), Equalising Superstars: The Internet and the Democratization of Education, NBER Working Paper Series, Working Paper 19851.

54 Ibid.

55 Ibid.

56 Leontyev, A., & Baranov, D. (2013). Massive open online courses in chemistry: A Comparative overview of platforms and features. Journal of Chemical Education, 90(11), 1533-1539.

57 Brandon Alcorn, Gayle Christensen & Devesh Kapur (2015), Higher Education and MOOCs in India and the Global South, Change: The Magazine of Higher Learning, 47:3, 42-49.

58 Ibid.

59 Seale, J., Georgeson, J., Mamas, C., & Swain, J. (2015). Not the right kind of ‘digital capital’? An examination of the complex relationship between disabled students, their technologies and higher education institutions. Computers & Education, 82, 118-128.

60 Ibid.

A range of studies have found that outcomes are worse for more disadvantaged pupils. A recent systematic review of the effect of MOOCs on social mobility, which evaluates 31 empirical studies, found that barriers might make MOOCs less accessible for those from disadvantaged backgrounds.⁶¹ As a result, MOOC participation is dominated by those that are more privileged; a study of 68 MOOCs offered by Harvard and MIT between 2012 and 2014 found that course participants from the US tend to live “in more affluent and better-educated neighbourhoods than the average U.S. resident.”⁶²

The same review found significant evidence that less advantaged students fare less well in MOOCs, compared to more privileged participants.⁶³ In an analysis of the rise of online learning within US colleges, Protopsaltis and Baum found that “without strong academic backgrounds” people are less likely to continue with courses that are fully online, and when they do continue, they have worse outcomes.⁶⁴ This leads them to conclude that “there is considerable danger that moving vulnerable students online will widen attainment gaps...”⁶⁵

These findings are supported in a study by Bettinger et al, who conclude that online courses are particularly challenging for the least well-prepared students and that these students do consistently worse online than in a classroom.⁶⁶ What’s more, they argue that taking online courses at college increases the chances of dropping out of college, potentially hindering their progress at college altogether.⁶⁷

However, just because MOOCs seem to be dominated by those that are already well-educated, they still appear to be providing a vital service for those who do not fall into this camp; indeed, MOOC participation is not exclusively the preserve of the well-educated and the better off.

Importantly, online courses do provide access for those that would never have had the opportunity, or inclination, to take in-person classes. For example, of the 5.8 million students taking online courses in the United States in the fall of 2014, 2.85 million of them took all their courses online.⁶⁸ This suggests that significant numbers of people would be missing out on significant quantities of training without online courses.

As Schmid et al argue, although many of the MOOC adopters have not been underserved, “there are some people for whom that was their only way to access rigorous, college-level content”.⁶⁹ They outline three distinct groups that have benefitted: those under the age of 18, those over the age of 65 and those who lack access to higher educational content.⁷⁰

We see a more positive picture emerging from a detailed assessment of Georgia Tech’s Online MS in Computer Science, which offers a highly ranked degree at a relatively low cost.⁷¹ Goodman et al argue that this programme increases access to education and that it provides an opportunity for lifelong learning, with the average applicant in-person applicant for the course a 24 year old recently out of college whilst the average applicant for the online course is a 34 year old mid career American.⁷² They highlight how 80 per cent of those admitted to the programme enroll, suggesting that few find decent alternatives and that the provision is likely meeting large unmet demand for mid-career training.

It is important to note that that this model may have been more successful from typical MOOC offers, which are characterised by Goodman et al as falling into a number of different camps: “highly ranked institutions offering online degrees as costly as their in-person equivalents, lower-ranked institutions

61 van de Oudeweetering, K., & Agirdag, O. (2018). MOOCs as accelerators of social mobility? A systematic review. *Journal of Educational Technology & Society*, 21(1), 1-11.

62 Hansen, John D., and Justin Reich (2015), *Democratizing Education? Examining Access and Usage Patterns in Massive Open Online Courses*. *Science* 350, no. 6265: 1245-1248.

63 van de Oudeweetering, K., & Agirdag, O. (2018). MOOCs as accelerators of social mobility? A systematic review. *Journal of Educational Technology & Society*, 21(1), 1-11.

64 Protopsaltis, S., & Baum, S. (2019). *Does online education live up to its promise? A look at the evidence and implications for federal policy*. Center for Educational Policy Evaluation.

65 Ibid.

66 Bettinger, E., Fox, L., Loeb, S., & Taylor, E. (2015). Changing distributions: How online college classes alter student and professor performance. *American Economic Review*.

67 Ibid.

68 Online Report Card – Tracking Online Education in the United States, the 2015 Survey of Online Learning conducted by the Babson Survey Research Group and co-sponsored by the Online Learning Consortium (OLC), Pearson, StudyPortals, WCET and Tyton Partners. Quoted by: <https://www.brookings.edu/research/promises-and-pitfalls-of-online-education/>

69 Schmid, L., Manturuk, K., Simpkins, I., Goldwasser, M., & Whitfield, K. E. (2015). Fulfilling the promise: do MOOCs reach the educationally underserved?. *Educational Media International*, 52(2), 116-128.

70 Ibid.

71 Goodman, J., Melkers, J., & Pallais, A. (2019). Can online delivery increase access to education?. *Journal of Labor Economics*, 37(1), 1-34.

72 Ibid.

offering inexpensive degrees with low labor market returns or free MOOCs with unclear returns and very high attrition rates".⁷³ This suggests that there is a need to experiment with a wide range of approaches to providing MOOCs, beyond standard forms of delivery.

To conclude, there is significant evidence that access to MOOCs, as a key form of online learning, remains dominated by higher-educated higher earners and that those from more disadvantaged backgrounds fare worse. However, it remains true that MOOCs likely to offer significant educational opportunities to those that may not otherwise have them.

HOW DOES ONLINE LEARNING AFFECT WELLBEING?

We know that higher levels of education are associated with a wide range of positive outcomes, including higher levels of wellbeing and better health.⁷⁴ Furthermore, we know that lifelong learning is particularly good for wellbeing - one study found that taking a part-time course for work gives wellbeing benefits equivalent to £1,584 of income per year.⁷⁵

Some of the benefits relating to continue to learn throughout life include: greater life satisfaction and optimism; a stronger ability to cope with stress; greater self-esteem, hope and purpose; more likely to interact with other people, building and strengthening social relationships.⁷⁶

In a systematic review of the relevant literature, the What Works Centre for Wellbeing identify eight studies that use online learning in a workplace setting and were evaluated using randomised control study designs.⁷⁷

Of these eight studies of online learning, only three had a positive impact on online learning and each of these three studies had a "social element to the learning process", in addition to the online element.⁷⁸ This "social element" consisted of group learning or discussion, and dialogue with a teacher.⁷⁹ This suggests that the opportunity to "reflect, share experiences, learn from others" is vital to achieving a positive impact on wellbeing and should be incorporated, where possible, into online learning experiences.⁸⁰

Furthermore, a survey of learners from various online learning websites found a positive impact on users' wellbeing.⁸¹ Across the levels measured - satisfaction, impact on life, life changes - the positive impact recorded was high, with many participants responding that the online learning had a significant positive impact on their lives and very significant life change.⁸² However, it is important to note that significant generalizations should not be drawn from this study as a result of the small sample size.

73 Ibid.

74 ESRC (2014), The wellbeing effect of education, Evidence Briefing. Available at: <https://esrc.ukri.org/news-events-and-publications/evidence-briefings/the-wellbeing-effect-of-education/> (accessed 13 Feb 2020).

75 Dolan, P., & Fujiwara, D. (2012). Valuing adult learning: comparing wellbeing valuation to contingent valuation.

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