

Distance learning



Distance learning (DL) is a way of studying without the learner being physically present in a classroom. It can be fully remote or 'blended' with in-person learning and is now usually underpinned by the use of digital technologies and resources. During the COVID-19 pandemic, there has been a rapid switch to DL. This POSTnote provides an overview of current trends in DL, evidence on key challenges and opportunities and potential future developments.

Background

Distance learning (DL) refers broadly to modes of teaching and learning that are not dependent on the teacher and student being physically together. It is usually underpinned by the use of digital technologies to deliver course material and establish virtual student-teacher and peer-to-peer communication and collaboration. Some elements of DL may be 'offline', such as the use of physical textbooks.¹ There is debate among experts about how to define DL.^{1,2} In this briefing, DL includes modes of learning that are fully remote and those that combine elements of in-person and remote learning (blended learning).

In 2019 the Department for Education's (DfE) education technology (EdTech) strategy set out plans to embed EdTech to reduce teacher workload, increase efficiency, improve accessibility and inclusion, support excellent teaching, and improve educational outcomes in schools, colleges and Higher Education (HE).³ In March 2020, widespread closures of schools, colleges and HE in response to the COVID-19 pandemic led to a rapid transition to fully-remote DL for the majority of learners.⁴ Some trends, challenges and opportunities in DL apply to multiple education sectors, from

Overview

- Before COVID-19, the use of distance learning (DL) was increasing in higher education (HE) but uncommon in schools.
- Assessing the effectiveness of DL is challenging and most available evidence comes from HE settings.
- Evidence suggests that the quality of learning design and teaching is more important than the mode of delivery in achieving learning outcomes.
- In schools and colleges, engaging all learners in DL is challenging. It requires parental support, integrated student-teacher and peer-to-peer communication, and access to hardware and study spaces.
- DL and education technology (EdTech) could improve accessibility and inclusion in education if the digital divide is addressed.
- For DL to be effective, teachers need adequate support and training in EdTech use and DL design.

schools to HE, whereas others are sector specific or have arisen in response to the COVID-19 pandemic.

Current trends

Over the past decade, advances in EdTech have enabled an increase in DL practices, notably in the HE sector. EdTech refers to the use of technology to support learning and the management of education institutions. It includes internet-connected hardware (such as tablets, laptops or other digital devices), online information sharing platforms and communication tools, such as virtual learning environments (VLEs), and digital learning resources.^{1,5}

Modes of delivery

DL can enable learners to engage with course material from any location via an internet-connected device.⁶ DL can be:

- **synchronous.** The teacher is virtually present at the same time as the learner(s), through video conferencing and instant messaging.
- **asynchronous.** Learners work through teaching materials in their own time, communicating with each other and the teacher via discussion boards, forums or email.

Fully remote learning

Fully remote learning describes courses and qualifications that can be completed without any in-person instruction. In HE, prior to March 2020, the majority of teaching and learning in HE was in-person.⁷ However, over the past decade, the number of fully remote degrees offered by UK universities has increased, with particular growth in overseas student registration on UK fully remote degrees.^{8,9} The Open University (OU) is the UK's first and largest HE provider of fully remote degrees with 175,719 students enrolled in 2019–2020.^{10,11} Many HE institutions also offer fully remote 'massive open online courses' (MOOCs), which are free-to-access online courses that enable users to learn new skills or gain full degrees. During the pandemic, global registrations on MOOCs have increased significantly.¹² Experts forecast that the global market for MOOCs will grow by 16.5% by 2030.^{12,13}

Prior to March 2020, schools and further education (FE) colleges rarely operated fully remote learning. Because of the pandemic, there have been periods during which schools and colleges across the UK have limited attendance to only vulnerable pupils and children of critical workers, with all others learning remotely. Schools and colleges have therefore had to rapidly switch to fully remote learning for most pupils with limited preparation, infrastructure or training in place.¹⁴

Blended learning

Blended learning combines elements of in-person and digital learning.¹⁵ There are different definitions and it can be used to refer broadly to the use of EdTech in the classroom. It is used here to refer only to the combination of in-person with remote learning.¹ For example, 'flipped learning' involves students learning core content remotely, with in-person time with teachers used for discussion, interactive activities and learning reinforcement.^{1,16,17} Blended learning is reported to be widely used across the HE sector but tracking the extent of use is difficult due to ambiguity over the definition.¹⁸ In response to the pandemic, UK HE providers report that blended learning approaches were developed for a large number of programmes and modules originally designed for in-person delivery for the academic year 2020–2021, to increase resilience.¹⁹ Survey data from November 2020 suggest that UK HE lecturers and leaders think that blended learning will become the standard model for learning in HE in the future.⁷

There are very few studies on the use of blended learning in schools and FE colleges across the UK, but it is not reported to be widespread. In response to the pandemic, in England, some schools have simultaneously provided in-person education and remote education to pupils who are unable to attend school because, for example, they are self-isolating or shielding.²⁰ In Scotland, blended learning has been used in secondary schools since the phased reopening of schools in March 2021.²¹

Digital resources and software

The UK EdTech market is growing and is currently estimated to be worth £3.5bn and the largest in Europe.²² The provision and use of information sharing platforms, communication tools and digital learning resources to support DL has surged since March 2020. However, the types of digital resources and software used differ between HE and schools and colleges.

Box 1: Department for Education-supported DL initiatives for schools and colleges

DfE has supported various initiatives to provide digital resources as part of the EdTech strategy and as part of a package of measures to support remote education in England during the COVID-19 pandemic.^{3,23} These include:

- **LearnED and LendED.** These were developed by the British Educational Suppliers Association (BESA). LearnED is a professional development programme for teachers to support best practice in EdTech use. LendED is a platform that allows teachers to trial EdTech resources for free.
- **Oak National Academy.** This provides free, teacher-made video lessons and resources. DfE supported the platform with a £4.84 million grant to provide lessons for the 2020 summer term and 2020–2021 school year.²³ The platform will continue to provide learning resources during the 2021 summer term and holidays as part of the DfE post-pandemic education recovery package.²⁴
- **EdTech Demonstrator Programme.** This supports schools and colleges to use technology to strengthen long-term DL provision and will continue into 2022.²⁵
- **Get help with technology.** This provides laptops and tablets for disadvantaged children and young people. The Government has invested over £400 million to support access to remote learning and online social care, including making available 1.3 million laptops and tablets.²⁶
- **Platforms Programme.** This is a Government-funded programme that provides state-funded schools with access to Google Classroom or Microsoft Teams.

Higher Education

Prior to March 2020, almost all UK universities were using some form of virtual learning environments (VLE); platforms such as Blackboard, Canvas and Moodle; to deliver learning materials, conduct assessments and facilitate online discussion.^{27–31} Some HE institutions also recorded and posted lectures online so that students could (re)watch them remotely in their own time.³² UK HE use of EdTech has changed since the start of the pandemic.³³ Many universities have now combined existing EdTech with additional communication tools (such as Microsoft Teams and Zoom) to recreate a synchronous learning experience. Most institutional VLEs are closed, meaning they can only be accessed by students enrolled at the institution. In 2006, the OU created 'OpenLearn', a free online learning platform. Website traffic to OpenLearn increased fivefold, from around 40,000 to 200,000 daily visitors during March 2020.³⁴

Schools and colleges

Prior to March 2020, the existing EdTech available to schools and colleges varied greatly. Around 23% of schools in the most deprived areas of England had some form of online information sharing platform and communication tools, compared with 60% of private schools.^{35,36} In response to closures, a range of platforms were adopted to support fully remote learning, such as ClassDojo, Seesaw and Google Classroom, as well as communication tools such as Microsoft Teams.^{37–40} DfE has supported several organisations to make resources freely available to support remote learning (Box 1).

Challenges and opportunities

Comparing the effectiveness of DL to traditional methods of in-person learning is challenging because research studies use different methods, inclusion criteria and outcome measures. It is often difficult to generalise findings to other age groups,

subjects or countries.⁴¹ There is little research regarding the use or impact of DL in schools and FE colleges.⁴² The most recent evidence on effective practice in DL comes from a [rapid evidence assessment](#) by the Education Endowment Foundation (EEF). This was conducted in April 2020 and reviewed international evidence from 60 [systematic reviews and meta-analyses](#) across all educational levels.⁴¹ The individual studies included were all carried out before the pandemic and the majority were in HE settings. Therefore, the findings are not directly comparable with the emergency remote learning situation in 2020–2021 and it is difficult to draw conclusions about the potential impact of DL for students in compulsory education. In June 2020, the Secretary of State for Education commissioned Sir Michael Barber to conduct a review of the shift toward digital teaching and learning in English HE since the start of the pandemic. The report was published in February 2021.⁴³ These reviews and other available evidence highlight several key challenges and opportunities for DL, outlined below.

Learning outcomes

Overall, evidence suggests that, in the HE context, the 'quality' of learning design and teaching, including adequate feedback and clear communication, may be more important than the mode of delivery for supporting learning outcomes.^{41,43–45} Research evidence from diverse educational settings suggests that DL can be as, or more, effective than in-person instruction at achieving learning outcomes for students in some subjects and contexts, with particular benefits of a blended learning approach.^{41,43,44,46–48} Learning outcomes varied between studies and included time spent on learning materials and academic attainment. Research suggests that there is no clear difference in learning outcomes between synchronous and asynchronous modes.⁴¹ Similarly, a 2020 international systematic review found that, in universities that provided both in-person and DL, there was no difference in learning outcomes. However, the measures used varied across studies.⁴⁶ Although well-designed DL courses can be as effective as in-person learning, some stakeholders warn that they are sometimes seen as a cheaper option, with providers investing less into their development.^{43,49}

There are limited data on DL outcomes in schools and colleges. Available case studies suggest that fully remote learning requires a degree of autonomy that is best suited to motivated, older students.⁵⁰ The largest study of blended learning was a trial of flipped learning for maths for Key Stage 2 pupils in England.⁵¹ An evaluation by EEF found that pupils made around 1 month of additional progress compared with students in schools using purely in-person learning and that teachers were positive about the approach.⁵¹ In the context of the pandemic, research by Ofsted found that fully remote DL was not a full replacement for classroom teaching, but did mitigate the learning loss that children experienced.⁵²

Learner engagement

Learner engagement and motivation are key to effective DL. In the HE sector, the dropout rate for DL degree programmes is considerably higher than for full-time in-person programmes, with graduation rates for DL often below 20%, compared with around 80% for in-person.^{53–56} However, DL courses often do not have minimum entry requirements (such as A levels) and

many students study part-time due to work or family commitments, which impacts on the dropout rate.⁵³ Engaging school-age learners in DL can be more challenging than for independent learners in HE settings.⁵² For school-aged children, parental support in DL is important for achieving learning outcomes, but there is currently limited evidence as to which specific interventions support improved learning outcomes.⁵⁷

Evidence indicates that engagement is supported by:

- **Robust learning design with integrated feedback.** For example, by embedding student-teacher communication into learning through live discussions and feedback.^{58–61} A study in June 2020 found that schools using a VLE had an 8% higher pupil engagement level and that disadvantaged pupils were more likely to be highly engaged compared with schools not using VLEs.⁶² Building learner independence, for example, by prompting students to reflect on their work and by using checklists or daily plans is also effective.^{41,48}
- **Enabling peer interaction.** Encouraging collaboration between students, including through peer marking and live discussions, can motivate students and improve learning outcomes, but this may be age-group dependent.^{41,63} In HE, it can build a sense of belonging and support retention.⁴³
- **Access to suitable IT and study space.** A national survey of school teachers in May 2020 found that 81% reported lower engagement from pupils with limited access to IT and study space.⁶² Research by Ofsted found that school students spent longer engaging with resources when using laptops compared with phones.⁴⁸ Improved interoperability between digital programmes, enabling them to function together, can also prevent lost learning time.⁶⁴

Health and well-being

In HE, in a survey of undergraduate students in November 2020, 58% reported that their mental health was in a worse state than at the start of the pandemic.⁶⁵ Negative impacts on HE students' mental health and well-being during DL could be pandemic-specific.⁶⁶ However, feelings of loneliness can occur with DL and good learning design is important to support well-being.⁴³ In the context of the pandemic, DL may negatively impact children and young people's health and well-being through reduced social contact with friends, academic stress and increased screen use, as well as causing increased strain and conflict in child-caregiver relationships.^{67–71}

Assessment

Research shows that well-designed, technology-enhanced assessment can be used both to monitor and evaluate student learning. For example, technology can help learners remember key ideas and information through retrieval practice and self-quizzing and provide personalised, adaptive and interactive feedback in real-time.^{41,61,72} However, the evidence base for what works best for integrating assessment into DL in different contexts is limited, particularly for formal exams and for assessment of vocational courses.^{73,74}

Most education sectors faced challenges with assessment during the pandemic because existing exam-based assessment models are not designed for DL.^{52,67} Anecdotal evidence from the pandemic suggests that changes to assessment practices, including less reliance on high-stakes final exams and greater

use of formative assessment, could have a positive impact on student attainment.⁶⁶ The Barber review found that digital assessment could enhance standards and consistency if done well, but that scalable approaches were needed.⁴³ Schools have tended to monitor attendance and engagement, but have found it more difficult to assess conceptual understanding.⁴⁸ Cheating and plagiarism are a concern in DL and some institutions have used secure digital exam platforms or proctoring (virtual invigilation using webcams). However, evidence suggests more work is required to address risks and maintain standards.^{7,43,52}

Accessibility and inclusion

Learners with Special Educational Needs and Disabilities

Research suggests that DL approaches can effectively support learning in some students with Special Educational Needs and Disabilities (SEND), as long as its design is inclusive and accessible.^{75–77} However, there are very limited data on how DL can best be used to support learners with different types of SEND and support may need to be tailored to the needs of individual learners.⁵² In the HE sector, DL may increase accessibility for certain groups, such as learners with a disability affecting mobility. For example, the OU is the largest provider of degrees for students with a registered disability in the UK.⁷⁸ School-age learners with SEND may need additional support to engage effectively with DL.⁵²

Widening participation in Higher Education

DL allows a more flexible approach to learning, allowing students to study alongside family or work commitments.⁷⁸ In HE, DL has the potential to widen participation of under-represented groups of UK and international students who may be unable to relocate for financial or cultural reasons.⁵⁴ DL courses may also increase recruitment of 'middle income' international students who want the prestige of a UK university degree but are unable to, or do not want to, relocate.⁷⁹

Digital exclusion

A major barrier to effective DL is the digital divide—the gap between those who have full access to digital technologies and those who do not. Learners may be digitally excluded for multiple reasons (see [COVID-19 and the Digital Divide](#)).^{80,81} The main factors that influence the digital divide in the UK include age, region, socioeconomic status and whether a person has a disability.⁸¹ A report by the Sutton Trust found that, in January 2021, just 10% of teachers reported that all students had access to the internet and devices.⁸⁰ Experts are concerned that the digital divide will stall progress made in the past decade to close the attainment gap between disadvantaged and non-disadvantaged pupils.⁸² DfE has launched a pilot study to improve remote learning for disadvantaged pupils (Box 2).²⁶

Teacher support

Teachers across education sectors cite a lack of confidence and time to master new digital technologies and DL approaches as key barriers to their use.^{83–85} In HE, evidence suggests that the digital confidence of staff increased substantially between March and September 2020, but that lecturers feel under significant pressure to adapt and deliver DL.^{7,83} In schools, a YouGov representative survey of school teachers in December 2020 found that 86% reported that their workload had increased.⁵² School teachers also reported lack of social contact and isolation from colleagues and pupils as a key challenge.⁸⁶

Box 2: Pilot study to improve remote learning for disadvantaged pupils

School closures have had a disproportionate impact on the most disadvantaged pupils.^{82,87,88} As part of DfE and Nesta's EdTech Innovation partnership, Nesta launched the EdTech R&D programme. The programme awarded £485,000 to six EdTech companies to test improvements in remote learning for the most disadvantaged pupils in 62 schools in England. Funded projects are developing improved technologies to improve mobile accessibility, assessment, parental engagement and support to independent learning, including solutions for students with English as an additional language.⁸⁷ Programme outcomes will be assessed by monitoring teacher, parent and student engagement with initial data expected after spring 2021.

Research suggests that ongoing and integrated high-quality teacher continuing professional development (CPD), combined with high quality working conditions and strong leadership, is key to enabling effective DL.^{43,89} Evidence indicates that for DL to be effective, CPD needs to support teachers to develop skills in effective learning design for DL approaches, as well as how to use EdTech tools.^{63,90} A 2020 rapid evidence assessment suggests that using DL within teacher training and CPD can be effective and offers increased flexibility for CPD.^{44,47}

The future of distance learning

Many experts suggest that the pandemic has shown the potential of DL and EdTech to support effective learning and that some forms of DL, such as blended learning, are likely to become increasingly embedded in education at all levels post-pandemic.^{91,92} However, there is debate about how to build robust remote learning capabilities and infrastructure into the education system and more high-quality research into DL in schools and colleges, outside the context of the pandemic, is required.^{91,93} Experts broadly agree that to create a more effective, inclusive and resilient education system, the digital divide needs to be tackled, teachers require adequate support and training in DL design and EdTech and investment in digital infrastructure is needed.^{36,43,67}

An increase in the use of DL and EdTech in the future could have wide-ranging impacts. These include:

- **Supporting digital skills for life and work.** Accreditation for more informal DL, such as MOOCs, could provide learners with more flexibility to rapidly upskill for a job, without the time and financial commitment of long-term study. This could help to address the workforce skills gap and improve student career prospects.^{43,94–96}
- **Personalising learning programmes.** Artificial Intelligence tools for education (AIED) and learner analytics could be used to personalise learning and to automate some marking and administrative tasks.^{43,97,98} Nesta has argued that government leadership and public funding is needed to shape growth of AIED to improve the school system.⁹⁸
- **HE models.** Wider use of DL could provide an additional revenue stream for universities, as student numbers are not limited by campus space.^{30,43} However, it may also require investment in redesign of campuses to accommodate blended learning approaches.⁷ Job roles may also change and universities may need to create new jobs, including for learning technologists and content creators.^{30,43,83}

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