

# The value of innovation in teaching and learning

Today, more than ever, innovations in university teaching are supporting universities to prepare students for their future careers, equipping them with the skills and experience they will need to succeed.

Innovation in university teaching is nothing new. Today's best practice represents centuries of incremental changes, each improving students' learning, and each making use of the most up-to-date teaching research and developments in technology.

During the twentieth century, lecturers moved from using blackboards to using overhead projectors to using Microsoft PowerPoint. Students have gone from completing assignments using pens, then typewriters, then computers. Adopting new technologies in educational settings is not unusual.

The past decade especially has seen education providers expanding the use of digital enhancements to teaching. As well as the fully online courses delivered by some universities, there has been a growth of blended learning (a mix of in-person and online content within a course), hybrid learning (providing both online and in-person provision for individual lectures or other course content), and increased use of digital tools and resources within the physical lecture theatre, seminar room, or laboratory.

## The impact of the Covid-19 pandemic

The Covid-19 pandemic has accelerated these developments, although there was inevitable disruption. Universities had to design and deliver online content without the opportunity to plan and review material to the same extent as they normally would do. Delivering online content was also necessary for all courses irrespective of subject.

However, many of the changes demonstrated that embracing online components could bring benefits, such as improving accessibility. Recorded or live online lectures

have ensured that students finding it difficult to attend in person due to work, caring responsibilities, or disability are not missing out. Similarly, the wider move away from examinations has also shown that moving to more authentic assessment methods can help to address awarding gaps.

The pandemic's unplanned experiment with the expansion of digital provision has also identified where digital tools, either online or used on campus, supplement and reinforce learning outcomes. This prepares students for life after graduation, and helps them to advance in their chosen careers. Digital devices and online applications facilitate this by:

- Allowing students to learn old skills in new ways by improving understanding and competencies.
- Providing students with the opportunity to practise new skills that are increasingly relevant in the modern workplace.

Against the backdrop of the pandemic's innovations and cultural shifts, we have investigated how universities can rethink curriculum design and the ways teaching and assessment are provided. These changes could benefit graduate skills and employability. If universities give themselves the freedom to invest in digital innovation, they have an opportunity to empower a better prepared graduate population.

# Skills and knowledge

## The value of a degree

No matter how a degree is taught, it provides students with expert, subject-specific knowledge. Degrees aren't just about learning knowledge, however. Students also develop skills during their degrees, such as necessary critical thinking skills to help them to understand the context and the limits of what they have learnt and to make appropriate use of their newly acquired knowledge. On some accredited courses, students are also required to demonstrate professional competencies.

While students' reasons for studying a degree vary, most hope to use their newly acquired knowledge and skills when they move into or return to the workplace. In a poll of students' reasons for attending university, wanting 'to pursue a particular career', '[continued] learning and development' or 'essential life skills' were some of the most highly ranked reasons, with more than half of respondents placing at least one of these answers in their top three. Meanwhile, employers, including internationally, value the skills and adaptability of UK graduates.

The importance of graduate employment is recognised by universities, and the UUK programme review framework shows that universities consider it when assessing and updating their courses. It is also evident within the regulatory framework in England, most notably in the Office for Students' (OfS) B3 condition of registration. This sets specific baseline expectations on graduates' progression into professional and managerial roles.

Employment outcomes on their own cannot tell you the quality of the course. Narrowly defined 'good' employment outcomes are not the only purpose of higher education and universities' actions can only go so far in influencing these. However, universities will always have a desire to set their students up for successful careers that can fulfil their aspirations. This means providing graduates with the full suite of skills needed in the modern workplace.

# Digitally-enhanced teaching and learning

## Teaching digital skills and knowledge

We expect a graduate's skillset to include both their subject-specific professional skills and so-called 'transferable' skills. As early as 1997, the Dearing Report recognised that 'basic information technology skills are needed in almost all spheres', and that 'the pace of change in the work-place will require people to re-equip themselves, as new knowledge and new skills are needed'. This pace of change has continued, and basic digital skills have become fundamental in ever more areas. As the idea of the 'digital native' has been shown to be inaccurate, these skills must be instilled through education.

Essential digital skills have often been taught through separate skills-focused courses, set apart from the core content of the degree. While this can have the advantage of making students more aware of having learnt this material, it can also risk low engagement with this extra, 'less important' content.

Instead, educational experts are seeing the benefit of embedding the teaching of these skills into the curriculum. This can support learning by contextualising them, and showing how they might be used and applied in different situations. For the essential digital skills that the vast majority of graduates now require, these skills must go beyond 'basic information technology skills' – which Jisc identify as 'ICT literacy'. They must also include the use of digital tools and techniques for scholarship and research, information management, media engagement, communications, identity management, and learning skills. This means digital approaches must be an integral part of all aspects of teaching and learning.

## Digitally-enhanced teaching and learning

The core, subject-specific knowledge of a degree can be taught and assessed in a variety of ways: via reading, videos, lectures, seminars, and labs, and through 'flipped learning' or a more traditional teaching order. Assessment can take place through coursework and other open-book assessments or closed-book exams. Each of these

methods can be used in different contexts to strengthen students' acquisition and understanding of knowledge and skills. All of these techniques can be implemented with more or less 'digital enhancement'.

Work by the [European University Association](#) has shown that between 2014 and 2019, 'digitally-enhanced learning and teaching' expanded greatly across member institutions. This expansion helped universities to prepare for the rapid implementation of fully-online learning that would take place in 2020 and also led to major innovations in teaching methods, as well as improvements to collaboration and access. These improvements to teaching are an important legacy of those years of gradual changes, as well as of the pandemic's rapid shifts, and must not be lost in any attempts to return to a fictionalised, 'digital free' pre-pandemic world.

### **University of East Anglia: Peer-Enhanced e-Placement**

Face-to-face placements for University of East Anglia Occupational Therapy students were suspended due to the Covid pandemic, forcing an emergency response to progress their placement learning.

The [Peer Enhanced e-Placement \(PEEP\)](#) was created by Professor Lisa Taylor, with placement learning outcomes at the heart of its design and delivery.

The PEEP is delivered entirely online, robustly designed using [evidence based online and peer group pedagogy](#), further detailed in a [recent book](#). PEEP research reported that students not only achieved their placement learning outcomes, but that PEEP added valuable in depth learning in areas such as professional reasoning and team working. PEEP has been shown to be adaptable and adoptable across over 20 professions and fields, is included in higher education employability strategy development, and was a case study in a [Council of Deans of Health placement strategy report](#). PEEP offers a quality and sustainable evidence-based placement model.

## **Meeting learning outcomes**

Online provision, and the more widespread use of digital technologies in learning, are not merely a way to replace more traditional teaching approaches. Instead, they can

represent the best of innovation, allowing both new content and the more effective teaching of existing course aims.

## **Online discussion**

Online discussion has been shown to be a useful aid to learning. This has ramifications for the ways that universities design their courses and supports the actions of institutions. For example, the University of East Anglia's Peer-Enhanced e-Placement programme allows for structured peer-support of learning, as well as improving employability by giving students access to a wider portfolio of learning opportunities than would be provided by a traditional, in-person placement.

## **STEM subjects**

In STEM subjects, digital or digitally-enhanced simulations of laboratory or medical processes may appear to lack much of the complexity and depth of their 'real' counterparts, but this can be an asset. As well as providing more opportunities for practical work, simulations can provide a simpler, more-controlled stepping stone between theory and reality.

Medical students will practise surgical techniques on mannikins before cadavers, and cadavers before living patients. Similarly digital, or digitally-enhanced, simulations of medical situations provide an even lower stakes environment to practice techniques, where everything is reversible and the emotional pressure of working on a real person is not present.

Students then feel more confident when transferring to real-world scenarios, and can get more out of their learning by being better prepared for employment in clinical settings, because they are better equipped at an earlier stage with foundational skills.

## **Science teaching**

In science teaching, laboratory simulations allow students to familiarise themselves with equipment without the risk of breakages, and allow them to conceptualise how the experimental setup links to their theoretical understanding without the additional cognitive load of sounds, smells, and safety procedures, acting as a stepping stone to the 'full lab'. These simulated labs are useful even when used after the in-person

experience, providing an opportunity to reinforce lessons learnt and, being guaranteed to produce the correct results, disrupting the acquisition of misconceptions.

None of these uses of simulation are about replacing the real-world practical experience; instead, they ensure that when students reach that stage, they can maximise the effectiveness of their learning. Employers can be reassured that new recruits are well practiced in the skills required.

### **Medical Schools Council: Virtual Primary Care**

Using recordings of real GP consultations, accompanied by teaching points and student activities and managed by a tutor, provides students at UK medical schools with learning content intermediate between traditional classroom teaching and healthcare placements.

The videos and activities delivered in the Virtual Primary Care programme provide students with exposure to the content of GP consultations, with the additional benefit of these being contextualised, and curated to provide exposure to a more diverse array of people and conditions than will be encountered on most students' placements.

Initially provided to medical schools due to the disruption of the Covid-19 pandemic, Virtual Primary Care has ongoing value as a supplement to other teaching and learning.

## **The new normal workplace**

Graduates are now expected to be competent in digital skills. The pandemic saw dramatic shifts in working patterns and flexible working models are becoming increasingly popular, with 65% of employers now expecting new hires to be able to work remotely. Just as past shifts in the labour market changed skills needs, as the focus of the economy moved from manufacturing to business services, higher education must adapt again to the needs of employers by instilling essential digital skills so that our graduates remain competitive.

The skills profile of modern graduates must be different and must be broader than before. Transferable skills are often more important than subject-specific expertise. On top of this, the development of new technologies has allowed business to become more efficient, but has required a supply of suitably-skilled graduates in order to do so. Meanwhile, the increased availability of graduates has allowed more jobs to demand, and benefit from, graduate skills.

As well as upskilling existing jobs, emerging sectors drive the need for digital skills. At least a quarter of new graduates do jobs that did not exist 50 years ago. Data Protection Officers, for example, are one of the top 3 emerging jobs in the UK, growing by a factor of 24 between 2015 and 2020.

This pace of change has continued, and basic digital skills have become fundamental in more and more areas. As the idea of the ‘digital native’ has been shown to be inaccurate, these skills must be instilled through education. Before the pandemic, a survey of European higher education institutions showed that 90% were aware of the importance of instilling digital skills in their students. As the pandemic has accelerated adoption of online meetings (and concerns about cost and climate have ensured that they continue to be a part of the new normal workplace), today’s graduates will need to be as adept at online presentations and collaboration as they are at working face-to-face.

## Not ‘second best’

The most recent and wide-ranging implementation of digital innovation in universities was undoubtedly that seen during the early stages of the Covid-19 pandemic. Unfortunately, due to association with disruption, isolation, and rapid change, and the necessity of implementing fully-online learning in unplanned ways, this has led to questions over the efficacy of online teaching. By extension, this concern often extends to blended learning, and by association to all digital innovation, despite the benefits outlined above.

However, as the OfS has also confirmed, while ‘pockets’ of poor practice exist (as can also happen with in-person provision), when used well the digital enhancement of teaching can add significantly to students’ learning. When implemented well and in the right contexts, the reduction or even complete removal of the ‘in-person’ components of a course is not inherently a barrier to student satisfaction.



Initially a hallmark of the Open University, fully-remote learning has become an increasingly popular option, with an expansion since 2011 in fully-remote courses being offered across the sector supported by increasing student registration on these courses.

The European University Association's research into digitally-enhanced learning and teaching showed that, before 2020, in-person teaching was already being complemented and supplemented (where appropriate) with digital tools. 75% of respondents across the European Higher Education Area were shown to have been using some form of blended learning. In those institutions that were already using blended learning to some extent in 2014, its use had become more prevalent. Digitally-enhanced learning, including fully-online offers, has therefore been being used alongside – and in competition with – more traditional approaches for some time, and has become increasingly prominent and increasingly popular.

### **University of Birmingham: Smart Campus**

In order to carry out digitally-enhanced teaching in the most effective way, with appropriate resources, many institutions are investing in their infrastructure in order to provide staff and students with the highest quality experience. This investment also helps to address other long-term challenges, bringing digital tools to bear on the continued financial and environmental sustainability of universities.

The University of Birmingham's 'Smart Campus' initiative combines the provision of high-quality digital teaching support with related tools and technologies that promote the gathering and monitoring of real-time data on the use of the university estate. This will enable the University to respond flexibly to the needs of staff and students, and to deliver new educational and operational models, providing students with the quality of digital services and educational experience they will expect. The initiative will allow for more agile use of space, and will facilitate new ways of working to increase work-life balance for staff as well as productivity and efficiency. These digital tools will also accelerate sustainability objectives, driving efficiency in building performance through more effective use of space, heating and power, minimising costs and improving the university's carbon footprint. Combining estate data with "digital twin" technology also allows different scenarios to be applied to a virtual model of the campus, making planning for the future more reliable and robust.

## What's next?

When done well, digitally-enhanced learning has the potential to improve quality in teaching and learning and student outcomes, whether it is used alongside more traditional approaches or on its own. As the sector looks ahead to how it can deliver high quality higher education not only for the graduates of today but the graduates of the future, consideration needs to be given to where digital enhancements can be introduced and further developed.

### **This can be supported by:**

#### **Targeted investment**

There are many demands on public and university finances, but these discussions need to also think about where there might be opportunities for more targeted investment. In particular:

- Investment in up-to-date technology, for innovations in teaching to be used effectively and to keep pace with developments in the sectors where graduates will be working.
- Investment in staff, to use technology effectively and to develop future innovations. This includes provision for specialist support that can stay up-to-date with the most suitable innovations in education technology, in addition to supporting wider teaching staff to make use of these.

## **Support from regulatory and professional bodies**

The OfS' [response](#) to the [review of blended learning](#) sets out how universities can make use of innovations while still meeting regulatory requirements. By linking those requirements to examples of good practice, the OfS provides universities with more certainty about whether planned changes are in line with the OfS conditions of registration. This also provides institutions looking to innovate further with guidance on how they might move forward.

Meanwhile, many professional bodies publish guidance or requirements for the approval or accreditation of degree programmes. Explicitly acknowledging and approving of technology-enhanced learning – as in the Nursing and Midwifery Council's [standards framework](#) – supports universities to innovate with confidence.

## **Strengthening communities**

Online delivery cannot be pursued at the expense of building the community of learners. We would encourage the identification and sharing of best practice to mitigate or minimise any negative impacts of online delivery, for example the best uses of communication technology, as well as the role of co-creation in engaging learners.

## **Updates to the design of courses**

As part of both updates to existing courses and the creation of new courses, universities can move beyond the lessons learned during the pandemic. They can also be making use of the wide range of emerging evidence, practice, thinking, and technology to design courses in a way that will best meet the needs of students and employers. This can be aligned to more strategic thinking on the digital transformation of their offer, and can be supported by tools including Jisc's ['Framework for digital transformation'](#).

## **Marketing**

All students are different, with different preferences and needs. It is important that universities communicate clearly with applicants on what they can expect from a course, both in content and how it will be delivered. However, this is also an

opportunity to be more up front about why digitally-enhanced teaching and learning – and, in particular, blended learning – is used, and what benefits it can bring.

### **Increased support for shared and open educational resources**

Programmes like Virtual Primary Care have demonstrated the value of a collective approach to producing resources for teaching and learning.

Collectively developed resources, delivered and implemented locally, maintain institutional autonomy and distinctiveness while reducing unnecessary duplication of effort, and providing universities and students with the best quality material.