

Emerging Trends in the New World of Education



Abstract

COVID-19 has expedited digital adoption in the education industry and encouraged educators to rethink how best to deliver education to students. Many agree that the pandemic has forced them to innovate and embrace technology to continue providing education remotely.

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In the words of José Luis Ponce López, director of IT and communications for the National Association of Universities and Higher Education Institutions in Mexico, COVID-19 has “forced universities to embark on a digital transformation process that was envisioned for 5-10 years in the future, within months.” Socio-political and economic pressures that pre-date the pandemic now seem certain to reshape the landscape of higher education.

“Innovation that would have taken a decade has happened immediately. Going back to university this year will be as if it were 2030.”

*Glyn Davis, Former Vice Chancellor,
The University of Melbourne*

Traditionally, universities teaching similar courses aimed at achieving similar outcomes, combined with some level of research, have differentiated themselves with quality. According to some educationalists, including Anthony Seldon, vice chancellor for the University of Buckingham, and Glyn Davis, former vice chancellor for the University of Melbourne, the sector will fragment into more specialized institutions—all adding value with much more intensive use of digital technology. They also expect the growth of online programs in an attempt to develop new revenue models and find the next wave of innovation.

The pandemic is not the only driver for change. Governments’ appetite for funding education that is misaligned with national and employer priorities or less-than-immediately applicable research is declining. Students continue to demand more flexibility and personalization. And in concert with the globalization of education and research, digital technology promises to bring about better, faster, and more relevant outcomes from almost anywhere.

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The growing popularity of **Massive Open Online Courses (MOOCs)** and open source learning platforms is in part a response to these pressures at much lower cost. Together with more specialized employer demands, such disruptive innovation has the potential to give rise to a new breed of degree-level qualifications made up of stacked credentials from different sources.

For primary and secondary schools, the situation varies in each country depending on the country's COVID-19 policies. Some schools have announced that younger learners can return at reduced capacity whereas others continue to offer distance learning.

The challenge for universities and schools alike is not merely a question of balancing in-person and online education—personalized or otherwise—in response to a health and safety challenge. They have to respond to a more complex Rubik's cube of socio-political, economic, competitive, and technical challenges. The economic challenge is particularly acute for universities, with many worrying that they might lose revenue with the decline in enrollment of international students and increase in competition.

Thirteen universities in **England** are under financial strain, while experts estimate **Australia's** universities may lose up to \$4.8 billion in revenue by the end of 2020, according to modelling by Universities Australia. Meanwhile, the University of Pennsylvania professor Robert Zemsky predicts that 20 percent of colleges in the **United States** will close while others will merge to be able to survive and compete with online universities and training centers.



(Click on the icons to learn more.)

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In order to reduce costs, some universities have started cutting back their physical estates, laying off staff and faculty, and reducing fees, which puts further pressure on an already strained sector. They—and others—are also looking for new revenue streams and ways to engage students in increasingly competitive markets. Their response to this challenge must be iterative and agile. Innovation in education is not a question of technology acquisition but rather leveraging technology to drive student objectives and outcomes. Indeed, this was one of the main lessons learned during the recent crisis.



Seven trends have emerged in conversations with customers and leaders across secondary and higher education.

- ✓ **Flexible Learning**
- ✓ **Employability**
- ✓ **Assessment**
- ✓ **Research**
- ✓ **Student Wellbeing**
- ✓ **Privacy and Security**
- ✓ **Digital Divide**

The next several pages will provide details regarding each of these identified trends.

Flexible learning is here to stay.

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Most universities are implementing social distancing measures on campus and in student accommodations when they reopen. A vast majority of universities across the world are offering a blend of face-to-face and online teaching and assessment for at least the 2020-21 academic year. Many schools are following shorter-term sprint plans rather than year-long strategies. Few have set out longer term plans, and none seem to be envisioning a return to the way things have been for years.

Educators now agree that **personalized education** yields **better learning outcomes**, and **technology** has accelerated this process.

The so-called flip classroom model, where students absorb new materials as homework and use classroom time for discussion, attempts to personalize the process of learning, with some success. But the content and the pace of progress remains fixed. For teaching to be more effective, educators agree that they should focus on how students are engaging with the material and use technology to drive engagement and interaction.

New technologies also offer a **personalized learning assistant** to students to remind them of their assignments and offer feedback on their learning experience. Importantly, technology can make assessment more inclusive of students with mental health conditions by allowing them to learn at their own pace. **Data analytics** also enables teachers to better understand how students are learning and what interventions are needed to support them. For example, Pearson, a multinational publishing and education company, created Revel, an analytics dashboard to show instructors student scores, performance, and time spent on assignments. This data helps instructors tailor their lessons and easily intervene with students who are struggling.

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“Real-time analytics just weren’t possible before, but now instructors can really understand how their classes are doing. As a result, instructors have more involvement and connection with their students,” says Heather Taylor, product marketing manager for Revel.

While this may be hard to scale in a traditional learning environment, **technology** makes it possible. “What has changed everything is technology,” according to one Financial Times report. “Tech companies have produced a wide array of products, courses, and platforms that now allow educators to provide a classroom full of different children-individualized material designed to suit their particular needs.” Furthermore, the same technology can easily be deployed remotely, thus providing a consistent platform for hybrid courses. According to Education Week, **97 percent** of districts in the United States of America have invested in some form of personalized learning.

The benefits of education extend beyond the acquisition of academic knowledge and skills. Non-academic co-curricular activities, life-skills, social capabilities, and the relationships that students form while at university are critical components of the higher education experience. The **short-term challenge** for universities is to acquire capabilities that enable them to deliver traditional education remotely while balancing the non-academic benefits of university education.

Universities will adjust offerings to enhance learner employability.

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The pandemic prompted a newfound urgency to reinvent curricula and offer flexible learning. There is more interest in **stackable learning**, defined as taking a selection of academic programs that can stack together to achieve a certificate or degree. For years, community colleges and further education institutions have been adopting alternative certifications in an effort to keep up with the pace of change in the jobs demanded by the labor market. While bachelors degrees are still sought after, educators are introducing shorter courses and stackable credentials that better meet the needs of their learners. They are offering flexibility on cost, time commitment, and the ability to gain certification in emerging specializations in fast-changing fields like **technology** and **healthcare**.

Stackable learning is a good fit for students balancing their education with full or part-time jobs, not least because it recognizes the knowledge and skills gained through activities beyond traditional degree courses like **certificates**, **digital badges**, and **apprenticeships**. Universities that have innovated in this space include Arizona State University and the University of Melbourne, both ranked among the top in the world by QS World University Rankings on graduate employability. This is also the case with MOOCs like edX, which allows learners to achieve multiple modules that stack up to former a larger credential or degree, all online.

Arizona State University is ranked first for innovation and is among the top universities worldwide in graduate employment. [Learn more.](#)



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Today's global recession is pushing universities to build curricula that are more **responsive** to the needs of **labor markets**. Some countries have cut public spending on universities and tying what remains to employment outcomes. Recent analysis from the UK's Institute for Fiscal Studies warned of a "significant financial threat" from the pandemic to the UK's higher education system, with losses of between £3bn and £19bn, depending on the university's international student body size and pension scheme deficits driven by the crisis, among other factors.

The UK government is offering emergency loans to universities facing financial challenges on the condition that they focus on disciplines with better job prospects for graduates.

The Australian government is also following a new **discipline-based funding model**, reducing student fees in areas of employment growth, including healthcare, science, and education.



(Click the image to learn more.)

The movement towards **graduating employable students** is likely to drive academic institutions to adjust their curricula, rebalancing it to the needs of the labor market and government priorities and offering students flexibility through stackable credentials.

Unleashing new assessment models.

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With most teaching moving online, educators need ways to assess learning remotely. In response to the pandemic, many countries either cancelled or postponed their national end-of-year tests for secondary schools. Other schools and universities attempted to move their exams online to wrap up the full academic year for their students.

The Colombian Institute for Educational Assessment and Evaluation (ICFES) is a government entity offering assessment services across all educational levels, including secondary school, higher education, and technical and technological training. ICFES supports the Ministry of Education in implementing state exams and conducting research to enhance quality education. Due to their inability to conduct these exams in person, ICFES gave senior students enrolled in technical training institutes the option to take digital exams. Amazon Web Services (AWS) Cloud enabled them to successfully conducted exams with **73,000 students**. They were also able to monitor students during the test and use AWS technologies to verify their identities.

Moving exams to the cloud makes it possible for universities to scale exams to thousands of students. The **London School of Economics and Political Science (LSE)** quickly realized that they could not accommodate more concurrent online testers on their existing on-premises infrastructure. According to Chris Fryer, senior systems administrator for digital education, they moved to the cloud and scaled their capacity to over **2,000 students**. The scalability and security of their online infrastructure was critical to facilitating this move.

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Over the medium and long term, educators have an opportunity to rethink assessment as a whole and experiment with technologies that enhance various aspects of assessment. The "[Future of Assessment Report](#)" by Jisc, an organization supporting higher education and research in the UK, argues that assessment needs to evolve as learning does, adapting to a digital environment, and that technology can aid this transformation.

"Students learn, communicate and collaborate in a digital environment; go on to work in a digital environment and yet online assessment is some way behind the curve. We believe in learning throughout life; where embracing and using knowledge, whether in work or education, is continuous."



The future of assessment: five principles, five targets for 2025, Jisc

Testing should be more **authentic** and **continuous**, assessing skills in a more realistic way. Technologies like machine learning can ease teachers' workloads by offering automated feedback on assignments. For example, Revisely is an education company that helps teachers give better feedback on students' writing assignments and performs plagiarism checks on essays.

How can machine learning save the teaching profession?
[Read more.](#)

Research will continue to internationalize and become more collaborative.

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The future of research is less certain than its predicament. For hundreds of years, research has informed teaching, and a university's reputation is still in large part based on its research. At least **two major shifts** promise to rebalance basic versus applied research, as well collaboration not only between universities but entire nations.

Firstly, governments are increasingly insistent on more immediately applicable research, citing the impact of independent research institutes funded by government and industry. Fundamentally, universities have their own interests, and industry pursues profits. Both are staunch protectors of their independence. Occasionally, however, interests converge and mutually fruitful endeavors materialize. According to Nancy Rothwell, vice chancellor at the University of Manchester and the chair-elect of the Russel Group of universities in the UK, "implementation has become as important as innovation."

Secondly, universities, research institutes, or even entire nations tackling the same opportunities cannot individually address global challenges. For example, the UN's sustainability goals including public health, climate change, security, and sustainability will require coordinated collaboration, reduced duplication, partnership, and interdisciplinarity across what are currently dispersed specialties and strengths. Several daunting barriers, including fragmented funding, restrictive bureaucracy, and measures of success persist, but progress towards specialization and collaboration seems set to continue.

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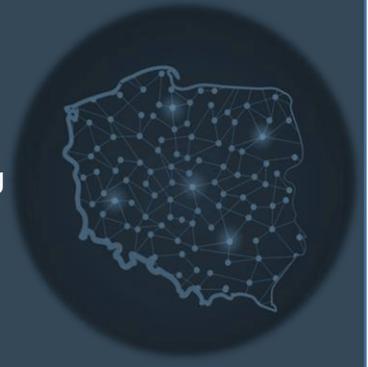
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Using high-performance storage, compute, and database resources as well as data analytics and machine learning, researchers are able to work with larger datasets and glean insights faster than ever before. Furthermore, researchers from all over the world are able to quickly access these capabilities in a secure and collaborative environment without having to invest in infrastructure or wait for it to be procured and commissioned. For example, the **University of Oxford** and **the National University of Singapore** are currently engaged in a cloud-based joint research initiative focused on human-machine collaboration. This collaboration, launched with eight specialized and intensive projects in human-machine collaboration, plans to scale to 15 universities.

Case Study

Researchers at the **University of Adelaide** are collaborating with researchers from the Plant Breeding and Acclimatization Institute (IHAR) in **Poland** on a project to study the increase crop yield of wheat. [Learn more.](#)



A growing mental health challenge.

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Online learning has the disadvantage of less **social interaction** and **connection** to the campus. Together with stress from the global pandemic, more remote courses may exacerbate mental health conditions among digital learners. Even before the pandemic, educators struggled to keep up with demand for mental health support. Research by **Boston University** shows that mental health problems correlate with dropping out of college. Some universities are using data analytics to gain insights on which students are struggling and intervene early to support them. For example, Betha Systems in Brazil offers municipal education departments the ability to use machine learning for such predictions.

In response to the crisis, some universities have set up **hotlines** and **chatbots**, which help reduce the administrative burden of increasing call volume and enable health professionals to spend more time with students. For example, the Los Angeles Unified School District in the US set up a cloud-based call center to provide mental health support to students and families a few days after the outbreak.

Universities are rethinking the layout and functionality of campuses and student accommodation, partly in response to the global health and safety challenge and partly because they believe that remote learning is here to stay. According to a recent survey by Jisc, both the universities and the students would prefer to retain the benefits of the campus community experience. Universities are considering all these factors as educators pay more attention to students' mental wellbeing amidst the pandemic and the rapid changes to their learning environments.

Helping 700,000 students transition to remote learning

How the second largest school district in the U.S. relied on Amazon to help shift from in-person to virtual instruction.

[Read more.](#)

The top two most pressing issues for presidents at public four-year institutions were "mental health of students" and "mental health of faculty and staff," while the top two most pressing issues for presidents at private four-year institutions were "mental health of students" and "long-term financial viability."

*-- American Council on Education
Survey 2020 Fall Term Survey*

Educational institutions will focus more on security and privacy of online systems.

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With much of learning taking place online, educational institutions and research centers are becoming even more vulnerable to cyber-attacks. Earlier this year, malware known as **Netwalker** hit several universities in the US, successfully encrypting systems on university networks and requesting funds in return for access to their files. Some reports indicate one of the schools were targeted because of its proprietary research related to COVID-19 vaccines. In response to these attacks, and to protect against future threats, universities are using security features such as data encryption, multifactor authentication, and virtual private networks (VPN).

Cyberattacks are an increasing threat everywhere; however, education institutions have become particularly vulnerable.

[Read more.](#)

Research theft is also becoming a larger concern for universities, especially those carrying out research on behalf of corporations. The announcement by universities that they were conducting COVID-19 vaccine-related research has made them targets for academic theft. These examples further highlighted the importance of enhancing security and transparency of systems housing academic research. **Technology** can help mitigate such incidents and guard against theft of intellectual property.

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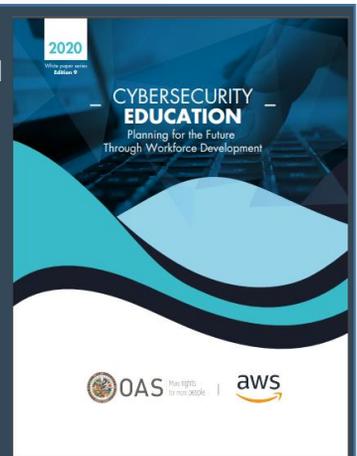
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Educators are also becoming more vigilant when it comes to **student data** and **privacy**. Attackers are increasingly threatening to reveal student and faculty personally identifiable information. With more and more students conducting their educational activities online—videoconferencing, taking online exams, and more—academic institutions increasingly have to scrutinize vendor contracts to ensure **compliance** with laws protecting student security and privacy. They also need to prioritize security awareness among faculty, staff, and students. Educational institutions have also been conducting more training for their staff and students around the security of online systems.

The increase in cyber attacks further emphasizes the need for a workforce trained in cybersecurity. **Cybersecurity Education: Planning for the Future of Workforce Development** outlines steps to build a Cybersecurity Education Action Plan (CEAP) to support cybersecurity education and address the shortage of cybersecurity skills in Latin America and the Caribbean.

[Download the report.](#)



Closing the digital divide.

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Digital learning is here to stay. Yet, many learners do not have access to the technology necessary for online learning, be it devices or a reliable internet connection. This problem is particularly acute for primary and secondary school students. According to the Brookings Institution, **less than 25%** of low-income countries provide any type of remote learning and only **36%** of residents of lower-middle income countries have access to the internet. For students from disadvantaged or low-income communities, school closures have implications far beyond their education. Schools provide them with housing, meals, and healthcare services. Loss of learning and increased risk of dropout may have long-term impact on individuals and society. Left unaddressed, this **digital gap will widen.**

There are promising solutions that are helping students connect no matter their location. US-based technology company **Kajeet Inc**, which runs on AWS, is providing learners with hotspot devices that are simple to use and are compliant with federal laws protecting student's access to online content. Already, a school district in Virginia, US, has started taking Kajeet's Education Broadband™ to those communities –they are installing the technology on buses that deployed in areas with no connectivity. The wireless signal can reach homes within 100 meters of the parked bus or the size of a football field. This is one example of a cloud solution that can help **bridge the educational gap**, which will be increasingly important as more schools decide to extend online learning in the coming months.

Other solutions include using low-bandwidth technology, including **chat apps**, to learn and connect with students and parents. In countries with no connectivity, educators are resorting to television and radio to deliver education to learners. In countries like Mexico, television teaching is how officials will make sure 30 million students get to learn this year, since 94% of households have TVs but only 60% have an internet connection.

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Investing in improvements to the **quality of online teaching** may also help students most in need. Most online learning during the pandemic has been teacher delivered. Teachers can use technology in ways that drive **collaboration, transparency, and learning** to focus on the needs of individual students, thereby helping them succeed despite challenges.

As educators work on getting students back to school, they are doing so with an eye towards equity. Although educators have demonstrated that they can find creative ways of connecting with their students, the success of remote learning long term depends on how well educational institutions **design for inclusion** and their ability to partner with government and industry to address this complicated challenge.



Conclusion

Teaching models are changing and forcing universities, colleges, and schools to adjust their business and financial models. Declining enrollments, rising health and safety costs, a decline in international student enrollment, and cuts in public funding are posing new financial challenges for educational institutions across the world. Despite these challenges, educational institutions have an opportunity to innovate and thrive in this era of rapid change and uncertainty. New technologies are increasingly demonstrating how they can enhance student outcomes, make teaching more effective, and drive collaboration and engagement.

To reap the full benefits of technology, educational institutions should embrace a **culture of change**, using this moment as an opportunity to experiment and **innovate** to meet the changing needs of their students.