The Economist INTELLIGENCE UNIT

Flattening the Multimodal Learning Curve: A Faculty Playbook

Optimising Higher Education Experiences at Each Learning Touchpoint: Remote, In-Person or Hybrid

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About this report

Flattening the Multimodal Learning Curve: A Faculty Playbook is an Economist Intelligence Unit (EIU) report, sponsored by Microsoft Higher Education, that aims to equip faculty with effective strategies, methods and tools to deliver high-quality, engaging and valuable learning experiences in any modality or setting – remote, hybrid (a mixture of online and offline classes) or in-person. In doing so, this report will share best practices to design, facilitate, assess and improve teaching approaches to continually enhance student engagement, performance, learning outcomes, and value at each and every education touchpoint.

Leveraging compelling insights from faculty and student surveys, expert interviews and desk research, this report will serve as a playbook, offering actionable solutions to key challenges outlined in the EIU report *Bridging the Digital Divide to Engage Students in Higher Education*. Specifically, this report will help faculty members to navigate the critical barriers to equity and access, digital divides, skill gaps, and socioeconomic disparities facing higher education institutions, professors and students, across and within different countries (the US, the UK, Australia and Germany), university sizes (small, medium and large), and subjects (business and management, liberal arts and humanities, STEM, and professional studies). It will provide key takeaways from pedagogical thought leaders specialising in remote and hybrid learning, student engagement, design thinking, education technology, and change management. We would like to thank the following experts for their insights:

- **Rebecca Frost Davis**, Associate Vice President for Digital Learning, St. Edward's University
- **Kassie Freeman**, founding president and CEO, African Diaspora Consortium
- **Douglas Harris**, Professor and Department Chair of Economics, Tulane University
- **John Hattie**, Professor and Director, Melbourne Education Research Institute (MERI), Melbourne Graduate School of Education
- **Michael Horn**, author and Co-founder, Clayton Christensen Institute for Disruptive Innovation
- **Dr David Conrad Kellermann**, Senior Lecturer, School of Mechanical and Manufacturing Engineering, University of New South Wales (UNSW)
- **Michaela Martin**, Programme Lead, Higher Education Policy, Governance and Management, UNESCO International Institute for Educational Planning
- **Christopher C. Morphew**, Dean, Johns Hopkins School of Education
- **Sara Goldrick-Rab**, President and Founder, Hope Center for College, Community, and Justice
- **Dr. Stella L. Smith**, Associate Director, Minority Achievement, Creativity and High-Ability (MACH III) Center, Prairie View A&M University
- **Dr. Elizabeth J. Stroble**, Chancellor, Webster University

Marianne Bray is the author of the report. Emily Wasik is the editor and project lead.

1 | **Higher Education One Year On:** Remote Learning Experiment to Future Operating Model

If ever there was ever a moment for faculty educators to embrace the opportunities presented by crisis and uncertainty, it is now. It has been more than a year since covid-19 disrupted higher education institutions, forcing faculty and students in every corner of the world to quickly pivot to remote and hybrid learning. Since then, the situation has evolved from responding to disruption and engaging in "crisis continuity mode" to reshaping future operating models toward an agile and future-focused learning system. [1]

With sufficient preparation, training, tools and bandwidth, this rapid remote learning revolution has the potential to serve as a "great equaliser," affecting almost every academic institution, regardless of geography, market, type, size or setting. While digital education solutions – including course offerings, models, platforms and tools – have been a key driver and benchmark of notably successful operations for some time, remote and hybrid learning has now become the new currency for higher education at scale and velocity.

As a result, faculty members are reimagining the use of "anytime, anywhere" approaches to navigate the new multimodal higher education paradigm. Now, a year on from the onset of the pandemic, the ability to embrace new pedagogical models, methods, tools and environments will be mission-critical to every faculty member's toolkit in 2021 and beyond. A shared sentiment among experts interviewed for this EIU study is that in-person learning will remain central to higher education's operating model, playing an integral role in cultivating higher-level cognitive skills such as critical thinking, problem solving and decision making. "There will be an influx of online and blended opportunities, but they won't overshadow face-to-face opportunities because the market is still going to desire those at all the different price points, entry levels and institutional types," says Dr Stella Smith, associate director of Minority Achievement, Creativity and High Ability at Prairie View A&M University.

To navigate this multimodal higher education landscape, future-forward, personalised student-centred approaches are required to empower students as active participants in their learning experience and facilitate peer-to-peer collaboration. For higher education institutions, that means supporting their faculty with the resources and training to adopt leading-edge technologies, such as virtual and augmented reality, artificial intelligence (AI), predictive analytics and hyper-personalisation tools.

Against this backdrop, this report will provide a playbook for faculty members to gain a competitive edge by strategically blending their offerings to not only survive but thrive in the face of unprecedented industry disruption.

Key Takeaways

- **One year on from the covid-19 outbreak**, faculty members are moving away from embracing remote and hybrid learning as a "pandemic experiment" to the new operating model for higher education.
- As a result, faculty members are **rethinking their teaching methods, standards, tools, skills and environments** in order to deliver high-quality, valuable and engaging learning experiences in any modality or setting: remote, in-person or hybrid.
- To truly augment student engagement and learning outcomes, faculty would benefit from adopting **flexible, interactive methods and technologies**.
    - Nearly one-third (30%) of students said flexible learning and interactive methods are the most effective way to boost their engagement.
    - Integrating simulations, games and next generation technologies like VR and AR can enable faculty to transform learning experiences.
- **In-person learning will still be integral to the future of higher education in 2021 and beyond**.
    - 75% of students agree that technology and digital tools will not be a replacement for actual teachers and professors.
    - A shared sentiment among the experts interviewed was that in-person learning is intrinsic to cultivating higher-level cognitive skills such as critical thinking, problem solving, and decision making.
- **In order to thrive in the post-pandemic higher education paradigm, faculty members are encouraged to continually adapt and transform**.
    - Students insist that their needs be put first, putting pressure on educators to deliver and on institutions to demonstrate greater value.

2 | Quality Standards and Expectations in a New Instructional Age

In order for faculty educators to successfully deliver remote, in-person and hybrid learning experiences, they require a clear definition of success in this new instructional age. Faculty instructors who are less familiar with remote and hybrid learning can leverage key takeaways from alternative online education offerings that emerged long before covid-19, along with their quality standards.

The growth of massive open online courses (typically referred to as MOOCs) over the past decade can provide key insights. These courses have offered fully remote education at scale around the world for some time – and although there have been concerns about student engagement and the generic feel of some of these offerings – the best courses focus on successful pedagogies and tools, alongside quality standards to enhance learning experiences. Topping the list of most popular MOOCs of all time are Stanford University's "Machine Learning" and Yale University's "Science of Well-Being" offerings, both attracting more than three million enrolments each.

According to a 2014 study, the key criteria for designing and implementing successful MOOCs can be categorised into two pillars – pedagogical and technical. On the pedagogy front, researchers found that the highest-rated courses among students and educators were those which engaged students and were tailored to specific cultural backgrounds. Employing accurate and relevant assessment methods – including online tests, quizzes, surveys and peer review – was another key pedagogical success factor. [2]

In terms of technical criteria, the most successful courses combined a compelling user interface and video content with the most effective learning tools and analytics. Overall, the research findings indicated the importance of embedding learning analytics to facilitate self-awareness and self-evaluation along with peer-to-peer reviews and gamification modules to support open assessment models.[3]

The European Alliance for Quality of Massive Open Online Courses developed a quality standards framework for MOOCs.[4] Their collaborative objective was to develop and integrate high-quality models, methods and delivery mechanisms that enhance learning processes, methodologies and assessments. As a result, the step-by-step framework outlines the specific criteria faculty instructors should apply to ensure they design, develop and evaluate online courses to meet ISO quality standards.

Since the covid-19 outbreak, quality standards have taken on a more integral role across all educational providers – they now underpin the rapid, widespread transformation of higher education globally, according to Michaela Martin, programme lead at the UNESCO International Institute for Educational Planning. In light of this, faculty have had to rethink their quality assurance procedures, especially given the shift from traditional, in-person learning to digital benchmarking approaches.[5] New quality assurance frameworks can track teaching and learning outcomes, institutional performance, operational effectiveness, economic impacts,

and technology adoption, as evidenced by the Middle East Quality Assurance Framework.[6] This quality assurance process enables instructors to accurately evaluate their course outcomes and effectiveness, particularly with tools such as the Online Learning Consortium's scorecard.[7]

Beyond assessing pre-pandemic alternative education models underpinned by these quality standards, success will also be defined by the extent to which faculty instructors understand and respond to the changing, diverse needs of students in the new learning environment. In particular, there will be an imperative to meet students' greater expectations for empathy, flexibility, guidance and feedback in their learning experiences.

While some students thrive in in-person class settings, especially those who are already disadvantaged, a smaller proportion actually perform better in online learning environments. In 2019, 11% of university "Chief Online Operators" reported that students in fully online classes performed better than their face-to-face counterparts.[8] Consequently, faculty instructors are challenged to balance this range of needs. Tools and data to effectively engage and respond to students in a variety of learning situations, and hybrid models that build on the successes of blended and remote learning, offer opportunities to address the variety of requirements.

When it comes to the value and purpose of higher education, students prioritise the ability to secure decent employment after graduation, along with personal growth and contributing to an improved society.[9] With rapid, widespread virtualisation of every sector, from remote office work to healthcare and customer service, it is important that students are at the forefront of this digitisation, starting with their education.

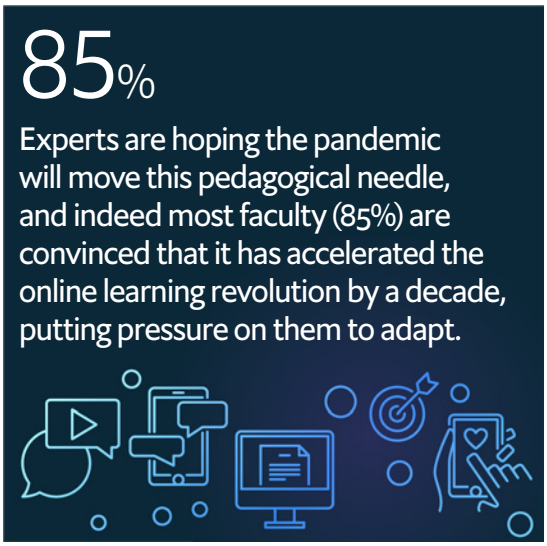
Faculty educators cannot ignore the growing trend away from traditional four-year programmes towards alternative education providers such as Udacity that offer students job-specific skills as part of a dedicated talent pipeline and lifelong learning. Alternative education providers have the potential to lower costs for students and increase the value of degrees aligning with workforce skills, while also addressing issues of equity and access. "You have to be tuned in and scan what's going on in the world and in your environment and what your students are actually going to need from you," said Dr Elizabeth Stroble, president, Webster University.

Key Takeaways

- Educators can look to massive open online courses that have been operating for a long time to see what works – key to success is understanding the role of pedagogy and technology in ensuring that these courses meet student needs.
- Adhering to quality standards, and checking their courses against these standards, are key in ensuring continuous improvement for faculty.
- Instructors understand the growing and changing needs of their students, and prepare them with the latest tools to be workforce-ready amid a shift to lifelong learning.

3 | What are faculty professors saying they need to succeed?

An effective combination of pedagogical methods and digital tools can help university educators to stay at the forefront of innovative education. Understanding what success looks like in online courses, adhering to quality standards and meeting student needs are critical. As the experience of MOOCs shows, educators should be supported in understanding the variety of pedagogical tools available to them and leveraging the vast array of digital tools in an environment that enhances this type of teaching, and with the right social and emotional back-up.



Leveraging pedagogical methods in a changed learning environment

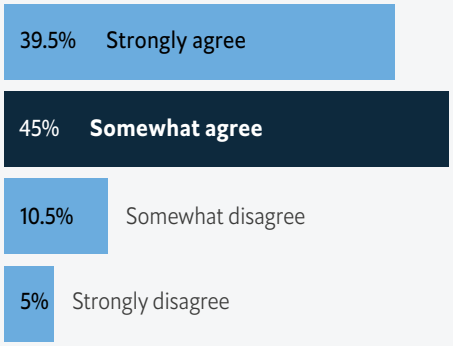
To succeed in delivering valuable learning experiences and embracing innovation, faculty professors should be equipped with the right pedagogical methods to boost engagement, outcomes and value, and to forge online connections and create communities of learners.

The pandemic has forced many educators to rethink their teaching methods, particularly those in higher education who might consider instruction as a necessary corollary to the research they rely on to maintain expertise in their field. When teaching is secondary, staying at the forefront of educational innovation is hardly a priority. Experts are hoping the pandemic will move this pedagogical needle, and indeed most faculty (85%) are convinced that it has accelerated the online learning revolution by a decade, putting pressure on them to adapt. "The notion of making the quality of teaching and the scholarship of teaching a focus in universities is a dream that hopefully will be sped up because of Covid," says John Hattie, professor and director, Melbourne Education Research Institute (MERI), Melbourne Graduate School of Education.

Opportunities now exist for educators to deliver the most up-to-date content, and to merge technology, platforms and tools with top learning strategies and best-in-class practices to deliver optimal outcomes to students. The EIU survey showed that students thought flexible learning methods, interactive learning experiences, and opportunities for self-guided learning were the most effective means to improve their engagement.

Chart 1: The Online Learning Revolution

To what extent do you agree or disagree? Covid-19 has accelerated the future of virtual education revolution by a decade.



Source: Navigating the New Learning Normal of Higher Education (Faculty) survey, November 2020

Professors Susan Bridges and Kathleen Armour echoed this view in a 2019 paper, claiming that integrated, inquiry-based, collaborative designs facilitated through dialogic approaches to blended learning lead to better outcomes.[10] Such online collaboration enables students to learn actively and work with professors as they would do in a job. "Rather than make the faculty member do all the rowing, why not give all the students oars so that they can pull the boat with you? You'll all go a lot faster, and they have skin in the game," says Michael Horn, author and co-founder of the Clayton Christensen Institute for Disruptive Innovation. Rebecca Frost Davis, associate vice president for Digital Learning at St. Edward's University, says active learning strategies and community of inquiry models are part of best practice – they encourage students to engage with the material, teacher and community, and allow them to take control of their own learning within the emerging digital ecosystem. In this scenario, educators move away from being an expert on stage and focus on a student-centred approach where the teacher becomes a mentor and ally in learning that is more emergent and personalised.

As educational reform is often one step behind the skills needed, emergent learning moves the pedagogical needle from a reactive curriculum to a proactive one where the subject and learning outcomes are fluid and move with the times. Another approach that works well is additive learning, which asserts that knowledge should supplement students' lives in ways that are useful, interesting, and applicable.[11]

An educator can now also push beyond the constraints of time and place, and open up the world of simulation, which has vast potential for higher learning, especially for field-based courses that demand hours requirements to be filled. Virtual and augmented reality and chatbots present the means to transcribe authentic real-world scenarios into repeatable and accessible modules.

With the potential for the digital integration of learning models to be standardised across many educational avenues, an aspect of learning that cannot be overlooked in the shift to online is social and emotional learning (SEL). Research over the past two decades on various school-based interventions has demonstrated that SEL is central to positive development in terms of physical and mental health, moral judgment, citizenship, academic achievement, and motivation.[12]

Students and faculty alike have raised the alarm over the long-term impact of a lack of social or emotional connection in the learning experience. The RULER approach, developed by the Yale Center for Emotional Intelligence as an online systemic technique for SEL in pre-kindergarten through high school settings, offers a template to use for higher education.[13] Within the online context, this may call upon non-faculty staff to become stakeholders in ensuring that a student is receiving all they can to be successful both online and offline.

As modalities evolve with developments in technology, educators must ensure that the rapidly evolving tools do not outweigh the quality of learning given and received. With online learning, the implications of the effectiveness of such modalities will be felt in the short and long term.

Leveraging digital tools

To succeed in 2021 and beyond, faculty educators can leverage a wide and growing range of digital tools, while adding value to their body of knowledge. As early as 2014, research demonstrated the need for innovation management in the research-focused "ivory tower" of higher education, if the sector is to remain a sustainable entity beyond 2025.[14] A 2020 University of Hong Kong study found that only 15% of teachers were "progressive innovators" with the qualities to excel in effective online teaching.

Faculty instructors can look to playbooks for insight about which tools are available and how to use them – from the initial course design to final assessment of student outcomes. In the early days of the pandemic, many faculty educators found it challenging to identify which tech tools to use, and the EIU survey showed that most universities and colleges implemented basic digital solutions such as video-conferencing tools, online platforms, web-based resources and live lectures. But only one in four faculties created hybrid learning models.

At the most basic level, educators use learning management systems to host their course work – Blackboard, Moodle and Canvas are the most popular.[15] Before the pandemic, around half used such systems as a complementary tool, with 28% using it as a holistic tool, for assignments, discussion boards and assessments. This leaves around a quarter who used the system just to upload content.[16] Experts believe that there is room for faculty educators to use these types of platforms more holistically, but also to go further and integrate them with tools that build communities of learners in collaborative and engaged ways, supporting the pedagogical methods mentioned above.

Already, innovative educators are delving into immersive technology such as augmented and virtual reality, AI and other data-based predictive and analytical tools to build on or beyond these platforms, allowing students to experience and interact in different scenarios and time periods from their devices. Education

market intelligence firm HolonIQ shows that AI is most useful for testing, experiential learning, tutoring and language. By mapping and understanding the ways in which students engage with their lessons, AI can help instructors better adjust curriculums, teaching styles, and content to suit the speed, learning capacity, and personality of each student. For example in a language course, an AI-driven virtual assistant can learn which areas of a conversation are more challenging for the student and adjust its teaching methods accordingly.

Case Study: HKU Crime Scene

The use of immersive technology can be seen in a recent Hong Kong University study titled *The Science of Crime Investigation*.[17] Educators from the pathology department joined up with those from electrical and electronic engineering to create a course that uses criminal cases to teach a diverse set of students scientific knowledge and inquiry, critical thinking and collaboration. A key part of the course is when the students co-operate to examine the crime scene, interview witnesses and collect and examine evidence. The professors decided to experiment and gamify the course, building a mobile app with chatbots supported by artificial intelligence to imitate witnesses and experts inside an interactive, three-dimensional crime scene, allowing students to explore and collect evidence. They designed a physical game board, enhanced by AR, to encourage student collaboration. Learning analytics used log books and progress bars in the user interface so that students could track their own learning. The results were overwhelming. Faculty found that students asked 30 times more questions when talking to chatbots than when taking part in class discussions; 60% of these questions were "meaningful questions", demonstrating deep understanding.

With the advent of these increasingly digitised learning environments, assessment systems and dashboards providing learning analytics, predictive analytics, intelligence tools, chatbots and success portals will increasingly become vital to assess the functionality and optimisation of these educational models, and raise a red flag if students need more help. Faculty instructors will be incentivised to learn about the increased availability of large datasets and powerful analytics engines, and to use the experience of the past to create supportive models, getting results through data-driven insights on performance. This will be critical in helping them monitor, evaluate and respond to the changing needs, expectations and priorities of students. Hyper-personalisation and learning analytics will become invaluable aids in education as new principles and methods are applied to 21st-century learning.

Case Study: Fostering a better model of digital education

One educator who is ahead of the curve is Dr David Kellermann at the University of New South Wales. The engineer was the first to use a suite of interconnected Microsoft software to deliver personalised classes to hundreds of students, teaching them professional skills on

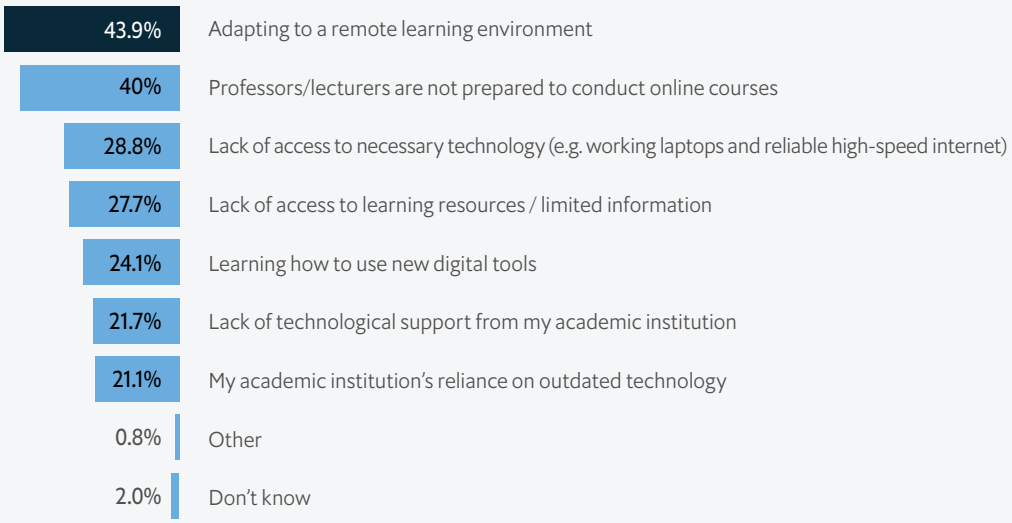
enterprise platforms useful in a work setting. He tailored these huge classes with topic channels that students could engage with. He also created an AI bot that answers student questions on its own. By using AI, Dr Kellermann was able to automate much of the educational routine, freeing up time to create a community of learners. AI also provides what he calls "the superpower of analytics" to identify students who need extra help, tailor homework to individual students, and join up groups of students together.

Optimal environment

Even if a teacher has the tools and teaching methods to deliver successful online learning, their efforts may be in vain if students are not in the right environment to engage with the teacher, their material or their peers. Connectivity may be the biggest issue. The EIU survey showed that 29% of students

Chart 2: Technological challenges

Which of the following have been the most significant technological challenges to your learning experience since the outbreak of covid-19 in your country?



Source: Navigating the New Learning Normal of Higher Education (Student) survey, November 2020

lacked access to necessary technology such as working laptops and reliable high-speed internet, with higher rates in developing countries where internet access is even more limited. A quiet space to study is just as important – 28% of students reported spending more time and effort to complete their workload because they lacked access to a quiet, productive workspace.

To provide quality online and hybrid experiences, a faculty educator must have access to the equipment and space to teach, with tools that are integrated into the classroom. Classrooms need to be set up for success, especially when it comes to dual mode learning requiring microphones, cameras and a seamless integration between offline and online learners. Faculty professors and students need access to safe, smart classrooms and workspaces, and an intelligent environment to maximise the power of data. ReportLinker predicts that the global edtech and smart classroom market will grow from US$75.24bn in 2019 to US$234.41bn by 2027. [18] Projectors, interactive displays, interactive whiteboards, printers, learning management and classroom management modules will all play a role, as well as distributed computing platforms for creating smart interconnected college environments.

Social and emotional support

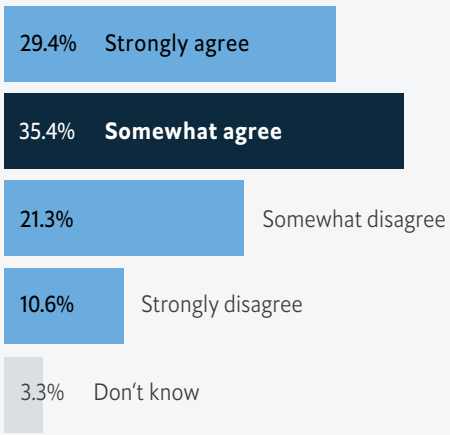
Beyond curriculum requirements, the active practice of empathy is arguably the most critical skill for faculty in a digital learning environment. Almost half of students (47%) surveyed in the EIU study claimed that they needed to spend more time and effort to complete their course workload successfully. One in four claimed that covid-19 had affected the effectiveness of their study and their ability to learn. And a striking two-thirds (66%) said that they did not feel mentally prepared for the coming academic year.

Faculty members can support collaborative community engagement and provide opportunities for social and political interaction on campus and through student groups. Faculty can also empower students to provide input to their learning experiences, supporting the design and implementation of courses and offering choice of learning methods and modalities. Co-operation can stem from a two-way dialogue between institutions and students about decisions, investments and priorities.

The needs of faculty must also be addressed, with supportive and empathic community building. Nearly three in ten faculty members in the EIU survey said that their institution was not equipped to provide mental health services for faculty and students to manage the impact of covid-19, highlighting a key need.

Chart 3: Emotional Wellbeing

To what extent do you agree or disagree? I do not feel mentally prepared for the coming school year.



Source: Navigating the New Learning Normal of Higher Education (Faculty) survey, November 2020

Key Takeaways

- There are a variety of pedagogical methods educators can use, but it takes an investment of time and effort to learn about them.
- Experts have highlighted some of the key pedagogies that work best in the online and hybrid space, including the community of inquiry model, flexible active and SEL learning.
- To be innovative educators, instructors can look beyond learning management systems and delve into augmented and virtual reality, AI and other data-based predictive and analytical tools.
- Faculty professors need intelligent environments to work from, not only to deliver their courses, but also to maximise what the data can tell them about the students and what they most need.
- Just as student needs are important, the needs of faculty are important, and supportive and empathic community building needs to be implemented.

Table of pedagogies, delivery modes and tools for multimodal learning environments

Pedagogy Models	Teaching Modalities	Tools/Tech	Student Benefits
• Flexible learning and assessment (scenario- based, reflective assignments, group project, one-minute paper, or debate-style discourse) • Deep learning • Community of inquiry • Active learning strategies • Universal Design for Learning • Emergent learning • Additive learning • Social and emotional learning • Simulated learning • Credentialing	• Blend of synchronous & asynchronous learning • Blend of online and offline at the same time (dual mode) • Blend of online and offline (e.g. one week online, one week offline) • All online (no in-person presence, including MOOCS) • All in-person • Flipped classrooms	• Digital discussion tools • Polling tools • Peer-to-peer learning and interactive tools (online presentations with commenting features, online concept mapping tools) • Creative collaboration • Extended reality, virtual reality and augmented reality • Animation tools • Predictive learning analytics • Artificial intelligence (including chatbots) • Gamification • Robotics • OpenCourseWare	• Choice in how to attend their classes • Choice to opt out of some assignments • Choice in what format to send their work • Can receive varied feedback • Student-centred • Choice in how to structure their degree (micro-degrees, nanodegrees from different providers)

4 | Faculty educators need support from leadership to adapt for a culture of innovation

"The worst possible outcome of Covid is that we go back to the old system," says John Hattie, professor and director of the Melbourne Education Research Institute. This is one in which academic jargon is conveyed in a fashion not so different from the philosophers of ancient Greece. If only a little over one-third of students are confident in the ability of their academic institution to prioritise career development and student retention, there must be critical focus on the skills and characteristics that faculty will require to deliver high-quality, engaging, and valuable learning experiences in a variety of formats, including online. "The first thing faculty need to do if they're going to teach online is think about any of their preconceived notions about what can be done online and move that out of the way so they can be creative in their vision about online learning and understand they can be successful on an online platform," says Dr Smith.

There is no doubt that more work is needed to understand the best combination of teaching methods, how best to employ the multiple tools available, and how to build up a rapport online while gauging and ensuring student success. It is also harder for some faculty instructors to track their students, and others have seen drops in grades across the board. But as the previous chapter showed, tools exist that will assist with teaching, assessing and providing quality learning experiences. To succeed, faculty educators need support from their institutions and leadership in four key areas - upskilling in pedagogy, investments in digital tools, training, equipment and access, upgrades in the teaching environment, and the provision of wellbeing services.

Investments in technology, tech support and access, tech upskilling

The Generation Z student population is the most dynamic, with the highest tech expectations, and represented 94% of students who answered the EIU survey. The majority (93%) of all students in the survey believe that online learning will benefit their education. Improving digital literacy should be at the forefront of faculty upskilling, and universities should push back against the narrative that faculty will be displaced by technology and digital tools. Three-quarters of students agree that technology and digital tools cannot replace actual teachers and professors. Better then, to provide the skills and training to reap the best of both.

Case Study: Webster University

Webster University Chancellor Elizabeth Stroble leads a higher learning institution that has been at the forefront of online learning decades before it became an immediate priority. Since the 1990s, Webster has offered online programs. Through asynchronous online learning, the university has cultivated an internal capacity to serve students from across a multitude of time zones spanning Europe and Asia, including a campus in

Uzbekistan. As it built out its asynchronous teaching capacity, the creation of its own platform, Webnet Plus, made it possible for someone at a distant location, maybe from one of the university's campuses or their home or workplace, to tune in to live classes via video connection. Webster set up its own online teaching centre with instructional designers who built content and course shells for every course and established a virtual student access portal where teachers can praise students for things they do well, but which also alerts them i f a student is falling behind. In 2021 it services more than 12,000 students. Prior to the pandemic, less than a quarter were fully online. The advent of cloud-based tools and learning management systems such as Moodle provides a model for how the transition from pandemic learning to a sustainable online learning model can be achieved.

The potential of all modes of learning will be driven also by a faculty's facility with instructional design, and whether it is able to use the tech tools available, says Christopher Morphew. The ability to master tech tools will require a breadth and depth of skills for which many professors will require training. The EIU survey showed that only one in four faculties had upskilled staff and increased investments in technology. To move beyond video conferences, and to optimise virtual learning, teaching and learning centres with specialists in pedagogy, instructional designers and technologists need to collaborate with professors and support online programming in a fast-moving field where new tools are being developed. Indeed, these centres became the first responders when the pandemic struck.

Not only will good teachers use operating programs and know how to edit basic audio and videos, an adeptness at navigating multiple programs and windows during a synchronous course will be crucial. Training is necessary to manage a live online classroom using talk, chat, slides, polls/quizzes, breakout rooms, and answer questions, Mr Morphew adds. Teachers should also be able to use mixed media to show a video, or graphics or simulations to engage the student, a method that does not rely on the faculty member to produce it all, says Michael Horn.

Upskilling professors goes hand-in-hand with technology investments – both broadly in technology infrastructure across institutions, and in making sure that students have the technology and internet access they need to ensure equitable education access. Investments may need to be made to ensure that students have the devices they need to access all different types of learning, as well as Wi-Fi. Given that the highest proportion of students in the EIU survey see online course offerings as a transformative feature of higher education within the next five years, internet accessibility will be fundamental for any future educational model. Over half of the surveyed students report concern about adequate, equitable access to the technology and digital tools necessary to join online classes since covid-19. Some schools have got round this by loaning devices to students who cannot afford them, and setting up MiFi spots. Texas-based St. Edward's University is one of these. Its HOOF fund provides students with emergency funding and resources, and it loans laptops and MiFi wireless routers.

Alongside tools that allow a professor to deliver content, tools that foster connections between teachers, students and the broader community will also need investment, as well as those which enhance social and emotional learning. The biggest American edtech funding deals in 2020 shed some light on where technology is heading. The most investment went to Roblox, a consumer online gaming platform with an educational component that teaches students how to code and design their own games. Roblox was followed by online course provider Coursera and financial management tool provider CampusLogic. Handshake, which connects students with employers, rounded out the edtech companies that sell to higher education institutions.

Environment

Institutes of higher education are highly fragmented and grossly under-digitised, according to HolonIQ. Technology is needed across the entire learner cycle and at every point of the learning journey, impacting institutional strategy from marketing to enrolment to teaching to assessment. Teachers need access to the IT infrastructure or classrooms that are digitally enabled with the equipment needed to offer multiple modes of delivery and feedback on performance. Leadership will need to invest in upgrading their teaching environments, whether campus classrooms or hubs where students can work, and to outfit their classrooms and back office functions with capacity development and support systems. Digital transformation has the potential to facilitate better communication between departments and reduce the time and cost of servicing students. The best investments will stem from faculty feedback to administrators, identifying what they need to succeed.

According to Dr Kellermann, institutions must consider how to leverage their physical campuses and at the same time create digital campuses that go some way to replicating the human connection and community that are organically created on a physical campus. "There are so many things that happen on a physical campus and what we have to think about is how do we also make all of this happen in a digital environment for those who can't attend classes," says Dr Kellermann. Impromptu meetings in the corridor, meeting friends for a coffee, or the chance to ask the teacher a question – Dr Kellermann believes these opportunities can be captured to some degree with live streaming, staying online to answer questions, and encouraging informal student dialogue.

Sufficient mental and emotional support

Research over the past six years shows the need to move to a "whole-university" approach to student well-being, and to consider the relationship between well-being and learning, teaching and assessment, according to the UK-based University Mental Health Charter.[19] There is also a growing consensus among educators to adopt an emotional and resilience component of teaching, as well-being becomes a growing concern amid the pandemic and the rapid transition to remote learning. There is significant room for improvement in building community and offering mental services to enhance the mental health of faculty members and students alike. Moreover, educators must be empowered to shepherd student career development, beyond disseminating their academic knowledge. "Our best online instructors – before and during the current pandemic, build community and demonstrate

caring for their students with several skills that are similar to how this is done with in-person teaching-learning – frequent interactions, responding to questions quickly, getting to know students personally, taking time during and between classes to check in with students," said Christopher Morphew.

Given the circumstances we have all reluctantly normalised, empathy may be the most important skill practiced by faculty members (and towards them) as they engage with students whose lives and futures may be more uncertain than their own. Faculty technical skills may enhance their teaching effectiveness, but without consideration of student well-being, even the most tech-enabled teaching cannot provide optimal student outcomes.

Setting up students with counsellors and success coaches, providing telehealth centres, and ensuring workforce well-being are all part of this supportive network. It is also important to foster the social and cultural side of the faculty experience, enabling community engagement, team bonding, virtual events and talks.

Key Takeaways

- Higher education institutes need to upskill faculty educators in pedagogical methods and in tech tools.
- Flexibility, adaptability and openness to feedback are key characteristics that should be fostered among faculty professors.
- Educators should be aware of the range of technical skills – from basic handling of learning management systems through to the full exploration of immersive and analytical tools.
- Institutes should promote their teaching and learning centres and instructional designers to help educators navigate the digital ecosystem.
- Investments need to be made in technology and access to technology for both faculty and students.
- Money also needs to be spent on creating intelligent environments and hubs for teaching and learning.
- Universities and colleges need to set up a whole-university approach to well-being, and consider the links between well-being and learning, teaching and assessment.

5 | Faculty need to be supported by partnerships

To accelerate innovation and collaboration and drive solutions to higher education's collective challenges, leaders will need to look at partnerships to support their faculty instructors. While faculty need to work with students, partnerships will need to extend beyond the one between student and teacher. "One of the big things that is important about online learning from a faculty member's point of view, is that it really should be a team sport. It shouldn't be an individual trying to do all of this on their own. It should really be a faculty member with an instructional designer with tech support, and coaches together, offering a really exciting experience," said Michael Horn.

The pandemic has also opened up a space for teachers and students to partner with those in other institutions around the world, supporting education diversity and inclusion. "Imagine if through an online course, students are assigned to work with someone from a totally different background to explore/research a topic? Look at all the possibilities of learning to occur – not just the content, but getting to know someone with different experiences, worldviews and approaches to problem solving," said Kassie Freeman, founding president and CEO, African Diaspora Consortium.

To innovate in a way that is inclusive, there need to be multiple responsibilities across the whole higher education system, experts say. "There will be a part at the level of the students, a part at the level of academic teachers, a part has to do with specialised structures in higher education institutions to support change. A part has to do with institutional leaders supporting this change and part has to do with national authorities making sure it reaches a systems level," says Michaela Martin.

There are multiple opportunities to support this change, including reaching out to stakeholders outside the higher education system to boost equity and access to all students, experts say. The EIU survey showed that the overwhelming majority of faculty members agreed with the need to embrace tech partnerships amid the increasing use of tech and digital transformation. Governments can help to seed innovations within the higher education sector, and funds can be part of the equation. This includes working with internet providers to make service widely available. Tech companies geared towards education were the first to rush in to help, and global edtech investment soared in the first half of 2020.

Academic institutions will also need to work with national educational organisations to set quality standards, and partner with alternative education courses to provide stackable credits and nanodegrees. An example of such successful partnerships is in India, where a major focus on online learning and national massive open online platforms has allowed many more students to gain qualifications. Before covid-19, students could be granted up to 20% of the credits of the programme from these online platforms.

During covid-19 that has doubled, with the government increasing it to 40%. South Korea too has an academic credit bank, allowing students to earn a degree by depositing recognised learning credits from different sources, accumulating them over time.

"It will be important to build these strong partnerships among universities, with agencies, with corporations, with foundations, trying to figure out how you bring resources and talent to still compete and help your students compete," says Dr Stroble.

Key Takeaways

- Student to teacher, student to student and teacher to faculty partnerships need to be promoted to provide engaging and collaborative learning.
- Institutes can collaborate globally to expand world-views and different viewpoints.
- Universities and campuses need to work with business to seed and fund innovation.
- They also need to work with business to develop tools for education in the future.
- National agencies need to help with setting standards and funding.
- New forms of accreditations need to be pursued, such as nanodegrees and micro-credentials.

Conclusion

Covid-19 served as a catalyst – in both scale and velocity – for the largest and fastest global online-learning experiment in history. To navigate this rapid, widespread higher education paradigm shift, faculty members quickly adapted to personalised teaching approaches and crowdsourced solutions.

As they now embark on 2021 and beyond, it has never been more important for faculty and academic institutions to pivot from short-term tactics to longer-term solutions, and to equip their students with optimal learning environments and the critical future-ready skill sets to navigate uncertainty.

With 94% of the world's student population affected by covid-19's campus closures, [20] a critical opportunity presents itself to reset and recalibrate the higher education system to be more equitable, inclusive and accessible for all. Educational innovators have shown that opportunities arise when digital tools converge with institutions willing to invest in professors, infrastructure and technology.

Endnotes

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