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Planning the Post-Pandemic Campus Environment

Three higher-education technology leaders discuss what COVID-related changes they think will continue and what they've learned from the experience.

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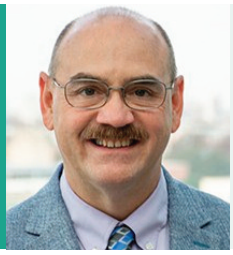
The last year and a half have been difficult for college and university leaders, faculty, staff, and students alike. But there have been some promising takeaways as well.

Institutions were forced to experiment with innovative modes of instruction and operation. From this process emerged new technologies and pedagogies that created more flexibility for learners and employees, as well as new devices and protocols for keeping campuses safe.

In an interview, three edtech leaders revealed how life has changed for their institutions, what changes they expect will continue moving forward, and how technology has played a key role in the transformation.



Raymond Lefebrve is the Chief Information Officer and Vice Chancellor of Information Technology Services for the University of Massachusetts Boston.

Alex Wirth-Cauchon is the Chief Information Officer and Executive Director of Library, Information, and Technology Services for Mount Holyoke College, a women's college in South Hadley, Massachusetts.

Brian Atkinson is the Director of Information Technology for Idaho College of Osteopathic Medicine (ICOM), a private, for-profit osteopathic medical school founded in 2016.

Q1: How has instruction changed at your institution during the pandemic, and will these changes continue when the threat from COVID-19 is over? What technology solutions are needed to support this new model effectively?

RL: The last 18 months at UMass Boston has been primarily remote instruction. For the spring 2021 semester, we did start to have some in-person classes, but it was a very small number. The key for us was, we piloted something called BeaconFlex, which is our take on hyflex teaching and learning (where the instructor is teaching to students in person and remotely at the same time).

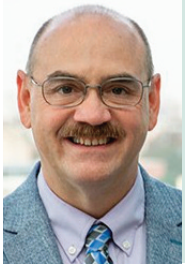
We piloted about half a dozen classes in this hyflex delivery model. It's been successful, and now we're planning to provide more BeaconFlex classes for the fall 2021 semester.

All of our students are returning to campus in the fall. We expect a full complement of students, and on-campus teaching and learning will resume. But some classes will remain remote, and there will be some BeaconFlex classes mixed in as well.

For these classes, we're using audio-visual equipment in different configurations for large and small classrooms, and portable BeaconFlex carts for added flexibility. The setup provides a webcam, a microphone, and a laptop for the instructor, and the classrooms also have a fully functioning front end, which allows the professor to share his or her screen with the students who are in class as well as those who are remote. Students who are learning remotely are able to see and hear their peers as if they were in the classroom, which is very important. IT has partnered with Academic Affairs to design BeaconFlex course delivery to be the best it can be.

We're very excited about maintaining this flexibility going forward. The question is scalability. How many of these cases will we be able to support initially, and how many will become BeaconFlex classes over time? We definitely have high hopes that the combination of pedagogy and technology will lead to a new and lasting educational paradigm.

There's really no going back to the way we were pre-pandemic. Students, faculty, and staff have all benefited in some respects from this more flexible approach to education. But we can't take a one-size-fits-all approach. It's going to require a mix of different modalities and technologies.



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AWC: For the undergraduate college curriculum, we are returning to our core as a residential liberal arts college with the bulk of our instruction happening in person, on campus. However, faculty will be bringing approaches from the past year into their repertoire.

For instance, many will continue to use flipped instruction in which lectures and other less active components are delivered asynchronously online, allowing them to focus synchronous class time on discussion, projects, and other active learning. In particular, the Psychology and Education department is rethinking its introductory course to reuse many of the recordings made last year, allowing instructors to teach much smaller discussion sections in person. Additionally, we have a number of international students who might not be able to make it back to campus. We are still working on what classes we can provide remotely for that population.

Last year we adopted Kaltura, a video cloud platform, to manage the expected increase in faculty use of video in a way that's accessible from the full range of countries where our students live. We plan to continue its use, which has expanded to serve other areas of the college to share recordings of speakers and events put on, for instance, by our Office of Diversity, Equity and Inclusion, as well as Student Life.

Many of our graduate programs were hybrid already, having pioneered blending active learning methods that include students around the world and in classrooms in South Hadley via live discussion and small group work. Tiffany Espinosa, Executive Director of Professional and Graduate Education, writes the following:

"Of our three graduate programs, two have always been hybrid low-residency models, and so they were well equipped for the past year. We received feedback from students in our campus-based program that hybrid learning was particularly supportive of busy working professionals and parents. This is definitely something we want to continue; adapting to the pandemic has helped us to find new ways to meet the needs of our community. The technologies that most effectively enable this are cameras that allow remote learners to have the experience of in-person participation, combined with web-connected devices that allow students to share work live with each other regardless of whether they are working onsite or remotely. And, of course, good internet and WiFi for everyone!"

BA: Over the past 15 months, ICOM's instruction has had to become a hybrid of small group, socially-distanced in-person learning and a multimedia approach to distance learning. As a medical school, and particularly an osteopathic medical school, much of the teaching and learning is done in our hands-on labs. We accomplished this by keeping students in very small groups and spreading them out across the building. Instructors are able to stay connected with students throughout the building by utilizing video conferencing and large-screen displays. This allowed instructors to teach to students no matter what learning space they were in and allowed students to easily interact with faculty.

The large-screen displays played a huge role in allowing students and faculty to keep distant within the same building. All of our learning spaces have Sharp large-screen displays. We also have 24 group study rooms that have 70-inch Sharp displays. These rooms allow students to airplay prerecorded lectures for small group study. They also make it convenient for students to engage in Webex classes while on campus.

Distance learning has had to take on many different forms. Some lectures were synchronous through web conferencing (Webex), while others were prerecorded and viewed through our lecture capture system (Panopto). To confirm that students were getting the instruction they needed, instructors would record themselves practicing techniques with their iPad and submit the videos for faculty review.

While many of our students and faculty long for the return of in-person teaching and learning, we recognize that a hybrid approach is likely to be a better fit, giving students and lecturers the option to learn and work remotely if that is what works best for them. We recognize that a blended learning environment gives students the option to tailor their own learning path and achieve greater results for each individual. We are currently incorporating a lecture capture studio to give faculty the option to record high-quality lectures that can keep students engaged while distanced. We also remain heavily invested in web conferencing for both video learning and communication.

Q2: Will remote working continue to be an option for some employees at your institution? If so, can you explain why and what that might look like? What technologies are needed to support this workforce model effectively?

RL: In the beginning, about 98 percent of employees were off campus. We probably plateaued about six months ago with 20 percent of our workforce on campus at any given time. Our campus wasn't available to faculty and staff unless you had prior approval to be on campus.

Now, we're actively putting together our Return to Campus plans for the fall semester with an eye toward flexible work arrangements wherever possible. With students returning to campus in the fall, that means we expect to bring back all essential in-person services and related personnel to meet the needs of students in time for the start of the semester.

In IT, we're bringing people back in a controlled, staggered fashion so that we can "wake up" the technology that's been asleep for almost a year and a half now, such as classroom projectors and the technology in meeting spaces. There's no guarantee that it will work when we turn it all back on.

Mixed-modality work arrangements have been the norm since the pandemic began. A solid VPN has and will continue to be central to securely gaining access to our IT services, while our "Cloud PC" Windows virtual desktop service, which we stood up in response to the pandemic, will provide flexible access to computing resources from on or off campus.

While there's going to be a big return of students, faculty and staff in the fall, we're trying to work out arrangements so that personnel who can work remotely and/or want hybrid, flexible work schedules are able to do so. Like everyone else, we've learned there are certain jobs that can be done successfully remotely—and flexible work arrangements can be effective as long as you set them up and manage them properly.

AWC: We have learned a lot about working remotely this year, and we have found that in many instances it can serve both the employee and the college well. The Mount Holyoke staff have been incredibly productive this past year working mostly remotely. The college is currently defining principles to guide decisions about supporting greater flexibility both in time and in location, while recognizing that, as a residential liberal arts college, the in-person connection is still vital to the transformative education we provide.

We expect that a growing number of positions will be issued laptops instead of desktop computers to support this flexibility. We are also stepping up our reliance on our VPN and centralized management of remote devices.

We expect that a growing number of positions will be issued laptops instead of desktop computers to support this flexibility. We are also stepping up our reliance on our VPN and centralized management of remote devices through tools such as Jamf.

We will be reviewing our computer allocation and replacement strategy more fully to address the budget challenges that could result from these shifts.

BA: We anticipate that a number of our faculty and staff can be effective working from home and want to have the choice. During the pandemic, out IT department worked hard to transition most of our employees to laptops in order to have a mobile workforce, allowing them to work securely from anywhere. Since office space is also an ongoing issue, we are currently exploring options for office hoteling, allowing employees to schedule an office that would be equipped with a large-screen display and AppleTV for collaboration and a desktop display with speakers and webcam for virtual meetings.

Q3: What changes have you made in the last 15 months to protect the health of students and employees? Of these, what changes will become permanent or ongoing practices moving forward? What technologies are you using to help with this?

RL: IT's role has primarily been in providing an enterprise service management platform for ensuring health and safety. We've created a tool within our ServiceNow platform for this, called SafeCampus. It's a series of modules that includes daily health check-in capabilities to be able to track coronavirus symptoms. There's also positive test result tracking, so we can track and share that information with the appropriate people. We also added an ad-hoc campus request capability for requesting and granting approvals. By requiring approval through this system, we know who's on campus every day and where they're going to be for contact tracking purposes. We're also looking at using the system to track vaccination statuses, but we're not sure we're going to do that yet.

My prediction is, this platform will live on for all of 2022. Hopefully, we'll be able to wind down our use of the SafeCampus solution by the end of that year.

AWC: We leaned heavily on our existing toolset, including Point and Click (our SaaS Electronic Health Record system) and CampusGroups (our SaaS Student Engagement System) to manage activities like our testing program and tracking student immunization records. We will be partnering with our insurer around staff vaccinations.

BA: The biggest change we made over the last 15 months to protect the health and safety of students and employees was with the use of mandatory temperature and mask sensors at the main entrances. We no longer require people to use them when entering the building, but they will remain available to people to use at their own convenience. IT didn't play much of a role in this process; it was left up to our facilities and security departments to provide temperature scanners and do contact tracing.

Q4: Do you have any other general thoughts about what the future holds for colleges and universities, or lessons learned from your experience?

RL: The COVID-19 pandemic struck unexpectedly, leading to implementation of full-scale business continuity plans overnight. In hindsight, UMass Boston was prepared for the pandemic, and the transition to remote teaching, learning, and working has been manageable and overall successful.

We've learned a lot along the way and have applied these key lessons to improve our IT capabilities. Our deployment of technical chat services, as well as a self-service portal and knowledge base, are examples of technology improvements that will live on post-pandemic. Our investment in Cloud PC and student laptops for students will also live on, as will the many cyber security improvements we've made.

Perhaps most importantly, flexibility in delivering IT services to students, faculty, and staff will live on, as we have proven that we can provide high-quality IT services on or off campus—and the new normal will reflect this fact for years to come.

My hope is that all CIOs have improved their operations during the pandemic. It's provided an opportunity for all IT leaders to step back, review their organization, and make it stronger and better, especially from a business continuity perspective.

AWC: At Mount Holyoke, we have been affirmed in the value of the holistic, rich, interactive, hands-on, and intensely personalized education that we provide. At the same time, we have learned that we can enhance that, can become more nimble, and allow greater flexibility in time and place for working and learning by tapping technology more fully.

BA: Overall, I think ICOM was well positioned to handle mobile workforce and student body. Being a relatively new school, we were built on a 100-percent cloud infrastructure that allows for the flexibility needed during the pandemic. Moving forward, ICOM will likely lean on the types of technology that allow greater mobility. I expect that flexibility will become a much higher priority in the technology decision-making of the future.

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About SHARP

Today's tech-savvy students and professors expect to be able to communicate in collaborative environments. To encourage student engagement, lecture halls and libraries need technology that can keep up. Not to mention, the past year has presented new challenges for staff and students, such as hybrid teaching. Higher educational institutions must preserve the learning experiences they're so well known for while finding solutions for distance learning and safety measures for in-person learning. Sharp can help improve efficiencies, encourage learning from anywhere and optimize workflow and document processes with award winning printers and copiers, durable laptops, collaboration and digital displays, managed print services and managed IT services. To learn more about Sharp's education solutions, visit **https://business.sharpusa.com/vertical-markets/education**

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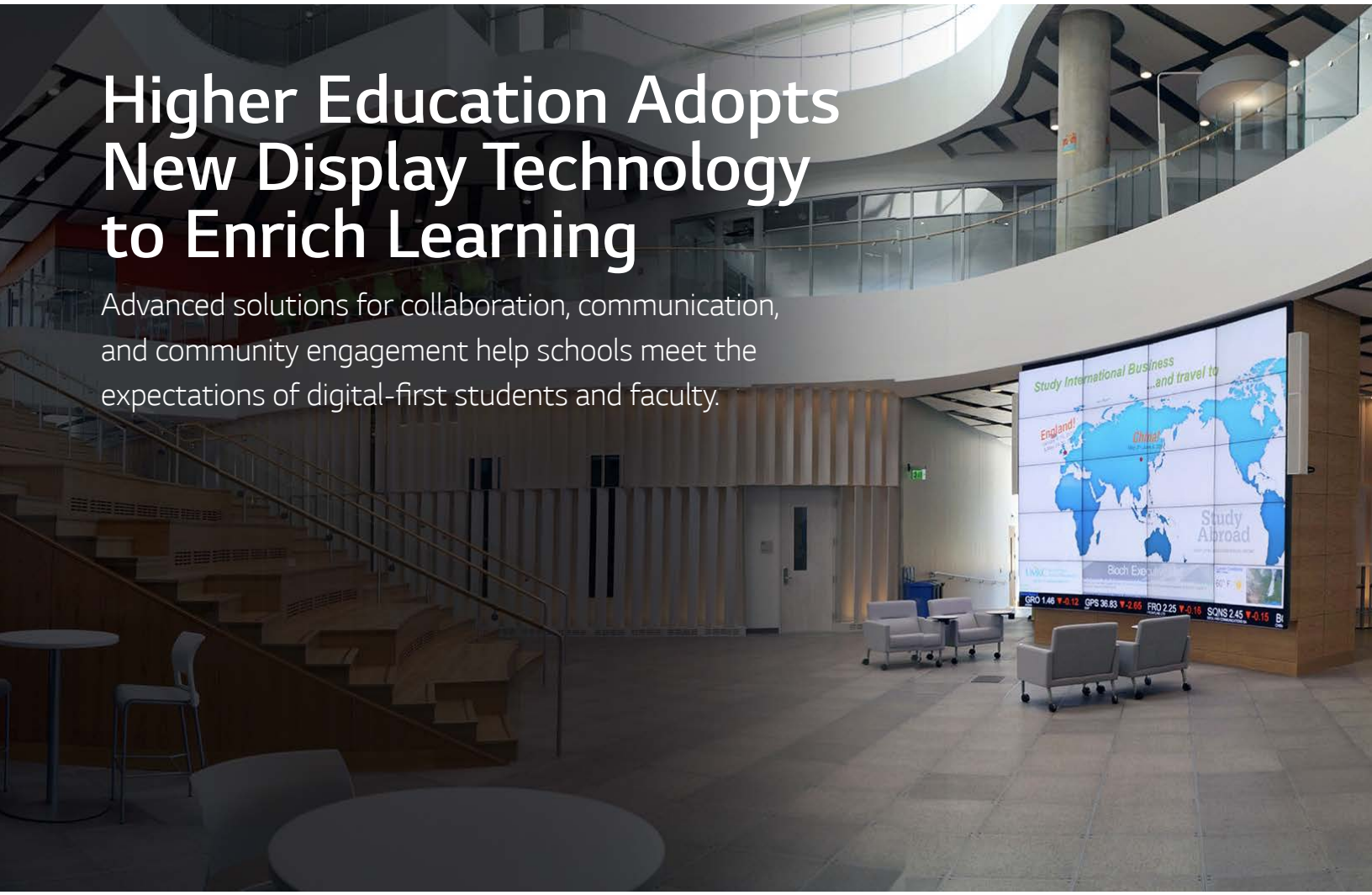


Higher Education Adopts New Display Technology to Enrich Learning

Advanced solutions for collaboration, communication, and community engagement help schools meet the expectations of digital-first students and faculty.

■ As digital technology permeates society, prospective college students prefer to learn and collaborate digitally, driving more higher education institutions to adopt advanced A/V solutions to better compete for digital-first scholars and expand their total offering.

According to the 2019 Educause ECAR Study of Undergraduate Students and Information Technology[1] , students "would like to be more engaged with the material, their instructors, and their peers in the classroom and they see technology as a vehicle for that engagement."

In higher education, even modest technology enhancements can have a major impact. The Florida State University (FSU) College of Business is designing and building a new facility on the school's Tallahassee campus, complete with audiovisual technology meant to better engage students and improve learning outcomes. And while the building is under construction, the technology team has been busy reinventing existing classrooms to understand what works.

"For example," says Aiden Sizemore, FSU College of Business Director of Academic Technology and Systems, "we've installed large confidence monitors into our podiums. It's a simple thing, but it has made a huge difference." Being able to see content on-screen right in front of them, rather than turning to see it projected behind them or to one side, allows faculty to better engage students and their subject matter.

Also, in light of a growing trend toward active-learning spaces, the FSU College of Business piloted a collaborative classroom with digital tools meant to foster project-based work.

"Our current building doesn't have a lot of collaboration space for students," explains Sizemore, "so we commandeered a room to test out our collaboration lab, outfitted it with a large presentation display and virtual 'pucks' that let students wirelessly share content on a pair of screens. We wanted to see how much use it would get, and I can tell you, it was booked every minute of every day."

At FSU's College of Business, that has meant including technologists in the design of its new building to ensure it can support everything needed to deliver the right learning experience — digital displays, electronic whiteboards, collaboration systems, video conferencing and more.

"We don't know where technology is going in the next five years, but we want to make sure we're able to change with the times," Sizemore says. "We're seeing increased demand for and usage of collaborative tools. Basically, we're boosting engagement and having a huge impact on how our students learn."

[1]https://library.educause.edu/resources/2019/10/2019-study-of-undergraduate-students-and-information-technology

Gaining Momentum

According to the 2019 Educause Horizon Report[2], the transition to tech-enabled, active-learning classrooms and spaces in higher education has gained considerable momentum. "Designing and evaluating spaces that facilitate active learning and collaboration require investments and strategic planning," said the report's authors. "Media-rich digital learning platforms, personalized or adaptive courseware and web conferencing tools capable of connecting students and their 1:1 devices are becoming common solutions for blended learning designs."

In fact, digital technology has come to pervade higher education through a variety of applications, whether it's classroom display technology to foster collaboration, digital signage for campus-wide health and safety communication, videowall installations for engaging visitors, and branding a school, or ever increasingly — a new genre of electronic sports (eSports) programs for attracting a growing legion of digital athletes and fans.

"You have this growing number of colleges and universities that have made a major commitment to integrating technology into more and more spaces," says Craig Park, Principal Consultant at The Sextant Group, a leading audiovisual technology consultancy recently acquired by global engineering firm NV5. "It tends to start in Engineering or STEM- oriented buildings, as well as business schools." Park's firm is also in the process of helping FSU's College of Business integrate technology into its new building. "Many put in technology to mimic the workplaces their students will eventually enter."

The Sextant Group helped the University of Texas (UT) Southwestern's medical school reimagine education delivery to large classes[3], creating what was, at the time, one of the largest active-learning spaces in higher education. "They realized that to be relevant in the 21st century, they needed to rethink education," Park says.

The school took a 250-seat lecture hall and created 42 six-student active-learning stations that include a 46-inch monitor, a microphone and a wireless collaboration system for sharing content from students' mobile devices. Three pairs of screens hang on the walls for facilitating team-based learning among various groups.

"It encourages interdisciplinary conversation so that the way they'd work together in the hospital is the same way they work together in the classroom," Park says.

In fact, collaborative audiovisual technology stands to benefit higher education departments of all types. It doesn't replace pedagogy, but rather enhances it.

According to Christopher Faulkner, Ph.D., Assistant Professor, Health Care Sciences/Research, Director of Educational Technology at the UT Southwestern Medical Center, "The Team-Based Learning Center fosters the type of organic conversation you can't create in a lecture environment, helping our students to learn to communicate more effectively – cross-discipline – as they will in the real world. The AV-over-IP/wireless collaboration technology has been a game-changer, helping our faculty and students to more effectively build and improve those interprofessional relationships."

"Technology has been changing how we think about teaching and learning," says Edward Maloney, Executive Director of Georgetown University's Center for New Designs in Learning and Scholarship (CNDLS). "That's going to continue to grow and evolve and we need to be reflective, responsible and responsive to those changes." (Read more in the section, "Georgetown University: Using Display Technology to Support Established Pedagogy.")

[2] https://library.educause.edu/resources/2019/4/2019-horizon-report
[3] https://thesextantgroup.com/portfolio-items/university-of-missouri-kansas-city-bloch-school-of-management/?portfolioID=4550

Collaborative Display Technology Enhances Learning Spaces

One of the most significant changes in higher education is the move from lecture-based teaching to team-based learning, and not only at the scale of the UT Southwestern medical school.

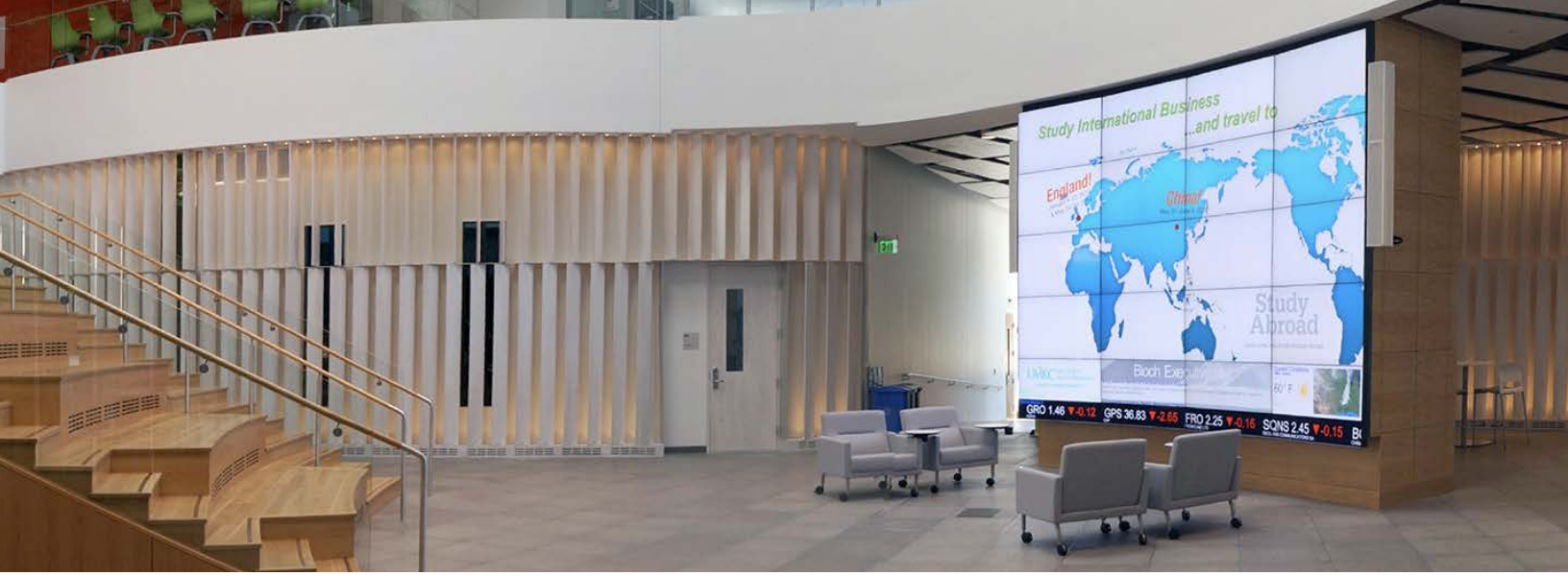
"Active-learning spaces are what we see most universities trying to make as their baseline, standard classrooms," says Jason Nast of technology integrator CTSI, which works with colleges to implement new systems and designs. The company has been outfitting 27 active-learning classrooms at George Mason University, near Washington, D.C.

"There is no front of the room," Nast explains. "The teacher station is mobile; there are display screens in different sections of the room; and portable microphones for voice reinforcement."

The furniture in those spaces is usually mobile and modular. Groups of students arrange themselves around a large, flat-screen display and either connect their laptops directly or through a wireless intermediary device. Some displays even have built-in support for "casting" content from a variety of mobile devices, allowing students to collaborate however they're most comfortable. And many have touch screens so students and faculty can annotate presentations on-screen and save the content for later use.

In addition, such active-learning spaces typically incorporate links to a university's preferred video conferencing platform in order to connect with remote students or lecturers from within the classroom. Especially in light of the recent pandemic, which temporarily shuttered learning spaces at higher education institutions, creating collaborative solutions that can combine physical and virtual modes of interacting is critical to maintaining a rich learning experience. The days of entire classes taking place in the same room are probably behind us. Audiovisual and collaborative technology form the foundation of this hybrid active learning.

"Investing in what can be complicated technology, but designed in a way that you don't really even notice, creates a seamless experience," says Molly Chehak, Managing Director of Georgetown University's CNDLS program. "Someone can easily bring remote speakers into a classroom and the experience is seamless. You can bring in learners who may be remote, but are still part of the class, in a way that is very personal. That makes a good class great."



Large-Format Video Makes a Big Impression

Beyond the classroom, modern audiovisual technology is helping schools communicate in new, impactful ways while also leaving a lasting impression on new and prospective students, university supporters and even members of the community. Increasingly, display solutions as impressive as those seen in malls, athletic arenas and other public spaces can support engaging experiences in higher education. Sometimes they're designed with large, thin TV-style displays; other times they're made of bright, LED signage displays, similar to the kind of display technology used outdoors.

At the University of Missouri, Kansas City, Henry W. Bloch Executive Hall for Entrepreneurship and Innovation, technologists at The Sextant Group designed a massive videowall[4] for the building's three-story atrium. Comprised of 20 flat-panel displays, the videowall not only communicates the hall's commitment to innovation through digital signage and messaging, but also offers a stunning backdrop for presentations and events.

"It's the university's school of business," says Park, "so there's a stock ticker running along the bottom with live video showing what's going on around campus and within the business school."

A large set of stairs facing the videowall provides a place for students and faculty to meet and socialize, but also serves as seating for guest lecturers and others who want to use the display as their presentation canvas.

"This type of 'wow' wall offers the kind of video showcase that you're seeing more and more of on college campuses. It's bright and visible from outside the building, attracting attention and engaging passersby with the school's mission," Park says.

Such 'wow' walls also show up in large lecture halls as an alternative to video projection systems. The University of Idaho, for example, built such a wall for one of its life sciences classrooms configured for 120 students. The wall consists of nine 55-inch flat-screen displays with very thin bezels, so it appears as one giant screen. In this case, the advantage of a large videowall is that the types of content it shows — detailed images of cells and organisms, CAD drawings, diagrams and more — are more easily readable by everyone in the room.

"Many institutions have an art budget for new buildings," says Park. "That's one way to fund a videowall, particularly in community engagement centers, with content moderated by student groups."

[4] https://thesextantgroup.com/portfolio-items/university-of-missouri-kansas-city-bloch-school-of-management/?portfolioID=4550

eSports Represents a New Frontier

It almost goes without saying that the stadiums and arenas hosting collegiate sports are incubators for technological innovation; from broadcast suites, to very high-definition scoreboards to ubiquitous digital signage. In fact, digital signage is quickly becoming omnipresent throughout campuses. Distributed digital displays, networked so they can be controlled and managed from a central location, have become one of the best ways to communicate information about activities, classes, and more. They're even effective as emergency notification systems.

But there's a new sport on campus drawing considerable technology investment. Esports is all about video gaming writ large. It started primarily as a professional gaming phenomenon, but now colleges and universities are getting in on the game. In 2019, the global esports market exceeded $1 billion[5], up more than 25 percent from the year before, and the global audience for esports was half a billion people. Today, more than 170 colleges and universities belong to the National Association of Collegiate Esports, offering more than $16 million a year in esports scholarships[6]. Some schools are even introducing esports-related coursework.

The collegiate esports experience runs the gamut. Some schools operate small esports spaces; others have built large-scale arenas in which competitors participate at individual workstations while spectators watch the action on giant video screens. The key technology ingredients include fast, responsive video monitors for gamers, computer workstations or gaming consoles and flat-screen displays so that coaches, teammates and fans can watch.

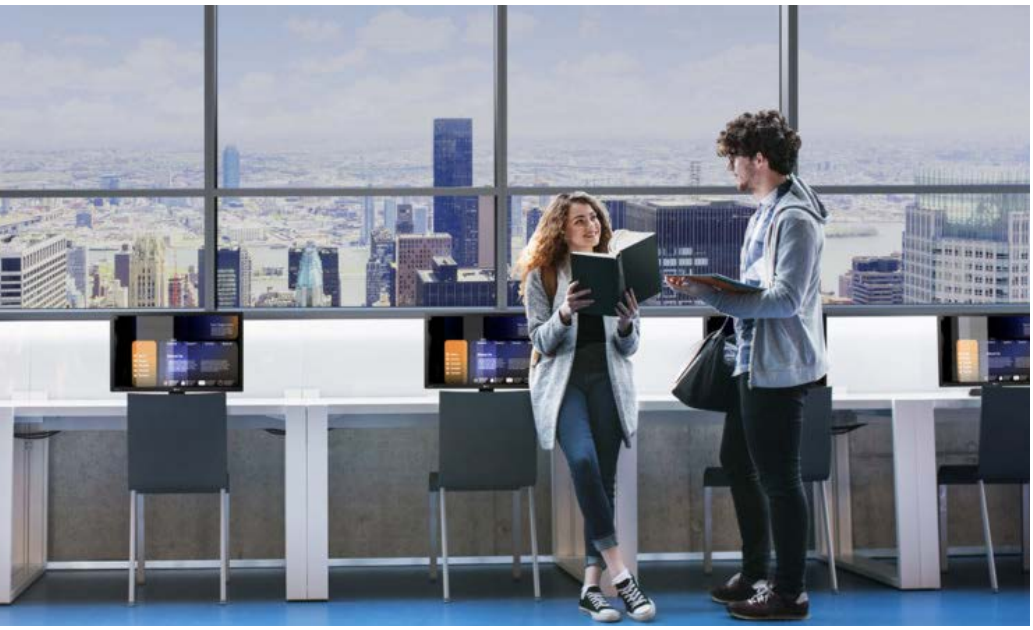
At the high end of the scale is Full Sail University, which created a purpose-built esports arena[7] that would also serve as an educational space for events and classes when the school's esports team is not competing. Full Sail's 11,200-square-foot arena can hold 500 onlookers, with rows of gaming stations and expansive LED displays so that there's not a bad seat in the house.

Other colleges have started smaller, but with the same intent of using audiovisual technology to engage a growing population of prospective students. "There are people out there who are extremely interested in not just playing but watching esports," says Anthony Yang, Assistant Vice President and Chief Information Officer at Caldwell University.

Yang says that recently, when the university's president Dr. Nancy Blattner attended a conference, esports was a hot topic, so Yang and his team began investigating how to make it viable. "Since then, our Overwatch team made it to the conference playoffs in their first semester ever," he says. (Read more in the section, "Caldwell University. Improving the Digital Experience. Embracing eSports."

[5] https://www.reuters.com/article/us-videogames-outlook/global-esports-revenues-to-top-1-billion-in-2019-report-idUSKCN1Q11XY
[6] https://nacesports.org/about/
[7] https://www.avixa.org/insight/CaseStudies/Details/full-sail-university-raises-the-bar-for-esports-venues/

Digital Experiences Lead to Better Learning Outcomes



As students and faculty begin to reassemble safely at institutions of higher education, an evolution toward new technology will continue. Reflecting the digital world from which their students come, colleges and universities are investing in experiences that meet expectations and create a higher level of engagement.

"For example," says The Sextant Group's Craig Park, "Students now are enamored with creating and streaming video. Schools are now using new audiovisual technology to create 'one-button' studio spaces that are easy to use."

Describing a project at the University of North Dakota, where the school is piloting a handful of active-learning classrooms, Park says students love them because they use technology to create a team experience.

"I happened to walk into one after hours and there were two groups of four students with their mobile devices working on a project together," Park says. "I asked, 'Why do you come here and not the library?' And they said it was because the tables and display screens were set up for them to easily use and collaborate."

Display technology continues to evolve and innovate. As it does, colleges and universities will find new applications and ways to enhance life on campus, whether that means more virtual learning that gathers together students from all over, or virtual reality technology that uses new display solutions to create safe, immersive education experiences. Research firm Futuresource Consulting recently estimated[8] that the education market would be the biggest buyer of cutting-edge, interactive flat-panel displays (IFPD), snapping up nearly 2 million of the all-in-one collaboration devices in 2020 and 2021.

All of this is in the service of a better learning experience, not technology adoption for technology's sake. Says Aiden Sizemore at FSU's College of Business, "Our biggest goal is to make sure we're not forcing anyone to use a certain technology. It's there to be assistive, make the process of learning easier and more engaging, and help faculty do their jobs even better."

[8] https://www.futuresource-consulting.com/reports/posts/2019/february/futuresource-interactive-displays-in-the-education-and-corporate-sectors-market-track-worldwide-q4-2018/?locale=e

Spotlight on Georgetown University:
Using Display Technology to Support Established Pedagogy

Georgetown University, in Washington, D.C., was founded in 1789 and is the oldest Jesuit Catholic institution of higher education in the United States[9]. It is also among the most forward-thinking universities when it comes to applying new technology to learning. Twenty years ago, Georgetown launched its Center for New Designs in Learning and Scholarship (CNDLS), one of the nation's first higher education programs aimed at bridging pedagogy and technological innovation.

"Georgetown has a long tradition of Ignation pedagogy, based on the 16th-century teachings of Saint Ignatius of Loyola," says Margaret Debelius, Director of Faculty Initiatives at CNDLS. "It's this five-step process of context, experience, action, reflection and evaluation. It still stands to this day, and technology allows us to do those things a little bit differently. It has expanded the ways in which we can engage in inquiry and reflection — things that are central to a Georgetown education."

In 2019, the CNDLS team wanted to reimagine learning spaces through collaborative technology. Working with LG Business Solutions and local technology integrator CTSI, Georgetown introduced to faculty and students a multidimensional classroom to support small- and large-group exploration, interactivity, distance-learning, and more.

"It's not a typical classroom," explains Andy Bukowski, systems designer at CTSI. "From a professor's perspective, they wanted to have a dual-display setup that could support remote participants on one screen and presentation material on the other. They also wanted a more typical single-display system you might see in a standard classroom. And they wanted to make it so smaller groups of students could gather around several different displays, connect and collaborate."

Flexible Technology for Multiple Teaching Modes

The final design, which first welcomed students and teachers in the fall of 2019, includes a pair of large (75-inch), 4K, interactive LG touch displays at one end of the room, a third 86-inch LG interactive 4K display at the other, and a fourth 86-inch LG 4K display on one side, opposite the classroom's bank of windows. There are Logitech® cameras installed on each wall for connecting directly to Georgetown's Zoom® video conferencing system; Biamp® ceiling speakers and microphone arrays for tracking speakers in the room and optimizing audio on other ends of a Zoom session; and four Mersive Solstice™ collaboration pods, which users can connect to wirelessly to share content on the room's displays.

"Many Georgetown classrooms have a big stage, a mothership of a desk and a screen that's very clearly a front of the room," says CNDLS Managing Director Molly Chehak. "We took out the stage and the desk so there is no front of the classroom. All the displays can be used by anybody in the room — instructors and students alike. They offer a collaborative space where students can work together on the same screen or multiple screens at one time, comparing, contrasting and collaborating. In a lecture-style situation, a professor can use one or more as a confidence display, or set them up as a gallery walk."

One anthropology professor would start each class in a unified, centralized formation, then students would rearrange the mobile furniture to be physically near one of the room's four displays. "They'd collaborate on a screen, then turn around and present to the rest of the class," Chehak says.

For Georgetown, it's a real-world application of new technology to an active-learning pedagogy. "The professor's presentation is about five or 10 minutes at the beginning of class," Chehak says. "The rest of the class is experiential; it's discovery and inquiry-based learning."

[9] https://www.georgetown.edu/who-we-are/our-history

Transparent, Intuitive Control

Everything in the room is managed through a Crestron® control system and touch panel, specially programmed to be as seamless as possible. According to CTSI, the biggest challenge may have been designing the system to include remote participants who would appear on the LG displays via video conferencing link.

"If you're familiar with most control systems, you basically need to leave that software to launch a Zoom session. That's not practical for the people using the room," says Bukowski. "We worked with Crestron and Zoom to modify the application programming interface and create intuitive buttons, so it felt seamless as the professor transitioned to conferences."

And with four different large-screen touch displays but only one classroom computer, the control system needed to manage which touch display was controlling the computer at any given time.

"We tried to make this transparent, too," says Bukowski. "On a graphical map showing the room's displays, a little thumb icon indicates which touch screen is in control."

When professors initiate a videoconference, they go to the touch panel, select Zoom, tell the system where they want the remote participants displayed and where they want the presentation displayed, pick the screen with the thumb and then they're actually controlling it through the LG touchscreen display.

"Typically, a higher education learning space might have one of these configurations in a room," says Bukowksi. "But we worked with the CNDLS team and our partners to make hopping in and out of different collaboration modes very intuitive."

Faculty has been quick to adopt the classroom technology. When the CTSI and LG teams visited to familiarize users with the installed system, such as the Mersive® wireless collaboration pods, found they were well received by staff members.. Because users can connect to the pods from their smartphones and begin sharing content on the room's LG displays, the learning curve was very minor.

Says Chehak, "The changes we made to the classroom reflect the deep shift in pedagogy and the experience of education. It's student-centered, collaboration-centered, it's multifaceted and needs to allow for the outside to come inside, and the inside to go outside. Technology can do that."

Spotlight on Caldwell University:

Improving the Digital Experience, Embracing eSports

Caldwell University has been on a roll. In recent years, the liberal arts school of 2,200 students in Caldwell, New Jersey, has seen enrollment increasing, invested $2 million in federal grants to help establish its Center for Excellence for Teaching, and made news by successfully launching a varsity eSports program[10]. At the heart of its recent success has been a commitment to using technology to enhance the higher education experience.

In the Summer, 2019, university officials surveyed their existing classrooms and determined that many of them were in need of an overhaul. With rising enrollment, they decided that the time was right to refresh its learning technologies with solutions that better engage today's digital-native students.

"We decided to invest in technological improvements to some of our classrooms that had aging hardware and software," explains Anthony Yang, Caldwell University Assistant Vice President and Chief Information Officer. "Many didn't have the right kind of environment for where classes are going today.

Some had computers connected to displays, but we wanted to upgrade all those displays and add new control systems. The goal was to create a one-touch process that's as seamless as possible for instructors who need to use technology in the room."

The university has also been in the process of modernizing its buildings through digital signage. With screens around campus, it's looking to implement new communications capabilities that support not only the digital dissemination of campus news, but also emergency notification and other real-time information.

"I want to make our hallways look less like a high school and more like a modern space for education," Yang says. "The next step is to find a solution that can leverage the placement of all of these digital displays and their network connectivity, so that if, for example, there's a weather closing or something worse, we can take over every digital display and instruct people to take action or not."

And then there is the new esports program, made successful in part by the school's commitment to creating a dedicated arena, with large screen displays on which students and faculty can watch the competition. Across the world, competitive video gaming has taken off at the professional — and now collegiate — level.

"Just like collegiate athletics, our program comes out of the demand from prospective students who want to continue to engage in any type of event or game or sport at a competitive level," says Yang. "And there are people out there who are extremely interested in not just playing, but also watching esports."

All told, Caldwell University's embrace of new technology has kept Yang and his staff busy — and they're pleased with the results.

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[10] https://www.caldwell.edu/about

A Standardized Visual Experience

To date, Caldwell University has reimagined learning technology in 19 classrooms — all modernized over a single summer. The school has standardized on Crestron controllers, typically installed in podiums, to drive various LG classroom displays, where appropriate, or laser-based projectors in larger spaces. Most rooms have built-in ceiling microphones picking up audio from the class itself and allowing students and faculty to communicate with remote participants through a video conferencing link. Like many universities today, Caldwell has adopted the Zoom platform to help video-enable its students, faculty and learning spaces.

"Whether it's another student or a guest lecturer who wants to communicate from outside the classroom, we wanted the supporting technology in our spaces, and we wanted it to be easy to use," says Yang. "Standardization has definitely helped. Now, with a single type of controller, it's easy for faculty to switch rooms and still have a familiar technology experience. Everything is available at their fingertips."

Outside the classrooms, Caldwell University is moving to standardize its digital signage experience for better communication and management. Today about 40 LCD screens around campus are used as information displays, but Yang and his team are looking to turn them into real-time communications devices. Each currently has some type of media player plugged into it, but Yang says a new fleet of signage displays with built-in computing devices could ease management. "We have network control over every digital display, so we can change them on the fly," Yang says.

Let the eSports Games Begin

In Caldwell University's Werner Hall, four 55-inch LG 4K digital signage screens serve a very particular purpose: to show passersby in ultra-high definition the eSports competition taking place in the hall's purpose-built eSports arena.

Inside the eSports space — a redesigned student lounge — there are 12 gaming stations with high-performance LG monitors and a pair of 43-inch 4K LG commercial displays so coaches can monitor matches or practice. The room is split into two sections, with sound isolation materials installed in between to accommodate multiple competitions without noise distracting players in one or the other.

The university learned quickly that to compete at a high level and engage current and prospective students, its eSports program required the right level of technology performance. eSports is just as competitive as physical sports, and in an eSports arena, fast responses and smooth graphics really matter," says Yang. "Our arena has the highest spec PCs available, but the raw processing power and graphics delivery only matter if it's connected to a top-flight gaming monitor."

Everywhere on Caldwell University's campus, investment in audiovisual technology — whether for learning, communication, or student engagement — supports the institution's larger goals. "These things draw students in," Yang says, "but even more importantly, they help retain them and make sure they graduate."

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