

*e*CAMPUS NEWS

2022 Special Report

# Next-Gen Tech Strategies

for Higher Ed Success



Embracing digital transformation to  
boost innovation, security, and efficiency



## Blended Learning Unbound

Blended learning is here to stay.  
Here's how to take it to the next level

When college classes resumed in fall 2020 after the pandemic shuttered campuses nationwide the previous spring, instruction looked very different. Nearly nine in 10 institutions offered a hybrid model of instruction,<sup>1</sup> with some students going to class in person and others learning online—and instructors used display solutions, online conferencing platforms, and other technologies to teach to both cohorts simultaneously.

That model continues at many colleges and universities this year as well. After experiencing the benefits of blended learning, a majority of students now expect to have a choice in how they'll attend class—and campus leaders say there's no going back to the pre-pandemic way of doing things.

The Washington Post reports that as many as 90 percent of San José State University's undergraduate classes were predominantly held in person a few years ago. Now, that figure stands at 40 percent, as the rest have become hybrid or fully remote. Provost Vincent J. Del Casino Jr. expects the share of fully in-person courses to top out at 75 percent in the future.

As California State Chancellor Joseph I. Castro told the newspaper: "Things have changed for everybody."<sup>2</sup>

In a national "Digital Learning Pulse" survey, 68 percent of students said they'd like to take courses offering a combination of in-person and online instruction—and an equal percentage agreed they'd like to see more use of digital materials and other technologies within in-person courses.<sup>3</sup> A survey from *Inside Higher Ed* found that three out of four provosts (74 percent) believe campuses will offer more hybrid courses in the future, while 73 percent predict a similar move toward online instruction.<sup>4</sup>

The massive shift toward hybrid instruction during the pandemic hasn't been perfect. While 43 percent of students gave an "A" for how well fall 2020 courses met their needs, 16 percent gave them a "C"—and 11 percent gave them a "D" or "F."<sup>5</sup> Some parents and students have even begun questioning the value of a traditional college education at all in the age of remote and blended learning.



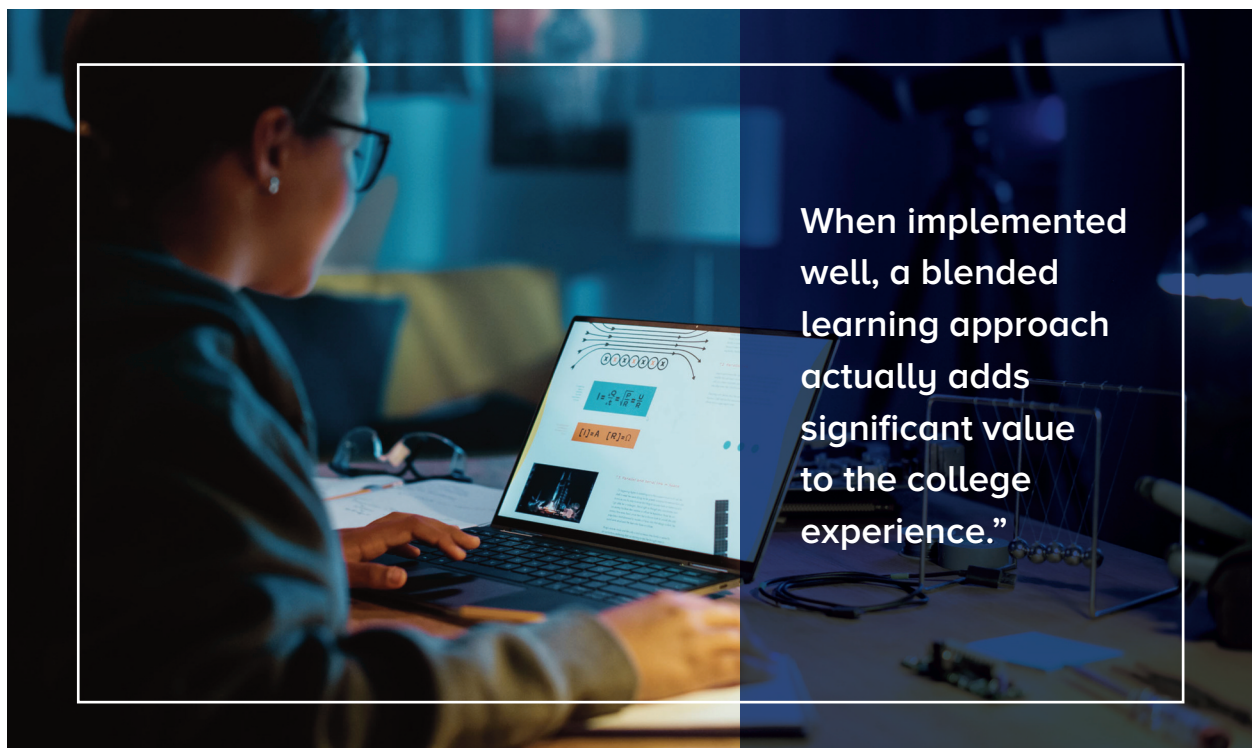
**74% of provosts**  
believe campuses will offer  
more hybrid courses.



However, when implemented well, a blended learning approach actually adds significant value to the college experience, as institutions that offered blended learning before the pandemic have discovered. Blended learning gives students the flexibility to attend class in the manner that best meets their needs, which could open the door to learning opportunities for many more students. It also gives students opportunities to engage with course materials in a wider variety of ways. The flexibility to learn any time, anywhere, minimizes the learning loss that can occur during a pandemic or other disruptive experience.

For these reasons, colleges and universities are looking at how they can leverage the investments they've made in display systems and other technologies to take blended learning to the next level, moving beyond emergency remote and hybrid instruction to design experiences that support truly exemplary teaching and learning. Some institutions are even highlighting their blended learning options as a key student recruitment strategy.

This white paper explores the benefits of high-quality blended learning in more detail—and it reveals how colleges and universities can create next-level blended learning environments that enhance the student experience and add considerable value to students' education.





## Three ways blended learning enhances education

COVID-19 has changed our notions of when and where learning can occur, proving for many people that students don't have to be in a physical classroom to learn effectively.

"Once upon a time, the expectation was that students would come to class at a set time two or three days a week," says Kecia Ray, Ed.D., principal consultant for K20Connect. "That way of thinking is going to have to change."

The pandemic has popularized the idea of giving students a choice in whether to attend the same class in person or online. Depending on a student's needs, this choice might vary from one class session to another.

There are many compelling reasons for institutions to continue to offer blended learning environments long after the pandemic is over. If campus leaders need more convincing, here are three key reasons in particular.

### ***1. Greater flexibility for students***

Blended learning gives students more choices, allowing them to participate in class either in person or online as their circumstances dictate.

For many students, this option could be a game changer. Not having to come to campus for every class session makes education more convenient for a significant number of people, including working adults, those who have children, and other nontraditional students who make up a growing percentage of today's college enrollment. In fact, nontraditional students have outnumbered those who begin college right out of high school for many years and now account for nearly three-fourths of all U.S. undergraduates.<sup>6</sup>

Besides giving more students the flexibility they might need to participate in courses, blended learning could help maintain the continuity of instruction during storms, natural disasters, or future pandemics.

"People value their personal time more than ever, and they don't want to lose that," Ray observes. "The idea of flexibility speaks to a lot of people right now."

### ***2. More opportunities to engage with course resources***

Blended learning takes advantage of multiple technologies to give students additional ways to engage with course content and materials that can deepen their learning experience.

For instance, when instruction is being live streamed through a web camera to a remote audience, it can be recorded at the same time and posted to a learning management system for future viewing. Students can review course recordings and presentations as often as they need to understand the material, and they can also watch a recording if they miss the live instruction for any reason.

When a course is being hosted on a web conferencing platform such as Zoom, Teams, or WebEx, students can also engage in back-channel online discussions with their peers or teaching assistants during class, making lectures and courses more interactive. Students can ask questions if they don't understand a concept during a lecture, and a teaching assistant can answer without interrupting the flow of the lecture.

And when courses are no longer bound by the four walls of a classroom, there are opportunities for students to learn from and collaborate with their peers and with experts from all over the world. This can broaden the perspectives that students are exposed to tremendously.

### *3. Help with student recruitment and retention*

Blended learning offerings can be more convenient for students with busy schedules. That might help colleges and universities attract and retain more students at a time when they're facing declining enrollment.

A look at fall 2021 enrollment numbers shows no signs of recovery from the previous year's declines: Undergraduate enrollment is down 3.2 percent from fall 2020 and has now fallen by 6.5 percent from two years ago.<sup>7</sup> In a survey of college presidents by the American Council on Education, 53 percent cited enrollment numbers as a "pressing" issue.<sup>8</sup>

**53% of college presidents** cited enrollment as a pressing issue.

Aside from the convenience to students, offering blended learning courses shows that colleges and universities are forward-thinking and willing to innovate to meet students' needs more effectively. Innovation is an important factor in the influential college ranking systems that play a key role in determining students' choice of schools—and it can give institutions a leg up in the highly competitive student recruiting landscape.

"When you're promoting your college programs, how can you distinguish your institution from others? One way is to 'level up' your programs by not only providing world-class instruction, but giving students options in how they can participate," Ray says.

## How to deliver exemplary blended learning

Taking blended learning to the next level requires understanding how to create an exceptional student experience in a blended environment.

Not surprisingly, it turns out that the same elements that lead to high-quality blended learning also define high-quality education in a face-to-face setting: Students learn more effectively when they have opportunities to engage in active, collaborative learning by exploring ideas and applying what they've learned in conjunction with their peers instead of just listening to a lecture.

A study published by the National Bureau of Economic Research found that, although the shift to remote instruction during the spring 2020 semester had a disruptive effect on learning overall, instructors' use of active learning strategies led to better student outcomes. Encouraging peer interaction with techniques such as "think-pair-share" or small group activities can be accomplished during live online instruction as readily as within classrooms, the researchers noted, and these teaching strategies were "significantly associated with improved learning" during remote education.<sup>9</sup>

To lead active and collaborative learning effectively in a blended learning environment, instructors will need certain technologies and skill sets. Here are three things that colleges and universities can do to make sure instructors have what they need to succeed.

### ***Train faculty how to teach effectively in a blended learning environment.***

Institutions shouldn't assume that faculty members are as adept at teaching online as in a traditional classroom. Faculty need extensive support in order to make blended learning effective. For instance, they need to know how to use breakout rooms in online conferencing platforms to support student collaboration. They must be proficient at using display solutions and other AV systems. They need to know how to use interactive applications to check for understanding and make students' thinking visible. They need to understand multiple tools and techniques for making instruction a two-way process and not just a one-way stream of information.

The training that faculty receive should be ongoing, not just a one-time workshop. Faculty members need opportunities to practice what they've learned and receive feedback. They need sustained guidance and support. Institutions can meet these needs by pairing faculty with mentors or instructional coaches, creating professional learning communities, and curating instructional resources, among other strategies.

### ***Give them the proper tools and classroom design.***

A high-quality blended learning environment should include a video camera and online conferencing platform for connecting remote students to live instruction, as well as an audio system for ensuring that the instructor and the students can be heard clearly. There should also be a presentation system for communicating information to students both in person and online, such as a projector or interactive display. The system you choose should allow course participants to present or annotate material and otherwise work together from wherever they are.

The design of the classroom is critical as well. When the instructor is presenting course material, it needs to be seen equally well by the students who are online and the students who are in the classroom. Classrooms must be set up properly for this to occur. Cameras, microphones, and displays should be positioned strategically so that students who are learning online can see and hear all in-class participants.

"You want remote students to feel as present in the class as in-person students," Ray says. "If you don't have the right room setup, it's very hard to have dynamic, interactive hybrid instruction."



One configuration that's becoming more popular for blended learning classrooms is placing large-screen displays at both the front and back of the room. Students attending class in person can see lecture slides and other course materials on the screen at the front of the room, while the instructor can see thumbnail images of students who are attending remotely on the large screen in the back.

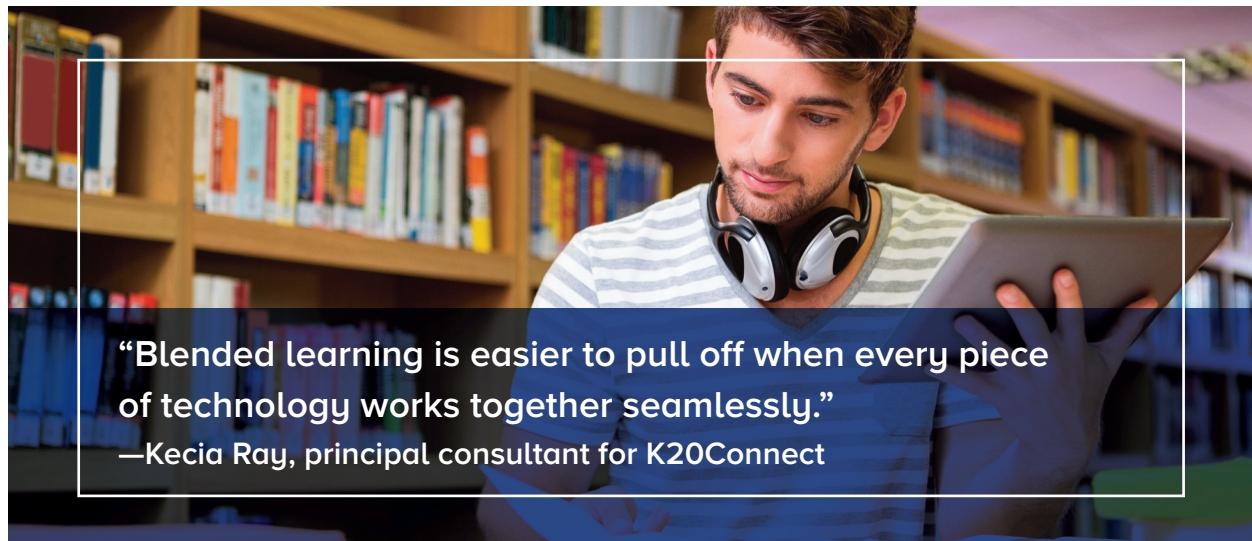
Classrooms at Middle Tennessee State University's College of Education are equipped with "collaboration stations," which are small tables that each contain their own touch-screen mounted display. When instructors want to transition from whole group instruction to small group interaction, students within the physical classroom can use these collaboration stations to work in small groups with their peers who are attending class remotely. "They all feel like they're within the same shared space," Ray says.

### *Make the technology as seamless to use as possible.*

"Think holistically about the technology you're installing in classrooms," Ray advises. "Blended learning is a lot easier to pull off when every piece of technology works together seamlessly." Instructors don't have time to grapple with the technology, she notes—and if it's not easy to use, they aren't likely to take full advantage of the technology and its capabilities.

This seamlessness is simple to achieve when every piece of technology is from the same vendor, or when colleges and universities choose a provider that can deliver a total solution with the help of industry partners.

Samsung offers a full array of solutions for creating seamless blended learning environments. Samsung's interactive 4K displays are shatter-resistant, easy to use, and come in sizes ranging from 55 to 85 inches diagonally. Samsung's remote management system, RMS, allows administrators to manage the hardware remotely, and Samsung's content management solution, MagicINFO™, simplifies the management of content for the displays. In addition, Samsung has teamed up with industry partners to offer cameras, projectors, web conferencing systems, emergency response systems, and everything else a college or university might need to make blended learning successful.



**"Blended learning is easier to pull off when every piece of technology works together seamlessly."**  
—Kecia Ray, principal consultant for K20Connect

## How Samsung can help

Whether in the classroom or at home, Samsung's digital education solutions blend vivid display technology with a host of robust software integrations to help educators improve their students' learning. Here's what these simple, elegant, best-in-class solutions offer:

- **One simple, secure, and scalable platform.** Samsung's custom education solutions enable educators to centralize their efforts, so they no longer need to figure out multiple disconnected tools and technologies.
- **Cross-device connectivity:** Samsung solutions are designed to work with Chrome, iOS, and other platforms seamlessly, so teachers and students can access and interact with learning materials from their mobile and desktop devices with ease.
- **Interactive digital whiteboards:** Samsung's easy-to-use digital whiteboards give students and teachers truly hands-on interactivity that makes learning more dynamic and tactile.
- **Complete control of the classroom:** Samsung's digital platform provides educators insight into how students engage with content, allowing them to maximize the value and efficacy of every element of the curriculum and ensure no students get left behind.
- **Advanced classroom management:** Integrated directly into Samsung's digital platform, this management toolset allows teachers to seamlessly adapt their lesson plans to blended environments without needing to sacrifice engagement, inclusivity, or their own mental wellbeing.
- **Expert-led training:** As former educators themselves, our trainers know firsthand the challenges of integrating technology into the classroom. They train teachers to unlock the full potential of Samsung solutions in every learning environment.

Samsung's digital platform amplifies blended learning by empowering educators to provide students the best education possible. No matter where they are in the world, students with access to Samsung's digital learning platform and vivid display solutions will greatly benefit from powerful features. Here's what learning enriched by Samsung technology can offer students:

- **Lesson plans to work through from anywhere:** Students each have unique needs, and they may not always be in the physical classroom. With daily curricula available to work on through Samsung's digital platform, students can start and finish their work from anywhere while seamlessly carrying their progress in and outside the classroom.
- **Equal opportunity to keep pace no matter where they are:** A better blended learning experience provided by Samsung makes doing work faster and more efficient. Students no longer have to worry about falling behind when learning from home. By centralizing classroom tasks and homework assignments into a digital repository, students everywhere are kept on the same page.
- **Interactive whiteboards that engage students:** Education has never felt more tactile and personalized than with Samsung's digital whiteboards. These whiteboards amplify the learning experience by giving students more ways to interact with their work, so they'll be more engaged with the lessons at hand.
- **All their work, centralized in one convenient location:** No more missing assignments or crossed wires about what's due when. With an integrated CMS provided by Samsung's digital solution, students can find their submissions and figure out what's due next quickly and easily.



### Supporting blended learning success

Blended learning makes education more suitable and adaptable to each student's preferred schedule and learning style. It broadens how students can engage with course materials, and it can boost recruitment and retention by improving the student experience, creating more inclusive learning environments, and positioning institutions as leaders in innovation.

The keys to success with blended learning are the same as in a traditional classroom: Make the learning active, collaborative, and highly engaging for students. To take blended learning to the next level, colleges and universities must provide ongoing training and support for faculty, provide the right equipment and classroom design, and create seamless learning environments with display solutions and other technologies that integrate with a host of third-party educational tools.

To learn how Samsung can help visit, [www.Samsung.com](http://www.Samsung.com).





- <sup>1</sup> Institute of International Education, “Survey: Most US colleges will adopt a hybrid learning model for fall 2020,” Aug. 5, 2020. <https://monitor.icef.com/2020/08/survey-most-us-colleges-will-adopt-a-hybrid-learning-model-for-fall-2020/>
- <sup>2</sup> Nick Anderson, “The post-pandemic future of college? It’s on campus and online,” *The Washington Post*, Sept. 28, 2021. <https://www.washingtonpost.com/education/2021/09/28/post-pandemic-university-online-classes/>
- <sup>3</sup> Lindsay McKenzie, “Students Want Online Learning Options Post-Pandemic,” *Inside Higher Ed*, Apr. 27, 2021. <https://www.insidehighered.com/news/2021/04/27/survey-reveals-positive-outlook-online-instruction-post-pandemic>
- <sup>4</sup> Scott Jaschik, “Provosts Face the Pandemic,” *Inside Higher Ed*, Apr. 26, 2021. <https://www.insidehighered.com/news/survey/survey-shows-how-provosts-faced-pandemic>
- <sup>5</sup> McKenzie, “Students Want Online Learning Options Post-Pandemic.”
- <sup>6</sup> Elissa Nadworny, “Today’s College Students Aren’t Who You Think They Are,” NPR, Sept. 4, 2018. <https://www.npr.org/sections/ed/2018/09/04/638561407/todays-college-students-arent-who-you-think-they-are>
- <sup>7</sup> National Student Clearinghouse Research Center, “First-Look Fall 2021 Enrollment,” Sept. 23, 2021. <https://nscresearchcenter.org/stay-informed/>
- <sup>8</sup> American Council on Education, “College and University Presidents Respond to COVID-19: 2021 Spring Term Survey, Part II,” May 20, 2021. <https://www.acenet.edu/Research-Insights/Pages/Senior-Leaders/Presidents-Respond-COVID-Spring-II.aspx>
- <sup>9</sup> Colleen Flaherty, “The Power of Peer Interaction,” *Inside Higher Ed*, Nov. 3, 2020. <https://www.insidehighered.com/digital-learning/article/2020/11/03/power-active-learning-during-remote-instruction>

## About Samsung

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# MANAGE TODAY'S UNCERTAINTIES IN HIGHER EDUCATION WITH HPE GREENLAKE

**Enabling postsecondary institutions to balance IT flexibility and cost with on-premises control and security**

## HPE GreenLake for Higher Education

### Pay-per-use economics

Flexible, consumption-based model with transparent predictable costs and on-demand capacity

### Simplified IT

Operated for you by HPE to add business value and lessen the burden on IT

### On-premises control

In your IT environment—from core to the edge—to maintain peak performance as well as security and control of valuable data

### Accelerated time to value

Solutions that evolve ahead of your needs, enabling you to quickly deploy value-added public services



## CHALLENGES FACING HIGHER EDUCATION

COVID-19 and other recent events have forced colleges and universities to shift priorities in response to changing student needs, variations in remote and blended learning models, heightened risk to student, teacher and staff health and safety, and rising cyber security threats.

With many returning to campus, new and evolving circumstances have underscored the need for higher education institutions to be as agile and proactive as possible. Both in times of crisis and as we move forward, the challenge is in maintaining the right balance. Colleges and universities must be able to scale with demand and rapidly deploy time-sensitive academic platforms and services, while IT must maintain the budgetary flexibility, manageability, and uncompromising data protection required.

## HPE GREENLAKE

Postsecondary institutions need to be able to consume the outcomes they want when they want them and pay only for what they use while maintaining the required security and control. Traditional on-premises solutions, however, tend to be too restrictive and often result in over provisioning and wasted spend (FIGURE 1). On the other hand, public cloud provides the needed IT flexibility and on-demand scalability but can fall short when it comes to compliance, manageability, and cost control due to hidden fees such as data egress costs. That's where HPE GreenLake can help.

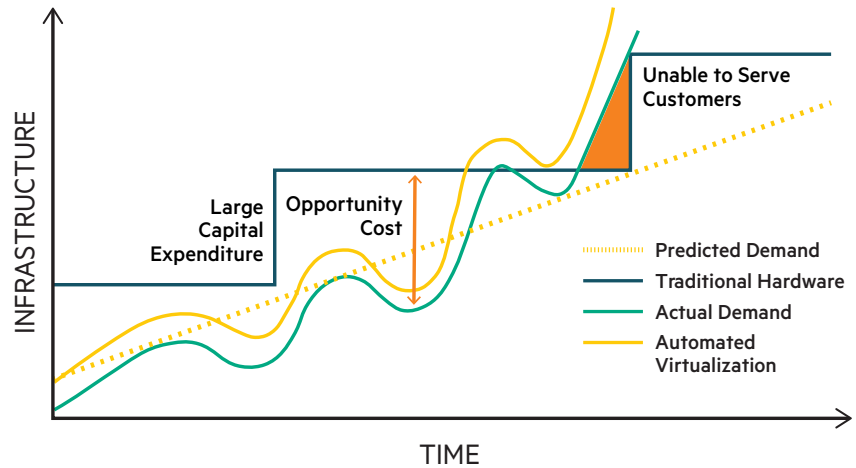
According to Forrester Research, HPE GreenLake, an on-premises, as-a-service consumption model, delivers the desired outcomes by combining the security and performance of on-premises IT with the flexibility and economic advantages of the cloud.<sup>1</sup> Benefits realized by those using the service include 30 percent CapEx savings

<sup>1</sup> "The Total Economic Impact of HPE GreenLake Flex Capacity," a commissioned study by HPE, Forrester Research, Inc., May 2018. [bit.ly/2Ts1Djw](https://bit.ly/2Ts1Djw)

## Solution brief

**FIGURE 1.** The CapEx dilemma

With a traditional on-premises model, hardware purchases are completed periodically to increase capacity ahead of projected utilization (blue line), costs accrue in excess capacity (orange line), and underestimating utilization (orange shaded area) leads to an inability to serve your end users.



30%

CapEx savings due to eliminated need for overprovisioning.<sup>1</sup>

75%

shortened time to market for deploying IT projects.<sup>1</sup>

40%

increased IT team productivity by reducing the support load on IT.<sup>1</sup>

<sup>1</sup> May be subject to a minimum commitment.

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due to eliminating the need to overprovision, 75 percent shortened time to market for deploying IT projects, and 40 percent increase in IT team productivity by reducing the support load on IT.<sup>1</sup>

## CONSUME IT ON YOUR TERMS

HPE GreenLake is a suite of preconfigured or customized built-for-purpose solutions, delivering IT outcomes with ready-to-deploy hardware, software, and expertise on premises in a pay-per-use model.<sup>2</sup>

HPE GreenLake cloud services include:

- VMs tailored to your needs
- VDI for security, seamless user experience and productivity
- Enterprise grade containers designed for cloud native apps
- Machine learning (ML) Ops delivering insights faster
- Compute and storage scaled for ease
- Data protection ensuring security
- Governance and management
- And more

Getting started is simple. HPE helps you every step of the way, ensuring that you start with the capacity you need today and scale as user demand changes, leveraging active capacity management, variable monthly payments based on metered usage, and services that simplify IT.

Need more choice? HPE GreenLake supports a wide- and growing-range of workloads as a service, including both HPE and partner

technologies. Configurations include compute, storage, private cloud, databases, virtualization, and backup solutions.

## BENEFITS OF HPE GREENLAKE

- Preserve cash flow and deploy capacity needed today in a pay-as-you-go monthly service.
- Realize total savings and respond to shifting budgets, only paying for capacity as used.
- Simplify your IT operations using automated capacity and deployment tools.
- Also get started quickly using predefined as-a-service configurations.

## GET STARTED

Institutions of higher education are facing sizable challenges today, but HPE can help you manage the uncertainties. With a good number of course-specific and student-centric apps and data requiring to live in the data center for security, latency, and application reasons, HPE GreenLake provides the agility of a modern cloud experience to your on-premises environment. Let us help you respond to the needs of your students, faculty, staff and administration, today and in the future—with one experience and one operating model across your distributed clouds, for apps and data at the edge, in colocations and in your data center.

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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<sup>1</sup>, 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.”

<sup>1</sup><https://library.educause.edu/resources/2019/10/2019-study-of-undergraduate-students-and-information-technology>







## ■ Gaining Momentum

According to the 2019 Educause Horizon Report<sup>2</sup>, 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<sup>3</sup>, 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.”)

<sup>2</sup><https://library.educause.edu/resources/2019/4/2019-horizon-report>

<sup>3</sup><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<sup>4</sup> 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."

<sup>4</sup><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<sup>5</sup>, 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<sup>6</sup>. 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<sup>7</sup> 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.")



<sup>5</sup> <https://www.reuters.com/article/us-videogames-outlook/global-esports-revenues-to-top-1-billion-in-2019-report-idUSKCN1Q11XY>

<sup>6</sup> <https://nacesports.org/about/>

<sup>7</sup> <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<sup>8</sup> 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.”**

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<sup>8</sup> <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<sup>9</sup>. 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<sup>®</sup> cameras installed on each wall for connecting directly to Georgetown's Zoom<sup>®</sup> video conferencing system; Biamp<sup>®</sup> 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<sup>™</sup> 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."

<sup>9</sup> <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 Bukowski. "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<sup>10</sup>. 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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<sup>10</sup> <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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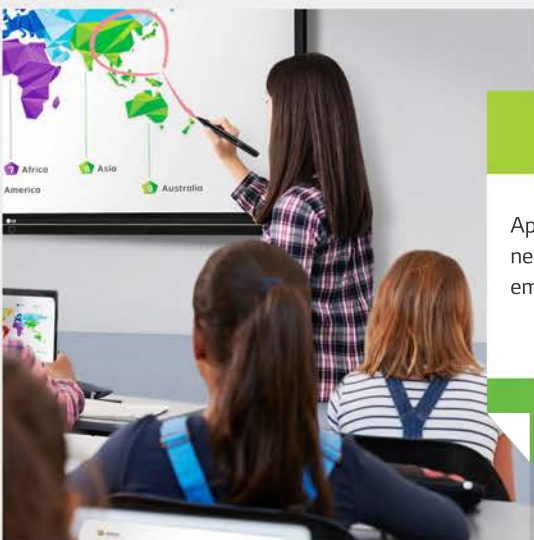


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<sup>1</sup><https://www.pnas.org/content/111/23/8410>

<sup>2</sup><https://campustechnology.com/articles/2020/10/08/report-points-to-negative-effects-of-covid-19-on-student-success.aspx>

<sup>3</sup><https://www.google.com/url?q=http://www.ascd.org/publications/educational-leadership/nov09/vol67/num03/Teaching-with-Interactive-Whiteboards.aspx&sa=D&source=editors&ust=1614217497019000&usq=A0Vvaw1nUA0cHqW-tXpwLP7j7FqD>

<sup>4</sup><https://www.guide2research.com/research/interactive-learning-statistics>