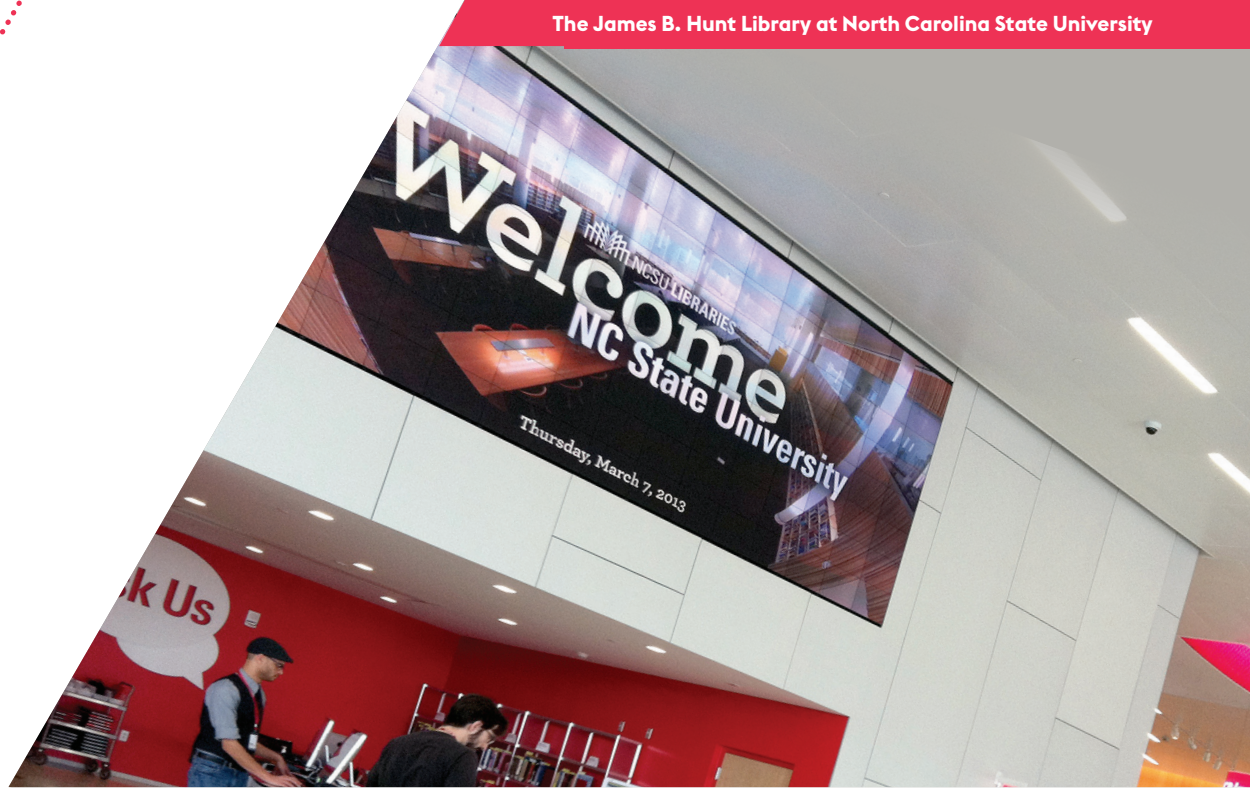AVIXA

The Power of Integrated AV Experiences in

Higher Education

Reimagining Higher Education:
The Power of Integrated AV Experiences

A new generation of students has arrived. They're glued to their smartphones and grew up experiencing the world through multiple screens. It shouldn't come as a surprise that they want something more than the traditional education experiences, like the well-worn classroom lecture or the stately campus library. Students use mobile devices to socialize, keep in touch with parents, handle finances and more. They communicate face-to-face — even when they're miles away from each other. They expect brilliant high definition everywhere they look and a soundtrack that fits in with their lives. Using new technology throughout higher education represents a natural progression for a generation that favors digital platforms.

Today's connected students are looking for meaningful, immersive experiences that impact their learning and their lives. They're used to consuming audio and video information at the press of a button, and they want that in their physical world, from classrooms to public spaces. Students seek interactive learning with peers and faculty — simulation, games, audiovisual (AV) collaboration — that will help them solve problems and retain vital information. Research bears this out.

Cognitive psychologist Richard Mayer of the University of California, Santa Barbara, has explored the link between multimedia exposure and learning. His experiments prove that students who get information in multisensory environments do better than students who perceive information through one sense. Mayer found that recall through multisensory stimulation is more accurate, detailed and longer lasting — even 20 years into the future. One's problem-solving ability improves, too, helping students generate up to 50 percent more creative solutions.

The growth of online degree programs and distance learning has contributed to heightened expectations. What was once considered a niche channel for delivering education content has rapidly become mainstream. Now, students want more than one-way exposure to knowledge — they demand the kinds of engaging experiences they have outside the classroom.

Higher education institutions that embrace experiential AV drive student engagement and retention.

2

Some of the most powerful benefits of integrated AV experiences in higher education include better collaboration, better listening, interactive learning through visualization and the opportunity for more effective pedagogies supported by technology. Schools that reimagine experiences:

- Attract the best students and help them achieve their full potential.

- Transform the student-teacher relationship in active-learning classrooms where technology fades into the background.

- Create unique spaces that enhance learning through multisensory stimulation.

- Immerse the entire university community — students, parents, alumni, partner businesses and thought leaders — in integrated experiences that go beyond campus.

A combination of compelling content, thoughtful use of space and modern technology represents the core of today's integrated learning experience. When students consider college campuses, they look for signs that the learning experience will be interactive, collaborative — and audiovisual.

The Case for Integrated AV Experiences

Integrated AV experiences are generated at the confluence of content, space and technology. These immersive, interactive experiences are rich in meaning and inspire total engagement from participants, when used for sensation, instruction, exploration and collaboration.

In higher education, AV experiences, when thoughtfully chosen and professionally integrated, provide exceptional benefits for students, teachers and the academic community as a whole, including:

- Enhanced collaboration. With collaboration technology, students can share their screens and engage in interactive activities using the connections and displays available to them. At the University of Kansas (KU), students can change what appears on screens from every seat in their active-learning classrooms.

- Interactive learning through visualization. Instead of relying on traditional monitors or projector screens, some universities make use of digital panels with built-in interactivity, such as touch-screen capabilities and

The Taylor Institute for Teaching and Learning at the University of Calgary

electronic drawing. The Taylor Institute for Teaching and Learning at the University of Calgary uses large mobile screens as interactive posters. Students illustrate their research through video, text and voice in a single presentation, and can interact with remote attendees via video camera.

- Clear listening. Sound quality is a critical challenge, particularly for today's classroom video sessions. A new generation of microphone and signal processing technology helps reduce ambient noise. The Washington University School of Medicine connects five schools across state boundaries. In addition to good visual connectivity among active-learning classrooms, the audio is automatically shaped to deliver clean, crisp sound. At 90 percent utilization, the rooms are an unqualified success.

- Heightened engagement. Halls and public spaces where big videowalls and interactive displays stream information about events and classes are an open invitation to engage. Students who might normally leave a building right after class now linger and collaborate with peers and faculty. The Great Hall at Elon University was designed to be the hub of their 'Global Neighborhood,' where students have the space, the connectivity and the visual tools to discuss and debate what they learned in classrooms.

- More effective teaching. With active-learning tools, students become more proactive in seeking information and interacting with each other and faculty, and teachers are able to learn what resonates most, based on first-hand observations and clues they can use to inform lessons and activities. Harvard Business School created its HBX Live virtual classroom to put students at the center of an active learning experience that reproduces the intimacy and student-teacher interaction of a physical classroom environment.

3

"We learn by doing, watching and experiencing."

**John Seely Brown,
independent co-chairman of
Deloitte LLP's Center for the Edge**

In his book, A New Culture of Learning: Cultivating the Imagination for a World of Constant Change, John Seely Brown, independent co-chairman of Deloitte LLP's Center for the Edge, and a visiting scholar at the University of Southern California, argues that learning must evolve from something that only happens in a classroom to something characterized as "connected learning."

In an increasingly digital world, he writes, "We learn by doing, watching and experiencing. People don't take a class or read books or manuals to learn how to use a Web browser or email program. They just start doing it, learning by absorption and making tacit connections. The more they do it, the more they learn."

What higher education institutions call active learning is an important way to reach Brown's goal. Teachers can change curricula often and students can engage in rich forms of research and collaboration.

In the 21st century, tacit knowledge plays an important role in this new culture of learning.

Success in an increasingly digital economy depends on students' ability to leverage every opportunity to interact with information and connect with peers anywhere and anytime.

Technology can't be the only answer — experiences, enabled by technology that includes audiovisual systems, should be at the center of learning.

Take-away: By elevating experience over technology, innovative higher education institutions create the advanced learning environment that attracts the best students and helps them to achieve their full potential.

4

Multisensory Experiences Facilitate Transformation

Many leading institutions have moved past technology into the world of multisensory learning and interaction in an integrated educational community. They are finding that integrated AV experiences help them attract the best students and lead to better educational outcomes for those students.

In pedagogical style, this trend reinforces the shift from the "sage at the stage" one-way delivery of information to more collaborative methods, where lectures are homework and collaborative problem-solving happens during class.

In Capitol Federal Hall, home of the University of Kansas School of Business, faculty member Greg Freix records his base lectures, including notes, and then provides them early to the students as assigned preparation for meeting live. Freix uses classroom time to do written quizzes and ask questions on key points. He also assigns students team activities in class to emphasize important learning elements.

Active collaboration empowers students to work on solutions together. Students can plug their devices into mobile-ready chairs and tables — or work wirelessly.

The University of Iowa prototyped one active-learning classroom as a pilot, fitted a second classroom in short order and followed with a third active-learning classroom. Utilization was so high that there was a waiting list to use the spaces.

"Now they're basically looking at designing the majority of their new learning spaces as active-learning spaces with very flexible furniture and displays, where the teacher is the facilitator, assisting students as they collaborate on the lesson they viewed at home," says Mark Valenti, President and CEO of information and communications technology design firm The Sextant Group. "With this configuration, the flipped classroom model, where students create their own learning, is much easier."

5

The James B. Hunt Library at North Carolina State University

Space Activates Content and Technology

Proper architecture and learning-space design create the optimal environment for AV experiences, thereby maximizing their effect on learning. Open floor plans with integrated screens and sound, partitions that define learning spaces, flexible seating configurations and movable digital displays all contribute to welcoming and energizing spaces that keep students engaged and productive.

Visual stimulation and sound from large and small screens grab attention as they broadcast what students, visitors and faculty are working on. Digital signage and interactive videowalls that include campus and local events create more opportunities for students to engage with information, connect with one another and the community.

Examples of institutions that are maximizing the educational potential of space include:

- The atrium and public spaces at The Taylor Institute of Teaching and Learning at the University of Calgary are in constant use, especially when projects are due. Students reconfigure spaces, using five or six tables and movable screens to work together. Each space in the building can be reconfigured to suit the purpose it needs to play. This level of flexibility changes how students and faculty interact.

- The James B. Hunt Library at North Carolina State University offers different spaces for different kinds of research. For example, the Teaching and Visualization Lab provides spaces for users to come together within and across different departments to visualize complex data and unique problems. It features moveable seating, multiple projection options and the capability to engage remote participants and several data sources.

6

Experiences That Look Beyond Graduation

A recent IBM survey of industry and academic leaders revealed the skills students need to succeed at work. Among them are analysis and problem solving, collaboration and teamwork, and business-context communication, along with flexibility, agility and adaptability. Experience-based practical learning has become even more critical. Partnerships between academia and the private sector help create an even more valuable education ecosystem.

The KU School of Business actively partners with the business community to benefit students in many ways — from attending guest lectures in the big auditorium or viewing them on the videowall; to learning advanced accounting from partners of a major accounting firm; to keeping up with the financial markets through the Bloomberg ticker streaming in the great hall; to engaging in casual conversations with business leaders as their presence is announced on the large screens.

Take-away: Through integrated experiences and collaboration with the business world, leading higher education institutions create a supportive ecosystem for students, parents, administrators and faculty to prepare students for their future in the workplace.

The University of Kansas School of Business Finance Lab

Innovative universities offer integrated AV experiences rich with stimuli that rival some of the most admired organizations, including Pixar Animation Studio, with its atrium space that is a central hub for spontaneous collaboration; and design and innovation consulting firm IDEO, whose San Francisco open office includes private booths for focused work. When students graduate, they will fit right in to a work environment they have already experienced.

Some leading higher education institutions have been particularly innovative in integrating AV experiences throughout their campus communities, whether revitalizing existing structures and spaces or creating new facilities designed around experiences from the ground up. They provide an inspiring way forward for all of higher education.

7

Taylor Institute of Teaching and Learning:
As Integrated as Technology Will Allow

The Taylor Institute of Teaching and Learning at the University of Calgary is an example of a converged higher education experience. "They are as integrated as technology will allow at this point," says Mark Valenti, of The Sextant Group.

The atrium and public spaces are in constant use, especially when projects are due. Students reconfigure spaces, using five or six tables and the ubiquitous screens to collaborate and engage in face-to-face conversations. Digital signage displays calendars of activities and class schedules, but also serves as digital whiteboards for students to leave notes to each other.

Better collaboration, thanks to smart audio and multiuse displays, is a main contributor to the success of many programs. Inviting students to sit in groups during class and encouraging feedback to shape their learning experiences sends students a clear message that they matter.

Feeling empowered and valued, and being invited to collaborate, are strong motivators for students to get to class early and stay to the end. A large nursing course grew its attendance by 70 percent after the school moved the class to the building, going from 20 to 30 percent to 100 percent attendance, with students staying through the whole class.

As part of a homework assignment, students turned a classroom into a retail store, with chairs, desks and screens rearranged. Students took over digital signage normally used to display class schedules throughout the building to get the word out on their sales.

"*I just want to be able to do magic.*"

Dr. Lynn Taylor, Vice-Provost, (Teaching and Learning), University of Calgary

The building has active-learning classrooms on one floor, where students and faculty interact. On another floor are instructional faculty rooms for the development of curriculum designed for audiovisual experiences. This new way of teaching has become popular quickly. In the words of Dr. Lynn Taylor, Vice-Provost (Teaching and Learning), "I just want to be able to do magic. The Taylor Institute is a grand experiment. The design is pedagogically and technically complex."

These changes to the structure of space through reconfigurable seats, screens, displays and dynamic content are not just cosmetic, they are changing the very nature of learning: transforming the experiences of students and faculty, and in the process, also the very institutions that have embraced integrated AV experiences.

The atrium and public spaces at the University of Calgary

8

The University of Kansas: Transparency, Visibility and Interaction With Stakeholders

Open spaces add transparency and visibility to areas previously isolated, such as faculty workspaces and student classrooms, and create more opportunities for the socialization of ideas.

When the University of Kansas School of Business began designing its new Capitol Federal Hall, everyone agreed the end result had to be a building that fostered a new and higher level of connection among faculty, students and visitors. "Former Dean Neeli Bendapudi had the vision for the project — to rethink the role of the university in students' lives, and that of the business school in the community," says Dan Nenonen, Partner at the architecture and design firm GastingerWalker& (GSA).

Space, imagery and sound are all part of the learning experience in the new building, and after the first two semesters, faculty member Greg Freix calls it, "an unqualified success with students." He says, "In the 'old home' of the business school, students wanted to get out as soon as classes were over. Now students do their finals preparation in the active-learning classrooms and take advantage of the USB ports and benches in the building. Connection is evident just standing on the bridge and looking at the assemblies below."

"It was an extreme change from not staying at all after class to the building constantly being occupied with students," says Julie Numrich Murray, Director of External Affairs, KU School of Business. "Students even complained the space wasn't open enough — they wanted more access."

A large videowall welcomes sponsors, orients visitors, serves as an information board for upcoming events and streams live conferences for spillover audiences when the 350-seat auditorium is at capacity. The school hosts an external lecture series with prominent business leaders, inviting community members and faculty to participate.

There are also opportunities for students to interact with the business community in multiple events throughout the year and informal settings like VIP nights. The 32-foot-wide videowall welcomes guests and lets students know who is in the building, so they can engage business leaders in casual conversation. This makes interactions much more natural and effective, taking the pressure off of getting to know professionals.

"The vision was to make the business school more like business, available to everyone," notes GSA's Nenonen. The new building has even become a new revenue stream for the business school. "We have a rate set for events by non-KU-related entities," says Julie Numrich Murray. "This helps us with costs when we host external events."

9
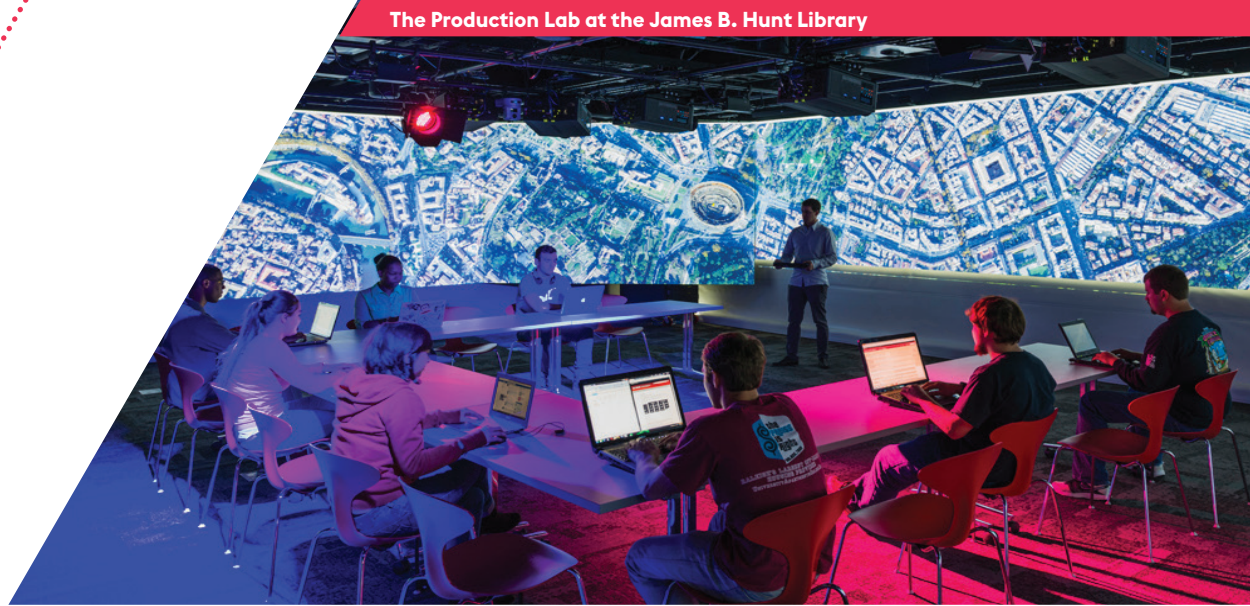
North Carolina State:
Reinventing the Library As an Experience Hub

Before trendy coffee shops became the place to go and collaborate outside home and work, libraries used to be the "third place" to meet. Universities are reclaiming that function by transitioning libraries from their original purpose, a massive storage space for books with a few reading rooms attached, to a more open, services-oriented space that leverages technology for interacting with information.

The James B. Hunt Library at North Carolina State University is a case in point. Students, faculty, staff and affiliates are able to interact and collaborate in a variety of different ways. A library orientation area features an Immersion Theatre with a large curved videowall. A large screen on the stair wall to the mezzanine displays student art and Wolfpack games during basketball season. There's also a gallery space where campus community members can experience interactive exhibits.

At the center of an engineering-focused campus are active-learning spaces for users from different departments to visualize complex data and unique problems. They include moveable seating, multiple projection options, remote participants and multiple data sources.

Students and faculty can experiment with new technologies in the hands-on Learning Commons. A Digital Production Lab for full-featured audio/video production and recording includes "green screens." Collaborative Learning Studios are fitted with clusters and workstations along with enclosed spaces for group study, practicing presentations and gaming.

A wall-sized display enables collaboration on complicated projects: looking at multiple images, documents, videos, or websites side-by-side, or group game simulations.

"Data visualization is increasingly a core competency in higher education, and the large-scale visualization spaces at Hunt are a canvas for researchers to share their work and for students to learn new techniques," says Emily Lynema, Associate Head of IT and Director of Academic Technology for North Carolina State University Libraries. "N.C. State students and faculty use the Hunt Library's AV technology across a range of disciplines to enrich learning and reveal new insights. For example, in our Teaching and Visualization Lab, communications students can experience a lost moment in time with a historically accurate simulation of Dr. Martin Luther King Jr.'s 'Fill Up The Jails' speech while nuclear engineering students can more effectively visualize the impact of changing parameters in their data model through stereoscopic rendering of the turbulent bubble flow in nuclear reactors."

"AV technology enables students to work together effectively, and the Hunt Library incorporates displays with wireless connections in every collaborative group study space."

Emily Lynema
Associate Head of IT and Director of Academic Technology at NCSU Libraries

Indiana University:
Awe-Inspiring Is Just for Starters

The innovation in schools that greet visitors with large screens is not just the technology, as impressive as it is, or the visceral responses it elicits. What begins as awe quickly leads to a series of remarkable experiences that energize and inform every conversation and interaction.

Jay Kincaid, Director of Facilities and Technology at The Media School at Indiana University, describes refurbished Franklin Hall, "The large display is the first thing you see when you walk into our building, and it's pretty amazing. There isn't a single person who comes into the building who doesn't say 'wow!' People are awestruck by the display hanging in our commons. It's amazing. They are slack-jawed." About the professional grade equipment, he adds, "The idea is to put tech in their hands, help them see how they'd interact with faculty."

The building benefits advisors and faculty as well. "Having advisors under one roof with a common lobby and meeting area helps us to distribute the workload more equitably, share knowledge and resources more easily, while making training and professional development easier to accomplish," says Amy Cornell, Director of Student Services.

Other innovations at the school include cloud archiving that allows students to start a project in one building and finish it at the other side of campus, and a Game Lab fitted with high-end gaming equipment where students can run simulations.

"Plug-and-play learning is a huge benefit to have as a student because it makes it easy to work on your project anywhere you'd like. Whether you're sick and need to work from home, or you're just running late and need to work in another building, plug-and-play learning makes it possible," says Brooklyne Beatty, a senior studying journalism with a focus in broadcast.

Jessica Tompkins, a second-year doctoral student who studies video games, says, "It's really efficient for getting work done in a timely manner. It's convenient, especially for working with other students on projects. We can meet in a variety of locations that are best suited to get the job done. For students doing projects in video game design and development, it helps to be able to access the different computer labs that have different software, which allows for the creation of those games."

Media students and faculty use the facility to discuss current events with the local community. "On election night, all networks were displayed on the videowall, while a panel of expert political science faculty discussed the results live in front of more than 100 people," notes Kincaid. "The local PBS station used live cuts from the event in their broadcast."

The Snow Atrium at Elon University

Elon University:
## Enabling Campus-Wide Collaboration

Integrated AV experiences facilitate social interaction. Just like the gathering place or central square in Socratic times, the resulting environment compels students to look up from their smartphones and interact with one another.

The Great Hall at Elon University is central to their 'Global Neighborhood' concept, connecting what students learn in the classroom with what they discuss everywhere else on campus. The Global Neighborhood includes five residence halls and the Global Commons Building, which houses the Isabella Cannon Global Education Center, multimedia rooms, a digital theater, an organic tea café, academic offices and the Great Hall itself, a three-story space overlooking Lake Mary Nell.

"As we began planning the Global Neighborhood, we wanted the Great Hall to be the ideal intellectual space for everyone on campus," says Joe Davis, Elon University's Assistant Director of Campus Technology/Solutions Architect. "However, since the room is so vast, we also hoped to host large scale events seamlessly, without bringing in a lot of extra materials. To do this, we needed a versatile screen that could display video and host presentations in a compelling and engaging way, without a lot of time-consuming configuration."

Opportunities for social engagement are everywhere. "We just built a new building," observes Davis, "and where two buildings come together, we created this huge, open glass room that acts as a breezeway connection. As you enter the new building, there's this beautiful screen over the entrance point, showing school communications."

At first, it showed recent graduates in their new jobs. Eventually this screen will also stream a live feed from the student broadcast facilities, further connecting the community.

12

The Great Hall at Elon University

The HBX Live virtual classroom at Harvard Business School
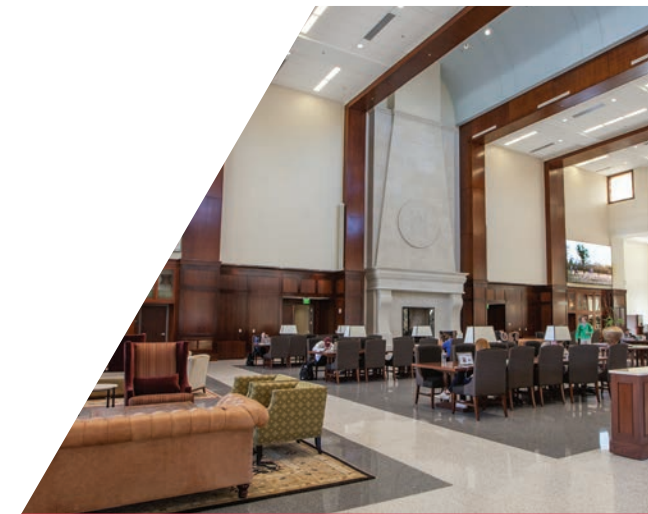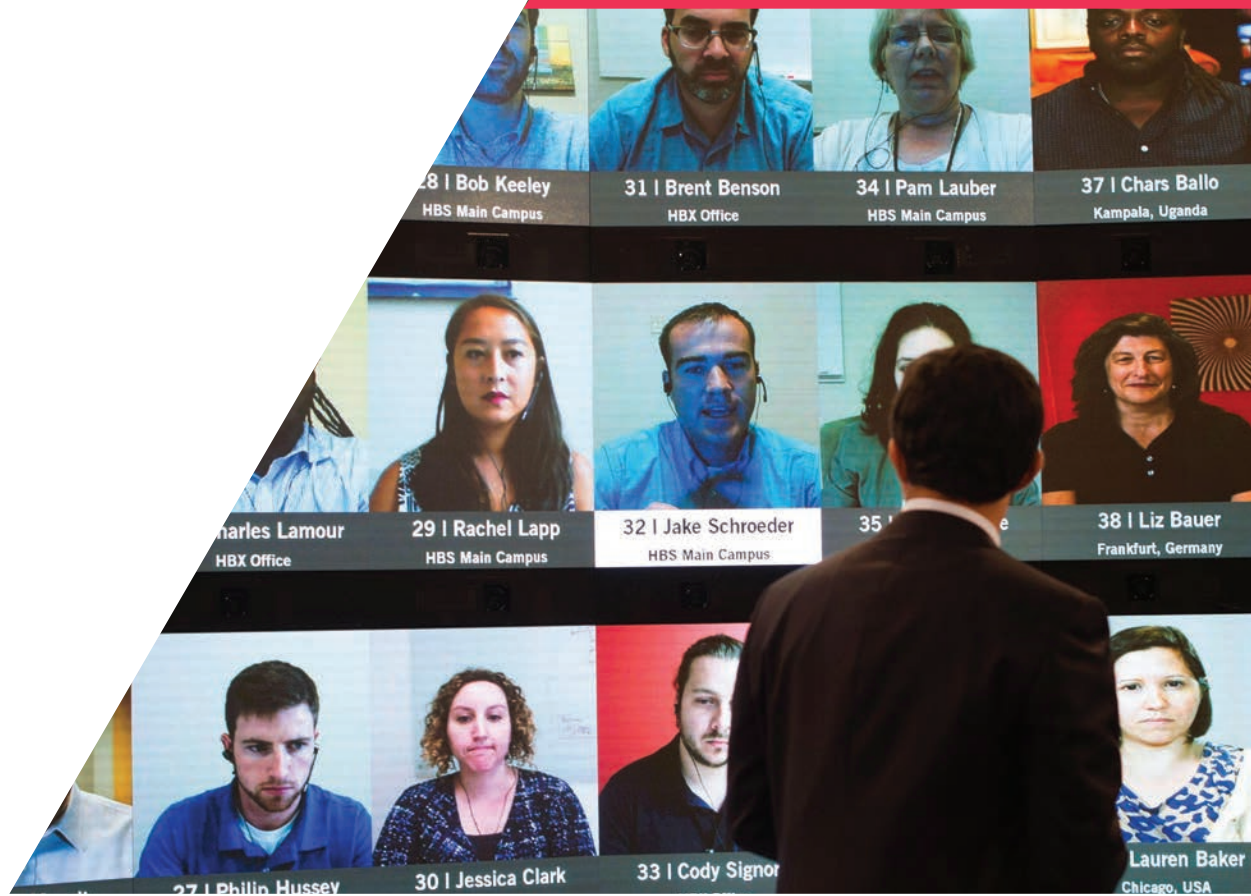
Harvard Business School:
Building the Global Classroom

Using interactive and visual AV experiences, institutions can expand the reach of their programs to educate students around the world.

Harvard Business School (HBS) created its HBX Live virtual classroom to reproduce the intimacy and interaction of the physical classroom environment and put students at the center of the learning experience. Participants from around the globe can log in and join real-time, case-based sessions with HBS faculty and business leaders. A high-resolution videowall mimics the amphitheater-style seating of a university lecture hall, with up to 60 participants displayed simultaneously.

High-definition views are also available from either side of the main videowall, facing the professor and teaching wall, a panoramic view facing the videowall, or within the teaching wall for another view of the professor.

To further simulate real-time classroom interaction, speakers are concealed within the videowall. If the professor is engaged in conversation on one end of the videowall, but a student on the opposite end interjects, he has a spatial, audio cue just as if in a classroom.

In addition to live interaction, faculty can poll students and get real-time feedback.

HBX Live is also used for alumni engagement and as a custom solution available to corporate clients.

"Each student has one unique student-to-professor video feed to simulate the typical conversational perspective, with additional vantage points provided by multiple in-studio cameras. From inside the studio, the professor's experience is just as personal and interactive."

JoAnn Arcenal
Director of Public Engagement, McCann Systems

13

A New Culture of Learning, With Benefits For Everyone

Today's connected students are looking for meaningful, immersive experiences that impact their learning and lives. When they visit university and college campuses, they look for evidence that the learning experience will be interactive, and that audiovisual collaboration will take center stage, in the classroom and in the common areas where they socialize. The intersection of content, space and technology is core to integrated AV experiences.

Powered in part by these integrated experiences, the role of universities and colleges is expanding from places to go and get a degree to learning communities that set the course for innovation. Students, faculty and administrators are not the only beneficiaries of this trend. Alumni, parents and the greater business community have a stake in this new model of learning, too.

In an age where everyone can see what others are doing, when parents and students have more options than ever before, higher enrollment and brand recognition depend on the ability of educational institutions to offer an environment that expands individual learning in a digital world. Some of the most compelling advancements offered by integrated AV experiences include better collaboration, interactive learning through visualization, better listening, improved retention and more effective teaching.

For millennials and newer generations of students, these are all good reasons to engage in an environment richer with stimulation and opportunities than their smartphone. For these students, it's not enough to be equipped to solve the problems at hand now. Their educational success will be predicated upon developing the ability to go beyond learning about the present to being able to interpret and figure out things as new challenges arise.

Many leading institutions have already positioned themselves for the challenges of tomorrow with an integrated AV strategy today. As science fiction writer William Gibson put it, "The future is already here — it's just not very evenly distributed."

Take-away: Powered by integrated AV experiences, universities are evolving from places to get a degree to learning communities that set the course for sustained innovation.

The James B. Hunt Library at North Carolina State University

14

**Audiovisual and Integrated
Experience Association™
11242 Waples Mill Road, Suite 200
Fairfax, Virginia 22030
+1.703.273.7200
www.avixa.org**