

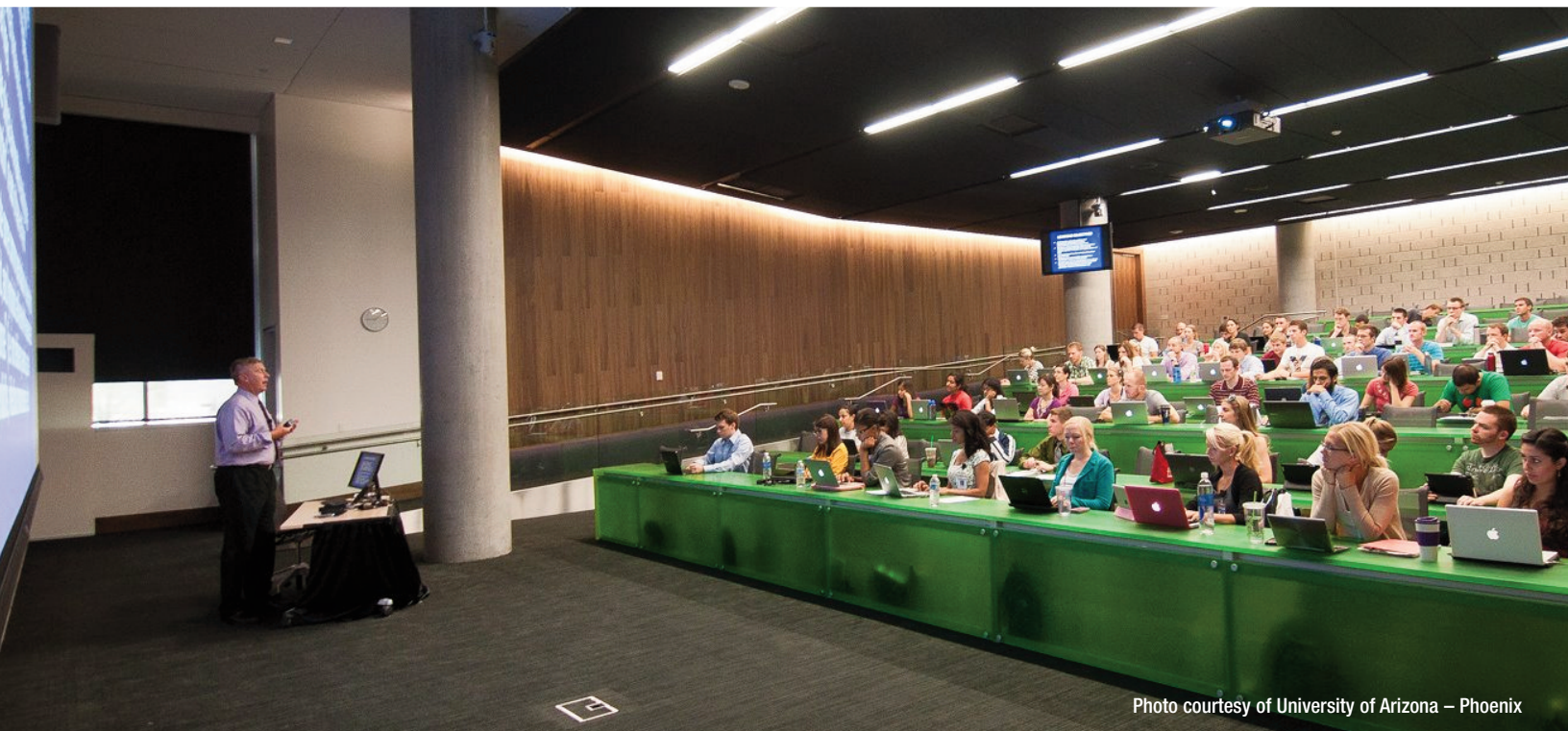


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Crestron control and DigitalMedia™ technology crucial to innovative, 85-room project in new Health Sciences Education Building

Challenge

To make unusually complex audio/video systems so simple to operate that guest lecturers can walk in and use them with absolutely no training.

Solution

Minimize the number of components in each system and the number of steps required to use them. Crestron control, Crestron DigitalMedia™ and Crestron DPMS-300-C integrated platforms were crucial to this process.

“An unusual characteristic of our campus is that we have about 400 community physicians who contribute to our programs on a volunteer basis, in addition to about a dozen full-time instructors. Many of these volunteers lead just one session per year, then go back to their regular practices. They come in cold off the street, step into a room they’ve never seen

before, yet they have to be able to quickly use the technology. We don’t want them fumbling and we don’t want my staff to have to hold their hands. We certainly can’t afford equipment issues.”

That’s Keven Siegert, Director of Media Services for the University of Arizona College of Medicine – Phoenix, describing the thought process of designing the technology in the new Health Sciences Education Building in Phoenix. The recently opened building includes 85 classrooms, lecture halls and laboratories, some of them with capabilities that haven’t been duplicated anywhere else.

The overriding need for operational simplicity affected every part of the AV system design. Fortunately, over the four years of planning, Siegert was able to draw on almost 30 years of experience in AV services, the ideas and advice of colleagues at a number of other medical schools, and the expertise of engineers at the Sextant Group, Phoenix-based Audio Video Resources (AVR) and Crestron.

The Learning Studios

Perhaps the most interesting of the classroom spaces is the four new collaborative Learning Studios. Three of these studios include 10 student work tables; one has 20 tables. Each work table, with seating for six students, has its own 42" Panasonic® LED display and an input plate using a Crestron DM-TX-201-C transmitter, which accepts both analog and digital devices. An instructor's station includes a movable lectern, a 55 Panasonic display and a Crestron 9" tilt touch screen.

"We use these rooms for subjects that don't have a hard correct answer, for example Medical Ethics," Siegert explains. "An instructor may present a case with an ethical dilemma, and then ask the groups at each work table to discuss it. When they reconvene as a class, each group will present their ideas, which they normally do with a PowerPoint® that may include photos or other illustrations they find or create on their laptops. The main visual on the touch screens is a map of the studio so that instructors can very easily choose the table they want and send that group's visuals to all the displays."

These rooms also include a sound system with wireless microphones for the instructor and student presenters. Student audio is switched together with video from the Crestron matrix switcher.

Siegert says these classrooms have proven extremely practical and are booked for almost every available class hour. "They

are by far the most popular rooms on campus, and several of the instructors have reported that the classes they have held in these rooms have been the most satisfying teaching experiences of their careers."

The Gross Anatomy Lab

A large anatomy lab, which Siegert describes as the most advanced in the country, if not the world, is organized in a similar fashion. It includes 20 student work tables, each with a Panasonic flat-panel display and an AV input, plus an instructor's station with a control screen that features a map of the lab.

In this lab, however, students don't use the AV systems to make presentations. It's used by instructors to show previously-prepared visuals and video from live demonstrations on each monitor, and students can refer to these materials to guide them in their dissections.

"We also designed a mobile cart with an HD camera on an articulating arm," Siegert explains. "We can plug it into any of the AV inputs and route video from the camera into all 20 monitors. If a student finds something of special interest, staff can roll in the cart with its camera so that everyone can see what he sees and discuss it. We also included a Crestron Capture HD® lecture capture system so that instructors can record questions and observations and use them in future classes."



Photos courtesy of University of Arizona – Phoenix



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Keven Siegert, Director of Media Services for the University of Arizona College of Medicine – Phoenix

The lab is available to individual students and groups for after-hours study. During these sessions they access reference materials from the university network on their laptops, then project the image on the large-screen display to guide them as they work.

The use of Crestron DM-TX-200-C Wall Plate Transmitters (mounted below the monitors at each workstation) ensures that the system can accept inputs from virtually any student laptop and medical instrument, as well as the HD camera cart. Lower-resolution analog signals are converted to digital and scaled up to 1080p high-definition using a Crestron DM-RMC-SCALER-C scaler.

Patient simulation labs

Like most medical schools, the University of Arizona – Phoenix offers its students the opportunity to practice invasive techniques without the possibility of hurting real patients. “We have some really sophisticated manikins, some intended for surgical practice, others for starting IV’s or for intubation, that is, opening up the airway by inserting a metal expander into

the throat. We have manikins that simulate children, adults, elderly people, and even one that simulates labor and delivery so our students can practice delivering a baby.”

There are four rooms in this lab, each with two ceiling and one wall-mounted PTZ camera, plus a ceiling mounted microphone. A nearby observation/control room allows physician/instructors to observe the student’s work as well as control and voice the manikins, causing, for example, a sudden crisis with bleeding, a drop in blood pressure or some other issue that the student must deal with.

An additional Clinical Examination Room, with local actors playing the part of patients, gives students the chance to practice human interaction. It is similarly equipped with cameras and a microphone and instructors observe from the same control room.

Crestron Capture HD systems record each session for later review and discussion. Crestron 9" touch screens allow the physician/instructors to adjust the cameras if needed and control recording and playback, all without previous experience with the technology.

Designing the AV systems

The sophistication of these rooms, plus additional classrooms and lecture halls, many of which include video conferencing systems, annotation systems and other cutting-edge technology, illustrates the challenge Siegert, the Sextant Group and AVR had in making them simple to operate.

One key to this process was the design of the control screens. “We really focused on stripping them down to the bare necessities, even going so far as taking the shadows off of text and buttons. If something did not contribute to the content or was extraneous in any way, we left it out. It’s true that the screens look really boring, but they’re highly functional.”

All of the control screens are linked using Crestron Fusion RV®, which allows the AV services staff to provide helpdesk services, should an instructor have a question or problem, as well as simplifying maintenance.

Another key was the use of Crestron DigitalMedia technology. “We needed really high quality audio and video, but we didn’t want to have to deal with multiple devices in order to convert signals to a format that would work,” Siegert explains. “One box does all the conversion and routing, and we know that box is a highly reliable box. There are just fewer links in the chain that can fail.”

Wherever possible, the team used the Crestron DMPS-300-C, which combines a control processor, audio processor, amplifier and switcher to simplify the systems, their installation

and maintenance. “We worked hard to determine the smallest number of components that could get the job done, with the highest reliability. I’ve found over the years that the fewer the pieces and the fewer the connections, the more reliable a system is likely to be.”

The larger labs, including the learning studios and gross anatomy lab, use Crestron CP2E control processors instead, with DM-MD16X16 or DM-MD32X32 switchers to handle the large number of inputs and outputs.

Evaluating the results

Bob Troidl, account executive at Audio Video Resources, points out that the AV installation at the Health Sciences Education Building was the largest ever for the university. “Even though the project was large it completed in a short time span and on-time. That was due to the high quality of the Sextant Group’s design, the superior quality of Crestron products and AVR’s dedication to a flawless job.”

Siegert says the faculty and students have been extremely pleased with the new classrooms and laboratories, although they’ve said very little about their underlying technology. “Yes, they’ll say, ‘the images and sound are fantastic,’ but nobody is saying, ‘that’s a terrific touch screen.’

And that’s how it should be. “I want the technology to be transparent. The instructors shouldn’t have to think about it. They can worry about the content they’re teaching and that’s enough.”

“One measure of our success,” Siegert adds, “is that in the five months since we’ve opened not a single faculty member has asked us how to use the systems. That’s despite the fact that we haven’t done a single training session, although we would if we were asked.”

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