



Photo Courtesy of William Carey University 2013

Building the best AV system from scratch

New Mississippi medical school relies on Crestron DigitalMedia™ technology

Challenge

Medical education is changing. Gone are the days when students try out basic practices on live patients. In the best medical schools today, aspiring physicians have already had two to three years of practice in medical techniques and human relations skills before caring for their first patients in a clinical setting. This includes interacting with robotic simulators, actors posing as patients, and with each other.

Therefore, when building a medical school from scratch it's critical that the technology be cutting edge and reliable.

So when William Carey University, a private institution founded in 1892, set out to open a College of Osteopathic Medicine, they based their AV systems on Crestron control and Crestron DigitalMedia™ technology.

Solution

According to Dr. James Turner, Dean and Associate Professor of Medicine, the mission of the new medical school is to prepare students to become primary care physicians to serve rural and medically underserved areas of the Gulf South including Mississippi, Louisiana, Alabama, Florida and Arkansas.

“Using a community-based training model, we send our third-year students into rural communities to give them an opportunity to understand the advantages of practicing in that type of setting,” he explains. Among those advantages, Turner says, is the chance to make a real difference in people's lives.

The decision to use Crestron components was not a difficult one at William Carey. Regina Knight, Coordinator of Asset Management and Special Projects, had already standardized on Crestron control and DigitalMedia for all of the university's newer classrooms, and she was in the process of converting older analog rooms on the Hattiesburg, Gulfport, Mississippi and New Orleans campuses to Crestron.

The new medical school, located in Hattiesburg, includes an academic building with two large lecture halls, an Osteopathic Practice (OPP) lab, a gross anatomy lab and a control room/recording studio. There's a second building with two conference rooms, and a third building with two clinical simulator rooms, eight patient examination rooms, two observation/control rooms and seven group study rooms, as well as faculty offices.



An early decision to use Crestron DigitalMedia technology helped make these advanced systems practical and affordable.

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“For the new campus, we went extremely high-end, linking the buildings with fiber so we can share video feeds and recording systems,” Knight explains.

The OPP lab is perhaps the most advanced of these rooms. Used to train students in the manipulative techniques that are the hallmark of Osteopathic Medicine, it includes a demonstration table with two high-definition PTZ cameras mounted overhead and three side-by-side projectors trained on a super-wide-format screen. Instructors can control the cameras and other equipment using an eight-inch Crestron wireless touch screen. Four wireless microphones can accommodate multiple presenters.

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Scott Daniel, President, Vision AV

“Most often we will put up a slide from an anatomy lecture on one section of the screen, a schematic drawing on the second section and live video in the middle,” Turner explains. “While students watch a demonstration, they’re able to correlate what they see with a drawing of the technique and a drawing of the anatomy involved.”

The three projectors can also be edge-blended to show a single, wide-format image of up to 5760 x 1200 resolution. “It’s a phenomenal image,” says Scott Daniel, president of Daphne, Alabama-based Vision AV, whose company designed and installed the AV systems at the college. “There are times when the material calls for really fine detail, and so we wanted to make sure we could provide it.”

The gross anatomy lab, where students have their earliest opportunity to study human body systems firsthand, also includes two ceiling-mounted PTZ cameras, multiple wireless mics and a Crestron control screen, here used to capture

images of instructor demonstrations and show them on six 55" NEC® flat-panel displays located close to student work tables.

Two patient simulator labs, each equipped with five HD cameras and microphones, provide hands-on practice in a variety of medical and surgical situations using robotic simulators.

Eight patient examination rooms, each equipped with two HD cameras and microphones, give students an opportunity to practice examination techniques and human interactions. "We hire actors and train them to describe various symptoms," Turner explains.

Video and audio from each of these rooms can be transmitted to a control room/recording studio, where technicians record it on a bank of DVRs and then upload it to a video-on-demand server for later review by students. Dr. Turner explains that in the patient examination rooms, "We record each of the sessions, and then the student and instructor review the recordings to improve their examination techniques, their professionalism, and their bedside manner as a physician."

The ability to record these sessions is crucial because of the "Hawthorne effect," in which people will change their behavior when they know they are being observed. "If the instructor were in the room, it would be an entirely different experience," Turner explains. "Here, to a very large degree, the students forget about the cameras and can interact with the patients in a natural way."

The two lecture halls provide a forum for traditional classes. Each includes a high-definition projector and surround-sound system to provide the highest possible quality, plus inputs for laptops and other devices, a document camera, Blu-ray Disc™ player, gooseneck and wireless microphones, and its own set of high-definition PTZ cameras for the recording of classes.

In addition to the recording capability, technicians or instructors can route video and audio from the twelve laboratories and examination rooms into either or both of the lecture halls, so that live demonstrations can be shown to full-sized classes and other audiences. Instructors can control all of the systems from eight-inch Crestron touch screens mounted in the podiums.

Finally, two conference rooms and seven group study rooms are equipped with large-screen flat-panel displays and inputs for laptops and other devices.

Designing the AV systems

An early decision to use Crestron DigitalMedia technology helped make these advanced systems practical and affordable. While the cameras and most of the video source equipment, including laptops and Blu-ray players, are digital, many medical instruments are still analog, as are the data outputs from the patient simulators. DigitalMedia accepts HDMI®, DVI, DisplayPort and VGA outputs used on newer and older laptops, as well as the component, SDI, SDI-HD and other outputs used by medical instruments.

DigitalMedia provides extremely high-quality signals, easily handling the 1920x1200 resolution used in the College of Medicine's AV systems, as well as future standards including 4K video and Deep Color. The technology is economical as well, putting all audio, video and control signals on twisted pair and fiber optic network cables, rather than the bulky, expensive and costly-to-install copper cable that used to be the norm. The simplicity of the cabling helped make an extensive signal routing system practical. A DM 32X32 switcher allows the college to route any video and audio signal from any source to any combination of displays throughout the medical campus. "It would be difficult, if not impossible, to provide the image quality and the flexibility available in the college with any other technology," Daniel explains.

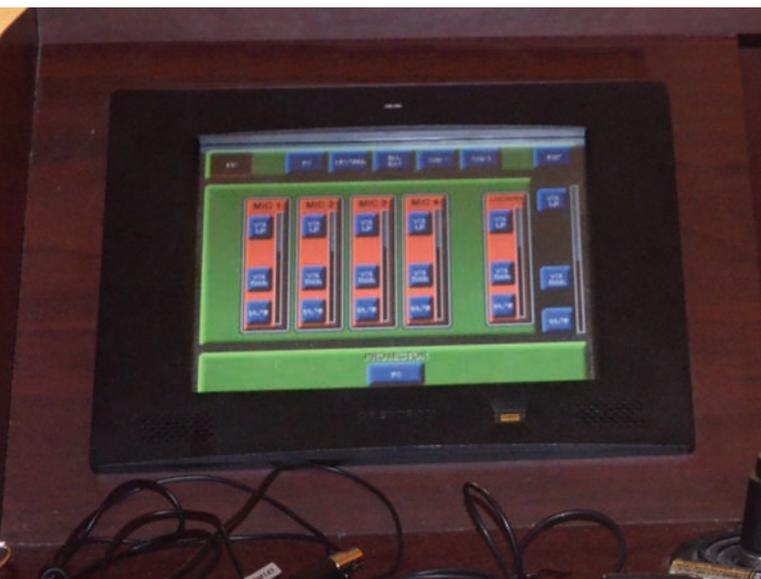
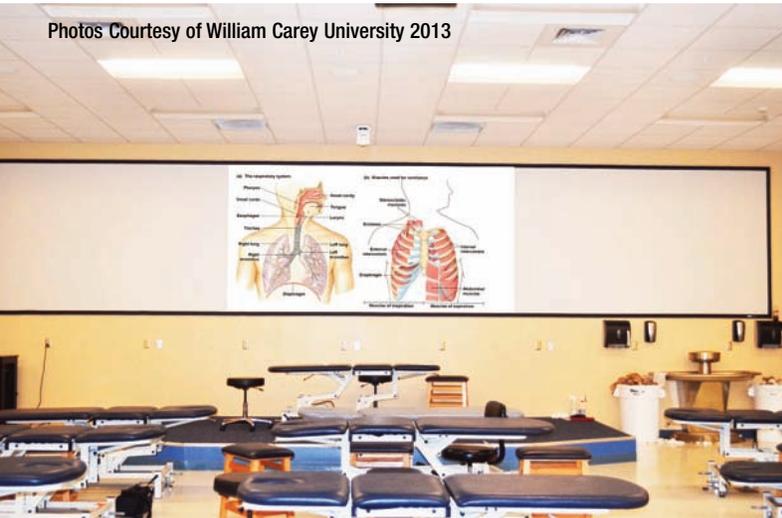


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Although the college employs support technicians to help instructors set up and maintain the AV systems, Crestron eight-inch touch screens installed in each of the rooms help keep operations simple. “Instructors get comfortable with the AV systems very quickly,” says Barry Williams, Director of Clinical Simulation, who also is in charge of support. Crestron Fusion RV® software helps the support staff to maintain the systems and provide help remotely if a professor has an issue. “We’re a small staff,” he explains. “If I don’t have to run across campus to help with a problem, that’s great.”

In the control room/recording studios, where the routing and recording systems are housed, technicians use larger 19" touch-sensitive displays for system control. These are connected to Crestron 3-Series™ control processors using Crestron touch screen interfaces. Technicians also use Crestron joystick camera controllers to operate each of the PTZ cameras from the control rooms.

Daniel says the William Carey faculty and staff has been very pleased with the new AV systems. “We’re continuing to add and upgrade systems throughout the university, as well as providing preventative maintenance contracts,” he explains. “We have been a pioneer with this technology,” Williams says. “We have the first completely digital Crestron installation in the state.”

“The most important thing for us is the reliability of these systems, that is, that they function properly every time,” Turner adds. When your mission is to provide a new generation of doctors for the rural and underserved areas of the Gulf South, you can’t accept anything less.”

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