

Competitive Edge: NEC's Displays Strengthen Pennsylvania College's Sports Medicine Curriculum

Facility:

- Moravian College

Vertical:

- Education

Location:

- Bethlehem, PA

Challenges:

- Create an interactive learning environment using technology to enhance a college's new rehabilitation sciences department

Solution:

- Seven 70" NEC E705 displays; two 80" NEC E805 displays; and three 90" NEC E905 displays

Result:

- A new experiential learning center that will enable graduate students to become successful healthcare practitioners through extensive hands-on experience

Date:

- Opened March 23, 2016

When a Pennsylvania college decided to add a new rehabilitation sciences department, it planned to open a brand-new, 45,000-plus-square-foot learning center to house the programs the department comprised – but creating the space was just one part of the undertaking. The school also needed to be able to teach these physical sciences in a way that would allow students to master them: through a hands-on approach and cutting-edge audio/visual aids.

In April 2015, Moravian College, located in Bethlehem, Pa., enlisted a team of experts to help renovate and expand an existing building not far from the main campus to create its new Sports Medicine and Rehabilitation Center, after recognizing a growing need in the job market for these specialized fields: From 2014 to 2024, employment of physical therapists is projected to grow 34 percent, employment of occupational therapists is projected to grow 27 percent, and employment of athletic trainers is expected to grow 21 percent – all much faster rates than the average. Demand for these services will come from factors like aging baby boomers, who are staying active later in life; the need to treat people with mobility issues stemming from chronic conditions or disabilities; and an increasing awareness of sports-related injuries.

The college's end goal was an experiential learning facility that would double as a practicing sports medicine and rehabilitation space where students and professionals work side by side. To create this environment, Moravian began examining options for the types of technology that would work best from both pedagogical and budgetary perspectives.

The Challenge

Moravian College contacted Advanced AV, LLC, an AV and networks systems integrator it has worked with for the past decade on various classroom projects and upgrades, to collaborate with the project team and designers on the AV equipment as well as network and conduit requirements, electric circuitry and support structures.

"[Our responsibilities] entailed not only defining what AV was needed with those spaces, but also figuring out the infrastructure and coordinating with construction and facilities [teams] from the very early phases of this project," said Mike Morgan, account executive at Advanced AV.

This helped minimize challenges during the AV installation process, Morgan added, because technology needs and specified equipment could be incorporated into construction contracts from the start.



James Scifers, chair of Moravian's rehabilitation sciences department and program director for its athletic training program, also was involved in the original design of the building, providing the important perspective of a faculty member/instructor who would be using the displays to teach.

"I talked to IT [which worked with Advanced AV to select technologies] on how we would use white boards and displays from pedagogical standpoints in lectures and labs," he said. "IT would show me various options and



configurations for how the rooms could be laid out, and I'd tell them what I thought would work best in terms of teaching."

Scifers said there were several factors that went into the display selection process: Considerations that were both physical – the practical limitations of the building and the budget – and aspirational – the ways the school wanted to use technology to teach its students – had to be taken into account.

"We wanted to have a larger size display in the lab to allow students to easily view what's being presented, and a high-resolution screen, so students can see the finer detail in imaging like MRIs and radiographs," Scifers said. "The third piece was affordability. [We asked], how can we accomplish the first two goals at an affordable price point?"

The Solution

For the numerous digital displays the college planned to incorporate into the labs and classrooms, Advanced AV recommended a manufacturer already used in other classrooms and conference spaces on campus: NEC Display Solutions – specifically its E Series displays.

"We like the solution for its consistency, quality and performance," Morgan said.

Morgan also noted that the E Series' serial control would ensure instructors could easily and comfortably operate the displays.

"The touchscreen control with the custom GUI [graphical user interface] we provided on the displays is probably the most important component of the systems," he said. "It takes complex AV systems and simplifies them for user control and interactivity. An instructor won't be intimidated by the technology, and that encourages them to use it."

The Design

The Sports Medicine and Rehabilitation Center consists of several specialized labs that teach specific skills to students in various programs, enabling grad students to become healthcare practitioners.

"They're learning lots of hands-on activities, so we're using technology, particularly the screens, to deliver content to students via video, PowerPoint, and high-res imaging like diagnostic exams, so they can identify pathology and understand how they might intervene when patients have different pathologies," Scifers said.

The center is laid out across two floors. On the second floor is the Splinting Lab, where students learn how to fabricate custom-made splints and casts. The 90-inch E905 display in that room is used for video instruction, so as the instructor demonstrates how to perform a split or cast, video on the display plays in the background, showing the step-by-step process.

Also on the second floor is the Home Simulation Lab, which simulates an apartment, so students can be trained to provide care for patients returning home after a hospitalization or surgery. The 70-inch E705 delivers content to students within that lab as they learn activities like safely moving patients in and out of a bathtub.

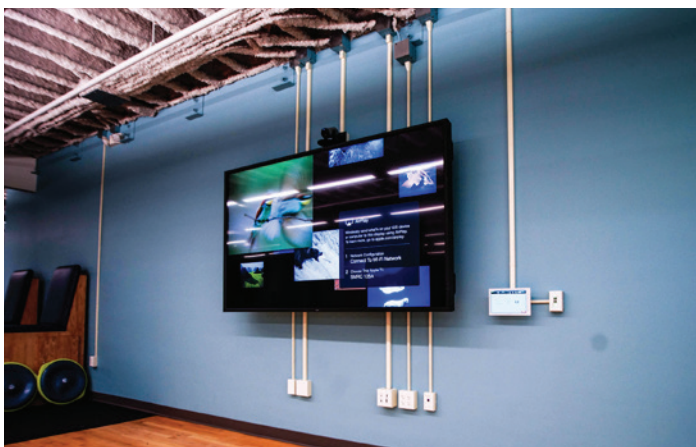
The second floor also has a conference room with a 70-inch E705 and a lobby area with a 58-inch E585, used to display visitor information.

On the first floor is the Orthopedic Assessment Lab, where the most eye-catching feature is a pentagonal arrangement of five 70-inch E705 displays in the center of the room, with another 90-inch E905 on the wall, allowing multiple images to be displayed at once.



"We can have video on one display, a PowerPoint on another, surf the web on another, and pull up research data with video on another," Scifers said. "We can do a variety of different things in the same space, which improves the students' learning."

Morgan noted that it was a bit of a challenge during installation to figure out how to install and secure such large monitors and get them wired so that everything was working in unison, but the final result was successful.



Scifers said the mainly hands-on learning activities in this lab are greatly facilitated by the display configuration and various cameras stationed around the room.

“We use cameras to capture what’s happening and deliver that content to the screens,” he said. “So even for a technique like a mobilization of a hand or wrist, where some students’ views might be blocked, a faculty member can perform it under the camera. The camera simultaneously projects to screens, so students can see it from anywhere.”

Also on the first floor is the Research Lab and Therapeutic Modalities Lab, each with a 70-inch E705 display to project images sent via Airplay from small computer monitors for better viewing. In the Therapeutic Modalities Lab, students across all programs learn modalities such as laser, ultrasound, electric stimulation, massage, and cold and heat therapy – all hands-on work. The displays are used to show a case study to students before they use the information to deliver care to each other in a mock environment, with students playing the roles of clinician and patient.

Two classrooms, each with dual 80-inch E805 displays, are primarily used to deliver lecture-type didactic materials, including distance education, in which instructors from across the country are able to teach via GoToMeeting – an offering the school rolled out in summer 2016.

“The monitors were outstanding and allowed us to deliver this high-res video and content [of remote instructors] in real time to students,” Scifers said.

The last space on the first floor is the Functional Rehabilitation Lab, which includes two 90-inch E905 displays as well as cameras, and is used to teach emergency medical care, biomechanics, and functional strength and conditioning.

“Having those screens and cameras allows us to capture what’s happening, put it on a screen, break it down in slow motion, and look at what students can be doing more safely or differently,” Scifers said. “It has been a very effective space for us in terms of teaching functional rehabilitation and strength activities.”

The Results

The 45,000-plus-square-foot facility opened in March 2016 and now houses Moravian College’s brand-new Master of Science in Athletic Training program as well as St. Luke’s University Health Network, and will be the home of future occupational therapy and physical therapy doctorate programs as well as a Master of Science program in Speech Pathology.

“It’s a new curriculum, a new venture for Moravian College and a new shining point on campus,” Morgan said. “There’s been a lot of interest and a lot of satisfaction with how it’s turned out – not just with the facility, but also with the technology.”

Students and faculty echo these sentiments, with Scifers calling the space “a fantastic environment to teach and learn in.”

“From a faculty standpoint, it’s nice to have access to technology that lets us expand our teaching,” Scifers said. “Without these large, high-res monitors, we would be limited in the ways content could be delivered. We now can utilize video, see subtle detail in diagnostic imaging, and film what’s happening in the lab and then use it as immediate feedback for students’ learning. Without the NEC monitors, it wouldn’t be impossible, but it would be much more difficult to deliver that level of education.”



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