Photo courtesy of Alpha Video & Audio, Inc.

A Silver Lining

Cedar Rapids Community Schools build advanced administrative center in aftermath of catastrophic floods

Challenge

There's a silver lining to every storm cloud.

When the administrative offices of Cedar Rapids Community School District were badly damaged in the flood of 2008, it was a real disaster – but not an unmitigated one.

No one was killed and injuries were few. And after the waters receded and school was back in session, federal and state emergency funds opened the possibility of repairing or replacing the damaged facilities. It was a unique opportunity for a fresh start, but planners knew that they had only one chance to get it right. It might be decades before there was funding again for a project of this scale.

Solution

After months of public input, the school district opted to build the Educational Leadership and Support Center (ELSC), combining offices that had been scattered at five sites throughout the city. They also included a new professional development center with a digital TV studio. To maximize their ability to offer relevant training and to 'future proof' the technology as much as possible, they used the latest high-definition broadcast standards together with a Crestron DigitalMedia™ infrastructure.

The decision to rebuild

The district did not take the decision to build a new facility lightly. "Our District community looked at it from every angle," explains Laurel Day, ELSC Building Co-Manager and Assistant to the Superintendent. "But in the end, the administration and board of education – with input from the community – determined it was just too costly to repair the old facilities." The main administrative building had opened as a vocational high school in 1913, and in order to bring it up to today's standards, it would have required all new heating, air conditioning, data and electrical systems, with the central plant moved from the basement up to a new structure on the roof to prevent catastrophic damage should another flood occur.

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"We had five buildings with up to nine feet of water on the first floor," says Day. The old facilities lacked any sizable meeting rooms, and so the district was forced to rent space at local hotels for staff and teacher training and to forego lesser-priority training when budgets were tight. "The only sizeable spaces we had were our high school gymnasiums, but they are so busy with school activities that they're very difficult to schedule," adds Justin Schaefer, Video Specialist.

It took nearly four years before staff and administrators were able to move into the new, 169,000 square-foot building, but Day and Schaefer say it was worth the wait.

A digital production and broadcast center

In researching the technology for the ELS Center, the district's planning committee toured several facilities, among them the University of Iowa's Kinnick Stadium, and they ended up hiring one of the stadium's engineers, Bill Crawford, as an independent design consultant. Crawford designed the new facility in conjunction with Alpha Video & Audio of Edina, Minnesota, which had designed and installed the stadium's new video control room.

"The Cedar Rapids ELSC is as close to a broadcast production facility I've ever seen in a K-12 environment," says Todd Johnson, the account executive for Alpha Video who worked on the project.

Among the goals of the design team was to produce extremely clean high-definition video and audio, to route it throughout the conference center, to produce original videos and to record and broadcast meetings, events and training sessions. "We keep everything in 1080p with no down convert, even in

archiving," Johnson adds. "It's all very high end and very well planned."

The TV studio includes green-screen and curtained backgrounds, a lighting grid and three Panasonic® digital studio cameras. There are also two adjoining edit rooms, each equipped with Apple® workstations and Final Cut Pro® software.

Schaefer says they use these capabilities mainly to produce material for the district's professional development program, as well as videos for their website and social media sites. For example, "We may have a fourth grade teacher who does a fantastic job on a certain lesson in math. We can bring her into the studio, record the lesson, and post it to our video on demand server, so that other fourth grade teachers can see what she does." Long term, the district hopes to build an online archive where teachers can search by a given learning goal and find examples of great lessons.

In addition, the district produces video for its own local access cable channel, as well as broadcasting school board meetings and other public events. Last year, for example, district staff interviewed experts in the community about social and emotional problems students can experience and how teachers can recognize them. This video was used in the district's ACE (Academic Challenge Experiences) training.

"The district video team also produces training videos for our school volunteer programs, for example Rockin' Reader, which brings adults into the classroom to help children with reading skills," adds Marcia Hughes, Community Relations Supervisor.

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A professional development center

Hughes sees the ELSC professional development center less as a production tool as a great place to hold a meeting or training session. "To have a location for community-building events and staff and curriculum development is a great advantage," she explains.

The district's new boardroom, used mainly for school board meetings, includes two 65" touch screen displays for viewing presentations and for virtual whiteboard operation plus a document camera, audio/video inputs for laptops and other devices and a sound system with wired and wireless microphones.

A very large conference room, which can seat up to 400 people, is used mainly for staff and teacher training. It includes sound, projection and wireless microphone systems plus AV inputs for presenter laptops and devices.

An ABC divisible conference room can accommodate groups from 30 up to 300 people, depending how many rooms are combined and how they are set up. It includes a projection system, two 65" touch screen displays, a sound system with wireless mics, and AV inputs for presenters' use.

In addition, all of these rooms include inputs into the video production system plus studio lighting to ensure the best possible video. The boardroom has five robotic pan/tilt/zoom cameras to capture meetings in high definition; the large conference room and ABC divisible room each have three HD-SDI inputs for the studio cameras. All of these inputs go back to a production control room behind the boardroom. From there, technicians can control the cameras and sound systems and record video onto two AJA Ki Pro digital video recorders.
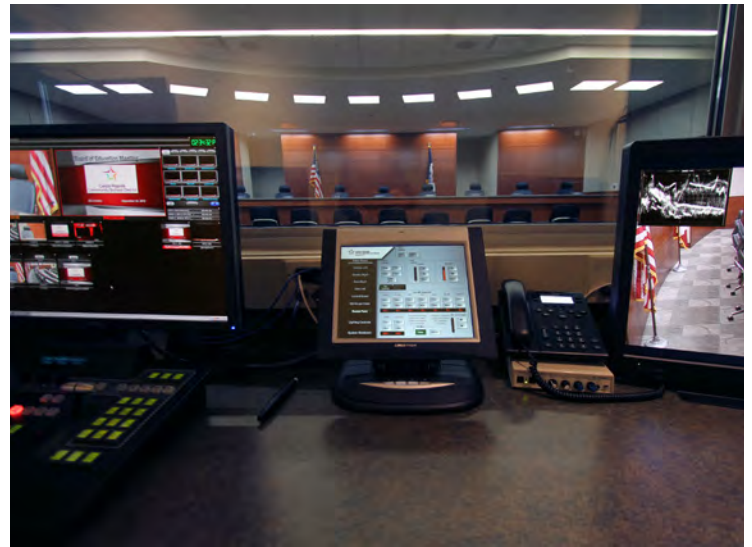
Schaefer explains that the district has used the recording system to record and archive various teacher training sessions as well as a number of community events, for example ceremonies to recognize volunteers and business partners.

The professional development center is booked almost every day of the week and many weekends. A recent week included a community resource fair, a 'green team' meeting, training in early learning, a home school support meeting, an Education Trust meeting (a private group that advocates for minority and low-income students), curriculum training for teachers, and a 'state of the district' event.

"Imagine the types of events that go on in a hotel or convention center," Schaefer explains. "We now have a conference center that we can utilize for any type of meeting or event that will support our staff and students."

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A powerful infrastructure

The power of the conference center and the television studio depends to a very large degree on the digital infrastructure at its basis.

Normally a television studio would be wired with HD-SDI cables, using repeaters for longer distances. Yet for a multi-purpose conference center like this, HD-SDI is not the best solution.

One issue is the need to include HDMI® connectors for newer laptops, tablets and Blu-ray™ players. Because the HDMI standard includes HDCP copy protection, if users wish to be able play commercial media in a conference center, the AV system must be HDCP compliant – but HD-SDI is not.

It's crucial to be able to accept VGA and other analog inputs from older laptops and other devices. This would also be a problem with an HD-SDI cable plant.

Yet the Crestron DigitalMedia platform carries HD-SDI, HDMI and analog VGA and component video signals on economical Cat5e network cable.

Another important goal in the ELSC professional development center was to be able to route video and audio from one room to another. Although the largest conference room at the ELS can hold up to 400 people, for some all-district meetings, that's not enough. "Being able to switch video and audio from one room into another can be very helpful, especially since we never know what kind of meeting might be booked here," Schaefer says. To meet this need, Alpha technicians installed a Crestron DM16X16 switcher, which can route HD video and audio from any source in the conference center to any combination of displays.

Because the district expects to use this facility for many decades, it was important that the media infrastructure be able to handle new technology standards as they gain acceptance. For example, Day says the ELSC is already able to accommodate those who wish to make presentations from their Apple or Android™ tablets—they can connect via the mini HDMI ports most of these devices include. But as demand grows for making wireless presentations, the center will be able to add another Crestron product, AirMedia™, to the DigitalMedia network to make that possible.

A final consideration was ease of use. Although in the ELSC, a district technician normally handles all of the setup for each presenter as well as the recording functions, when simultaneous events are taking place, operations can be a challenge. To this end, the design team put all of the AV, camera, lighting and recording control functions on a 12"

Crestron touch screen in the production control room, with duplicate controls on two iPads that technicians can carry from room to room.

"The Crestron systems gave us all of the functionality and capability we needed to achieve with maximum flexibility," Johnson says. "Crestron is second to none when it comes to management of signals, including routing and matrixing all these signals in high definition. Overall, this has been a fantastic project."

District administrators are very pleased with the new ELS Center and its technology. "The new ELSC has been a huge boost for staff morale," says Day. "It's a one stop shop for our teachers, students and community stakeholders. Everything they need is right here."

"The AV systems are very useful, functional, efficient and user-friendly," adds Schaefer. "The ELSC is working very well for the district

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