

➔ Challenge

Encourage university professors to use more engaging teaching methods based on collaborative technology.

➔ Solution

Create an advanced learning studio with distance learning capability and simplify its use through Crestron DigitalMedia™, AirMedia™, and Crestron control technology.



Photos: University of Ottawa Centre for E-Learning

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— **Martin Fortin**
University of Ottawa

Attention-Getter

A new collaborative classroom helps University of Ottawa professors engage with students

How much attention do university students really pay to traditional lectures?

“Years ago we started to see a trend in the classroom,” says Martin Fortin, Manager, Learning Technology Systems and Networks of the Centre for Mediated Teaching and Learning at the University of Ottawa in Canada’s capital.

“Professors were reporting that many of their students with laptops were on Facebook® and other social media sites while the class was going on.”

The proportion of students on social media varied, but in one of the lectures Fortin says that, out of 45 students with laptops, more than 30 had social media sites open. “It’s obvious that, for at least some classes, our students could be more engaged.”

The issue of engagement is one reason the University of Ottawa recently opened a new collaborative classroom designed by Fortin and colleague Marc Villeneuve. Similar to “learning studios” on other campuses, it has workgroup tables rather than standard seating, and students work in groups of six, each group sharing a large-screen display. Like other learning studios, instructors can route images from one group’s display to any or all of the others, and show their own PowerPoint® or video presentations on a larger display or on one or more of the students’ displays.



This classroom is set up for distance learning as well, so the tables have dual monitors, the room includes pan/tilt/zoom cameras, and one of the workgroup displays is a six-screen video wall.

This powerful room was built on an infrastructure using primarily Crestron DigitalMedia, AirMedia, and Crestron control technology.

An instructional laboratory

The University of Ottawa is one of Canada's top-ranked higher education institutions and, with 41,000 students, the world's largest English-French bilingual university. It's known not only for academic excellence, but also for an innovative cooperative education program that places more than 98-percent of participating students in jobs in local business, schools, and government facilities. It also boasts one of the largest videoconferencing infrastructures in Canada and is the envy of many Universities across North America.

Part of Fortin's intention in including such powerful technology in the new learning studio was to give Ottawa instructors a chance to experiment. "We know we can't force our professors to use any given system," he explains. "So instead we put it out there, so that if they want to use it, they can, and we ask for their input to improve it."

Fortin believes this approach is the key to any significant change in an educational setting. Most instructors need to see a new technology or new teaching method, talk about it with colleagues, and try it in limited ways before they're willing to immerse themselves completely.

So for this first learning studio at Ottawa, Fortin's goal was to maximize flexibility, while at the same time make sure



the new systems would be extremely easy to use.

He says that Ottawa professors have used the room in any number of ways: for collaborative sessions, group work in more traditional classes, meetings, thesis defenses, job interviews, and even for traditional lectures. "And because the collaborative technology is available, even our professors who were the most reluctant to use new teaching technologies have seen the possibilities and used the technology. And as time goes by, we expect the professors to embrace it more and more."

Designing the ultimate collaborative classroom

Fortin says he, Villeneuve and the CMTL team spent almost two years designing the new classroom, a process that included interviews with the most tech-savvy and techno-phobic professors at the school, site visits to other universities, and visits to the InfoComm and EDUCAUSE® conferences.

"I started putting our ideas on paper, or rather into 3D design software, and I asked our Crestron rep a number of questions," Fortin recalls. "He said he was working on a similar classroom and sent me a schematic, which we used in our final designs."

Fortin says the team installed many of the components in a credenza from Middle Atlantic®. They populated the racks, installed the power distribution, and programmed a Biamp audio processor themselves. "We did almost everything but run the Crestron cables and program the Crestron controls," Fortin adds.

Because the room is intended for traditional use, as well as collaborative classes, Fortin built a portable lectern



based on a Newcastle Systems industrial warehouse cart dressed up with an aluminum and Plexiglas® faceplate with the university logo. The cart includes a heavy-duty rechargeable battery able to power its built-in computer, an interactive pen display, and a laptop for up to eight hours. Fortin also added a wireless HDMI® extender to send audio and video signals to the DigitalMedia network.

The room can be used in many different ways for distance learning. It can connect to classrooms at other locations with instruction originating from either. Professors can bring in guest speakers from anywhere around the world, or individual students can connect from home via videoconference and participate in a work group if they can't attend class in person.

When professors are lecturing, they will most often combine the screens in the video wall into a large, classroom-sized display, and perhaps send visuals to the students' displays as well. For distance learning, there's a preset that combines four displays on the video wall into a main screen, then uses the two remaining displays for far-end and near-end views. For distance-learning sessions, one screen on the student stations shows presentation visuals and the other far-end views.

Audio quality is crucial in distance learning, so the team at CMTL provided a wireless lavalier for the instructor and a wireless table mic for each student group with a large, backlit "push-to-talk" button control.

They decided not to put a camera on each table, but instead mounted one PTZ camera on each wall and, in addition, a fourth tracking camera to follow the movements of the professor. "We wanted to make the technology as transparent as possible, so we didn't give people direct

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University of Ottawa

camera controls. Instead, they programmed camera presets. If someone presses a 'talk' button, a camera zooms in on that table. This arrangement is very simple and it works well.”

Fortin and Villeneuve also included a whiteboard for each student group as well the professor. These are standard marker boards, but a large button next to each triggers a camera preset that optimizes viewing.

The room also includes a Crestron Capture HD® device so that professors, when they choose, can record any class session and post it to a video-on-demand server. For now, the captured materials are used most often when a student has missed class, but some instructors have implemented the "flipped classroom" method. Flipped classrooms or blended learning is when lectures are assigned as homework, viewed as streaming video on laptops and mobile devices, and classroom time is devoted to collaborative group activity.



In a collaborative session, the students can use a dedicated computer built into each table, plug a laptop into the Crestron DigitalMedia transmitter at the group table or, if they're using a tablet or smartphone, connect wirelessly via AirMedia. A seven-inch Crestron touch screen at each table makes it easy for students to select whose content to display. AirMedia features Quad View mode, so up to four students can share content at the same time. A DM32X32 matrix switcher gives instructors the ability to route their own presentation visuals, distance learning images, and student screens to any combination of displays.

To control signal routing, instructors simply touch the graphic of a source device on a 15" Crestron touch screen and then touch the devices they want to send the signal to. They can also make video calls, mute the student displays, lock out control from the student touch screens, and preview sources before they are routed, all from the same simple interface. An iPad® outfitted with the Crestron control app duplicates all of the touch screen controls in a device they can use anywhere in the room.

Changing instruction

Fortin says that he and his team were well-versed in Crestron technology and Crestron seemed to be most appropriate solution for a job of this size and scale. The university, however, required the team to do their due diligence. "We looked at several other solutions. There were alternatives, but they were all considerably more complex and expensive. Crestron proved to be the best solution for this project."

For example, using Crestron gear, Fortin was able to limit the equipment installed at each student table to one cable

caddy with only two CAT5 cables, one control screen, and one transmitter/scaler. That would have been more difficult with another solution. "We were concerned, too, about future upgrades. To go to 4K video, we will need only to add 4K cards to our switcher and change out the displays; everything else is 4K-ready now." Still, the main reason to continue to use Crestron, Fortin adds, "is that we've always been satisfied with Crestron's products and great support."

Acceptance of the new technology by staff and students has been excellent. The room is constantly booked all day and well into the evening. To meet the growing demand, they are already planning additional collaborative rooms.

"One of the most positive comments we've received is that, during the 13 weeks of a semester, the students' attitudes changed," Fortin adds. "There's a natural progression," one professor told me. 'At first they're a little shy, but once they see that they can work on their computers and share what they're doing on the main display, they start raising their hands more. Instead of hiding in the back, our students are now eager to participate. And they feel more motivated and involved.'"

The number of new collaborative rooms is still undecided, but one thing is certain: no one will be visiting social media sites instead of paying careful attention in these new classrooms!