

Adapting Traditional Teaching to Synchronous Hybrid Learning at UC San Diego

Core Contributors

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Summary

With pandemic restrictions in place, our team had to pivot towards installing and upgrading audiovisual (AV) equipment that supported synchronous hybrid teaching. In order to allow socially-distanced students to resume in-person learning, 100 classrooms and lecture halls were properly outfitted along with the construction of six large outdoor tents.

Project Narrative

As the sole department responsible for providing and supporting audiovisual (AV) solutions to UC San Diego general assignment classrooms and lecture halls, the Covid-19 pandemic placed an enormous challenge in front of us. Before the pandemic, the campus had an established culture of in-person, collaborative, engaged learning. Students would sit shoulder-to-shoulder in large lecture halls, taking in valuable knowledge taught by their professors. These lecture halls and many classrooms were fully outfitted with voice amplification systems and large screens for easy viewing of visual content. Other AV aids such as document cameras, Blu-ray/DVD players, and even rudimentary chalkboards played a role in communicating facts and ideas. Then in March 2020, California's Governor issued a Stay At Home order in an effort to minimize the spread of Covid. When professors were once again allowed to continue teaching in empty - and later hybrid - learning spaces, we were tasked with finding ways to provide the same quality in-room instruction to remote students, which numbered over 36,000 during the 2020-21 academic year.



Prior to the pandemic, we had already enhanced many of our over 110 General Assignment classrooms and lecture halls with podcast-recording capabilities. Some of the larger rooms even featured auto-tracking cameras to follow instructors as they performed practical demonstrations or utilized the chalkboards. Thanks in part to support from our colleagues at ITS Educational Technology Services, the podcasting system was a solid system that provided recordings of the instructor's AV material (e.g., slides and videos), along with audio of the instructor teaching the class. For rooms with auto-tracking cameras, video of the instructor was displayed in a separate window in the recording. This system quickly became a valuable resource for students who wanted to review the classes to gain a better understanding of the content. However, recordings were only available one or more hours after the conclusion of the class meeting. And even though the podcasting system would prove to be a vital component for a new way of remote teaching and learning, it was not collaborative or engaging in the traditional sense.

The UC San Diego campus had been using and supporting the Zoom app for video call/conference capabilities in the years prior to 2020, so it was a natural transition for us to move towards an integration of Zoom with the existing AV hardware in the classrooms and lecture halls. The initial design was that instructors would teach from an assigned classroom or lecture hall, and their students would join in virtually. The students would see and hear their instructor in real-time, and have the capability to see slides, videos, document camera content, chalkboards, or any other content that the instructor shares. And the instructor would be able to engage with students via video or chat, and get immediate feedback with the effectiveness of each lesson.

The idea of using Zoom for synchronous learning was great, but could it become reality? In a short amount of time, we had to upgrade the largest possible number of classrooms and lecture halls to be Zoom-ready. We had to ensure that instructors could walk into any of the rooms and connect their laptops or devices to the AV system without any trouble. We had to develop a solution that utilized as many of the existing AV components as possible, while minimizing new hardware needed, since the pandemic was causing major disruptions in global supply chains.

Our initial goal was to prepare 25 learning spaces by Fall 2020. Because we operate on a continuous refresh cycle with the General Assignment classrooms and lecture halls, we had already ordered replacement hardware, including new auto-tracking cameras. All of this hardware immediately got put to use developing the Zoom-ready rooms. A little ingenuity was needed to update the AV infrastructure so that the connections were always active, the audio and video quality was retained for local projection/podcasting/Zoom, and the entire system was robust enough to withstand daily use with back-to-back classes across different devices. A Crestron touchpanel and matrix switches were crucial in ensuring the right signals went to the correct destinations, while keeping the system intuitive and easy-to-use.

After promising feedback from instructors, the new goal was to double the number of Zoom-ready spaces to 50 for the next term (Winter 2021). In addition, four large outdoor tents were erected and prepared for socially distanced, hybrid, synchronous teaching. Outfitting these unique environments proved especially challenging with extra long runs of cable and various environmental factors (outside noises, extreme temperatures, wind, rain) that could negatively impact the sensitive electronics. Since typical classroom projectors would not be bright enough for outdoor use, four 4K 84" displays



were set up to show visual content for in-person students. Custom lecterns were procured and manufactured with marine-grade materials to withstand coastal conditions. Nearby storage containers acted as the control centers for the tents and were specially modified to keep networking and AV equipment safe and cool in a small closet.

The very next term (Spring 2021) brought the number of Zoom-ready spaces up to 60, along with two additional outdoor tents. By Fall 2021, 100 classrooms and lecture halls were ready. Many professors adapted well to the updated classrooms, lecture halls, and tents. With patience and practice, they successfully delivered lectures and had engaging discussions with students simultaneously in-person and remote. Building on this success, seven new learning spaces were furnished to be Zoom-ready at the state-of-the-art North Torrey Pines Living and Learning Neighborhood (NTPLLN). Future classroom projects will follow similar plans to provide synchronous hybrid teaching options.

Even before the first Covid vaccines were available to the public, our team worked on-site daily to diligently develop, modify, install, and commission our various learning spaces in order to allow teaching and learning to persevere at UC San Diego. The pandemic did present multiple setbacks, but we are happy to be at a point where instructors are able to utilize a variety of AV teaching solutions and continue the high standard of education on our campus.

Feedback

Both the IT Services Audiovisual Design & Installation and Classroom Technology Support teams deserve praise for their efforts to introduce Zoom-ready classrooms throughout UC San Diego. They applied innovation and ingenuity in designing the Zoom A/V and instructor interface, then spent long days and nights installing and supporting the technology.

Not only did they do this for our existing 100+ classrooms, but then also took on the challenge of engineering new outdoor classrooms from the ground up and solving the challenges associated with making technology work seamlessly across varying conditions. While all this would have been a challenging feat under normal circumstances, they accomplished the entire project during the height of the pandemic and under a very tight deadline. Thanks to the teams' innovation with Zoom-ready classrooms, UC San Diego was able to offer much of the in-classroom experience to our remote students.

- Carlos Jensen, Associate Vice Chancellor for Educational Innovation, and
Dan Suchy, Senior Director for Educational Technology

Supplementary Content

A short video featuring AV technology in the outdoor tents can be viewed here: <https://youtu.be/dEySw5JlzYI>